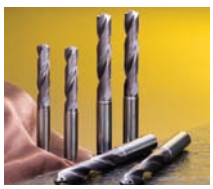
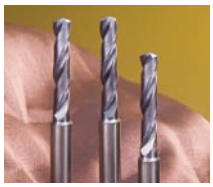
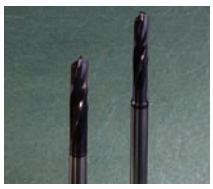
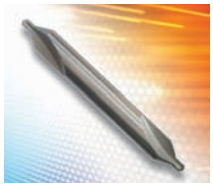
YG

CUTTING TOOLS

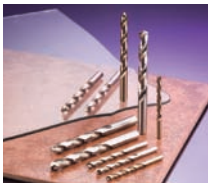
DRILLING TOOLS

1. ENGLISH 2.GERMAN 3.FRENCH 4. ITALIAN 5. SPANISH

	PRODUCTS	DESCRIPTION	PAGE
	1. i-DREAM DRILLS, CARBIDE INSERT 2. i-DREAM DRILLS, HM-EINSÄTZE 3. i-DREAM DRILLS - PLAQUETTES CARBURE 4. i-DREAM DRILL, INSERTI IN METALLO DURO 5. Brocas i-dream, placa de metal duro	For General Steels and for Stainless Steels	**41**
	**1. SOLID CARBIDE DREAM DRILLS - GENERAL (with & without coolant Holes)** 2. VHM-DREAM DRILLS-UNIVERSAL(mit und ohne Kühlkanäle) 3. DREAM DRILLS - FORETS CARBURE Général(avec et sans arrosage central) 4. PUNTE IN MDI DREAM DRILLS- IN GENERALE(con e senza fori per refrigerante) 5. Brocas Dream de metal duro- General(con y sin agujeros de refrigeración)	For General Purpose HRc30 to HRc50	**55**
	**1. SOLID CARBIDE DREAM DRILLS - INOX (with coolant Holes)** 2. VHM - DREAM DRILLS - INOX(mit Kühlkanälen) 3. DREAM DRILLS - FORETS CARBURE Spécial INOX(avec arrosage central) 4. PUNTE IN MDI DREAM DRILLS - PER INOX(con fori per refrigerante) 5. Brocas de metal duro- Inox(con agujeros de refrigeración)	For Tough Materials - Stainless Steels, Nickel Alloys and Titanium up to HRc35	**73**
	1. SOLID CARBIDE DREAM DRILLS - ALU (with coolant Holes) 2. VHM - DREAM DRILLS - ALU(mit Kühlkanälen) 3. DREAM DRILLS - FORETS CARBURE Spécial ALU(avec arrosage central) 4. PUNTE IN MDI DREAM DRILLS - PER ALU(con fori per refrigerante) 5. Brocas de metal duro- ALU(con agujeros de refrigeración)	For Drilling Aluminum and Aluminum Alloys	**85**
	1. SOLID CARBIDE DREAM DRILLS - CFRP 2. VHM - DREAM DRILLS – CFK 3. DREAM DRILLS - FORETS CARBURE Spécial CFRP 4. PUNTE IN MDI DREAM DRILLS - PER CFRP 5. Brocas de metal duro- CFRP	For Composite Materials including CFRP and GFRP	**95**
	1. SOLID CARBIDE DREAM DRILLS - MQL TYPE (with coolant Holes) 2. VHM - DREAM DRILLS - MQL(mit Kühlkanälen) 3. DREAM DRILLS - FORETS CARBURE - Type MQL(avec arrosage central) 4. PUNTE IN MDI DREAM DRILL - TIPO MQL(con fori per refrigerante) 5. Brocas Dream de metal duro- Tipo MQL(con agujeros de refrigeración)	Minimum Quantity Lubrication Drilling Deep Holes (10×D ~ 30×D)	**99**
	**1. SOLID CARBIDE DREAM DRILLS for HIGH HARDENED STEELS** 2. VHM - DREAM DRILLS FÜR HOCHGEHÄRTETE STÄHLE 3. DREAM DRILLS - FORETS CARBURE pour ACIERS DURS 4. PUNTE IN MDI DREAM DRILLS - PER ACCIAI TEMPRATI 5. Brocas Dream de metal duro para aceros templados	For High Hardened Steels HRc50 to HRc70	**107**
	1. GENERAL SOLID CARBIDE DRILLS, JOBBER & STUB LENGTH 2. UNIVERSELLE VHM - BOHRER(in Längen nach DIN 338 und DIN 1897) 3. FORETS CARBURE à usage général- SERIE COURTE 4. PUNTE IN MDI IN GENERALE, CORTE ED EXTRA CORTE 5. Brocas de metal duro, longitud extra corta, estándar	For General Purpose DIN338 and DIN6539	**113**
	1. SOLID CARBIDE NC-SPOTTING DRILLS 2. VHM - NC-ANBOHRER 3. FORETS CARBURE A POINTER NC 4. PUNTE IN MDI PER CENTRATURA SU NC 5. Brocas de metal duro para puntear	Centering and Chamfering	**121**
	**1. SOLID CARBIDE CENTER DRILLS** 2. VHM - ZENTRIERBOHRER 3. FORETS CARBURE à centrer 4. PUNTE MDI PER CENTRATURA SU TORNI 5. Brocas CARBURO de centrar	For General Purpose	**127**

DRILLING TOOLS

1. ENGLISH 2.GERMAN 3.FRENCH 4. ITALIAN 5. SPANISH

	PRODUCTS	DESCRIPTION	PAGE
	1. HSS-PM MULTI-1 DRILLS 2. HSS-PM MULTI-1 BOHRER 3. MULTI-1 DRILLS - FORETS HSS-PM 4. PUNTE IN HSS-PM - MULTI-1 5. Brocas HSS sinterizado Multi-1	For Multi Purpose Particularly for Stainless Steels and Titanium	**131**
	1. PREMIUM HSS HPD STRAIGHT SHANK DRILLS 2. PREMIUM-HSS HPD ZYLINDERSCHAFT BOHRER 3. FORETS HSS-PM Haute Performance cylindriques 4. PUNTE IN HSS-PREMIUM - HPD- GAMBO CILINDRICO 5. Brocas HSS Co HPD mango cilíndrico	For General Steels and Stainless Steels	**139**
	1. HSS GOLD-P DRILLS 2. HSS GOLD-P BOHRER 3. GOLD-P, FORETS HSS 4. PUNTE HSS GOLD-P DRILLS 5. Brocas Acero rápido Gold-P	Gold-P Coating (HSS & HSS-E)	**157**
	**1. HSS STRAIGHT SHANK DRILLS** 2. HSS BOHRER MIT ZYLINDERSCHAFT 3. FORETS HSS Cylindriques 4. PUNTE HSS GAMBO CILINDRICO 5. Brocas HSS mango cilíndrico	For General Purpose (HSS & HSS-E & 8% Cobalt)	**171**
	1. HSS MORSE TAPER SHANK DRILLS 2. HSS BOHRER MIT MK 3. FORETS HSS Queue Cône Morse 4. PUNTE HSS CON ATTACCO CONO MORSE 5. Brocas HSS mango cónico	For General Purpose (HSS & HSS-E & 8% Cobalt)	**219**
	1. HSS (8% Cobalt) NC-SPOTTING DRILLS 2. HSS-Co8 NC-ANBOHRER 3. FORETS HSSCo8 NC à pointer 4. PUNTE HSS (8% Cobalto) PER CENTRATURA SU NC 5. Brocas HSS Co8 para puntear	Centering and Chamfering	**231**
	1. HSS CENTER DRILLS 2. HSS ZENTRIERBOHRER 3. FORETS HSS à centrer 4. PUNTE HSS PER CENTRATURA SU TORNI 5. Brocas HSS de centrar	For General Purpose (HSS & HSS-EX)	**239**
	1. CARBIDE & HSS-PM SPADE DRILLS 2. HM & HSS-PM BOHRMESSER 3. LAMES CARBURE & HSS-PM 4. METALLO DURO & HSS-PM SPADE DRILLS 5. Insertos de metall duro y HSS para taladrado	For General Machines and Drilling Large Diameters Longer Tool Life and High Productivity	**249**

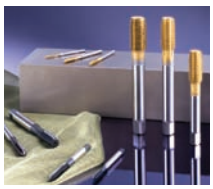
THREADING TOOLS

1. ENGLISH 2.GERMAN 3.FRENCH 4. ITALIAN 5. SPANISH

	PRODUCTS	DESCRIPTION	PAGE
	1. HSS COMBO TAPS **(Spiral Point, Spiral Flute Tap)** 2. HSS COMBO GEWINDEBOHRER(gerade- und drallgenutet) 3. COMBO TAPS - TARAUDS HSS(Entree GUN, HELICOIDAUX) 4. MASCHI HSS COMBO(Imbocco corretto, Scanalature elicoidali) 5. Machos Combo HSS(tipo helicoidal con entrada corregida)	For Multi Purpose Tapping, YG-1's Patent (HSS-E)	**373**

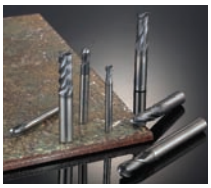
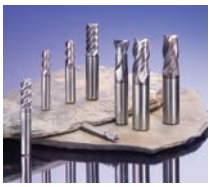
THREADING TOOLS

1. ENGLISH 2.GERMAN 3.FRENCH 4. ITALIAN 5. SPANISH

	PRODUCTS	DESCRIPTION	PAGE
	1. HSS SPIRAL POINT TAPS 2. HSS GEWINDEBOHRER MIT SCHÄLANSCHNITT 3. TARAUDS HSS Gun 4. MASCHI HSS CON IMBOCCO CORRETTO 5. Machos HSS con entrada corregida	Tapping Through Holes (HSS-E & HSS-PM)	**397**
	1. HSS SPIRAL FLUTE TAPS 2. HSS GEWINDEBOHRER MIT DRALL 3. TARAUDS HSS HELICOÏDAUX 4. MASCHI HSS CON SCANALATURE ELICOIDALI 5. Machos HSS helicoidales	Tapping Blind Holes (HSS-E & HSS-PM)	**447**
	1. HSS STRAIGHT FLUTE TAPS 2. HSS GEWINDEBOHRER GERADE GENUTET 3. TARAUDS HSS DROIT 4. MASCHI HSS CON SCANALATURE DIRITTE 5. Machos HSS rectos	Tapping Shallow Holes of Cast Iron, Mild Steels and Brass (HSS-E)	**491**
	**1. HSS COLD FORMING TAPS** 2. HSS INNENGEWINDEFORMER 3. TARAUDS HSS A REFOULER 4. MASCHI HSS A RULLARE 5. Machos HSS de laminación	Tapping by Forming Soft Materials (HSS-E & HSS-PM)	**507**
	1. HSS NUT TAPS 2. HSS MUTTERGEWINDEBOHRER 3. TARAUDS HSS ENFILADE 4. MASCHI HSS PER DADI 5. Machos HSS para roscado de tuercas	Nut Tapping Machines (HSS-E)	**523**
	1. HSS SCREW THREAD INSERT TAPS 2. HSS GEWINDEBOHRER FÜR GEWINDEDRAHTEINSÄTZE 3. TARAUDS HSS POUR FILETS RAPPORTES 4. MASCHI HSS PER HELICOIL 5. Machos HSS para insertos de roscas de tornillo	Tapping STI Threads of Soft Materials (HSS-E)	**525**
	1. HSS HAND TAPS 2. HSS HANDGEWINDEBOHRER 3. TARAUDS HSS à MAIN 4. MASCHI HSS - A MANO 5. Machos HSS de mano	General Tapping (HSS & HSS-E)	**533**
	1. HSS PIPE TAPS 2. HSS GASGEWINDEBOHRER 3. TARAYDS HSS POUR TUBE 4. MASCHI HSS PER TUBI 5. Machos HSS para roscado de tuberías	Tapping Whitworth Pipe threads (HSS & HSS-E)	**545**
	1. SOLID CARBIDE TAPS 2. VHM - GEWINDEBOHRER 3. TARAUDS CARBURE 4. MASCHI IN METALLO DURO 5. Machos de metal duro integral	Tapping Cast Iron and High Silicon Aluminium Mass Production and High Productivity achievable	**553**
	1. SOLID CARBIDE THREAD MILLS (with & without coolant Holes) 2. VHM - GEWINDEFRÄSER(mit und ohne Kühlkanäle) 3. FRAISE A FILETER CARBURE(avec et sans arrosage central) 4. FRESE IN METALLO DURO PER FILETTATURA(con e senza fori per refrigerante) 5. Fresas de interpolación de metal duro(con y sin agujeros de refrigeración)	Threading Large Diameter in High Quality Available with Chamfer	**557**

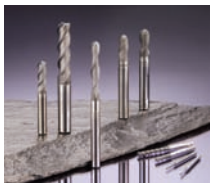
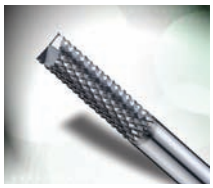
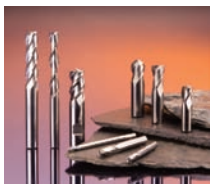
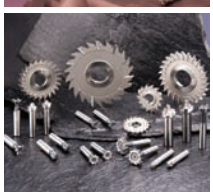
MILLING TOOLS

1. ENGLISH 2.GERMAN 3.FRENCH 4. ITALIAN 5. SPANISH

	PRODUCTS	DESCRIPTION	PAGE
	1. CBN END MILLS 2. CBN - FRÄSER 3. FRAISE CBN 4. FRESE A CANDELA IN CBN 5. Fresas CBN	CBN(Cubic Boron Nitride) Machining High Hardened Steels up to HRc70, Mirror Finish	**627**
	1. i-Xmills, CARBIDE INSERT END MILLS 2. i-Xmills, HM-WP - FRÄSER 3. i-Xmills, PLAQUETTES CARBURE 4. INSERTI PER FRESE A CANDELA i-Xmills 5. i-Xmills, insertos metal duro para fresado	For General Steels and Hardened Steels up to HRc65	**633**
	1. i-HS mills, CARBIDE INSERT END MILLS 2. i-HS mills, HM-WP - FRÄSER 3. i-HS mills, PLAQUETTES CARBURE 4. INSERTI PER FRESE A CANDELA i-HS mills 5. i-HS mills, insertos metal duro para fresado	For General Steels and Cast Iron, Ductile Cast Iron	**645**
	1. X5070 NANO SOLID CARBIDE END MILLS 2. X5070 NANO-VHM - FRÄSER 3. X5070 - FRAISE CARBURE NG 4. FRESE A CANDELA IN MDI NANO X-5070 5. X5070, fresas de metal duro nanograno	For High Hardened Steels HRc45 to HRc70 High Speed Machining, Dry Cutting	**653**
	**1. 4G Mill SOLID CARBIDE END MILLS** 2. 4G Mill VHM - FRÄSER 3. 4G Mill - FRAISE CARBURE 4. FRESE A CANDELA IN MDI 4G Mill 5. Fresas de metal duro 4G Mill	High Speed Cutting for Pre-Hardened Steels up to HRc55	**703**
	1. X-SPEED ROUGHER SOLID CARBIDE & HSS-PM END MILLS 2. X-SPEED ROUGHER VHM - FRÄSER 3. X-SPEED ROUGHER - FRAISE CARBURE 4. FRESE A CANDELA IN MDI X-SPEED ROUGHER 5. Fresas de metal duro X-SPEED ROUGHER	Roughing End Mills for High-Feed Machining with reduced vibrations	**819**
	1. X-POWER SOLID CARBIDE END MILLS 2. X-POWER VHM - FRÄSER 3. X-POWER - FRAISE CARBURE 4. FRESE A CANDELA IN MDI X-POWER 5. Fresas de metal duro X-Power	For Medium Steels to High Hardened Steels up to HRc65	**829**
	**1. JET-POWER SOLID CARBIDE & HSS-PM END MILLS** 2. JET - POWER VHM - FRÄSER 3. JET-POWER - FRAISE CARBURE 4. FRESE A CANDELA IN MDI JET-POWER 5. Fresas de metal duro Jet-Power	For Exotic materials like Stainless Steels, Nickel alloys and Titanium	**911**
	1. TN MILL SOLID CARBIDE END MILLS 2. TN MILL VHM - FRÄSER 3. TN MILL - FRAISE CARBURE 4. FRESE A CANDELA IN MDI TN MILL 5. Fresas de metal duro TN MILL	For Titanium, Titanium Alloys, Inconel and Stainless Steels	**931**
	1.V7 Mill SOLID CARBIDE END MILLS 2. V7 VHM - FRÄSER 3. V7 FRAISE CARBURE POUR 4. FRESE A CANDEL IN MDI V7 5. Fresas de metal duro V7	The unique design for High speed and Heavy duty cutting	**937**

MILLING TOOLS

1. ENGLISH 2.GERMAN 3.FRENCH 4. ITALIAN 5. SPANISH

	PRODUCTS	DESCRIPTION	PAGE
	1. ALU-POWER SOLID CARBIDE & HSS-PM END MILLS 2. ALU - POWER VHM - FRÄSER 3. ALU-POWER - FRAISE CARBURE 4. FRESE A CANDELA IN MDI ALU-POWER 5. Fresas de metal duro Alu-Power	For Aluminium Alloys and Silent Cutting	**959**
	1. CRX S SOLID CARBIDE END MILLS 2. CRX S VHM - FRÄSER 3. CRX S - FRAISE CARBURE 4. FRESE A CANDELA IN MDI CRX S 5. Fresas de metal duro CRX S	DLC Coated End Mills for Copper	**983**
	**1. D-POWER GRAPHITE SOLID CARBIDE END MILLS** 2. D - POWER Graphit VHM - FRÄSER 3. D-POWER graphite - FRAISE CARBURE 4. FRESE A CANDELA IN MDI D-POWER grafite 5. Fresas de metal duro D-Power grafito	For Graphites	**997**
	1. D-POWER CFRP SOLID CARBIDE END MILLS 2. D - POWER CFK VHM - FRÄSER 3. D-POWER CFRP - FRAISE CARBURE 4. FRESE A CANDELA IN MDI D-POWER CFRP 5. Fresas de metal duro D-Power CFRP	For Composite Materials including CFRP and GFRP	**1017**
	**1. CARBIDE ROUTERS** 2. Mikroverzahnter VHM Fräser 3. FRAISE A DETOURER 4. fresa in metallo duro 5. Fresa lima	For Composite Materials including CFRP and GFRP	**1023**
	1. K-2 SOLID CARBIDE END MILLS 2. K-2 VHM - FRÄSER 3. K-2 - FRAISE CARBURE 4. FRESE A CANDELA IN MDI K-2 5. Fresas de metal duro K-2	General Purpose with Coating Conventional or High Speed Milling Wet or Dry Cutting.	**1029**
	**1. GENERAL SOLID CARBIDE END MILLS** 2. VHM - FRÄSER 3. FRAISES CARBURE à Usage Général 4. FRESE A CANDELA IN MDI 5. Fresas de metal duro	General Purpose, Non-coated, Any Coating Available	**1081**
	1. TANK-POWER HSS-PM END MILLS 2. TANK - POWER HSS-PM - FRÄSER 3. TANK-POWER - FRAISES HSS-PM 4. FRESE A CANDELA IN HSS-PM TANK-POWER 5. Fresas acero sinterizado Tank-Power	High Toughness, for Stainless Steels, Carbon steels, Alloy Steels. For General Application, Rough & Finish	**1133**
	1. GENERAL HSS END MILLS 2. HSS SCHAFTFRÄSER 3. FRAISES HSS 4. FRESE A CANDELA IN HSS 5. Fresas HSS	General Purpose, Non-coated, Any Coating Available	**1167**
	**1. HSS MILLING CUTTERS** 2. HSS FRÄSER 3. FRAISES DE FORME HSS 4. CORPI FRESA IN HSS 5. Fresas HSS	General Works. Available Dovetail, Woodruff Keyseat, T-slot, Side Milling Cutters and HSS (8% Cobalt) Corner Rounding, Shell End Mills	**1269**

OTHER TOOLS

1. ENGLISH 2.GERMAN 3.FRENCH 4. ITALIAN 5. SPANISH

	PRODUCTS	DESCRIPTION	PAGE
	1. REAMERS 2. REIBAHLEN 3. ALESOIRS 4. ALESATORI IN 5. Escariadores	Carbide NC Machine Reamers HSS Hand Reamers HSS-E Chucking Reamers	**1309**
	1. HSS COUNTERSINKS 2. HSS SENKER 3. FRAISES A EBAVURER HSS 4. SVASATORI-SMUSSATORI IN HSS 5. Avellanadores conicos HSS mango cilíndrico	Deburring, Chamfering, Countersinking (HSS & HSS-E & 8% Cobalt)	**1329**
	1. HSS-E COUNTERBORES 2. HSS-E FLACHSENKER 3. FRAISES A LAMER HSS-E 4. ALLARGATORI PER SEDI TESTE DI VITI 5. Avellanadores tipo Allen HSS mango cilíndrico	For General Purpose	**1337**
	1. CARBIDE ROTARY BURRS 2. HM - ROTIERFRÄSER 3. FRAISES LIMES ROTATIVES CARBURE 4. LIME ROTATIVE IN METALLO DURO 5. Fresas rotativas de metal duro	For General Steels and Non-ferrous Metals etc. (3mm & 6mm Shank Diameter)	**1341**
	1. 330mm(LENGTH) GROUND CARBIDE BARS 2. GESCHLIFFENE VHM - RUNDSTÄBE (330 mm Gesamtlänge) 3. BARRAUDS 330mm (Lg Totale) 4. BARRETTE COLINDRICHE IN METALLO DURO RETTIFICATE.330 mm (O.A.L.) 5. Barras de metal duro rectificadas de longitud 330mm	h6(Diameter Tolerance), +6.0mm(Length Tolerance)	**1359**
	1. SPECIAL CUTTING TOOLS 2. SONDERWERKZEUGE 3. COMPLEMENTS DE GAMME 4. UTENSILI SPECIALI 5. Herramientas especiales	The Customized Tools for Automobile, Medical, Power Generator, Aerospace and Wind Power Industries	**1361**
	1. TOOL HOLDERS 2. WERKZEUGHALTER 3. ATTACHEMENTS 4. MANDRINI- PORTAUTENSILI 5. Portaherramientas	According to International Standards such as DIN, MAS and ISO	**1365**

TEST I - GENERAL

TOOL

HOLDER	ZH14505020
INSERT	YB1A1450 / Ø14.5

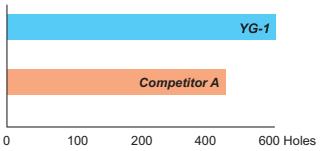
WORKPIECE - Structural Steels

ASTM	A36
DIN	St37-2
JIS	SS400

CONDITIONS

Cutting Speed	80 m/min
Feed	0.24 mm/rev.
Feedrate	421 mm/min.
RPM	1756 rev./min.
Drilling	48.0 mm
Coolant	Internal
Machine type	Vertical Machining Center

RESULT



YG-1 (Total Drilling 600 Holes)

Competitor A (Total Drilling 470 Holes)

TEST II - INOX

TOOL

HOLDER	ZH14005020
INSERT	YB2C1400 / Ø14.0

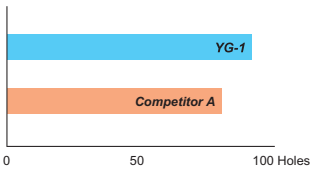
WORKPIECE - Stainless Steels

AISI	304
DIN	X5CrNi189
JIS	SUS304

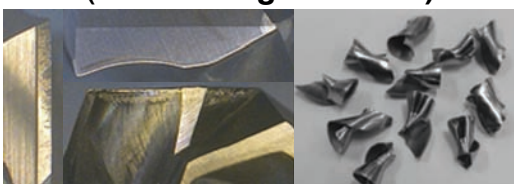
CONDITIONS

Cutting Speed	55 m/min
Feed	0.15 mm/rev.
Feedrate	188 mm/min.
RPM	1250 rev./min.
Drilling	50.0 mm
Coolant	Internal
Machine type	Vertical Machining Center

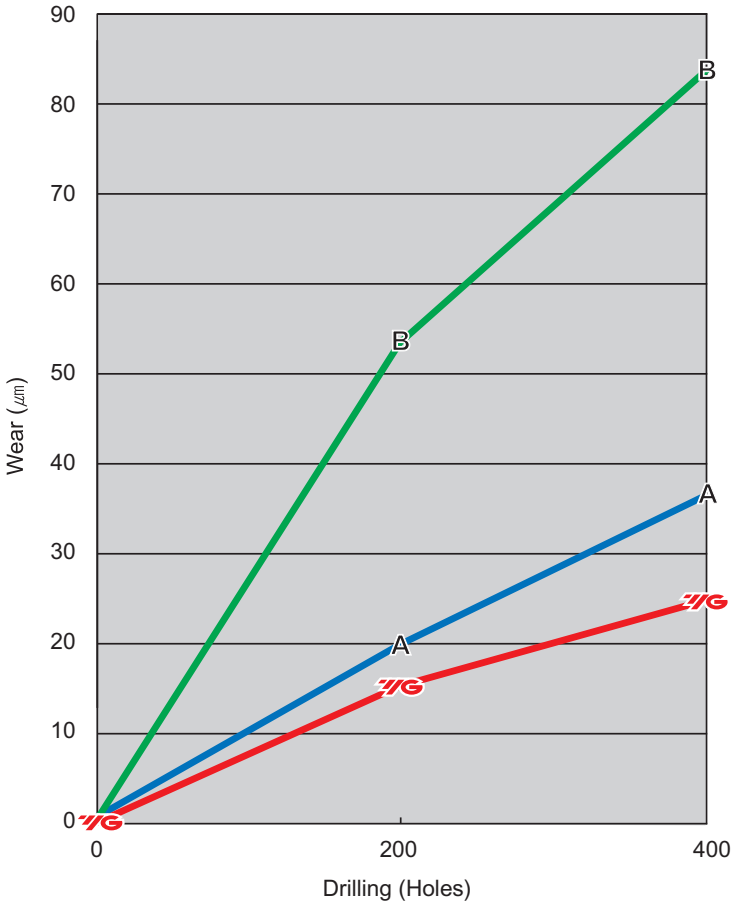
RESULT



YG-1 (Total Drilling 100 Holes)



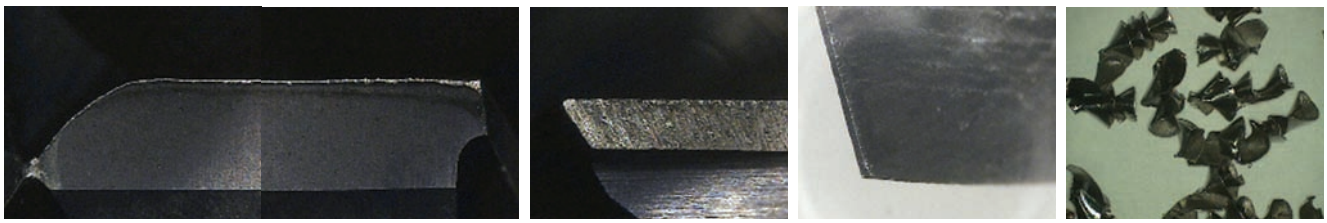
Competitor A (Total Drilling 80 Holes)



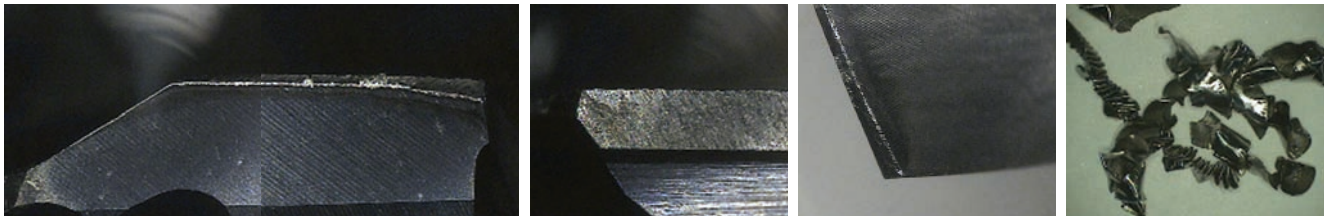
CUTTING CONDITION

Tools : DH452060(DREAM DRILLS-INOX)
Size : Ø6 x Ø6 x 44 x 82
Work Material : • JIS:SUS304
• DIN:X5CrNi1810
(X4CrNi18-10)
• WR:1.4301
R.P.M : 3700 rev./min.
Feed : 0.07 mm/rev.
Drilling Depth : 24 mm
Coolant : Wet Cut

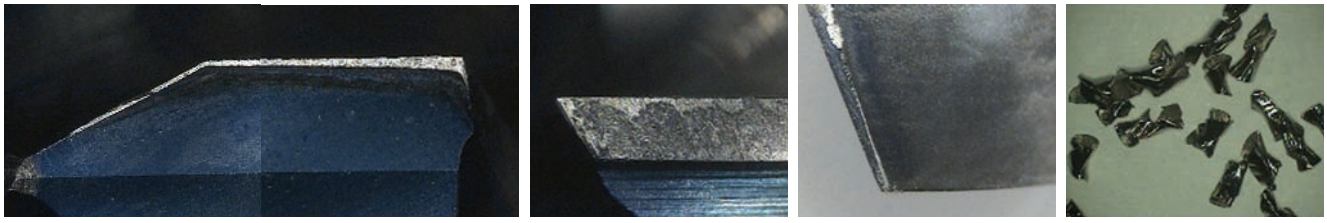
YG-1 (Total Drilling 400 Holes)



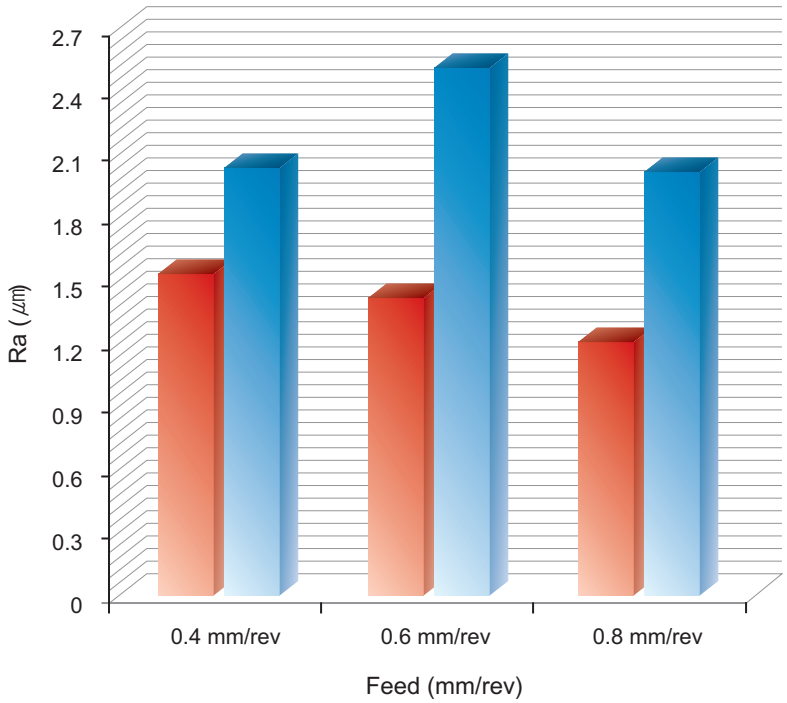
Competitor A (Total Drilling 400 Holes)



Competitor B (Total Drilling 400 Holes)



Surface Roughness of Work Piece

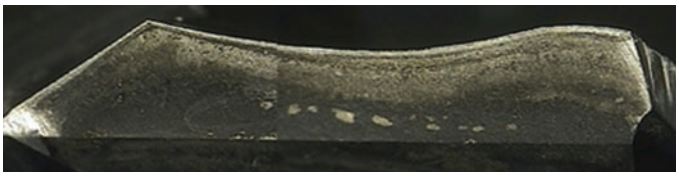
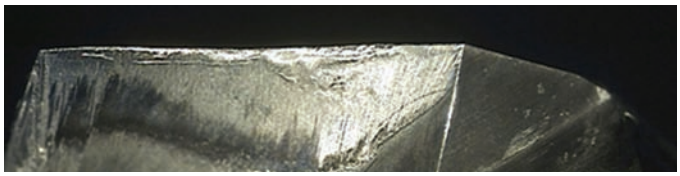


Cutting Condition

- Tools : DREAM DRILL ALU
- Size : Ø10
- Work Material : • Al(6061)
  • JIS:A6061
  • DIN:AlMgSiCu
- R.P.M : 6367 rev./min.
- Feed : 0.4 ~ 0.8 mm/rev.
- Drilling Depth : 45mm
- Coolant : Wet cut

YG-1 (Total Drilling 820 Holes)

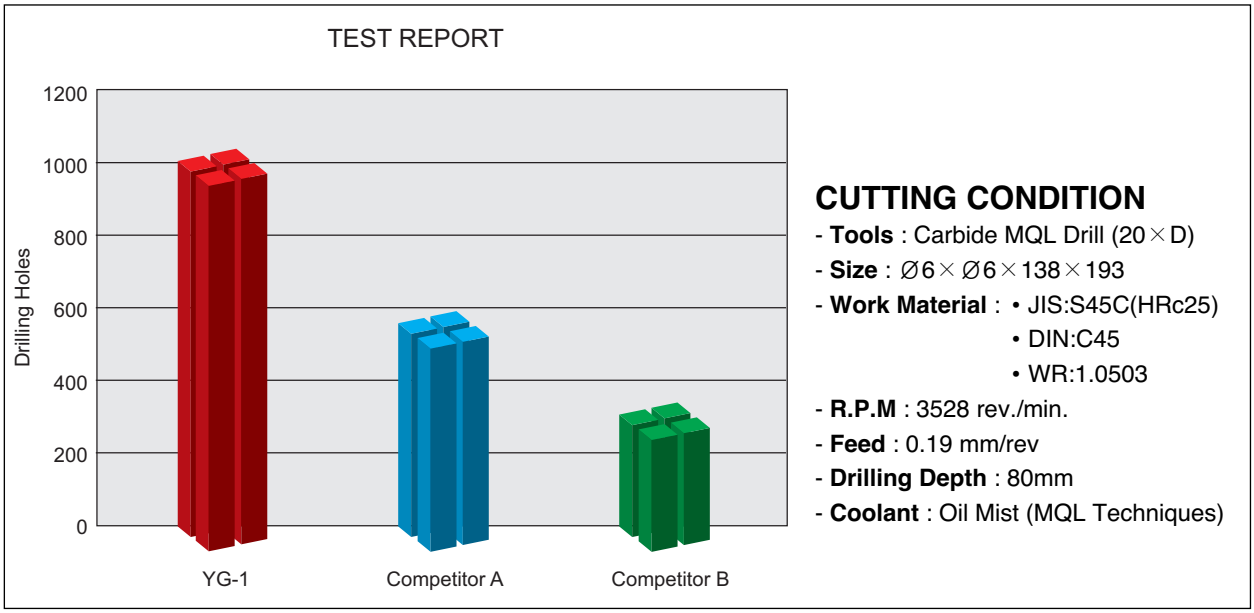
COMPETITOR (Total Drilling 820 Holes)

FEATURES OF DREAM DRILLS MQL TYPE

- Flute Shape and Point Shape allowing better chip evacuation in deep hole drilling
- Excellent Coating and Surface Treatment for better performance and chip evacuation

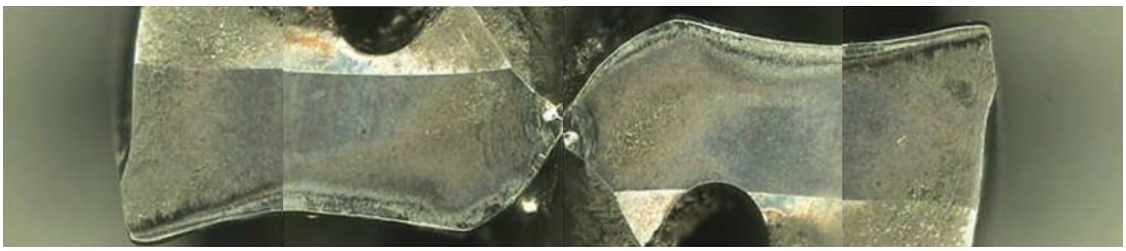
TEST RESULT AGAINST COMPETITOR's DRILLS



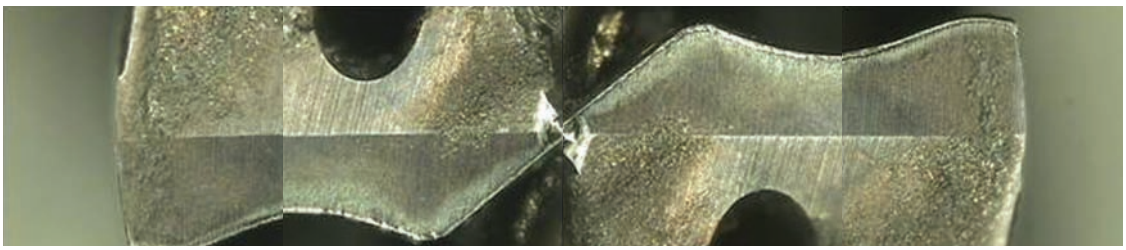
CUTTING CONDITION

- **Tools** : Carbide MQL Drill (20×D)
- **Size** : Ø6×Ø6×138×193
- **Work Material** : • JIS:S45C(HRc25)
  • DIN:C45
  • WR:1.0503
- **R.P.M** : 3528 rev./min.
- **Feed** : 0.19 mm/rev
- **Drilling Depth** : 80mm
- **Coolant** : Oil Mist (MQL Techniques)

YG-1 (After Drilling 1,000 Holes)



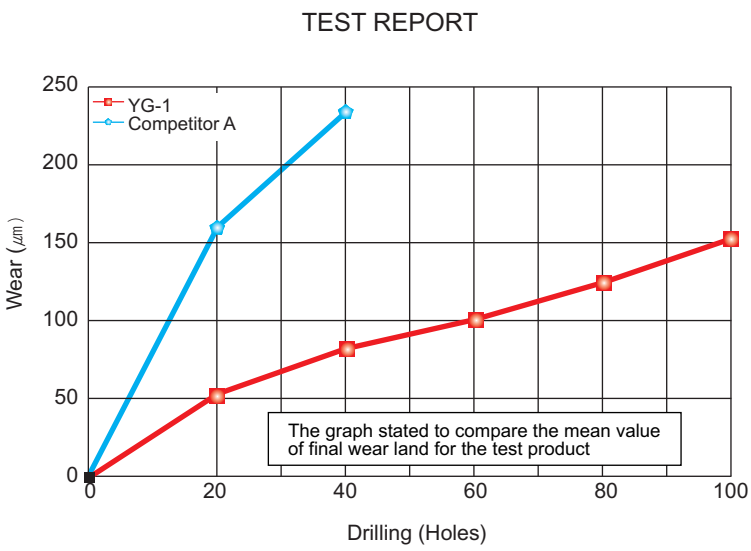
Competitor A (After Drilling 546 Holes)



FEATURES OF DREAM DRILLS HARDENED STEELS

- Low Helix Angle to maximize tools' rigidity.
- Special Point Thinning to improve chip evacuation.
- Excellent Coating and Surface Treatment for improved surface and better chip evacuation.

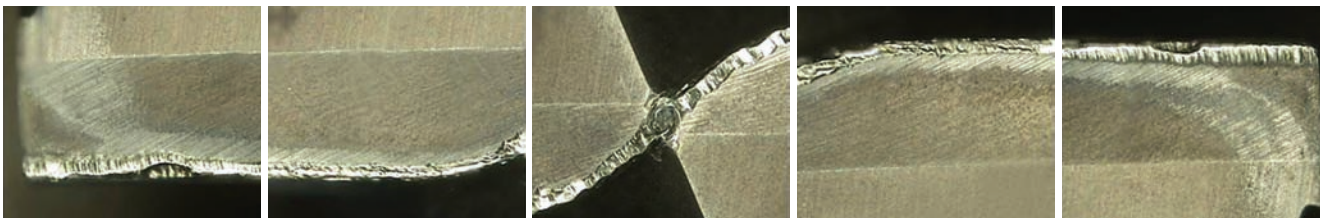
TEST RESULT AGAINST COMPETITOR's DRILLS



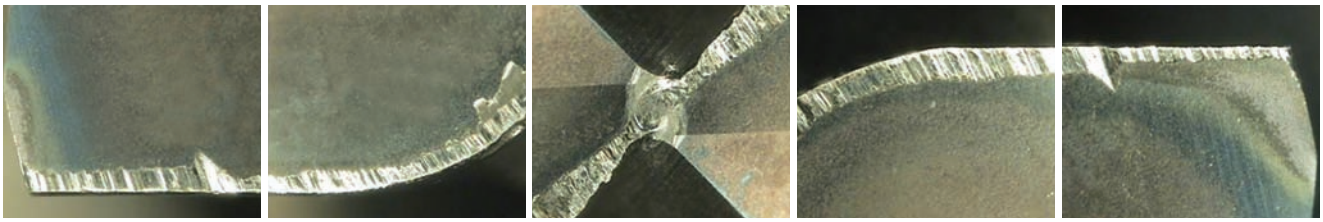
CUTTING CONDITION

- **Tools** : Dream Drill for High Hardened Steels
- **Size** : Ø10 × Ø10 × 63 × 111
- **Work Material** : • JIS:SKD11(HRc60)
  • DIN:X155CrV-Mo12-1
  • WR:1.2379
- **R.P.M** : 380 rev./min.
- **Feed** : 0.04 mm/rev
- **Drilling Depth** : 25mm (2.5D)
- **Coolent** : Wet Cut

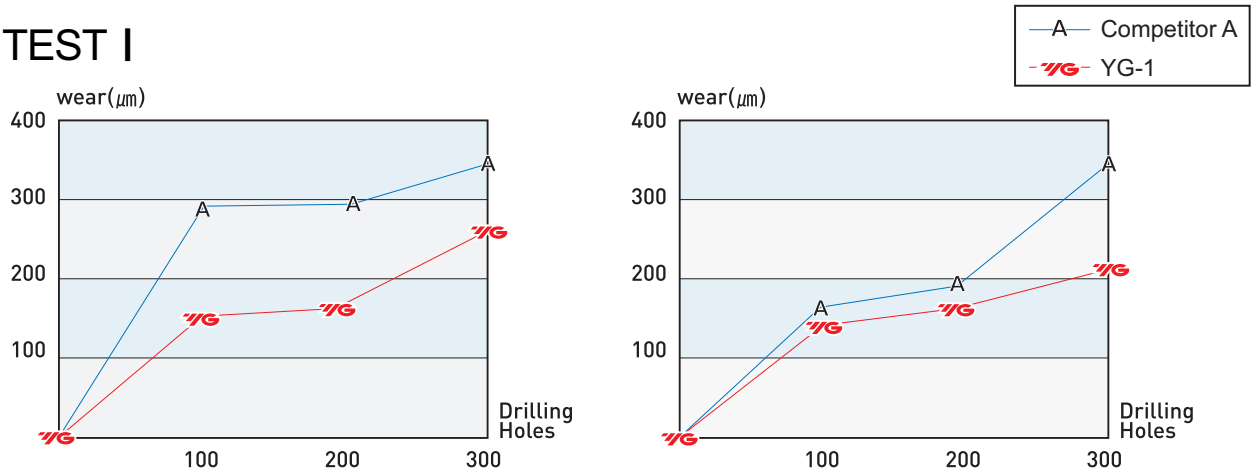
YG-1 (After Drilling 100 Holes)



Competitor A (After Drilling 40 Holes)



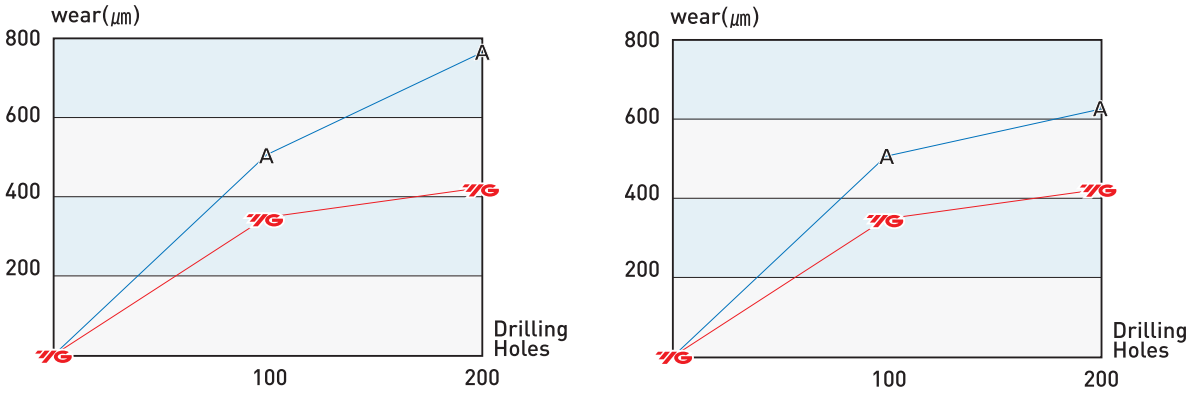
TEST I



CUTTING CONDITION

- **Work material** : • JIS:SUS316
  • DIN:X3CrNiMo17-13-3
  • WR:1.4436
- **Drilling Depth** : 24 mm
- **Total Drilling(hole)** : 300 Holes
- **R.P.M** : 600 rev./min.
- **Feed** : 110 mm/min.

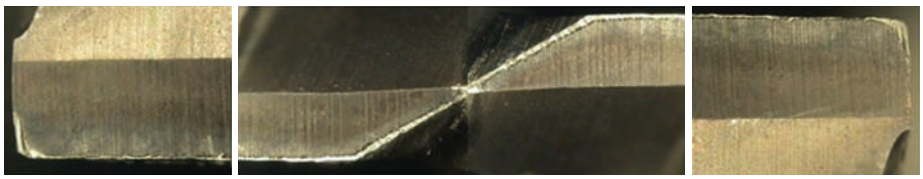
TEST II



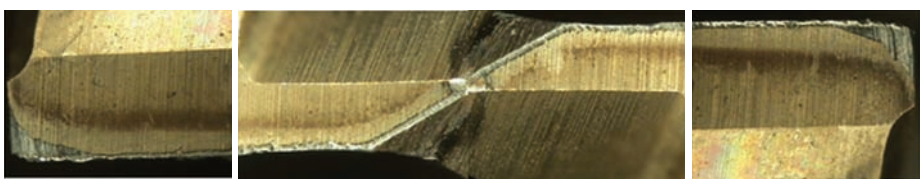
CUTTING CONDITION

- **Work material** : • JIS:SKD11
  • DIN:X155CrVMo12-1
  • WR:1.4436
- **Drilling Depth** : 24 mm
- **Total Drilling(hole)** : 200 Holes
- **R.P.M** : 600 rev./min.
- **Feed** : 110 mm/min.

YG-1



Competitor A



TEST Ⅰ - SPIRAL FLUTE

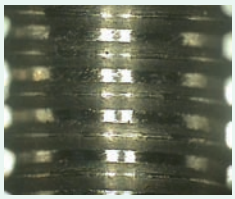
Cutting Condition

- **Tools** : Combo Spiral Flute Tap
- **Size** : M8×1.25
- **Work Material** : • JIS:S45C(HRc35)
  • DIN:C45
  • WR:1.0503
- **Tapping Depth** : 20mm
- **Coolant** : Water Soluble Oil
- **Vc (Tapping Speed)** : 10.0m/min

YG-1(Total Tapping 204 Holes)

Surface Roughness of Work Piece
Oberflächengüte des Werkstücks

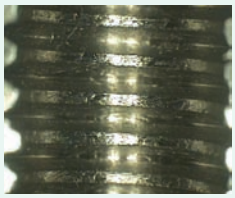
204 Holes ▶



Competitor A (Total Tapping 159 Holes)

Surface Roughness of Work Piece
Oberflächengüte des Werkstücks

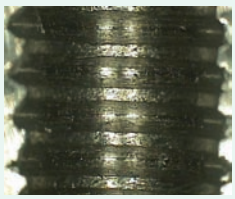
159 Holes ▶



Competitor B (Total Tapping 204 Holes)

Surface Roughness of Work Piece
Oberflächengüte des Werkstücks

204 Holes ▶

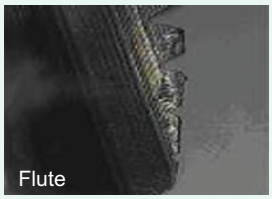


TEST Ⅱ - SPIRAL POINT

Cutting Condition

- **Tools** : Combo Spiral Point Tap
- **Size** : M2×0.4
- **Work Material** : • JIS:S45C(HRc35)
  • DIN:C45
  • WR:1.0503
- **Tapping Depth** : 6mm
- **Coolant** : Tapping Oil
- **Vc (Tapping Speed)** : 10.0m/min

YG-1(Total Tapping 450 Holes)



Competitor A (Total Tapping 318 Holes)

Tool was broken after 318 holes tapping

Competitor B (Total Tapping 103 Holes)

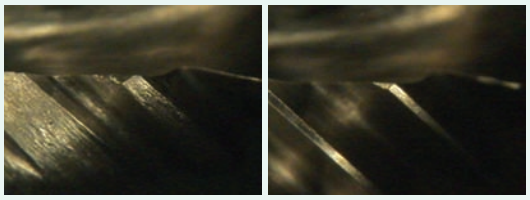
Tool was broken after 103 holes tapping

TEST Ⅰ - SPIRAL FLUTE

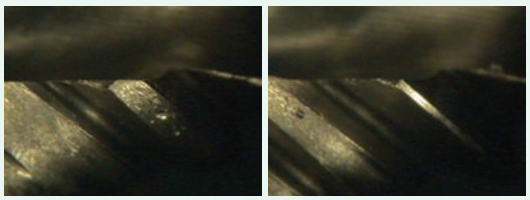
Cutting Condition

- **Tools** : Combo tap for Stainless Steels (TQ744246)
- **Size** : M4×0.7
- **Work Material** : • DIN : X5CrNi18 10
  (X 4 CrNi18-10)
  • WR : 1.4303
  • JIS : SUS304
- **Tapping Depth** : 10mm
- **Coolant** : Wet Cut
- **Vc (Tapping Speed)** : 8m/min.

YG-1 (Total Tapping 170 Holes)



COMPETITOR A(Total Tapping 170 Holes)



COMPETITOR B

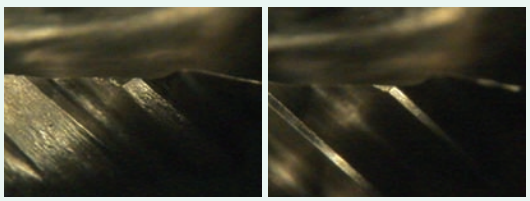
Tool was broken after 83 holes tapping

TEST Ⅱ - SPIRAL FLUTE

Cutting Condition

- **Tools** : Combo tap for Stainless Steels (TQ744316)
- **Size** : M6×1.0
- **Work Material** : • DIN : X5CrNi18 10
  (X 4 CrNi18-10)
  • WR : 1.4303
  • JIS : SUS304
- **Tapping Depth** : 15mm
- **Coolant** :Wet Cut
- **Vc (Tapping Speed)** : 8m/min.

YG-1(Total Tapping 230 Holes)



COMPETITOR A

Tool was broken after 92 holes tapping

COMPETITOR B

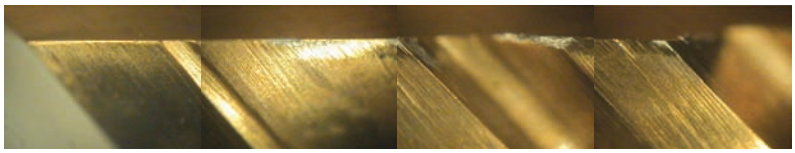
Tool was broken after 98 holes tapping

TEST Ⅰ - SPIRAL FLUTE

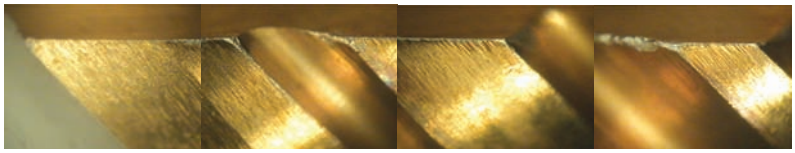
Cutting Condition

- **Tools** : HSS-PM Synchro Spiral Flute Tap
- **Size** : M10×1.5
- **Work Material** • JIS:S45C(HRc35)
  • DIN:C45
  • WR:1.0503
- **Cutting Speed** : 30 m/min.
- **R.P.M.** : 955 rev./min.
- **Feed** : 1.5 mm/rev.
- **Tapping Depth** : 25 mm
- **Tapping Method** : Blind Hole Tapping
- **Coolant** : Wet Cut
- **Machine** : Machining Center

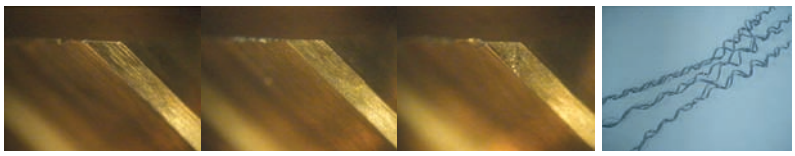
YG-1(Total Tapping 330 Holes)-Chamfer



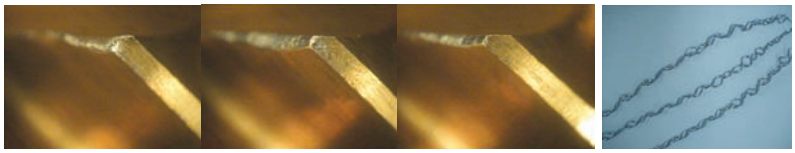
Competitor A(Total Tapping 330 Holes)-Chamfer



YG-1(Total Tapping 330 Holes)-Thread



Competitor A(Total Tapping 330 Holes)-Thread

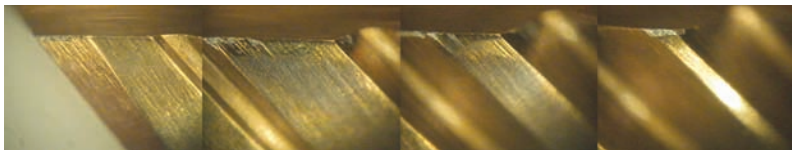


TEST Ⅱ - SPIRAL FLUTE

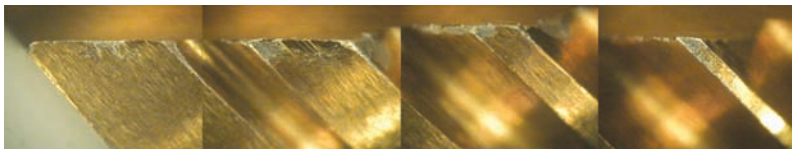
Cutting Condition

- **Tools** : HSS-PM Synchro Spiral Flute Tap
- **Size** : M6×1.0
- **Work Material** • JIS:S45C(HRc35)
  • DIN:C45
  • WR:1.0503
- **Cutting Speed** : 30 m/min.
- **R.P.M.** : 1,592 rev./min.
- **Feed** : 1.0 mm/rev.
- **Tapping Depth** : 15 mm
- **Tapping Method** : Blind Hole Tapping
- **Coolant** : Wet Cut
- **Machine** : Machining Center

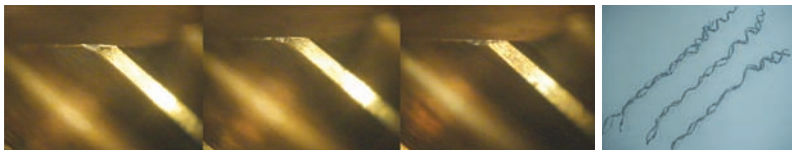
YG-1(Total Tapping 490 Holes)-Chamfer



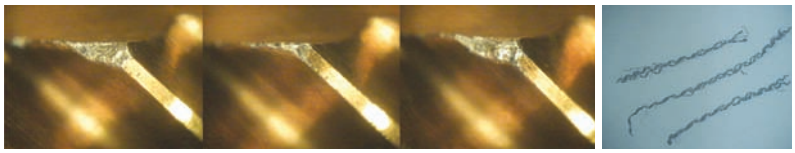
Competitor A(Total Tapping 490 Holes)-Chamfer



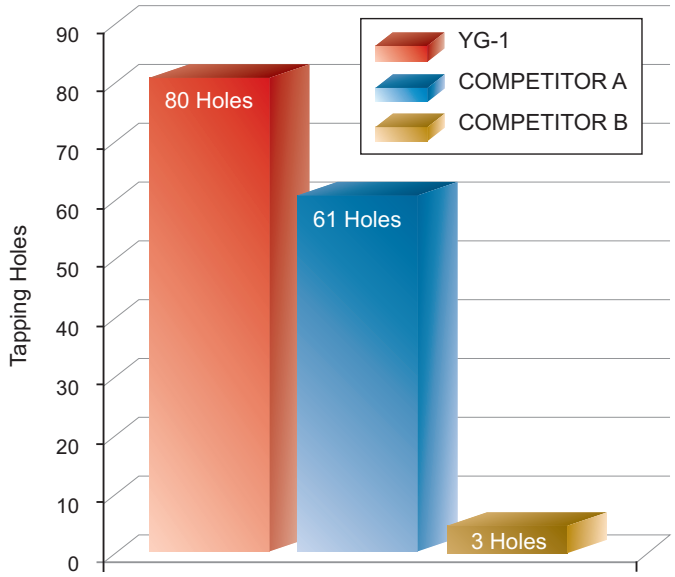
YG-1(Total Tapping 490 Holes)-Thread



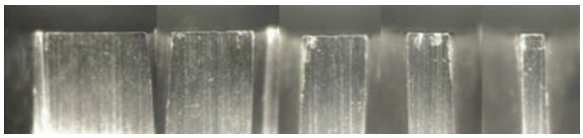
Competitor A(Total Tapping 490 Holes)-Thread



TEST I - STRAIGHT FLUTE TAPS



YG-1(Total Tapping 80 Holes)



Competitor A(Total Tapping 61 Holes)

Tool was broken after 61 holes tapping

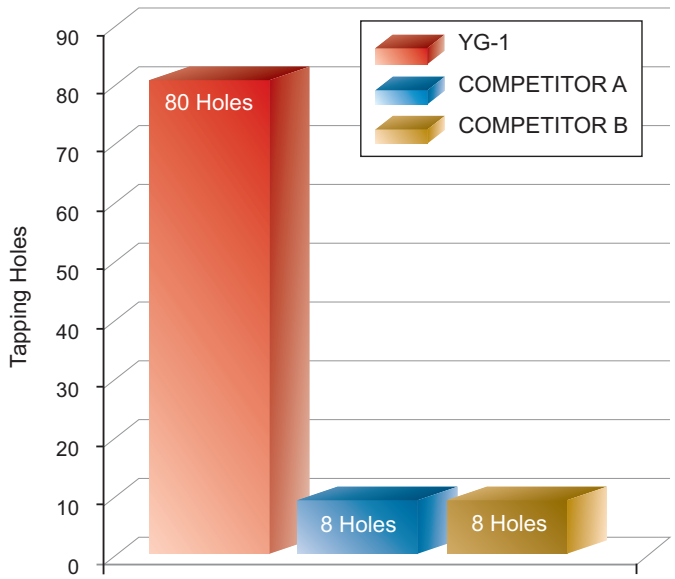
Competitor B(Total Tapping 3 Holes)

Tool was broken after 3 holes tapping

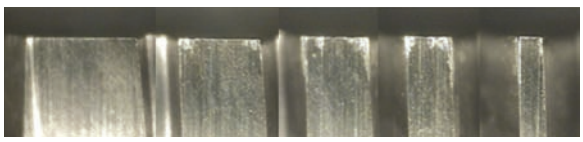
Cutting Condition

- **Tools** : Straight flute tap
- **Size** : M6×1.0
- **Work Material** : • JIS:SKD61 (HRc50)
  • DIN:X40GrMoV51(1.2344)
  • AISI : H13
- **R.P.M.** : 120 rev./min.
- **Feed** : 1.0 mm/rev.
- **Tapping Depth** : 9mm (1.5×D)
- **Coolant** : Wet Cut

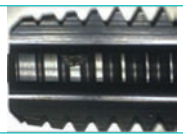
TEST II - STRAIGHT FLUTE TAPS



YG-1(Total Tapping 80 Holes)



Competitor A(Total Tapping 8 Holes)



Competitor B(Total Tapping 8 Holes)

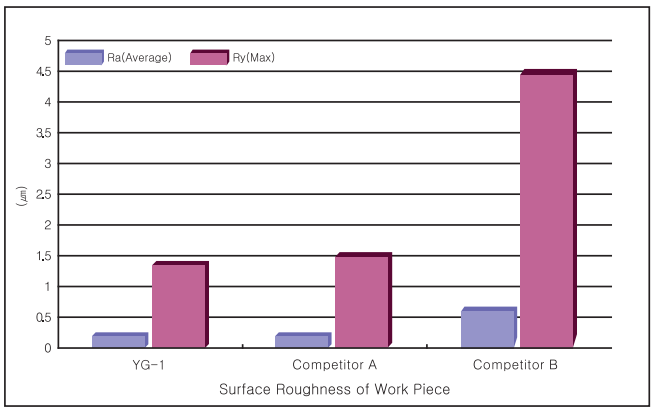
Tool was broken after 8 holes tapping

Cutting Condition

- **Tools** : Straight flute tap
- **Size** : M6×1.0
- **Work Material** : • JIS : SKD61 (HRc50)
  • DIN : X40GrMoV51(1.2344)
  • AISI : H13
- **R.P.M.** : 120 rev./min.
- **Feed** : 1.0 mm/rev.
- **Tapping Depth** : 9mm (1.5×D)
- **Coolant** : Wet Cut

TEST Ⅰ - Total Milling Length : 240m

Surface Roughness of Work Piece

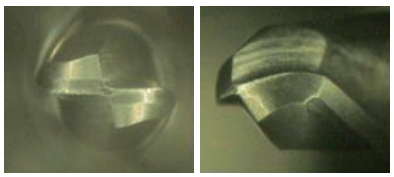


CUTTING CONDITION (Ø1mm)

Tools : 2Flute, CBN Ball Nose End mill
Size : Ø1 × Ø4 × 0.6 × 50
Work Material : • JIS:SKD11(HRc60)
• DIN:X155CrV-Mo12-1
• WR:1.2379
Cutting Speed : 94.25 m/min.
R.P.M : 30,000 rev./min.
Feed : 1,500 mm/min.
Milling Depth : 0.01 mm
Coolant : Oil Mist
Machine : Machining Center

Maximum Wear (㎛)

YG-1 (19.611㎛)



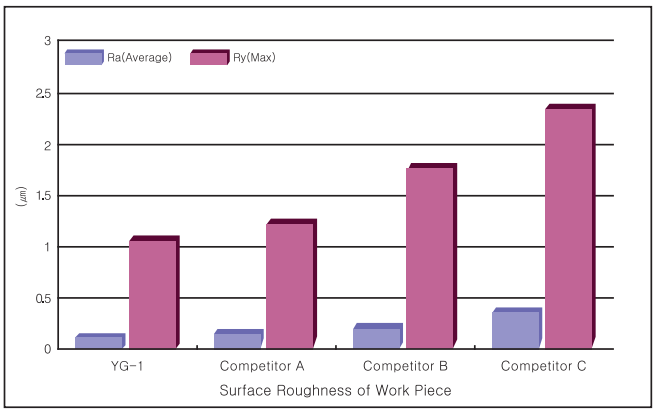
Competitor A (32.249㎛)

Competitor B

Tool was broken after 100 meter milling

TEST Ⅱ - Total Milling Length : 750m

Surface Roughness of Work Piece

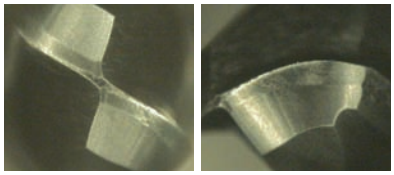


CUTTING CONDITION (Ø2mm)

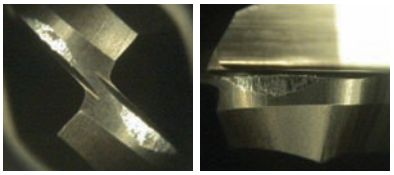
Tools : 2Flute, CBN Ball Nose End mill
Size : Ø2 × Ø4 × 1.8 × 50
Work Material : • JIS:SKD11(HRc60)
• DIN:X155CrV-Mo12-1
• WR:1.2379
Cutting Speed : 188.50 m/min.
R.P.M : 30,000 rev./min.
Feed : 2,000 mm/min.
Milling Depth : 0.01 mm
Coolant : Oil Mist
Machine : Machining Center

Maximum Wear (㎛)

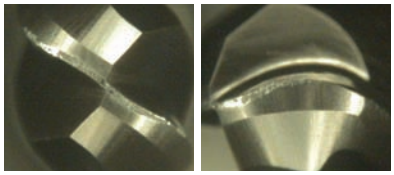
YG-1 (57.630㎛)



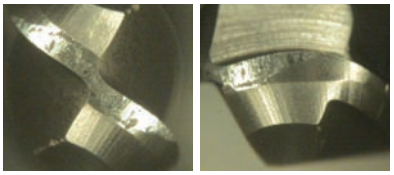
Competitor A (100.314㎛)



Competitor B (71.471㎛)

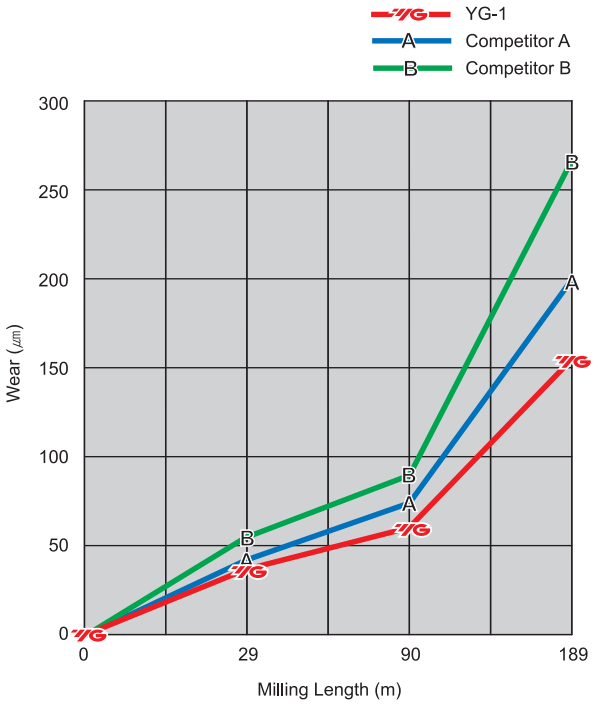


Competitor C (170.200㎛)

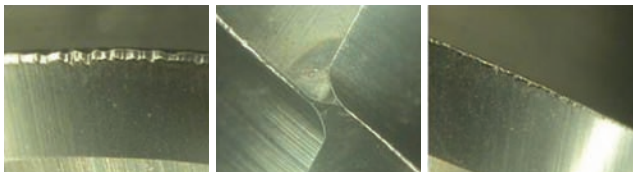


CASE STUDY ◆ i-Xmill (Reference page : p.633 ~ p.644)

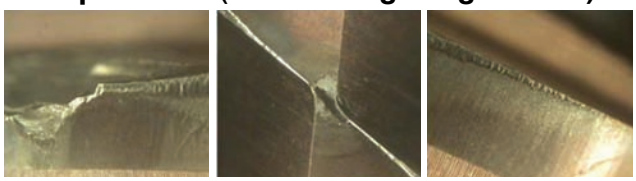
TEST I - BALL



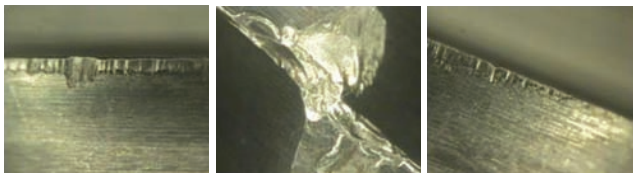
YG-1 *i*-Xmill (Total Milling Length 189m)



Competitor A (Total Milling Length 189m)



Competitor B (Total Milling Length 189m)



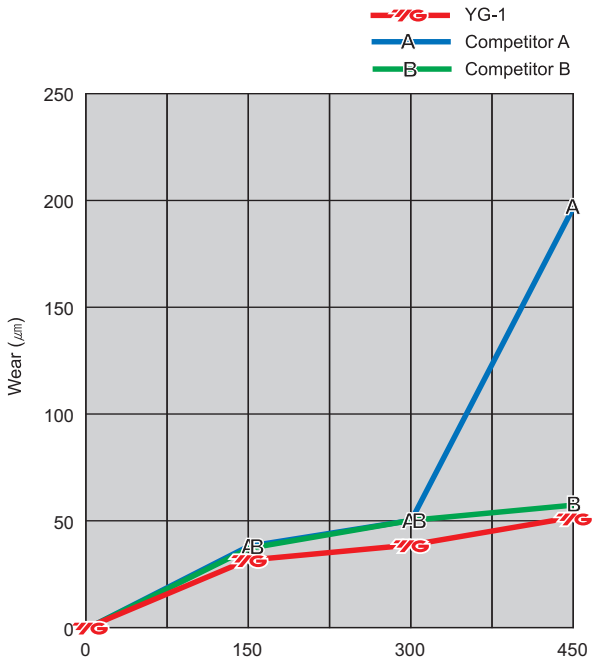
CUTTING CONDITION

Tools : i -Xmill Ball (XMB120C160)
Size : Ø16×R8.0
Work Material : JIS : SKD61 (HRc50),
DIN : X40GrMoV51(1.2344)
AISI : H13

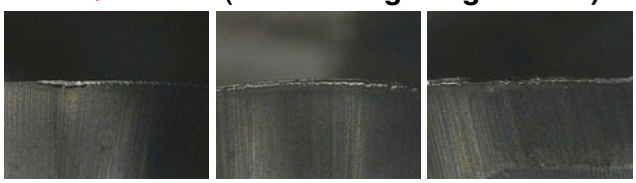
Cutting Speed : 80.42 m/min.
R.P.M : 1,600 rev./min.
Feed : 390 mm/min.
Feed per tooth : 0.12 mm/tooth
Milling Method : Side Cutting

Milling Depth : Axial : 0.8 mm
Radial : 1.6 mm
Coolant : Oil Mist
Overhang : YG-1, Competitor B : 48 mm
Competitor A : 56 mm
Machine : Machining Center

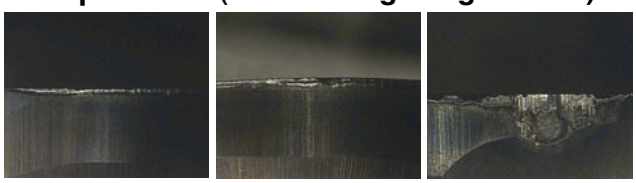
TEST II - CORNER RADIUS



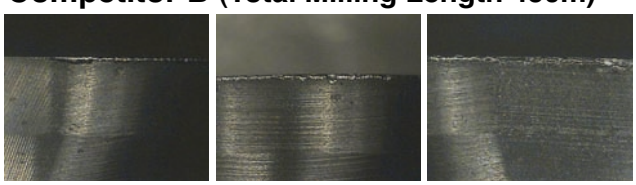
YG-1 *i*-Xmill (Total Milling Length 450m)



Competitor A (Total Milling Length 450m)



Competitor B (Total Milling Length 450m)



CUTTING CONDITION

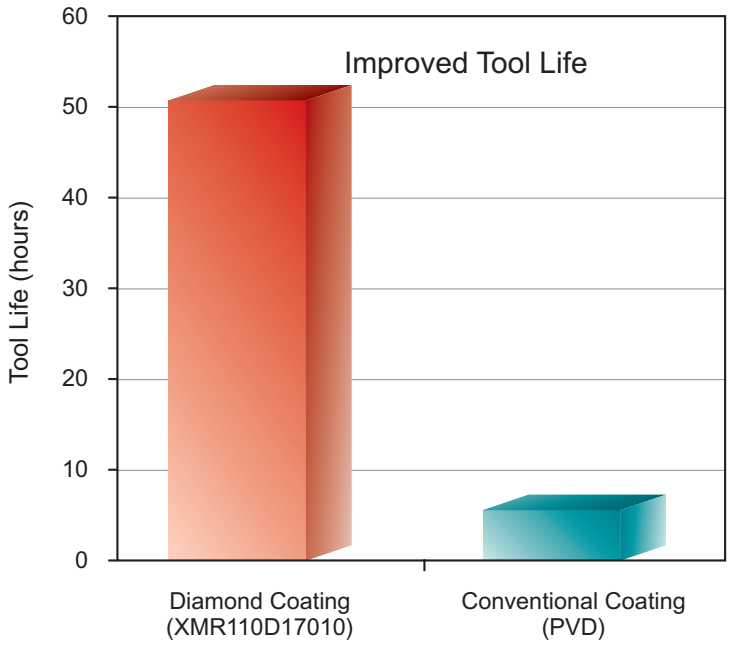
Tools : i-Xmill Corner Radius (XMR110A16020)
Size : Ø16 x R2.0
Work Material : KS : KP4M (Mold steels HRc35)
DIN : 40CrMnNiMo8-6-4(1.2738)
AISI : P20+Ni

Cutting Speed : 280 m/min.
R.P.M : 5,570 rev./min.
Feed : 2,230 mm/min.
Feed per tooth : 0.2 mm/tooth
Milling Method : Side Cutting

Milling Depth : Axial : 3.0mm
Radial : 0.2mm
Coolant : Oil Mist
Overhang : 70mm
Machine : Machining Center

CASE STUDY ◆ i-Xmill with Diamond Coating

(Reference page : p.636, p.639 ~ p.640)



CUTTING CONDITION

Tools: i-Xmill Corner Radius (XMR110D17010)
Size : Ø17 Corner Radius R1.0
Work Material : Graphite
Cutting Speed : 320 m/min.
R.P.M : 6,000 rev./min.
Feed : 2,800 mm/min.
Feed per tooth : 0.23 mm/tooth
Milling Depth : Axial : 0.2 mm
Coolant : Air

Coating properties

This coating generation features a good crystalline structure. It protects tools perfectly against abrasive wear and is unsurpassed in graphite cutting.

Feature

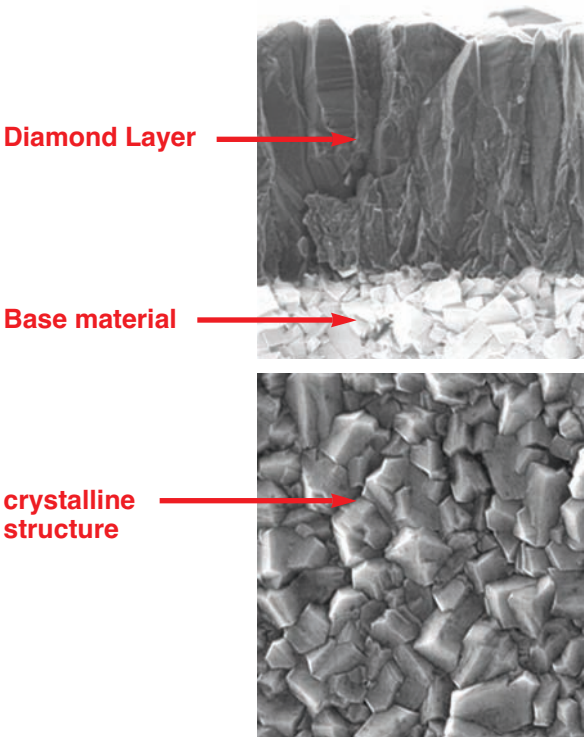
1. High Abrasive wear resistance.
2. Good Coefficient of friction.(against Al)
3. High Precision.

Advantages

Diamond coated i-Xmill possible to cut graphite workpieces with substantially greater speeds and in significantly better quality.

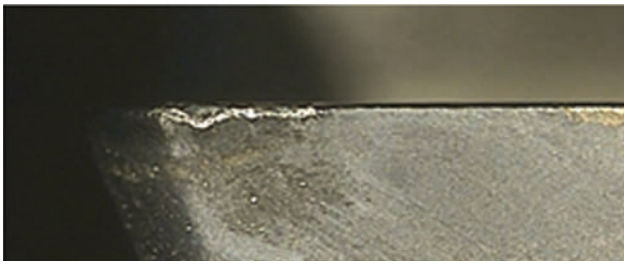
Applications

1. Precision-structured graphite electrodes.
2. Micro-Electromechanical Systems. (MEMS)
3. Printed Circuit Boards. (PCBs)
4. Ceramics (greens, sintered) Dental, machinery.

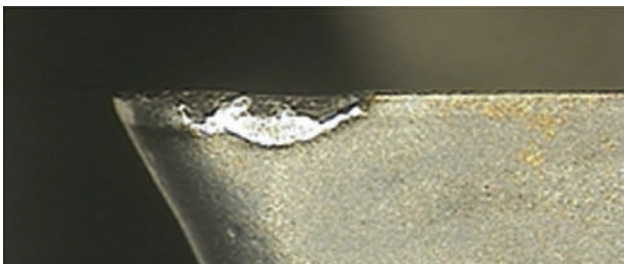


TEST I

YG-1 (Wear : 0.113mm)



Competitor (Wear : 0.230mm)

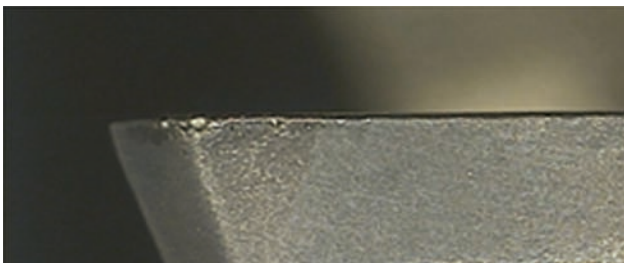


CUTTING CONDITION

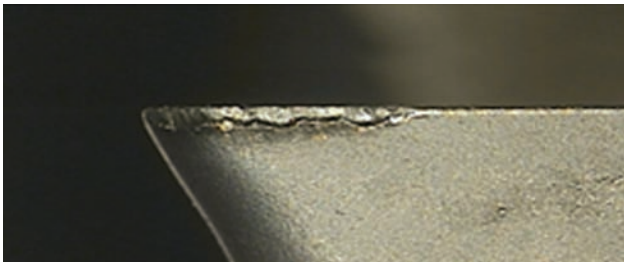
Tools : YG1 : APKT103504PDER YA702
ZHS20090AP10F3E
Competitor : 2Corner Insert
Ø20 Indexable Endmill
Workpiece : Alloy Tool steel
(X40CrMoV5-1-HRC 50)
Vc : 80 m/min.
fz : 0.18 mm/tooth
Depth : ap=1mm, ae=10mm
Coolant : Oil Mist

TEST II

YG-1 (Wear : 0.090mm)



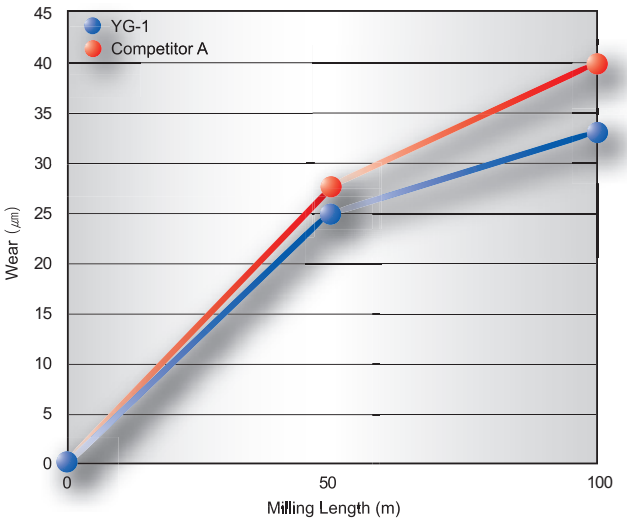
Competitor (Wear : 0.159mm)



CUTTING CONDITION

Tools : YG1 : APKT103504PDER YA702
ZHS20090AP10F3E
Competitor : 2Corner Insert
Ø20 Indexable Endmill
Workpiece : High Grade Alloy mold steel
(KP4-HRC 30)
Vc : 140 m/min.
fz : 0.15 mm/tooth
Depth : ap=1mm, ae=8mm
Coolant : Wet

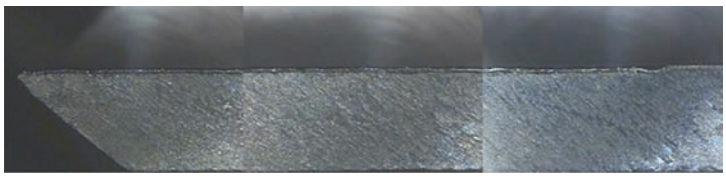
Carbide 6 Flute 45° Helix End Mill for Hardened Steel



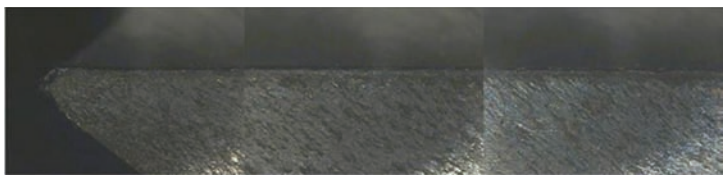
CUTTING CONDITION

Tools : 6Flute, X5070 45° Helix
Size : Ø16×Ø16×40×110
Work Material : • JIS:SKD61(HRc50)
• DIN:X40CrMoV5-1(1.2344)
• AISI:H13
Cutting Speed : 96.5 m/min.
R.P.M : 1,920 rev./min.
Feed : 912 mm/min.
Milling Method : Down & Side Cutting
Milling Depth :Axial : 24 mm
Radial : 0.96 mm
Coolant : Dry Cut
Overhang : 52 mm
Machine : Machining Center

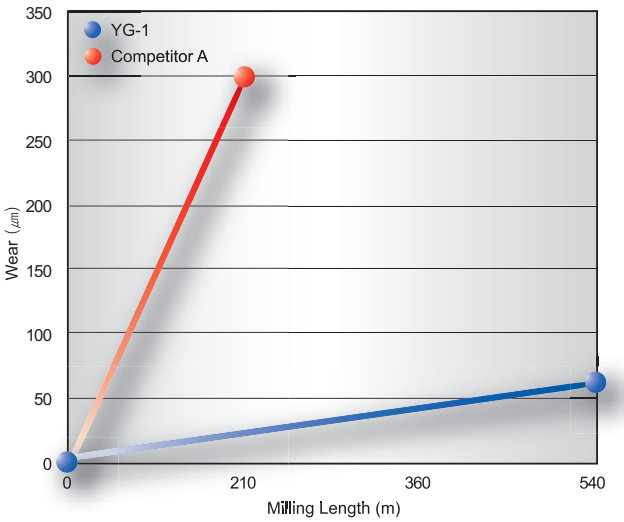
YG-1
(Total Milling Length 100m)



Competitor A
(Total Milling Length 100m)



Carbide 4 Flute Center Match Ball End Mill for Hardened Steel

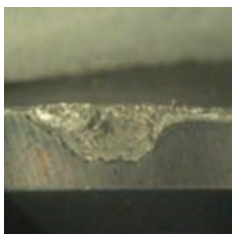


CUTTING CONDITION

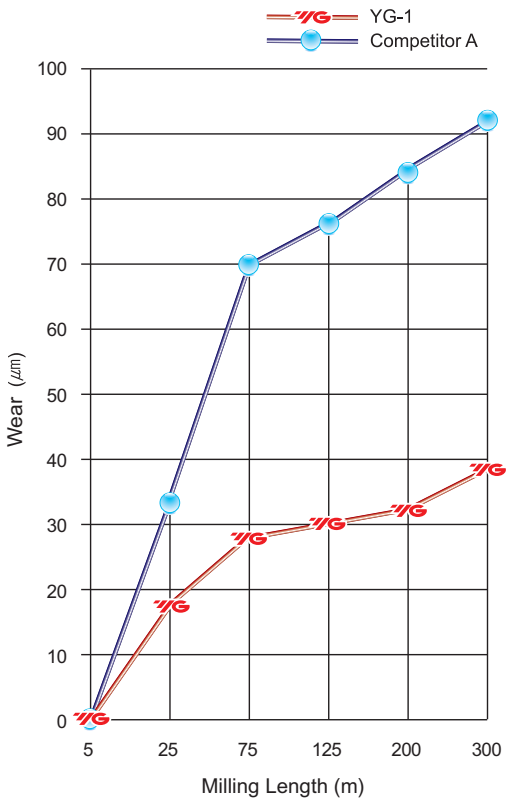
Tools : 4Flute, X5070 Ball Nose
Size : Ø10×Ø10×18×100
Work Material : • JIS:SKD11(HRc60)
• DIN:X155CrVMo12-1(1.2379)
• AISI:D2
Cutting Speed : 210.486 m/min.
R.P.M : 6,700 rev./min.
Feed : 2,800 mm/min.
Milling Method : Side Cutting
Milling Depth :Axial : 0.2 mm
Radial : 0.5 mm
Coolant : Oil Mist
Overhang : 32 mm
Machine : Machining Center

YG-1
(Total Milling Length 540m)

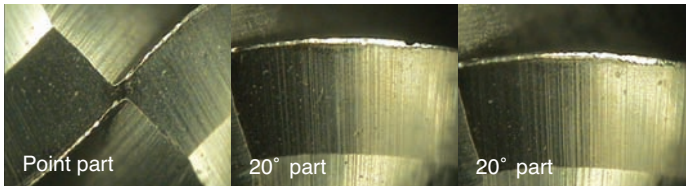
Competitor A
(Total Milling Length 210m)



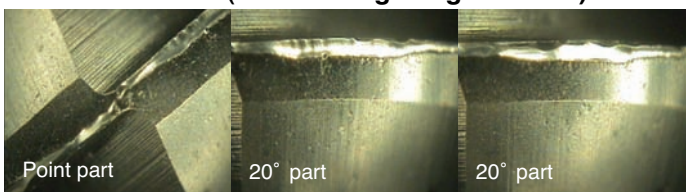
TEST I - BALL



YG-1 (Total Milling Length : 300m)



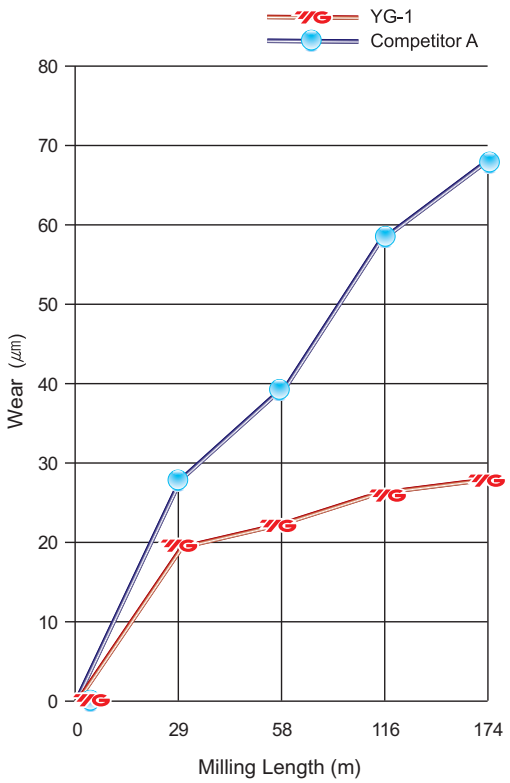
COMPETITOR A (Total Milling Length : 300m)



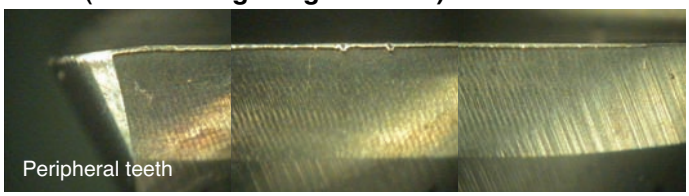
CUTTING CONDITION

Tool : SEMD98060E (2Flute, Carbide Ball End Mill)
SIZE : Ø6×6×12×90
Work Material : KP4M (HRc35 / DIN 1.2738 Improved)
Cutting Speed : 130.061 m/min.
R.P.M : 6900 rev./min.
FEED : 830 mm/min.
Feed per tooth : 0.060 mm/tooth
Milling Method : Profiling
Milling Depth : Axial : 0.2 mm
Radial : 1.2 mm
Coolant : Oil Mist
Overhang : 26mm

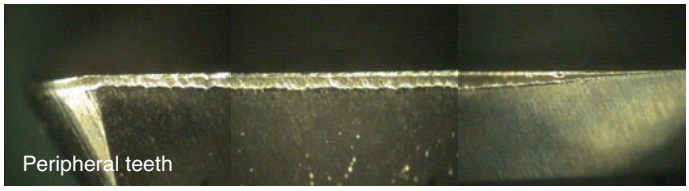
TEST II - CORNER RADIUS



YG-1 (Total Milling Length : 174m)



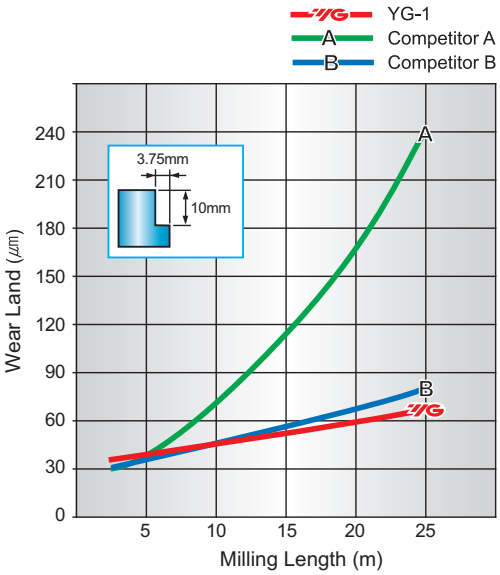
COMPETITOR A (Total Milling Length : 174m)



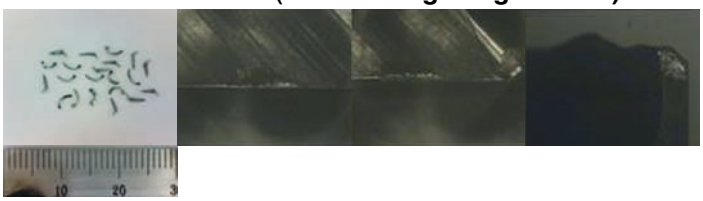
CUTTING CONDITION

Tool : SEME0110005E (4Flute, Carbide Corner Radius End Mill)
SIZE : Ø10(R0.5)×10×25×100
Work Material : KP4M (HRc35 / DIN 1.2738 Improved)
Cutting Speed : 51.522 m/min.
R.P.M : 1640 rev./min.
FEED : 180 mm/min.
Feed per tooth : 0.027 mm/tooth
Milling Method : Down & Side Cutting
Milling Depth : Axial : 25 mm
Radial : 0.5 mm
Coolant : Oil Mist
Overhang : 41mm

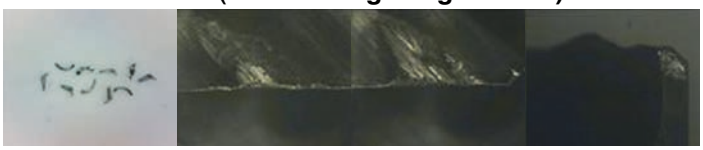
TEST I - **DOWN & SIDE CUTTING**



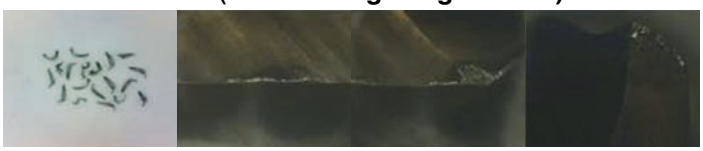
X-SPEED ROUGHER (Total Milling Length : 25m)



COMPETITOR A (Total Milling Length : 25m)



COMPETITOR B (Total Milling Length : 25m)

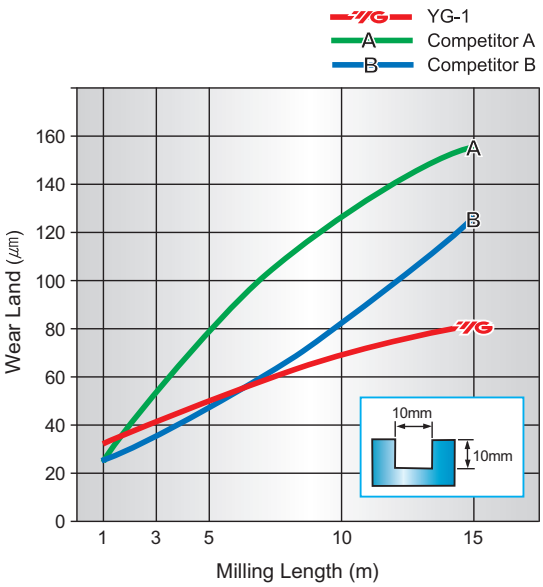


CUTTING CONDITION

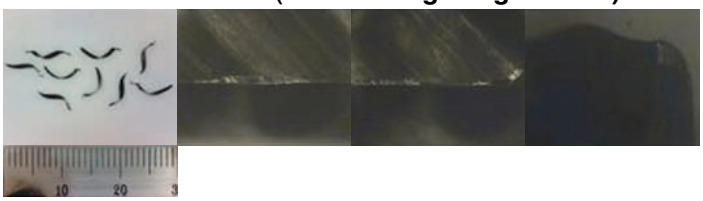
SIZE : X-SPEED ROUGHER : Ø10×10×15×72
COMPETITOR A : Ø10×10×20×72
COMPETITOR B : Ø10×10×15×80
Work Material : DIN : X40CrMoV51(1.2344)
JIS : SKD61 (HRc30)
AISI : H13

R.P.M : 5,000rev./min. (157.08m/min.)
FEED : 1,300mm/min.
Milling Method : Down & Side Cutting
Coolant : Wet Cut
Overhang : 32mm
Machine : Machining Center

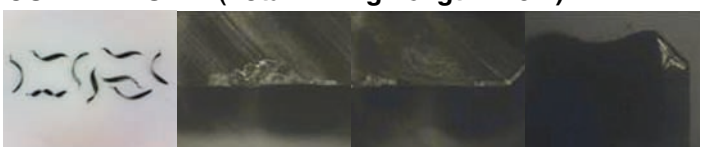
TEST II - **SLOTTING**



X-SPEED ROUGHER (Total Milling Length : 15m)



COMPETITOR A (Total Milling Length : 15m)



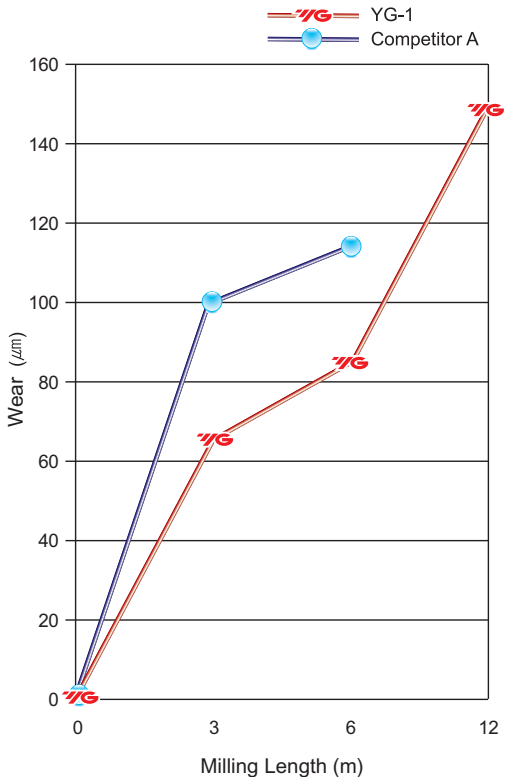
COMPETITOR B (Total Milling Length : 15m)

CUTTING CONDITION

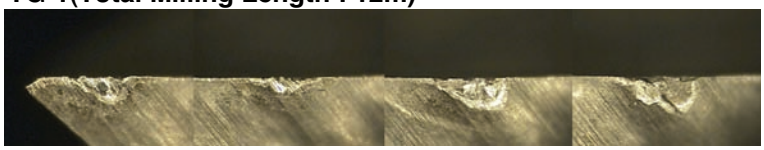
SIZE : X-SPEED ROUGHER : Ø10×10×15×72
COMPETITOR A : Ø10×10×20×72
COMPETITOR B : Ø10×10×15×80
Work Material : DIN : X40CrMoV51(1.2344)
JIS : SKD61 (HRc20)
AISI : H13

R.P.M : 4,000rev./min. (125.66m/min.)
FEED : 1,000mm/min.
Milling Method : Slotting
Coolant : Wet Cut
Overhang : 32mm
Machine : Machining Center

TEST I - TITANIUM



YG-1(Total Milling Length : 12m)



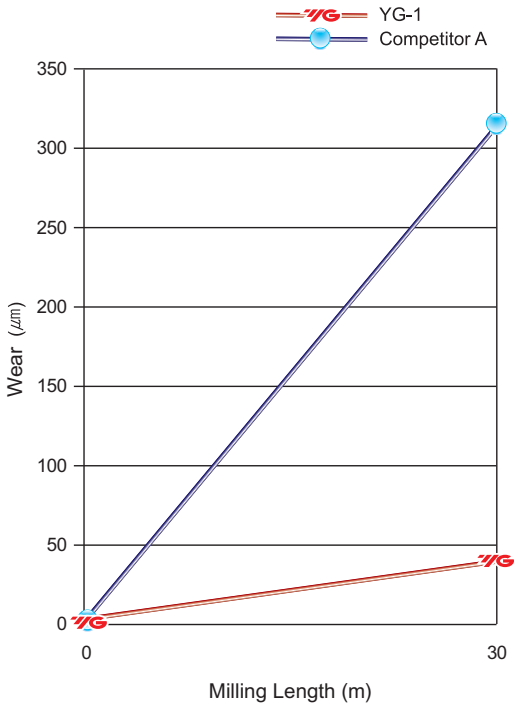
COMPETITOR A(Total Milling Length : 9.3m)

Tool was broken after
9.3 meter milling

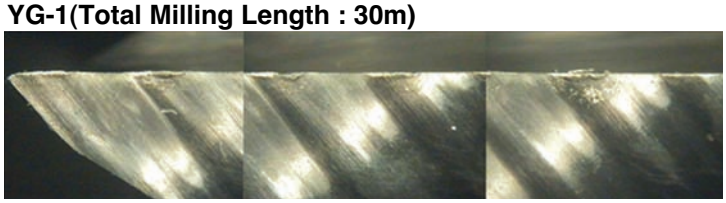
CUTTING CONDITION

Tool : 5Flute Roughing
SIZE : Ø12×Ø12×26×80
Work Material : • DIN : Ti6Al4V (Titanium)
• WR : 3.7165.1
Cutting Speed : 50 m/min.
R.P.M : 1,327 rev./min.
FEED : 265.4 mm/min.
Feed per tooth : 0.04 mm/tooth
Milling Method : Down & Side Cutting
Milling Depth : Axial : 18 mm
Radial : 7.2 mm
Coolant : Wet Cut
Overhang : 39 mm
Machine : Machining Center

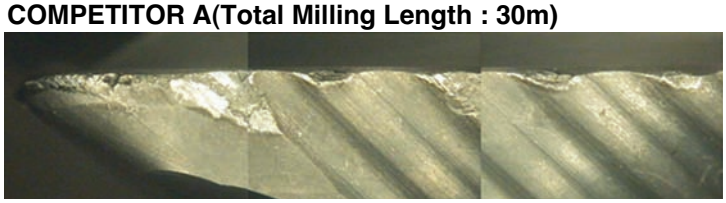
TEST II - STAINLESS STEEL (SUS420)



YG-1(Total Milling Length : 30m)



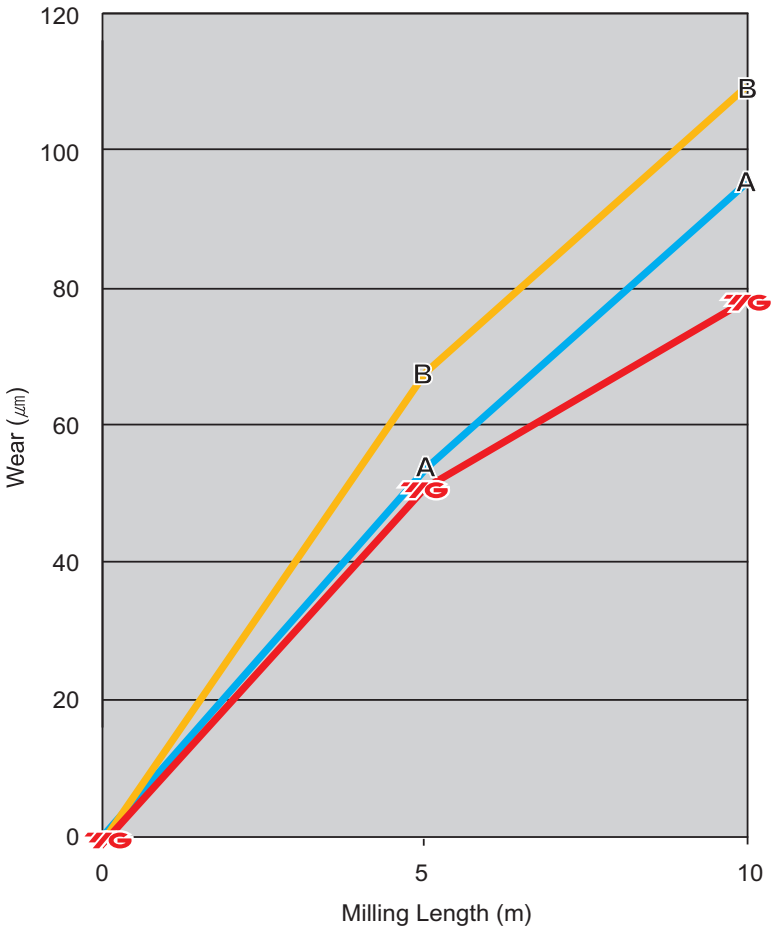
COMPETITOR A(Total Milling Length : 30m)



CUTTING CONDITION

Tool : 5Flute Roughing
SIZE : Ø12×Ø12×26×73
Work Material : • JIS : SUS420J (HRc35)
• DIN : X20Cr13(1.4021)
• AISI : 420
Cutting Speed : 158.336 m/min.
R.P.M : 4,200 rev./min.
FEED : 714 mm/min.
Feed per tooth : 0.04 mm/tooth
Milling Method : Down & Side Cutting
Milling Depth : Axial : 18 mm
Radial : 1.2 mm
Coolant : Wet Cut
Overhang : 34 mm
Machine : Machining Center

CASE STUDY ◆ V7 STEELS END MILLS (Reference page : p.937 ~ p.957)



CUTTING CONDITION

Tools: V7 STEELS, 4Flute
Size : Ø12×Ø12×26×83
Work Material :
- JIS : SKD61 (HRc30)
- DIN : X40GrMoV51(1.2344)
- AISI : H13

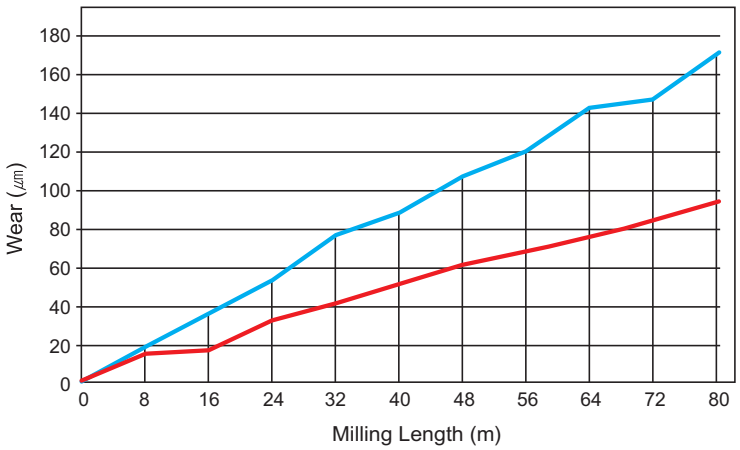
Cutting Speed : 139 m/min.
R.P.M : 3,688 rev./min.
Feed : 689.7 mm/min.
Milling Method : Down & Side Cutting
Milling Depth : Axial : 18 mm
Radial : 6 mm
Coolant : Wet Cut
Overhang : 40 mm
Machine : Machining Center

YG-1
(Total Milling Length 10m)

Competitor A
(Total Milling Length 10m)

Competitor B
(Total Milling Length 10m)

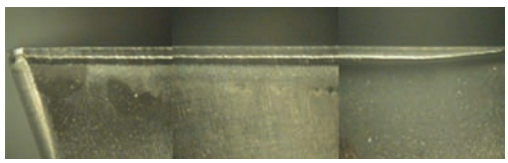
TEST I - 4 FLUTE, FINISH



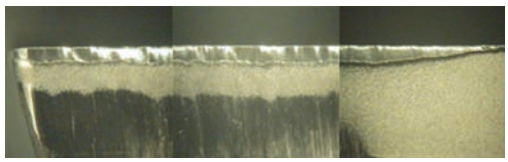
CUTTING CONDITION

Tools : 4 Flute
Size : Ø12 × Ø12 × 36 × 100
Work Material : CFRP
R.P.M : 5,310 rev./min.
Feed : 1,275 mm/min.
Cutting Depth : Axial : 12 mm
Radial : 1.2 mm
Coolant : Dry Cut
Overhang : 56 mm
Milling Method : Down & Side Cutting
Machine : Machining Center

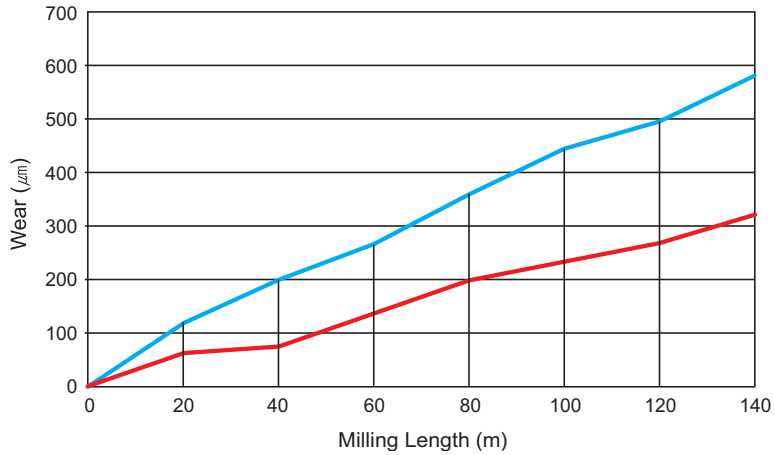
YG-1
(Total Milling Length 140m)



Competitor A
(Total Milling Length 140m)



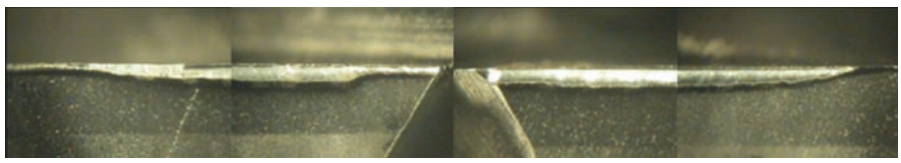
TEST II - DUAL HELIX



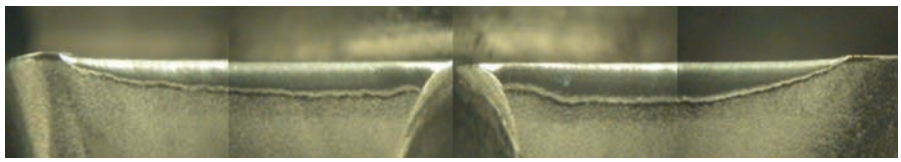
CUTTING CONDITION

Tools : 4 Flute, Dual Helix
Size : Ø6(R0.5) × Ø6 × 12 × 65
Work Material : CFRP
R.P.M : 7,960 rev./min.
Feed : 1,145 mm/min.
Cutting Depth : Axial : 6 mm
Radial : 2.4 mm
Coolant : Dry Cut
Overhang : 29 mm
Milling Method : Side Cutting
Machine : Machining Center

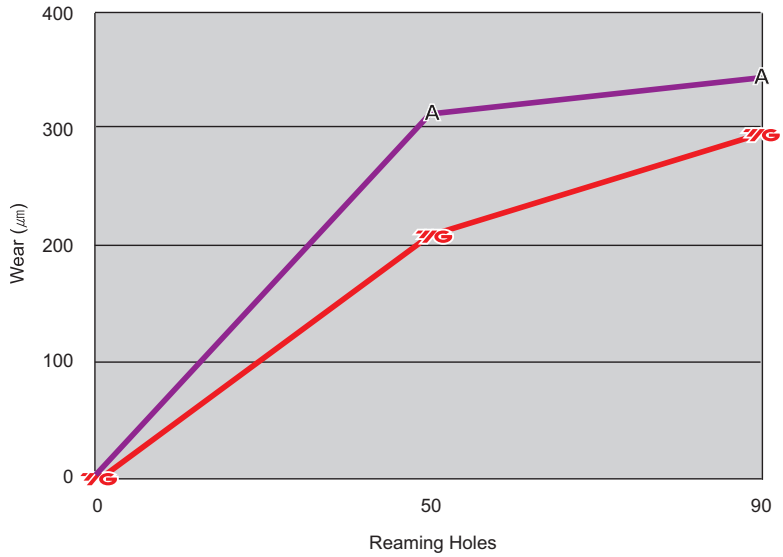
YG-1
(Total Milling Length 140m)



Competitor A
(Total Milling Length 140m)



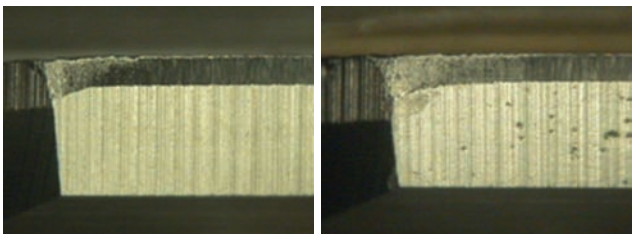
TEST I



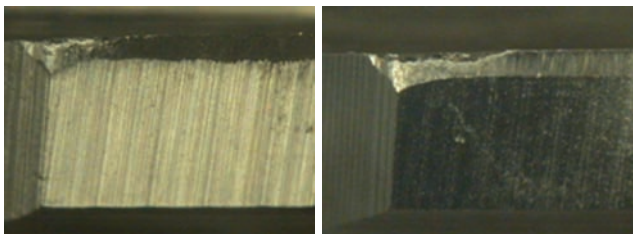
CUTTING CONDITION

Tools: Straight Flute Chucking Reamer, Ø8.0
Work Material : • JIS:S45C(HRc25)
• DIN:C45
• WR:1.0503
R.P.M : 477 rev./min.
Feed : 57 mm/min.
Prepared hole : Ø7.8
Reaming Depth : 16 mm

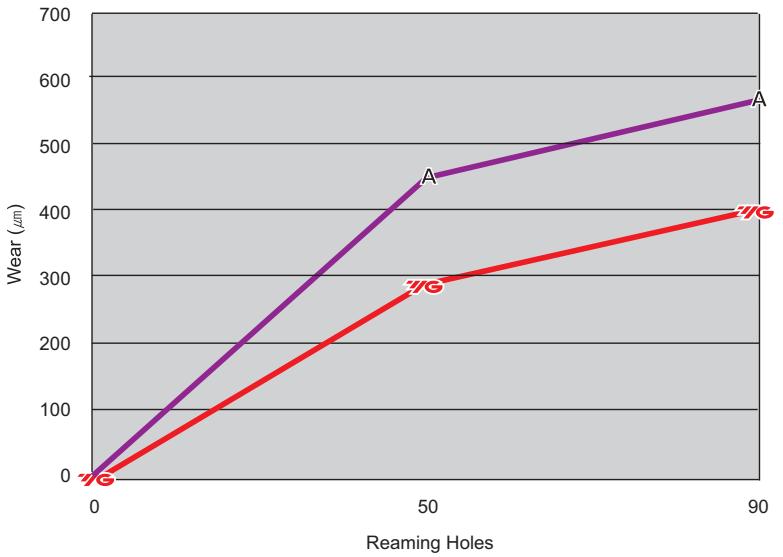
YG-1



Competitor A



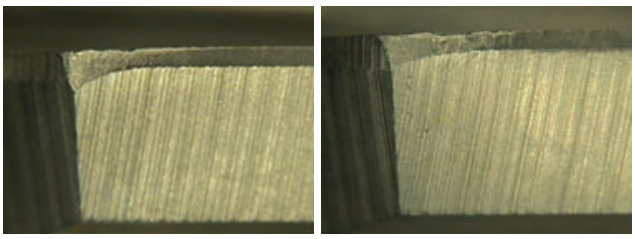
TEST II



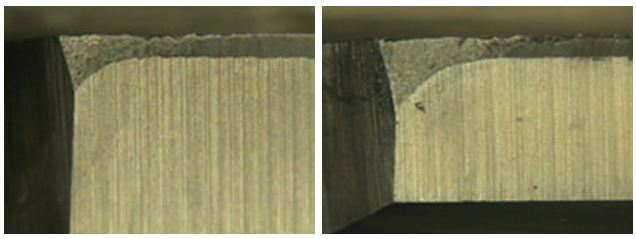
CUTTING CONDITION

Tools: Spiral Flute Chucking Reamer, Ø12.0
Work Material : • JIS:S45C(HRc25)
• DIN:C45
• WR:1.0503
R.P.M : 318 rev./min.
Feed : 48 mm/min.
Prepared hole : Ø11.8
Reaming Depth : 24 mm

YG-1



Competitor A



DRILLING TOOLS

i-DREAM DRILLS, CARBIDE INSERT

SOLID CARBIDE DREAM DRILLS - GENERAL (with & without Coolant Holes)

SOLID CARBIDE DREAM DRILLS - INOX (with Coolant Holes)

SOLID CARBIDE DREAM DRILLS -ALU (with Coolant Holes)

SOLID CARBIDE DREAM DRILLS -CFRP

SOLID CARBIDE DREAM DRILLS - MQL TYPE (with Coolant Holes)

SOLID CARBIDE DREAM DRILLS for HIGH HARDENED STEELS

GENERAL SOLID CARBIDE DRILLS (JOBBER & STUB LENGTH)

SOLID CARBIDE NC-SPOTTING DRILLS

SOLID CARBIDE CENTER DRILLS

HSS-PM MULTI-1 DRILLS

PREMIUM HSS HPD STRAIGHT SHANK DRILLS

HSS GOLD-P DRILLS

HSS STRAIGHT SHANK DRILLS

HSS MORSE TAPER SHANK DRILLS

HSS(8% Cobalt) NC-SPOTTING DRILLS

HSS CENTER DRILLS

CARBIDE & HSS-PM SPADE DRILLS

TECHNICAL DATA

YG-1 CO., LTD.

Contents

DRILLING TOOLS

CARBIDE INSERT DRILLS

SOLID CARBIDE DRILLS

HSS DRILLS

CARBIDE & HSS-PM SPADE DRILLS

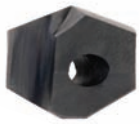
TECHNICAL DATA

YG-1 CO., LTD.

Contents / DRILLING TOOLS

i-DREAM DRILLS For General Steels and for Stainless Steels	i-DREAM DRILLS
SOLID CARBIDE DREAM DRILLS - GENERAL (with & without Coolant Holes) For General Purpose HRc30 to HRc50	DREAM DRILLS -GENERAL
SOLID CARBIDE DREAM DRILLS - INOX (with Coolant Holes) For Tough Materials - Stainless Steels, Nickel Alloys and Titanium up to HRc35	DREAM DRILLS -INOX
SOLID CARBIDE DREAM DRILLS - ALU (with Coolant Holes) For Drilling Aluminum and Aluminum Alloys	DREAM DRILLS -ALU
SOLID CARBIDE DREAM DRILLS - CFRP For Composite Materials including CFRP and GFRP	DREAM DRILLS -CFRP
SOLID CARBIDE DREAM DRILLS - MQL TYPE (with Coolant Holes) Minimum Quantity Lubrication Drilling Deep Holes (10×D ~ 30×D)	DREAM DRILLS -MQL TYPE
SOLID CARBIDE DREAM DRILLS for HIGH HARDENED STEELS For High Hardened Steels HRc50 to HRc70	DREAM DRILLS for HARDENED STEELS
GENERAL SOLID CARBIDE DRILLS (JOBBER & STUB LENGTH) For General Purpose DIN338 and DIN6539	GENERAL CARBIDE DRILLS
SOLID CARBIDE NC-SPOTTING DRILLS Centering and Chamfering	NC-SPOTTING DRILLS
SOLID CARBIDE CENTER DRILLS For General Purpose	CENTER DRILLS
HSS-PM MULTI-1 DRILLS For Multi Purpose Particularly for Stainless Steels and Titanium	MULTI-1 DRILLS
PREMIUM HSS HPD STRAIGHT SHANK DRILLS For General Steels and Stainless Steels	HPD DRILLS
HSS GOLD-P DRILLS Gold-P Coating (HSS & HSS-E)	GOLD-P DRILLS
HSS STRAIGHT SHANK DRILLS For General Purpose (HSS & HSS-E & 8% Cobalt)	STRAIGHT SHANK DRILLS
HSS MORSE TAPER SHANK DRILLS For General Purpose (HSS & HSS-E & 8% Cobalt)	TAPER SHANK DRILLS
HSS(8% Cobalt) NC SPOTTING DRILLS Centering and Chamfering	NC-SPOTTING DRILLS
HSS CENTER DRILLS For General Purpose (HSS & HSS-EX)	CENTER DRILLS
CARBIDE & HSS-PM SPADE DRILLS For General Machines and Drilling Large Diameters Longer Tool Life and High Productivity	SPADE DRILLS
TECHNICAL DATA	TECHNICAL DATA

DRILLING TOOLS **APPLICATION TABLE**

	ITEM	MODEL	DESCRIPTION	SIZE		PAGE
				MIN	MAX	
i-Dream Drills	Y ∗ 1A		Insert for General Purpose	Ø12.0 (#A)	Ø31.75 (#J)	**44~49**
	Y ∗ 2C		Insert for Stainless Steels	Ø12.0 (#A)	Ø31.75 (#J)	**44~49**
Spade Drills	S14∗∗ (SM4∗∗)		HSS M4 Insert	Ø17.86 (#1)	Ø114.3 (#8)	**252~257 278~280**
	S11∗∗ (SM1∗∗)		Super HSS T15 Insert	Ø9.5 (#Y)	Ø65.09 (#4)	**258~262 281~284**
	S15∗∗ (SM5∗∗)		Primium HSS M48 Insert	Ø9.5 (#Y)	Ø35 (#2)	**263~265 285~287**
	S16∗∗ (SM6∗∗)		Carbide K10 Insert	Ø9.5 (#Y)	Ø35 (#2)	**266~268 288~290**
	S17∗∗ (SM7∗∗)		Carbide K20 Insert	Ø9.5 (#Y)	Ø47.63 (#3)	**269~272 291~294**
	S18∗∗ (SM8∗∗)		Carbide P40 Insert	Ø9.5 (#Y)	Ø47.63 (#3)	**273~276 295~298**
	S21∗∗		Super HSS T15 Insert (Flat Bottom)	Ø9.5 (#Y)	Ø35 (#2)	**299~301**

◎ : Excellent
○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloy
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
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DRILLING TOOLS **APPLICATION TABLE**

	ITEM	MODEL	LENGTH / TYPE	SIZE		PAGE
				MIN	MAX	
SOLID CARBIDE DREAM DRILLS - GENERAL (without coolant holes)	DH404		STUB (3xD)	D3.0	D20.0	**58**
	DH423		SHORT (3xD)	D3.0	D20.0	**60**
	DH424		LONG (5xD)	D1.0	D20.0	**62**
SOLID CARBIDE DREAM DRILLS - GENERAL (with coolant holes)	DH406		SHORT (3xD)	D3.0	D20.0	**65**
	DH408		LONG (5xD)	D1.0	D20.0	**67**
	DH421		EXTRA LONG (8xD)	D3.0	D14.0	**70**
SOLID CARBIDE DREAM DRILLS - INOX (with coolant holes)	DH451		SHORT (3xD)	D3.0	D20.0	**76**
	DH452		LONG (5xD)	D1.0	D20.0	**79**
	DH453		EXTRA LONG (8xD)	D3.0	D14.0	**82**
SOLID CARBIDE DREAM DRILLS - ALU (with coolant holes)	D5432		SHORT (3xD)	D3.0	D20.0	**88**
	D5433		LONG (5xD)	D3.0	D20.0	**90**
	D5434		EXTRA LONG (8xD)	D3.0	D14.0	**92**
SOLID CARBIDE DREAM DRILLS - CFRP	DI473			D2.5	D12.0	**98**
SOLID CARBIDE DREAM DRILLS - MQL TYPE (with coolant holes)	DH510		EXTRA LONG (10xD)	D3.0	D14.0	**102**
	DH515		EXTRA LONG (15xD)	D3.0	D12.0	**103**
	DH520		EXTRA LONG (20xD)	D3.0	D12.0	**103**
	DHM10		EXTRA LONG (10xD)	D3.0	D14.0	**104**
	DHM15		EXTRA LONG (15xD)	D3.0	D12.0	**104**
	DHM20		EXTRA LONG (20xD)	D3.0	D12.0	**104**
	DHM25		EXTRA LONG (25xD)	D3.0	D10.0	**105**
	DHM30		EXTRA LONG (30xD)	D3.0	D8.0	**105**
SOLID CARBIDE DREAM DRILLS for HIGH HARDENED STEELS	DH500			D2.6	D14.0	**110**
GENERAL SOLID CARBIDE DRILLS	D5405		STUB	D1.0	D13.0	**116**
	D5407		JOBBER	D1.0	D13.0	**118**
SOLID CARBIDE NC-SPOTTING DRILLS	D5306 D5307			D6.0	D20.0	**124**
	D5320			D3.0	D20.0	**125**
SOLID CARBIDE CENTER DRILLS	D5303		Form A	D1.0	D6.3	**130**
HSS-PM MULTI-1 DRILLS	CDRA03		STUB	D1.0	D13.0	**134**
	CDRA04		JOBBER	D2.0	D13.0	**136**

◎ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
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DRILLING TOOLS **APPLICATION TABLE**

	ITEM	MODEL	LENGTH	SIZE MIN	SIZE MAX	PAGE
HSS HPD STRAIGHT SHANK DRILLS	D4541		STUB	D2.0	D13.0	**142**
	D4542		JOBBER	D2.0	D32.0	**146**
	DJ543		STUB	D2.0	D13.0	**151**
	DJ544		JOBBER	D2.0	D20.0	**153**
HSS GOLD-P DRILLS	D1GP125		JOBBER	D1.0	D13.0	**160**
	D1GP165		JOBBER	D1.6	D13.0	**162**
	DLGP195		JOBBER	D1.0	D13.0	**164**
	DLGP506		JOBBER	D2.0	D13.0	**166**
HSS STRAIGHT SHANK DRILLS	D2107		STUB	D1.0	D31.0	**176**
	D1107		STUB	D1.0	D13.0	**179**
	D2105		JOBBER	D1.0	D20.0	**181**
	DL105		JOBBER	D1.0	D20.0	**184**
	D1105		JOBBER	D0.3	D20.0	**187**
	D1125		JOBBER	D2.0	D20.0	**191**
	D2104		LONG	D2.0	D12.0	**194**
	D1121		EXTRA LONG	D2.0	D13.0	**196**
	DL109		JOBBER	D1.5	D13.0	**197**
	D1100		JOBBER	D1.5	D13.0	**198**
	D1106		JOBBER	D1.5	D13.0	**200**
	DL510		STUB	D2.0	D20.0	**202**
	DL508		JOBBER	D2.0	D16.0	**204**
	DL509		LONG	D2.0	D12.0	**206**
	DL505		JOBBER	D2.0	D13.0	**208**
	DL504		LONG	D2.0	D13.0	**210**
	DT600 DT692 DT693		EXTRA LONG	D2.0 D3.0 D4.0	D10.5 D10.2 D10.0	**211**
	DL608		LONG	D13.0	D30.0	**212**
	DL507		EXTRA LONG	D2.0	D13.0	**213**

◎ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
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☞ NEXT

DRILLING TOOLS **APPLICATION TABLE**

	ITEM	MODEL	LENGTH / TYPE	SIZE		PAGE
				MIN	MAX	
HSS MORSE TAPER SHANK DRILLS	DL205		JOBBER	D13.0	D30.0	**222**
	D1205		JOBBER	D5.0	D60.0	**223**
	D1206		LONG	D13.0	D30.0	**226**
	D1209		EXTRA LONG	D13.0	D50.0	**227**
	D1210		EXTRA LONG	D13.0	D50.0	**228**
HSS NC SPOTTING DRILLS	D2306 D2321			D3.0	D20.0	**234**
	D2307 D2322			D3.0 D6.0	D20.0 D12.0	**235**
	D2320 D2323			D3.0 D6.0	D20.0 D12.0	**236**
HSS CENTER DRILLS	DV303		Form A	D0.5	D6.3	**242**
	DV333		Form A	D1.6	D6.3	**242**
	DV334		Form A	D1.0	D5.0	**243**
	D1303		Form A	D0.5	D10.0	**244**
	D1343		Form A	D0.5	D8.0	**244**
	D1313		Form B	D1.0	D6.3	**245**
	D1353		Form B	D2.0	D6.3	**245**
	D1363		Form R	D0.5	D8.0	**246**
	D1373		Form R	D0.8	D5.0	**246**
	DV383		Form R	D1.6	D6.3	**247**

◎ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
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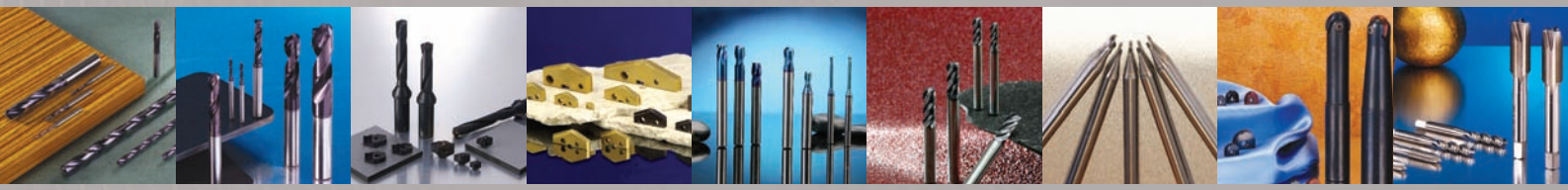
Global Cutting Tool Leader **YG-1**



CARBIDE INSERT

Being the best through innovation

i-Dream Drills

i-Dream Drill

- Available for General Steels and for Stainless Steels
- Lieferbar für normale und rostfreie Stähle

SELECTION GUIDE

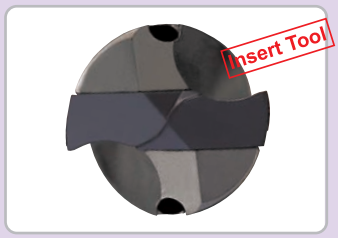
ITEM	MODEL	DESCRIPTION	PAGE
YA1A / YB1A		*i*-*Dream Drills* General / Allgemeinen Einsatz	44
YA2C / YB2C		*i*-*Dream Drills* INOX / INOX	
YB1A / YC1A		*i*-*Dream Drills* General / Allgemeinen Einsatz	45
YB2C / YC2C		*i*-*Dream Drills* INOX / INOX	
YC1A / YD1A		*i*-*Dream Drills* General / Allgemeinen Einsatz	46
YC2C / YD2C		*i*-*Dream Drills* INOX / INOX	
YE1A / YF1A		*i*-*Dream Drills* General / Allgemeinen Einsatz	47
YE2C / YF2C		*i*-*Dream Drills* INOX / INOX	
YG1A / YH1A		*i*-*Dream Drills* General / Allgemeinen Einsatz	48
YG2C / YH2C		*i*-*Dream Drills* INOX / INOX	
YI1A / YJ1A		*i*-*Dream Drills* General / Allgemeinen Einsatz	49
YI2C / YJ2C		*i*-*Dream Drills* INOX / INOX	
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN	50

Comparison with Split Point Drill, Spade Drill & Dream Drill

Normal Split Point Drill

Dream Drill

Spade Drill



i-Dream Drill

◎ : Excellent
○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
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YG *i*-Dream Drills

YA1A / YA2C
YB1A / YB2C

i-DREAM DRILL INSERTS & HOLDERS
i-DREAM DRILL EINSÄTZE UND HALTER

- Features of *i*-*Dream Drill* Inserts-
Merkmale des i-Dream Drill Einsätze

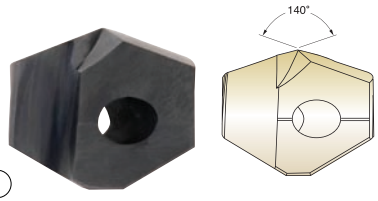
- Secure and accurate seating resulting in accurate repeatability and concentricity.
  Der sichere und genaue Sitz der Platte garantiert genaue Wiederholbarkeit beim Einsatz und beim Rundlauf.

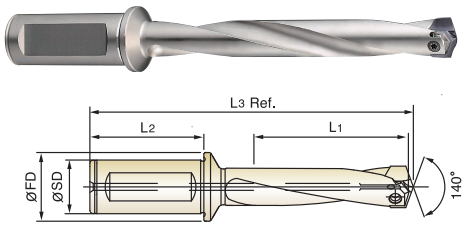
i-Dream Drill **General** / *i-Dream Drill* **allgemeinen**
- For most steels materials / In den meisten Stahlsorten

i-Dream Drill **INOX** / *i-Dream Drill* **INOX**
- For tough,ductile materials and stainless steels
  Für zähe, verformbare Werkstoffe und rostfreie Stähle.
- Light,sharp cutting edge / Scharfe Schneidkante
- Soft cutting action / Weicher Schnitt
- Minimize cutting forces / Minimaler Schneidendruck
- Reduce built-up edge / Reduzierte Gratbildung

- Features of *i*-*Dream Drill* Holders-
- Merkmale des i-Dresm Drill Halters-

- Special Alloy Steels maintain its hardness and toughness under high temperatures.
  Speziell legierter Stahl, der seine Härte und Zähigkeit auch bei hohen Temperaturen behält.
- Innovative surface treatment improves wear resistance and reduces corrosion.
  Innovative Oberflächenbehandlung, die die Verschleissfestigkeit erhöht und die Korrosion vermindert.
- High Performance flute design allows maximum chip evacuation and minimum interference.
  Optimierte Nutenform für maximale Spanabfuhr.





cutting conditions : p.50~51

Series Range	Insert EDP No.		Insert O.D.			Holder EDP No.	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth		Overall Length	Screw No.
	General (TiAlN)	INOX (TiCN)	h7 dec.	h7 frac.	h7 mm		SD	L2	FD	L1		L3 Ref.	
(mm)													
A Ø12.00 to Ø13.99	YA1A1200	YA2C1200	0.4724		12.00	ZH12003020	20	50	25	3D	36	112.4	TX1213T08
	YA1A1210	YA2C1210	0.4764		12.10	ZH12005020				5D	60	136.4	
	YA1A1220	YA2C1220	0.4803		12.20	ZH12007020				7D	84	160.4	
	YA1A1230	YA2C1230	0.4844	31/64	12.30								
	YA1A1250	YA2C1250	0.4921		12.50	ZH12503020	20	50	25	3D	37.5	113.4	
	YA1A1260	YA2C1260	0.4961		12.60	ZH12505020				5D	62.5	138.4	
	YA1A1270	YA2C1270	0.5000	1/2	12.70	ZH12507020				7D	87.5	163.4	
	YA1A1280	YA2C1280	0.5039		12.80								
	YA1A1290	YA2C1290	0.5079		12.90								
	YA1A1300	YA2C1300	0.5118		13.00	ZH13003020	20	50	25	3D	39	115.4	TX1314T08
	YA1A1310	YA2C1310	0.5156	33/64	13.10	ZH13005020				5D	65	141.4	
	YA1A1320	YA2C1320	0.5197		13.20	ZH13007020				7D	91	167.4	
	YA1A1349	YA2C1349	0.5312	17/32	13.49								
	YA1A1350	YA2C1350	0.5315		13.50	ZH13503020	20	50	25	3D	40.5	116.4	
	YA1A1360	YA2C1360	0.5354		13.60	ZH13505020				5D	67.5	143.4	
	YA1A1370	YA2C1370	0.5394		13.70	ZH13507020				7D	94.5	170.4	
	YA1A1380	YA2C1380	0.5433		13.80								
	YA1A1389	YA2C1389	0.5469	35/64	13.89								
B Ø14.00 to Ø15.99	YB1A1400	YB2C1400	0.5512		14.00	ZH14003020	20	50	25	3D	42	118.9	TX1415T08
	YB1A1410	YB2C1410	0.5551		14.10	ZH14005020				5D	70	146.9	
	YB1A1420	YB2C1420	0.5591		14.20	ZH14007020				7D	98	174.9	
	YB1A1429	YB2C1429	0.5625	9/16	14.29								
	YB1A1430	YB2C1430	0.5630		14.30								
	YB1A1440	YB2C1440	0.5669		14.40								

- ▶TiN, TiCN, TiAlN & Hardslick are available on your request.
- ▶10×D Holder is available on your request.

◎ : Excellent ○ : Good

	Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
	~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
Y＊1A	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎		◎	◎		
Y＊2C	○	○		○				○		○		◎			○	○

YG *i*-Dream Drills

YB1A / YB2C
YC1A / YC2C

i-DREAM DRILL INSERTS & HOLDERS
i-DREAM DRILL EINSÄTZE UND HALTER

- Features of *i*-*Dream Drill* Inserts-
Merkmale des i-Dream Drill Einsätze

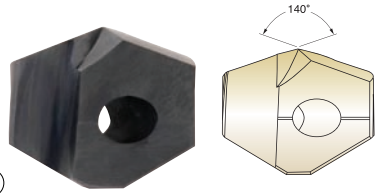
▶ Secure and accurate seating resulting in accurate repeatability and concentricity.
Der sichere und genaue Sitz der Platte garantiert genaue Wiederholbarkeit beim Einsatz und beim Rundlauf.

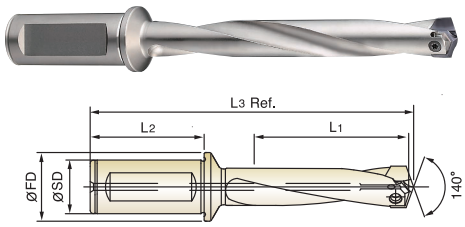
i-Dream Drill **General /** *i-Dream Drill* **allgemeinen**
▶ For most steels materials / In den meisten Stahlsorten

i-Dream Drill **INOX /** *i-Dream Drill* **INOX**
▶ For tough,ductile materials and stainless steels
Für zähe, verformbare Werkstoffe und rostfreie Stähle.
▶ Light,sharp cutting edge / Scharfe Schneidkante
▶ Soft cutting action / Weicher Schnitt
▶ Minimize cutting forces / Minimaler Schneidendruck
▶ Reduce built-up edge / Reduzierte Gratbildung

- Features of *i*-*Dream Drill* Holders-
- Merkmale des i-Dresm Drill Halters-

▶ Special Alloy Steels maintain its hardness and toughness under high temperatures.
Speziell legierter Stahl, der seine Härte und Zähigkeit auch bei hohen Temperaturen behält.
▶ Innovative surface treatment improves wear resistance and reduces corrosion.
Innovative Oberflächenbehandlung, die die Verschleissfestigkeit erhöht und die Korrosion vermindert.
▶ High Performance flute design allows maximum chip evacuation and minimum interference.
Optimierte Nutenform für maximale Spanabfuhr.





cutting conditions : p.50~51

Series Range (mm)	Insert EDP No. General (TiAlN)	Insert EDP No. INOX (TiCN)	Insert O.D. h7 dec.	Insert O.D. h7 frac.	Insert O.D. h7 mm	Holder EDP No.	Shank Dia. SD	Shank Length L2	Flange Dia. FD	Drilling Depth L1		Overall Length L3 Ref.	Screw No.
B Ø14.00 to Ø15.99	YB1A1450	YB2C1450	0.5709		14.50	ZH14503020	20	50	25	3D	43.5	120.9	TX1415T08
	YB1A1460	YB2C1460	0.5748		14.60	ZH14505020				5D	72.5	149.9	
	YB1A1468	YB2C1468	0.5781	37/64	14.68	ZH14507020				7D	101.5	178.9	
	YB1A1480	YB2C1480	0.5827		14.80								
	YB1A1500	YB2C1500	0.5906		15.00	ZH15003020	20	50	25	3D	45	122.9	TX1516T08
	YB1A1508	YB2C1508	0.5938	19/32	15.08	ZH15005020				5D	75	152.9	
	YB1A1510	YB2C1510	0.5945		15.10	ZH15007020				7D	105	182.9	
	YB1A1520	YB2C1520	0.5984		15.20								
	YB1A1530	YB2C1530	0.6024		15.30								
	YB1A1548	YB2C1548	0.6094	39/64	15.48								
	YB1A1550	YB2C1550	0.6102		15.50	ZH15503020	20	50	25	3D	46.5	123.9	
	YB1A1560	YB2C1560	0.6142		15.60	ZH15505020				5D	77.5	154.9	
	YB1A1570	YB2C1570	0.6181		15.70	ZH15507020				7D	108.5	185.9	
	YB1A1580	YB2C1580	0.6220		15.80								
	YB1A1587	YB2C1587	0.6250	5/8	15.87								
C Ø16.00 to Ø17.99	YC1A1600	YC2C1600	0.6299		16.00	ZH16003020	20	50	25	3D	48	125.0	TX1617T08
	YC1A1609	YC2C1609	0.6335		16.09	ZH16005020				5D	80	157.0	
	YC1A1620	YC2C1620	0.6378		16.20	ZH16007020				7D	112	189.0	
	YC1A1627	YC2C1627	0.6406	41/64	16.27								
	YC1A1630	YC2C1630	0.6417		16.30								
	YC1A1650	YC2C1650	0.6496		16.50	ZH16503020	20	50	25	3D	49.5	127.0	
	YC1A1667	YC2C1667	0.6562	21/32	16.67	ZH16505020				5D	82.5	160.0	
	YC1A1680	YC2C1680	0.6614		16.80	ZH16507020				7D	115.5	193.0	

▶TiN, TiCN, TiAlN & Hardslick are available on your request.
▶10×D Holder is available on your request.

◎ : Excellent ○ : Good

	Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
	~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
Y*1A	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎		◎	◎		
Y*2C	○	○		○				○		○		◎			○	○

i-Dream Drills

YC1A / YC2C
YD1A / YD2C

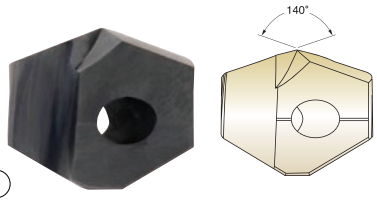
i-DREAM DRILL INSERTS & HOLDERS
i-DREAM DRILL EINSÄTZE UND HALTER

- Features of *i-Dream Drill* Inserts-
Merkmale des i-Dream Drill Einsätze

- Secure and accurate seating resulting in accurate repeatability and concentricity.
  Der sichere und genaue Sitz der Platte garantiert genaue Wiederholbarkeit beim Einsatz und beim Rundlauf.

***i-Dream Drill* General / *i-Dream Drill* allgemeinen**
- For most steels materials / In den meisten Stahlsorten

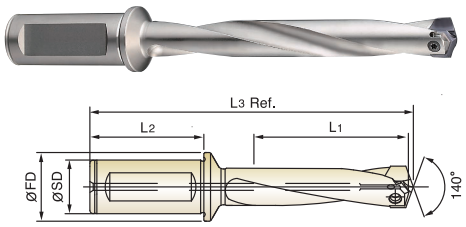
***i-Dream Drill* INOX / *i-Dream Drill* INOX**
- For tough,ductile materials and stainless steels
  Für zähe, verformbare Werkstoffe und rostfreie Stähle.
- Light,sharp cutting edge / Scharfe Schneidkante
- Soft cutting action / Weicher Schnitt
- Minimize cutting forces / Minimaler Schneidendruck
- Reduce built-up edge / Reduzierte Gratbildung



cutting conditions : p.50~51

- Features of *i-Dream Drill* Holders-
- Merkmale des i-Dresm Drill Halters-

- Special Alloy Steels maintain its hardness and toughness under high temperatures.
  Speziell legierter Stahl, der seine Härte und Zähigkeit auch bei hohen Temperaturen behält.
- Innovative surface treatment improves wear resistance and reduces corrosion.
  Innovative Oberflächenbehandlung, die die Verschleissfestigkeit erhöht und die Korrosion vermindert.
- High Performance flute design allows maximum chip evacuation and minimum interference.
  Optimierte Nutenform für maximale Spanabfuhr.



Series Range	Insert EDP No.		Insert O.D.			Holder EDP No.	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth		Overall Length	Screw No.
	General (TiAlN)	INOX (TiCN)	h7 dec.	h7 frac.	h7 mm		SD	L2	FD	L1		L3 Ref.	
(mm)													
C Ø16.00 to Ø17.99	YC1A1700	YC2C1700	0.6693		17.00	ZH17003020	20	50	25	3D	51	128.0	TX1718T08
	YC1A1707	YC2C1707	0.6719	43/64	17.07	ZH17005020				5D	85	162.0	
	YC1A1746	YC2C1746	0.6875	11/16	17.46	ZH17007020				7D	119	196.0	
	YC1A1750	YC2C1750	0.6890		17.50	ZH17503020	20	50	25	3D	52.5	130.0	
	YC1A1780	YC2C1780	0.7008		17.80	ZH17505020				5D	87.5	165.0	
	YC1A1786	YC2C1786	0.7031	45/64	17.86	ZH17507020				7D	122.5	200.0	
D Ø18.00 to Ø19.99	YD1A1800	YD2C1800	0.7087		18.00	ZH18003025	25	56	32	3D	54	140.3	TX1819T15
	YD1A1826	YD2C1826	0.7188	23/32	18.26	ZH18005025				5D	90	176.3	
						ZH18007025				7D	126	212.3	
	YD1A1850	YD2C1850	0.7283		18.50	ZH18503025	25	56	32	3D	55.5	141.3	
	YD1A1865	YD2C1865	0.7344	47/64	18.65	ZH18505025				5D	92.5	178.3	
	YD1A1880	YD2C1880	0.7402		18.80	ZH18507025				7D	129.5	215.3	
	YD1A1900	YD2C1900	0.7480		19.00	ZH19003025	25	56	32	3D	57	144.3	TX1920T15
	YD1A1905	YD2C1905	0.7500	3/4	19.05	ZH19005025				5D	95	182.3	
	YD1A1927	YD2C1927	0.7587		19.27	ZH19007025				7D	133	220.3	
	YD1A1945	YD2C1945	0.7656	49/64	19.45								
	YD1A1950	YD2C1950	0.7677		19.50	ZH19503025	25	56	32	3D	58.5	145.3	
	YD1A1980	YD2C1980	0.7795		19.80	ZH19505025				5D	97.5	184.3	
	YD1A1984	YD2C1984	0.7812	25/32	19.84	ZH19507025				7D	136.5	223.3	

- ▶TiN, TiCN, TiAlN & Hardslick are available on your request.
- ▶10×D Holder is available on your request.

◎ : Excellent ○ : Good

	Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
	~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
Y*1A	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎		◎	◎		
Y*2C	○	○		○				○		○		◎			○	○

i-Dream Drills

YE1A / YE2C
YF1A / YF2C

i-DREAM DRILL INSERTS & HOLDERS
i-DREAM DRILL EINSÄTZE UND HALTER

- Features of *i-Dream Drill* Inserts-
Merkmale des i-Dream Drill Einsätze

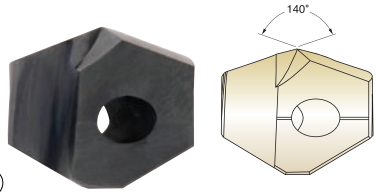
▶ Secure and accurate seating resulting in accurate repeatability and concentricity.
Der sichere und genaue Sitz der Platte garantiert genaue Wiederholbarkeit beim Einsatz und beim Rundlauf.

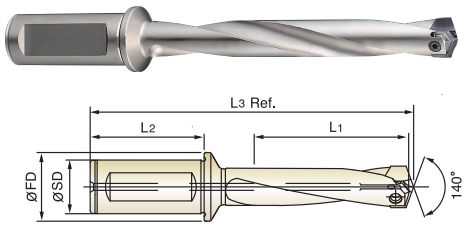
i-Dream Drill **General /** *i-Dream Drill* **allgemeinen**
▶ For most steels materials / In den meisten Stahlsorten

i-Dream Drill **INOX /** *i-Dream Drill* **INOX**
▶ For tough,ductile materials and stainless steels
Für zähe, verformbare Werkstoffe und rostfreie Stähle.
▶ Light,sharp cutting edge / Scharfe Schneidkante
▶ Soft cutting action / Weicher Schnitt
▶ Minimize cutting forces / Minimaler Schneidendruck
▶ Reduce built-up edge / Reduzierte Gratbildung

- Features of *i-Dream Drill* Holders-
- Merkmale des i-Dresm Drill Halters-

▶ Special Alloy Steels maintain its hardness and toughness under high temperatures.
Speziell legierter Stahl, der seine Härte und Zähigkeit auch bei hohen Temperaturen behält.
▶ Innovative surface treatment improves wear resistance and reduces corrosion.
Innovative Oberflächenbehandlung, die die Verschleissfestigkeit erhöht und die Korrosion vermindert.
▶ High Performance flute design allows maximum chip evacuation and minimum interference.
Optimierte Nutenform für maximale Spanabfuhr.





cutting conditions : p.50~51

Series Range (mm)	Insert EDP No. General (TiAlN)	Insert EDP No. INOX (TiCN)	Insert O.D. h7 dec.	Insert O.D. h7 frac.	Insert O.D. h7 mm	Holder EDP No.	Shank Dia. SD	Shank Length L2	Flange Dia. FD	Drilling Depth L1		Overall Length L3 Ref.	Screw No.
E Ø20.00 to Ø21.99	YE1A2000	YE2C2000	0.7874		20.00	ZH20003025	25	56	32	3D	60	145.5	TX2021T20
	YE1A2024	YE2C2024	0.7969	51/64	20.24	ZH20005025				5D	100	185.5	
						ZH20007025				7D	140	225.5	
	YE1A2050	YE2C2050	0.8071		20.50	ZH20503025	25	56	32	3D	61.5	147.5	
	YE1A2064	YE2C2064	0.8125	13/16	20.64	ZH20505025				5D	102.5	188.5	
	YE1A2070	YE2C2070	0.8150		20.70	ZH20507025				7D	143.5	229.5	
	YE1A2100	YE2C2100	0.8268		21.00	ZH21003025	25	56	32	3D	63	149.5	TX2122T20
	YE1A2103	YE2C2103	0.8281	53/64	21.03	ZH21005025				5D	105	191.5	
	YE1A2143	YE2C2143	0.8438	27/32	21.43	ZH21007025				7D	147	233.5	
	YE1A2150	YE2C2150	0.8465		21.50	ZH21503025	25	56	32	3D	64.5	150.5	
	YE1A2170	YE2C2170	0.8543		21.70	ZH21505025				5D	107.5	193.5	
	YE1A2183	YE2C2183	0.8594	55/64	21.83	ZH21507025				7D	150.5	236.5	
F Ø22.00 to Ø23.99	YF1A2200	YF2C2200	0.8661		22.00	ZH22003025	25	56	32	3D	66	152.4	TX2223T20
	YF1A2223	YF2C2223	0.8750	7/8	22.23	ZH22005025				5D	110	196.4	
						ZH22007025				7D	154	240.4	
	YF1A2250	YF2C2250	0.8858		22.50	ZH22503025	25	56	32	3D	67.5	153.4	
	YF1A2262	YF2C2262	0.8906	57/64	22.62	ZH22505025				5D	112.5	198.4	
	YF1A2270	YF2C2270	0.8937		22.70	ZH22507025				7D	157.5	243.4	
	YF1A2300	YF2C2300	0.9055		23.00	ZH23003025	25	56	32	3D	69	155.4	TX2324T20
	YF1A2302	YF2C2302	0.9062	29/32	23.02	ZH23005025				5D	115	201.4	
	YF1A2342	YF2C2342	0.9219	59/64	23.42	ZH23007025				7D	161	247.4	
	YF1A2350	YF2C2350	0.9252		23.50	ZH23503025	25	56	32	3D	70.5	157.4	
	YF1A2370	YF2C2370	0.9331		23.70	ZH23505025				5D	117.5	204.4	
	YF1A2381	YF2C2381	0.9375	15/16	23.81	ZH23507025				7D	164.5	251.4	

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▶10×D Holder is available on your request.

◎ : Excellent ○ : Good

	Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
	~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
Y*1A	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎		◎	◎		
Y*2C	○	○		○				○		○		◎			○	○

i-Dream Drills

YG1A / YG2C
YH1A / YH2C

i-DREAM DRILL INSERTS & HOLDERS
i-DREAM DRILL EINSÄTZE UND HALTER

- Features of *i-Dream Drill* Inserts-
Merkmale des i-Dream Drill Einsätze

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  Der sichere und genaue Sitz der Platte garantiert genaue Wiederholbarkeit beim Einsatz und beim Rundlauf.

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***i-Dream Drill* INOX / *i-Dream Drill* INOX**
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  Für zähe, verformbare Werkstoffe und rostfreie Stähle.
- Light,sharp cutting edge / Scharfe Schneidkante
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- Minimize cutting forces / Minimaler Schneidendruck
- Reduce built-up edge / Reduzierte Gratbildung

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- Merkmale des i-Dresm Drill Halters-

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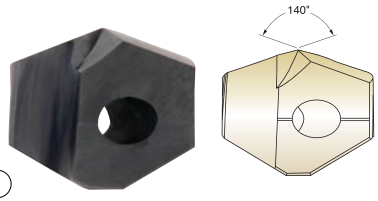

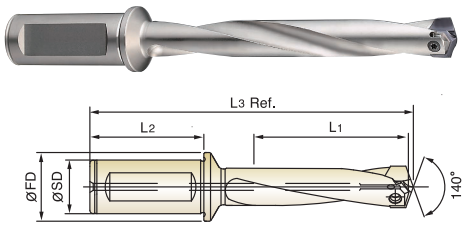

cutting conditions : p.50~51

Series Range	Insert EDP No.		Insert O.D.			Holder EDP No.	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth		Overall Length	Screw No.
	General (TiAlN)	INOX (TiCN)	h7										
(mm)			dec.	frac.	mm		SD	L2	FD		L1	L3 Ref.	
G Ø24.00 to Ø25.99	YG1A2400	YG2C2400	0.9449		24.00	ZH24003032	32	60	37	3D	72	164.8	TX2425T20
	YG1A2421	YG2C2421	0.9531	61/64	24.21	ZH24005032				5D	120	212.8	
						ZH24007032				7D	168	260.8	
	YG1A2450	YG2C2450	0.9646		24.50	ZH24503032	32	60	37	3D	73.5	165.8	
	YG1A2461	YG2C2461	0.9688	31/32	24.61	ZH24505032				5D	122.5	214.8	
	YG1A2470	YG2C2470	0.9724		24.70	ZH24507032				7D	171.5	263.8	
	YG1A2500	YG2C2500	0.9843	63/64	25.00	ZH25003032	32	60	37	3D	75	167.8	TX2526T20
	YG1A2540	YG2C2540	1.0000	1	25.40	ZH25005032				5D	125	217.8	
						ZH25007032				7D	175	267.8	
	YG1A2550	YG2C2550	1.0039		25.50	ZH25503032	32	60	37	3D	76.5	170.8	
	YG1A2567	YG2C2567	1.0106		25.67	ZH25505032				5D	127.5	221.8	
	YG1A2570	YG2C2570	1.0118		25.70	ZH25507032				7D	178.5	272.8	
	YG1A2580	YG2C2580	1.0156	1*1/64	25.80								
H Ø26.00 to Ø27.99	YH1A2600	YH2C2600	1.0236		26.00	ZH26003032	32	60	37	3D	78	171.2	TX2627T25
	YH1A2619	YH2C2619	1.0312	1*1/32	26.19	ZH26005032				5D	130	223.2	
						ZH26007032				7D	182	275.2	
	YH1A2650	YH2C2650	1.0433		26.50	ZH26503032	32	60	37	3D	79.5	172.2	
	YH1A2659	YH2C2659	1.0469	1*3/64	26.59	ZH26505032				5D	132.5	225.2	
	YH1A2699	YH2C2699	1.0625	1*1/16	26.99	ZH26507032				7D	185.5	278.2	
	YH1A2700	YH2C2700	1.0630		27.00	ZH27003032	32	60	37	3D	81	174.2	TX2728T25
						ZH27005032				5D	135	228.2	
						ZH27007032				7D	189	282.2	
	YH1A2750	YH2C2750	1.0827		27.50	ZH27503032	32	60	37	3D	82.5	175.2	
	YH1A2778	YH2C2778	1.0938	1*3/32	27.78	ZH27505032				5D	137.5	230.2	
						ZH27507032				7D	192.5	285.2	

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	~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
Y*1A	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎		◎	◎		
Y*2C	○	○		○				○		○		◎			○	○

YG *i*-Dream Drills

YI1A / YI2C
YJ1A / YJ2C

i-DREAM DRILL INSERTS & HOLDERS
i-DREAM DRILL EINSÄTZE UND HALTER

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Merkmale des i-Dream Drill Einsätze

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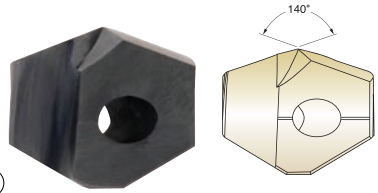
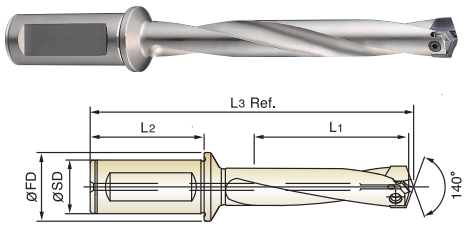




cutting conditions : p.50~51

Series Range (mm)	Insert EDP No. General (TiAlN)	Insert EDP No. INOX (TiCN)	Insert O.D. h7 dec.	Insert O.D. h7 frac.	Insert O.D. h7 mm	Holder EDP No.	Shank Dia. SD	Shank Length L2	Flange Dia. FD	Drilling Depth L1		Overall Length L3 Ref.	Screw No.
I Ø28.00 to Ø29.99	YI1A2800	YI2C2800	1.1024		28.00	ZH28003032	32	60	37	3D	84	178.2	TX2829T25
	YI1A2818	YI2C2818	1.1094	1*7/64	28.18	ZH28005032				5D	140	234.2	
						ZH28007032				7D	196	290.2	
	YI1A2850	YI2C2850	1.1220		28.50	ZH28503032	32	60	37	3D	85.5	179.2	
	YI1A2858	YI2C2858	1.1250	1*1/8	28.58	ZH28505032				5D	142.5	236.2	
						ZH28507032				7D	199.5	293.2	
	YI1A2900	YI2C2900	1.1417		29.00	ZH29003032	32	60	37	3D	87	182.2	TX2930T25
	YI1A2937	YI2C2937	1.1562	1*5/32	29.37	ZH29005032				5D	145	240.2	
						ZH29007032				7D	203	298.2	
	YI1A2950	YI2C2950	1.1614		29.50	ZH29503032	32	60	37	3D	88.5	183.2	
	YI1A2977	YI2C2977	1.1719	1*11/64	29.77	ZH29505032				5D	147.5	242.2	
						ZH29507032				7D	206.5	301.2	
J Ø30.00 to Ø31.99	YJ1A3000	YJ2C3000	1.1811		30.00	ZH30003032	32	60	37	3D	90	186.0	TX3031T25
	YJ1A3016	YJ2C3016	1.1875	1*3/16	30.16	ZH30005032				5D	150	246.0	
						ZH30007032				7D	210	306.0	
	YJ1A3050	YJ2C3050	1.2008		30.50	ZH30503032	32	60	37	3D	91.5	187.0	
	YJ1A3056	YJ2C3056	1.2031	1*11/64	30.56	ZH30505032				5D	152.5	248.0	
	YJ1A3096	YJ2C3096	1.2188	1*7/32	30.96	ZH30507032				7D	213.5	309.0	
	YJ1A3100	YJ2C3100	1.2205		31.00	ZH31003032	32	60	37	3D	93	188.0	TX3132T25
						ZH31005032				5D	155	250.0	
						ZH31007032				7D	217	312.0	
	YJ1A3150	YJ2C3150	1.2402		31.50	ZH31503032	32	60	37	3D	94.5	191.0	
	YJ1A3175	YJ2C3175	1.2500	1*1/4	31.75	ZH31505032				5D	157.5	254.0	
						ZH31507032				7D	220.5	317.0	

▶TiN, TiCN, TiAlN & Hardslick are available on your request.
▶10×D Holder is available on your request.

◎ : Excellent ○ : Good

	Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
	~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
Y*1A	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎		◎	◎		
Y*2C	○	○		○				○		○		◎			○	○

METRIC

Material Werkstück			Tensile Strength [N/mm²]	Hardness HB	Hardness HRc	Cutting Speed Vc [M/min]	Feed [mm/rev] Ø12.0 ~Ø14.9	Ø15.0 ~Ø17.9	Ø18.0 ~Ø21.9	Ø22.0 ~Ø26.9	Ø27.0 ~Ø31.9
Non-alloyed steels, Cast steels Free-machining steels	9SMn28, 9SMnPb28, 10SPb20 etc	Y□1A / Y□2C	~500	100~150		95~120	0.16~0.28	0.21~0.35	0.27~0.40	0.34~0.52	0.37~0.55
			500~850	150~250	~24	80~105	0.14~0.24	0.21~0.35	0.27~0.40	0.34~0.52	0.37~0.55
Low-alloyed steels, Cast steels(<5%) Carbon steels	C15, C22, 20Mn5, Ck45, C45 etc		~450	85~125		90~115	0.14~0.25	0.20~0.33	0.25~0.39	0.31~0.47	0.34~0.50
			450~755	125~225	~19	70~90	0.12~0.20	0.17~0.28	0.22~0.32	0.30~0.46	0.33~0.49
			755~900	225~265	19~27	60~80	0.12~0.20	0.17~0.28	0.22~0.32	0.30~0.46	0.33~0.49
			900~1200	265~350	27~37	55~70	0.10~0.16	0.15~0.25	0.21~0.30	0.25~0.38	0.29~0.43
Alloyed steels	45CrMo4, 42CrMo4, 16MnCr5, Ck75, 35CrMo4, 16MnCr5 etc		~600	125~175	~7	80~100	0.14~0.24	0.17~0.28	0.22~0.32	0.30~0.46	0.34~0.50
			600~800	175~235	7~22	70~90	0.12~0.20	0.17~0.28	0.22~0.32	0.30~0.46	0.34~0.50
			800~950	235~280	22~29	60~80	0.12~0.20	0.15~0.25	0.22~0.32	0.30~0.46	0.34~0.50
			950~1110	280~330	29~35	55~70	0.10~0.16	0.13~0.21	0.21~0.30	0.25~0.38	0.29~0.43
			1110~1230	330~360	35~39	45~60	0.08~0.12	0.13~0.21	0.21~0.30	0.25~0.38	0.29~0.43
High-alloyed steels	36CrNiMo4, 41CrAlMo7 etc		600~1020	225~300	19~32	45~60	0.12~0.20	0.15~0.25	0.21~0.30	0.20~0.31	0.24~0.35
			1020~1200	300~355	32~38	40~55	0.10~0.16	0.11~0.18	0.21~0.30	0.20~0.31	0.24~0.35
			1200~1330	355~390	38~42	40~50	0.08~0.12	0.09~0.14	0.18~0.26	0.19~0.29	0.23~0.34
Structural steels	St33, St37-2, St44-2, St52, St60 etc		350~500	100~150		75~95	0.14~0.24	0.21~0.35	0.27~0.39	0.29~0.44	0.32~0.47
			500~850	150~250	~24	60~75	0.12~0.20	0.20~0.33	0.22~0.32	0.25~0.38	0.29~0.43
			850~1200	250~355	24~38	50~65	0.10~0.16	0.17~0.28	0.21~0.30	0.21~0.32	0.26~0.38
Tool steels	102Cr6, 105WCr6, C75W etc		500~705	150~210	~16	50~65	0.10~0.16	0.13~0.21	0.18~0.26	0.20~0.31	0.24~0.35
			705~950	210~280	16~29	40~50	0.10~0.16	0.13~0.21	0.18~0.26	0.20~0.31	0.24~0.35
Grey cast iron	Pearlitic, Ferritic		500~700	150~210	~16	100~125	0.15~0.26	0.20~0.37	0.27~0.42	0.36~0.51	0.40~0.55
	Pearlitic		700~850	210~250	16~24	75~95	0.11~0.20	0.16~0.29	0.20~0.30	0.25~0.35	0.29~0.40
Cast iron nodular	Ferritic		540	165	4	95~120	0.13~0.22	0.17~0.31	0.21~0.32	0.28~0.40	0.32~0.44
	Pearlitic		850	250	24	75~95	0.11~0.20	0.14~0.26	0.19~0.29	0.25~0.35	0.29~0.40
Malleable cast iron	Ferritic		450	125		100~125	0.13~0.22	0.17~0.31	0.21~0.32	0.28~0.40	0.32~0.44
	Pearlitic		780	230	21	75~95	0.11~0.18	0.14~0.26	0.19~0.29	0.25~0.35	0.29~0.40
Aluminum alloys (Wrought)	not heat treatable			65		250~330	0.30~0.40	0.35~0.45	0.40~0.50	0.45~0.55	0.50~0.60
	hardened			150		200~250	0.30~0.40	0.35~0.45	0.40~0.50	0.45~0.55	0.50~0.60
Aluminum alloys (Cast)	≤12% Si, not heat treatable			75		200~50	0.25~0.35	0.30~0.40	0.35~0.45	0.40~0.50	0.45~0.55
	≤12% Si, hardened			90		150~220	0.25~0.35	0.30~0.40	0.35~0.45	0.40~0.50	0.45~0.55
	>12% Si, not heat treatable			130		100~200	0.20~0.30	0.25~0.35	0.30~0.40	0.35~0.45	0.40~0.50
Copper alloys	Free machining(Pb>1%)			110		115~145	0.16~0.28	0.23~0.36	0.29~0.36	0.37~0.45	0.41~0.48
	Brass			90		145~185	0.17~0.29	0.24~0.37	0.30~0.38	0.38~0.46	0.42~0.49
	Electrolitic copper			100		95~120	0.06~0.09	0.09~0.13	0.11~0.13	0.15~0.18	0.19~0.22
Non ferrous material	Duroplastics										
	Fiber plastics										
	Hard rubber										
Stainless steels	Austenitic and Austenitic/ferritic	Y□2C	450~610	135~185	~9	45~60	0.10~0.16	0.12~0.18	0.14~0.20	0.15~0.26	0.18~0.28
			610~930	185~275	9~28	30~45	0.08~0.14	0.09~0.15	0.10~0.16	0.12~0.20	0.14~0.22

RPM = revolution per minute (rev/min)
M/min = surface meter per minute(M/min)
DIA. = diameter of drill (mm)
mm/rev = feed rate(mm/rev)

*Formulas :

$$\text{M/min} = \frac{(\text{RPM}) \cdot \pi \cdot (\text{DIA.})}{1000}$$

$$\text{mm/min} = (\text{RPM}) \cdot (\text{mm/rev})$$

$$\text{RPM} = \frac{(\text{M/min}) \cdot 1000}{(\pi) \cdot (\text{DIA.})}$$

▶ The recommendations for speeds, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points.
Speed and feed reductions (20% reduction in speed and 10% reduction in feed) are recommended.
▶ Recommend you to reduce the feed rate to 85%, 70% when you use 5xD, 7xD holders.
▶ For use of 7xD holder, we recommend to drill a centering pre-hole with equal to or larger than 140° point angle to min. 2/3 cutting diameter.
The use of the centering pre-hole improves hole location, roundness and surface finish.

INCH

Material Werkstück			Tensile Strength	Hardness		Cutting Speed	Feed [IPR]				
			MPa	HB	HRc	Vc [SFM]	Ø31/64 ~Ø37/64	Ø19/32 ~Ø45/64	Ø23/32 ~Ø55/64	Ø7/8 ~Ø1-1/16	Ø1-3/32 ~Ø1-1/4
Non-alloyed steels, Cast steels Free-machining steels	9SMn28, 9SMnPb28, 10SPb20 etc	Y□1A / Y□2C	~500	100~150		312~394	0.006~0.011	0.008~0.014	0.011~0.016	0.013~0.020	0.015~0.022
			500~850	150~250	~24	262~344	0.006~0.009	0.008~0.014	0.011~0.016	0.013~0.020	0.015~0.022
Low-alloyed steels, Cast steels(<5%) Carbon steels	C15, C22, 20Mn5, Ck45, C45 etc		~450	85~125		295~377	0.006~0.010	0.008~0.013	0.010~0.015	0.012~0.019	0.013~0.020
			450~755	125~225	~19	230~295	0.005~0.008	0.007~0.011	0.009~0.013	0.012~0.018	0.013~0.019
			755~900	225~265	19~27	197~262	0.005~0.008	0.007~0.011	0.009~0.013	0.012~0.018	0.013~0.019
			900~1200	265~350	27~37	180~230	0.004~0.006	0.006~0.010	0.008~0.012	0.010~0.015	0.011~0.017
Alloyed steels	45CrMo4, 42CrMo4, 16MnCr5, Ck75, 35CrMo4, 16MnCr5 etc		~600	125~175	~7	262~328	0.006~0.009	0.007~0.011	0.009~0.013	0.012~0.018	0.013~0.020
			600~800	175~235	7~22	230~295	0.005~0.008	0.007~0.011	0.009~0.013	0.012~0.018	0.013~0.020
			800~950	235~280	22~29	197~262	0.005~0.008	0.006~0.010	0.009~0.013	0.012~0.018	0.013~0.020
			950~1110	280~330	29~35	180~230	0.004~0.006	0.005~0.008	0.008~0.012	0.010~0.015	0.011~0.017
			1110~1230	330~360	35~39	148~197	0.003~0.005	0.005~0.008	0.008~0.012	0.010~0.015	0.011~0.017
High-alloyed steels	36CrNiMo4, 41CrAlMo7 etc		600~1020	225~300	19~32	148~197	0.005~0.008	0.006~0.010	0.008~0.012	0.008~0.012	0.009~0.014
			1020~1200	300~355	32~38	131~180	0.004~0.006	0.004~0.007	0.008~0.012	0.008~0.012	0.009~0.014
			1200~1330	355~390	38~42	131~164	0.003~0.005	0.004~0.006	0.007~0.010	0.007~0.011	0.009~0.013
Structural steels	St33, St37-2, St44-2, St52, St60 etc		350~500	100~150		246~312	0.006~0.009	0.008~0.014	0.011~0.015	0.011~0.017	0.013~0.019
			500~850	150~250	~24	197~246	0.005~0.008	0.008~0.013	0.009~0.013	0.010~0.015	0.011~0.017
			850~1200	250~355	24~38	164~213	0.004~0.006	0.007~0.011	0.008~0.012	0.008~0.013	0.010~0.015
Tool steels	102Cr6, 105WCr6,		500~705	150~210	~16	164~213	0.004~0.006	0.005~0.008	0.007~0.010	0.008~0.012	0.009~0.014
	C75W etc		705~950	210~280	16~29	131~164	0.004~0.006	0.005~0.008	0.007~0.010	0.008~0.012	0.009~0.014
Grey cast iron	Pearlitic, Ferritic		500~700	150~210	~16	328~410	0.006~0.010	0.008~0.015	0.011~0.017	0.014~0.020	0.016~0.022
	Pearlitic		700~850	210~250	16~24	246~312	0.004~0.008	0.006~0.011	0.008~0.012	0.010~0.014	0.011~0.016
Cast iron nodular	Ferritic		540	165	4	312~394	0.005~0.009	0.007~0.012	0.008~0.013	0.011~0.016	0.013~0.017
	Pearlitic		850	250	24	246~312	0.004~0.008	0.006~0.010	0.007~0.011	0.010~0.014	0.011~0.016
Malleable cast iron	Ferritic		450	125		328~410	0.005~0.009	0.007~0.012	0.008~0.013	0.011~0.016	0.013~0.017
	Pearlitic		780	230	21	246~312	0.004~0.007	0.006~0.010	0.007~0.011	0.010~0.014	0.011~0.016
Aluminum alloys (Wrought)	not heat treatable			65		820~1083	0.0118~0.0157	0.0138~0.0177	0.0157~0.0197	0.0177~0.0217	0.0197~0.0236
	hardened			150		656~820	0.0118~0.0157	0.0138~0.0177	0.0157~0.0197	0.0177~0.0217	0.0197~0.0236
Aluminum alloys (Cast)	≤12% Si, not heat treatable			75		656~820	0.0098~0.0138	0.0118~0.0157	0.0138~0.0177	0.0157~0.0197	0.0177~0.0217
	≤12% Si, hardened			90		492~722	0.0098~0.0138	0.0118~0.0157	0.0138~0.0177	0.0157~0.0197	0.0177~0.0217
	>12% Si, not heat treatable			130		328~656	0.0079~0.0118	0.0098~0.0138	0.0118~0.0157	0.0138~0.0177	0.0157~0.0197
Copper alloys	Free machining(Pb>1%)			110		377~476	0.006~0.011	0.009~0.014	0.011~0.014	0.015~0.018	0.016~0.019
	Brass			90		476~607	0.007~0.011	0.009~0.015	0.012~0.015	0.015~0.018	0.017~0.019
	Electrolitic copper			100		312~394	0.002~0.004	0.004~0.005	0.004~0.005	0.006~0.007	0.007~0.009
Non ferrous material	Duroplastics										
	Fiber plastics										
	Hard rubber										
Stainless steels	Austenitic and Austenitic/ferritic	Y□2C	450~610	135~185	~9	145~197	0.004~0.006	0.005~0.007	0.006~0.008	0.006~0.011	0.007~0.011
			610~930	185~275	9~28	89~145	0.003~0.005	0.004~0.006	0.004~0.006	0.005~0.008	0.006~0.009

RPM = revolution per minute (rev/min)
SFM = surface feet per minute (ft/min)
DIA. = diameter of drill (inch)
IPR = feed rate (inch/rev)
IPM = inch per minute penetration rate

*Formulas :

$$SFM = \frac{(RPM) \cdot \pi \cdot (DIA.)}{12}$$

$$IPM = (RPM) \cdot (IPR)$$

$$RPM = \frac{(SFM) \cdot 12}{(\pi) \cdot (DIA.)}$$

- The recommendations for speeds, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points.
  Speed and feed reductions (20% reduction in speed and 10% reduction in feed) are recommended.
- Recommend you to reduce the feed rate to 85%, 70% when you use 5xD, 7xD holders.
- For use of 7xD holder, we recommend to drill a centering pre-hole with equal to or larger than 140° point angle to min. 2/3 cutting diameter.
  The use of the centering pre-hole improves hole location, roundness and surface finish.

ASSEMBLY OF *i*-DREAM DRILLS
MONTAGE DES i-DREAM DRILLS

Make sure to clean the insert and insert seat.
Schneideinsatz und Haltersitz sorgfältig reinigen.

Slide the drill insert into the slot of the holder and press down the insert to touch the bottom of the slot.
Schneideinsatz in den Haltersitz einführen und den Schneideinsatz fest auf den Grund des Haltersitzes pressen.

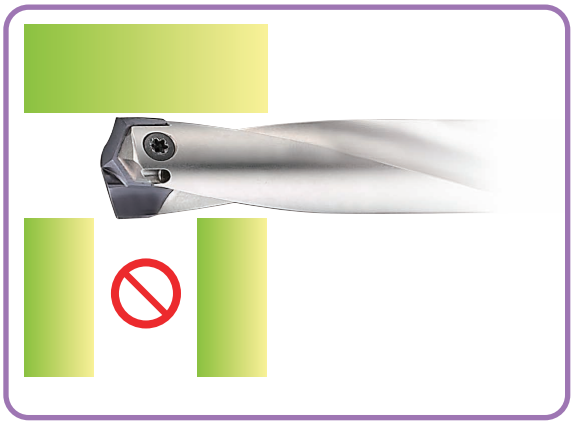
After confirming the insert is pressed down to the bottom of the slot, tighten the screw using anti-seize compound.
Wenn der Schneideinsatz fest auf den Grund des Haltersitzes gepresst ist, die Schraube fest anziehen und dabei Spezialfett verwenden.

WRENCH TYPE	PRODUCT No.	T-HANDLE No.	SERIES (SIZE)
WING TYPE	TWWT08	—	A (Ø12.00~Ø13.99)
			B (Ø14.00~Ø15.99)
			C (Ø16.00~Ø17.99)
TORX BIT TYPE	TWBT15	TWH600	D (Ø18.00~Ø19.99)
	TWBT20		E, F, G (Ø20.00~Ø25.99)
	TWBT25		H, I, J (Ø26.00~Ø31.99)

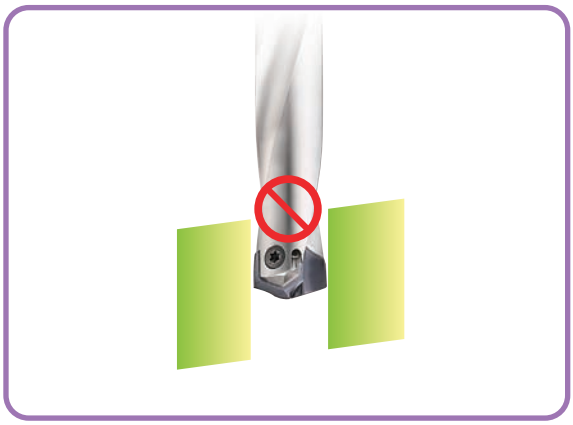
Use the wing type or T-type wrench.
Benutzen Sie den Winkeldreher oder T - Schlüsse

- ▶ Need to use appropriate wrenches and screws as indicated.
  Unbedingt die angegebenen Schrauben und Dreher verwenden.
- ▶ It's important to tighten up the screw properly.
  Es ist wichtig, die Schraube korrekt und fest anzuziehen.

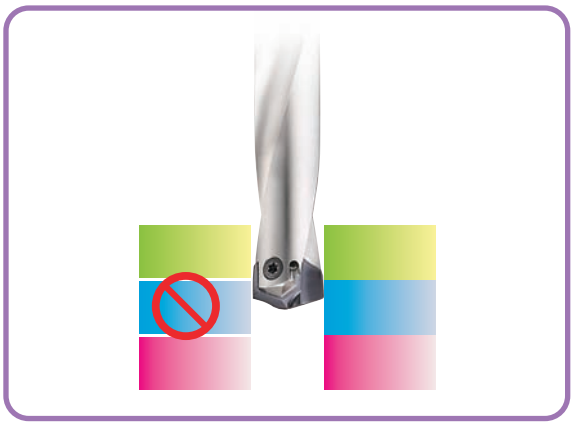
CAUTION-NOT RECOMMENDABLE APPLICATION
ACHTUNG - NICHT EMPFOHLENE ANWENDUNG



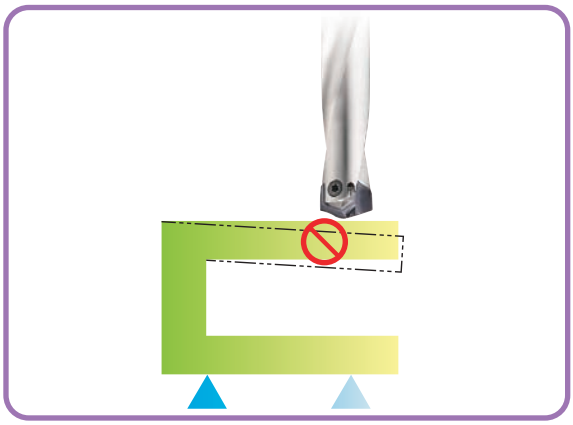
Intersecting cross hole is bigger than the drill insert's Margin Length.
Der Haltersitz ist größer als die Breite des Schneideinsatzes.



Material with slanting entrance and exit over 7 degree. (If drilling 7 degree or under slanting surface, reduce the feed about 30-50%)
Werkstücke mit schrägem Anschnitt oder Austritt von über 7°. (Zum Bohren von bis zu 7° Schräge den Vorschub um ca. 30-50% reduzieren).



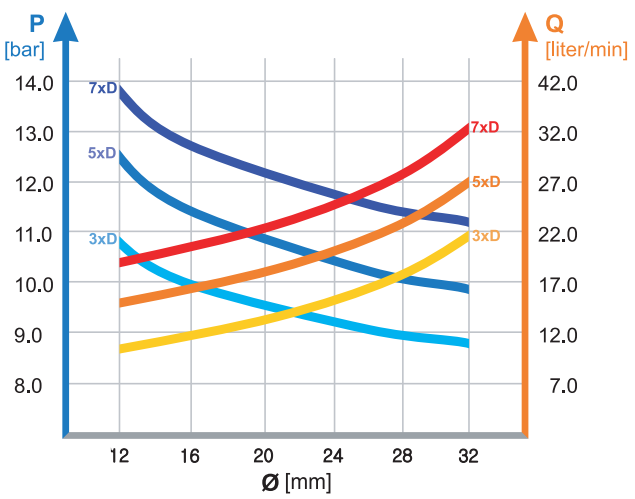
For drilling stacked plates, minimize the space between the plates.
Beim Bohren von Blechpaketen den Abstand der Bleche minimieren.
The space stacked plates can cause insert breakage or poor chip control.
Freiraum in Blechpaketen kann den Bruch des Schneideinsatzes oder schlechte Entspanung verursachen.



The material needs to be fixtured securely before drilling.
Das Werkstück muss fest und sicher aufgespannt sein

i-Dream Drills

RECOMMENDED COOLANT PRESSURE AND FLOW RATE ON VERTICAL DRILLING
EMPFOHLENE KÜHLMITTELDRUCK UND - MENGE BEIM VERTIKALEN BOHREN



- Recommended emulsion mix is 6 - 8%.
  Empfohlene Emulsionsmischung 6 - 8 %.
- For Drilling in Stainless and High Strength steels, a mix of 10% is recommended.
  Beim Bohren in rostfreie und hochfeste Stähle werden 10% empfohlen.
- For horizontal drilling, 30% reduction on the coolant pressure and flow rate is possible.
  Beim horizontalen Bohren können Kühlmitteldruck und - menge um 30% gemindert werden.
- Dry drilling is possible for 1-2xD drilling. But not recommended.
  Trocken Bohren ist möglich bei 1-2xD. Aber nicht empfohlen.

TROUBLE SHOOTING
PROBLEMLÖSUNGEN

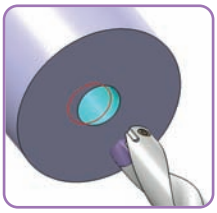
1) Heavy flank wear / Fast flank wear
- Reduce cutting speed
- Increase feed

2) Chipping on cutting edge
- Reduce feed
- Check the rigidity of spindle and chuck
- Rigid clamping of workpiece

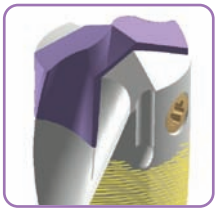
3) Build up on cutting edge
- Increase cutting speed
- Use a coated insert

4) Chipping or break down on outer corner
- Reduce feed
- Rigid clamping of workpiece

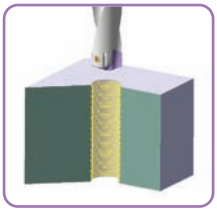
5) Wear of land margin
- Rigid clamping of workpiece
- Reduce cutting speed
- Increase coolant flow



6) Unsatisfactory positioning of the hole
- Rigid clamping of workpiece
- Reduce feed during entrance or exit



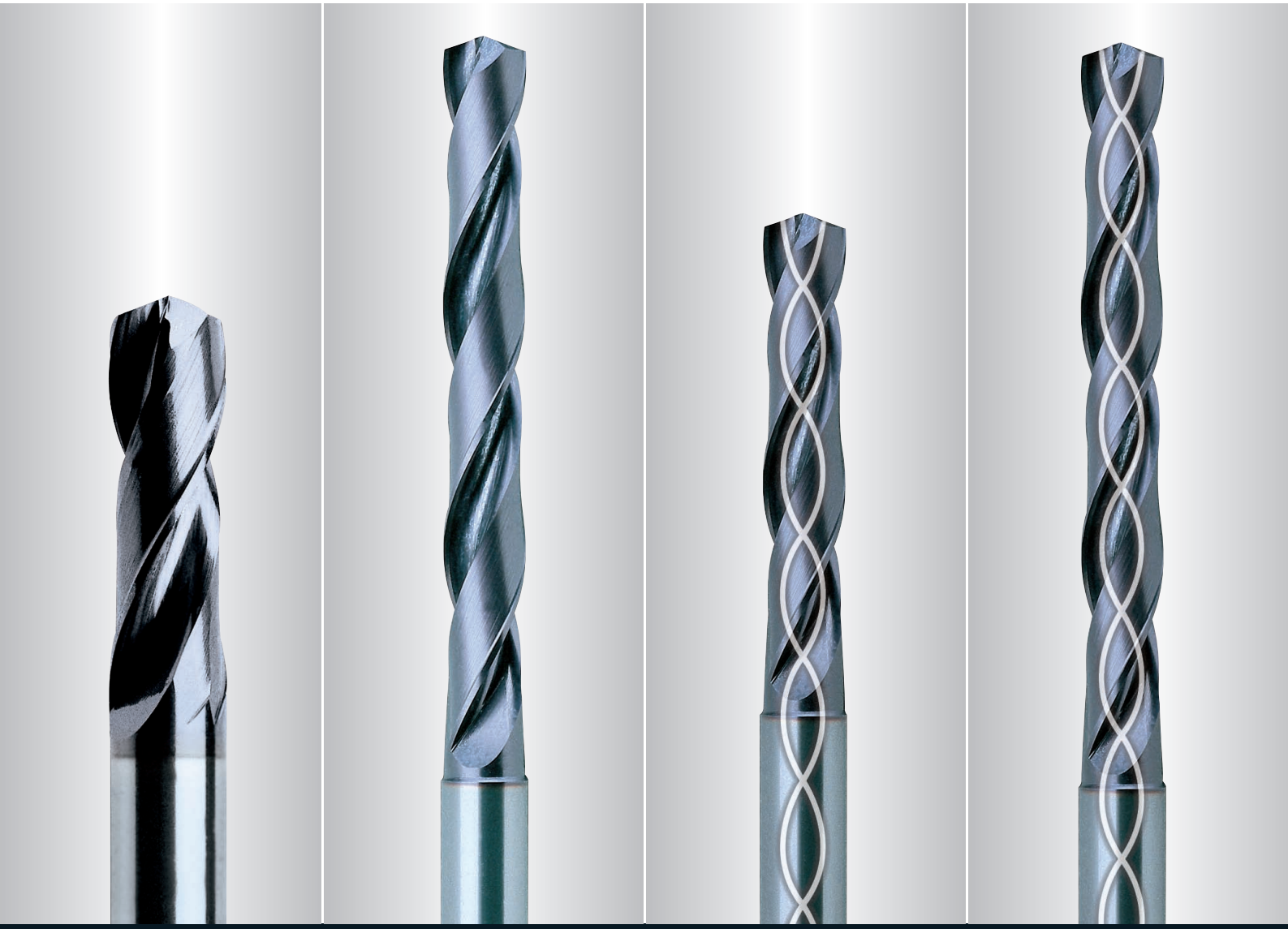
7) Scratching on holder
- Rigid clamping of workpiece
- Reduce feed
- Increase coolant flow



8) Unsatisfactory surface finish
- Rigid clamping of workpiece
- Increase coolant flow and pressure

CARBIDE

Being the best through innovation



DREAM DRILLS -GENERAL

DREAM DRILLS - UNIVERSAL

- WITH & WITHOUT COOLANT HOLES
  General Purpose usually HRc30 to HRc50
- Mit und ohne Kühlkanäle
  Für allgemeinen Einsatz von HRc30 bis HRc50

SOLID CARBIDE DREAM DRILLS - GENERAL (with & without Coolant Holes)

General Purpose usually HRc30 to HRc50

ITEM	MODEL	DESCRIPTION		SIZE MIN	SIZE MAX	PAGE
3XD **DH404**		CARBIDE, DREAM DRILLS VOLLHARTMETALL DREAM SPIRALBOHRER	*STUB* *EXTRA KURZ*	D3.0	D20.0	**58**
3XD **DH423**		CARBIDE, DREAM DRILLS VOLLHARTMETALL DREAM SPIRALBOHRER	*SHORT* *KURZ*	D3.0	D20.0	**60**
5XD **DH424**		CARBIDE, DREAM DRILLS VOLLHARTMETALL DREAM SPIRALBOHRER	*LONG* *LANG*	D1.0	D20.0	**62**
3XD **DH406**		CARBIDE, DREAM DRILLS with COOLANT HOLES VOLLHARTMETALL DREAM SPIRALBOHRER mit KÜHLKANAL	*SHORT* *KURZ*	D3.0	D20.0	**65**
5XD **DH408**		CARBIDE, DREAM DRILLS with COOLANT HOLES VOLLHARTMETALL DREAM SPIRALBOHRER mit KÜHLKANAL	*LONG* *LANG*	D1.0	D20.0	**67**
8XD **DH421**		CARBIDE, DREAM DRILLS with COOLANT HOLES VOLLHARTMETALL DREAM SPIRALBOHRER mit KÜHLKANAL	*EXTRA LONG* *ÜBERLANG*	D3.0	D14.0	**70**
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN				**72**

◎ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎			○		○					
○	◎	◎			○		○					
○	◎	◎			○		○					
○	◎	◎			○		○					
○	◎	◎			○		○					
○	◎	◎			○		○					

DREAM DRILLS -GENERAL

DH404 SERIES

CARBIDE, DREAM DRILLS
VOLLHARTMETALL DREAM SPIRALBOHRER

STUB
EXTRA KURZ

▶ **Application** : Drilling steels in general, cast steels, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metals, non-ferrous light metals, abrasive plastics.

▶ **Advantage** : Self centering
- center drilling is not required.

Excellent positioning
- bush is not necessary.

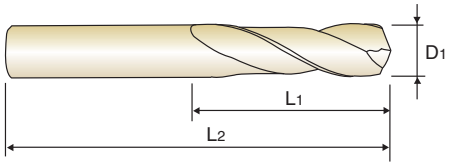
Special Design
- reaming is not required.
- good chip removal
- powerful drilling

▶ **Verwendung** : Zum wirtschaftlichen Bohren von Stahl allgemein, Stahlguß, Hart-und Temperguß, Nichteisen Leichtmetallen, abrasiven Kunststoffen.

▶ **Vorteile** : Selbst zentrierend
- Zentrierbohrung wird nicht benötigt.

Exzellente Positionierbarkeit
- Keine Führungsbuchse notwendig.

Spezielles Design
- Räumen ist nicht notwendig
- Gute Spanabfuhr
- Leistungsfähiges Bohren



DIN 6539 | MG | h6 | h7 | 140° | P.72

$D_1=D_2$
3 × D

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length	EDP No.	Drill Diameter	Flute Length	Overall Length
TiAlN	D_1	L_1	L_2	TiAlN	D_1	L_1	L_2
DH404030	3.0	16	46	DH404057	5.7	28	66
DH404031	3.1	18	49	DH404058	5.8	28	66
DH404032	3.2	18	49	DH404059	5.9	28	66
DH404033	3.3	18	49	DH404060	6.0	28	66
DH404034	3.4	20	52	DH404061	6.1	31	70
DH404035	3.5	20	52	DH404062	6.2	31	70
DH404036	3.6	20	52	DH404063	6.3	31	70
DH404037	3.7	20	52	DH404064	6.4	31	70
DH404038	3.8	22	55	DH404065	6.5	31	70
DH404039	3.9	22	55	DH404066	6.6	31	70
DH404040	4.0	22	55	DH404067	6.7	31	70
DH404041	4.1	22	55	DH404068	6.8	34	74
DH404042	4.2	22	55	DH404069	6.9	34	74
DH404043	4.3	24	58	DH404070	7.0	34	74
DH404044	4.4	24	58	DH404071	7.1	34	74
DH404045	4.5	24	58	DH404072	7.2	34	74
DH404046	4.6	24	58	DH404073	7.3	34	74
DH404047	4.7	24	58	DH404074	7.4	34	74
DH404048	4.8	26	62	DH404075	7.5	34	74
DH404049	4.9	26	62	DH404076	7.6	37	79
DH404050	5.0	26	62	DH404077	7.7	37	79
DH404051	5.1	26	62	DH404078	7.8	37	79
DH404052	5.2	26	62	DH404079	7.9	37	79
DH404053	5.3	26	62	DH404080	8.0	37	79
DH404054	5.4	28	66	DH404081	8.1	37	79
DH404055	5.5	28	66	DH404082	8.2	37	79
DH404056	5.6	28	66	DH404083	8.3	37	79

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎			○		○					

DREAM DRILLS -GENERAL

DH404 SERIES

CARBIDE, DREAM DRILLS
VOLLHARTMETALL DREAM SPIRALBOHRER

STUB
EXTRA KURZ

▶ **Application** : Drilling steels in general, cast steels, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metals, non-ferrous light metals, abrasive plastics.

▶ **Advantage** : Self centering
- center drilling is not required.

Excellent positioning
- bush is not necessary.

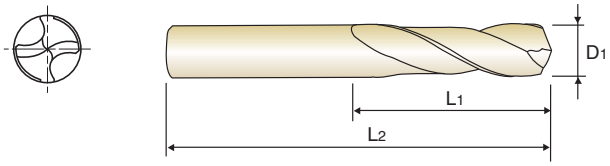
Special Design
- reaming is not required.
- good chip removal
- powerful drilling

▶ **Verwendung** : Zum wirtschaftlichen Bohren von Stahl allgemein, Stahlguß, Hart-und Temperguß, Nichteisen Leichtmetallen, abrasiven Kunststoffen.

▶ **Vorteile** : Selbst zentrierend
- Zentrierbohrung wird nicht benötigt.

Exzellente Positionierbarkeit
- Keine Führungsbuchse notwendig.

Spezielles Design
- Räumen ist nicht notwendig
- Gute Spanabfuhr
- Leistungsfähiges Bohren



DIN 6539 | MG | h6 | h7 | 140° | P.72

$D_1=D_2$

3 × D

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiAlN	D_1	L_1	L_2
DH404084	8.4	37	79
DH404085	8.5	37	79
DH404086	8.6	40	84
DH404087	8.7	40	84
DH404088	8.8	40	84
DH404089	8.9	40	84
DH404090	9.0	40	84
DH404091	9.1	40	84
DH404092	9.2	40	84
DH404093	9.3	40	84
DH404094	9.4	40	84
DH404095	9.5	40	84
DH404096	9.6	43	89
DH404097	9.7	43	89
DH404098	9.8	43	89
DH404099	9.9	43	89
DH404100	10.0	43	89
DH404102	10.2	43	89
DH404105	10.5	43	89

EDP No.	Drill Diameter	Flute Length	Overall Length
TiAlN	D_1	L_1	L_2
DH404110	11.0	47	95
DH404115	11.5	47	95
DH404120	12.0	51	102
DH404130	13.0	51	102
DH404135	13.5	54	107
DH404140	14.0	54	107
DH404145	14.5	56	111
DH404150	15.0	56	111
DH404155	15.5	58	115
DH404160	16.0	58	115
DH404165	16.5	60	119
DH404170	17.0	60	119
DH404175	17.5	62	123
DH404180	18.0	62	123
DH404185	18.5	64	127
DH404190	19.0	64	127
DH404195	19.5	66	131
DH404200	20.0	66	131

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎			○		○					

DREAM DRILLS -GENERAL

DH423 SERIES

CARBIDE, DREAM DRILLS
VOLLHARTMETALL DREAM SPIRALBOHRER

SHORT
KURZ

▶ **Application** : Drilling steels in general, cast steels, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metals, non-ferrous light metals, abrasive plastics.

▶ **Advantage** : Self centering
- center drilling is not required.

Excellent positioning
- bush is not necessary.

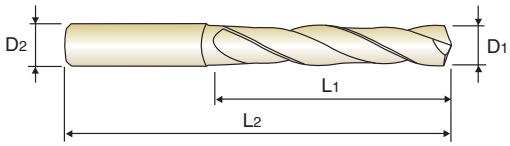
Special Design
- reaming is not required.
- good chip removal
- powerful drilling

▶ **Verwendung** : Zum wirtschaftlichen Bohren von Stahl allgemein, Stahlguß, Hart-und Temperguß, Nichteisen Leichtmetallen, abrasiven Kunststoffen.

▶ **Vorteile** : Selbst zentrierend
- Zentrierbohrung wird nicht benötigt.

Exzellente Positionierbarkeit
-Keine Führungsbuchse notwendig.

Spezielles Design
-Räumen ist nicht notwendig
-Gute Spanabfuhr
-Leistungsfähiges Bohren



DIN 6537 | MG | h6 | m7 | 140° | P.72

3 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH423030	3.0	6	20	62
DH423031	3.1	6	20	62
DH423032	3.2	6	20	62
DH423033	3.3	6	20	62
DH423034	3.4	6	20	62
DH423035	3.5	6	20	62
DH423036	3.6	6	20	62
DH423037	3.7	6	20	62
DH423038	3.8	6	24	66
DH423039	3.9	6	24	66
DH423040	4.0	6	24	66
DH423041	4.1	6	24	66
DH423042	4.2	6	24	66
DH423043	4.3	6	24	66
DH423044	4.4	6	24	66
DH423045	4.5	6	24	66
DH423046	4.6	6	24	66
DH423047	4.7	6	24	66
DH423048	4.8	6	28	66
DH423049	4.9	6	28	66
DH423050	5.0	6	28	66
DH423051	5.1	6	28	66
DH423052	5.2	6	28	66
DH423053	5.3	6	28	66
DH423054	5.4	6	28	66
DH423055	5.5	6	28	66
DH423056	5.6	6	28	66
DH423057	5.7	6	28	66
DH423058	5.8	6	28	66

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH423059	5.9	6	28	66
DH423060	6.0	6	28	66
DH423061	6.1	8	34	79
DH423062	6.2	8	34	79
DH423063	6.3	8	34	79
DH423064	6.4	8	34	79
DH423065	6.5	8	34	79
DH423066	6.6	8	34	79
DH423067	6.7	8	34	79
DH423068	6.8	8	34	79
DH423069	6.9	8	34	79
DH423070	7.0	8	34	79
DH423071	7.1	8	41	79
DH423072	7.2	8	41	79
DH423073	7.3	8	41	79
DH423074	7.4	8	41	79
DH423075	7.5	8	41	79
DH423076	7.6	8	41	79
DH423077	7.7	8	41	79
DH423078	7.8	8	41	79
DH423079	7.9	8	41	79
DH423080	8.0	8	41	79
DH423081	8.1	10	47	89
DH423082	8.2	10	47	89
DH423083	8.3	10	47	89
DH423084	8.4	10	47	89
DH423085	8.5	10	47	89
DH423086	8.6	10	47	89
DH423087	8.7	10	47	89

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎			○		○					

DREAM DRILLS -GENERAL

DH423 SERIES

CARBIDE, DREAM DRILLS
VOLLHARTMETALL DREAM SPIRALBOHRER

SHORT
KURZ

▶ **Application** : Drilling steels in general, cast steels, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metals, non-ferrous light metals, abrasive plastics.

▶ **Advantage** : Self centering
- center drilling is not required.

Excellent positioning
- bush is not necessary.

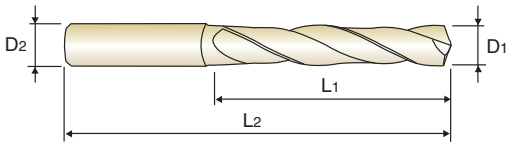
Special Design
- reaming is not required.
- good chip removal
- powerful drilling

▶ **Verwendung** : Zum wirtschaftlichen Bohren von Stahl allgemein, Stahlguß, Hart-und Temperguß, Nichteisen Leichtmetallen, abrasiven Kunststoffen.

▶ **Vorteile** : Selbst zentrierend
- Zentrierbohrung wird nicht benötigt.

Exzellente Positionierbarkeit
-Keine Führungsbuchse notwendig.

Spezielles Design
-Räumen ist nicht notwendig
-Gute Spanabfuhr
-Leistungsfähiges Bohren



DIN 6537 | MG | h6 | m7 | 140° | P.72

3 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH423088	8.8	10	47	89
DH423089	8.9	10	47	89
DH423090	9.0	10	47	89
DH423091	9.1	10	47	89
DH423092	9.2	10	47	89
DH423093	9.3	10	47	89
DH423094	9.4	10	47	89
DH423095	9.5	10	47	89
DH423096	9.6	10	47	89
DH423097	9.7	10	47	89
DH423098	9.8	10	47	89
DH423099	9.9	10	47	89
DH423100	10.0	10	47	89
DH423101	10.1	12	55	102
DH423102	10.2	12	55	102
DH423103	10.3	12	55	102
DH423104	10.4	12	55	102
DH423105	10.5	12	55	102
DH423106	10.6	12	55	102
DH423107	10.7	12	55	102
DH423108	10.8	12	55	102
DH423109	10.9	12	55	102
DH423110	11.0	12	55	102
DH423111	11.1	12	55	102
DH423112	11.2	12	55	102
DH423113	11.3	12	55	102
DH423114	11.4	12	55	102
DH423115	11.5	12	55	102
DH423116	11.6	12	55	102

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH423117	11.7	12	55	102
DH423118	11.8	12	55	102
DH423119	11.9	12	55	102
DH423120	12.0	12	55	102
DH423123	12.3	14	60	107
DH423125	12.5	14	60	107
DH423128	12.8	14	60	107
DH423130	13.0	14	60	107
DH423135	13.5	14	60	107
DH423138	13.8	14	60	107
DH423140	14.0	14	60	107
DH423145	14.5	16	65	115
DH423148	14.8	16	65	115
DH423150	15.0	16	65	115
DH423155	15.5	16	65	115
DH423158	15.8	16	65	115
DH423160	16.0	16	65	115
DH423165	16.5	18	73	123
DH423168	16.8	18	73	123
DH423170	17.0	18	73	123
DH423175	17.5	18	73	123
DH423178	17.8	18	73	123
DH423180	18.0	18	73	123
DH423185	18.5	20	79	131
DH423190	19.0	20	79	131
DH423195	19.5	20	79	131
DH423198	19.8	20	79	131
DH423200	20.0	20	79	131

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎			○		○					

DREAM DRILLS -GENERAL

DH424 SERIES

CARBIDE, DREAM DRILLS
VOLLHARTMETALL DREAM SPIRALBOHRER

LONG
LANG

▶ **Application** : Drilling steels in general, cast steels, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metals, non-ferrous light metals, abrasive plastics.

▶ **Advantage** : Self centering
- center drilling is not required.

Excellent positioning
- bush is not necessary.

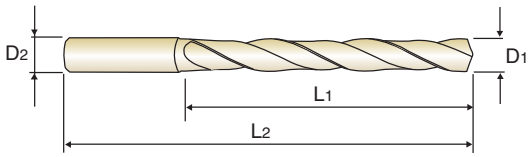
Special Design
- reaming is not required.
- good chip removal
- powerful drilling

▶ **Verwendung** : Zum wirtschaftlichen Bohren von Stahl allgemein, Stahlguß, Hart-und Temperguß, Nichteisen Leichtmetallen, abrasiven Kunststoffen

▶ **Vorteile** : Selbst zentrierend
- Zentrierbohrung wird nicht benötigt.

Exzellente Positionierbarkeit
- Keine Führungsbuchse notwendig.

Spezielles Design
- Räumen ist nicht notwendig
- Gute Spanabfuhr
- Leistungsfähiges Bohren



DIN 6537 | MG | h6 | m7 | 140° P.72

5 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length	EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2	TiAlN	D_1	D_2	L_1	L_2
DH424010	1.0	3	8	55	DH424036	3.6	6	28	66
DH424011	1.1	3	12	55	DH424037	3.7	6	28	66
DH424012	1.2	3	12	55	DH424038	3.8	6	36	74
DH424013	1.3	3	12	55	DH424039	3.9	6	36	74
DH424014	1.4	3	12	55	DH424040	4.0	6	36	74
DH424015	1.5	3	16	55	DH424041	4.1	6	36	74
DH424016	1.6	3	16	55	DH424042	4.2	6	36	74
DH424017	1.7	3	16	55	DH424043	4.3	6	36	74
DH424018	1.8	3	16	55	DH424044	4.4	6	36	74
DH424019	1.9	3	16	55	DH424045	4.5	6	36	74
DH424020	2.0	4	21	57	DH424046	4.6	6	36	74
DH424021	2.1	4	21	57	DH424047	4.7	6	36	74
DH424022	2.2	4	21	57	DH424048	4.8	6	44	82
DH424023	2.3	4	21	57	DH424049	4.9	6	44	82
DH424024	2.4	4	21	57	DH424050	5.0	6	44	82
DH424025	2.5	4	21	57	DH424051	5.1	6	44	82
DH424026	2.6	4	21	57	DH424052	5.2	6	44	82
DH424027	2.7	4	21	57	DH424053	5.3	6	44	82
DH424028	2.8	4	21	57	DH424054	5.4	6	44	82
DH424029	2.9	4	21	57	DH424055	5.5	6	44	82
DH424030	3.0	6	28	66	DH424056	5.6	6	44	82
DH424031	3.1	6	28	66	DH424057	5.7	6	44	82
DH424032	3.2	6	28	66	DH424058	5.8	6	44	82
DH424033	3.3	6	28	66	DH424059	5.9	6	44	82
DH424034	3.4	6	28	66	DH424060	6.0	6	44	82
DH424035	3.5	6	28	66	DH424061	6.1	8	53	91

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎			○		○					

DREAM DRILLS -GENERAL

DH424 SERIES

CARBIDE, DREAM DRILLS
VOLLHARTMETALL DREAM SPIRALBOHRER

LONG
LANG

▶ **Application** : Drilling steels in general, cast steels, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metals, non-ferrous light metals, abrasive plastics.

▶ **Advantage** : Self centering
- center drilling is not required.

Excellent positioning
- bush is not necessary.

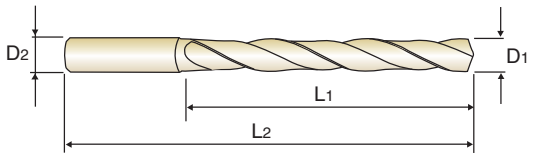
Special Design
- reaming is not required.
- good chip removal
- powerful drilling

▶ **Verwendung** : Zum wirtschaftlichen Bohren von Stahl allgemein, Stahlguß, Hart-und Temperguß, Nichteisen Leichtmetallen, abrasiven Kunststoffen

▶ **Vorteile** : Selbst zentrierend
- Zentrierbohrung wird nicht benötigt.

Exzellente Positionierbarkeit
- Keine Führungsbuchse notwendig.

Spezielles Design
- Räumen ist nicht notwendig
- Gute Spanabfuhr
- Leistungsfähiges Bohren



DIN 6537 | MG | h6 | m7 | 140° | P.72

5 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH424062	6.2	8	53	91
DH424063	6.3	8	53	91
DH424064	6.4	8	53	91
DH424065	6.5	8	53	91
DH424066	6.6	8	53	91
DH424067	6.7	8	53	91
DH424068	6.8	8	53	91
DH424069	6.9	8	53	91
DH424070	7.0	8	53	91
DH424071	7.1	8	53	91
DH424072	7.2	8	53	91
DH424073	7.3	8	53	91
DH424074	7.4	8	53	91
DH424075	7.5	8	53	91
DH424076	7.6	8	53	91
DH424077	7.7	8	53	91
DH424078	7.8	8	53	91
DH424079	7.9	8	53	91
DH424080	8.0	8	53	91
DH424081	8.1	10	61	103
DH424082	8.2	10	61	103
DH424083	8.3	10	61	103
DH424084	8.4	10	61	103
DH424085	8.5	10	61	103
DH424086	8.6	10	61	103
DH424087	8.7	10	61	103

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH424088	8.8	10	61	103
DH424089	8.9	10	61	103
DH424090	9.0	10	61	103
DH424091	9.1	10	61	103
DH424092	9.2	10	61	103
DH424093	9.3	10	61	103
DH424094	9.4	10	61	103
DH424095	9.5	10	61	103
DH424096	9.6	10	61	103
DH424097	9.7	10	61	103
DH424098	9.8	10	61	103
DH424099	9.9	10	61	103
DH424100	10.0	10	61	103
DH424101	10.1	12	71	118
DH424102	10.2	12	71	118
DH424103	10.3	12	71	118
DH424104	10.4	12	71	118
DH424105	10.5	12	71	118
DH424106	10.6	12	71	118
DH424107	10.7	12	71	118
DH424108	10.8	12	71	118
DH424109	10.9	12	71	118
DH424110	11.0	12	71	118
DH424111	11.1	12	71	118
DH424112	11.2	12	71	118
DH424113	11.3	12	71	118

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎			○		○					

DREAM DRILLS -GENERAL

DH424 SERIES

CARBIDE, DREAM DRILLS
VOLLHARTMETALL DREAM SPIRALBOHRER

LONG
LANG

▶ **Application** : Drilling steels in general, cast steels, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metals, non-ferrous light metals, abrasive plastics.

▶ **Advantage** : Self centering
- center drilling is not required.

Excellent positioning
- bush is not necessary.

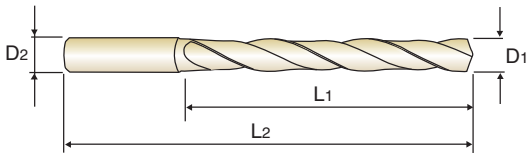
Special Design
- reaming is not required.
- good chip removal
- powerful drilling

▶ **Verwendung** : Zum wirtschaftlichen Bohren von Stahl allgemein, Stahlguß, Hart-und Temperguß, Nichteisen Leichtmetallen, abrasiven Kunststoffen

▶ **Vorteile** : Selbst zentrierend
- Zentrierbohrung wird nicht benötigt.

Exzellente Positionierbarkeit
- Keine Führungsbuchse notwendig.

Spezielles Design
- Räumen ist nicht notwendig
- Gute Spanabfuhr
- Leistungsfähiges Bohren



DIN 6537 | MG | h6 | m7 | 140° | P.72

5 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH424114	11.4	12	71	118
DH424115	11.5	12	71	118
DH424116	11.6	12	71	118
DH424117	11.7	12	71	118
DH424118	11.8	12	71	118
DH424119	11.9	12	71	118
DH424120	12.0	12	71	118
DH424123	12.3	14	77	124
DH424125	12.5	14	77	124
DH424128	12.8	14	77	124
DH424130	13.0	14	77	124
DH424135	13.5	14	77	124
DH424138	13.8	14	77	124
DH424140	14.0	14	77	124
DH424145	14.5	16	83	133
DH424148	14.8	16	83	133

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH424150	15.0	16	83	133
DH424155	15.5	16	83	133
DH424158	15.8	16	83	133
DH424160	16.0	16	83	133
DH424165	16.5	18	93	143
DH424168	16.8	18	93	143
DH424170	17.0	18	93	143
DH424175	17.5	18	93	143
DH424178	17.8	18	93	143
DH424180	18.0	18	93	143
DH424185	18.5	20	101	153
DH424190	19.0	20	101	153
DH424195	19.5	20	101	153
DH424198	19.8	20	101	153
DH424200	20.0	20	101	153

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎			○		○					

DREAM DRILLS -GENERAL

DH406 SERIES

CARBIDE, DREAM DRILLS with COOLANT HOLES — SHORT
VOLLHARTMETALL DREAM SPIRALBOHRER mit KÜHLKANAL — KURZ

▶ **Application** : Drilling steels in general, cast steels, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metals, non-ferrous light metals, abrasive plastics.

▶ **Advantage** : Self centering
- center drilling is not required.

Excellent positioning
- bush is not necessary.

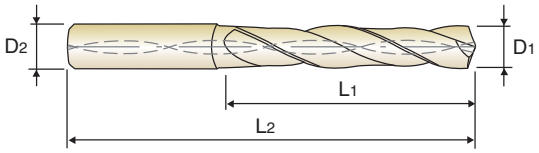
Special Design
- reaming is not required.
- good chip removal
- powerful drilling

▶ **Verwendung** : Zum wirtschaftlichen Bohren von Stahl allgemein, Stahlguß, Hart-und Temperguß, Nichteisen Leichtmetallen, abrasiven Kunststoffen.

▶ **Vorteile** : Selbst zentrierend
- Zentrierbohrung wird nicht benötigt.

Exzellente Positionierbarkeit
- Keine Führungsbuchse notwendig.

Spezielles Design
- Räumen ist nicht notwendig
- Gute Spanabfuhr
- Leistungsfähiges Bohren



DIN 6537 | MG | h6 | m7 | 140° P.72

3 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH406030	3.0	6	20	62
DH406031	3.1	6	20	62
DH406032	3.2	6	20	62
DH406033	3.3	6	20	62
DH406034	3.4	6	20	62
DH406035	3.5	6	20	62
DH406036	3.6	6	20	62
DH406037	3.7	6	20	62
DH406038	3.8	6	24	66
DH406039	3.9	6	24	66
DH406040	4.0	6	24	66
DH406041	4.1	6	24	66
DH406042	4.2	6	24	66
DH406043	4.3	6	24	66
DH406044	4.4	6	24	66
DH406045	4.5	6	24	66
DH406046	4.6	6	24	66
DH406047	4.7	6	24	66
DH406048	4.8	6	28	66
DH406049	4.9	6	28	66
DH406050	5.0	6	28	66
DH406051	5.1	6	28	66
DH406052	5.2	6	28	66
DH406053	5.3	6	28	66
DH406054	5.4	6	28	66
DH406055	5.5	6	28	66
DH406056	5.6	6	28	66

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH406057	5.7	6	28	66
DH406058	5.8	6	28	66
DH406059	5.9	6	28	66
DH406060	6.0	6	28	66
DH406061	6.1	8	34	79
DH406062	6.2	8	34	79
DH406063	6.3	8	34	79
DH406064	6.4	8	34	79
DH406065	6.5	8	34	79
DH406066	6.6	8	34	79
DH406067	6.7	8	34	79
DH406068	6.8	8	34	79
DH406069	6.9	8	34	79
DH406070	7.0	8	34	79
DH406071	7.1	8	41	79
DH406072	7.2	8	41	79
DH406073	7.3	8	41	79
DH406074	7.4	8	41	79
DH406075	7.5	8	41	79
DH406076	7.6	8	41	79
DH406077	7.7	8	41	79
DH406078	7.8	8	41	79
DH406079	7.9	8	41	79
DH406080	8.0	8	41	79
DH406081	8.1	10	47	89
DH406082	8.2	10	47	89
DH406083	8.3	10	47	89

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎			○		○					

DREAM DRILLS -GENERAL

DH406 SERIES

CARBIDE, DREAM DRILLS with COOLANT HOLES *SHORT*
VOLLHARTMETALL DREAM SPIRALBOHRER mit KÜHLKANAL *KURZ*

▶ **Application** : Drilling steels in general, cast steels, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metals, non-ferrous light metals, abrasive plastics.

▶ **Advantage** : Self centering
- center drilling is not required.

Excellent positioning
- bush is not necessary.

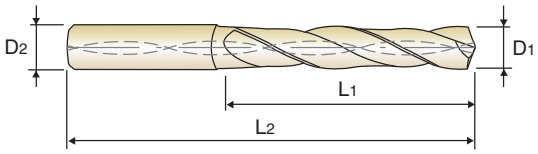
Special Design
- reaming is not required.
- good chip removal
- powerful drilling

▶ **Verwendung** : Zum wirtschaftlichen Bohren von Stahl allgemein, Stahlguß, Hart-und Temperguß, Nichteisen Leichtmetallen, abrasiven Kunststoffen.

▶ **Vorteile** : Selbst zentrierend
- Zentrierbohrung wird nicht benötigt.

Exzellente Positionierbarkeit
- Keine Führungsbuchse notwendig.

Spezielles Design
- Räumen ist nicht notwendig
- Gute Spanabfuhr
- Leistungsfähiges Bohren



DIN 6537 | MG | h6 | m7 | 140° | P.72

3 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH406084	8.4	10	47	89
DH406085	8.5	10	47	89
DH406086	8.6	10	47	89
DH406087	8.7	10	47	89
DH406088	8.8	10	47	89
DH406089	8.9	10	47	89
DH406090	9.0	10	47	89
DH406091	9.1	10	47	89
DH406092	9.2	10	47	89
DH406093	9.3	10	47	89
DH406094	9.4	10	47	89
DH406095	9.5	10	47	89
DH406096	9.6	10	47	89
DH406097	9.7	10	47	89
DH406098	9.8	10	47	89
DH406099	9.9	10	47	89
DH406100	10.0	10	47	89
DH406101	10.1	12	55	102
DH406102	10.2	12	55	102
DH406103	10.3	12	55	102
DH406104	10.4	12	55	102
DH406105	10.5	12	55	102
DH406106	10.6	12	55	102
DH406107	10.7	12	55	102
DH406108	10.8	12	55	102
DH406109	10.9	12	55	102
DH406110	11.0	12	55	102

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH406111	11.1	12	55	102
DH406112	11.2	12	55	102
DH406113	11.3	12	55	102
DH406114	11.4	12	55	102
DH406115	11.5	12	55	102
DH406116	11.6	12	55	102
DH406117	11.7	12	55	102
DH406118	11.8	12	55	102
DH406119	11.9	12	55	102
DH406120	12.0	12	55	102
DH406125	12.5	14	60	107
DH406130	13.0	14	60	107
DH406135	13.5	14	60	107
DH406140	14.0	14	60	107
DH406145	14.5	16	65	115
DH406150	15.0	16	65	115
DH406155	15.5	16	65	115
DH406160	16.0	16	65	115
DH406165	16.5	18	73	123
DH406170	17.0	18	73	123
DH406175	17.5	18	73	123
DH406180	18.0	18	73	123
DH406185	18.5	20	79	131
DH406190	19.0	20	79	131
DH406195	19.5	20	79	131
DH406200	20.0	20	79	131

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎			○		○					

DREAM DRILLS -GENERAL

DH408 SERIES

CARBIDE, DREAM DRILLS with COOLANT HOLES — LONG
VOLLHARTMETALL DREAM SPIRALBOHRER mit KÜHLKANAL — LANG

▶ **Application** : Drilling steels in general, cast steels, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metals, non-ferrous light metals, abrasive plastics.

▶ **Advantage** : Self centering
- center drilling is not required.

Excellent positioning
- bush is not necessary.

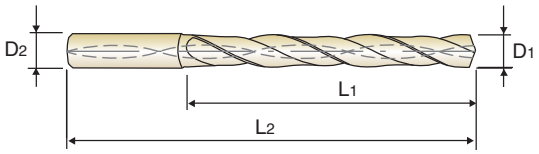
Special Design
- reaming is not required.
- good chip removal
- powerful drilling

▶ **Verwendung** : Zum wirtschaftlichen Bohren von Stahl allgemein,Stahlguß, Hart-und Temperguß, Nichteisen Leichtmetallen, abrasiven Kunststoffen.

▶ **Vorteile** : Selbst zentrierend
- Zentrierbohrung wird nicht benötigt.

Exzellente Positionierbarkeit
- Keine Führungsbuchse notwendig.

Spezielles Design
- Räumen ist nicht notwendig
- Gute Spanabfuhr
- Leistungsfähiges Bohren



DIN 6537 | MG | h6 | m7 | 140° | P.72

5 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH408010	1.0	3	8	55
DH408011	1.1	3	12	55
DH408012	1.2	3	12	55
DH408013	1.3	3	12	55
DH408014	1.4	3	12	55
DH408015	1.5	3	16	55
DH408016	1.6	3	16	55
DH408017	1.7	3	16	55
DH408018	1.8	3	16	55
DH408019	1.9	3	16	55
DH408020	2.0	4	21	57
DH408021	2.1	4	21	57
DH408022	2.2	4	21	57
DH408023	2.3	4	21	57
DH408024	2.4	4	21	57
DH408025	2.5	4	21	57
DH408026	2.6	4	21	57
DH408027	2.7	4	21	57
DH408028	2.8	4	21	57
DH408029	2.9	4	21	57
DH408030	3.0	6	28	66
DH408031	3.1	6	28	66
DH408032	3.2	6	28	66
DH408033	3.3	6	28	66
DH408034	3.4	6	28	66
DH408035	3.5	6	28	66

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH408036	3.6	6	28	66
DH408037	3.7	6	28	66
DH408038	3.8	6	36	74
DH408039	3.9	6	36	74
DH408040	4.0	6	36	74
DH408041	4.1	6	36	74
DH408042	4.2	6	36	74
DH408043	4.3	6	36	74
DH408044	4.4	6	36	74
DH408045	4.5	6	36	74
DH408046	4.6	6	36	74
DH408047	4.7	6	36	74
DH408048	4.8	6	44	82
DH408049	4.9	6	44	82
DH408050	5.0	6	44	82
DH408051	5.1	6	44	82
DH408052	5.2	6	44	82
DH408053	5.3	6	44	82
DH408054	5.4	6	44	82
DH408055	5.5	6	44	82
DH408056	5.6	6	44	82
DH408057	5.7	6	44	82
DH408058	5.8	6	44	82
DH408059	5.9	6	44	82
DH408060	6.0	6	44	82
DH408061	6.1	8	53	91

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎			○		○					

DREAM DRILLS -GENERAL

DH408 SERIES

CARBIDE, DREAM DRILLS with COOLANT HOLES — LONG
VOLLHARTMETALL DREAM SPIRALBOHRER mit KÜHLKANAL — LANG

▶ **Application** : Drilling steels in general, cast steels, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metals, non-ferrous light metals, abrasive plastics.

▶ **Advantage** : Self centering
- center drilling is not required.

Excellent positioning
- bush is not necessary.

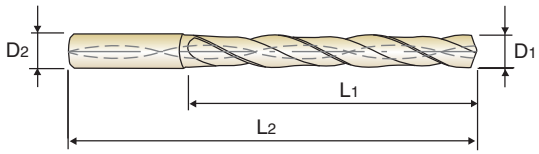
Special Design
- reaming is not required.
- good chip removal
- powerful drilling

▶ **Verwendung** : Zum wirtschaftlichen Bohren von Stahl allgemein,Stahlguß, Hart-und Temperguß, Nichteisen Leichtmetallen, abrasiven Kunststoffen.

▶ **Vorteile** : Selbst zentrierend
- Zentrierbohrung wird nicht benötigt.

Exzellente Positionierbarkeit
- Keine Führungsbuchse notwendig.

Spezielles Design
- Räumen ist nicht notwendig
- Gute Spanabfuhr
- Leistungsfähiges Bohren



DIN 6537 | MG | h6 | m7 | 140° P.72

5 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH408062	6.2	8	53	91
DH408063	6.3	8	53	91
DH408064	6.4	8	53	91
DH408065	6.5	8	53	91
DH408066	6.6	8	53	91
DH408067	6.7	8	53	91
DH408068	6.8	8	53	91
DH408069	6.9	8	53	91
DH408070	7.0	8	53	91
DH408071	7.1	8	53	91
DH408072	7.2	8	53	91
DH408073	7.3	8	53	91
DH408074	7.4	8	53	91
DH408075	7.5	8	53	91
DH408076	7.6	8	53	91
DH408077	7.7	8	53	91
DH408078	7.8	8	53	91
DH408079	7.9	8	53	91
DH408080	8.0	8	53	91
DH408081	8.1	10	61	103
DH408082	8.2	10	61	103
DH408083	8.3	10	61	103
DH408084	8.4	10	61	103
DH408085	8.5	10	61	103
DH408086	8.6	10	61	103
DH408087	8.7	10	61	103

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH408088	8.8	10	61	103
DH408089	8.9	10	61	103
DH408090	9.0	10	61	103
DH408091	9.1	10	61	103
DH408092	9.2	10	61	103
DH408093	9.3	10	61	103
DH408094	9.4	10	61	103
DH408095	9.5	10	61	103
DH408096	9.6	10	61	103
DH408097	9.7	10	61	103
DH408098	9.8	10	61	103
DH408099	9.9	10	61	103
DH408100	10.0	10	61	103
DH408101	10.1	12	71	118
DH408102	10.2	12	71	118
DH408103	10.3	12	71	118
DH408104	10.4	12	71	118
DH408105	10.5	12	71	118
DH408106	10.6	12	71	118
DH408107	10.7	12	71	118
DH408108	10.8	12	71	118
DH408109	10.9	12	71	118
DH408110	11.0	12	71	118
DH408111	11.1	12	71	118
DH408112	11.2	12	71	118
DH408113	11.3	12	71	118

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎			○		○					

DREAM DRILLS -GENERAL

DH408 SERIES

CARBIDE, DREAM DRILLS with COOLANT HOLES — LONG
VOLLHARTMETALL DREAM SPIRALBOHRER mit KÜHLKANAL — LANG

▶ **Application** : Drilling steels in general, cast steels, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metals, non-ferrous light metals, abrasive plastics.

▶ **Advantage** : Self centering
- center drilling is not required.

Excellent positioning
- bush is not necessary.

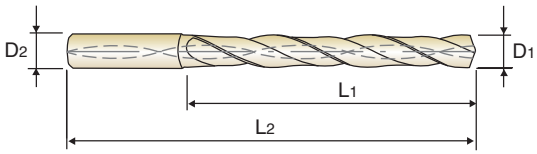
Special Design
- reaming is not required.
- good chip removal
- powerful drilling

▶ **Verwendung** : Zum wirtschaftlichen Bohren von Stahl allgemein,Stahlguß, Hart-und Temperguß, Nichteisen Leichtmetallen, abrasiven Kunststoffen.

▶ **Vorteile** : Selbst zentrierend
- Zentrierbohrung wird nicht benötigt.

Exzellente Positionierbarkeit
- Keine Führungsbuchse notwendig.

Spezielles Design
- Räumen ist nicht notwendig
- Gute Spanabfuhr
- Leistungsfähiges Bohren



DIN 6537 | MG | h6 | m7 | 140° P.72

5 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH408114	11.4	12	71	118
DH408115	11.5	12	71	118
DH408116	11.6	12	71	118
DH408117	11.7	12	71	118
DH408118	11.8	12	71	118
DH408119	11.9	12	71	118
DH408120	12.0	12	71	118
DH408125	12.5	14	77	124
DH408130	13.0	14	77	124
DH408135	13.5	14	77	124
DH408140	14.0	14	77	124
DH408145	14.5	16	83	133

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH408150	15.0	16	83	133
DH408155	15.5	16	83	133
DH408160	16.0	16	83	133
DH408165	16.5	18	93	143
DH408170	17.0	18	93	143
DH408175	17.5	18	93	143
DH408180	18.0	18	93	143
DH408185	18.5	20	101	153
DH408190	19.0	20	101	153
DH408195	19.5	20	101	153
DH408200	20.0	20	101	153

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎			○		○					

DREAM DRILLS -GENERAL

DH421 SERIES

CARBIDE, DREAM DRILLS with COOLANT HOLES
VOLLHARTMETALL DREAM SPIRALBOHRER mit KÜHLKANAL

EXTRA LONG
ÜBERLANG

▶ **Application** : Drilling steels in general, cast steels, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metals, non-ferrous light metals, abrasive plastics.

▶ **Advantage** : Self centering
- center drilling is not required.

Excellent positioning
- bush is not necessary.

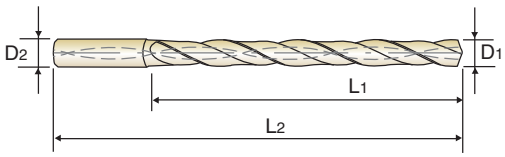
Special Design
- reaming is not required.
- good chip removal
- powerful drilling

▶ **Verwendung** : Zum wirtschaftlichen Bohren von Stahl allgemein, Stahlguß, Hart-und Temperguß, Nichteisen Leichtmetallen, abrasiven Kunststoffen.

▶ **Vorteile** : Selbst zentrierend
- Zentrierbohrung wird nicht benötigt.

Exzellente Positionierbarkeit
- Keine Führungsbuchse notwendig.

Spezielles Design
- Räumen ist nicht notwendig
- Gute Spanabfuhr
- Leistungsfähiges Bohren



DIN 6537 | MG | h6 | m7 | 140° | P.72

8 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH421030	3.0	6	34	72
DH421031	3.1	6	34	72
DH421032	3.2	6	34	72
DH421033	3.3	6	34	72
DH421034	3.4	6	34	72
DH421035	3.5	6	34	72
DH421036	3.6	6	34	72
DH421037	3.7	6	34	72
DH421038	3.8	6	43	81
DH421039	3.9	6	43	81
DH421040	4.0	6	43	81
DH421041	4.1	6	43	81
DH421042	4.2	6	43	81
DH421043	4.3	6	43	81
DH421044	4.4	6	43	81
DH421045	4.5	6	43	81
DH421046	4.6	6	43	81
DH421047	4.7	6	43	81
DH421048	4.8	6	57	95
DH421049	4.9	6	57	95
DH421050	5.0	6	57	95
DH421051	5.1	6	57	95
DH421052	5.2	6	57	95
DH421053	5.3	6	57	95
DH421054	5.4	6	57	95

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH421055	5.5	6	57	95
DH421056	5.6	6	57	95
DH421057	5.7	6	57	95
DH421058	5.8	6	57	95
DH421059	5.9	6	57	95
DH421060	6.0	6	57	95
DH421061	6.1	8	76	114
DH421062	6.2	8	76	114
DH421063	6.3	8	76	114
DH421064	6.4	8	76	114
DH421065	6.5	8	76	114
DH421066	6.6	8	76	114
DH421067	6.7	8	76	114
DH421068	6.8	8	76	114
DH421069	6.9	8	76	114
DH421070	7.0	8	76	114
DH421071	7.1	8	76	114
DH421072	7.2	8	76	114
DH421073	7.3	8	76	114
DH421074	7.4	8	76	114
DH421075	7.5	8	76	114
DH421076	7.6	8	76	114
DH421077	7.7	8	76	114
DH421078	7.8	8	76	114
DH421079	7.9	8	76	114

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎			○		○					

DREAM DRILLS -GENERAL

DH421 SERIES

CARBIDE, DREAM DRILLS with COOLANT HOLES
VOLLHARTMETALL DREAM SPIRALBOHRER mit KÜHLKANAL

EXTRA LONG
ÜBERLANG

▶ **Application** : Drilling steels in general, cast steels, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metals, non-ferrous light metals, abrasive plastics.

▶ **Advantage** : Self centering
- center drilling is not required.

Excellent positioning
- bush is not necessary.

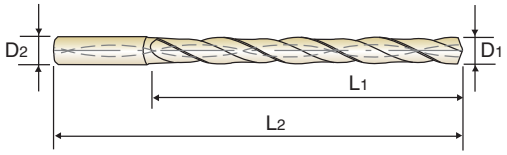
Special Design
- reaming is not required.
- good chip removal
- powerful drilling

▶ **Verwendung** : Zum wirtschaftlichen Bohren von Stahl allgemein, Stahlguß, Hart-und Temperguß, Nichteisen Leichtmetallen, abrasiven Kunststoffen.

▶ **Vorteile** : Selbst zentrierend
- Zentrierbohrung wird nicht benötigt.

Exzellente Positionierbarkeit
- Keine Führungsbuchse notwendig.

Spezielles Design
- Räumen ist nicht notwendig
- Gute Spanabfuhr
- Leistungsfähiges Bohren



DIN 6537 | MG | h6 | m7 | 140° | P.72

8 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH421080	8.0	8	76	114
DH421081	8.1	10	95	142
DH421082	8.2	10	95	142
DH421083	8.3	10	95	142
DH421084	8.4	10	95	142
DH421085	8.5	10	95	142
DH421086	8.6	10	95	142
DH421087	8.7	10	95	142
DH421088	8.8	10	95	142
DH421089	8.9	10	95	142
DH421090	9.0	10	95	142
DH421091	9.1	10	95	142
DH421092	9.2	10	95	142
DH421093	9.3	10	95	142
DH421094	9.4	10	95	142
DH421095	9.5	10	95	142
DH421096	9.6	10	95	142
DH421097	9.7	10	95	142
DH421098	9.8	10	95	142
DH421099	9.9	10	95	142
DH421100	10.0	10	95	142
DH421101	10.1	12	114	162
DH421102	10.2	12	114	162

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH421103	10.3	12	114	162
DH421104	10.4	12	114	162
DH421105	10.5	12	114	162
DH421106	10.6	12	114	162
DH421107	10.7	12	114	162
DH421108	10.8	12	114	162
DH421109	10.9	12	114	162
DH421110	11.0	12	114	162
DH421111	11.1	12	114	162
DH421112	11.2	12	114	162
DH421113	11.3	12	114	162
DH421114	11.4	12	114	162
DH421115	11.5	12	114	162
DH421116	11.6	12	114	162
DH421117	11.7	12	114	162
DH421118	11.8	12	114	162
DH421119	11.9	12	114	162
DH421120	12.0	12	114	162
DH421125	12.5	14	133	178
DH421130	13.0	14	133	178
DH421135	13.5	14	133	178
DH421140	14.0	14	133	178

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎			○		○					

DREAM DRILLS -GENERAL

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, DREAM DRILLS, TiAlN COATED
VOLLHARTMETALL DREAM BOHRER, TiAlN-BESCHICHTET

DH404, DH423, DH424 SERIES

WORK MATERIAL	NON-ALLOY STEELS		ALLOY STEELS		SOFT GREY CAST IRON		HARD GREY CAST IRON	
STRENGTH	< 700 N/mm²		< 1000 N/mm²		< HB240, GG25		< HB300, GG40	
DRILLING SPEED	Ø1.0 ~ Ø2.9 : 40 ~ 80 m/min Ø3.0 ~ : 100 ~ 120 m/min		Ø1.0 ~ Ø2.9 : 35 ~ 70 m/min Ø3.0 ~ : 85 ~ 105 m/min		Ø1.0 ~ Ø2.9 : 60 ~ 130 m/min Ø3.0 ~ : 180 ~ 200 m/min		Ø1.0 ~ Ø2.9 : 40 ~ 90 m/min Ø3.0 ~ : 110 ~ 130 m/min	
DIAMETER	N	S	N	S	N	S	N	S
1.0	13000	0.04	11250	0.04	21300	0.04	14200	0.04
2.0	13000	0.06	11250	0.06	21300	0.06	14200	0.06
3.0	13000	0.13	11000	0.13	21000	0.13	14000	0.13
4.0	9500	0.14	8400	0.14	16000	0.14	10500	0.14
5.0	7600	0.15	6700	0.15	13000	0.15	8300	0.15
6.0	6400	0.17	5600	0.17	11000	0.17	6900	0.17
7.0	5500	0.19	4800	0.19	9100	0.19	5900	0.19
8.0	4800	0.21	4200	0.21	8000	0.21	5200	0.21
9.0	4200	0.23	3700	0.23	7100	0.23	4600	0.23
10.0	3800	0.25	3350	0.25	6400	0.25	4150	0.25
12.0	3200	0.27	2800	0.27	5300	0.27	3450	0.27
14.0	2750	0.29	2400	0.29	4550	0.29	3000	0.29
16.0	2400	0.31	2100	0.31	4000	0.31	2600	0.31
18.0	2100	0.33	1850	0.33	3550	0.33	2300	0.33
20.0	1900	0.35	1650	0.35	3200	0.35	2100	0.35

▶ Recommend to reduce the feed rate as following
Feed 100% : DH404(3×D), DH423(3×D)
Feed 85% : DH424(5×D)

N = R.P.M
S = Feed per Revolution (mm/rev.)

CARBIDE, DREAM DRILLS with COOLANT HOLES DIN6537, TiAlN COATED
VOLLHARTMETALL DREAM BOHRER mit KÜHLKANAL DIN6537, TiAlN-BESCHICHTET

DH406, DH408, DH421 SERIES

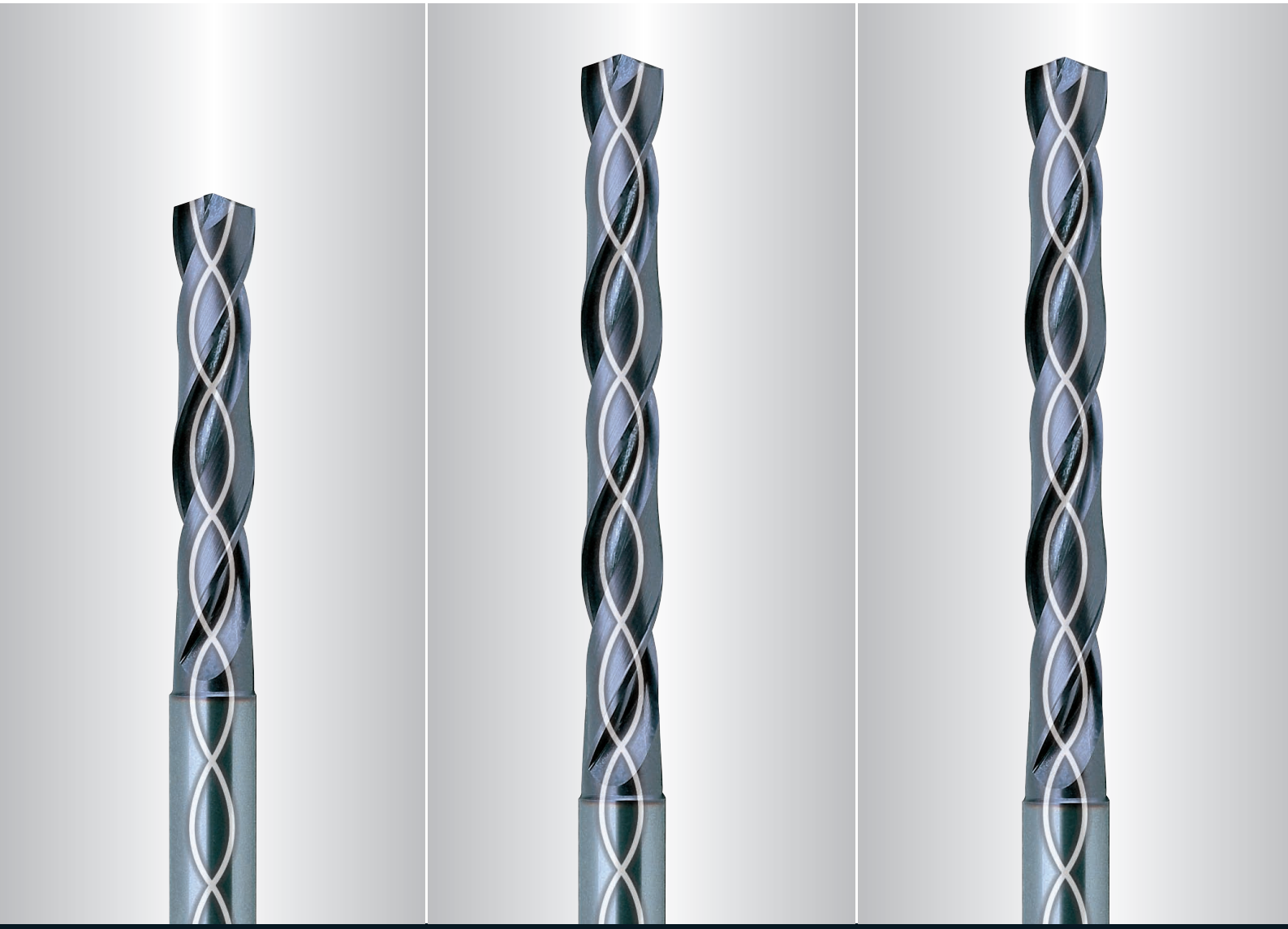
WORK MATERIAL	NON-ALLOY STEELS		ALLOY STEELS		SOFT GREY CAST IRON		HARD GREY CAST IRON	
STRENGTH	< 700 N/mm²		< 1000 N/mm²		< HB240, GG25		< HB300, GG40	
DRILLING SPEED	Ø1.0 ~ Ø2.9 : 50 ~ 100 m/min Ø3.0 ~ : 130 ~ 150 m/min		Ø1.0 ~ Ø2.9 : 40 ~ 90 m/min Ø3.0 ~ : 115 ~ 135 m/min		Ø1.0 ~ Ø2.9 : 80 ~ 160 m/min Ø3.0 ~ : 230 ~ 250 m/min		Ø1.0 ~ Ø2.9 : 50 ~ 100 m/min Ø3.0 ~ : 140 ~ 160 m/min	
DIAMETER	N	S	N	S	N	S	N	S
1.0	16250	0.05	14800	0.05	26600	0.05	17300	0.05
2.0	16250	0.07	14800	0.07	26600	0.07	17300	0.07
3.0	16000	0.16	14500	0.16	26000	0.16	17000	0.16
4.0	12000	0.17	11000	0.17	20000	0.17	13000	0.17
5.0	9550	0.18	8600	0.18	16000	0.18	10000	0.18
6.0	8000	0.20	7200	0.20	13000	0.20	8500	0.20
7.0	6800	0.22	6100	0.22	11500	0.22	7300	0.22
8.0	6000	0.24	5400	0.24	9900	0.24	6400	0.24
9.0	5300	0.27	4800	0.27	8800	0.27	5700	0.27
10.0	4800	0.30	4300	0.30	8000	0.30	5100	0.30
12.0	4000	0.33	3600	0.33	6600	0.33	4250	0.33
14.0	3400	0.36	3050	0.36	5700	0.36	3650	0.36
16.0	3000	0.39	2700	0.39	5000	0.39	3200	0.39
18.0	2650	0.42	2400	0.42	4400	0.42	2850	0.42
20.0	2400	0.45	2150	0.45	4000	0.45	2550	0.45

▶ Recommend to reduce the feed rate as following
Feed 100% : DH406(3×D)
Feed 85% : DH408(5×D)
Feed 70% : DH421(8×D)

N = R.P.M
S = Feed per Revolution (mm/rev.)

CARBIDE

Being the best through innovation



DREAM DRILLS -INOX

DREAM DRILLS - INOX

- **WITH COOLANT HOLES**
  Tough Materials like Stainless Steels, Nickel Alloys and Titanium
- **Mit Kühlkanälen**
  Für zähe Werkstoffe, wie rostfreier Stahl, Nickellegierungenund Titan

SOLID CARBIDE DREAM DRILLS - INOX (with Coolant Holes)

Tough Materials like Stainless Steels, Nickel Alloys and Titanium

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
3XD DH451		CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES *SHORT* VOLLHARTMETALL DREAM SPIRALBOHRER - INOX mit KÜHLKANAL *KURZ*	D3.0	D20.0	76
5XD DH452		CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES *LONG* VOLLHARTMETALL DREAM SPIRALBOHRER - INOX mit KÜHLKANAL *LANG*	D1.0	D20.0	79
8XD DH453		CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES *EXTRA LONG* VOLLHARTMETALL DREAM SPIRALBOHRER - INOX mit KÜHLKANAL *ÜBERLANG*	D3.0	D14.0	82
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			84

◎ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○				○	◎	○	○			
◎	◎	○				○	◎	○	○			
◎	◎	○				○	◎	○	○			

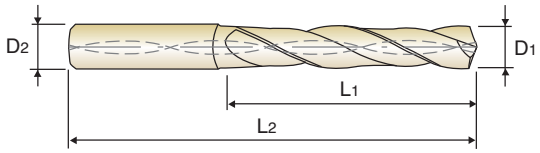
DREAM DRILLS -INOX

DH451 SERIES

CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES — *SHORT*
VOLLHARTMETALL DREAM SPIRALBOHRER - INOX mit KÜHLKANAL — *KURZ*

- The tool has the special flute shape and geometry for suitable machining of stainless steels.
- Excellent chip evacuation due to better surface treatment.
- Point R-thinning makes superior centering and chip curling.
- Applied TiAlN coating achieves the better surface finish of materials to be cut and the longer tool life.

- Der Bohrer hat eine besondere Nutenform, die sich besonders zur Bearbeitung von rostfreiem Stahl eignet.
- Ausgezeichnete Entspanung wegen der besseren Oberflächenqualität.
- Vorzügliche Zentrierung und Spanbruch durch die R-Ausspitzung.
- Modifizierte TiAlN-Beschichtung verbessert die Oberflächengüte der Bohrung und verlängert die Lebensdauer der Bohrung.



DIN 6537 | MG | h6 | m7 | 140° | P.84

3 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH451030	3.0	6	20	62
DH451031	3.1	6	20	62
DH451032	3.2	6	20	62
DH451033	3.3	6	20	62
DH451034	3.4	6	20	62
DH451035	3.5	6	20	62
DH451036	3.6	6	20	62
DH451037	3.7	6	20	62
DH451038	3.8	6	24	66
DH451039	3.9	6	24	66
DH451040	4.0	6	24	66
DH451041	4.1	6	24	66
DH451042	4.2	6	24	66
DH451043	4.3	6	24	66
DH451044	4.4	6	24	66
DH451045	4.5	6	24	66
DH451046	4.6	6	24	66
DH451047	4.7	6	24	66
DH451048	4.8	6	28	66
DH451049	4.9	6	28	66

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH451050	5.0	6	28	66
DH451051	5.1	6	28	66
DH451052	5.2	6	28	66
DH451053	5.3	6	28	66
DH451054	5.4	6	28	66
DH451055	5.5	6	28	66
DH451056	5.6	6	28	66
DH451057	5.7	6	28	66
DH451058	5.8	6	28	66
DH451059	5.9	6	28	66
DH451060	6.0	6	28	66
DH451061	6.1	8	34	79
DH451062	6.2	8	34	79
DH451063	6.3	8	34	79
DH451064	6.4	8	34	79
DH451065	6.5	8	34	79
DH451066	6.6	8	34	79
DH451067	6.7	8	34	79
DH451068	6.8	8	34	79
DH451069	6.9	8	34	79

- Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○				○	◎	○	○			

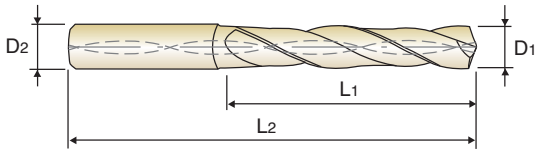
DREAM DRILLS -INOX

DH451 SERIES

CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES — SHORT
VOLLHARTMETALL DREAM SPIRALBOHRER - INOX mit KÜHLKANAL — KURZ

- The tool has the special flute shape and geometry for suitable machining of stainless steels.
- Excellent chip evacuation due to better surface treatment.
- Point R-thinning makes superior centering and chip curling.
- Applied TiAlN coating achieves the better surface finish of materials to be cut and the longer tool life.

- Der Bohrer hat eine besondere Nutenform, die sich besonders zur Bearbeitung von rostfreiem Stahl eignet.
- Ausgezeichnete Entspanung wegen der besseren Oberflächenqualität.
- Vorzügliche Zentrierung und Spanbruch durch die R-Ausspitzung.
- Modifizierte TiAlN-Beschichtung verbessert die Oberflächengüte der Bohrung und verlängert die Lebensdauer der Bohrung.



DIN 6537 | MG | h6 | m7 | 140° | P.84

3 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH451070	7.0	8	34	79
DH451071	7.1	8	41	79
DH451072	7.2	8	41	79
DH451073	7.3	8	41	79
DH451074	7.4	8	41	79
DH451075	7.5	8	41	79
DH451076	7.6	8	41	79
DH451077	7.7	8	41	79
DH451078	7.8	8	41	79
DH451079	7.9	8	41	79
DH451080	8.0	8	41	79
DH451081	8.1	10	47	89
DH451082	8.2	10	47	89
DH451083	8.3	10	47	89
DH451084	8.4	10	47	89
DH451085	8.5	10	47	89
DH451086	8.6	10	47	89
DH451087	8.7	10	47	89
DH451088	8.8	10	47	89
DH451089	8.9	10	47	89

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH451090	9.0	10	47	89
DH451091	9.1	10	47	89
DH451092	9.2	10	47	89
DH451093	9.3	10	47	89
DH451094	9.4	10	47	89
DH451095	9.5	10	47	89
DH451096	9.6	10	47	89
DH451097	9.7	10	47	89
DH451098	9.8	10	47	89
DH451099	9.9	10	47	89
DH451100	10.0	10	47	89
DH451101	10.1	12	55	102
DH451102	10.2	12	55	102
DH451103	10.3	12	55	102
DH451104	10.4	12	55	102
DH451105	10.5	12	55	102
DH451106	10.6	12	55	102
DH451107	10.7	12	55	102
DH451108	10.8	12	55	102
DH451109	10.9	12	55	102

- Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○				○	◎	○	○			

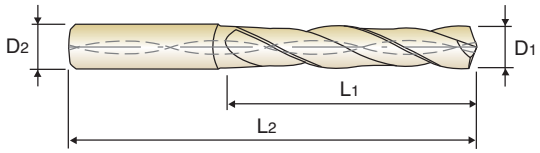
DREAM DRILLS -INOX

DH451 SERIES

CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES *SHORT*
VOLLHARTMETALL DREAM SPIRALBOHRER - INOX mit KÜHLKANAL *KURZ*

- The tool has the special flute shape and geometry for suitable machining of stainless steels.
- Excellent chip evacuation due to better surface treatment.
- Point R-thinning makes superior centering and chip curling.
- Applied TiAlN coating achieves the better surface finish of materials to be cut and the longer tool life.

- Der Bohrer hat eine besondere Nutenform, die sich besonders zur Bearbeitung von rostfreiem Stahl eignet.
- Ausgezeichnete Entspanung wegen der besseren Oberflächenqualität.
- Vorzügliche Zentrierung und Spanbruch durch die R-Ausspitzung.
- Modifizierte TiAlN-Beschichtung verbessert die Oberflächengüte der Bohrung und verlängert die Lebensdauer der Bohrung.



DIN 6537 | MG | h6 | m7 | 140° | P.84

3 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH451110	11.0	12	55	102
DH451111	11.1	12	55	102
DH451112	11.2	12	55	102
DH451113	11.3	12	55	102
DH451114	11.4	12	55	102
DH451115	11.5	12	55	102
DH451116	11.6	12	55	102
DH451117	11.7	12	55	102
DH451118	11.8	12	55	102
DH451119	11.9	12	55	102
DH451120	12.0	12	55	102
DH451125	12.5	14	60	107
DH451130	13.0	14	60	107
DH451135	13.5	14	60	107

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH451140	14.0	14	60	107
DH451145	14.5	16	65	115
DH451150	15.0	16	65	115
DH451155	15.5	16	65	115
DH451160	16.0	16	65	115
DH451165	16.5	18	73	123
DH451170	17.0	18	73	123
DH451175	17.5	18	73	123
DH451180	18.0	18	73	123
DH451185	18.5	20	79	131
DH451190	19.0	20	79	131
DH451195	19.5	20	79	131
DH451200	20.0	20	79	131

- Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○				○	◎	○	○			

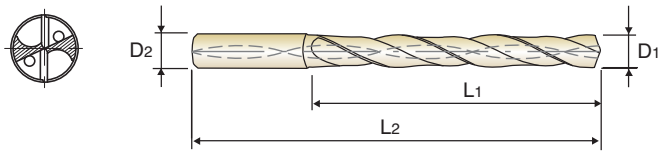
DREAM DRILLS -INOX

DH452 SERIES

CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES — LONG
VOLLHARTMETALL DREAM SPIRALBOHRER - INOX mit KÜHLKANAL — LANG

- The tool has the special flute shape and geometry for suitable machining of stainless steels.
- Excellent chip evacuation due to better surface treatment.
- Point R-thinning makes superior centering and chip curling.
- Applied TiAlN coating achieves the better surface finish of materials to be cut and the longer tool life.

- Der Bohrer hat eine besondere Nutenform, die sich besonders zur Bearbeitung von rostfreiem Stahl eignet.
- Ausgezeichnete Entspanung wegen der besseren Oberflächenqualität.
- Vorzügliche Zentrierung und Spanbruch durch die R-Ausspitzung.
- Modifizierte TiAlN-Beschichtung verbessert die Oberflächengüte der Bohrung und verlängert die Lebensdauer der Bohrung.



DIN 6537 | MG | h6 | m7 | 140° | P.84

5 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH452010	1.0	3	8	55
DH452011	1.1	3	12	55
DH452012	1.2	3	12	55
DH452013	1.3	3	12	55
DH452014	1.4	3	12	55
DH452015	1.5	3	16	55
DH452016	1.6	3	16	55
DH452017	1.7	3	16	55
DH452018	1.8	3	16	55
DH452019	1.9	3	16	55
DH452020	2.0	4	21	57
DH452021	2.1	4	21	57
DH452022	2.2	4	21	57
DH452023	2.3	4	21	57
DH452024	2.4	4	21	57
DH452025	2.5	4	21	57
DH452026	2.6	4	21	57
DH452027	2.7	4	21	57
DH452028	2.8	4	21	57
DH452029	2.9	4	21	57
DH452030	3.0	6	28	66
DH452031	3.1	6	28	66
DH452032	3.2	6	28	66
DH452033	3.3	6	28	66
DH452034	3.4	6	28	66

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH452035	3.5	6	28	66
DH452036	3.6	6	28	66
DH452037	3.7	6	28	66
DH452038	3.8	6	36	74
DH452039	3.9	6	36	74
DH452040	4.0	6	36	74
DH452041	4.1	6	36	74
DH452042	4.2	6	36	74
DH452043	4.3	6	36	74
DH452044	4.4	6	36	74
DH452045	4.5	6	36	74
DH452046	4.6	6	36	74
DH452047	4.7	6	36	74
DH452048	4.8	6	44	82
DH452049	4.9	6	44	82
DH452050	5.0	6	44	82
DH452051	5.1	6	44	82
DH452052	5.2	6	44	82
DH452053	5.3	6	44	82
DH452054	5.4	6	44	82
DH452055	5.5	6	44	82
DH452056	5.6	6	44	82
DH452057	5.7	6	44	82
DH452058	5.8	6	44	82
DH452059	5.9	6	44	82

- Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○				○	◎	○	○			

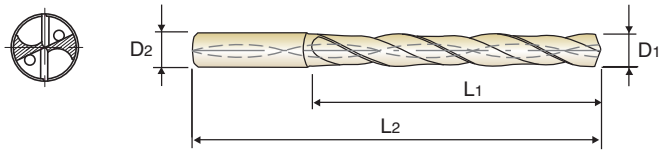
DREAM DRILLS -INOX

DH452 SERIES

CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES — LONG
VOLLHARTMETALL DREAM SPIRALBOHRER - INOX mit KÜHLKANAL — LANG

- The tool has the special flute shape and geometry for suitable machining of stainless steels.
- Excellent chip evacuation due to better surface treatment.
- Point R-thinning makes superior centering and chip curling.
- Applied TiAlN coating achieves the better surface finish of materials to be cut and the longer tool life.

- Der Bohrer hat eine besondere Nutenform, die sich besonders zur Bearbeitung von rostfreiem Stahl eignet.
- Ausgezeichnete Entspanung wegen der besseren Oberflächenqualität.
- Vorzügliche Zentrierung und Spanbruch durch die R-Ausspitzung.
- Modifizierte TiAlN-Beschichtung verbessert die Oberflächengüte der Bohrung und verlängert die Lebensdauer der Bohrung.



DIN 6537 | MG | h6 | m7 | 140° | P.84

5 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length	EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2	TiAlN	D_1	D_2	L_1	L_2
DH452060	6.0	6	44	82	DH452085	8.5	10	61	103
DH452061	6.1	8	53	91	DH452086	8.6	10	61	103
DH452062	6.2	8	53	91	DH452087	8.7	10	61	103
DH452063	6.3	8	53	91	DH452088	8.8	10	61	103
DH452064	6.4	8	53	91	DH452089	8.9	10	61	103
DH452065	6.5	8	53	91	DH452090	9.0	10	61	103
DH452066	6.6	8	53	91	DH452091	9.1	10	61	103
DH452067	6.7	8	53	91	DH452092	9.2	10	61	103
DH452068	6.8	8	53	91	DH452093	9.3	10	61	103
DH452069	6.9	8	53	91	DH452094	9.4	10	61	103
DH452070	7.0	8	53	91	DH452095	9.5	10	61	103
DH452071	7.1	8	53	91	DH452096	9.6	10	61	103
DH452072	7.2	8	53	91	DH452097	9.7	10	61	103
DH452073	7.3	8	53	91	DH452098	9.8	10	61	103
DH452074	7.4	8	53	91	DH452099	9.9	10	61	103
DH452075	7.5	8	53	91	DH452100	10.0	10	61	103
DH452076	7.6	8	53	91	DH452101	10.1	12	71	118
DH452077	7.7	8	53	91	DH452102	10.2	12	71	118
DH452078	7.8	8	53	91	DH452103	10.3	12	71	118
DH452079	7.9	8	53	91	DH452104	10.4	12	71	118
DH452080	8.0	8	53	91	DH452105	10.5	12	71	118
DH452081	8.1	10	61	103	DH452106	10.6	12	71	118
DH452082	8.2	10	61	103	DH452107	10.7	12	71	118
DH452083	8.3	10	61	103	DH452108	10.8	12	71	118
DH452084	8.4	10	61	103	DH452109	10.9	12	71	118

- Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○				○	◎	○	○			

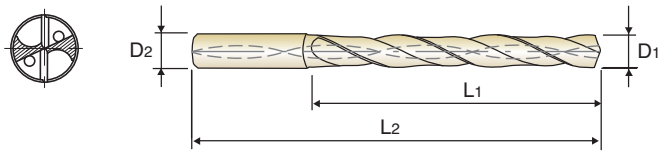
DREAM DRILLS -INOX

DH452 SERIES

CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES — LONG
VOLLHARTMETALL DREAM SPIRALBOHRER - INOX mit KÜHLKANAL — LANG

- The tool has the special flute shape and geometry for suitable machining of stainless steels.
- Excellent chip evacuation due to better surface treatment.
- Point R-thinning makes superior centering and chip curling.
- Applied TiAlN coating achieves the better surface finish of materials to be cut and the longer tool life.

- Der Bohrer hat eine besondere Nutenform, die sich besonders zur Bearbeitung von rostfreiem Stahl eignet.
- Ausgezeichnete Entspanung wegen der besseren Oberflächenqualität.
- Vorzügliche Zentrierung und Spanbruch durch die R-Ausspitzung.
- Modifizierte TiAlN-Beschichtung verbessert die Oberflächengüte der Bohrung und verlängert die Lebensdauer der Bohrung.



DIN 6537 | MG | h6 | m7 | 140° P.84

5 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH452110	11.0	12	71	118
DH452111	11.1	12	71	118
DH452112	11.2	12	71	118
DH452113	11.3	12	71	118
DH452114	11.4	12	71	118
DH452115	11.5	12	71	118
DH452116	11.6	12	71	118
DH452117	11.7	12	71	118
DH452118	11.8	12	71	118
DH452119	11.9	12	71	118
DH452120	12.0	12	71	118
DH452125	12.5	14	77	124
DH452130	13.0	14	77	124
DH452135	13.5	14	77	124

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH452140	14.0	14	77	124
DH452145	14.5	16	83	133
DH452150	15.0	16	83	133
DH452155	15.5	16	83	133
DH452160	16.0	16	83	133
DH452165	16.5	18	93	143
DH452170	17.0	18	93	143
DH452175	17.5	18	93	143
DH452180	18.0	18	93	143
DH452185	18.5	20	101	153
DH452190	19.0	20	101	153
DH452195	19.5	20	101	153
DH452200	20.0	20	101	153

- Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○				○	◎	○	○			

DREAM DRILLS -INOX

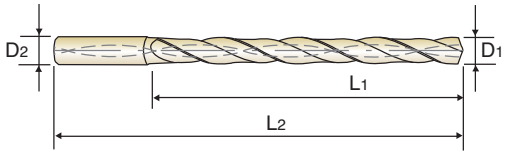
DH453 SERIES

CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES *EXTRA LONG*

VOLLHARTMETALL DREAM SPIRALBOHRER - INOX mit KÜHLKANAL *ÜBERLANG*

- The tool has the special flute shape and geometry for suitable machining of stainless steels.
- Excellent chip evacuation due to better surface treatment.
- Point R-thinning makes superior centering and chip curling.
- Applied TiAlN coating achieves the better surface finish of materials to be cut and the longer tool life.

- Der Bohrer hat eine besondere Nutenform, die sich besonders zur Bearbeitung von rostfreiem Stahl eignet.
- Ausgezeichnete Entspanung wegen der besseren Oberflächenqualität.
- Vorzügliche Zentrierung und Spanbruch durch die R-Ausspitzung.
- Modifizierte TiAlN-Beschichtung verbessert die Oberflächengüte der Bohrung und verlängert die Lebensdauer der Bohrung.



DIN 6537 | MG | h6 | m7 | 140° | P.84

8 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length	EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2	TiAlN	D_1	D_2	L_1	L_2
DH453030	3.0	6	34	72	DH453057	5.7	6	57	95
DH453031	3.1	6	34	72	DH453058	5.8	6	57	95
DH453032	3.2	6	34	72	DH453059	5.9	6	57	95
DH453033	3.3	6	34	72	DH453060	6.0	6	57	95
DH453034	3.4	6	34	72	DH453061	6.1	8	76	114
DH453035	3.5	6	34	72	DH453062	6.2	8	76	114
DH453036	3.6	6	34	72	DH453063	6.3	8	76	114
DH453037	3.7	6	34	72	DH453064	6.4	8	76	114
DH453038	3.8	6	43	81	DH453065	6.5	8	76	114
DH453039	3.9	6	43	81	DH453066	6.6	8	76	114
DH453040	4.0	6	43	81	DH453067	6.7	8	76	114
DH453041	4.1	6	43	81	DH453068	6.8	8	76	114
DH453042	4.2	6	43	81	DH453069	6.9	8	76	114
DH453043	4.3	6	43	81	DH453070	7.0	8	76	114
DH453044	4.4	6	43	81	DH453071	7.1	8	76	114
DH453045	4.5	6	43	81	DH453072	7.2	8	76	114
DH453046	4.6	6	43	81	DH453073	7.3	8	76	114
DH453047	4.7	6	43	81	DH453074	7.4	8	76	114
DH453048	4.8	6	57	95	DH453075	7.5	8	76	114
DH453049	4.9	6	57	95	DH453076	7.6	8	76	114
DH453050	5.0	6	57	95	DH453077	7.7	8	76	114
DH453051	5.1	6	57	95	DH453078	7.8	8	76	114
DH453052	5.2	6	57	95	DH453079	7.9	8	76	114
DH453053	5.3	6	57	95	DH453080	8.0	8	76	114
DH453054	5.4	6	57	95	DH453081	8.1	10	95	142
DH453055	5.5	6	57	95	DH453082	8.2	10	95	142
DH453056	5.6	6	57	95	DH453083	8.3	10	95	142

- Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○				○	◎	○	○			

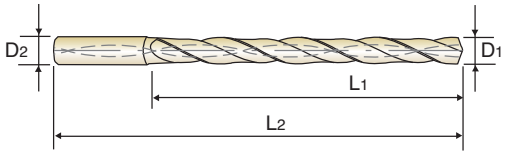
DREAM DRILLS -INOX

DH453 SERIES

CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES *EXTRA LONG*
VOLLHARTMETALL DREAM SPIRALBOHRER - INOX mit KÜHLKANAL *ÜBERLANG*

- The tool has the special flute shape and geometry for suitable machining of stainless steels.
- Excellent chip evacuation due to better surface treatment.
- Point R-thinning makes superior centering and chip curling.
- Applied TiAlN coating achieves the better surface finish of materials to be cut and the longer tool life.

- Der Bohrer hat eine besondere Nutenform, die sich besonders zur Bearbeitung von rostfreiem Stahl eignet.
- Ausgezeichnete Entspanung wegen der besseren Oberflächenqualität.
- Vorzügliche Zentrierung und Spanbruch durch die R-Ausspitzung.
- Modifizierte TiAlN-Beschichtung verbessert die Oberflächengüte der Bohrung und verlängert die Lebensdauer der Bohrung.



DIN 6537 | MG | h6 | m7 | 140° | P.84

8 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH453084	8.4	10	95	142
DH453085	8.5	10	95	142
DH453086	8.6	10	95	142
DH453087	8.7	10	95	142
DH453088	8.8	10	95	142
DH453089	8.9	10	95	142
DH453090	9.0	10	95	142
DH453091	9.1	10	95	142
DH453092	9.2	10	95	142
DH453093	9.3	10	95	142
DH453094	9.4	10	95	142
DH453095	9.5	10	95	142
DH453096	9.6	10	95	142
DH453097	9.7	10	95	142
DH453098	9.8	10	95	142
DH453099	9.9	10	95	142
DH453100	10.0	10	95	142
DH453101	10.1	12	114	162
DH453102	10.2	12	114	162
DH453103	10.3	12	114	162
DH453104	10.4	12	114	162

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH453105	10.5	12	114	162
DH453106	10.6	12	114	162
DH453107	10.7	12	114	162
DH453108	10.8	12	114	162
DH453109	10.9	12	114	162
DH453110	11.0	12	114	162
DH453111	11.1	12	114	162
DH453112	11.2	12	114	162
DH453113	11.3	12	114	162
DH453114	11.4	12	114	162
DH453115	11.5	12	114	162
DH453116	11.6	12	114	162
DH453117	11.7	12	114	162
DH453118	11.8	12	114	162
DH453119	11.9	12	114	162
DH453120	12.0	12	114	162
DH453125	12.5	14	133	178
DH453130	13.0	14	133	178
DH453135	13.5	14	133	178
DH453140	14.0	14	133	178

- Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○				○	◎	○	○			

DREAM DRILLS -INOX

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES, TiAlN COATED
VOLLHARTMETALL DREAM BOHRER - INOX mit KÜHLKANAL, TiAlN-BESCHICHTET

DH451, DH452, DH453 SERIES

WORK MATERIAL	STAINLESS STEELS		STAINLESS STEELS		ALUMINUM		ALUMINUM		TITANIUM Ti ALLOYS		CARBON STEELS ALLOY STEELS		NON FRERROUS	
STRENGTH	< 800 N/mm²		> 800 N/mm²		< 10% Si		> 10% Si							
DRILLING SPEED	60 ~ 70 m/min		35 ~ 45 m/min		200 ~ 220 m/min		155 ~ 175 m/min		40 ~ 50 m/min		105 ~ 125 m/min		130 ~ 150 m/min	
DIAMETER	N	S	N	S	N	S	N	S	N	S	N	S	N	S
1.0	12000	0.02	6200	0.02	48000	0.04	38000	0.03	8100	0.01	26000	0.02	38000	0.02
1.5	9000	0.03	5400	0.02	43000	0.05	32000	0.04	7500	0.01	18000	0.03	25500	0.03
2.5	7000	0.04	4200	0.03	25500	0.08	19500	0.06	4500	0.02	10800	0.05	15500	0.05
3.0	7400	0.04	4700	0.02	23000	0.12	18500	0.10	5300	0.03	13000	0.04	16000	0.08
4.0	5600	0.05	3600	0.03	17500	0.18	13900	0.15	4000	0.04	10000	0.05	11900	0.10
5.0	4400	0.05	2800	0.03	14000	0.20	11000	0.18	3200	0.05	8000	0.05	9500	0.12
6.0	3700	0.06	2400	0.04	11700	0.25	9300	0.25	2650	0.06	6600	0.06	8000	0.15
8.0	2800	0.08	1800	0.06	8800	0.30	7000	0.30	2000	0.07	5000	0.08	6000	0.18
10.0	2200	0.10	1400	0.08	7000	0.40	5600	0.35	1600	0.08	4000	0.10	4800	0.22
12.0	1900	0.12	1200	0.10	5800	0.50	4600	0.40	1300	0.10	3300	0.12	4000	0.26
14.0	1600	0.15	1000	0.12	5000	0.60	4000	0.50	1100	0.12	2800	0.15	3400	0.30
16.0	1400	0.20	900	0.15	4380	0.80	3500	0.60	1000	0.14	2500	0.20	3000	0.40
18.0	1250	0.22	800	0.17	3900	1.00	3100	0.70	900	0.16	2200	0.22	2650	0.45
20.0	1120	0.24	720	0.19	3500	1.20	2800	0.80	800	0.18	2000	0.24	2400	0.50

▶ Recommend to reduce the feed rate as following

N = R.P.M
S = Feed per Revolution (mm/rev.)

Feed 100% : DH451(3xD), DH452(5XD)
Feed 85% : DH453(8xD)

CARBIDE

Being the best through innovation

DREAM DRILLS -ALU

DREAM DRILLS - ALU

- with Coolant Holes
  For Drilling Aluminum & Aluminum Alloys
- Mit Kühlkanälen
  Zum Bohren von Aluminium und Aluminium-Legiegungen

SOLID CARBIDE DREAM DRILLS - ALU (with Coolant Holes)
For Drilling Aluminum & Aluminum Alloys

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
3XD D5432		CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES *SHORT* VOLLHARTMETALL DREAM SPIRALBOHRER - ALU mit KÜHLKANAL *KURZ*	D3.0	D20.0	88
5XD D5433		CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES *LONG* VOLLHARTMETALL DREAM SPIRALBOHRER - ALU mit KÜHLKANAL *LANG*	D3.0	D20.0	90
8XD D5434		CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES *EXTRA LONG* VOLLHARTMETALL DREAM SPIRALBOHRER - ALU mit KÜHLKANAL *ÜBERLANG*	D3.0	D14.0	92
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			94

◎ : Excellent
○ : Good

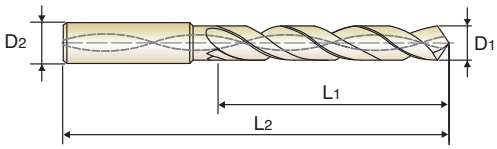
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
						◎						
						◎						
						◎						

DREAM DRILLS -ALU

D5432 SERIES

CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES — *SHORT*
VOLLHARTMETALL DREAM SPIRALBOHRER - ALU mit KÜHLKANAL — *KURZ*

- Good chip treatment due to flute geometry & chip space
- Better finish & built-up edge preventive
- Bessere Entspanung durch eine angepasste Spannut-Geometrie & großem Span-Volumen
- Verbesserte Schliffgüte & Schneidkanten-Präparation



DIN 6537 | MG | h6 | m7 | 118° P.94

3 × D

Unit : mm

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
D5432030	3.0	6	20	62
D5432031	3.1	6	20	62
D5432032	3.2	6	20	62
D5432033	3.3	6	20	62
D5432034	3.4	6	20	62
D5432035	3.5	6	20	62
D5432036	3.6	6	20	62
D5432037	3.7	6	20	62
D5432038	3.8	6	24	66
D5432039	3.9	6	24	66
D5432040	4.0	6	24	66
D5432041	4.1	6	24	66
D5432042	4.2	6	24	66
D5432043	4.3	6	24	66
D5432044	4.4	6	24	66
D5432045	4.5	6	24	66
D5432046	4.6	6	24	66
D5432047	4.7	6	24	66
D5432048	4.8	6	28	66
D5432049	4.9	6	28	66
D5432050	5.0	6	28	66
D5432051	5.1	6	28	66
D5432052	5.2	6	28	66
D5432053	5.3	6	28	66
D5432054	5.4	6	28	66
D5432055	5.5	6	28	66
D5432056	5.6	6	28	66

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
D5432057	5.7	6	28	66
D5432058	5.8	6	28	66
D5432059	5.9	6	28	66
D5432060	6.0	6	28	66
D5432061	6.1	8	34	79
D5432062	6.2	8	34	79
D5432063	6.3	8	34	79
D5432064	6.4	8	34	79
D5432065	6.5	8	34	79
D5432066	6.6	8	34	79
D5432067	6.7	8	34	79
D5432068	6.8	8	34	79
D5432069	6.9	8	34	79
D5432070	7.0	8	34	79
D5432071	7.1	8	41	79
D5432072	7.2	8	41	79
D5432073	7.3	8	41	79
D5432074	7.4	8	41	79
D5432075	7.5	8	41	79
D5432076	7.6	8	41	79
D5432077	7.7	8	41	79
D5432078	7.8	8	41	79
D5432079	7.9	8	41	79
D5432080	8.0	8	41	79
D5432081	8.1	10	47	89
D5432082	8.2	10	47	89
D5432083	8.3	10	47	89

- DLC coating is available on your request.
- Other shank types are available on your request.

◎ : Excellent ○ : Good

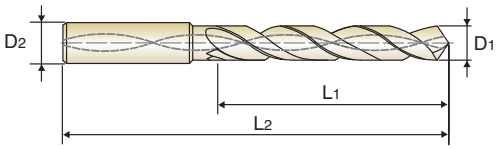
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
						◎						

DREAM DRILLS -ALU

D5432 SERIES

CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES — SHORT
VOLLHARTMETALL DREAM SPIRALBOHRER - ALU mit KÜHLKANAL — KURZ

- ▶ Good chip treatment due to flute geometry & chip space
- ▶ Better finish & built-up edge preventive
- ▶ Bessere Entspanung durch eine angepasste Spannut-Geometrie & großem Span-Volumen
- ▶ Verbesserte Schliffgüte & Schneidkanten-Präparation



DIN 6537 | MG | h6 | m7 | 118° | P.94

3 × D

Unit : mm

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
D5432084	8.4	10	47	89
D5432085	8.5	10	47	89
D5432086	8.6	10	47	89
D5432087	8.7	10	47	89
D5432088	8.8	10	47	89
D5432089	8.9	10	47	89
D5432090	9.0	10	47	89
D5432091	9.1	10	47	89
D5432092	9.2	10	47	89
D5432093	9.3	10	47	89
D5432094	9.4	10	47	89
D5432095	9.5	10	47	89
D5432096	9.6	10	47	89
D5432097	9.7	10	47	89
D5432098	9.8	10	47	89
D5432099	9.9	10	47	89
D5432100	10.0	10	47	89
D5432101	10.1	12	55	102
D5432102	10.2	12	55	102
D5432103	10.3	12	55	102
D5432104	10.4	12	55	102
D5432105	10.5	12	55	102
D5432106	10.6	12	55	102
D5432107	10.7	12	55	102
D5432108	10.8	12	55	102
D5432109	10.9	12	55	102
D5432110	11.0	12	55	102

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
D5432111	11.1	12	55	102
D5432112	11.2	12	55	102
D5432113	11.3	12	55	102
D5432114	11.4	12	55	102
D5432115	11.5	12	55	102
D5432116	11.6	12	55	102
D5432117	11.7	12	55	102
D5432118	11.8	12	55	102
D5432119	11.9	12	55	102
D5432120	12.0	12	55	102
D5432125	12.5	14	60	107
D5432130	13.0	14	60	107
D5432135	13.5	14	60	107
D5432140	14.0	14	60	107
D5432145	14.5	16	65	115
D5432150	15.0	16	65	115
D5432155	15.5	16	65	115
D5432160	16.0	16	65	115
D5432165	16.5	18	73	123
D5432170	17.0	18	73	123
D5432175	17.5	18	73	123
D5432180	18.0	18	73	123
D5432185	18.5	20	79	131
D5432190	19.0	20	79	131
D5432195	19.5	20	79	131
D5432200	20.0	20	79	131

- ▶ DLC coating is available on your request.
- ▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

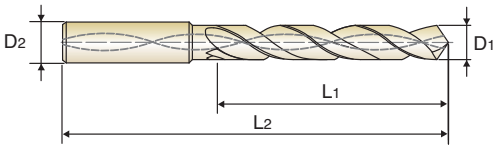
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
						◎						

DREAM DRILLS -ALU

D5433 SERIES

CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES — LONG
VOLLHARTMETALL DREAM SPIRALBOHRER - ALU mit KÜHLKANAL — LANG

- Good chip treatment due to flute geometry & chip space
- Better finish & built-up edge preventive
- Bessere Entspanung durch eine angepasste Spannut-Geometrie & großem Span-Volumen
- Verbesserte Schliffgüte & Schneidkanten-Präparation



DIN 6537 | MG | h6 | m7 | 118° | P.94

5 × D

Unit : mm

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
D5433030	3.0	6	28	66
D5433031	3.1	6	28	66
D5433032	3.2	6	28	66
D5433033	3.3	6	28	66
D5433034	3.4	6	28	66
D5433035	3.5	6	28	66
D5433036	3.6	6	28	66
D5433037	3.7	6	28	66
D5433038	3.8	6	36	74
D5433039	3.9	6	36	74
D5433040	4.0	6	36	74
D5433041	4.1	6	36	74
D5433042	4.2	6	36	74
D5433043	4.3	6	36	74
D5433044	4.4	6	36	74
D5433045	4.5	6	36	74
D5433046	4.6	6	36	74
D5433047	4.7	6	36	74
D5433048	4.8	6	44	82
D5433049	4.9	6	44	82
D5433050	5.0	6	44	82
D5433051	5.1	6	44	82
D5433052	5.2	6	44	82
D5433053	5.3	6	44	82
D5433054	5.4	6	44	82
D5433055	5.5	6	44	82
D5433056	5.6	6	44	82

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
D5433057	5.7	6	44	82
D5433058	5.8	6	44	82
D5433059	5.9	6	44	82
D5433060	6.0	6	44	82
D5433061	6.1	8	53	91
D5433062	6.2	8	53	91
D5433063	6.3	8	53	91
D5433064	6.4	8	53	91
D5433065	6.5	8	53	91
D5433066	6.6	8	53	91
D5433067	6.7	8	53	91
D5433068	6.8	8	53	91
D5433069	6.9	8	53	91
D5433070	7.0	8	53	91
D5433071	7.1	8	53	91
D5433072	7.2	8	53	91
D5433073	7.3	8	53	91
D5433074	7.4	8	53	91
D5433075	7.5	8	53	91
D5433076	7.6	8	53	91
D5433077	7.7	8	53	91
D5433078	7.8	8	53	91
D5433079	7.9	8	53	91
D5433080	8.0	8	53	91
D5433081	8.1	10	61	103
D5433082	8.2	10	61	103
D5433083	8.3	10	61	103

- DLC coating is available on your request.
- Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
						◎						

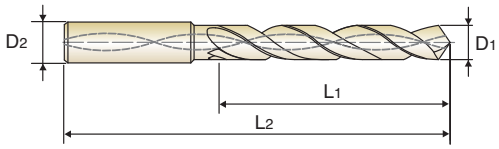
DREAM DRILLS -ALU

D5433 SERIES

CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES — LONG
VOLLHARTMETALL DREAM SPIRALBOHRER - ALU mit KÜHLKANAL — LANG

- ▶ Good chip treatment due to flute geometry & chip space
- ▶ Better finish & built-up edge preventive

- ▶ Bessere Entspanung durch eine angepasste Spannut-Geometrie & großem Span-Volumen
- ▶ Verbesserte Schliffgüte & Schneidkanten-Präparation



DIN 6537 | MG | h6 | m7 | 118° | P.94

5 × D

Unit : mm

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
D5433084	8.4	10	61	103
D5433085	8.5	10	61	103
D5433086	8.6	10	61	103
D5433087	8.7	10	61	103
D5433088	8.8	10	61	103
D5433089	8.9	10	61	103
D5433090	9.0	10	61	103
D5433091	9.1	10	61	103
D5433092	9.2	10	61	103
D5433093	9.3	10	61	103
D5433094	9.4	10	61	103
D5433095	9.5	10	61	103
D5433096	9.6	10	61	103
D5433097	9.7	10	61	103
D5433098	9.8	10	61	103
D5433099	9.9	10	61	103
D5433100	10.0	10	61	103
D5433101	10.1	12	71	118
D5433102	10.2	12	71	118
D5433103	10.3	12	71	118
D5433104	10.4	12	71	118
D5433105	10.5	12	71	118
D5433106	10.6	12	71	118
D5433107	10.7	12	71	118
D5433108	10.8	12	71	118
D5433109	10.9	12	71	118
D5433110	11.0	12	71	118

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
D5433111	11.1	12	71	118
D5433112	11.2	12	71	118
D5433113	11.3	12	71	118
D5433114	11.4	12	71	118
D5433115	11.5	12	71	118
D5433116	11.6	12	71	118
D5433117	11.7	12	71	118
D5433118	11.8	12	71	118
D5433119	11.9	12	71	118
D5433120	12.0	12	71	118
D5433125	12.5	14	77	124
D5433130	13.0	14	77	124
D5433135	13.5	14	77	124
D5433140	14.0	14	77	124
D5433145	14.5	16	83	133
D5433150	15.0	16	83	133
D5433155	15.5	16	83	133
D5433160	16.0	16	83	133
D5433165	16.5	18	93	143
D5433170	17.0	18	93	143
D5433175	17.5	18	93	143
D5433180	18.0	18	93	143
D5433185	18.5	20	101	153
D5433190	19.0	20	101	153
D5433195	19.5	20	101	153
D5433200	20.0	20	101	153

- ▶ DLC coating is available on your request.
- ▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
						◎						

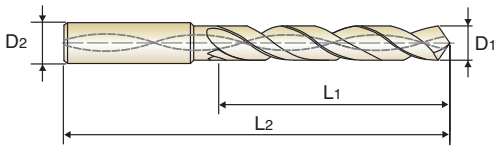
DREAM DRILLS -ALU

D5434 SERIES

CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES *EXTRA LONG*
VOLLHARTMETALL DREAM SPIRALBOHRER - ALU mit KÜHLKANAL *ÜBERLANG*

- Good chip treatment due to flute geometry & chip space
- Better finish & built-up edge preventive

- Bessere Entspanung durch eine angepasste Spannut-Geometrie & großem Span-Volumen
- Verbesserte Schliffgüte & Schneidkanten-Präparation



DIN 6537 | MG | h6 | m7 | 118° | P.94

8 × D

Unit : mm

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
D5434030	3.0	6	34	72
D5434031	3.1	6	34	72
D5434032	3.2	6	34	72
D5434033	3.3	6	34	72
D5434034	3.4	6	34	72
D5434035	3.5	6	34	72
D5434036	3.6	6	34	72
D5434037	3.7	6	34	72
D5434038	3.8	6	43	81
D5434039	3.9	6	43	81
D5434040	4.0	6	43	81
D5434041	4.1	6	43	81
D5434042	4.2	6	43	81
D5434043	4.3	6	43	81
D5434044	4.4	6	43	81
D5434045	4.5	6	43	81
D5434046	4.6	6	43	81
D5434047	4.7	6	43	81
D5434048	4.8	6	57	95
D5434049	4.9	6	57	95
D5434050	5.0	6	57	95
D5434051	5.1	6	57	95
D5434052	5.2	6	57	95
D5434053	5.3	6	57	95
D5434054	5.4	6	57	95
D5434055	5.5	6	57	95
D5434056	5.6	6	57	95

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
D5434057	5.7	6	57	95
D5434058	5.8	6	57	95
D5434059	5.9	6	57	95
D5434060	6.0	6	57	95
D5434061	6.1	8	76	114
D5434062	6.2	8	76	114
D5434063	6.3	8	76	114
D5434064	6.4	8	76	114
D5434065	6.5	8	76	114
D5434066	6.6	8	76	114
D5434067	6.7	8	76	114
D5434068	6.8	8	76	114
D5434069	6.9	8	76	114
D5434070	7.0	8	76	114
D5434071	7.1	8	76	114
D5434072	7.2	8	76	114
D5434073	7.3	8	76	114
D5434074	7.4	8	76	114
D5434075	7.5	8	76	114
D5434076	7.6	8	76	114
D5434077	7.7	8	76	114
D5434078	7.8	8	76	114
D5434079	7.9	8	76	114
D5434080	8.0	8	76	114
D5434081	8.1	10	95	142
D5434082	8.2	10	95	142
D5434083	8.3	10	95	142

- DLC coating is available on your request.
- Other shank types are available on your request.

◎ : Excellent ○ : Good

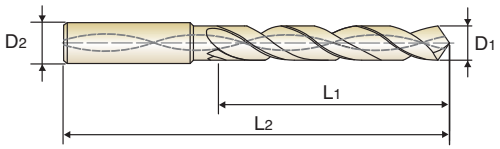
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
						◎						

DREAM DRILLS -ALU

D5434 SERIES

CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES — EXTRA LONG
VOLLHARTMETALL DREAM SPIRALBOHRER - ALU mit KÜHLKANAL — ÜBERLANG

- Good chip treatment due to flute geometry & chip space
- Better finish & built-up edge preventive
- Bessere Entspanung durch eine angepasste Spannut-Geometrie & großem Span-Volumen
- Verbesserte Schliffgüte & Schneidkanten-Präparation



DIN 6537 | MG | h6 | m7 | 118° | P.94

8 × D

Unit : mm

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
D5434084	8.4	10	95	142
D5434085	8.5	10	95	142
D5434086	8.6	10	95	142
D5434087	8.7	10	95	142
D5434088	8.8	10	95	142
D5434089	8.9	10	95	142
D5434090	9.0	10	95	142
D5434091	9.1	10	95	142
D5434092	9.2	10	95	142
D5434093	9.3	10	95	142
D5434094	9.4	10	95	142
D5434095	9.5	10	95	142
D5434096	9.6	10	95	142
D5434097	9.7	10	95	142
D5434098	9.8	10	95	142
D5434099	9.9	10	95	142
D5434100	10.0	10	95	142
D5434101	10.1	12	114	162
D5434102	10.2	12	114	162
D5434103	10.3	12	114	162
D5434104	10.4	12	114	162

EDP No.	Drill Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
D5434105	10.5	12	114	162
D5434106	10.6	12	114	162
D5434107	10.7	12	114	162
D5434108	10.8	12	114	162
D5434109	10.9	12	114	162
D5434110	11.0	12	114	162
D5434111	11.1	12	114	162
D5434112	11.2	12	114	162
D5434113	11.3	12	114	162
D5434114	11.4	12	114	162
D5434115	11.5	12	114	162
D5434116	11.6	12	114	162
D5434117	11.7	12	114	162
D5434118	11.8	12	114	162
D5434119	11.9	12	114	162
D5434120	12.0	12	114	162
D5434125	12.5	14	133	178
D5434130	13.0	14	133	178
D5434135	13.5	14	133	178
D5434140	14.0	14	133	178

- DLC coating is available on your request.
- Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
						◎						

DREAM DRILLS -ALU

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES
VOLLHARTMETALL DREAM BOHRER - ALU mit KÜHLKANAL

D5432, D5433, D5434 SERIES

WORK MATERIAL	Aluminium Alloy Casting Aluminium Die Casting			Wrought Aluminium Alloy		
DIAMETER	RPM(MIN^{-1})	Speed(m/min)	Feed(mm/rev)	RPM(MIN^{-1})	Speed(m/min)	Feed(mm/rev)
Ø3.0 ~ Ø6.0	8,000~15,000	80~150	0.2~0.5	8,000~15,000	80~150	0.15~0.3
~ Ø10.0	6,000~10,500	100~200	0.3~1.0	6,000~10,500	100~200	0.2~0.4
~ Ø14.0	4,500~5,800	150~250	0.3~1.0	4,500~5,800	150~250	0.2~0.4
~ Ø20.0	3,200~4,600	150~200	0.3~1.0	3,200~4,600	150~200	0.2~0.4

CARBIDE

Being the best through innovation

DREAM DRILLS -CFRP

DREAM DRILLS – CFK

- For composite materials including CFRP, GFRP
- Für Verbund Materialien einschl. CFK und GFK

SOLID CARBIDE DREAM DRILLS - CFRP
For composite materials including CFRP, GFRP

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
DI473		CARBIDE, DREAM DRILLS - CFRP VOLLHARTMETALL DREAM SPIRALBOHRER - CFK	D2.5	D12.0	98

◎ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
												◎

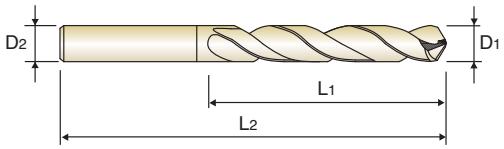
DREAM DRILLS -CFRP

DI473 SERIES

CARBIDE, DREAM DRILLS - CFRP
VOLLHARTMETALL DREAM SPIRALBOHRER - CFK

- Special Point Type improve hole quality for Composite Material
  -> Minimized Burr and Delamination at Entry / Exit Hole.
- Outstanding Performance
- Long Tool Life and Increased product by Diamond Coating.

- Spezielle Spitzengeometrie zur Verbesserung der Bohrungsqualität bei Composite-Materialien
  -> Minimiert die Grat-Bildung beim Bohrungs Ein- und Austritt
- Überzeugende Schnittdaten
- Lange Standzeiten und erhöhte Produktivität durch Diamant-Beschichtung



DIN 6537 | MG | h6 | m7 | 118°

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
DIAMOND COATED	D_1	D_2	L_1	L_2
DI473025	2.5	6	24	66
DI473030	3.0	6	28	66
DI473040	4.0	6	36	74
DI473050	5.0	6	44	82
DI473060	6.0	6	44	82
DI473080	8.0	8	53	91
DI473090	9.0	10	61	103
DI473100	10.0	10	61	103
DI473110	11.0	12	71	118
DI473120	12.0	12	71	118

CUTTING CONDITIONS

Speed (m/min)	RPM	Feed (mm/rev)
100 ~ 150	12,700 ~ 19,000	0.03 ~ 0.07
	10,600 ~ 15,900	
	8,000 ~ 11,900	
	6,370 ~ 9,500	
	5,300 ~ 8,000	
	4,000 ~ 6,000	
	3,500 ~ 5,300	
	3,200 ~ 4,700	
	2,900 ~ 4,300	
	2,700 ~ 3,900	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
												◎

CARBIDE

Being the best through innovation

DREAM DRILLS -MQL TYPE

DREAM DRILLS - MQL TYPE

- **WITH COOLANT HOLES**
  Minimum Quantity Lubrication. Drilling Deep Holes, 10×D ~ 30×D
- **Mit Kühlkanälen**
  Minimalmengenschmierung. Tiefloch 10×D, 15×D, 20×D, 25×D und 30×D

SOLID CARBIDE DREAM DRILLS - MQL TYPE (with Coolant Holes)

Minimum Quantity Lubrication. Drilling Deep Holes, 10×D ~ 30×D

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
10XD **DH510**		CARBIDE, DREAM DRILLS MQL TYPE with COOLANT HOLES *EXTRA LONG* VOLLHARTMETALL DREAM SPIRALBOHRER MQL - TYPE mit KÜHLKANAL *ÜBERLANG*	D3.0	D14.0	**102**
15XD **DH515**		CARBIDE, DREAM DRILLS MQL TYPE with COOLANT HOLES *EXTRA LONG* VOLLHARTMETALL DREAM SPIRALBOHRER MQL - TYPE mit KÜHLKANAL *ÜBERLANG*	D3.0	D12.0	**103**
20XD **DH520**		CARBIDE, DREAM DRILLS MQL TYPE with COOLANT HOLES *EXTRA LONG* VOLLHARTMETALL DREAM SPIRALBOHRER MQL - TYPE mit KÜHLKANAL *ÜBERLANG*	D3.0	D12.0	**103**
10XD **DHM10**		CARBIDE, DREAM DRILLS MQL TYPE END MILL SHANK with COOLANT HOLES *EXTRA LONG* VOLLHARTMETALL DREAM SPIRALBOHRER MQL - TYPE mit KÜHLKANAL in GERADZAHLIGER SCHAFTAUSFÜHRUNG *ÜBERLANG*	D3.0	D14.0	**104**
15XD **DHM15**		CARBIDE, DREAM DRILLS MQL TYPE END MILL SHANK with COOLANT HOLES *EXTRA LONG* VOLLHARTMETALL DREAM SPIRALBOHRER MQL - TYPE mit KÜHLKANAL in GERADZAHLIGER SCHAFTAUSFÜHRUNG *ÜBERLANG*	D3.0	D12.0	**104**
20XD **DHM20**		CARBIDE, DREAM DRILLS MQL TYPE END MILL SHANK with COOLANT HOLES *EXTRA LONG* VOLLHARTMETALL DREAM SPIRALBOHRER MQL - TYPE mit KÜHLKANAL in GERADZAHLIGER SCHAFTAUSFÜHRUNG *ÜBERLANG*	D3.0	D12.0	**104**
25XD **DHM25**		CARBIDE, DREAM DRILLS MQL TYPE END MILL SHANK with COOLANT HOLES *EXTRA LONG* VOLLHARTMETALL DREAM SPIRALBOHRER MQL - TYPE mit KÜHLKANAL in GERADZAHLIGER SCHAFTAUSFÜHRUNG *ÜBERLANG*	D3.0	D10.0	**105**
30XD **DHM30**		CARBIDE, DREAM DRILLS MQL TYPE END MILL SHANK with COOLANT HOLES *EXTRA LONG* VOLLHARTMETALL DREAM SPIRALBOHRER MQL - TYPE mit KÜHLKANAL in GERADZAHLIGER SCHAFTAUSFÜHRUNG *ÜBERLANG*	D3.0	D8.0	**105**
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			**106**

◎ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○			○				○			
◎	◎	○			○				○			
◎	◎	○			○				○			
◎	◎	○			○				○			
◎	◎	○			○				○			
◎	◎	○			○				○			
◎	◎	○			○				○			
◎	◎	○			○				○			

DREAM DRILLS -MQL TYPE

DH510 SERIES

CARBIDE, DREAM DRILLS MQL TYPE with COOLANT HOLES *EXTRA LONG*

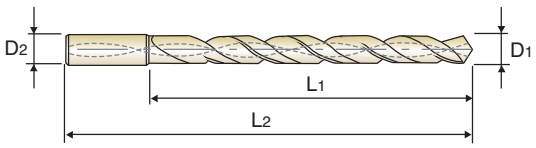
VOLLHARTMETALL DREAM SPIRALBOHRER MQL - TYPE mit KÜHLKANAL in GERADZAHLIGER SCHAFTAUSFÜHRUNG *ÜBERLANG*

▶ **Application** : Drilling steels in general, cast steels, cast iron, non-ferrous heavy metals, non-ferrous light metals.

▶ **Advantage** : Non step drilling up to 10 times of drill diameter.
Available for processing MQL(Minimum Quantity Lubrication).
Excellent positioning
- Bush is not necessary.
Special design
- Good chip removal
Powerful drilling

▶ **Verwendung** : Zum wirtschaftlichen Bohren von Stahl allgemein, Hart-und Temperguß, Nichteisen Leichtmetallen.

▶ **Vorteile** : Bohren bis zu 10 x D ohne abzusetzen,
Geeignet für MQL (minimale Kühlschmierung)
Selbstzentrierend
- Keine vorherige Zentrierung notwendig
Kein Verlaufen
- Keine Bohrbuchse notwendig
Spezielle Bohrergeometrie
- Gute Spanabfuhr
Hochleistungsbohren



MG | N ≈ 30° | h6 | h7 | 140° | P.106

10 × D

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length	EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2	TiAlN	D_1	D_2	L_1	L_2
DH510030	**3.0**	3	39	90	**DH510080**	**8.0**	8	104	161
DH510033	**3.3**	4	46	97	**DH510085**	**8.5**	9	111	169
DH510035	**3.5**	4	46	97	**DH510090**	**9.0**	9	117	175
DH510040	**4.0**	4	52	103	**DH510095**	**9.5**	10	124	182
DH510042	**4.2**	5	59	112	**DH510100**	**10.0**	10	130	188
DH510045	**4.5**	5	59	112	**DH510105**	**10.5**	11	137	201
DH510050	**5.0**	5	65	118	**DH510110**	**11.0**	11	143	207
DH510055	**5.5**	6	72	127	**DH510115**	**11.5**	12	150	215
DH510060	**6.0**	6	78	133	**DH510120**	**12.0**	12	156	221
DH510065	**6.5**	7	85	141	**DH510125**	**12.5**	13	163	229
DH510068	**6.8**	7	91	147	**DH510130**	**13.0**	13	169	235
DH510070	**7.0**	7	91	147	**DH510135**	**13.5**	14	176	243
DH510075	**7.5**	8	98	155	**DH510140**	**14.0**	14	182	249

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○			○				○			

DREAM DRILLS -MQL TYPE

DH515 SERIES
DH520 SERIES

CARBIDE, DREAM DRILLS MQL TYPE with COOLANT HOLES *EXTRA LONG*

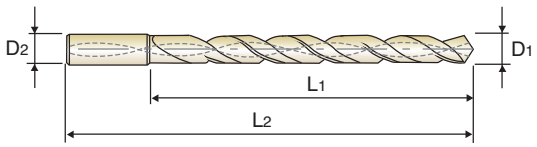
VOLLHARTMETALL DREAM SPIRALBOHRER MQL - TYPE mit KÜHLKANAL in GERADZAHLIGER SCHAFTAUSFÜHRUNG *ÜBERLANG*

▶ **Application** : Drilling steels in general, cast steels, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metals, non-ferrous light metals, abrasive plastics.

▶ **Advantage** : Non step drilling up to 15 times (20 times) of drill diameter.
Available for processing MQL(Minimum Quantity Lubrication).
Excellent positioning
- Bush is not necessary.
Special design
- Good chip removal
Powerful drilling

▶ **Verwendung** : Zum wirtschaftlichen Bohren von Stahl allgemein, Stahlguß, Hart-und Temperguß, Nichteisen Leichtmetallen, abrasiven Kunststoffen.

▶ **Vorteile** : Bohren bis zu 15 x D(20 x D) ohne abzusetzen, Geeignet für MQL (minimale Kühlschmierung)
Selbstzentrierend
- Keine vorherige Zentrierung notwendig
Kein Verlaufen
- Keine Bohrbuchse notwendig
Spezielle Bohrergeometrie
- Gute Spanabfuhr
Hochleistungsbohren



MG | N 30° | h6 | h7 | 140° | P.106

15 × D (DH515) | 20 × D (DH520)

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH515030	3.0	3	54	105
DH515035	3.5	4	63	114
DH515040	4.0	4	72	123
DH515045	4.5	5	81	134
DH515050	5.0	5	90	143
DH515055	5.5	6	99	154
DH515060	6.0	6	108	163
DH515070	7.0	7	126	182
DH515080	8.0	8	144	201
DH515090	9.0	9	162	220
DH515100	10.0	10	180	238
DH515110	11.0	11	198	262
DH515120	12.0	12	216	281

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH520030	3.0	3	69	120
DH520035	3.5	4	81	132
DH520040	4.0	4	92	143
DH520045	4.5	5	104	157
DH520050	5.0	5	115	168
DH520055	5.5	6	127	182
DH520060	6.0	6	138	193
DH520070	7.0	7	161	217
DH520080	8.0	8	184	241
DH520090	9.0	9	207	265
DH520100	10.0	10	230	288
DH520120	12.0	12	276	341

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○			○				○			

DREAM DRILLS -MQL TYPE

DHM15 SERIES
DHM10 SERIES
DHM20 SERIES

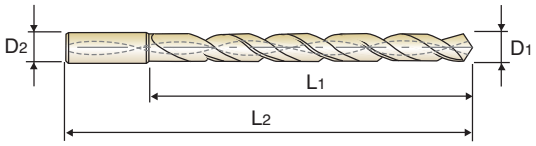
CARBIDE, DREAM DRILL MQL TYPE END MILL SHANK with COOLANT HOLE *EXTRA LONG*
VOLLHARTMETALL DREAM SPIRALBOHRER MQL - TYPE mit KÜHLKANAL *ÜBERLANG*

▶ **Application** : Drilling steels in general, cast steels, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metals, non-ferrous light metals, abrasive plastics.

▶ **Advantage** : Non step drilling up to 10 times of drill diameter.
Available for processing MQL(Minimum Quantity Lubrication).
Excellent positioning
- Bush is not necessary.
Special design
- Good chip removal
Powerful drilling

▶ **Verwendung** : Zum wirtschaftlichen Bohren von Stahl allgemein, Stahlguß, Hart-und Temperguß, Nichteisen Leichtmetallen, abrasiven Kunststoffen.

▶ **Vorteile** : Bohren bis zu 10 x D ohne abzusetzen,
Geeignet für MQL (minimale Kühlschmierung)
Selbstzentrierend
- Keine vorherige Zentrierung notwendig
Kein Verlaufen
- Keine Bohrbuchse notwendig
Spezielle Bohrergeometrie
- Gute Spanabfuhr
Hochleistungsbohren



MG | N ≈ 30° | h6 | h7 | 140° | P.106

10 × D (DHM10) | 15 × D (DHM15) | 20 × D (DHM15)

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DHM10030	3.0	6	40	80
DHM10033	3.3	6	47	87
DHM10035	3.5	6	47	87
DHM10040	4.0	6	53	93
DHM10042	4.2	6	60	100
DHM10045	4.5	6	60	100
DHM10050	5.0	6	66	106
DHM10055	5.5	6	73	113
DHM10060	6.0	6	79	119
DHM10065	6.5	8	86	126
DHM10068	6.8	8	92	132
DHM10075	7.5	8	99	139
DHM10080	8.0	8	105	145
DHM10085	8.5	10	112	156
DHM10090	9.0	10	118	162
DHM10095	9.5	10	126	170
DHM10100	10.0	10	132	176
DHM10105	10.5	12	139	188
DHM10110	11.0	12	145	194
DHM10115	11.5	12	152	201
DHM10120	12.0	12	158	207
DHM10125	12.5	14	165	214
DHM10130	13.0	14	171	220
DHM10135	13.5	14	178	227
DHM10140	14.0	14	184	233

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DHM15030	3.0	6	55	95
DHM15035	3.5	6	64	104
DHM15040	4.0	6	73	113
DHM15045	4.5	6	82	122
DHM15050	5.0	6	91	131
DHM15055	5.5	6	100	140
DHM15060	6.0	6	109	149
DHM15070	7.0	8	127	167
DHM15080	8.0	8	145	185
DHM15090	9.0	10	163	207
DHM15100	10.0	10	182	226
DHM15110	11.0	12	200	249
DHM15120	12.0	12	218	267

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DHM20030	3.0	6	70	110
DHM20035	3.5	6	82	122
DHM20040	4.0	6	93	133
DHM20045	4.5	6	105	145
DHM20050	5.0	6	116	156
DHM20055	5.5	6	128	168
DHM20060	6.0	6	139	179
DHM20070	7.0	8	162	202
DHM20080	8.0	8	185	225
DHM20090	9.0	10	208	252
DHM20100	10.0	10	232	276
DHM20110	11.0	12	255	304
DHM20120	12.0	12	278	327

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○			○				○			

DREAM DRILLS -MQL TYPE

DHM25 SERIES
DHM30 SERIES

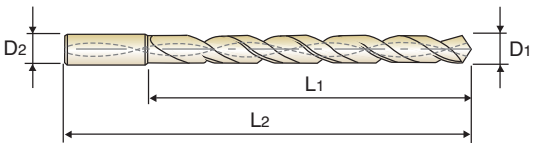
CARBIDE, DREAM DRILL MQL TYPE END MILL SHANK with COOLANT HOLE *EXTRA LONG*
VOLLHARTMETALL DREAM SPIRALBOHRER MQL - TYPE mit KÜHLKANAL *ÜBERLANG*

▶ **Application** : Drilling steels in general, cast steels, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metals, non-ferrous light metals, abrasive plastics.

▶ **Advantage** : Non step drilling up to 15 times (20 times) of drill diameter.
Available for processing MQL(Minimum Quantity Lubrication).
Excellent positioning
- Bush is not necessary.
Special design
- Good chip removal
Powerful drilling

▶ **Verwendung** : Zum wirtschaftlichen Bohren von Stahl allgemein, Stahlguß, Hart-und Temperguß, Nichteisen Leichtmetallen, abrasiven Kunststoffen.

▶ **Vorteile** : Bohren bis zu 15 x D(20 x D) ohne abzusetzen, Geeignet für MQL (minimale Kühlschmierung)
Selbstzentrierend
- Keine vorherige Zentrierung notwendig
Kein Verlaufen
- Keine Bohrbuchse notwendig
Spezielle Bohrergeometrie
- Gute Spanabfuhr
Hochleistungsbohren



MG | N ≈ 30° | h6 | h7 | 140° | P.106

25 × D (DHM25) | 30 × D (DHM30)

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DHM25030	3.0	6.0	85	125
DHM25035	3.5	6.0	99	139
DHM25040	4.0	6.0	113	153
DHM25045	4.5	6.0	127	167
DHM25050	5.0	6.0	141	181
DHM25055	5.5	6.0	155	195
DHM25060	6.0	6.0	169	209
DHM25070	7.0	8.0	197	237
DHM25080	8.0	8.0	225	265
DHM25090	9.0	10.0	253	297
DHM25100	10.0	10.0	282	326

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DHM30030	3.0	6.0	100	140
DHM30035	3.5	6.0	117	157
DHM30040	4.0	6.0	133	173
DHM30045	4.5	6.0	150	190
DHM30050	5.0	6.0	166	206
DHM30055	5.5	6.0	183	223
DHM30060	6.0	6.0	199	239
DHM30070	7.0	8.0	232	272
DHM30080	8.0	8.0	265	305

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○			○				○			

DREAM DRILLS -MQL TYPE

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, DREAM DRILL MQL TYPE END MILL SHANK WITH COOLANT HOLE, TIAIN COATED
VOLLHARTMETALL DREAM BOHRER MQL-TYPE, TiAlN-BESCHICHTET

DH510, DH515, DH520, DHM10, DHM15, DHM20 SERIES

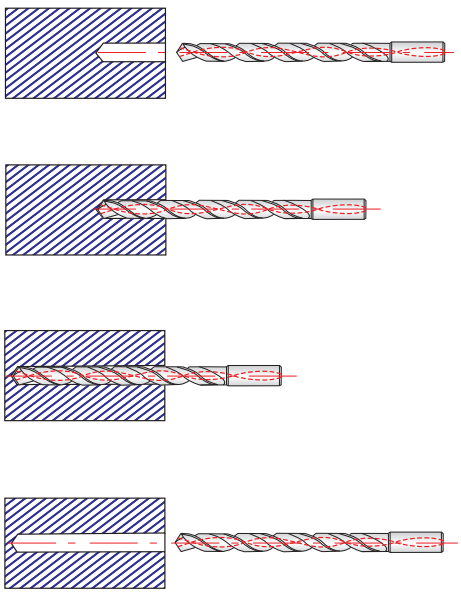
WORK MATERIAL	CARBON STEELS ALLOY STEELS		CAST IRON		DUCTILE CAST IRON	
STRENGTH	~ 1060 N/mm²		250 ~ 350 N/mm²		400 ~ 500 N/mm²	
DRILLING SPEED	63 ~ 125 m/min		63 ~ 125 m/min		60 ~ 80 m/min	
DIAMETER	N	S	N	S	N	S
3.0	7500	0.06~0.12	7500	0.06~0.12	7500	0.06~0.12
4.0	6400	0.08~0.16	6400	0.08~0.16	5600	0.08~0.16
5.0	5800	0.10~0.20	5800	0.10~0.20	4500	0.10~0.20
6.0	4800	0.12~0.24	4800	0.12~0.24	3800	0.12~0.24
8.0	3600	0.16~0.28	3600	0.16~0.28	2800	0.16~0.28
10.0	2900	0.20~0.35	2900	0.20~0.35	2300	0.20~0.35
12.0	2400	0.24~0.42	2400	0.24~0.42	1900	0.24~0.42
14.0	2050	0.28~0.46	2050	0.28~0.46	1600	0.28~0.46

N = R.P.M
S = Feed per Revolution (mm/rev.)

DHM25, DHM30 SERIES

WORK MATERIAL	CARBON STEELS ALLOY STEELS		CAST IRON		DUCTILE CAST IRON	
STRENGTH	~ 1060 N/mm²		250 ~ 350 N/mm²		400 ~ 500 N/mm²	
DRILLING SPEED	50 ~ 110 m/min		50 ~ 110 m/min		40 ~ 70 m/min	
DIAMETER	N	S	N	S	N	S
3.0	6400	0.06~0.12	6400	0.06~0.12	6400	0.06~0.12
4.0	5500	0.08~0.16	5500	0.08~0.16	4700	0.08~0.16
5.0	4900	0.10~0.20	4900	0.10~0.20	3800	0.10~0.20
6.0	4200	0.12~0.24	4200	0.12~0.24	3200	0.12~0.24
8.0	3000	0.16~0.28	3000	0.16~0.28	2400	0.16~0.28
10.0	2500	0.20~0.35	2500	0.20~0.35	1900	0.20~0.35

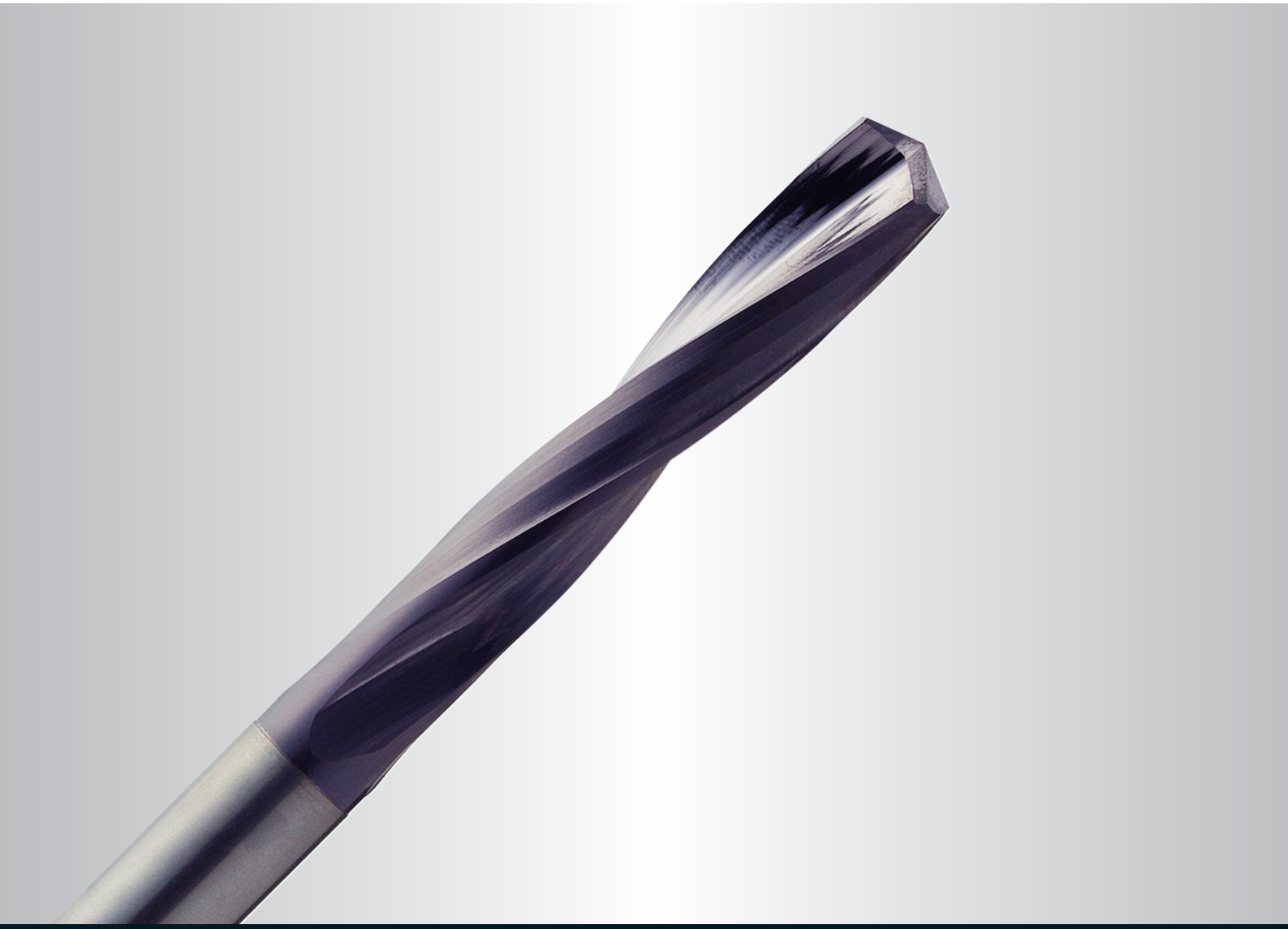
N = R.P.M
S = Feed per Revolution (mm/rev.)



1. Guide Drilling should be done as Diameter+0.1mm between 3xD and 5xD depth.
2. For Main Drilling, proceed with low RPM at Guide Drilling segment.
   (RPM 300, FEED 400mm/min)
3. Just before the end of Guide Drilling segment, reduce feed to zero and increase the RPM according to Recommended Cutting Condition chart (See above).
4. After then, proceed main drilling by increasing feed without step drilling.
5. When coming out from Guide Drilling start point after drilling, RPM should be reduced as 300 and feed should be 1000 mm/min.
6. When coming out from Guide Drilling segment to the outside, the feed should be decreased as 50%.

CARBIDE

Being the best through innovation



DREAM DRILLS
- For HIGH HARDENED STEELS
DREAM DRILLS
- FÜR HOCHGEHÄRTETE STÄHLE

- HIGH HARDENED STEELS, HRc50~HRc70
- HOCHGEHÄRTETE STÄHLE HRc50 TO HRc70

SOLID CARBIDE DREAM DRILLS for HIGH HARDENED STEELS

High Hardened Steels, HRc50~HRc70

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
DH500		CARBIDE, DREAM DRILLS for HIGH HARDENED STEELS VOLLHARTMETALL DREAM SPIRALBOHRER für HOCHGEHARTETE STAHLE	D2.6	D14.0	110
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			111

◎ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
			◎	◎								

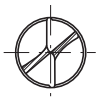
DREAM DRILLS for HIGH HARDENED STEELS

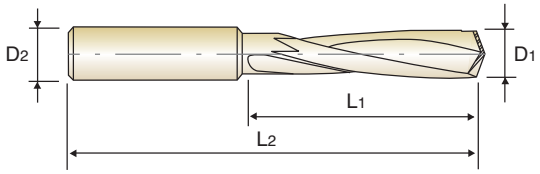
DH500 SERIES

CARBIDE, DREAM DRILLS for HIGH HARDENED STEELS (HRc50~HRc70)
VOLLHARTMETALL DREAM SPIRALBOHRER für HOCHGEHÄRTETE STAHLE

▶ **Application** : Drilling for High Hardened Steels[Quenched Steels, Tempered Steels (Under HRc 70)
▶ **Advantage** : Special Design
Minimum of cutting load through special thinning
Good chip removal
Powerful Drilling

▶ **Verwendung** : Hoch gehärtete Stähle (Vergütungsstähle, angelassene Stähle) bis HRc 70
▶ **Vorteile** : Spezielle Bohrergeometrie
Minimaler Schneidendruck durch besondere Ausspitzung
Gute Spanabfuhr
Hochleistungsbohren





MG | 15° | h6 | h7 | 140° P.111

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH500026	2.6	3	14	44
DH500030	3.0	3	16	46
DH500033	3.3	4	18	48
DH500034	3.4	4	20	50
DH500035	3.5	4	20	50
DH500040	4.0	4	22	52
DH500042	4.2	6	25	65
DH500043	4.3	6	28	68
DH500044	4.4	6	28	68
DH500045	4.5	6	28	68
DH500050	5.0	6	32	72
DH500051	5.1	6	32	72
DH500052	5.2	6	32	72
DH500055	5.5	6	35	75
DH500060	6.0	6	35	75
DH500065	6.5	8	40	80
DH500068	6.8	8	45	85
DH500069	6.9	8	45	85

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH500070	7.0	8	45	85
DH500075	7.5	8	45	85
DH500080	8.0	8	50	98
DH500085	8.5	10	50	98
DH500086	8.6	10	57	105
DH500088	8.8	10	57	105
DH500090	9.0	10	57	105
DH500095	9.5	10	57	105
DH500100	10.0	10	63	111
DH500102	10.2	12	63	111
DH500103	10.3	12	63	111
DH500105	10.5	12	63	111
DH500108	10.8	12	71	119
DH500110	11.0	12	71	119
DH500115	11.5	12	71	119
DH500120	12.0	12	71	119
DH500140	14.0	14	77	125

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
			◎	◎								

DREAM DRILLS for HIGH HARDENED STEELS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

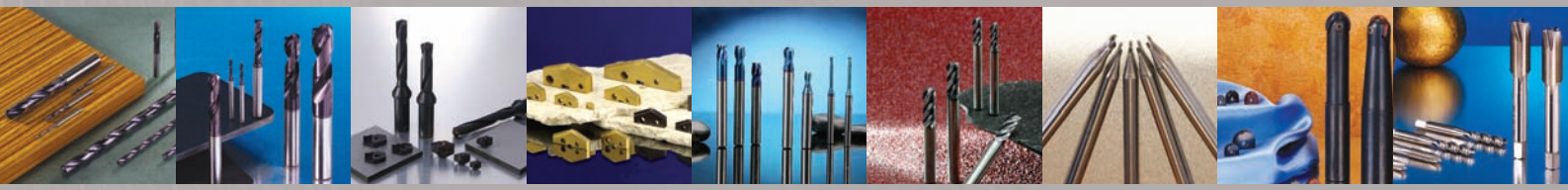
CARBIDE, DREAM DRILLS for HIGH HARDENED STEELS (HRc50~HRc70), TiAlN COATED
VOLLHARTMETALL DREAM BOHRER für HOCHGEHÄRTETE STÄHLE, TiAlN-BESCHICHTET

DH500 SERIES

WORK MATERIAL	HARDENED STEELS					
	HRc 50~55		HRc 55~60		HRc 60~70	
DRILLING SPEED	14 ~ 22 m/min		10 ~ 16 m/min		8 ~ 13 m/min	
DIAMETER	N	S	N	S	N	S
3.0	1900	0.04	1330	0.04	1250	0.04
4.0	1430	0.04	1000	0.04	950	0.04
5.0	1150	0.04	800	0.04	750	0.04
6.0	960	0.04	670	0.04	630	0.04
8.0	720	0.04	500	0.04	480	0.04
10.0	570	0.04	400	0.04	380	0.04
12.0	480	0.04	330	0.04	320	0.04
14.0	438	0.04	282	0.04	272	0.04

N = R.P.M
S = Feed per Revolution (mm/rev.)

Global Cutting Tool Leader **YG-1**



CARBIDE

Being the best through innovation

GENERAL CARBIDE DRILLS

UNIVERSELLE VHM - BOHRER

- **JOBBER & STUB LENGTH**
  General Purpose, DIN338 & DIN6539
- **Kurz & Extra Kurz**
  Für allgemeinen Einsatz, DIN338 und DIN6539

GENERAL SOLID CARBIDE DRILLS

For General materials, Cast steels, Cast iron, Non-ferrous materials

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
D5405		CARBIDE DRILLS *STUB* VOLLHARTMETALL-SPIRALBOHRER *EXTRA KURZ*	D1.0	D13.0	116
D5407		CARBIDE DRILLS *JOBBER* VOLLHARTMETALL-SPIRALBOHRER *KURZ*	D1.0	D13.0	118
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			120

◎ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	○	○	◎			
◎	◎				○	○	○	○	◎			

GENERAL CARBIDE DRILLS

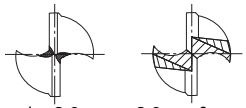
D5405 SERIES

CARBIDE DRILLS
VOLLHARTMETALL-SPIRALBOHRER

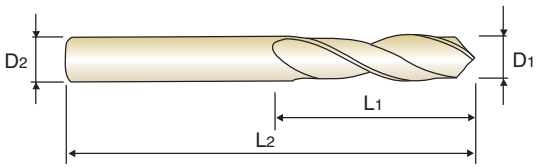
STUB
EXTRA KURZ

▶ **Application** : Drilling steels in general, cast steels, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metals, non-ferrous light metals, abrasive plastics.

▶ **Verwendung** : Zum wirtschaftlichen Bohren von Stahl allgemein, Stahlguß, Hart-und Temperguß, Nichteisen Leichtmetallen, abrasiven Kunststoffen.



under 3.0mm 3.0mm & over



DIN 6539 | MG | N 30° | h6 | h7 | 118° | P.120

$D_1 = D_2$

Unit : mm

EDP No.	Drill Diameter D_1	Flute Length L_1	Overall Length L_2
D5405010	1.0	6	26
D5405011	1.1	7	28
D5405012	1.2	8	30
D5405013	1.3	8	30
D5405014	1.4	9	32
D5405015	1.5	9	32
D5405016	1.6	10	34
D5405017	1.7	10	34
D5405018	1.8	11	36
D5405019	1.9	11	36
D5405020	2.0	12	38
D5405021	2.1	12	38
D5405022	2.2	13	40
D5405023	2.3	13	40
D5405024	2.4	14	43
D5405025	2.5	14	43
D5405026	2.6	14	43
D5405027	2.7	16	46
D5405028	2.8	16	46
D5405029	2.9	16	46
D5405030	3.0	16	46
D5405031	3.1	18	49
D5405032	3.2	18	49
D5405033	3.3	18	49
D5405034	3.4	20	52

EDP No.	Drill Diameter D_1	Flute Length L_1	Overall Length L_2
D5405035	3.5	20	52
D5405036	3.6	20	52
D5405037	3.7	20	52
D5405038	3.8	20	52
D5405039	3.9	22	55
D5405040	4.0	22	55
D5405041	4.1	22	55
D5405042	4.2	22	55
D5405043	4.3	24	58
D5405044	4.4	24	58
D5405045	4.5	24	58
D5405046	4.6	24	58
D5405047	4.7	24	58
D5405048	4.8	26	62
D5405049	4.9	26	62
D5405050	5.0	26	62
D5405051	5.1	26	62
D5405052	5.2	26	62
D5405053	5.3	26	62
D5405054	5.4	28	66
D5405055	5.5	28	66
D5405056	5.6	28	66
D5405057	5.7	28	66
D5405058	5.8	28	66
D5405059	5.9	28	66

▶ TiN(D6405), TiCN(DG405) and TiAlN(DH405) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	○	○	◎			

GENERAL CARBIDE DRILLS

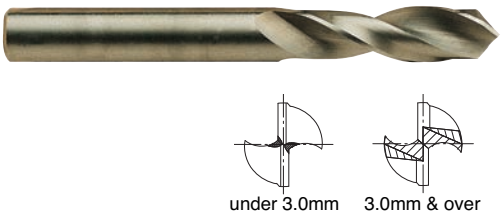
D5405 SERIES

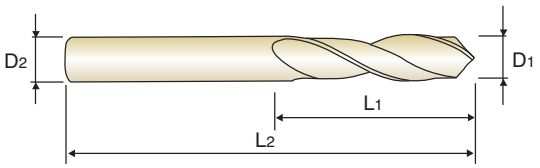
CARBIDE DRILLS
VOLLHARTMETALL-SPIRALBOHRER

STUB
EXTRA KURZ

▶ **Application** : Drilling steels in general, cast steels, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metals, non-ferrous light metals, abrasive plastics.

▶ **Verwendung** : Zum wirtschaftlichen Bohren von Stahl allgemein, Stahlguß, Hart-und Temperguß, Nichteisen Leichtmetallen, abrasiven Kunststoffen.





DIN 6539 | MG | N 30° | h6 | h7 | 118° P.120

$D_1=D_2$

Unit : mm

EDP No.	Drill Diameter D_1	Flute Length L_1	Overall Length L_2
D5405060	6.0	28	66
D5405061	6.1	31	70
D5405062	6.2	31	70
D5405063	6.3	31	70
D5405064	6.4	31	70
D5405065	6.5	31	70
D5405066	6.6	31	70
D5405067	6.7	31	70
D5405068	6.8	34	74
D5405069	6.9	34	74
D5405070	7.0	34	74
D5405071	7.1	34	74
D5405072	7.2	34	74
D5405073	7.3	34	74
D5405074	7.4	34	74
D5405075	7.5	34	74
D5405076	7.6	37	79
D5405077	7.7	37	79
D5405078	7.8	37	79
D5405079	7.9	37	79
D5405080	8.0	37	79
D5405081	8.1	37	79
D5405082	8.2	37	79
D5405083	8.3	37	79

EDP No.	Drill Diameter D_1	Flute Length L_1	Overall Length L_2
D5405084	8.4	37	79
D5405085	8.5	37	79
D5405086	8.6	40	84
D5405087	8.7	40	84
D5405088	8.8	40	84
D5405089	8.9	40	84
D5405090	9.0	40	84
D5405091	9.1	40	84
D5405092	9.2	40	84
D5405093	9.3	40	84
D5405094	9.4	40	84
D5405095	9.5	40	84
D5405096	9.6	43	89
D5405097	9.7	43	89
D5405098	9.8	43	89
D5405099	9.9	43	89
D5405100	10.0	43	89
D5405102	10.2	43	89
D5405105	10.5	43	89
D5405110	11.0	47	95
D5405115	11.5	47	95
D5405120	12.0	51	102
D5405130	13.0	51	102

▶ TiN(D6405), TiCN(DG405) and TiAlN(DH405) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	○	○	◎			

GENERAL CARBIDE DRILLS

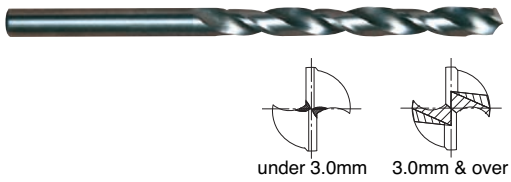
D5407 SERIES

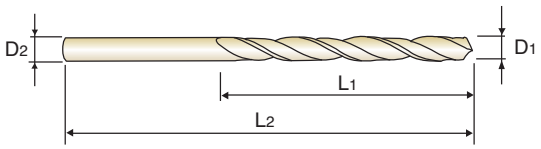
CARBIDE DRILLS
VOLLHARTMETALL-SPIRALBOHRER

JOBBER
KURZ

▶ **Application** : Drilling steels in general, cast steels, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metals, non-ferrous light metals, abrasive plastics.

▶ **Verwendung** : Zum wirtschaftlichen Bohren von Stahl allgemein, Stahlguß, Hart-und Temperguß, Nichteisen Leichtmetallen, abrasiven Kunststoffen.





DIN 338 | MG | N 30° | h6 | h7 | 118° | P.120

$D_1 = D_2$

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D5407010	1.0	12	34
D5407011	1.1	14	36
D5407012	1.2	16	38
D5407013	1.3	16	38
D5407014	1.4	18	40
D5407015	1.5	18	40
D5407016	1.6	20	43
D5407017	1.7	20	43
D5407018	1.8	22	46
D5407019	1.9	22	46
D5407020	2.0	24	49
D5407021	2.1	24	49
D5407022	2.2	27	53
D5407023	2.3	27	53
D5407024	2.4	30	57
D5407025	2.5	30	57
D5407026	2.6	30	57
D5407027	2.7	33	61
D5407028	2.8	33	61
D5407029	2.9	33	61
D5407030	3.0	33	61
D5407031	3.1	36	65

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D5407032	3.2	36	65
D5407033	3.3	36	65
D5407034	3.4	39	70
D5407035	3.5	39	70
D5407036	3.6	39	70
D5407037	3.7	39	70
D5407038	3.8	43	75
D5407039	3.9	43	75
D5407040	4.0	43	75
D5407041	4.1	43	75
D5407042	4.2	43	75
D5407043	4.3	47	80
D5407044	4.4	47	80
D5407045	4.5	47	80
D5407046	4.6	47	80
D5407047	4.7	47	80
D5407048	4.8	52	86
D5407049	4.9	52	86
D5407050	5.0	52	86
D5407051	5.1	52	86
D5407052	5.2	52	86
D5407053	5.3	52	86

▶ TiN(D6407), TiCN(DG407) and TiAlN(DH407) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	○	○	◎			

GENERAL CARBIDE DRILLS

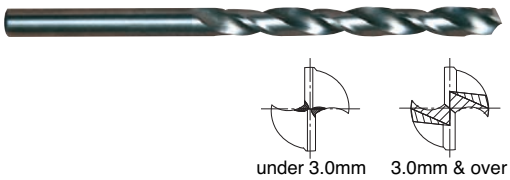
D5407 SERIES

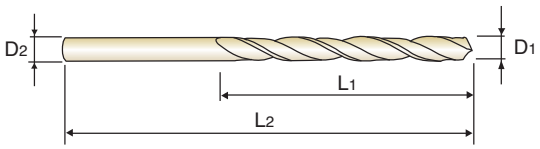
CARBIDE DRILLS
VOLLHARTMETALL-SPIRALBOHRER

JOBBER
KURZ

▶ **Application** : Drilling steels in general, cast steels, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metals, non-ferrous light metals, abrasive plastics.

▶ **Verwendung** : Zum wirtschaftlichen Bohren von Stahl allgemein, Stahlguß, Hart-und Temperguß, Nichteisen Leichtmetallen, abrasiven Kunststoffen.





DIN 338 | MG | N 30° | h6 | h7 | 118° P.120

$D_1 = D_2$

Unit : mm

EDP No.	Drill Diameter D_1	Flute Length L_1	Overall Length L_2
D5407054	5.4	57	93
D5407055	5.5	57	93
D5407056	5.6	57	93
D5407057	5.7	57	93
D5407058	5.8	57	93
D5407059	5.9	57	93
D5407060	6.0	57	93
D5407061	6.1	63	101
D5407062	6.2	63	101
D5407063	6.3	63	101
D5407064	6.4	63	101
D5407065	6.5	63	101
D5407068	6.8	69	109

EDP No.	Drill Diameter D_1	Flute Length L_1	Overall Length L_2
D5407070	7.0	69	109
D5407075	7.5	69	109
D5407080	8.0	75	117
D5407085	8.5	75	117
D5407090	9.0	81	125
D5407095	9.5	81	125
D5407100	10.0	87	133
D5407102	10.2	87	133
D5407105	10.5	87	133
D5407110	11.0	94	142
D5407115	11.5	94	142
D5407120	12.0	101	151
D5407130	13.0	101	151

▶ TiN(D6407), TiCN(DG407) and TiAlN(DH407) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	○	○	◎			

GENERAL CARBIDE DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE DRILLS, DIN6539, DIN338
VOLLHARTMETALL SPIRALBOHRER, DIN 6539, DIN 338

D5405, D5407 SERIES

WORK MATERIAL	NON-ALLOY STEELS		ALLOY STEELS		SOFT GREY CAST IRON		HARD GREY CAST IRON		STAINLESS STEELS		Al-Si ALLOYS, Si<10%		Al-Si ALLOYS, Si>10%		Ti, Ni ALLOY STEELS	
STRENGTH	< 700 N/mm²		< 1000 N/mm²		< HB240, GG25		< HB300, GG40									
DRILLING SPEED	65 ~ 75 m/min		45 ~ 55 m/min		80 ~ 100 m/min		50 ~ 70 m/min		30 ~ 40 m/min		150 ~ 170 m/min		110 ~ 130 m/min		33 ~ 38 m/min	
DIAMETER	N	S	N	S	N	S	N	S	N	S	N	S	N	S	N	S
1.0	23000	0.03	17200	0.03	32000	0.04	23000	0.04	12000	0.04	54000	0.05	42000	0.05	11800	0.02
2.0	11500	0.04	8600	0.04	16000	0.05	11500	0.05	6000	0.03	27000	0.06	21000	0.06	5900	0.03
3.0	7800	0.05	5750	0.05	10500	0.06	7600	0.06	4000	0.04	18000	0.07	14000	0.07	3900	0.04
4.0	5800	0.06	4300	0.06	7800	0.07	5700	0.07	3000	0.05	13000	0.08	10500	0.08	2950	0.05
5.0	4700	0.07	3450	0.07	6200	0.08	4550	0.08	2400	0.06	10500	0.09	8500	0.09	2350	0.06
6.0	3900	0.08	2850	0.08	5200	0.09	3800	0.09	2000	0.07	8800	0.11	7100	0.11	1950	0.07
7.0	3350	0.09	2450	0.09	4500	0.10	3250	0.10	1700	0.08	7600	0.13	6100	0.13	1700	0.08
8.0	2900	0.10	2150	0.10	3900	0.12	2850	0.12	1500	0.09	6600	0.15	5350	0.15	1450	0.09
9.0	2600	0.11	1900	0.11	3450	0.14	2550	0.14	1350	0.10	5900	0.17	4750	0.17	1300	0.10
10.0	2350	0.12	1700	0.12	3100	0.16	2300	0.16	1200	0.11	5300	0.19	4250	0.19	1200	0.11
11.0	2150	0.13	1600	0.13	2850	0.18	2100	0.18	1100	0.12	4850	0.21	3900	0.21	1050	0.12
12.0	1950	0.14	1450	0.14	2600	0.20	1900	0.20	1000	0.13	4450	0.23	3550	0.23	980	0.13
13.0	1800	0.16	1350	0.16	2400	0.20	1750	0.20	950	0.13	4100	0.25	3300	0.25	905	0.13

N = R.P.M
S = Feed per Revolution (mm/rev.)

CARBIDE

Being the best through innovation

NC-SPOTTING DRILLS

NC-ANBOHRER

- CENTERING and CHAMFERING
- Zentrier & Abfasen

SELECTION GUIDE

SOLID CARBIDE NC-SPOTTING DRILLS

For General materials, Cast steels, Cast iron, Non-ferrous materials

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
D5306 D5307		CARBIDE, NC-SPOTTING DRILLS 90°, 120° VOLLHARTMETALL NC-ANBOHRER 90°, 120°	D6.0	D20.0	124
D5320		CARBIDE, NC-SPOTTING DRILLS 142° VOLLHARTMETALL NC-ANBOHRER 142°	D3.0	D20.0	125
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			126

◎ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	◎			○	○	○	○	○			
◎	◎	◎			○	○	○	○	○			

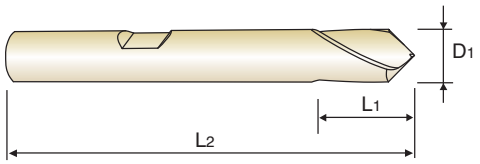
NC-SPOTTING DRILLS

D5306 SERIES
D5307 SERIES

CARBIDE, NC-SPOTTING DRILLS
VOLLHARTMETALL NC-ANBOHRER

▶ **Application** : For more precise centering work on NC/CNC machines. The large diameter of the tool permits chamfering work after centering continuously.

▶ Verwendung : Auf NC-Maschinen, Lehrenbohrwerken u.a. kapitalintensiven Bohrwerken, zum Zentrieren und Anfasen von Gewindebohrungen in einem Arbeitsgang. Besonders geeignet zum Anbohren von hochfesten Stählen, Stahlguß, Grauguß, Hartguß, Mangan-Hartstahl, CrNi-Stählen, Bronze, Leicht-und Buntmetallen.



MG | DIN 6535HB | h6 | 90° | 120° P.126

NC-Spotting drills 90°
NC-Anbohrer 90°

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D5306060	6.0	13	50
D5306080	8.0	23	60
D5306100	10.0	24	70
D5306120	12.0	24	70
D5306160	16.0	29	75
D5306200	20.0	35	100

NC-Spotting drills 120°
NC-Anbohrer 120°

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D5307060	6.0	13	50
D5307080	8.0	23	60
D5307100	10.0	24	70
D5307120	12.0	24	70
D5307160	16.0	29	75
D5307200	20.0	35	100

▶ TiN(D6306, D6307), TiCN(DG306, DG307) and TiAlN(DH306, DH307) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	◎			○	○	○	○	○			

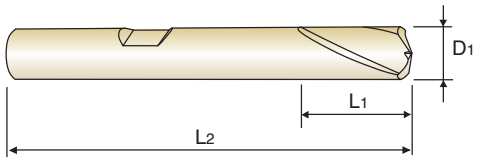
NC-SPOTTING DRILLS

D5320 SERIES

CARBIDE, NC-SPOTTING DRILLS
VOLLHARTMETALL NC-ANBOHRER

▶ **Application** : For more precise centering work on NC/CNC machines. The large diameter of the tool permits chamfering work after centering continuously.

▶ Verwendung : Auf NC-Maschinen, Lehrenbohrwerken u.a. kapitalintensiven Bohrwerken, zum Zentrieren und Anfasen von Gewindebohrungen in einem Arbeitsgang. Besonders geeignet zum Anbohren von hochfesten Stählen, Stahlguß, Grauguß, Hartguß, Mangan-Hartstahl, CrNi-Stählen, Bronze, Leicht-und Buntmetallen.



MG | DIN 6535HB | h6 | 142° P.126

NC-Spotting drills 142°
NC-Anbohrer 142°

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D5320030	3.0	8	32
D5320040	4.0	10	40
D5320050	5.0	13	50
D5320060	6.0	13	50
D5320080	8.0	23	60
D5320100	10.0	24	70
D5320120	12.0	24	70
D5320160	16.0	29	75
D5320200	20.0	35	100

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	◎			○	○	○	○	○			

NC-SPOTTING DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE NC - SPOTTING DRILLS 90°, 120°, 142° with FLATTED SHANK
VOLLHARTMETALL NC-ANBOHRER 90°, 120°, 142° mit MITNAHME FLÄCHE

D5306, D5307, D5320 SERIES

WORK MATERIAL	NON-ALLOY STEELS		ALLOY STEELS		SOFT GREY CAST IRON		HARD GREY CAST IRON		STAINLESS STEELS		Al-Si ALLOYS, Si<10%		Al-Si ALLOYS, Si>10%		Ti, Ni ALLOY STEELS	
STRENGTH	< 700 N/mm²		< 1000 N/mm²		< HB240, GG25		< HB300, GG40									
DRILLING SPEED	65 ~ 75 m/min		45 ~ 55 m/min		90 ~ 100 m/min		65 ~ 75 m/min		35 ~ 40 m/min		145 ~ 165 m/min		115 ~ 135 m/min		35 ~ 40 m/min	
DIAMETER	N	S	N	S	N	S	N	S	N	S	N	S	N	S	N	S
6.0	3900	0.08	2850	0.08	5200	0.09	3800	0.09	2000	0.07	8800	0.11	7100	0.11	1950	0.07
8.0	2900	0.10	2150	0.10	3900	0.12	2850	0.12	1500	0.09	6600	0.15	5350	0.15	1450	0.09
10.0	2350	0.12	1700	0.12	3100	0.16	2300	0.16	1200	0.11	5300	0.19	4250	0.19	1200	0.11
12.0	1950	0.14	1450	0.14	2600	0.20	1900	0.20	1000	0.13	4450	0.23	3550	0.23	980	0.13
16.0	1450	0.17	1100	0.17	1950	0.24	1450	0.24	755	0.17	3300	0.27	2650	0.27	735	0.17
20.0	1150	0.19	850	0.19	1550	0.28	1150	0.28	590	0.20	2650	0.31	2150	0.31	590	0.20

N = R.P.M
S = Feed per Revolution (mm/rev.)

CARBIDE

Being the best through innovation

CENTER DRILLS

ZENTRIERBOHRER

- General Purpose
- Für allgemeinen Einsatz

SOLID CARBIDE CENTER DRILLS
General Purpose

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
D5303		CARBIDE, CENTER DRILLS, FORM A VOLLHARTMETALL CENTER DRILLS, FORM A	D1.0	D6.3	130
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			130

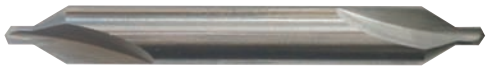
◎ : Excellent
○ : Good

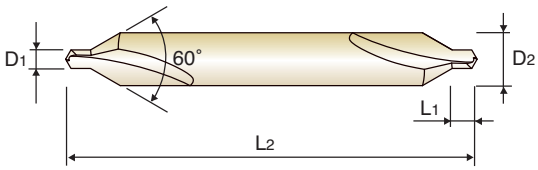
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○			○	○	○	○	○	○	○	

CENTER DRILLS

D5303 SERIES

CARBIDE, CENTER DRILLS
VOLLHARTMETALL ZENTRIERBOHRER

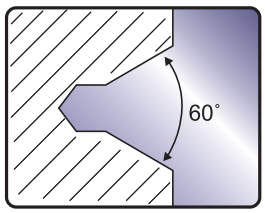




DIN 333 | MG | h8 | k12 | 120°

FORM A (60°)

EDP No.	Drill Diameter D1	Shank Diameter D2	Pilot Length L1	Overall Length L2
D5303010	1.0	3.15	1.3	31.5
D5303912	1.25	3.15	1.6	31.5
D5303016	1.6	4	2	35.5
D5303020	2.0	5	2.5	40
D5303025	2.5	6.3	3.1	45
D5303931	3.15	8	3.9	50
D5303040	4.0	10	5	56
D5303050	5.0	12.5	6.3	63
D5303063	6.3	16	8	71



CUTTING CONDITIONS

WORK MATERIAL	MILD STEEL		ALLOY STEEL				STAINLESS STEEL	
HARDNESS	< 700 N/mm²		~ HRc 23		~ HRc 32			
DIAMETER	SPEED	FEED	SPEED	FEED	SPEED	FEED	SPEED	FEED
1.0	30 ~ 50	0.01~0.03	30 ~ 50	0.01~0.03	20 ~ 40	0.01~0.03	15 ~ 25	0.01~0.03
2.0		0.01~0.035		0.01~0.035		0.01~0.035		0.01~0.035
3.0		0.015~0.05		0.015~0.05		0.015~0.05		0.015~0.05
4.0		0.02~0.06		0.02~0.06		0.02~0.06		0.02~0.06
5.0		0.03~0.07		0.03~0.07		0.03~0.07		0.03~0.07
6.0		0.04~0.07		0.04~0.07		0.04~0.07		0.04~0.07

SPEED(Shank Dia.) = m/min
FEED(Drill Dia.) = mm/rev

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○			○	○	○	○	○	○	○	

HSS

Being the best through innovation

MULTI-1 DRILLS

MULTI-1 BOHRER

- **HSS-PM MULTI-1 DRILLS**
  Multi Purpose Drilling. Particularly for Stainless Steels, Titanium
- **HSS-PM MULTI-1 BOHRER**
  Mehrzweckbohrer. Besonders für rostfreien Stahl, Titan

PREMIUM HSS-PM MULTI-1 DRILLS

Premium HSS-PM Drills for wide range of applications
- Carbon Steels, Alloy Steels, Stainless steels, Titanium etc

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
CDRA03		PREMIUM HSS-PM MULTI-1 DRILLS *STUB* PREMIUM HSS-PM MULTI-1 SPIRALBOHRER *EXTRA KURZ*	D1.0	D13.0	134
CDRA04		PREMIUM HSS-PM MULTI-1 DRILLS *JOBBER* PREMIUM HSS-PM MULTI-1 SPIRALBOHRER *KURZ*	D2.0	D13.0	136
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			138

◎ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○			○	○	○	◎	◎			
◎	◎	○			○	○	○	◎	◎			

MULTI-1 DRILLS

CDRA03 SERIES

PREMIUM HSS-PM MULTI-1 DRILLS
PREMIUM HSS-PM MULTI-1 BROHER

STUB
EXTRA KURZ

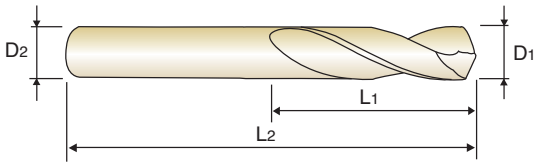
▶ **Application** : Structural steels, Carbon steels, Alloy steels, Pre-hardened steels, Mold steels, Stainless steels, Hardened steels(HRc30~45), Cast iron, Aluminum alloys, Nonferrous alloys, Titanium.

▶ **Advantage** : Point shape to maximize self-centering.
Flute design for the best chip evacuation.
Premium powder materials with excellent toughness.

▶ **Anwendung** : Baustähle, Kohlenstoffstähle, legierte Stähle, vorgehärtete Stähle, Formstähle, rostfreie Stähle, gehärtete Stähle (HRc 30~45), Gusseisen, Aluminiumlegierungen, Nichteisen Legierungen, Titan.

▶ **Vorteile** : Maximale Selbstzentrierung durch besonderen Spitzenanschliff
Bohrergeometrie für optimale Spanabfuhr.
Premium Pulverstahl mit ausgezeichneter Zähigkeit.

up to 1.4mm over 1.4mm



PREMIUM HSS-PM | N 30° | h6 | h7 | 118° | 135° | P.138

up to 1.9mm over 1.9mm

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
CDRA03010	1.0	3	6	38
CDRA03011	1.1	3	7	39
CDRA03012	1.2	3	8	40
CDRA03013	1.3	3	8	40
CDRA03014	1.4	3	9	41
CDRA03015	1.5	3	9	41
CDRA03016	1.6	3	10	42
CDRA03017	1.7	3	10	42
CDRA03018	1.8	3	11	43
CDRA03019	1.9	3	11	43
CDRA03020	2.0	3	12	44
CDRA03021	2.1	3	12	44
CDRA03022	2.2	3	13	45
CDRA03023	2.3	3	13	45
CDRA03024	2.4	3	14	46
CDRA03025	2.5	3	14	46
CDRA03026	2.6	3	14	46
CDRA03027	2.7	3	16	48
CDRA03028	2.8	3	16	48
CDRA03029	2.9	3	16	48
CDRA03030	3.0	3	16	48
CDRA03031	3.1	4	18	50
CDRA03032	3.2	4	18	50
CDRA03033	3.3	4	18	50
CDRA03034	3.4	4	20	52
CDRA03035	3.5	4	20	52
CDRA03036	3.6	4	20	52
CDRA03037	3.7	4	20	52
CDRA03038	3.8	4	22	54
CDRA03039	3.9	4	22	54
CDRA03040	4.0	4	22	54

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
CDRA03041	4.1	6	22	66
CDRA03042	4.2	6	22	66
CDRA03043	4.3	6	24	68
CDRA03044	4.4	6	24	68
CDRA03045	4.5	6	24	68
CDRA03046	4.6	6	24	68
CDRA03047	4.7	6	24	68
CDRA03048	4.8	6	26	70
CDRA03049	4.9	6	26	70
CDRA03050	5.0	6	26	70
CDRA03051	5.1	6	26	70
CDRA03052	5.2	6	26	70
CDRA03053	5.3	6	26	70
CDRA03054	5.4	6	28	72
CDRA03055	5.5	6	28	72
CDRA03056	5.6	6	28	72
CDRA03057	5.7	6	28	72
CDRA03058	5.8	6	28	72
CDRA03059	5.9	6	28	72
CDRA03060	6.0	6	28	72
CDRA03061	6.1	8	31	75
CDRA03062	6.2	8	31	75
CDRA03063	6.3	8	31	75
CDRA03064	6.4	8	31	75
CDRA03065	6.5	8	31	75
CDRA03066	6.6	8	31	75
CDRA03067	6.7	8	31	75
CDRA03068	6.8	8	34	78
CDRA03069	6.9	8	34	78
CDRA03070	7.0	8	34	78
CDRA03071	7.1	8	34	78

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○			○	○	○	◎	◎			

MULTI-1 DRILLS

CDRA03 SERIES

PREMIUM HSS-PM MULTI-1 DRILLS
PREMIUM HSS-PM MULTI-1 BROHER

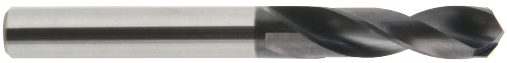
STUB
EXTRA KURZ

▶ **Application** : Structural steels, Carbon steels, Alloy steels, Pre-hardened steels, Mold steels, Stainless steels, Hardened steels(HRc30~45), Cast iron, Aluminum alloys, Nonferrous alloys, Titanium.

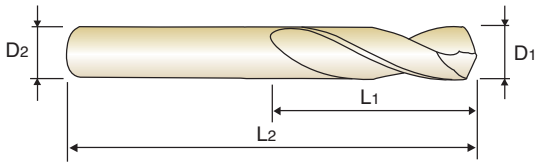
▶ **Advantage** : Point shape to maximize self-centering.
Flute design for the best chip evacuation.
Premium powder materials with excellent toughness.

▶ **Anwendung** : Baustähle, Kohlenstoffstähle, legierte Stähle, vorgehärtete Stähle, Formstähle, rostfreie Stähle, gehärtete Stähle (HRc 30~45), Gusseisen, Aluminiumlegierungen, Nichteisen Legierungen, Titan.

▶ **Vorteile** : Maximale Selbstzentrierung durch besonderen Spitzenanschliff
Bohrergeometrie für optimale Spanabfuhr.
Premium Pulverstahl mit ausgezeichneter Zähigkeit.



up to 1.4mm over 1.4mm



PREMIUM HSS-PM | N 30° | h6 | h7 | 118° | 135° | P.138

up to 1.9mm over 1.9mm

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
CDRA03072	7.2	8	34	78
CDRA03073	7.3	8	34	78
CDRA03074	7.4	8	34	78
CDRA03075	7.5	8	34	78
CDRA03076	7.6	8	37	81
CDRA03077	7.7	8	37	81
CDRA03078	7.8	8	37	81
CDRA03079	7.9	8	37	81
CDRA03080	8.0	8	37	81
CDRA03081	8.1	10	37	87
CDRA03082	8.2	10	37	87
CDRA03083	8.3	10	37	87
CDRA03084	8.4	10	37	87
CDRA03085	8.5	10	37	87
CDRA03086	8.6	10	40	90
CDRA03087	8.7	10	40	90
CDRA03088	8.8	10	40	90
CDRA03089	8.9	10	40	90
CDRA03090	9.0	10	40	90
CDRA03091	9.1	10	40	90
CDRA03092	9.2	10	40	90
CDRA03093	9.3	10	40	90
CDRA03094	9.4	10	40	90
CDRA03095	9.5	10	40	90
CDRA03096	9.6	10	43	93
CDRA03097	9.7	10	43	93
CDRA03098	9.8	10	43	93
CDRA03099	9.9	10	43	93
CDRA03100	10.0	10	43	93
CDRA03101	10.1	12	43	100

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
CDRA03102	10.2	12	43	100
CDRA03103	10.3	12	43	100
CDRA03104	10.4	12	43	100
CDRA03105	10.5	12	43	100
CDRA03106	10.6	12	43	100
CDRA03107	10.7	12	47	104
CDRA03108	10.8	12	47	104
CDRA03109	10.9	12	47	104
CDRA03110	11.0	12	47	104
CDRA03111	11.1	12	47	104
CDRA03112	11.2	12	47	104
CDRA03113	11.3	12	47	104
CDRA03114	11.4	12	47	104
CDRA03115	11.5	12	47	104
CDRA03116	11.6	12	47	104
CDRA03117	11.7	12	47	104
CDRA03118	11.8	12	47	104
CDRA03119	11.9	12	51	108
CDRA03120	12.0	12	51	108
CDRA03121	12.1	12	51	108
CDRA03122	12.2	12	51	108
CDRA03123	12.3	12	51	108
CDRA03124	12.4	12	51	108
CDRA03125	12.5	12	51	108
CDRA03126	12.6	12	51	108
CDRA03127	12.7	12	51	108
CDRA03128	12.8	12	51	108
CDRA03129	12.9	12	51	108
CDRA03130	13.0	12	51	108

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○			○	○	○	◎	◎			

MULTI-1 DRILLS

CDRA04 SERIES

PREMIUM HSS-PM MULTI-1 DRILLS
PREMIUM HSS-PM MULTI-1 BROHER

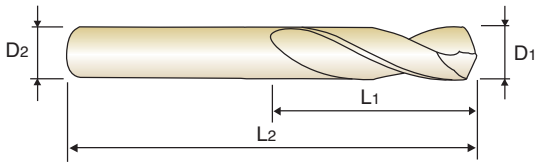
JOBBER
KURZ

▶ **Application** : Structural steels, Carbon steels, Alloy steels, Pre-hardened steels, Mold steels, Stainless steels, Hardened steels(HRc30~45), Cast iron, Aluminum alloys, Nonferrous alloys, Titanium.

▶ **Advantage** : Point shape to maximize self-centering.
Flute design for the best chip evacuation.
Premium powder materials with excellent toughness.

▶ **Anwendung** : Baustähle, Kohlenstoffstähle, legierte Stähle, vorgehärtete Stähle, Formstähle, rostfreie Stähle, gehärtete Stähle (HRc 30~45), Gusseisen, Aluminiumlegierungen, Nichteisen Legierungen, Titan.

▶ **Vorteile** : Maximale Selbstzentrierung durch besonderen Spitzenanschliff
Bohrergeometrie für optimale Spanabfuhr.
Premium Pulverstahl mit ausgezeichneter Zähigkeit.



PREMIUM HSS-PM | N 30° | h6 | h7 | 135° | P.138

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
CDRA04020	2.0	3	24	56
CDRA04021	2.1	3	24	56
CDRA04022	2.2	3	25	56
CDRA04023	2.3	3	25	56
CDRA04024	2.4	3	30	61
CDRA04025	2.5	3	30	61
CDRA04026	2.6	3	30	61
CDRA04027	2.7	3	33	64
CDRA04028	2.8	3	33	64
CDRA04029	2.9	3	33	64
CDRA04030	3.0	3	33	64
CDRA04031	3.1	4	36	68
CDRA04032	3.2	4	36	68
CDRA04033	3.3	4	36	68
CDRA04034	3.4	4	39	71
CDRA04035	3.5	4	39	71
CDRA04036	3.6	4	39	71
CDRA04037	3.7	4	39	71
CDRA04038	3.8	4	43	75
CDRA04039	3.9	4	43	75
CDRA04040	4.0	4	43	75
CDRA04041	4.1	6	43	85
CDRA04042	4.2	6	43	85
CDRA04043	4.3	6	47	89
CDRA04044	4.4	6	47	89
CDRA04045	4.5	6	47	89
CDRA04046	4.6	6	47	89
CDRA04047	4.7	6	47	89

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
CDRA04048	4.8	6	52	94
CDRA04049	4.9	6	52	94
CDRA04050	5.0	6	52	94
CDRA04051	5.1	6	52	94
CDRA04052	5.2	6	52	94
CDRA04053	5.3	6	52	94
CDRA04054	5.4	6	57	99
CDRA04055	5.5	6	57	99
CDRA04056	5.6	6	57	99
CDRA04057	5.7	6	57	99
CDRA04058	5.8	6	57	99
CDRA04059	5.9	6	57	99
CDRA04060	6.0	6	57	99
CDRA04061	6.1	8	63	107
CDRA04062	6.2	8	63	107
CDRA04063	6.3	8	63	107
CDRA04064	6.4	8	63	107
CDRA04065	6.5	8	63	107
CDRA04066	6.6	8	63	107
CDRA04067	6.7	8	63	107
CDRA04068	6.8	8	69	113
CDRA04069	6.9	8	69	113
CDRA04070	7.0	8	69	113
CDRA04071	7.1	8	69	113
CDRA04072	7.2	8	69	113
CDRA04073	7.3	8	69	113
CDRA04074	7.4	8	69	113
CDRA04075	7.5	8	69	113

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○			○	○	○	◎	◎			

MULTI-1 DRILLS

CDRA04 SERIES

PREMIUM HSS-PM MULTI-1 DRILLS
PREMIUM HSS-PM MULTI-1 BROHER

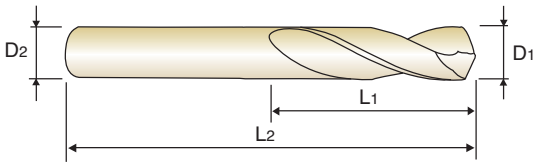
JOBBER
KURZ

▶Application : Structural steels, Carbon steels, Alloy steels, Pre-hardened steels, Mold steels, Stainless steels, Hardened steels(HRc30~45), Cast iron, Aluminum alloys, Nonferrous alloys, Titanium.

▶Advantage : Point shape to maximize self-centering.
Flute design for the best chip evacuation.
Premium powder materials with excellent toughness.

▶Anwendung : Baustähle, Kohlenstoffstähle, legierte Stähle, vorgehärtete Stähle, Formstähle, rostfreie Stähle, gehärtete Stähle (HRc 30~45), Gusseisen, Aluminiumlegierungen, Nichteisen Legierungen, Titan.

▶Vorteile : Maximale Selbstzentrierung durch besonderen Spitzenanschliff
Bohrergeometrie für optimale Spanabfuhr.
Premium Pulverstahl mit ausgezeichneter Zähigkeit.



PREMIUM HSS-PM | N 30° | h6 | h7 | 135° P.138

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
CDRA04076	7.6	8	75	119
CDRA04077	7.7	8	75	119
CDRA04078	7.8	8	75	119
CDRA04079	7.9	8	75	119
CDRA04080	8.0	8	75	119
CDRA04081	8.1	10	75	125
CDRA04082	8.2	10	75	125
CDRA04083	8.3	10	75	125
CDRA04084	8.4	10	75	125
CDRA04085	8.5	10	75	125
CDRA04086	8.6	10	81	131
CDRA04087	8.7	10	81	131
CDRA04088	8.8	10	81	131
CDRA04089	8.9	10	81	131
CDRA04090	9.0	10	81	131
CDRA04091	9.1	10	81	131
CDRA04092	9.2	10	81	131
CDRA04093	9.3	10	81	131
CDRA04094	9.4	10	81	131
CDRA04095	9.5	10	81	131
CDRA04096	9.6	10	87	137
CDRA04097	9.7	10	87	137
CDRA04098	9.8	10	87	137
CDRA04099	9.9	10	87	137
CDRA04100	10.0	10	87	137
CDRA04101	10.1	12	87	144
CDRA04102	10.2	12	87	144
CDRA04103	10.3	12	87	144

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
CDRA04104	10.4	12	87	144
CDRA04105	10.5	12	87	144
CDRA04106	10.6	12	87	144
CDRA04107	10.7	12	94	151
CDRA04108	10.8	12	94	151
CDRA04109	10.9	12	94	151
CDRA04110	11.0	12	94	151
CDRA04111	11.1	12	94	151
CDRA04112	11.2	12	94	151
CDRA04113	11.3	12	94	151
CDRA04114	11.4	12	94	151
CDRA04115	11.5	12	94	151
CDRA04116	11.6	12	94	151
CDRA04117	11.7	12	94	151
CDRA04118	11.8	12	94	151
CDRA04119	11.9	12	101	158
CDRA04120	12.0	12	101	158
CDRA04121	12.1	12	101	158
CDRA04122	12.2	12	101	158
CDRA04123	12.3	12	101	158
CDRA04124	12.4	12	101	158
CDRA04125	12.5	12	101	158
CDRA04126	12.6	12	101	158
CDRA04127	12.7	12	101	158
CDRA04128	12.8	12	101	158
CDRA04129	12.9	12	101	158
CDRA04130	13.0	12	101	158

◎ : Excellent ○ : Good
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○			○	○	○	◎	◎			

MULTI-1 DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

PREMIUM HSS-PM MULTI-1 DRILLS, TiAlN COATED
PREMIUM HSS-PM MULTI-1 BROHER, TiAlN-BESCHICHTET

CDRA03 SERIES

WORK MATERIAL	CARBON STEELS		ALLOY STEELS PRE-HARDENED STEELS		CAST IRON		ALUMINUM ALLOYS NONFRERROUS ALLOYS		MOLD STEELS, HARDENED STEELS (HRc30~45) STAINLESS STEELS (SUS304, 200)		STAINLESS STEELS (SUS420, 440)		TITANUM ALLOYSNICKEL ALLOYS	
DRILLING SPEED	30 ~ 40 m/min		25 ~ 35 m/min		35 ~ 45 m/min		80 ~ 100 m/min		13 ~ 18 m/min		15 ~ 20 m/min		3 ~ 6 m/min	
DIAMETER	N	S	N	S	N	S	N	S	N	S	N	S	N	S
2.0	5800	0.06	4700	0.05	6500	0.08	10500	0.17	2600	0.04	3100	0.08	800	0.03
3.0	4300	0.12	3500	0.09	4900	0.14	10500	0.27	1800	0.05	2100	0.09	530	0.05
4.0	3200	0.15	2600	0.13	3600	0.18	8000	0.33	1300	0.07	1600	0.11	400	0.07
5.0	2600	0.18	2100	0.16	2900	0.21	6500	0.39	1050	0.09	1250	0.17	320	0.09
6.0	2100	0.20	1700	0.18	2400	0.25	5200	0.46	900	0.10	1050	0.19	260	0.10
8.0	1600	0.24	1300	0.20	1800	0.29	4200	0.51	650	0.14	800	0.26	200	0.13
10.0	1300	0.27	1000	0.24	1500	0.32	3400	0.61	550	0.17	630	0.33	160	0.16
12.0	1100	0.29	850	0.26	1200	0.36	2700	0.73	450	0.20	530	0.39	130	0.19

N = R.P.M
S = Feed per Revolution (mm/rev.)

PREMIUM HSS-PM MULTI-1 DRILLS, TiAlN COATED
PREMIUM HSS-PM MULTI-1 BROHER, TiAlN-BESCHICHTET

CDRA04 SERIES

WORK MATERIAL	CARBON STEELS		ALLOY STEELS PRE-HARDENED STEELS		CAST IRON		ALUMINUM ALLOYS NONFRERROUS ALLOYS		MOLD STEELS, HARDENED STEELS (HRc30~45) STAINLESS STEELS (SUS304, 200)		STAINLESS STEELS (SUS420, 440)		TITANUM ALLOYSNICKEL ALLOYS	
DRILLING SPEED	30 ~ 40 m/min		25 ~ 35 m/min		35 ~ 45 m/min		80 ~ 100 m/min		13 ~ 18 m/min		15 ~ 20 m/min		3 ~ 6 m/min	
DIAMETER	N	S	N	S	N	S	N	S	N	S	N	S	N	S
2.0	5800	0.05	4700	0.04	6500	0.07	10500	0.14	2600	0.03	3100	0.07	800	0.02
3.0	4300	0.10	3500	0.08	4900	0.12	10500	0.23	1800	0.04	2100	0.08	530	0.04
4.0	3200	0.13	2600	0.11	3600	0.15	8000	0.28	1300	0.06	1600	0.09	400	0.05
5.0	2600	0.15	2100	0.14	2900	0.18	6500	0.33	1050	0.08	1250	0.14	320	0.06
6.0	2100	0.17	1700	0.15	2400	0.21	5200	0.39	900	0.09	1050	0.16	260	0.07
8.0	1600	0.20	1300	0.17	1800	0.25	4200	0.43	650	0.12	800	0.22	200	0.09
10.0	1300	0.23	1000	0.20	1500	0.27	3400	0.52	550	0.14	630	0.28	160	0.11
12.0	1100	0.25	850	0.22	1200	0.31	2700	0.62	450	0.17	530	0.33	130	0.13

N = R.P.M
S = Feed per Revolution (mm/rev.)

HSS

Being the best through innovation

HPD DRILLS

HPD BOHRER

- PREMIUM HSS HPD STRAIGHT SHANK DRILLS
  General Steels and Stainless Steels
- PREMIUM-HSS HPD ZYLINDERSCHAFT BOHRER
  Für normale und rostfreie Stähle

HPD - HIGH PERFORMANCE DRILLS

HPD Drills for High precision drilling in general steels.
HPD-SUS Drills for High precision drilling in Stainless steels

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
D4541		PREMIUM HSS COBALT, HPD TWIST DRILLS for STEELS *STUB* PREMIUM HSS KOBALT, HPD SPIRALBOHRER für STÄHLE *EXTRA KURZ*	D2.0	D13.0	142
D4542		PREMIUM HSS COBALT, HPD TWIST DRILLS for STEELS *JOBBER* PREMIUM HSS KOBALT, HPD SPIRALBOHRER für STÄHLE *KURZ*	D2.0	D32.0	146
DJ543		HSS-EX, HPD-SUS DRILLS for STAINLESS STEELS *STUB* HSS-EX, HPD-SUS SPIRALBOHRER für ROSTFREIER STÄHLE *EXTRA KURZ*	D2.0	D13.0	151
DJ544		HSS-EX, HPD-SUS DRILLS for STAINLESS STEELS *JOBBER* HSS-EX, HPD-SUS SPIRALBOHRER für ROSTFREIER STÄHLE *KURZ*	D2.0	D20.0	153
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			156

◎ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○			○	○	○	○				
◎	◎	○			○	○	○	○				
◎						○	◎	○	○	○		
◎						○	◎	○	○	○		

HPD DRILLS

D4541 SERIES

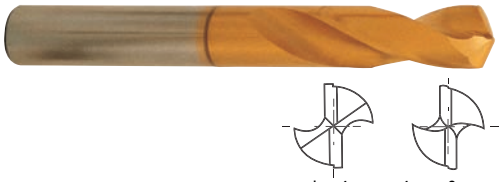
PREMIUM HSS COBALT, HPD TWIST DRILLS for STEELS — *STUB*
PREMIUM HSS KOBALT, HPD SPIRALBOHRER für STÄHLE — *EXTRA KURZ*

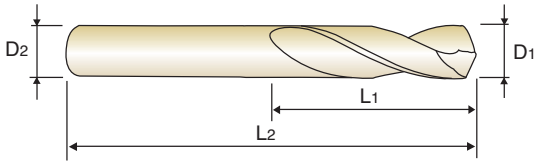
▶ **Application** : Designed for accurate drilling on NC/CNC machines. Drilling hard and tough materials, alloyed tool steels, inconel, nimonic, cast iron, aluminum die casting, etc.

▶ **Advantage** : Helical thinning - good chip removal, self-centering, reducing thrust and improving accuracy.
Reinforced web and stub length - increasing rigidity, reducing vibration and deflection.
Premium Cobalt HSS with superior TiN coating - higher speed and feed, longer tool life
High quality & good surface finish, high productivity

▶ **Anwendung** : Für präzises Bohren mit NC/CNC Maschinen, geeignet zum Bearbeiten von harten und zähen Werkstücken, Legierungen, Werkzeugstahl, Nimonic, Inconel, Gusseisen, Aluminium-Guss usw.

▶ **Vorteile** : Durch Kreuzanschliff gute Spanentfernung, reduzierter Druck, verbesserte Genauigkeit, selbstzentriert, extra kurze Ausführung, verbesserte Stabilität, weniger Vibrationen und Abdrängung, Premium Kobalt HSS mit hochwertiger TiN-Beschichtung, höhere Geschwindigkeit und Vorschub, längere Standzeit, verbesserte Oberflächengüte und Produktivität.





PREMIUM HSS-Co | N 25° | h7 | h8 | 130° P.156

$D_1 = D_2$

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4541020	2.0	12	44
D4541920	2.05	12	44
D4541021	2.1	12	44
D4541921	2.15	13	45
D4541022	2.2	13	45
D4541922	2.25	13	45
D4541023	2.3	13	45
D4541923	2.35	13	45
D4541024	2.4	14	46
D4541924	2.45	14	46
D4541025	2.5	14	46
D4541925	2.55	14	46
D4541026	2.6	14	46
D4541926	2.65	14	46
D4541027	2.7	16	48
D4541927	2.75	16	48
D4541028	2.8	16	48
D4541928	2.85	16	48
D4541029	2.9	16	48
D4541929	2.95	16	48
D4541030	3.0	16	48
D4541930	3.05	18	50
D4541031	3.1	18	50
D4541931	3.15	18	50

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4541032	3.2	18	50
D4541932	3.25	18	50
D4541033	3.3	18	50
D4541933	3.35	18	50
D4541034	3.4	20	52
D4541934	3.45	20	52
D4541035	3.5	20	52
D4541935	3.55	20	52
D4541036	3.6	20	52
D4541936	3.65	20	52
D4541037	3.7	20	52
D4541937	3.75	20	52
D4541038	3.8	22	54
D4541938	3.85	22	54
D4541039	3.9	22	54
D4541939	3.95	22	54
D4541040	4.0	22	54
D4541940	4.05	22	66
D4541041	4.1	22	66
D4541941	4.15	22	66
D4541042	4.2	22	66
D4541942	4.25	22	66
D4541043	4.3	24	68
D4541943	4.35	24	68

▶ TiCN(D7541), TiAlN(DQ541) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○			○	○	○	○				

HPD DRILLS

D4541 SERIES

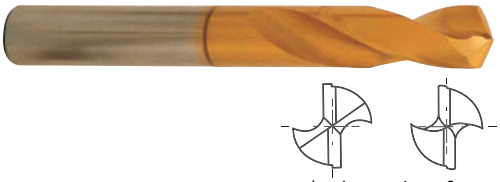
PREMIUM HSS COBALT, HPD TWIST DRILLS for STEELS — *STUB*
PREMIUM HSS KOBALT, HPD SPIRALBOHRER für STÄHLE — *EXTRA KURZ*

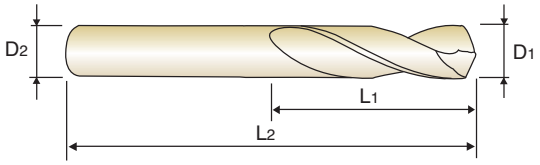
▶ **Application** : Designed for accurate drilling on NC/CNC machines. Drilling hard and tough materials, alloyed tool steels, inconel, nimonic, cast iron, aluminum die casting, etc.

▶ **Advantage** : Helical thinning - good chip removal, self-centering, reducing thrust and improving accuracy.
Reinforced web and stub length - increasing rigidity, reducing vibration and deflection.
Premium Cobalt HSS with superior TiN coating - higher speed and feed, longer tool life
High quality & good surface finish, high productivity

▶ **Anwendung** : Für präzises Bohren mit NC/CNC Maschinen, geeignet zum Bearbeiten von harten und zähen Werkstücken, Legierungen, Werkzeugstahl, Nimonic, Inconel, Gusseisen, Aluminium-Guss usw.

▶ **Vorteile** : Durch Kreuzanschliff gute Spanentfernung, reduzierter Druck, verbesserte Genauigkeit, selbstzentriert, extra kurze Ausführung, verbesserte Stabilität, weniger Vibrationen und Abdrängung, Premium Kobalt HSS mit hochwertiger TiN-Beschichtung, höhere Geschwindigkeit und Vorschub, längere Standzeit, verbesserte Oberflächengüte und Produktivität.





PREMIUM HSS-Co | N 25° | h7 | h8 | 130° P.156

$D_1 = D_2$

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4541044	4.4	24	68
D4541944	4.45	24	68
D4541045	4.5	24	68
D4541945	4.55	24	68
D4541046	4.6	24	68
D4541946	4.65	24	68
D4541047	4.7	24	68
D4541947	4.75	24	68
D4541048	4.8	26	70
D4541948	4.85	26	70
D4541049	4.9	26	70
D4541949	4.95	26	70
D4541050	5.0	26	70
D4541950	5.05	26	70
D4541051	5.1	26	70
D4541951	5.15	26	70
D4541052	5.2	26	70
D4541952	5.25	26	70
D4541053	5.3	26	70
D4541953	5.35	28	72
D4541054	5.4	28	72
D4541954	5.45	28	72
D4541055	5.5	28	72
D4541955	5.55	28	72

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4541056	5.6	28	72
D4541956	5.65	28	72
D4541057	5.7	28	72
D4541957	5.75	28	72
D4541058	5.8	28	72
D4541958	5.85	28	72
D4541059	5.9	28	72
D4541959	5.95	28	72
D4541060	6.0	28	72
D4541061	6.1	31	75
D4541062	6.2	31	75
D4541063	6.3	31	75
D4541064	6.4	31	75
D4541065	6.5	31	75
D4541965	6.55	31	75
D4541066	6.6	31	75
D4541966	6.65	31	75
D4541067	6.7	31	75
D4541068	6.8	34	78
D4541069	6.9	34	78
D4541070	7.0	34	78
D4541071	7.1	34	78
D4541072	7.2	34	78
D4541073	7.3	34	78

▶ TiCN(D7541), TiAlN(DQ541) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○			○	○	○	○				

HPD DRILLS

D4541 SERIES

PREMIUM HSS COBALT, HPD TWIST DRILLS for STEELS — *STUB*
PREMIUM HSS KOBALT, HPD SPIRALBOHRER für STÄHLE — *EXTRA KURZ*

▶ **Application** : Designed for accurate drilling on NC/CNC machines. Drilling hard and tough materials, alloyed tool steels, inconel, nimonic, cast iron, aluminum die casting, etc.

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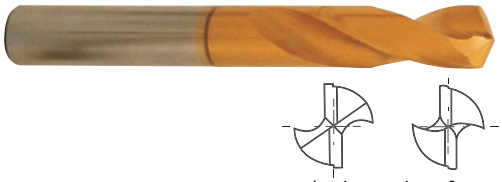
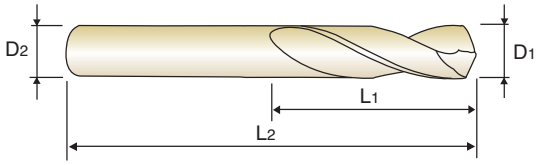
▶ **Vorteile** : Durch Kreuzanschliff gute Spanentfernung, reduzierter Druck, verbesserte Genauigkeit, selbstzentriert, extra kurze Ausführung, verbesserte Stabilität, weniger Vibrationen und Abdrängung, Premium Kobalt HSS mit hochwertiger TiN-Beschichtung, höhere Geschwindigkeit und Vorschub, längere Standzeit, verbesserte Oberflächengüte und Produktivität.





PREMIUM HSS-Co | N 25° | h7 | h8 | 130° | P.156

$D_1 = D_2$

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4541973	7.35	34	78
D4541074	7.4	34	78
D4541075	7.5	34	78
D4541975	7.55	37	81
D4541076	7.6	37	81
D4541976	7.65	37	81
D4541077	7.7	37	81
D4541078	7.8	37	81
D4541079	7.9	37	81
D4541080	8.0	37	81
D4541081	8.1	37	87
D4541082	8.2	37	87
D4541083	8.3	37	87
D4541983	8.35	37	87
D4541084	8.4	37	87
D4541085	8.5	37	87
D4541985	8.55	40	90
D4541086	8.6	40	90
D4541986	8.65	40	90
D4541087	8.7	40	90
D4541088	8.8	40	90
D4541089	8.9	40	90
D4541090	9.0	40	90
D4541091	9.1	40	90

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4541092	9.2	40	90
D4541992	9.25	40	90
D4541093	9.3	40	90
D4541993	9.35	40	90
D4541094	9.4	40	90
D4541994	9.45	40	90
D4541095	9.5	40	90
D4541995	9.55	43	93
D4541096	9.6	43	93
D4541996	9.65	43	93
D4541097	9.7	43	93
D4541098	9.8	43	93
D4541099	9.9	43	93
D4541999	9.95	43	93
D4541100	10.0	43	93
D4541101	10.1	43	100
D4541102	10.2	43	100
D4541802	10.25	43	100
D4541103	10.3	43	100
D4541803	10.35	43	100
D4541104	10.4	43	100
D4541105	10.5	43	100
D4541805	10.55	43	100
D4541106	10.6	43	100

▶ TiCN(D7541), TiAlN(DQ541) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○			○	○	○	○				

HPD DRILLS

D4541 SERIES

PREMIUM HSS COBALT, HPD TWIST DRILLS for STEELS — STUB
PREMIUM HSS KOBALT, HPD SPIRALBOHRER für STÄHLE — EXTRA KURZ

▶ **Application** : Designed for accurate drilling on NC/CNC machines. Drilling hard and tough materials, alloyed tool steels, inconel, nimonic, cast iron, aluminum die casting, etc.

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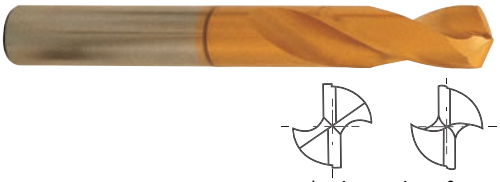
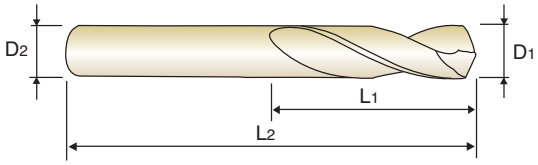




PREMIUM HSS-Co | N 25° | h7 | h8 | 130° P.156

$D_1 = D_2$

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4541806	10.65	47	104
D4541107	10.7	47	104
D4541108	10.8	47	104
D4541109	10.9	47	104
D4541809	10.95	47	104
D4541110	11.0	47	104
D4541111	11.1	47	104
D4541112	11.2	47	104
D4541812	11.25	47	104
D4541113	11.3	47	104
D4541813	11.35	47	104
D4541114	11.4	47	104
D4541115	11.5	47	104
D4541815	11.55	47	104
D4541116	11.6	47	104

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4541117	11.7	47	104
D4541118	11.8	47	104
D4541119	11.9	51	108
D4541120	12.0	51	108
D4541121	12.1	51	108
D4541122	12.2	51	108
D4541123	12.3	51	108
D4541124	12.4	51	108
D4541125	12.5	51	108
D4541126	12.6	51	108
D4541127	12.7	51	108
D4541128	12.8	51	108
D4541129	12.9	51	108
D4541130	13.0	51	108

▶ TiCN(D7541), TiAlN(DQ541) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○			○	○	○	○				

HPD DRILLS

D4542 SERIES

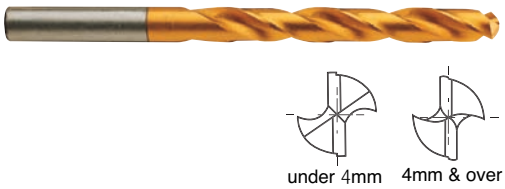
PREMIUM HSS COBALT, HPD TWIST DRILLS for STEELS — *JOBBER*
PREMIUM HSS KOBALT, HPD SPIRALBOHRER für STÄHLE — *KURZ*

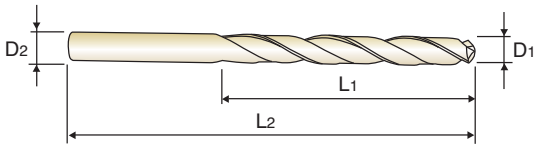
▶ **Application** : Designed for high speed non-step 4D~5D drilling. Drilling mild steels, cast iron, aluminum, alloyed tool steels, etc.

▶ **Advantage** : Helical thinning - good chip removal, self-centering, reducing thrust and improving accuracy.
Reinforced web and jobbers length - increasing rigidity and suitable for 4D~5D drilling
Premium Cobalt HSS with superior TiN coating - higher speed and feed, longer tool life
High quality & good surface finish, high productivity.

▶ **Anwendung** : Zum Hochgeschwindigkeitsbohren 4D~5D Bohrtiefe geeignet zum Bearbeiten von Stahl, Gusseisen, Aluminium, Legierungen, Werkzeugstahl, usw.

▶ **Vorteile** : Gute Spanabfuhr, selbstzentriert, geringere Abdrängung und verbesserte Genauigkeit, kurze Ausführung, verbesserte Stabilität, zum Bearbeiten von Premium kobalt HSS mit hochwertiger TiN-Beschichtung, höhere Geschwindigkeit und Vorschub, längere Standzeit, verbesserte Oberflächengüte und Produktivität.





PREMIUM HSS-Co | N 30° | h7 (up to 13mm) | h6 (over 13mm) | h8 | 130° | P.156

$D_1 = D_2$

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4542020	2.0	24	56
D4542920	2.05	24	56
D4542021	2.1	24	56
D4542921	2.15	27	59
D4542022	2.2	27	59
D4542922	2.25	27	59
D4542023	2.3	27	59
D4542923	2.35	27	59
D4542024	2.4	30	62
D4542924	2.45	30	62
D4542025	2.5	30	62
D4542925	2.55	30	62
D4542026	2.6	30	62
D4542926	2.65	30	62
D4542027	2.7	33	65
D4542927	2.75	33	65
D4542028	2.8	33	65
D4542928	2.85	33	65
D4542029	2.9	33	65
D4542929	2.95	33	65
D4542030	3.0	33	65
D4542930	3.05	36	68
D4542031	3.1	36	68
D4542931	3.15	36	68
D4542032	3.2	36	68

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4542932	3.25	36	68
D4542033	3.3	36	68
D4542933	3.35	36	68
D4542034	3.4	39	71
D4542934	3.45	39	71
D4542035	3.5	39	71
D4542935	3.55	39	71
D4542036	3.6	39	71
D4542936	3.65	39	71
D4542037	3.7	39	71
D4542937	3.75	39	71
D4542038	3.8	43	75
D4542938	3.85	43	75
D4542039	3.9	43	75
D4542939	3.95	43	75
D4542040	4.0	43	75
D4542940	4.05	43	87
D4542041	4.1	43	87
D4542941	4.15	43	87
D4542042	4.2	43	87
D4542942	4.25	43	87
D4542043	4.3	47	91
D4542943	4.35	47	91
D4542044	4.4	47	91
D4542944	4.45	47	91

▶ TiCN(D7542), TiAlN(DQ542) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○			○	○	○	○				

HPD DRILLS

D4542 SERIES

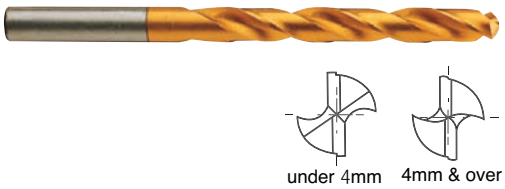
PREMIUM HSS COBALT, HPD TWIST DRILLS for STEELS — JOBBER
PREMIUM HSS KOBALT, HPD SPIRALBOHRER für STÄHLE — KURZ

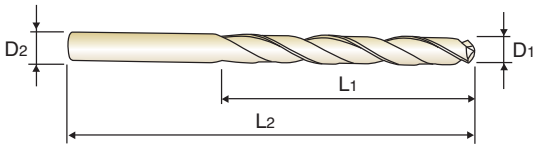
▶ **Application** : Designed for high speed non-step 4D~5D drilling. Drilling mild steels, cast iron, aluminum, alloyed tool steels, etc.

▶ **Advantage** : Helical thinning - good chip removal, self-centering, reducing thrust and improving accuracy.
Reinforced web and jobbers length - increasing rigidity and suitable for 4D~5D drilling
Premium Cobalt HSS with superior TiN coating - higher speed and feed, longer tool life
High quality & good surface finish, high productivity.

▶ **Anwendung** : Zum Hochgeschwindigkeitsbohren 4D~5D Bohrtiefe geeignet zum Bearbeiten von Stahl, Gusseisen, Aluminium, Legierungen, Werkzeugstahl, usw.

▶ **Vorteile** : Gute Spanabfuhr, selbstzentriert, geringere Abdrängung und verbesserte Genauigkeit, kurze Ausführung, verbesserte Stabilität, zum Bearbeiten von Premium kobalt HSS mit hochwertiger TiN-Beschichtung, höhere Geschwindigkeit und Vorschub, längere Standzeit, verbesserte Oberflächengüte und Produktivität.





PREMIUM HSS-Co | N 30° | h7 (up to 13mm) | h6 (over 13mm) | h8 | 130° P.156

$D_1 = D_2$

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4542045	4.5	47	91
D4542945	4.55	47	91
D4542046	4.6	47	91
D4542946	4.65	47	91
D4542047	4.7	47	91
D4542947	4.75	47	91
D4542048	4.8	52	96
D4542948	4.85	52	96
D4542049	4.9	52	96
D4542949	4.95	52	96
D4542050	5.0	52	96
D4542950	5.05	52	96
D4542051	5.1	52	96
D4542951	5.15	52	96
D4542052	5.2	52	96
D4542952	5.25	52	96
D4542053	5.3	52	96
D4542953	5.35	57	101
D4542054	5.4	57	101
D4542954	5.45	57	101
D4542055	5.5	57	101
D4542955	5.55	57	101
D4542056	5.6	57	101
D4542956	5.65	57	101
D4542057	5.7	57	101

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4542957	5.75	57	101
D4542058	5.8	57	101
D4542958	5.85	57	101
D4542059	5.9	57	101
D4542959	5.95	57	101
D4542060	6.0	57	101
D4542960	6.05	63	107
D4542061	6.1	63	107
D4542961	6.15	63	107
D4542062	6.2	63	107
D4542962	6.25	63	107
D4542063	6.3	63	107
D4542963	6.35	63	107
D4542064	6.4	63	107
D4542964	6.45	63	107
D4542065	6.5	63	107
D4542965	6.55	63	107
D4542066	6.6	63	107
D4542966	6.65	63	107
D4542067	6.7	63	107
D4542967	6.75	69	113
D4542068	6.8	69	113
D4542968	6.85	69	113
D4542069	6.9	69	113
D4542969	6.95	69	113

▶ TiCN(D7542), TiAlN(DQ542) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○			○	○	○	○				

HPD DRILLS

D4542 SERIES

PREMIUM HSS COBALT, HPD TWIST DRILLS for STEELS — *JOBBER*
PREMIUM HSS KOBALT, HPD SPIRALBOHRER für STÄHLE — *KURZ*

▶ **Application** : Designed for high speed non-step 4D~5D drilling.
Drilling mild steels, cast iron, aluminum, alloyed tool steels, etc.

▶ **Advantage** : Helical thinning - good chip removal, self-centering, reducing thrust and improving accuracy.
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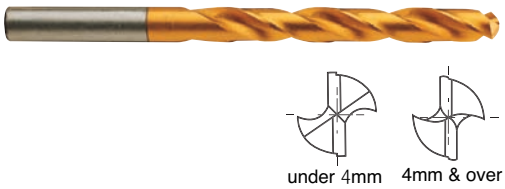

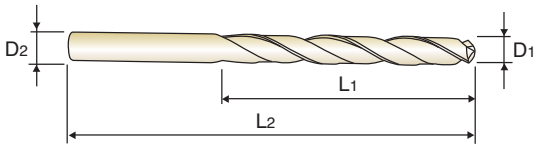

PREMIUM HSS-Co | N 30° | h7 (up to 13mm) | h6 (over 13mm) | h8 | 130° | P.156

$D_1 = D_2$

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4542070	7.0	69	113
D4542970	7.05	69	113
D4542071	7.1	69	113
D4542971	7.15	69	113
D4542072	7.2	69	113
D4542972	7.25	69	113
D4542073	7.3	69	113
D4542973	7.35	69	113
D4542074	7.4	69	113
D4542974	7.45	69	113
D4542075	7.5	69	113
D4542975	7.55	75	119
D4542076	7.6	75	119
D4542976	7.65	75	119
D4542077	7.7	75	119
D4542977	7.75	75	119
D4542078	7.8	75	119
D4542978	7.85	75	119
D4542079	7.9	75	119
D4542979	7.95	75	119
D4542080	8.0	75	119
D4542980	8.05	75	125
D4542081	8.1	75	125
D4542981	8.15	75	125
D4542082	8.2	75	125

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4542982	8.25	75	125
D4542083	8.3	75	125
D4542983	8.35	75	125
D4542084	8.4	75	125
D4542984	8.45	75	125
D4542085	8.5	75	125
D4542985	8.55	81	131
D4542086	8.6	81	131
D4542986	8.65	81	131
D4542087	8.7	81	131
D4542987	8.75	81	131
D4542088	8.8	81	131
D4542988	8.85	81	131
D4542089	8.9	81	131
D4542989	8.95	81	131
D4542090	9.0	81	131
D4542990	9.05	81	131
D4542091	9.1	81	131
D4542991	9.15	81	131
D4542092	9.2	81	131
D4542992	9.25	81	131
D4542093	9.3	81	131
D4542993	9.35	81	131
D4542094	9.4	81	131
D4542994	9.45	81	131

▶ TiCN(D7542), TiAlN(DQ542) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○			○	○	○	○				

HPD DRILLS

D4542 SERIES

PREMIUM HSS COBALT, HPD TWIST DRILLS for STEELS — JOBBER
PREMIUM HSS KOBALT, HPD SPIRALBOHRER für STÄHLE — KURZ

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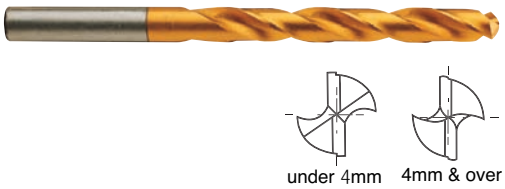

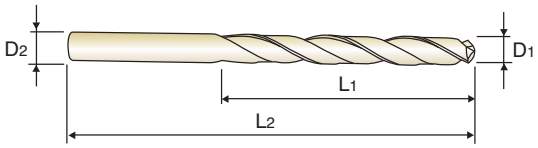

PREMIUM HSS-Co | N 30° | h7 | h6 | h8 | 130° | P.156

up to 13mm over 13mm

$D_1 = D_2$

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length	EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2	TiN	D_1	L_1	L_2
D4542095	9.5	81	131	D4542807	10.75	94	151
D4542995	9.55	87	137	D4542108	10.8	94	151
D4542096	9.6	87	137	D4542808	10.85	94	151
D4542996	9.65	87	137	D4542109	10.9	94	151
D4542097	9.7	87	137	D4542809	10.95	94	151
D4542997	9.75	87	137	D4542110	11.0	94	151
D4542098	9.8	87	137	D4542810	11.05	94	151
D4542998	9.85	87	137	D4542111	11.1	94	151
D4542099	9.9	87	137	D4542811	11.15	94	151
D4542999	9.95	87	137	D4542112	11.2	94	151
D4542100	10.0	87	137	D4542812	11.25	94	151
D4542800	10.05	87	144	D4542113	11.3	94	151
D4542101	10.1	87	144	D4542813	11.35	94	151
D4542801	10.15	87	144	D4542114	11.4	94	151
D4542102	10.2	87	144	D4542814	11.45	94	151
D4542802	10.25	87	144	D4542115	11.5	94	151
D4542103	10.3	87	144	D4542815	11.55	94	151
D4542803	10.35	87	144	D4542116	11.6	94	151
D4542104	10.4	87	144	D4542816	11.65	94	151
D4542804	10.45	87	144	D4542117	11.7	94	151
D4542105	10.5	87	144	D4542817	11.75	94	151
D4542805	10.55	87	144	D4542118	11.8	94	151
D4542106	10.6	87	144	D4542818	11.85	101	158
D4542806	10.65	94	151	D4542119	11.9	101	158
D4542107	10.7	94	151	D4542819	11.95	101	158

▶ TiCN(D7542), TiAlN(DQ542) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○			○	○	○	○				

HPD DRILLS

D4542 SERIES

PREMIUM HSS COBALT, HPD TWIST DRILLS for STEELS — *JOBBER*
PREMIUM HSS KOBALT, HPD SPIRALBOHRER für STÄHLE — *KURZ*

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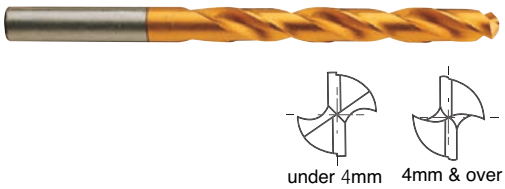
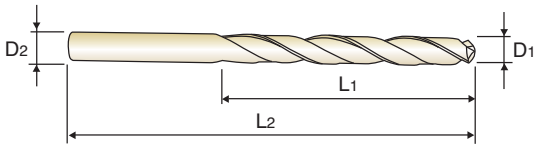




PREMIUM HSS-Co | N 30° | h7 | h6 | h8 | 130° | P.156

up to 13mm over 13mm

$D_1 = D_2$

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4542120	12.0	101	158
D4542121	12.1	101	158
D4542122	12.2	101	158
D4542123	12.3	101	158
D4542124	12.4	101	158
D4542125	12.5	101	158
D4542126	12.6	101	158
D4542127	12.7	101	158
D4542128	12.8	101	158
D4542129	12.9	101	158
D4542130	13.0	101	158
D4542135	13.5	90	150
D4542140	14.0	90	150
D4542141	14.1	95	155
D4542145	14.5	95	155
D4542150	15.0	95	161
D4542155	15.5	100	166
D4542156	15.6	100	166
D4542160	16.0	100	166
D4542165	16.5	106	172
D4542170	17.0	106	172
D4542175	17.5	112	178
D4542176	17.6	112	178
D4542180	18.0	112	178
D4542185	18.5	118	184

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
D4542190	19.0	118	194
D4542195	19.5	125	201
D4542196	19.6	125	201
D4542200	20.0	125	201
D4542205	20.5	128	204
D4542210	21.0	128	204
D4542211	21.1	128	204
D4542215	21.5	132	208
D4542220	22.0	132	208
D4542225	22.5	136	212
D4542230	23.0	136	212
D4542235	23.5	136	212
D4542240	24.0	140	220
D4542245	24.5	140	220
D4542250	25.0	140	220
D4542255	25.5	145	225
D4542260	26.0	145	225
D4542265	26.5	145	225
D4542270	27.0	150	230
D4542280	28.0	150	230
D4542290	29.0	155	235
D4542300	30.0	155	235
D4542310	31.0	160	240
D4542320	32.0	165	245

▶ TiCN(D7542), TiAlN(DQ542) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○			○	○	○	○				

HPD DRILLS

DJ543 SERIES

HSS-EX, HPD-SUS TWIST DRILLS for STAINLESS STEELS *STUB*

HSS-EX, HPD-SUS SPIRALBOHRER für ROSTFREIER STÄHLE *EXTRA KURZ*

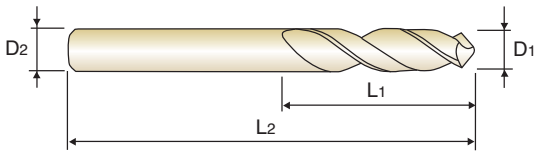
▶ **Application** : Designed for drilling stainless steels, mild steels, aluminum, aluminum alloys, aluminum die casting, copper, copper alloys, etc.

▶ **Advantage** : High helix-sharp cutting edges to avoid built-up and to be suitable for high performance drilling
Wide flute and stub length-increasing chip removal and reducing vibration and deflecton.
High vanadium HSS-EX material with superior TiN coating - higher speed and feed, longer tool life
High quality & good surface finish, high productivity.

▶ Anwendung : Geeignet zum Bearbeiten von rostfreier stähle, Aluminium, Aluminium-Legierungen, Aluminium-Guss, Kupfer, Kupfer-Legierungen usw.

▶ **Vorteile** : Durch hohen Helix wird Spanstau vermieden, geeignet zum Hochleistungsbohren, durch die breiten Schneiden und die kurze Ausführung wird die Spanabfuhr erhöht und Vibrationen und Stoß reduziert. Hoch Vanadium HSS-EX-Material mit TiN-Beschichtung, höhere Geschwindigkeit und Vorschub, längere Standzeit, verbesserte Oberflächengüte und Produktivität.

four facet



for STAINLESS STEELS
f r rostfreier St hle

HSS EX | W 38° | h7 | h8 | 130° | 120° | P.156

up to 4mm over 4mm

$D_1 = D_2$

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length	EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2	TiN	D_1	L_1	L_2
DJ543020	2.0	12	44	DJ543048	4.8	26	70
DJ543021	2.1	12	44	DJ543049	4.9	26	70
DJ543022	2.2	13	45	DJ543050	5.0	26	70
DJ543023	2.3	13	45	DJ543051	5.1	26	70
DJ543024	2.4	14	46	DJ543052	5.2	26	70
DJ543025	2.5	14	46	DJ543053	5.3	26	70
DJ543026	2.6	14	46	DJ543054	5.4	28	72
DJ543027	2.7	16	48	DJ543055	5.5	28	72
DJ543028	2.8	16	48	DJ543056	5.6	28	72
DJ543029	2.9	16	48	DJ543057	5.7	28	72
DJ543030	3.0	16	48	DJ543058	5.8	28	72
DJ543031	3.1	18	50	DJ543059	5.9	28	72
DJ543032	3.2	18	50	DJ543060	6.0	28	72
DJ543033	3.3	18	50	DJ543061	6.1	31	75
DJ543034	3.4	20	52	DJ543062	6.2	31	75
DJ543035	3.5	20	52	DJ543063	6.3	31	75
DJ543036	3.6	20	52	DJ543064	6.4	31	75
DJ543037	3.7	20	52	DJ543065	6.5	31	75
DJ543038	3.8	22	54	DJ543066	6.6	31	75
DJ543039	3.9	22	54	DJ543067	6.7	31	75
DJ543040	4.0	22	54	DJ543068	6.8	34	78
DJ543041	4.1	22	66	DJ543069	6.9	34	78
DJ543042	4.2	22	66	DJ543070	7.0	34	78
DJ543043	4.3	24	68	DJ543071	7.1	34	78
DJ543044	4.4	24	68	DJ543072	7.2	34	78
DJ543045	4.5	24	68	DJ543073	7.3	34	78
DJ543046	4.6	24	68	DJ543074	7.4	34	78
DJ543047	4.7	24	68	DJ543075	7.5	34	78

▶ TiCN(DW543), TiAlN(DY543) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎						○	◎	○	○	○		

HPD DRILLS

DJ543 SERIES

HSS-EX, HPD-SUS TWIST DRILLS for STAINLESS STEELS *STUB*

HSS-EX, HPD-SUS SPIRALBOHRER für ROSTFREIER STÄHLE *EXTRA KURZ*

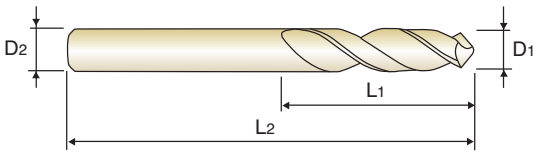
▶ **Application** : Designed for drilling stainless steels, mild steels, aluminum, aluminum alloys, aluminum die casting, copper, copper alloys, etc.

▶ **Advantage** : High helix-sharp cutting edges to avoid built-up and to be suitable for high performance drilling
Wide flute and stub length-increasing chip removal and reducing vibration and deflecton.
High vanadium HSS-EX material with superior TiN coating - higher speed and feed, longer tool life
High quality & good surface finish, high productivity.

▶ **Anwendung** : Geeignet zum Bearbeiten von rostfreier stähle, Aluminium, Aluminium-Legierungen, Aluminium-Guss, Kupfer, Kupfer-Legierungen usw.

▶ **Vorteile** : Durch hohen Helix wird Spanstau vermieden, geeignet zum Hochleistungsbohren, durch die breiten Schneiden und die kurze Ausführung wird die Spanabfuhr erhöht und Vibrationen und Stoß reduziert. Hoch Vanadium HSS-EX-Material mit TiN-Beschichtung, höhere Geschwindigkeit und Vorschub, längere Standzeit, verbesserte Oberflächengüte und Produktivität.

four facet



for STAINLESS STEELS
f r rostfreier St hle

HSS EX | W 38° | h7 | h8 | 130° | 120° | P.156

up to 4mm over 4mm

$D_1 = D_2$

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length	EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2	TiN	D_1	L_1	L_2
DJ543076	7.6	37	81	DJ543104	10.4	43	100
DJ543077	7.7	37	81	DJ543105	10.5	43	100
DJ543078	7.8	37	81	DJ543106	10.6	43	100
DJ543079	7.9	37	81	DJ543107	10.7	47	104
DJ543080	8.0	37	81	DJ543108	10.8	47	104
DJ543081	8.1	37	87	DJ543109	10.9	47	104
DJ543082	8.2	37	87	DJ543110	11.0	47	104
DJ543083	8.3	37	87	DJ543111	11.1	47	104
DJ543084	8.4	37	87	DJ543112	11.2	47	104
DJ543085	8.5	37	87	DJ543113	11.3	47	104
DJ543086	8.6	40	90	DJ543114	11.4	47	104
DJ543087	8.7	40	90	DJ543115	11.5	47	104
DJ543088	8.8	40	90	DJ543116	11.6	47	104
DJ543089	8.9	40	90	DJ543117	11.7	47	104
DJ543090	9.0	40	90	DJ543118	11.8	47	104
DJ543091	9.1	40	90	DJ543119	11.9	51	108
DJ543092	9.2	40	90	DJ543120	12.0	51	108
DJ543093	9.3	40	90	DJ543121	12.1	51	108
DJ543094	9.4	40	90	DJ543122	12.2	51	108
DJ543095	9.5	40	90	DJ543123	12.3	51	108
DJ543096	9.6	43	93	DJ543124	12.4	51	108
DJ543097	9.7	43	93	DJ543125	12.5	51	108
DJ543098	9.8	43	93	DJ543126	12.6	51	108
DJ543099	9.9	43	93	DJ543127	12.7	51	108
DJ543100	10.0	43	93	DJ543128	12.8	51	108
DJ543101	10.1	43	100	DJ543129	12.9	51	108
DJ543102	10.2	43	100	DJ543130	13.0	51	108
DJ543103	10.3	43	100				

▶ TiCN(DW543), TiAlN(DY543) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎						○	◎	○	○	○		

HPD DRILLS

DJ544 SERIES

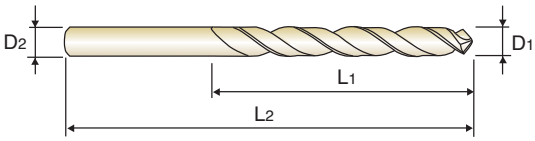
HSS-EX, HPD-SUS TWIST DRILLS for STAINLESS STEELS — *JOBBER*
HSS-EX, HPD-SUS SPIRALBOHRER für ROSTFREIER STÄHLE — *KURZ*

▶ **Application** : Designed for 4D~5D drilling stainless steels, mild steels, aluminum, aluminum alloys, aluminum die casting, copper, copper alloys, etc.

▶ **Advantage** : High helix-sharp cutting edges to avoid built-up and to be suitable for high performance drilling
Reinforced web and jobbers length-increasing rigidity and suitable for 4D~5D drilling.
High vanadium HSS-EX material with superior TiN coating - higher speed and feed, longer tool life
High quality & good surface finish, high productivity.

▶ **Anwendung** : Für 4D~5D Bohrtiefe, geeignet für rostfreier stähle, Stahl, Aluminium, Aluminium-Legierungen, Aluminium-Guss, Kupfer, Kupfer-Legierung usw.

▶ **Vorteile** : Helixwinkel, durch scharfe Hauptschneide wird Spanstau vermieden, geeignet zum Hochleistungsbohren, verstärkte Kerndicke, kurze Ausführung, Hoch Vanadium HSS-EX-Material mit TiN-Beschichtung, höhere Geschwindigkeit und Vorschub, längere Standzeit, verbesserte Stabilität, Oberflächengüte und Produktivität.



for STAINLESS STEELS
f r rostfreier St hle

HSS EX | W 38° | h7 | h8 | 130° | 120° | P.156

up to 4mm over 4mm

$D_1=D_2$

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
DJ544020	2.0	24	56
DJ544021	2.1	24	56
DJ544022	2.2	27	59
DJ544023	2.3	27	59
DJ544024	2.4	30	62
DJ544025	2.5	30	62
DJ544026	2.6	30	62
DJ544027	2.7	33	65
DJ544028	2.8	33	65
DJ544029	2.9	33	65
DJ544030	3.0	33	65
DJ544031	3.1	36	68
DJ544032	3.2	36	68
DJ544033	3.3	36	68
DJ544034	3.4	39	71
DJ544035	3.5	39	71
DJ544036	3.6	39	71
DJ544037	3.7	39	71
DJ544038	3.8	43	75
DJ544039	3.9	43	75
DJ544040	4.0	43	75
DJ544041	4.1	43	87
DJ544042	4.2	43	87
DJ544043	4.3	47	91

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
DJ544044	4.4	47	91
DJ544045	4.5	47	91
DJ544046	4.6	47	91
DJ544047	4.7	47	91
DJ544048	4.8	52	96
DJ544049	4.9	52	96
DJ544050	5.0	52	96
DJ544051	5.1	52	96
DJ544052	5.2	52	96
DJ544053	5.3	52	96
DJ544054	5.4	57	101
DJ544055	5.5	57	101
DJ544056	5.6	57	101
DJ544057	5.7	57	101
DJ544058	5.8	57	101
DJ544059	5.9	57	101
DJ544060	6.0	57	101
DJ544061	6.1	63	107
DJ544062	6.2	63	107
DJ544063	6.3	63	107
DJ544064	6.4	63	107
DJ544065	6.5	63	107
DJ544066	6.6	63	107
DJ544067	6.7	63	107

▶ TiCN(DW544), TiAlN(DY544) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎						○	◎	○	○	○		

HPD DRILLS

DJ544 SERIES

HSS-EX, HPD-SUS TWIST DRILLS for STAINLESS STEELS *JOBBER*
HSS-EX, HPD-SUS SPIRALBOHRER für ROSTFREIER STÄHLE *KURZ*

▶ **Application** : Designed for 4D~5D drilling stainless steels, mild steels, aluminum, aluminum alloys, aluminum die casting, copper, copper alloys, etc.

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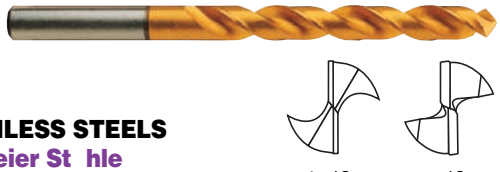
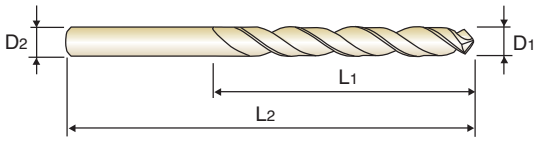
Reinforced web and jobbers length-increasing rigidity and suitable for 4D~5D drilling.
High vanadium HSS-EX material with superior TiN coating - higher speed and feed, longer tool life
High quality & good surface finish, high productivity.

▶ **Anwendung** : Für 4D~5D Bohrtiefe, geeignet für rostfreier stähle, Stahl, Aluminium, Aluminium-Legierungen, Aluminium-Guss, Kupfer, Kupfer-Legierung usw.

▶ **Vorteile** : Helixwinkel, durch scharfe Hauptschneide wird Spanstau vermieden, geeignet zum Hochleistungsbohren, verstärkte Kerndicke, kurze Ausführung, Hoch Vanadium HSS-EX-Material mit TiN-Beschichtung, höhere Geschwindigkeit und Vorschub, längere Standzeit, verbesserte Stabilität, Oberflächengüte und Produktivität.



up to 13mm over 13mm



for STAINLESS STEELS
f r rostfreier St hle

HSS EX | W 38° | h7 | h8 | 130° | 120° | P.156

up to 4mm over 4mm

$D_1=D_2$

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length	EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2	TiN	D_1	L_1	L_2
DJ544068	6.8	69	113	DJ544092	9.2	81	131
DJ544069	6.9	69	113	DJ544093	9.3	81	131
DJ544070	7.0	69	113	DJ544094	9.4	81	131
DJ544071	7.1	69	113	DJ544095	9.5	81	131
DJ544072	7.2	69	113	DJ544096	9.6	87	137
DJ544073	7.3	69	113	DJ544097	9.7	87	137
DJ544074	7.4	69	113	DJ544098	9.8	87	137
DJ544075	7.5	69	113	DJ544099	9.9	87	137
DJ544076	7.6	75	119	DJ544100	10.0	87	137
DJ544077	7.7	75	119	DJ544101	10.1	87	144
DJ544078	7.8	75	119	DJ544102	10.2	87	144
DJ544079	7.9	75	119	DJ544103	10.3	87	144
DJ544080	8.0	75	119	DJ544104	10.4	87	144
DJ544081	8.1	75	125	DJ544105	10.5	87	144
DJ544082	8.2	75	125	DJ544106	10.6	87	144
DJ544083	8.3	75	125	DJ544107	10.7	94	151
DJ544084	8.4	75	125	DJ544108	10.8	94	151
DJ544085	8.5	75	125	DJ544109	10.9	94	151
DJ544086	8.6	81	131	DJ544110	11.0	94	151
DJ544087	8.7	81	131	DJ544111	11.1	94	151
DJ544088	8.8	81	131	DJ544112	11.2	94	151
DJ544089	8.9	81	131	DJ544113	11.3	94	151
DJ544090	9.0	81	131	DJ544114	11.4	94	151
DJ544091	9.1	81	131	DJ544115	11.5	94	151

▶ TiCN(DW544), TiAlN(DY544) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎						○	◎	○	○	○		

HPD DRILLS

DJ544 SERIES

HSS-EX, HPD-SUS TWIST DRILLS for STAINLESS STEELS — JOBBER
HSS-EX, HPD-SUS SPIRALBOHRER für ROSTFREIER STÄHLE — KURZ

▶ **Application** : Designed for 4D~5D drilling stainless steels, mild steels, aluminum, aluminum alloys, aluminum die casting, copper, copper alloys, etc.

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▶ **Anwendung** : Für 4D~5D Bohrtiefe, geeignet für rostfreier stähle, Stahl, Aluminium, Aluminium-Legierungen, Aluminium-Guss, Kupfer, Kupfer-Legierung usw.

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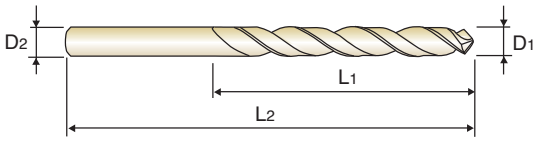
for STAINLESS STEELS
f r rostfreier St hle

up to 13mm over 13mm



HSS EX | W 38° | h7 | h8 | 130° | 120° | P.156

up to 4mm over 4mm

$D_1 = D_2$

Unit : mm

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
DJ544116	11.6	94	151
DJ544117	11.7	94	151
DJ544118	11.8	94	151
DJ544119	11.9	101	158
DJ544120	12.0	101	158
DJ544121	12.1	101	158
DJ544122	12.2	101	158
DJ544123	12.3	101	158
DJ544124	12.4	101	158
DJ544125	12.5	101	158
DJ544126	12.6	101	158
DJ544127	12.7	101	158
DJ544128	12.8	101	158
DJ544129	12.9	101	158
DJ544130	13.0	101	158
DJ544135	13.5	106	166
DJ544140	14.0	106	166

EDP No.	Drill Diameter	Flute Length	Overall Length
TiN	D_1	L_1	L_2
DJ544141	14.1	109	169
DJ544145	14.5	109	169
DJ544150	15.0	109	169
DJ544155	15.5	112	172
DJ544156	15.6	112	172
DJ544160	16.0	112	172
DJ544165	16.5	115	181
DJ544170	17.0	115	181
DJ544175	17.5	118	184
DJ544176	17.6	118	184
DJ544180	18.0	118	184
DJ544185	18.5	122	188
DJ544190	19.0	122	188
DJ544195	19.5	125	191
DJ544196	19.6	125	191
DJ544200	20.0	125	191

▶ TiCN(DW544), TiAlN(DY544) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎						○	◎	○	○	○		

HPD DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

PREMIUM HSS COBALT, HPD TWIST DRILLS, TiN COATED
PREMIUM HSS KOBALT, HPD SPIRALBOHRER, TiN-BESCHICHTET

D4541, D4542 SERIES

Please decrease the feed rate (15~20%) in D4542 SERIES HPD drills.
Den Vorschub in der D4542 Gruppe HPD Bohrer bitte verringern.

WORK MATERIAL	CARBON STEELS		ALLOY STEELS (SCM-SNC-SNCM)		TOOL STEELS ALLOY STEELS (SKD11)		CAST IRON TOOL STEELS		ALUMINUM ALLOYS MAGNESIUM ALLOYS	
DRILLING SPEED	20 ~ 25 m/min		20 ~ 25 m/min		8 ~ 13 m/min		35 ~ 40 m/min		80 ~ 100 m/min	
DIAMETER	N	S	N	S	N	S	N	S	N	S
2.0	4200	0.08	3600	0.08	1750	0.08	5800	0.11	10500	0.16
3.0	2900	0.13	2500	0.13	1170	0.13	4000	0.14	10500	0.25
4.0	2100	0.14	1900	0.14	880	0.14	3000	0.17	8000	0.30
5.0	1700	0.16	1500	0.16	700	0.16	2400	0.20	6500	0.36
6.0	1300	0.17	1300	0.17	580	0.17	2100	0.23	5200	0.42
8.0	1000	0.21	950	0.21	440	0.21	1500	0.26	4200	0.47
10.0	850	0.25	750	0.25	350	0.25	1100	0.32	3400	0.56
12.0	700	0.30	650	0.30	290	0.30	1000	0.38	2700	0.67
14.0	550	0.35	500	0.35	250	0.35	850	0.40	2400	0.72
16.0	520	0.38	470	0.38	220	0.38	750	0.42	2100	0.77
18.0	450	0.44	420	0.44	195	0.44	700	0.45	1900	0.80
20.0	400	0.45	350	0.45	175	0.45	600	0.51	1600	0.87
22.0	370	0.50	340	0.50	160	0.50	550	0.52	1500	0.95
24.0	350	0.54	300	0.54	145	0.54	500	0.58	1400	1.00
26.0	320	0.58	280	0.58	135	0.58	450	0.60	1300	1.05
28.0	300	0.62	260	0.62	125	0.62	420	0.63	1200	1.10
30.0	280	0.66	240	0.66	115	0.66	400	0.74	1100	1.15
32.0	260	0.70	230	0.70	110	0.70	380	0.74	950	1.20

N = R.P.M
S = Feed per Revolution (mm/rev.)

HSS-EX, HPD-SUS TWIST DRILLS, TiN COATED
HSS-EX, HPD-SUS SPIRALBOHRER, TiN-BESCHICHTET

DJ543, DJ544 SERIES

Please decrease the feed rate (15~20%) in DJ544 SERIES HPD-SUS drills.
Den Vorschub in der DJ544 Gruppe HPD-SUS Bohrer bitte verringern

WORK MATERIAL	STAINLESS STEELS (SUS304, 200)		STAINLESS STEELS (SUS420, 440)		ALUMINUM & ALUMINIUM ALLOYS		PLASTICS COPPER COPPER ALLOYS		MILD STEELS LOW CARBON STEELS	
DRILLING SPEED	13 ~ 18 m/min		15 ~ 20 m/min		70 ~ 90 m/min		30 ~ 35 m/min		30 ~ 40 m/min	
DIAMETER	N	S	N	S	N	S	N	S	N	S
2.0	2600	0.03	3100	0.07	11000	0.09	5600	0.06	6300	0.08
3.0	1800	0.04	2100	0.08	7350	0.13	3750	0.08	4200	0.13
4.0	1300	0.06	1600	0.10	7050	0.18	2800	0.10	3200	0.14
5.0	1050	0.08	1250	0.15	5500	0.22	2250	0.13	2500	0.16
6.0	900	0.09	1050	0.18	4600	0.26	1850	0.15	2100	0.18
8.0	650	0.12	800	0.24	3500	0.34	1350	0.20	1550	0.22
10.0	550	0.15	630	0.30	2800	0.40	1100	0.25	1250	0.26
12.0	450	0.18	530	0.36	2300	0.50	950	0.30	1050	0.32
14.0	400	0.33	450	0.44	2050	0.55	800	0.33	900	0.36
16.0	350	0.36	390	0.48	1750	0.62	700	0.35	790	0.40
18.0	300	0.39	350	0.50	1600	0.70	620	0.40	700	0.45
20.0	260	0.43	320	0.53	1450	0.75	560	0.40	620	0.47

N = R.P.M
S = Feed per Revolution (mm/rev.)

HSS

Being the best through innovation

GOLD-P DRILLS

GOLD-P BOHRER

- GOLD-P COATING, HSS & HSS-E
- TiN-teilbeschichtete Bohrer, HSS und HSS-E

GOLD-P DRILLS (GOLD-P COATED)

Competitive price and same performance as full TiN coating

ITEM	MODEL	DESCRIPTION		SIZE MIN	SIZE MAX	PAGE
D1GP125		HSS STRAIGHT SHANK DRILLS, GOLD-P COATED HSS SPIRALBOHRER, GOLD-P BESCHICHTET	*JOBBER* *KURZ*	D1.0	D13.0	160
D1GP165		HSS STRAIGHT SHANK DRILLS, GOLD-P COATED HSS SPIRALBOHRER, GOLD-P BESCHICHTET	*JOBBER* *KURZ*	D1.6	D13.0	162
DLGP195		HSS-E STRAIGHT SHANK DRILLS, GOLD-P COATED HSS-E SPIRALBOHRER, GOLD-P BESCHICHTET	*JOBBER* *KURZ*	D1.0	D13.0	164
DLGP506		HSS-E DH100 STRAIGHT SHANK DRILLS for DEEP HOLES, GOLD-P COATED HSS-E DH100 SPIRALBOHRER, f r TIEFLOCH mit ZYLINDERSCHAFT, GOLD-P BESCHICHTET	*JOBBER* *KURZ*	D2.0	D13.0	166
GOLD-P DRILL SETS	1.0mm ~ 10.0mm ×0.5mm STEP SET1(19PCS)	1.0mm ~ 13.0mm ×0.5mm STEP SET2(25PCS)	1.0mm ~ 10.5mm ×0.5mm STEP +3.3 +4.2 +6.8 +10.2 SET3(24PCS)	1.0mm ~ 10.0mm ×0.1mm STEP SET4(91PCS)		168
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN				169

◎ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎					○	○	○	○			
◎	◎					○	○	○	○			
◎	◎					○	○	○	○			
◎	◎				○	○			○			

GOLD-P DRILLS

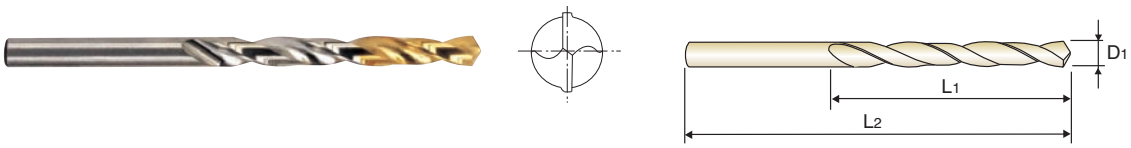
D1GP125 SERIES

HSS STRAIGHT SHANK DRILLS, GOLD-P COATED
HSS SPIRALBOHRER, GOLD-P BESCHICHTET

JOBBER
KURZ

- **Flute Geometry** : Right hand helix
- **Point Angle** : 118˚, Normal point
- **Surface treatment** : Bright body, TiN coating on working area
- **Application** : Drilling steels, Cast steels alloyed and Non-alloyed, Grey cast iron, Graphite, Malleable cast iron

- **Nutenform** : Rechtsspirale
- **Spitzenwinkel** : 118° Normalanschliff
- **Oberfläche** : Blank mit TiN-Beschichtung im Arbeitsbereich
- **Anwendung** : Stahl, legierter und unlegierter Stahlguss, Grauguss, Graphit, Temperguss



DIN 338 | HSS | N ≈30° | h8 | 118° P.169

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1GP125010	1.0	12	34
D1GP125011	1.1	14	36
D1GP125012	1.2	16	38
D1GP125013	1.3	16	38
D1GP125014	1.4	18	40
D1GP125015	1.5	18	40
D1GP125016	1.6	20	43
D1GP125017	1.7	20	43
D1GP125018	1.8	22	46
D1GP125019	1.9	22	46
D1GP125020	2.0	24	49
D1GP125021	2.1	24	49
D1GP125022	2.2	27	53
D1GP125023	2.3	27	53
D1GP125024	2.4	30	57
D1GP125025	2.5	30	57
D1GP125026	2.6	30	57
D1GP125027	2.7	33	61
D1GP125028	2.8	33	61
D1GP125029	2.9	33	61
D1GP125030	3.0	33	61
D1GP125031	3.1	36	65
D1GP125032	3.2	36	65
D1GP125033	3.3	36	65
D1GP125034	3.4	39	70
D1GP125035	3.5	39	70
D1GP125036	3.6	39	70
D1GP125037	3.7	39	70
D1GP125038	3.8	43	75
D1GP125039	3.9	43	75
D1GP125040	4.0	43	75

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1GP125041	4.1	43	75
D1GP125042	4.2	43	75
D1GP125043	4.3	47	80
D1GP125044	4.4	47	80
D1GP125045	4.5	47	80
D1GP125046	4.6	47	80
D1GP125047	4.7	47	80
D1GP125048	4.8	52	86
D1GP125049	4.9	52	86
D1GP125050	5.0	52	86
D1GP125051	5.1	52	86
D1GP125052	5.2	52	86
D1GP125053	5.3	52	86
D1GP125054	5.4	57	93
D1GP125055	5.5	57	93
D1GP125056	5.6	57	93
D1GP125057	5.7	57	93
D1GP125058	5.8	57	93
D1GP125059	5.9	57	93
D1GP125060	6.0	57	93
D1GP125061	6.1	63	101
D1GP125062	6.2	63	101
D1GP125063	6.3	63	101
D1GP125064	6.4	63	101
D1GP125065	6.5	63	101
D1GP125066	6.6	63	101
D1GP125067	6.7	63	101
D1GP125068	6.8	69	109
D1GP125069	6.9	69	109
D1GP125070	7.0	69	109
D1GP125071	7.1	69	109

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎					○	○	○	○			

GOLD-P DRILLS

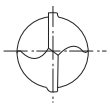
D1GP125 SERIES

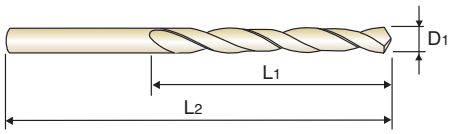
HSS STRAIGHT SHANK DRILLS, GOLD-P COATED
HSS SPIRALBOHRER, GOLD-P BESCHICHTET

JOBBER
KURZ

- **Flute Geometry** : Right hand helix
- **Point Angle** : 118˚, Normal point
- **Surface treatment** : Bright body, TiN coating on working area
- **Application** : Drilling steels, Cast steels alloyed and Non-alloyed, Grey cast iron, Graphite, Malleable cast iron

- **Nutenform** : Rechtsspirale
- **Spitzenwinkel** : 118° Normalanschliff
- **Oberfläche** : Blank mit TiN-Beschichtung im Arbeitsbereich
- **Anwendung** : Stahl, legierter und unlegierter Stahlguss, Grauguss, Graphit, Temperguss





DIN 338 | HSS | N ≈30° | h8 | 118° P.169

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1GP125072	7.2	69	109
D1GP125073	7.3	69	109
D1GP125074	7.4	69	109
D1GP125075	7.5	69	109
D1GP125076	7.6	75	117
D1GP125077	7.7	75	117
D1GP125078	7.8	75	117
D1GP125079	7.9	75	117
D1GP125080	8.0	75	117
D1GP125081	8.1	75	117
D1GP125082	8.2	75	117
D1GP125083	8.3	75	117
D1GP125084	8.4	75	117
D1GP125085	8.5	75	117
D1GP125086	8.6	81	125
D1GP125087	8.7	81	125
D1GP125088	8.8	81	125
D1GP125089	8.9	81	125
D1GP125090	9.0	81	125
D1GP125091	9.1	81	125
D1GP125092	9.2	81	125
D1GP125093	9.3	81	125
D1GP125094	9.4	81	125
D1GP125095	9.5	81	125
D1GP125096	9.6	87	133
D1GP125097	9.7	87	133
D1GP125098	9.8	87	133
D1GP125099	9.9	87	133
D1GP125100	10.0	87	133
D1GP125101	10.1	87	133

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1GP125102	10.2	87	133
D1GP125103	10.3	87	133
D1GP125104	10.4	87	133
D1GP125105	10.5	87	133
D1GP125106	10.6	87	133
D1GP125107	10.7	94	142
D1GP125108	10.8	94	142
D1GP125109	10.9	94	142
D1GP125110	11.0	94	142
D1GP125111	11.1	94	142
D1GP125112	11.2	94	142
D1GP125113	11.3	94	142
D1GP125114	11.4	94	142
D1GP125115	11.5	94	142
D1GP125116	11.6	94	142
D1GP125117	11.7	94	142
D1GP125118	11.8	94	142
D1GP125119	11.9	101	151
D1GP125120	12.0	101	151
D1GP125121	12.1	101	151
D1GP125122	12.2	101	151
D1GP125123	12.3	101	151
D1GP125124	12.4	101	151
D1GP125125	12.5	101	151
D1GP125126	12.6	101	151
D1GP125127	12.7	101	151
D1GP125128	12.8	101	151
D1GP125129	12.9	101	151
D1GP125130	13.0	101	151

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎					○	○	○	○			

GOLD-P DRILLS

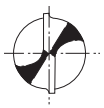
D1GP165 SERIES

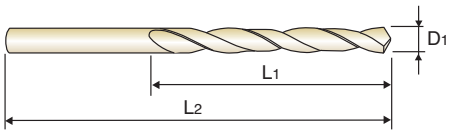
HSS STRAIGHT SHANK DRILLS, GOLD-P COATED
HSS SPIRALBOHRER, GOLD-P BESCHICHTET

JOBBER
KURZ

- **Flute Geometry** : Right hand helix
- **Point Angle** : 118˚, Split point
- **Surface treatment** : Bright body, TiN coating on working area
- **Application** : Drilling steels, Cast steels alloyed and Non-alloyed, Grey cast iron, Graphite, Malleable cast iron

- **Nutenform** : Rechtsspirale
- **Spitzenwinkel** : 118° Kreuzanschliff
- **Oberfläche** : Blank mit TiN-Beschichtung im Arbeitsbereich
- **Anwendung** : Stahl, legierter und unlegierter Stahlguss, Grauguss, Graphit, Temperguss





DIN 338 | HSS | N ≈30° | h8 | 118° P.169

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1GP165016	1.6	20	43
D1GP165017	1.7	20	43
D1GP165018	1.8	22	46
D1GP165019	1.9	22	46
D1GP165020	2.0	24	49
D1GP165021	2.1	24	49
D1GP165022	2.2	27	53
D1GP165023	2.3	27	53
D1GP165024	2.4	30	57
D1GP165025	2.5	30	57
D1GP165026	2.6	30	57
D1GP165027	2.7	33	61
D1GP165028	2.8	33	61
D1GP165029	2.9	33	61
D1GP165030	3.0	33	61
D1GP165031	3.1	36	65
D1GP165032	3.2	36	65
D1GP165033	3.3	36	65
D1GP165034	3.4	39	70
D1GP165035	3.5	39	70
D1GP165036	3.6	39	70
D1GP165037	3.7	39	70
D1GP165038	3.8	43	75
D1GP165039	3.9	43	75
D1GP165040	4.0	43	75
D1GP165041	4.1	43	75
D1GP165042	4.2	43	75
D1GP165043	4.3	47	80
D1GP165044	4.4	47	80
D1GP165045	4.5	47	80

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1GP165046	4.6	47	80
D1GP165047	4.7	47	80
D1GP165048	4.8	52	86
D1GP165049	4.9	52	86
D1GP165050	5.0	52	86
D1GP165051	5.1	52	86
D1GP165052	5.2	52	86
D1GP165053	5.3	52	86
D1GP165054	5.4	57	93
D1GP165055	5.5	57	93
D1GP165056	5.6	57	93
D1GP165057	5.7	57	93
D1GP165058	5.8	57	93
D1GP165059	5.9	57	93
D1GP165060	6.0	57	93
D1GP165061	6.1	63	101
D1GP165062	6.2	63	101
D1GP165063	6.3	63	101
D1GP165064	6.4	63	101
D1GP165065	6.5	63	101
D1GP165066	6.6	63	101
D1GP165067	6.7	63	101
D1GP165068	6.8	69	109
D1GP165069	6.9	69	109
D1GP165070	7.0	69	109
D1GP165071	7.1	69	109
D1GP165072	7.2	69	109
D1GP165073	7.3	69	109
D1GP165074	7.4	69	109
D1GP165075	7.5	69	109

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎					○	○	○	○			

GOLD-P DRILLS

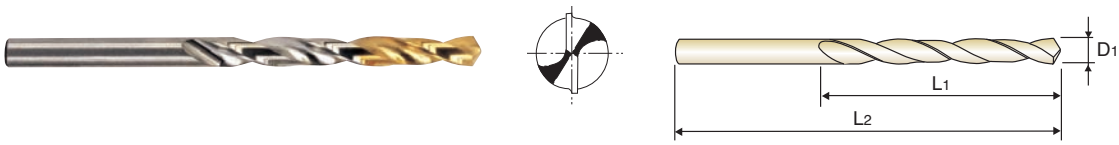
D1GP165 SERIES

HSS STRAIGHT SHANK DRILLS, GOLD-P COATED
HSS SPIRALBOHRER, GOLD-P BESCHICHTET

JOBBER
KURZ

- **Flute Geometry** : Right hand helix
- **Point Angle** : 118˚, Split point
- **Surface treatment** : Bright body, TiN coating on working area
- **Application** : Drilling steels, Cast steels alloyed and Non-alloyed, Grey cast iron, Graphite, Malleable cast iron

- **Nutenform** : Rechtsspirale
- **Spitzenwinkel** : 118° Kreuzanschliff
- **Oberfläche** : Blank mit TiN-Beschichtung im Arbeitsbereich
- **Anwendung** : Stahl, legierter und unlegierter Stahlguss, Grauguss, Graphit, Temperguss



DIN 338 | HSS | N ≈30° | h8 | 118° P.169

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1GP165076	7.6	75	117
D1GP165077	7.7	75	117
D1GP165078	7.8	75	117
D1GP165079	7.9	75	117
D1GP165080	8.0	75	117
D1GP165081	8.1	75	117
D1GP165082	8.2	75	117
D1GP165083	8.3	75	117
D1GP165084	8.4	75	117
D1GP165085	8.5	75	117
D1GP165086	8.6	81	125
D1GP165087	8.7	81	125
D1GP165088	8.8	81	125
D1GP165089	8.9	81	125
D1GP165090	9.0	81	125
D1GP165091	9.1	81	125
D1GP165092	9.2	81	125
D1GP165093	9.3	81	125
D1GP165094	9.4	81	125
D1GP165095	9.5	81	125
D1GP165096	9.6	87	133
D1GP165097	9.7	87	133
D1GP165098	9.8	87	133
D1GP165099	9.9	87	133
D1GP165100	10.0	87	133
D1GP165101	10.1	87	133
D1GP165102	10.2	87	133
D1GP165103	10.3	87	133

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1GP165104	10.4	87	133
D1GP165105	10.5	87	133
D1GP165106	10.6	87	133
D1GP165107	10.7	94	142
D1GP165108	10.8	94	142
D1GP165109	10.9	94	142
D1GP165110	11.0	94	142
D1GP165111	11.1	94	142
D1GP165112	11.2	94	142
D1GP165113	11.3	94	142
D1GP165114	11.4	94	142
D1GP165115	11.5	94	142
D1GP165116	11.6	94	142
D1GP165117	11.7	94	142
D1GP165118	11.8	94	142
D1GP165119	11.9	101	151
D1GP165120	12.0	101	151
D1GP165121	12.1	101	151
D1GP165122	12.2	101	151
D1GP165123	12.3	101	151
D1GP165124	12.4	101	151
D1GP165125	12.5	101	151
D1GP165126	12.6	101	151
D1GP165127	12.7	101	151
D1GP165128	12.8	101	151
D1GP165129	12.9	101	151
D1GP165130	13.0	101	151

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎					○	○	○	○			

GOLD-P DRILLS

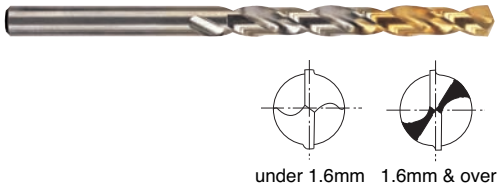
DLGP195 SERIES

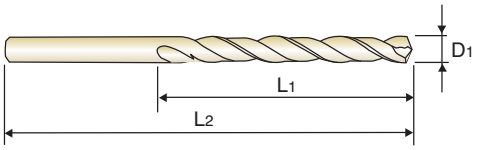
HSS-E STRAIGHT SHANK DRILLS, GOLD-P COATED
HSS-E SPIRALBOHRER, GOLD-P BESCHICHTET

JOBBER
KURZ

- **Flute Geometry** : Right hand helix
- **Point Angle** : 135˚, under 1.6mm : Normal point
  1.6mm & over : Split point
- **Surface treatment** : Bright body, TiN coating on working area
- **Application** : Drilling stainless steels, difficult to cut materials such as titanium alloys and inconel.

- **Nutenform** : Rechtsspirale
- **Spitzenwinkel** : 135°, unter 1.6mm : Normalanschliff
  1.6mm & über : Kreuzanschliff
- **Oberfläche** : Blank mit TiN-Beschichtung im Arbeitsbereich
- **Anwendung** : Tiefe Bohrungen in unlegierten und legierten Stählen, Grauguss, Temperguss, Aluminium- und Magnesiumlegierungen





DIN 338 | HSS-E | N ≈33° | h8 | 135° P.169

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DLGP195010	1.0	12	34
DLGP195011	1.1	14	36
DLGP195012	1.2	16	38
DLGP195013	1.3	16	38
DLGP195014	1.4	18	40
DLGP195015	1.5	18	40
DLGP195016	1.6	20	43
DLGP195017	1.7	20	43
DLGP195018	1.8	22	46
DLGP195019	1.9	22	46
DLGP195020	2.0	24	49
DLGP195021	2.1	24	49
DLGP195022	2.2	27	53
DLGP195023	2.3	27	53
DLGP195024	2.4	30	57
DLGP195025	2.5	30	57
DLGP195026	2.6	30	57
DLGP195027	2.7	33	61
DLGP195028	2.8	33	61
DLGP195029	2.9	33	61
DLGP195030	3.0	33	61
DLGP195031	3.1	36	65
DLGP195032	3.2	36	65
DLGP195033	3.3	36	65
DLGP195034	3.4	39	70
DLGP195035	3.5	39	70
DLGP195036	3.6	39	70
DLGP195037	3.7	39	70
DLGP195038	3.8	43	75
DLGP195039	3.9	43	75
DLGP195040	4.0	43	75

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DLGP195041	4.1	43	75
DLGP195042	4.2	43	75
DLGP195043	4.3	47	80
DLGP195044	4.4	47	80
DLGP195045	4.5	47	80
DLGP195046	4.6	47	80
DLGP195047	4.7	47	80
DLGP195048	4.8	52	86
DLGP195049	4.9	52	86
DLGP195050	5.0	52	86
DLGP195051	5.1	52	86
DLGP195052	5.2	52	86
DLGP195053	5.3	52	86
DLGP195054	5.4	57	93
DLGP195055	5.5	57	93
DLGP195056	5.6	57	93
DLGP195057	5.7	57	93
DLGP195058	5.8	57	93
DLGP195059	5.9	57	93
DLGP195060	6.0	57	93
DLGP195061	6.1	63	101
DLGP195062	6.2	63	101
DLGP195063	6.3	63	101
DLGP195064	6.4	63	101
DLGP195065	6.5	63	101
DLGP195066	6.6	63	101
DLGP195067	6.7	63	101
DLGP195068	6.8	69	109
DLGP195069	6.9	69	109
DLGP195070	7.0	69	109
DLGP195071	7.1	69	109

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎					○	○	○	○			

GOLD-P DRILLS

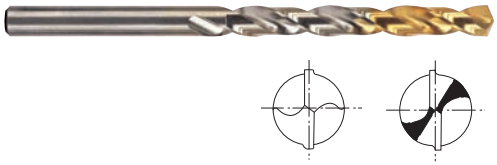
DLGP195 SERIES

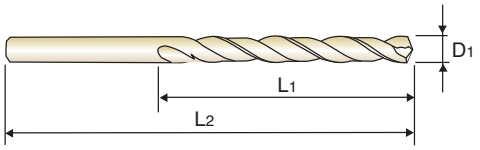
HSS-E STRAIGHT SHANK DRILLS, GOLD-P COATED
HSS-E SPIRALBOHRER, GOLD-P BESCHICHTET

JOBBER
KURZ

- ▶ **Flute Geometry** : Right hand helix
- ▶ **Point Angle** : 135˚, under 1.6mm : Normal point
  1.6mm & over : Split point
- ▶ **Surface treatment** : Bright body, TiN coating on working area
- ▶ **Application** : Drilling stainless steels, difficult to cut materials such as titanium alloys and inconel.

- ▶ **Nutenform** : Rechtsspirale
- ▶ **Spitzenwinkel** : 135°, unter 1.6mm : Normalanschliff
  1.6mm & über : Kreuzanschliff
- ▶ **Oberfläche** : Blank mit TiN-Beschichtung im Arbeitsbereich
- ▶ **Anwendung** : Tiefe Bohrungen in unlegierten und legierten Stählen, Grauguss, Temperguss, Aluminium- und Magnesiumlegierungen





DIN 338 | HSS-E | N ≈33° | h8 | 135° | P.169

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DLGP195072	7.2	69	109
DLGP195073	7.3	69	109
DLGP195074	7.4	69	109
DLGP195075	7.5	69	109
DLGP195076	7.6	75	117
DLGP195077	7.7	75	117
DLGP195078	7.8	75	117
DLGP195079	7.9	75	117
DLGP195080	8.0	75	117
DLGP195081	8.1	75	117
DLGP195082	8.2	75	117
DLGP195083	8.3	75	117
DLGP195084	8.4	75	117
DLGP195085	8.5	75	117
DLGP195086	8.6	81	125
DLGP195087	8.7	81	125
DLGP195088	8.8	81	125
DLGP195089	8.9	81	125
DLGP195090	9.0	81	125
DLGP195091	9.1	81	125
DLGP195092	9.2	81	125
DLGP195093	9.3	81	125
DLGP195094	9.4	81	125
DLGP195095	9.5	81	125
DLGP195096	9.6	87	133
DLGP195097	9.7	87	133
DLGP195098	9.8	87	133
DLGP195099	9.9	87	133
DLGP195100	10.0	87	133
DLGP195101	10.1	87	133

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DLGP195102	10.2	87	133
DLGP195103	10.3	87	133
DLGP195104	10.4	87	133
DLGP195105	10.5	87	133
DLGP195106	10.6	87	133
DLGP195107	10.7	94	142
DLGP195108	10.8	94	142
DLGP195109	10.9	94	142
DLGP195110	11.0	94	142
DLGP195111	11.1	94	142
DLGP195112	11.2	94	142
DLGP195113	11.3	94	142
DLGP195114	11.4	94	142
DLGP195115	11.5	94	142
DLGP195116	11.6	94	142
DLGP195117	11.7	94	142
DLGP195118	11.8	94	142
DLGP195119	11.9	101	151
DLGP195120	12.0	101	151
DLGP195121	12.1	101	151
DLGP195122	12.2	101	151
DLGP195123	12.3	101	151
DLGP195124	12.4	101	151
DLGP195125	12.5	101	151
DLGP195126	12.6	101	151
DLGP195127	12.7	101	151
DLGP195128	12.8	101	151
DLGP195129	12.9	101	151
DLGP195130	13.0	101	151

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎					○	○	○	○			

GOLD-P DRILLS

DLGP506 SERIES

HSS-E DH100 STRAIGHT SHANK DRILLS for DEEP HOLES, GOLD-P COATED

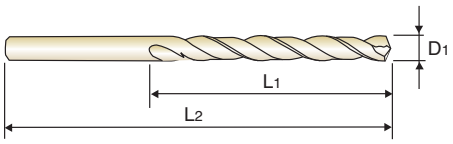
JOBBER

HSS-E DH100 SPIRALBOHRER, für TIEFLOCH mit ZYLINDERSCHAFT, GOLD-P BESCHICHTET

KURZ

- **Flute Geometry** : Right hand, 38° helix, DH100 worm pattern type.
- **Point Angle** : 130°, Split point giving higher chip removal.
- **Surface treatment** : Bright body, TiN coating on working area.
- **Application** : Drilling deep holes in non alloy steels, alloy steels, grey cast iron, malleable cast iron, Special aluminum or magnesium alloys.

- **Nutenform** : 38° Rechtsspirale, DH 100 Flachnut
- **Spitzenwinkel** : Durch 130° Kreuzanschliff Gute Spanabfuhr
- **Oberfläche** : Blank mit TiN-Beschichtung im Arbeitsbereich
- **Anwendung** : Tiefe Bohrungen in unlegierten und legierten Stählen, Grauguss, Temperguss, Aluminium- und Magnesiumlegierungen



DIN 338 | HSS-E | N ≈ 38° | h8 | 130° P.169

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DLGP506020	2.0	24	49
DLGP506021	2.1	24	49
DLGP506022	2.2	27	53
DLGP506023	2.3	27	53
DLGP506024	2.4	30	57
DLGP506025	2.5	30	57
DLGP506026	2.6	30	57
DLGP506027	2.7	33	61
DLGP506028	2.8	33	61
DLGP506029	2.9	33	61
DLGP506030	3.0	33	61
DLGP506031	3.1	36	65
DLGP506032	3.2	36	65
DLGP506033	3.3	36	65
DLGP506034	3.4	39	70
DLGP506035	3.5	39	70
DLGP506036	3.6	39	70
DLGP506037	3.7	39	70
DLGP506038	3.8	43	75
DLGP506039	3.9	43	75
DLGP506040	4.0	43	75
DLGP506041	4.1	43	75
DLGP506042	4.2	43	75
DLGP506043	4.3	47	80
DLGP506044	4.4	47	80
DLGP506045	4.5	47	80
DLGP506046	4.6	47	80
DLGP506047	4.7	47	80
DLGP506048	4.8	52	86

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DLGP506049	4.9	52	86
DLGP506050	5.0	52	86
DLGP506051	5.1	52	86
DLGP506052	5.2	52	86
DLGP506053	5.3	52	86
DLGP506054	5.4	57	93
DLGP506055	5.5	57	93
DLGP506056	5.6	57	93
DLGP506057	5.7	57	93
DLGP506058	5.8	57	93
DLGP506059	5.9	57	93
DLGP506060	6.0	57	93
DLGP506061	6.1	63	101
DLGP506062	6.2	63	101
DLGP506063	6.3	63	101
DLGP506064	6.4	63	101
DLGP506065	6.5	63	101
DLGP506066	6.6	63	101
DLGP506067	6.7	63	101
DLGP506068	6.8	69	109
DLGP506069	6.9	69	109
DLGP506070	7.0	69	109
DLGP506071	7.1	69	109
DLGP506072	7.2	69	109
DLGP506073	7.3	69	109
DLGP506074	7.4	69	109
DLGP506075	7.5	69	109
DLGP506076	7.6	75	117
DLGP506077	7.7	75	117

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○			○			

GOLD-P DRILLS

DLGP506 SERIES

HSS-E DH100 STRAIGHT SHANK DRILLS for DEEP HOLES, GOLD-P COATED

JOBBER

HSS-E DH100 SPIRALBOHRER, für TIEFLOCH mit ZYLINDERSCHAFT, GOLD-P BESCHICHTET

KURZ

- ▶ **Flute Geometry** : Right hand, 38° helix, DH100 worm pattern type.
- ▶ **Point Angle** : 130°, Split point giving higher chip removal.
- ▶ **Surface treatment** : Bright body, TiN coating on working area.
- ▶ **Application** : Drilling deep holes in non alloy steels, alloy steels, grey cast iron, malleable cast iron, Special aluminum or magnesium alloys.

- ▶ **Nutenform** : 38° Rechtsspirale, DH 100 Flachnut
- ▶ **Spitzenwinkel** : Durch 130° Kreuzanschliff Gute Spanabfuhr
- ▶ **Oberfläche** : Blank mit TiN-Beschichtung im Arbeitsbereich
- ▶ **Anwendung** : Tiefe Bohrungen in unlegierten und legierten Stählen, Grauguss, Temperguss, Aluminium- und Magnesiumlegierungen

DIN 338 | HSS-E | N ≈ 38° | h8 | 130° P.169

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DLGP506078	7.8	75	117
DLGP506079	7.9	75	117
DLGP506080	8.0	75	117
DLGP506081	8.1	75	117
DLGP506082	8.2	75	117
DLGP506083	8.3	75	117
DLGP506084	8.4	75	117
DLGP506085	8.5	75	117
DLGP506086	8.6	81	125
DLGP506087	8.7	81	125
DLGP506088	8.8	81	125
DLGP506089	8.9	81	125
DLGP506090	9.0	81	125
DLGP506091	9.1	81	125
DLGP506092	9.2	81	125
DLGP506093	9.3	81	125
DLGP506094	9.4	81	125
DLGP506095	9.5	81	125
DLGP506096	9.6	87	133
DLGP506097	9.7	87	133
DLGP506098	9.8	87	133
DLGP506099	9.9	87	133
DLGP506100	10.0	87	133
DLGP506101	10.1	87	133
DLGP506102	10.2	87	133
DLGP506103	10.3	87	133
DLGP506104	10.4	87	133

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DLGP506105	10.5	87	133
DLGP506106	10.6	87	133
DLGP506107	10.7	94	142
DLGP506108	10.8	94	142
DLGP506109	10.9	94	142
DLGP506110	11.0	94	142
DLGP506111	11.1	94	142
DLGP506112	11.2	94	142
DLGP506113	11.3	94	142
DLGP506114	11.4	94	142
DLGP506115	11.5	94	142
DLGP506116	11.6	94	142
DLGP506117	11.7	94	142
DLGP506118	11.8	94	142
DLGP506119	11.9	101	151
DLGP506120	12.0	101	151
DLGP506121	12.1	101	151
DLGP506122	12.2	101	151
DLGP506123	12.3	101	151
DLGP506124	12.4	101	151
DLGP506125	12.5	101	151
DLGP506126	12.6	101	151
DLGP506127	12.7	101	151
DLGP506128	12.8	101	151
DLGP506129	12.9	101	151
DLGP506130	13.0	101	151

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○			○			

GOLD-P DRILLS

GOLD-P COATED DRILL SETS
GOLD-P BESCHICHTET BOHRER SATS

DIN338 DRILL SETS JOBBER LENGTH Gold-P coated Drills

SET NO.	DESCRIPTON	SIZE	Q'TY
D1GP165SET1	HSS Straight Shank, Split Point (Ø1.0 &Ø1.5 : NORMAL point)	1.0-10.0x0.5mm step	19 pcs
D1GP165SET2	HSS Straight Shank, Split Point (Ø1.0 &Ø1.5 : NORMAL point)	1.0-13.0X0.5mm step	25 pcs
D1GP165SET3	HSS Straight Shank, Split Point (Ø1.0 &Ø1.5 : NORMAL point)	1.0-10.5x0.5mm step +3.3 +4.2 +6.8 +10.2	24 pcs
DLGP195SET1	HSS-E Straight Shank, Split Point (Ø1.0 &Ø1.5 : NORMAL point)	1.0-10.0x0.5mm step	19 pcs
DLGP195SET2	HSS-E Straight Shank, Split Point (Ø1.0 &Ø1.5 : NORMAL point)	1.0-13.0x0.5mm step	25 pcs
DLGP195SET3	HSS-E Straight Shank, Split Point (Ø1.0 &Ø1.5 : NORMAL point)	1.0-10.5x0.5mm step +3.3 +4.2 +6.8 +10.2	24 pcs
DLGPSET982	HSS-E Straight Shank, Split Point (Ø1.0 &Ø1.5 : NORMAL point)	1.0-10.0x0.1mm step	91 pcs

GOLD-P DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

GOLD-P COATED DRILLS
GOLD-P BESCHICHTET BOHRER

D1GP125, D1GP165, DLGP195 SERIES

WORK MATERIAL	CARBON STEELS		CARBON STEELS		ALLOY STEELS		STAINLESS STEELS		TITANIUM ALLOYS		ALUMINUM ALLOYS, ZINC ALLOYS		MAGNESIUM ALLOYS	
HARDNESS			~ HRc23		~ HRc23 ~ 34		HRc23							
STRENGTH	~ 570 N/mm²		~ 830 N/mm²		810 ~ 1110 N/mm²		~ 830 N/mm²		~ 410 N/mm²					
DRILLING SPEED	35 ~ 45 m/min		30 ~ 40 m/min		20 ~ 25 m/min		20 ~ 25 m/min		20 ~ 25 m/min		85 ~ 95 m/min		30 ~ 35 m/min	
DIAMETER	N	S	N	S	N	S	N	S	N	S	N	S	N	S
1.0	14000	0.02	12500	0.02	7700	0.02	7000	0.02	8050	0.02	30000	0.02	11500	0.03
2.0	7000	0.06	6100	0.06	3850	0.06	3500	0.06	4050	0.06	15000	0.06	5800	0.09
3.0	4650	0.10	4100	0.08	2550	0.08	2350	0.08	2700	0.08	9900	0.10	3850	0.13
4.0	3500	0.11	3050	0.11	1950	0.10	1750	0.10	2000	0.09	7450	0.11	2900	0.15
5.0	2800	0.12	2450	0.11	1550	0.10	1400	0.10	1600	0.10	5950	0.12	2300	0.17
6.0	2350	0.14	2050	0.13	1300	0.12	1150	0.12	1350	0.12	4950	0.14	1950	0.19
7.0	2000	0.16	1750	0.15	1100	0.14	1000	0.14	1150	0.14	4250	0.16	1650	0.22
8.0	1750	0.18	1550	0.18	960	0.15	875	0.15	1000	0.15	3700	0.18	1450	0.24
9.0	1550	0.20	1350	0.22	855	0.18	780	0.18	895	0.17	3300	0.20	1280	0.27
10.0	1400	0.21	1250	0.22	770	0.18	700	0.18	805	0.18	3000	0.23	1150	0.29
11.0	1250	0.22	1100	0.22	700	0.18	650	0.18	730	0.18	2700	0.23	1050	0.30
12.0	1150	0.23	1000	0.22	650	0.20	585	0.20	670	0.20	2480	0.23	960	0.31
13.0	1050	0.23	950	0.22	595	0.20	540	0.20	620	0.20	2300	0.23	890	0.31

N = R.P.M
S = Feed per Revolution (mm/rev.)

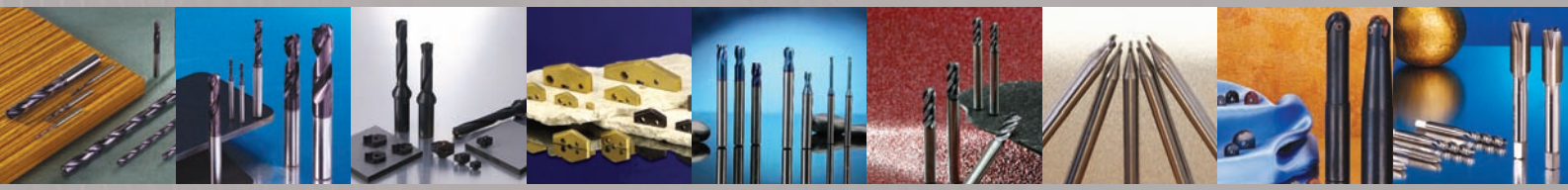
GOLD-P COATED DRILLS for DEEP HOLES
GOLD-P BESCHICHTET BOHRER für TIEFLOCH MIT ZYLINDERSCHAFT

DLGP506 SERIES

WORK MATERIAL	CARBON STEELS ALLOY STEELS		TOOL STEELS HARDENED STEELS		SOFT GREY CAST IRON		HARD GREY CAST IRON	
HARDNESS	HRc15 ~ 30		HRc20 ~ 40					
STRENGTH	700 ~ 1000 N/mm²		800 ~ 1200 N/mm²					
DRILLING SPEED	23 ~ 28 m/min		15 ~ 20 m/min		40 ~ 50 m/min		25 ~ 30 m/min	
DIAMETER	N	S	N	S	N	S	N	S
1.0	8750	0.02	6300	0.02	16000	0.02	9800	0.02
2.0	4400	0.06	3150	0.06	7900	0.07	4900	0.07
3.0	2900	0.08	2100	0.08	5250	0.11	3250	0.11
4.0	2200	0.09	1600	0.09	3950	0.14	2450	0.14
5.0	1750	0.10	1250	0.10	3150	0.14	1950	0.14
6.0	1450	0.12	1050	0.12	2650	0.18	1650	0.18
7.0	1250	0.14	900	0.14	2250	0.20	1400	0.20
8.0	1100	0.15	790	0.15	1950	0.22	1250	0.22
9.0	975	0.17	700	0.17	1750	0.24	1100	0.24
10.0	875	0.18	630	0.18	1600	0.28	980	0.28
11.0	800	0.20	575	0.20	1450	0.28	890	0.28
12.0	730	0.20	525	0.20	1300	0.28	815	0.28
13.0	675	0.20	485	0.20	1200	0.28	755	0.28

N = R.P.M
S = Feed per Revolution (mm/rev.)

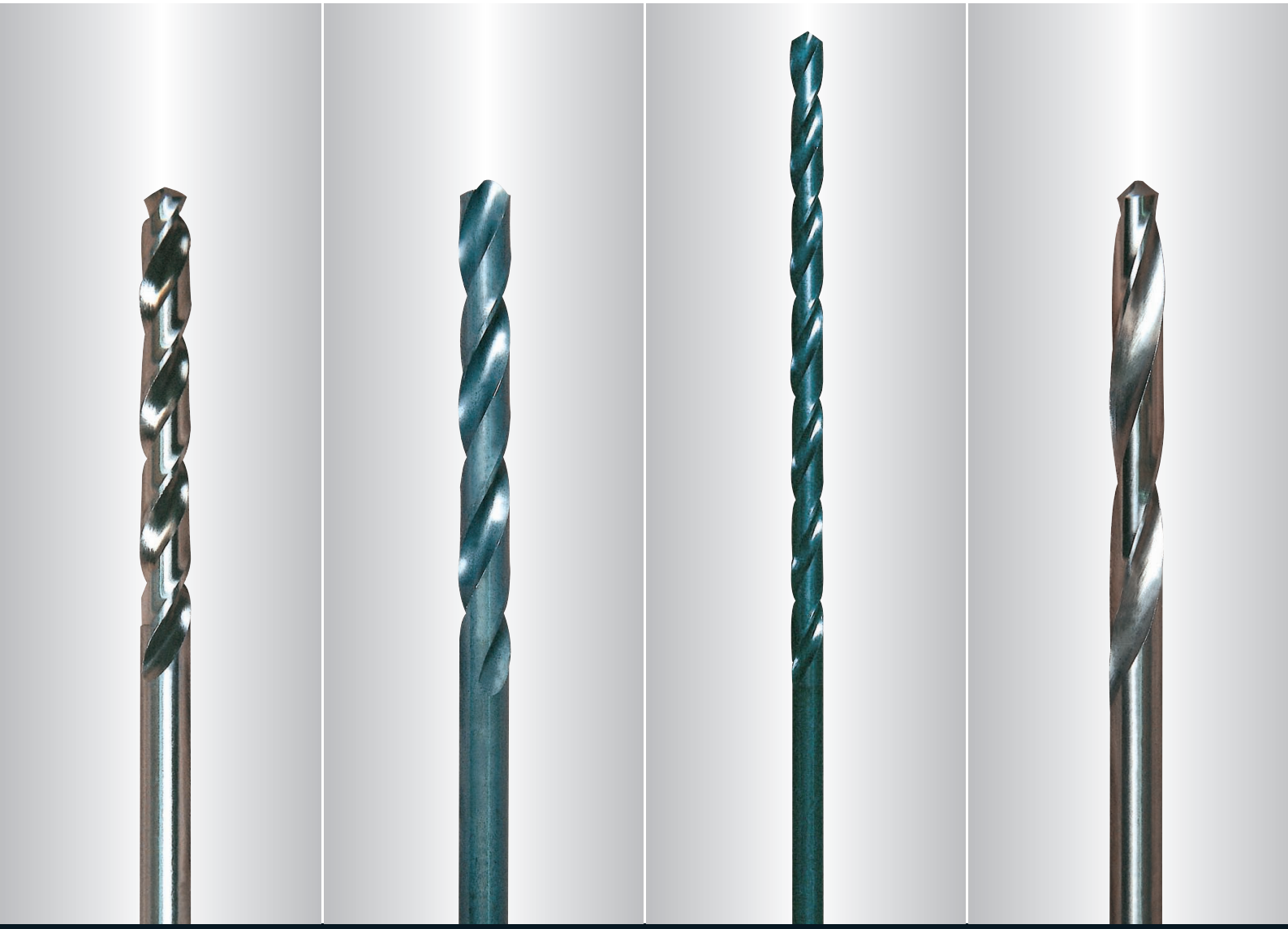
Global Cutting Tool Leader **YG-1**



HSS

YG

Being the best through innovation



STRAIGHT SHANK DRILLS

BOHRER MIT ZYLINDERSCHAFT

- General Purpose (HSS & HSS-E & 8% Cobalt)
- Für allgemeinen Einsatz, HSS und HSSE-Co8

STRAIGHT SHANK TWIST DRILLS

HSS Drills for soft materials & HSS cobalt Drills for tough materials

ITEM	MODEL	DESCRIPTION		SIZE MIN	SIZE MAX	PAGE
D2107		HSSCo8, STRAIGHT SHANK TWIST DRILLS, FORM C HSSCo8, SPIRALBOHRER mit ZYLINDERSCHAFT	*STUB* *EXTRA KURZ*	D1.0	D31.0	176
D1107		HSS, STRAIGHT SHANK TWIST DRILLS HSS, SPIRALBOHRER mit ZYLINDERSCHAFT	*STUB* *EXTRA KURZ*	D1.0	D13.0	179
D2105		HSSCo8, STRAIGHT SHANK TWIST DRILLS, FORM C HSSCo8, SPIRALBOHRER mit ZYLINDERSCHAFT	*JOBBER* *KURZ*	D1.0	D20.0	181
DL105		HSS-E, STRAIGHT SHANK TWIST DRILLS, FORM C HSS-E, SPIRALBOHRER mit ZYLINDERSCHAFT	*JOBBER* *KURZ*	D1.0	D20.0	184
D1105		HSS, STRAIGHT SHANK TWIST DRILLS HSS, SPIRALBOHRER mit ZYLINDERSCHAFT	*JOBBER* *KURZ*	D0.3	D20.0	187
D1125		HSS, STRAIGHT SHANK TWIST DRILLS HSS, SPIRALBOHRER mit ZYLINDERSCHAFT	*JOBBER* *KURZ*	D2.0	D20.0	191
D2104		HSSCo8, STRAIGHT SHANK TWIST DRILLS HSSCo8, SPIRALBOHRER mit ZYLINDERSCHAFT	*LONG* *LANG*	D2.0	D12.0	194
D1121		HSS, STRAIGHT SHANK TWIST DRILLS HSS, SPIRALBOHRER mit ZYLINDERSCHAFT	*EXTRA LONG* *ÜBERLANG*	D2.0	D13.0	196
DL109		HSS-E, STRAIGHT SHANK TWIST DRILLS for HEAVY DUTY HSS-E, SPIRALBOHRER für HOHE LEISTUNGEN mit ZYLINDERSCHAFT	*JOBBER* *KURZ*	D1.5	D13.0	197
D1100		HSS, STRAIGHT SHANK TWIST DRILLS for BRASS/BRONZE HSS, SPIRALBOHRER für MESSING/BRONZE mit ZYLINDERSCHAFT	*JOBBER* *KURZ*	D1.5	D13.0	198
D1106		HSS, STRAIGHT SHANK TWIST DRILLS for ALUMINUM, FORM C HSS, SPIRALBOHRER für ALUMINIUM mit ZYLINDERSCHAFT	*JOBBER* *KURZ*	D1.5	D13.0	200
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN				215

◎ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	○	○	○			
◎	◎				○	○	○	○	○			
◎	◎				○	○	◎	○	○			
◎	◎				○	○	◎	○	○			
◎	◎				○	○	○	○	○			
◎	◎				○	○	○	○	○			
◎	◎				○	○	◎	○	○			
◎	◎				○	○	○	○	○			
◎	◎				○	○	○	○	○			
											◎	
						◎					○	

DH100, DH50-WORM PATTERN DRILLS

DH100-For Deep hole drilling in general steels

ITEM	MODEL	DESCRIPTION		SIZE MIN	SIZE MAX	PAGE
DH100 DL510		HSS-E, STRAIGHT SHANK DRILLS for DEEP HOLES, FORM B HSS-E, SPIRALBOHRER für TIEFLOCH mit ZYLINDERSCHAFT	*STUB* *EXTRA KURZ*	D2.0	D20.0	202
DH100 DL508		HSS-E, STRAIGHT SHANK DRILLS for DEEP HOLES, FORM B HSS-E, SPIRALBOHRER für TIEFLOCH mit ZYLINDERSCHAFT	*JOBBER* *KURZ*	D2.0	D16.0	204
DH100 DL509		HSS-E, STRAIGHT SHANK DRILLS for DEEP HOLES, FORM B HSS-E, SPIRALBOHRER für TIEFLOCH mit ZYLINDERSCHAFT	*LONG* *LANG*	D2.0	D12.0	206
DH100 DL505		HSS-E, STRAIGHT SHANK DRILLS for DEEP HOLES, FORM C HSS-E, SPIRALBOHRER für TIEFLOCH mit ZYLINDERSCHAFT	*JOBBER* *KURZ*	D2.0	D13.0	208
DH100 DL504		HSS-E, STRAIGHT SHANK DRILLS for DEEP HOLES, FORM C HSS-E, SPIRALBOHRER für TIEFLOCH mit ZYLINDERSCHAFT	*LONG* *LANG*	D2.0	D13.0	210
DH100 DT600 DT692 DT693		HSS-E, STRAIGHT SHANK DRILLS for DEEP HOLES, FORM C HSS-E, SPIRALBOHRER für TIEFLOCH mit ZYLINDERSCHAFT	*EXTRA LONG* *ÜBERLANG*	D2.0 D3.0 D4.0	D10.5 D10.2 D10.0	211
DH100 DL608		HSS-E, TAPER SHANK DRILLS for DEEP HOLES, FORM C HSS-E, SPIRALBOHRER für TIEFLOCH mit MORSEKEGELSCHAFT	*LONG* *LANG*	D13.0	D30.0	212

DH50-For Deep hole drilling in aluminum

DH50 DL507		HSS-E, STRAIGHT SHANK DRILLS for ALUMINUM DEEP HOLES, FORM C HSS-E, SPIRALBOHRER für ALUMINIUM TIEFLOCH mit ZYLINDERSCHAFT	*EXTRA LONG* *ÜBERLANG*	D2.0	D13.0	213
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN				217

◎ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○			○			
◎	◎				○	○			○			
◎	◎				○	○			○			
◎	◎				○	○			○			
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◎	◎				○	○			○			

◎	◎				○	◎			○			

STRAIGHT SHANK DRILLS

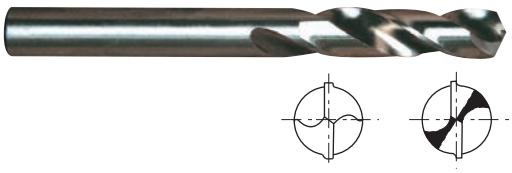
D2107 SERIES

HSSCo8, STRAIGHT SHANK TWIST DRILLS
HSSCo8, SPIRALBOHRER mit ZYLINDERSCHAFT

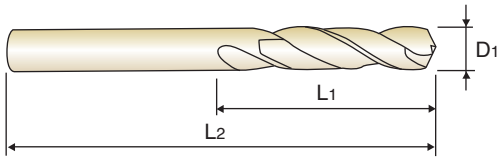
STUB
EXTRA KURZ

▶ **Surface treatment** : Coloring(Gold color)
▶ **Application** : Suitable for drilling thin materials with portable electric drills.
Special twist drills for automatic and turret lathes

▶ **Oberflächenbehandlung** : Coloring(Goldfarbe)
▶ **Verwendung** : Sonderbohrer zum Einsatz auf Automaten und Revolverdrehbänken. Geeignet für den Einsatz in Handbohrmaschinen zum Bohren von dünnwandigem Material.



under 1.6mm 1.6mm & over



DIN 1897 | HSS Co8 | N 33° | h8 | 135° P.215

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2107010	1.0	6	26	D2107034	3.4	20	52
D2107011	1.1	7	28	D2107035	3.5	20	52
D2107012	1.2	8	30	D2107036	3.6	20	52
D2107912	1.25	8	30	D2107037	3.7	20	52
D2107013	1.3	8	30	D2107937	3.75	20	52
D2107014	1.4	9	32	D2107038	3.8	22	55
D2107015	1.5	9	32	D2107039	3.9	22	55
D2107016	1.6	10	34	D2107040	4.0	22	55
D2107017	1.7	10	34	D2107041	4.1	22	55
D2107917	1.75	11	36	D2107042	4.2	22	55
D2107018	1.8	11	36	D2107942	4.25	22	55
D2107019	1.9	11	36	D2107043	4.3	24	58
D2107020	2.0	12	38	D2107044	4.4	24	58
D2107021	2.1	12	38	D2107045	4.5	24	58
D2107022	2.2	13	40	D2107046	4.6	24	58
D2107925	2.55	13	40	D2107946	4.65	24	58
D2107023	2.3	13	40	D2107047	4.7	24	58
D2107024	2.4	14	43	D2107947	4.75	24	58
D2107025	2.5	14	43	D2107048	4.8	26	62
D2107026	2.6	14	43	D2107049	4.9	26	62
D2107027	2.7	16	46	D2107050	5.0	26	62
D2107927	2.75	16	46	D2107051	5.1	26	62
D2107028	2.8	16	46	D2107052	5.2	26	62
D2107029	2.9	16	46	D2107952	5.25	26	62
D2107030	3.0	16	46	D2107053	5.3	26	62
D2107031	3.1	18	49	D2107054	5.4	28	66
D2107032	3.2	18	49	D2107055	5.5	28	66
D2107932	3.25	18	49	D2107955	5.55	28	66
D2107033	3.3	18	49	D2107056	5.6	28	66

▶ HSS-E(DL107) is available on your request.
▶ TiN(D4107), TiCN(D7107) and TiAlN(DQ107) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	○	○	○			

STRAIGHT SHANK DRILLS

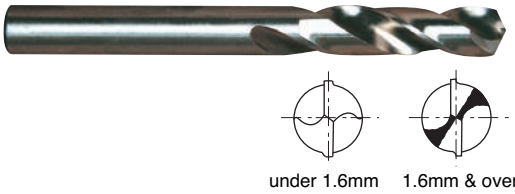
D2107 SERIES

HSSCo8, STRAIGHT SHANK TWIST DRILLS
HSSCo8, SPIRALBOHRER mit ZYLINDERSCHAFT

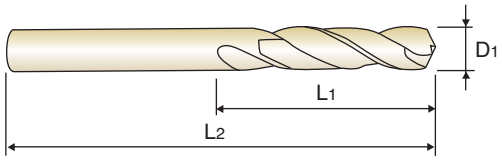
STUB
EXTRA KURZ

▶ **Surface treatment** : Coloring(Gold color)
▶ **Application** : Suitable for drilling thin materials with portable electric drills.
Special twist drills for automatic and turret lathes

▶ **Oberflächenbehandlung** : Coloring(Goldfarbe)
▶ **Verwendung** : Sonderbohrer zum Einsatz auf Automaten und Revolverdrehbänken. Geeignet für den Einsatz in Handbohrmaschinen zum Bohren von dünnwandigem Material.



under 1.6mm 1.6mm & over



DIN 1897 | HSS Co8 | N 33° | h8 | 135° P.215

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2107057	5.7	28	66
D2107957	5.75	28	66
D2107058	5.8	28	66
D2107059	5.9	28	66
D2107060	6.0	28	66
D2107061	6.1	31	70
D2107062	6.2	31	70
D2107962	6.25	31	70
D2107063	6.3	31	70
D2107064	6.4	31	70
D2107065	6.5	31	70
D2107066	6.6	31	70
D2107067	6.7	31	70
D2107967	6.75	34	74
D2107068	6.8	34	74
D2107069	6.9	34	74
D2107070	7.0	34	74
D2107071	7.1	34	74
D2107072	7.2	34	74
D2107972	7.25	34	74
D2107073	7.3	34	74
D2107074	7.4	34	74
D2107974	7.45	34	74
D2107075	7.5	34	74
D2107076	7.6	37	79
D2107077	7.7	37	79
D2107977	7.75	37	79
D2107078	7.8	37	79
D2107079	7.9	37	79

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2107080	8.0	37	79
D2107081	8.1	37	79
D2107082	8.2	37	79
D2107982	8.25	37	79
D2107083	8.3	37	79
D2107084	8.4	37	79
D2107085	8.5	37	79
D2107086	8.6	40	84
D2107087	8.7	40	84
D2107987	8.75	40	84
D2107088	8.8	40	84
D2107089	8.9	40	84
D2107090	9.0	40	84
D2107091	9.1	40	84
D2107092	9.2	40	84
D2107992	9.25	40	84
D2107093	9.3	40	84
D2107993	9.35	40	84
D2107094	9.4	40	84
D2107095	9.5	40	84
D2107096	9.6	43	89
D2107097	9.7	43	89
D2107997	9.75	43	89
D2107098	9.8	43	89
D2107099	9.9	43	89
D2107100	10.0	43	89
D2107102	10.2	43	89
D2107802	10.25	43	89
D2107105	10.5	43	89

▶ HSS-E(DL107) is available on your request.
▶ TiN(D4107), TiCN(D7107) and TiAlN(DQ107) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	○	○	○			

STRAIGHT SHANK DRILLS

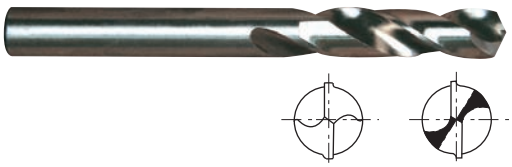
D2107 SERIES

HSSCo8, STRAIGHT SHANK TWIST DRILLS
HSSCo8, SPIRALBOHRER mit ZYLINDERSCHAFT

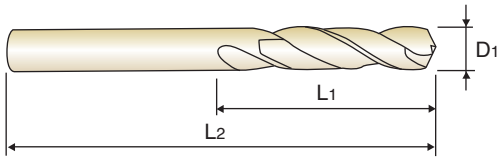
STUB
EXTRA KURZ

▶ **Surface treatment** : Coloring(Gold color)
▶ **Application** : Suitable for drilling thin materials with portable electric drills.
Special twist drills for automatic and turret lathes

▶ **Oberflächenbehandlung** : Coloring(Goldfarbe)
▶ **Verwendung** : Sonderbohrer zum Einsatz auf Automaten und Revolverdrehbänken. Geeignet für den Einsatz in Handbohrmaschinen zum Bohren von dünnwandigem Material.



under 1.6mm 1.6mm & over



DIN 1897 | HSS Co8 | N 33° | h8 | 135° P.215

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2107807	10.75	47	95
D2107110	11.0	47	95
D2107812	11.25	47	95
D2107115	11.5	47	95
D2107817	11.75	47	95
D2107118	11.8	47	95
D2107120	12.0	51	102
D2107822	12.25	51	102
D2107125	12.5	51	102
D2107827	12.75	51	102
D2107130	13.0	51	102
D2107832	13.25	54	107
D2107135	13.5	54	107
D2107837	13.75	54	107
D2107138	13.8	54	107
D2107140	14.0	54	107
D2107842	14.25	56	111
D2107145	14.5	56	111
D2107847	14.75	56	111
D2107150	15.0	56	111
D2107852	15.25	58	115
D2107155	15.5	58	115
D2107857	15.75	58	115
D2107160	16.0	58	115
D2107862	16.25	60	119
D2107165	16.5	60	119
D2107867	16.75	60	119
D2107170	17.0	60	119

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2107872	17.25	62	123
D2107175	17.5	62	123
D2107877	17.75	62	123
D2107180	18.0	62	123
D2107882	18.25	64	127
D2107185	18.5	64	127
D2107887	18.75	64	127
D2107190	19.0	64	127
D2107892	19.25	66	131
D2107195	19.5	66	131
D2107897	19.75	66	131
D2107200	20.0	66	131
D2107205	20.5	68	136
D2107210	21.0	68	136
D2107215	21.5	70	141
D2107220	22.0	70	141
D2107225	22.5	72	146
D2107230	23.0	72	146
D2107235	23.5	72	146
D2107240	24.0	75	151
D2107245	24.5	75	151
D2107250	25.0	75	151
D2107260	26.0	78	156
D2107270	27.0	81	162
D2107280	28.0	81	162
D2107290	29.0	84	168
D2107300	30.0	84	168
D2107310	31.0	87	174

▶ HSS-E(DL107) is available on your request.
▶ TiN(D4107), TiCN(D7107) and TiAlN(DQ107) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	○	○	○			

STRAIGHT SHANK DRILLS

D1107 SERIES

HSS, STRAIGHT SHANK TWIST DRILLS
HSS, SPIRALBOHRER mit ZYLINDERSCHAFT

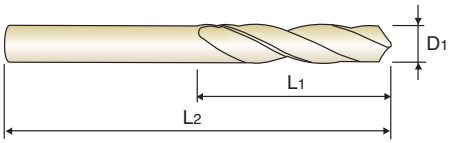
STUB
EXTRA KURZ

▶ **Surface treatment** : Steam Tempered(Black Oxide Finish)
Bright Finish under 2mm

▶ **Application** : Suitable for drilling thin materials with portable electric drills.
Special twist drills for automatic and turret lathes.

▶ **Oberflächenbehandlung** : Steam Homo(Scwarzoxidation)
Helle Beschaffenheit unter 2mm

▶ **Verwendung** : Sonderbohrer zum Einsatz auf Automaten und Revolverdrehbänken.
Geeignet für den Einsatz in Handbohrmaschinen zum Bohren von dünnwandigem Material.



DIN 1897 | HSS | N 20~30° | h8 | 118° P.215

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1107010	1.0	6	26	D1107036	3.6	20	52
D1107011	1.1	7	28	D1107037	3.7	20	52
D1107012	1.2	8	30	D1107937	3.75	20	52
D1107912	1.25	8	30	D1107038	3.8	22	55
D1107013	1.3	8	30	D1107039	3.9	22	55
D1107014	1.4	9	32	D1107040	4.0	22	55
D1107015	1.5	9	32	D1107041	4.1	22	55
D1107016	1.6	9	34	D1107042	4.2	22	55
D1107017	1.7	10	34	D1107942	4.25	22	55
D1107917	1.75	11	36	D1107043	4.3	24	58
D1107018	1.8	11	36	D1107044	4.4	24	58
D1107019	1.9	11	36	D1107045	4.5	24	58
D1107020	2.0	12	38	D1107046	4.6	24	58
D1107021	2.1	12	38	D1107047	4.7	24	58
D1107022	2.2	13	40	D1107947	4.75	24	58
D1107922	2.25	13	40	D1107048	4.8	26	62
D1107023	2.3	13	40	D1107049	4.9	26	62
D1107024	2.4	14	43	D1107050	5.0	26	62
D1107025	2.5	14	43	D1107051	5.1	26	62
D1107026	2.6	14	43	D1107052	5.2	26	62
D1107027	2.7	16	46	D1107952	5.25	26	62
D1107927	2.75	16	46	D1107053	5.3	26	62
D1107028	2.8	16	46	D1107054	5.4	28	66
D1107029	2.9	16	46	D1107055	5.5	28	66
D1107030	3.0	16	46	D1107056	5.6	28	66
D1107031	3.1	18	49	D1107057	5.7	28	66
D1107032	3.2	18	49	D1107957	5.75	28	66
D1107932	3.25	18	49	D1107058	5.8	28	66
D1107033	3.3	18	49	D1107059	5.9	28	66
D1107034	3.4	20	52	D1107060	6.0	28	66
D1107035	3.5	20	52	D1107061	6.1	31	70

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	○	○	○			

STRAIGHT SHANK DRILLS

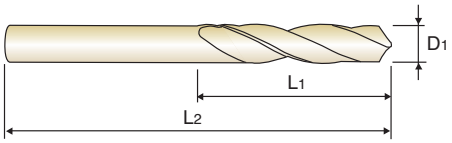
D1107 SERIES

HSS, STRAIGHT SHANK TWIST DRILLS
HSS, SPIRALBOHRER mit ZYLINDERSCHAFT

STUB
EXTRA KURZ

▶ **Surface treatment** : Steam Tempered(Black Oxide Finish)
▶ **Application** : Suitable for drilling thin materials with portable electric drills.
Special twist drills for automatic and turret lathes.

▶ **Oberflächenbehandlung** : Steam Homo(Scwarzoxidation)
▶ **Verwendung** : Sonderbohrer zum Einsatz auf Automaten und Revolverdrehbänken. Geeignet für den Einsatz in Handbohrmaschinen zum Bohren von dünnwandigem Material.



DIN 1897 | HSS | N 20~30° | h8 | 118° P.215

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1107062	6.2	31	70
D1107962	6.25	31	70
D1107063	6.3	31	70
D1107064	6.4	31	70
D1107065	6.5	31	70
D1107066	6.6	31	70
D1107067	6.7	31	70
D1107967	6.75	34	74
D1107068	6.8	34	74
D1107069	6.9	34	74
D1107070	7.0	34	74
D1107071	7.1	34	74
D1107072	7.2	34	74
D1107972	7.25	34	74
D1107073	7.3	34	74
D1107074	7.4	34	74
D1107075	7.5	34	74
D1107076	7.6	37	79
D1107077	7.7	37	79
D1107977	7.75	37	79
D1107078	7.8	37	79
D1107079	7.9	37	79
D1107080	8.0	37	79
D1107081	8.1	37	79
D1107082	8.2	37	79
D1107982	8.25	37	79
D1107083	8.3	37	79
D1107084	8.4	37	79
D1107085	8.5	37	79
D1107086	8.6	40	84

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1107087	8.7	40	84
D1107987	8.75	40	84
D1107088	8.8	40	84
D1107089	8.9	40	84
D1107090	9.0	40	84
D1107091	9.1	40	84
D1107092	9.2	40	84
D1107992	9.25	40	84
D1107093	9.3	40	84
D1107094	9.4	40	84
D1107095	9.5	40	84
D1107096	9.6	43	89
D1107097	9.7	43	89
D1107997	9.75	43	89
D1107098	9.8	43	89
D1107099	9.9	43	89
D1107100	10.0	43	89
D1107802	10.25	43	89
D1107105	10.5	43	89
D1107807	10.75	47	95
D1107110	11.0	47	95
D1107812	11.25	47	95
D1107115	11.5	47	95
D1107817	11.75	47	95
D1107120	12.0	51	102
D1107822	12.25	51	102
D1107125	12.5	51	102
D1107827	12.75	51	102
D1107130	13.0	51	102

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	○	○	○			

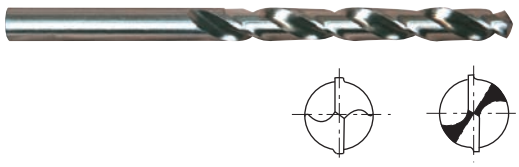
STRAIGHT SHANK DRILLS

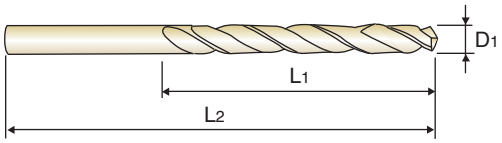
D2105 SERIES

HSSCo8, STRAIGHT SHANK TWIST DRILLS — *JOBBER*
HSSCo8, SPIRALBOHRER mit ZYLINDERSCHAFT — *KURZ*

▶ **Surface treatment** : Coloring(Gold color)
▶ **Application** : Drilling stainless steels and difficult - to - cut materials such as titanium and inconel.

▶ **Oberflächenbehandlung** : Coloring(Goldfarbe)
▶ **Verwendung** : Zum Bohren von rostfreien und austenitischen. Stählen, schwerzerspanbaren Werkstoffen wie Titan und Inconel.





DIN 338 | HSS Co8 | N 33° | h8 | 135° P.215

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2105010	1.0	12	34	D2105031	3.1	36	65
D2105011	1.1	14	36	D2105032	3.2	36	65
D2105012	1.2	16	38	D2105932	3.25	36	65
D2105912	1.25	16	38	D2105033	3.3	36	65
D2105013	1.3	16	38	D2105034	3.4	39	70
D2105014	1.4	18	40	D2105035	3.5	39	70
D2105015	1.5	18	40	D2105036	3.6	39	70
D2105016	1.6	20	43	D2105037	3.7	39	70
D2105017	1.7	20	43	D2105937	3.75	39	70
D2105917	1.75	22	46	D2105038	3.8	43	75
D2105018	1.8	22	46	D2105039	3.9	43	75
D2105019	1.9	22	46	D2105040	4.0	43	75
D2105020	2.0	24	49	D2105041	4.1	43	75
D2105021	2.1	24	49	D2105042	4.2	43	75
D2105022	2.2	27	53	D2105942	4.25	43	75
D2105922	2.25	27	53	D2105043	4.3	47	80
D2105023	2.3	27	53	D2105044	4.4	47	80
D2105024	2.4	30	57	D2105045	4.5	47	80
D2105025	2.5	30	57	D2105046	4.6	47	80
D2105026	2.6	30	57	D2105047	4.7	47	80
D2105027	2.7	33	61	D2105947	4.75	47	80
D2105927	2.75	33	61	D2105048	4.8	52	86
D2105028	2.8	33	61	D2105049	4.9	52	86
D2105029	2.9	33	61	D2105050	5.0	52	86
D2105030	3.0	33	61	D2105051	5.1	52	86

▶ TiN(D4105), TiCN(D7105) and TiAlN(DQ105) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	◎	○	○			

STRAIGHT SHANK DRILLS

D2105 SERIES

HSSCo8, STRAIGHT SHANK TWIST DRILLS

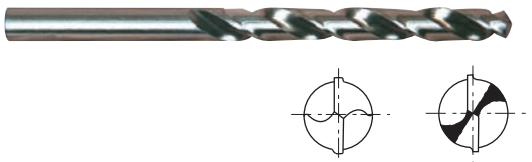
JOBBER

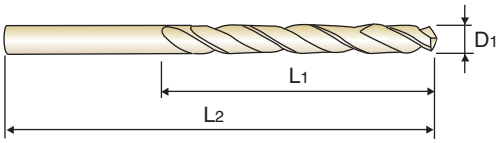
HSSCo8, SPIRALBOHRER mit ZYLINDERSCHAFT

KURZ

▶ **Surface treatment** : Coloring(Gold color)
▶ **Application** : Drilling stainless steels and difficult - to - cut materials such as titanium and inconel.

▶ **Oberflächenbehandlung** : Coloring(Goldfarbe)
▶ **Verwendung** : Zum Bohren von rostfreien und austenitischen. Stählen, schwerzerspanbaren Werkstoffen wie Titan und Inconel.





DIN 338 | HSS Co8 | N 33° | h8 | 135° P.215

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2105052	5.2	52	86	D2105972	7.25	69	109
D2105952	5.25	52	86	D2105073	7.3	69	109
D2105053	5.3	52	86	D2105074	7.4	69	109
D2105054	5.4	57	93	D2105075	7.5	69	109
D2105055	5.5	57	93	D2105076	7.6	75	117
D2105056	5.6	57	93	D2105077	7.7	75	117
D2105057	5.7	57	93	D2105977	7.75	75	117
D2105957	5.75	57	93	D2105078	7.8	75	117
D2105058	5.8	57	93	D2105079	7.9	75	117
D2105059	5.9	57	93	D2105080	8.0	75	117
D2105060	6.0	57	93	D2105081	8.1	75	117
D2105061	6.1	63	101	D2105082	8.2	75	117
D2105062	6.2	63	101	D2105982	8.25	75	117
D2105962	6.25	63	101	D2105083	8.3	75	117
D2105063	6.3	63	101	D2105084	8.4	75	117
D2105064	6.4	63	101	D2105085	8.5	75	117
D2105065	6.5	63	101	D2105086	8.6	81	125
D2105066	6.6	63	101	D2105087	8.7	81	125
D2105067	6.7	63	101	D2105987	8.75	81	125
D2105967	6.75	69	109	D2105088	8.8	81	125
D2105068	6.8	69	109	D2105089	8.9	81	125
D2105069	6.9	69	109	D2105090	9.0	81	125
D2105070	7.0	69	109	D2105091	9.1	81	125
D2105071	7.1	69	109	D2105092	9.2	81	125
D2105072	7.2	69	109	D2105992	9.25	81	125

▶ TiN(D4105), TiCN(D7105) and TiAlN(DQ105) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	◎	○	○			

STRAIGHT SHANK DRILLS

D2105 SERIES

HSSCo8, STRAIGHT SHANK TWIST DRILLS

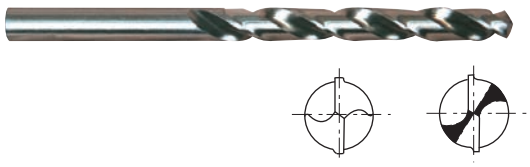
HSSCo8, SPIRALBOHRER mit ZYLINDERSCHAFT

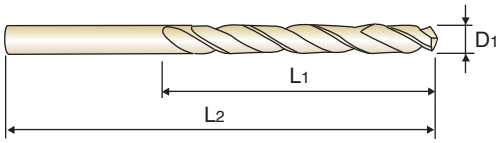
JOBBER

KURZ

▶ **Surface treatment** : Coloring(Gold color)
▶ **Application** : Drilling stainless steels and difficult - to - cut materials such as titanium and inconel.

▶ **Oberflächenbehandlung** : Coloring(Goldfarbe)
▶ **Verwendung** : Zum Bohren von rostfreien und austenitischen. Stählen, schwerzerspanbaren Werkstoffen wie Titan und Inconel.





DIN 338 | HSS Co8 | N 33° | h8 | 135° P.215

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2105093	9.3	81	125
D2105094	9.4	81	125
D2105095	9.5	81	125
D2105096	9.6	87	133
D2105097	9.7	87	133
D2105997	9.75	87	133
D2105098	9.8	87	133
D2105099	9.9	87	133
D2105100	10.0	87	133
D2105102	10.2	87	133
D2105105	10.5	87	133
D2105110	11.0	94	142
D2105115	11.5	94	142
D2105120	12.0	101	151
D2105125	12.5	101	151

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2105130	13.0	101	151
D2105135	13.5	108	160
D2105140	14.0	108	160
D2105145	14.5	114	169
D2105150	15.0	114	169
D2105155	15.5	120	178
D2105160	16.0	120	178
D2105165	16.5	125	184
D2105170	17.0	125	184
D2105175	17.5	130	191
D2105180	18.0	130	191
D2105185	18.5	135	198
D2105190	19.0	135	198
D2105195	19.5	140	205
D2105200	20.0	140	205

▶ TiN(D4105), TiCN(D7105) and TiAlN(DQ105) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	◎	○	○			

STRAIGHT SHANK DRILLS

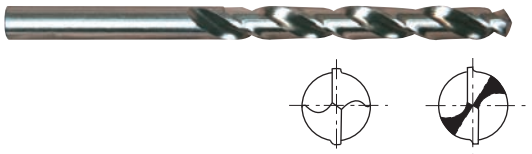
DL105 SERIES

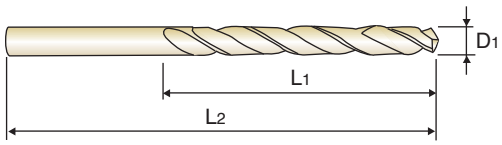
HSS-E, STRAIGHT SHANK TWIST DRILLS
HSS-E, SPIRALBOHRER mit ZYLINDERSCHAFT

JOBBER
KURZ

▶ **Surface treatment** : Coloring(Gold color)
▶ **Application** : Drilling stainless steels and difficult - to - cut materials such as titanium and inconel.

▶ **Oberflächenbehandlung** : Coloring(Goldfarbe)
▶ **Verwendung** : Zum Bohren von rostfreien und austenitischen. Stählen, schwerzerspanbaren Werkstoffen wie Titan und Inconel.





DIN 338 | HSS-E | N 33° | h8 | 135° P.215

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL105010	1.0	12	34
DL105011	1.1	14	36
DL105012	1.2	16	38
DL105912	1.25	16	38
DL105013	1.3	16	38
DL105014	1.4	18	40
DL105015	1.5	18	40
DL105016	1.6	20	43
DL105017	1.7	20	43
DL105917	1.75	22	46
DL105018	1.8	22	46
DL105019	1.9	22	46
DL105020	2.0	24	49
DL105021	2.1	24	49
DL105022	2.2	27	53
DL105922	2.25	27	53
DL105023	2.3	27	53
DL105024	2.4	30	57
DL105025	2.5	30	57
DL105026	2.6	30	57
DL105027	2.7	33	61
DL105927	2.75	33	61
DL105028	2.8	33	61
DL105029	2.9	33	61
DL105030	3.0	33	61

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL105031	3.1	36	65
DL105032	3.2	36	65
DL105932	3.25	36	65
DL105033	3.3	36	65
DL105034	3.4	39	70
DL105035	3.5	39	70
DL105036	3.6	39	70
DL105037	3.7	39	70
DL105937	3.75	39	70
DL105038	3.8	43	75
DL105039	3.9	43	75
DL105040	4.0	43	75
DL105041	4.1	43	75
DL105042	4.2	43	75
DL105942	4.25	43	75
DL105043	4.3	47	80
DL105044	4.4	47	80
DL105045	4.5	47	80
DL105046	4.6	47	80
DL105047	4.7	47	80
DL105947	4.75	47	80
DL105048	4.8	52	86
DL105049	4.9	52	86
DL105050	5.0	52	86
DL105051	5.1	52	86

▶ TiN(DN105), TiCN(DX105) and TiAlN(DT105) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	◎	○	○			

STRAIGHT SHANK DRILLS

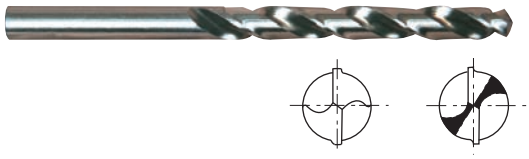
DL105 SERIES

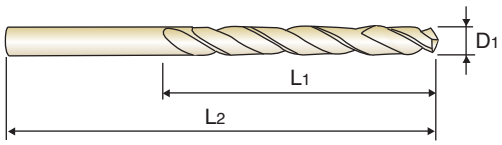
HSS-E, STRAIGHT SHANK TWIST DRILLS
HSS-E, SPIRALBOHRER mit ZYLINDERSCHAFT

JOBBER
KURZ

▶ **Surface treatment** : Coloring(Gold color)
▶ **Application** : Drilling stainless steels and difficult - to - cut materials such as titanium and inconel.

▶ **Oberflächenbehandlung** : Coloring(Goldfarbe)
▶ **Verwendung** : Zum Bohren von rostfreien und austenitischen. Stählen, schwerzerspanbaren Werkstoffen wie Titan und Inconel.





DIN 338 | HSS-E | N 33° | h8 | 135° P.215

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL105052	5.2	52	86	DL105972	7.25	69	109
DL105952	5.25	52	86	DL105073	7.3	69	109
DL105053	5.3	52	86	DL105074	7.4	69	109
DL105054	5.4	57	93	DL105075	7.5	69	109
DL105055	5.5	57	93	DL105076	7.6	75	117
DL105056	5.6	57	93	DL105077	7.7	75	117
DL105057	5.7	57	93	DL105977	7.75	75	117
DL105957	5.75	57	93	DL105078	7.8	75	117
DL105058	5.8	57	93	DL105079	7.9	75	117
DL105059	5.9	57	93	DL105080	8.0	75	117
DL105060	6.0	57	93	DL105081	8.1	75	117
DL105061	6.1	63	101	DL105082	8.2	75	117
DL105062	6.2	63	101	DL105982	8.25	75	117
DL105962	6.25	63	101	DL105083	8.3	75	117
DL105063	6.3	63	101	DL105084	8.4	75	117
DL105064	6.4	63	101	DL105085	8.5	75	117
DL105065	6.5	63	101	DL105086	8.6	81	125
DL105066	6.6	63	101	DL105087	8.7	81	125
DL105067	6.7	63	101	DL105987	8.75	81	125
DL105967	6.75	69	109	DL105088	8.8	81	125
DL105068	6.8	69	109	DL105089	8.9	81	125
DL105069	6.9	69	109	DL105090	9.0	81	125
DL105070	7.0	69	109	DL105091	9.1	81	125
DL105071	7.1	69	109	DL105092	9.2	81	125
DL105072	7.2	69	109	DL105992	9.25	81	125

▶ TiN(DN105), TiCN(DX105) and TiAlN(DT105) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	◎	○	○			

STRAIGHT SHANK DRILLS

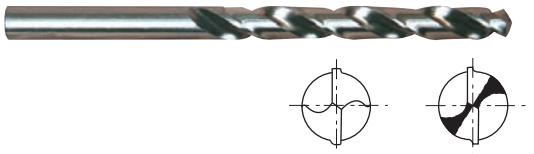
DL105 SERIES

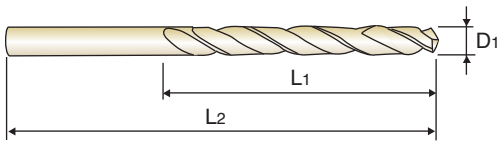
HSS-E, STRAIGHT SHANK TWIST DRILLS
HSS-E, SPIRALBOHRER mit ZYLINDERSCHAFT

JOBBER
KURZ

▶ **Surface treatment** : Coloring(Gold color)
▶ **Application** : Drilling stainless steels and difficult - to - cut materials such as titanium and inconel.

▶ **Oberflächenbehandlung** : Coloring(Goldfarbe)
▶ **Verwendung** : Zum Bohren von rostfreien und austenitischen. Stählen, schwerzerspanbaren Werkstoffen wie Titan und Inconel.





DIN 338 | HSS-E | N 33° | h8 | 135° P.215

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL105093	9.3	81	125	DL105130	13.0	101	151
DL105094	9.4	81	125	DL105135	13.5	108	160
DL105095	9.5	81	125	DL105140	14.0	108	160
DL105096	9.6	87	133	DL105145	14.5	114	169
DL105097	9.7	87	133	DL105150	15.0	114	169
DL105997	9.75	87	133	DL105155	15.5	120	178
DL105098	9.8	87	133	DL105160	16.0	120	178
DL105099	9.9	87	133	DL105165	16.5	125	184
DL105100	10.0	87	133	DL105170	17.0	125	184
DL105102	10.2	87	133	DL105175	17.5	130	191
DL105105	10.5	87	133	DL105180	18.0	130	191
DL105110	11.0	94	142	DL105185	18.5	135	198
DL105115	11.5	94	142	DL105190	19.0	135	198
DL105120	12.0	101	151	DL105195	19.5	140	205
DL105125	12.5	101	151	DL105200	20.0	140	205

▶ TiN(DN105), TiCN(DX105) and TiAlN(DT105) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	◎	○	○			

STRAIGHT SHANK DRILLS

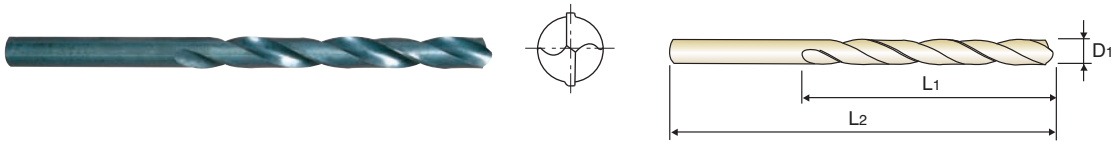
D1105 SERIES

HSS, STRAIGHT SHANK TWIST DRILLS
HSS, SPIRALBOHRER mit ZYLINDERSCHAFT

JOBBER
KURZ

▶ **Surface treatment** : Steam Tempered(Black Oxide Finish) Bright Finish under 2mm
▶ **Application** : Drilling steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron and graphite.

▶ **Oberflächenbehandlung** : Steam Homo(Scwarzoxidation) Helle Beschaffenheit unter 2mm
▶ **Verwendung** : Zum Bohren von Stahl und Stahlguß, Grauguß, Tempergu ß, Sphäroguß, Sintereisen, Graphite.



DIN 338 | HSS | N 20~30° | h8 | 118° P.215

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1105003	0.3	3	19
D1105004	0.4	5	20
D1105005	0.5	6	22
D1105006	0.6	7	24
D1105007	0.7	9	28
D1105008	0.8	10	30
D1105009	0.9	11	32
D1105010	1.0	12	34
D1105910	1.05	12	34
D1105011	1.1	14	36
D1105911	1.15	14	36
D1105012	1.2	16	38
D1105912	1.25	16	38
D1105013	1.3	16	38
D1105913	1.35	18	40
D1105014	1.4	18	40
D1105914	1.45	18	40
D1105015	1.5	18	40
D1105915	1.55	20	43
D1105016	1.6	20	43
D1105916	1.65	20	43
D1105017	1.7	20	43
D1105917	1.75	22	46
D1105018	1.8	22	46
D1105918	1.85	22	46
D1105019	1.9	22	46
D1105919	1.95	24	49
D1105020	2.0	24	49
D1105920	2.05	24	49
D1105021	2.1	24	49

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1105921	2.15	27	53
D1105022	2.2	27	53
D1105922	2.25	27	53
D1105023	2.3	27	53
D1105923	2.35	27	53
D1105024	2.4	30	57
D1105924	2.45	30	57
D1105025	2.5	30	57
D1105925	2.55	30	57
D1105026	2.6	30	57
D1105926	2.65	30	57
D1105027	2.7	33	61
D1105927	2.75	33	61
D1105028	2.8	33	61
D1105928	2.85	33	61
D1105029	2.9	33	61
D1105929	2.95	33	61
D1105030	3.0	33	61
D1105930	3.05	36	65
D1105031	3.1	36	65
D1105931	3.15	36	65
D1105032	3.2	36	65
D1105932	3.25	36	65
D1105033	3.3	36	65
D1105933	3.35	36	65
D1105034	3.4	39	70
D1105934	3.45	39	70
D1105035	3.5	39	70
D1105935	3.55	39	70
D1105036	3.6	39	70

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	○	○	○			

STRAIGHT SHANK DRILLS

D1105 SERIES

HSS, STRAIGHT SHANK TWIST DRILLS
HSS, SPIRALBOHRER mit ZYLINDERSCHAFT

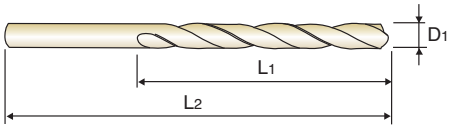
JOBBER
KURZ

▶ **Surface treatment** : Steam Tempered(Black Oxide Finish)
Bright Finish under 2mm

▶ **Application** : Drilling steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron and graphite.

▶ **Oberflächenbehandlung** : Steam Homo(Scwarzoxidation)
Helle Beschaffenheit unter 2mm

▶ **Verwendung** : Zum Bohren von Stahl und Stahlguß, Grauguß, Temperguß, Sphäroguß, Sintereisen, Graphite.



DIN 338 | HSS | N 20~30° | h8 | 118° P.215

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1105936	3.65	39	70	D1105951	5.15	52	86
D1105037	3.7	39	70	D1105052	5.2	52	86
D1105937	3.75	39	70	D1105952	5.25	52	86
D1105038	3.8	43	75	D1105053	5.3	52	86
D1105938	3.85	43	75	D1105953	5.35	57	93
D1105039	3.9	43	75	D1105054	5.4	57	93
D1105939	3.95	43	75	D1105954	5.45	57	93
D1105040	4.0	43	75	D1105055	5.5	57	93
D1105940	4.05	43	75	D1105955	5.55	57	93
D1105041	4.1	43	75	D1105056	5.6	57	93
D1105941	4.15	43	75	D1105956	5.65	57	93
D1105042	4.2	43	75	D1105057	5.7	57	93
D1105942	4.25	43	75	D1105957	5.75	57	93
D1105043	4.3	47	80	D1105058	5.8	57	93
D1105943	4.35	47	80	D1105958	5.85	57	93
D1105044	4.4	47	80	D1105059	5.9	57	93
D1105944	4.45	47	80	D1105959	5.95	57	93
D1105045	4.5	47	80	D1105060	6.0	57	93
D1105945	4.55	47	80	D1105960	6.05	63	101
D1105046	4.6	47	80	D1105061	6.1	63	101
D1105946	4.65	47	80	D1105961	6.15	63	101
D1105047	4.7	47	80	D1105062	6.2	63	101
D1105947	4.75	47	80	D1105962	6.25	63	101
D1105048	4.8	52	86	D1105063	6.3	63	101
D1105948	4.85	52	86	D1105963	6.35	63	101
D1105049	4.9	52	86	D1105064	6.4	63	101
D1105949	4.95	52	86	D1105964	6.45	63	101
D1105050	5.0	52	86	D1105065	6.5	63	101
D1105950	5.05	52	86	D1105965	6.55	63	101
D1105051	5.1	52	86	D1105066	6.6	63	101

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	○	○	○			

STRAIGHT SHANK DRILLS

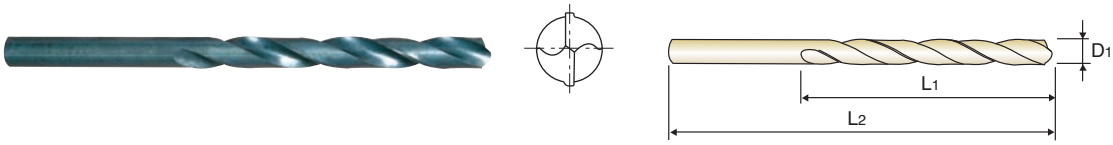
D1105 SERIES

HSS, STRAIGHT SHANK TWIST DRILLS
HSS, SPIRALBOHRER mit ZYLINDERSCHAFT

JOBBER
KURZ

▶ **Surface treatment** : Steam Tempered(Black Oxide Finish) Bright Finish under 2mm
▶ **Application** : Drilling steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron and graphite.

▶ **Oberflächenbehandlung** : Steam Homo(Scwarzoxidation) Helle Beschaffenheit unter 2mm
▶ **Verwendung** : Zum Bohren von Stahl und Stahlguß, Grauguß, Tempergu ß, Sphäroguß, Sintereisen, Graphite.



DIN 338 | HSS | N 20~30° | h8 | 118° P.215

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1105966	6.65	63	101
D1105067	6.7	63	101
D1105967	6.75	69	109
D1105068	6.8	69	109
D1105968	6.85	69	109
D1105069	6.9	69	109
D1105969	6.95	69	109
D1105070	7.0	69	109
D1105970	7.05	69	109
D1105071	7.1	69	109
D1105971	7.15	69	109
D1105072	7.2	69	109
D1105972	7.25	69	109
D1105073	7.3	69	109
D1105973	7.35	69	109
D1105074	7.4	69	109
D1105974	7.45	69	109
D1105075	7.5	69	109
D1105975	7.55	75	117
D1105076	7.6	75	117
D1105976	7.65	75	117
D1105077	7.7	75	117
D1105977	7.75	75	117
D1105078	7.8	75	117
D1105978	7.85	75	117
D1105079	7.9	75	117
D1105979	7.95	75	117
D1105080	8.0	75	117
D1105081	8.1	75	117
D1105082	8.2	75	117

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1105982	8.25	75	117
D1105083	8.3	75	117
D1105084	8.4	75	117
D1105085	8.5	75	117
D1105086	8.6	81	125
D1105087	8.7	81	125
D1105987	8.75	81	125
D1105088	8.8	81	125
D1105089	8.9	81	125
D1105090	9.0	81	125
D1105091	9.1	81	125
D1105092	9.2	81	125
D1105992	9.25	81	125
D1105093	9.3	81	125
D1105094	9.4	81	125
D1105095	9.5	81	125
D1105096	9.6	87	133
D1105097	9.7	87	133
D1105997	9.75	87	133
D1105098	9.8	87	133
D1105099	9.9	87	133
D1105100	10.0	87	133
D1105101	10.1	87	133
D1105102	10.2	87	133
D1105802	10.25	87	133
D1105103	10.3	87	133
D1105104	10.4	87	133
D1105105	10.5	87	133
D1105106	10.6	87	133
D1105107	10.7	94	142

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	○	○	○			

STRAIGHT SHANK DRILLS

D1105 SERIES

HSS, STRAIGHT SHANK TWIST DRILLS
HSS, SPIRALBOHRER mit ZYLINDERSCHAFT

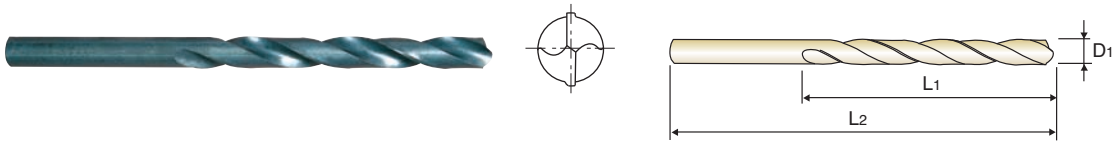
JOBBER
KURZ

▶ **Surface treatment** : Steam Tempered(Black Oxide Finish)
Bright Finish under 2mm

▶ **Application** : Drilling steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron and graphite.

▶ **Oberflächenbehandlung** : Steam Homo(Scwarzoxidation)
Helle Beschaffenheit unter 2mm

▶ **Verwendung** : Zum Bohren von Stahl und Stahlguß, Grauguß, Temperguß, Sphäroguß, Sintereisen, Graphite.



DIN 338 | HSS | N 20~30° | h8 | 118° P.215

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1105807	10.75	94	142	D1105832	13.25	108	160
D1105108	10.8	94	142	D1105135	13.5	108	160
D1105109	10.9	94	142	D1105837	13.75	108	160
D1105110	11.0	94	142	D1105140	14.0	108	160
D1105111	11.1	94	142	D1105842	14.25	114	169
D1105112	11.2	94	142	D1105145	14.5	114	169
D1105812	11.25	94	142	D1105847	14.75	114	169
D1105113	11.3	94	142	D1105150	15.0	114	169
D1105114	11.4	94	142	D1105852	15.25	120	178
D1105115	11.5	94	142	D1105155	15.5	120	178
D1105116	11.6	94	142	D1105857	15.75	120	178
D1105117	11.7	94	142	D1105160	16.0	120	178
D1105817	11.75	94	142	D1105862	16.25	125	184
D1105118	11.8	94	142	D1105165	16.5	125	184
D1105119	11.9	101	151	D1105867	16.75	125	184
D1105120	12.0	101	151	D1105170	17.0	125	184
D1105121	12.1	101	151	D1105872	17.25	130	191
D1105122	12.2	101	151	D1105175	17.5	130	191
D1105822	12.25	101	151	D1105877	17.75	130	191
D1105123	12.3	101	151	D1105180	18.0	130	191
D1105124	12.4	101	151	D1105882	18.25	135	198
D1105125	12.5	101	151	D1105185	18.5	135	198
D1105126	12.6	101	151	D1105887	18.75	135	198
D1105127	12.7	101	151	D1105190	19.0	135	198
D1105827	12.75	101	151	D1105892	19.25	140	205
D1105128	12.8	101	151	D1105195	19.5	140	205
D1105129	12.9	101	151	D1105897	19.75	140	205
D1105130	13.0	101	151	D1105200	20.0	140	205

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	○	○	○			

STRAIGHT SHANK DRILLS

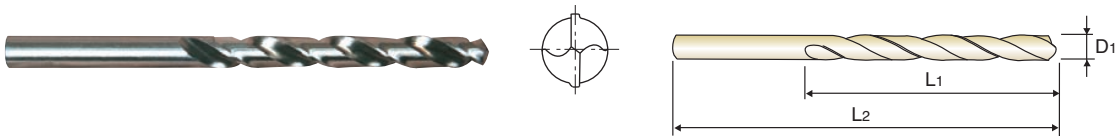
D1125 SERIES

HSS, STRAIGHT SHANK TWIST DRILLS
HSS, SPIRALBOHRER mit ZYLINDERSCHAFT

JOBBER
KURZ

▶ **Surface treatment** : Bright Finish
▶ **Application** : Drilling steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron and graphite.

▶ **Oberflächenbehandlung** : Helle Beschaffenheit
▶ **Verwendung** : Zum Bohren von Stahl und Stahlguß, Grauguß, Temperguß, Sphäroguß, Sintereisen, Graphite.



DIN 338 | HSS | N 20~30° | h8 | 118° P.215

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1125020	2.0	24	49	D1125045	4.5	47	80
D1125021	2.1	24	49	D1125046	4.6	47	80
D1125022	2.2	27	53	D1125047	4.7	47	80
D1125023	2.3	27	53	D1125048	4.8	52	86
D1125024	2.4	30	57	D1125049	4.9	52	86
D1125025	2.5	30	57	D1125050	5.0	52	86
D1125026	2.6	30	57	D1125051	5.1	52	86
D1125027	2.7	33	61	D1125052	5.3	52	86
D1125028	2.8	33	61	D1125053	5.3	52	86
D1125029	2.9	33	61	D1125054	5.4	57	93
D1125030	3.0	33	61	D1125055	5.5	57	93
D1125031	3.1	36	65	D1125056	5.6	57	93
D1125032	3.2	36	65	D1125057	5.7	57	93
D1125033	3.3	36	65	D1125058	5.8	57	93
D1125034	3.4	39	70	D1125059	5.9	57	93
D1125035	3.5	39	70	D1125060	6.0	57	93
D1125036	3.6	39	70	D1125061	6.1	63	101
D1125037	3.7	39	70	D1125062	6.2	63	101
D1125038	3.8	43	75	D1125063	6.3	63	101
D1125039	3.9	43	75	D1125064	6.4	63	101
D1125040	4.0	43	75	D1125065	6.5	63	101
D1125041	4.1	43	75	D1125066	6.6	63	101
D1125042	4.2	43	75	D1125067	6.7	63	101
D1125043	4.3	47	80	D1125068	6.8	69	109
D1125044	4.4	47	80	D1125069	6.9	69	109

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	○	○	○			

STRAIGHT SHANK DRILLS

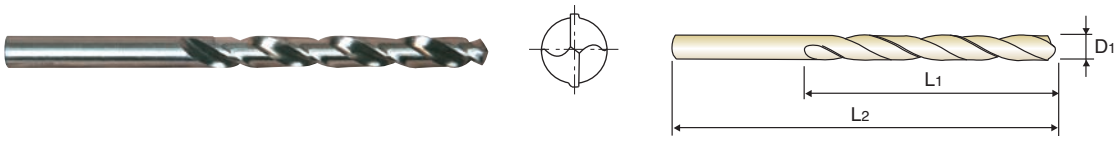
D1125 SERIES

HSS, STRAIGHT SHANK TWIST DRILLS
HSS, SPIRALBOHRER mit ZYLINDERSCHAFT

JOBBER
KURZ

▶ **Surface treatment** : Bright Finish
▶ **Application** : Drilling steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron and graphite.

▶ **Oberflächenbehandlung** : Helle Beschaffenheit
▶ **Verwendung** : Zum Bohren von Stahl und Stahlguß, Grauguß, Temperguß, Sphäroguß, Sintereisen, Graphite.



DIN 338 | HSS | N 20~30° | h8 | 118° P.215

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1125070	7.0	69	109	D1125095	9.5	81	125
D1125071	7.1	69	109	D1125096	9.6	87	133
D1125072	7.2	69	109	D1125097	9.7	87	133
D1125073	7.3	69	109	D1125098	9.8	87	133
D1125074	7.4	69	109	D1125099	9.9	87	133
D1125075	7.5	69	109	D1125100	10.0	87	133
D1125076	7.6	75	117	D1125101	10.1	87	133
D1125077	7.7	75	117	D1125102	10.2	87	133
D1125078	7.8	75	117	D1125103	10.3	87	133
D1125079	7.9	75	117	D1125104	10.4	87	133
D1125080	8.0	75	117	D1125105	10.5	87	133
D1125081	8.1	75	117	D1125106	10.6	87	133
D1125082	8.2	75	117	D1125107	10.7	94	142
D1125083	8.3	75	117	D1125108	10.8	94	142
D1125084	8.4	75	117	D1125109	10.9	94	142
D1125085	8.5	75	117	D1125110	11.0	94	142
D1125086	8.6	81	125	D1125111	11.1	94	142
D1125087	8.7	81	125	D1125112	11.2	94	142
D1125088	8.8	81	125	D1125113	11.3	94	142
D1125089	8.9	81	125	D1125114	11.4	94	142
D1125090	9.0	81	125	D1125115	11.5	94	142
D1125091	9.1	81	125	D1125116	11.6	94	142
D1125092	9.2	81	125	D1125117	11.7	94	142
D1125093	9.3	81	125	D1125118	11.8	94	142
D1125094	9.4	81	125	D1125119	11.9	101	151

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	○	○	○			

STRAIGHT SHANK DRILLS

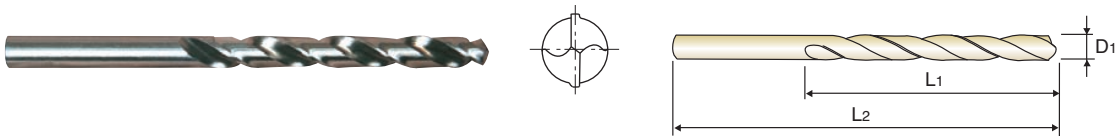
D1125 SERIES

HSS, STRAIGHT SHANK TWIST DRILLS
HSS, SPIRALBOHRER mit ZYLINDERSCHAFT

JOBBER
KURZ

▶ **Surface treatment** : Bright Finish
▶ **Application** : Drilling steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron and graphite.

▶ **Oberflächenbehandlung** : Helle Beschaffenheit
▶ **Verwendung** : Zum Bohren von Stahl und Stahlguß, Grauguß, Tempergu ß, Sphäroguß, Sintereisen, Graphite.



DIN 338 | HSS | N 20~30° | h8 | 118° P.215

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1125120	12.0	101	151
D1125121	12.1	101	151
D1125122	12.2	101	151
D1125123	12.3	101	151
D1125124	12.4	101	151
D1125125	12.5	101	151
D1125126	12.6	101	151
D1125127	12.7	101	151
D1125128	12.8	101	151
D1125129	12.9	101	151
D1125130	13.0	101	151
D1125132	13.2	101	151
D1125133	13.3	108	160
D1125135	13.5	108	160

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1125140	14.0	108	160
D1125145	14.5	114	169
D1125150	15.0	114	169
D1125155	15.5	120	178
D1125160	16.0	120	178
D1125165	16.5	125	184
D1125170	17.0	125	184
D1125175	17.5	130	191
D1125180	18.0	130	191
D1125185	18.5	135	198
D1125190	19.0	135	198
D1125195	19.5	140	205
D1125200	20.0	140	205

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	○	○	○			

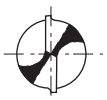
STRAIGHT SHANK DRILLS

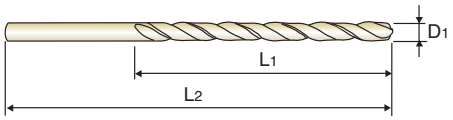
D2104 SERIES

HSSCo8, STRAIGHT SHANK TWIST DRILLS — LONG
HSSCo8, SPIRALBOHRER mit ZYLINDERSCHAFT — LANG

▶ **Surface treatment** : Coloring(Gold color)
▶ **Application** : Drilling deep holes in stainless steels and difficult - to - cut materials such as titanium and inconel.

▶ **Oberflächenbehandlung** : Coloring(Goldfarbe)
▶ **Verwendung** : Für Bohrarbeiten mit Bohrungen oder an tief liegenden Stellen. Zum Bohren von rostfreien und austenitischen Stählen, schwerzerspanbaren Werkstoffen wie Titan und Inconel.





DIN 340 | HSS Co8 | N 33° | h8 | 135° P.215

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2104020	2.0	56	85	D2104047	4.7	82	126
D2104021	2.1	56	85	D2104048	4.8	87	132
D2104022	2.2	59	90	D2104049	4.9	87	132
D2104023	2.3	59	90	D2104050	5.0	87	132
D2104024	2.4	62	95	D2104051	5.1	87	132
D2104025	2.5	62	95	D2104052	5.2	87	132
D2104026	2.6	62	95	D2104053	5.3	87	132
D2104027	2.7	66	100	D2104054	5.4	91	139
D2104028	2.8	66	100	D2104055	5.5	91	139
D2104029	2.9	66	100	D2104056	5.6	91	139
D2104030	3.0	66	100	D2104057	5.7	91	139
D2104031	3.1	69	106	D2104058	5.8	91	139
D2104032	3.2	69	106	D2104059	5.9	91	139
D2104033	3.3	69	106	D2104060	6.0	91	139
D2104034	3.4	73	112	D2104061	6.1	97	148
D2104035	3.5	73	112	D2104062	6.2	97	148
D2104036	3.6	73	112	D2104063	6.3	97	148
D2104037	3.7	73	112	D2104064	6.4	97	148
D2104038	3.8	78	119	D2104065	6.5	97	148
D2104039	3.9	78	119	D2104066	6.6	97	148
D2104040	4.0	78	119	D2104067	6.7	97	148
D2104041	4.1	78	119	D2104068	6.8	102	156
D2104042	4.2	78	119	D2104069	6.9	102	156
D2104043	4.3	82	126	D2104070	7.0	102	156
D2104044	4.4	82	126	D2104071	7.1	102	156
D2104045	4.5	82	126	D2104072	7.2	102	156
D2104046	4.6	82	126	D2104073	7.3	102	156

▶ HSS-E(DL104) is available on your request.
▶ TiN(D4104), TiCN(D7104) and TiAlN(DQ104) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	◎	○	○			

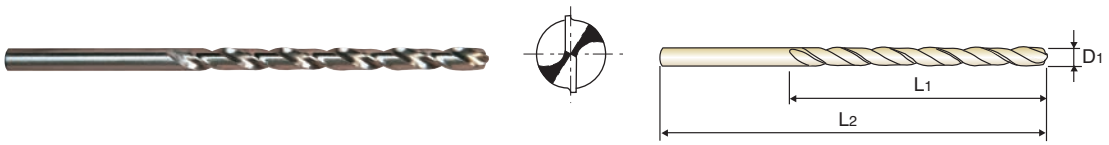
STRAIGHT SHANK DRILLS

D2104 SERIES

HSSCo8, STRAIGHT SHANK TWIST DRILLS — *LONG*
HSSCo8, SPIRALBOHRER mit ZYLINDERSCHAFT — *LANG*

▶ **Surface treatment** : Coloring(Gold color)
▶ **Application** : Drilling deep holes in stainless steels and difficult - to - cut materials such as titanium and inconel.

▶ **Oberflächenbehandlung** : Coloring(Goldfarbe)
▶ **Verwendung** : Für Bohrarbeiten mit Bohrbuchsen oder an tief liegenden Stellen. Zum Bohren von rostfreien und austenitischen. Stählen, schwerzerspanbaren Werkstoffen wie Titan und Inconel.



DIN 340 | HSS Co8 | N 33° | h8 | 135° P.215

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2104074	7.4	102	156
D2104075	7.5	102	156
D2104076	7.6	109	165
D2104077	7.7	109	165
D2104078	7.8	109	165
D2104079	7.9	109	165
D2104080	8.0	109	165
D2104081	8.1	109	165
D2104082	8.2	109	165
D2104083	8.3	109	165
D2104084	8.4	109	165
D2104085	8.5	109	165
D2104086	8.6	115	175
D2104087	8.7	115	175
D2104088	8.8	115	175
D2104089	8.9	115	175
D2104090	9.0	115	175
D2104091	9.1	115	175

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2104092	9.2	115	175
D2104093	9.3	115	175
D2104094	9.4	115	175
D2104095	9.5	115	175
D2104096	9.6	121	184
D2104097	9.7	121	184
D2104098	9.8	121	184
D2104099	9.9	121	184
D2104100	10.0	121	184
D2104102	10.2	121	184
D2104105	10.5	121	184
D2104108	10.8	128	195
D2104110	11.0	128	195
D2104112	11.2	128	195
D2104115	11.5	128	195
D2104118	11.8	128	195
D2104120	12.0	134	205

▶ HSS-E(DL104) is available on your request.
▶ TiN(D4104), TiCN(D7104) and TiAlN(DQ104) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	◎	○	○			

STRAIGHT SHANK DRILLS

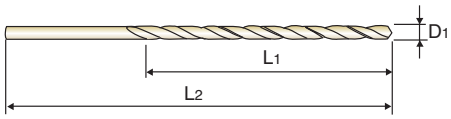
D1121 SERIES

HSS, STRAIGHT SHANK TWIST DRILLS
HSS, SPIRALBOHRER mit ZYLINDERSCHAFT

EXTRA LONG
ÜBERLANG

▶ **Surface treatment** : Steam Tempered(Black Oxide Finish)
▶ **Application** : Designed for drilling deep holes or deeply located holes
Drilling steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron and graphite.

▶ **Oberflächenbehandlung** : Steam Homo(Scwarzoxidation)
▶ **Verwendung** : Standardbohrer zum Bohren extrem tiefer Löcher, zum Bohren von Stahl und Stahlguß, Grauguß, Temperguß, Sphäroguß, Sintereisen, Graphit.



DIN 1869/1 | HSS | N 20~30° | h8 | 118° P.215

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1121020	2.0	85	125
D1121025	2.5	95	140
D1121030	3.0	100	150
D1121035	3.5	115	165
D1121040	4.0	120	175
D1121045	4.5	125	185
D1121050	5.0	135	195
D1121055	5.5	140	205
D1121060	6.0	140	205
D1121065	6.5	150	215
D1121070	7.0	155	225
D1121075	7.5	155	225

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1121080	8.0	165	240
D1121085	8.5	165	240
D1121090	9.0	175	250
D1121095	9.5	175	250
D1121100	10.0	185	265
D1121105	10.5	185	265
D1121110	11.0	195	280
D1121115	11.5	195	280
D1121120	12.0	205	295
D1121125	12.5	205	295
D1121130	13.0	205	295

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	○	○	○			

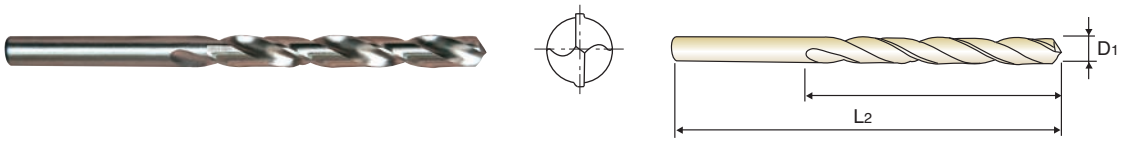
STRAIGHT SHANK DRILLS

DL109 SERIES

HSS-E, STRAIGHT SHANK TWIST DRILLS for HEAVY DUTY — *JOBBER*
HSS-E, SPIRALBOHRER für HOHE LEISTUNGEN mit ZYLINDERSCHAFT — *KURZ*

▶ **Application** : Drilling steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron and graphite.

▶ **Verwendung** : Zum Bohren von Stahl und Stahlguß, Grauguß, Temperguß, Sphäroguß, Sintereisen, Graphit.



DIN 338 | HSS-E | N 20~30° | h8 | 118° P.215

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL109015	1.5	18	40	DL109967	6.75	69	109
DL109917	1.75	22	46	DL109070	7.0	69	109
DL109020	2.0	24	49	DL109972	7.25	69	109
DL109922	2.25	27	53	DL109075	7.5	69	109
DL109025	2.5	30	57	DL109977	7.75	75	117
DL109927	2.75	33	61	DL109080	8.0	75	117
DL109030	3.0	33	61	DL109982	8.25	75	117
DL109932	3.25	36	65	DL109085	8.5	75	117
DL109035	3.5	39	70	DL109987	8.75	81	125
DL109937	3.75	39	70	DL109090	9.0	81	125
DL109040	4.0	43	75	DL109992	9.25	81	125
DL109942	4.25	43	75	DL109095	9.5	81	125
DL109045	4.5	47	80	DL109997	9.75	87	133
DL109947	4.75	47	80	DL109100	10.0	87	133
DL109050	5.0	52	86	DL109105	10.5	87	133
DL109952	5.25	52	86	DL109110	11.0	94	142
DL109055	5.5	57	93	DL109115	11.5	94	142
DL109957	5.75	57	93	DL109120	12.0	101	151
DL109060	6.0	57	93	DL109125	12.5	101	151
DL109962	6.25	63	101	DL109130	13.0	101	151
DL109065	6.5	63	101				

▶ TiN(DN109), TiCN(DX109) and TiAlN(DT109) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	○	○	○			

STRAIGHT SHANK DRILLS

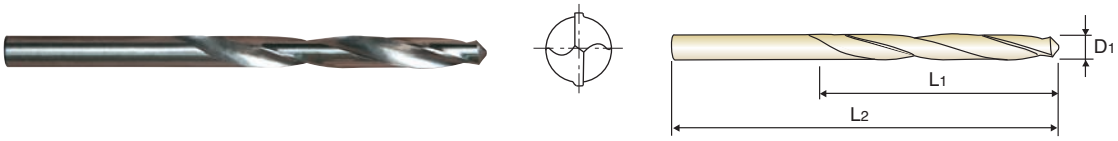
D1100 SERIES

HSS, STRAIGHT SHANK TWIST DRILLS for BRASS/BRONZE *JOBBER*

HSS, SPIRALBOHRER für MESSING/BRONZE mit ZYLINDERSCHAFT *KURZ*

▶ **Application** : Drilling hard, brittle and short-chip materials. i.e., brass, bronze, phosphor bronze and magnesium alloys.

▶ **Verwendung** : Zum Bohren von harten und spröden Werkstoffen wie Messing, Magnesium-Legierungen, Bronze, Phosphorbronze.



DIN 338 | HSS | N 15~20° | h8 | 118° P.216

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1100015	1.5	18	40
D1100016	1.6	20	43
D1100017	1.7	20	43
D1100018	1.8	22	46
D1100019	1.9	22	46
D1100020	2.0	24	49
D1100021	2.1	24	49
D1100022	2.2	27	53
D1100023	2.3	27	53
D1100024	2.4	30	57
D1100025	2.5	30	57
D1100026	2.6	30	57
D1100027	2.7	33	61
D1100028	2.8	33	61
D1100029	2.9	33	61
D1100030	3.0	33	61
D1100031	3.1	36	65
D1100032	3.2	36	65
D1100033	3.3	36	65
D1100034	3.4	39	70
D1100035	3.5	39	70
D1100036	3.6	39	70
D1100037	3.7	39	70
D1100038	3.8	43	75
D1100039	3.9	43	75
D1100040	4.0	43	75
D1100041	4.1	43	75
D1100042	4.2	43	75

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1100043	4.3	47	80
D1100044	4.4	47	80
D1100045	4.5	47	80
D1100046	4.6	47	80
D1100047	4.7	47	80
D1100048	4.8	52	86
D1100049	4.9	52	86
D1100050	5.0	52	86
D1100051	5.1	52	86
D1100052	5.2	52	86
D1100053	5.3	52	86
D1100054	5.4	57	93
D1100055	5.5	57	93
D1100056	5.6	57	93
D1100057	5.7	57	93
D1100058	5.8	57	93
D1100059	5.9	57	93
D1100060	6.0	57	93
D1100061	6.1	63	101
D1100062	6.2	63	101
D1100063	6.3	63	101
D1100064	6.4	63	101
D1100065	6.5	63	101
D1100066	6.6	63	101
D1100067	6.7	63	101
D1100068	6.8	69	109
D1100069	6.9	69	109
D1100070	7.0	69	109

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Brass/ Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
											◎	

STRAIGHT SHANK DRILLS

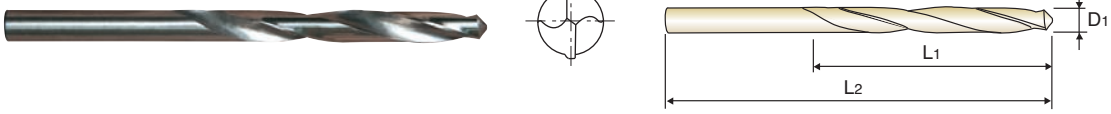
D1100 SERIES

HSS, STRAIGHT SHANK TWIST DRILLS for BRASS/BRONZE *JOBBER*

HSS, SPIRALBOHRER für MESSING/BRONZE mit ZYLINDERSCHAFT *KURZ*

▶ **Application** : Drilling hard, brittle and short-chip materials. i.e., brass, bronze, phosphor bronze and magnesium alloys.

▶ **Verwendung** : Zum Bohren von harten und spröden Werkstoffen wie Messing, Magnesium-Legierungen, Bronze, Phosphorbronze.



DIN 338 | HSS | N 15~20° | h8 | 118° P.216

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1100071	7.1	69	109
D1100072	7.2	69	109
D1100073	7.3	69	109
D1100074	7.4	69	109
D1100075	7.5	69	109
D1100076	7.6	75	117
D1100077	7.7	75	117
D1100078	7.8	75	117
D1100079	7.9	75	117
D1100080	8.0	75	117
D1100081	8.1	75	117
D1100082	8.2	75	117
D1100083	8.3	75	117
D1100084	8.4	75	117
D1100085	8.5	75	117
D1100086	8.6	81	125
D1100087	8.7	81	125
D1100088	8.8	81	125

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1100089	8.9	81	125
D1100090	9.0	81	125
D1100091	9.1	81	125
D1100092	9.2	81	125
D1100093	9.3	81	125
D1100094	9.4	81	125
D1100095	9.5	81	125
D1100096	9.6	87	133
D1100097	9.7	87	133
D1100098	9.8	87	133
D1100099	9.9	87	133
D1100100	10.0	87	133
D1100105	10.5	87	133
D1100110	11.0	94	142
D1100115	11.5	94	142
D1100120	12.0	101	151
D1100125	12.5	101	151
D1100130	13.0	101	151

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Brass/ Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
											◎	

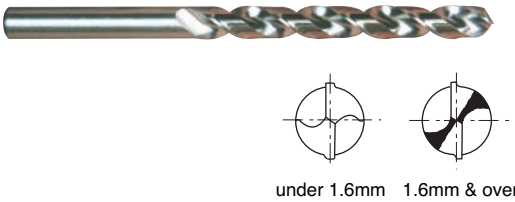
STRAIGHT SHANK DRILLS

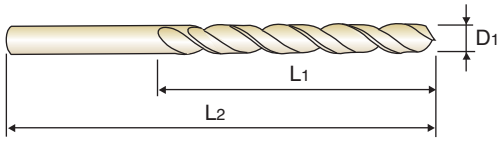
D1106 SERIES

HSS, STRAIGHT SHANK TWIST DRILLS for ALUMINUM — *JOBBER*
HSS, SPIRALBOHRER für ALUMINIUM mit ZYLINDERSCHAFT — *KURZ*

▶ **Application** : Drilling hard, brittle and short-chip materials. i.e., brass, bronze, phosphor bronze aluminum and magnesium alloys.

▶ **Verwendung** : Zum Bohren von harten und spröden Werkstoffen wie Messing, Magnesium-Legierungen, Bronze, Phosphorbronze.





DIN 338 | HSS | W 38° | h8 | 135° P.216

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1106015	1.5	18	40
D1106016	1.6	20	43
D1106017	1.7	20	43
D1106018	1.8	22	46
D1106019	1.9	22	46
D1106020	2.0	24	49
D1106021	2.1	24	49
D1106022	2.2	27	53
D1106023	2.3	27	53
D1106024	2.4	30	57
D1106025	2.5	30	57
D1106026	2.6	30	57
D1106027	2.7	33	61
D1106028	2.8	33	61
D1106029	2.9	33	61
D1106030	3.0	33	61
D1106031	3.1	36	65
D1106032	3.2	36	65
D1106033	3.3	36	65
D1106034	3.4	39	70
D1106035	3.5	39	70
D1106036	3.6	39	70
D1106037	3.7	39	70
D1106038	3.8	43	75
D1106039	3.9	43	75
D1106040	4.0	43	75
D1106041	4.1	43	75
D1106042	4.2	43	75

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1106043	4.3	47	80
D1106044	4.4	47	80
D1106045	4.5	47	80
D1106046	4.6	47	80
D1106047	4.7	47	80
D1106048	4.8	52	86
D1106049	4.9	52	86
D1106050	5.0	52	86
D1106051	5.1	52	86
D1106052	5.2	52	86
D1106053	5.3	52	86
D1106054	5.4	57	93
D1106055	5.5	57	93
D1106056	5.6	57	93
D1106057	5.7	57	93
D1106058	5.8	57	93
D1106059	5.9	57	93
D1106060	6.0	57	93
D1106061	6.1	63	101
D1106062	6.2	63	101
D1106063	6.3	63	101
D1106064	6.4	63	101
D1106065	6.5	63	101
D1106066	6.6	63	101
D1106067	6.7	63	101
D1106068	6.8	69	109
D1106069	6.9	69	109
D1106070	7.0	69	109

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
						◎					○	

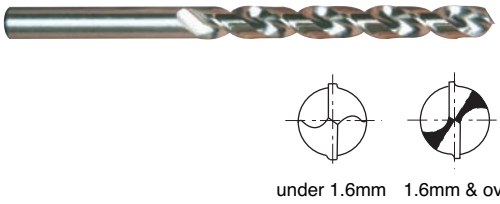
STRAIGHT SHANK DRILLS

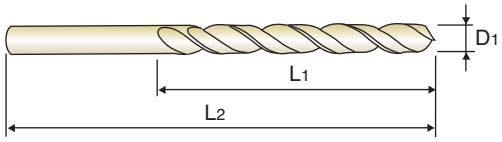
D1106 SERIES

HSS, STRAIGHT SHANK TWIST DRILLS for ALUMINUM — *JOBBER*
HSS, SPIRALBOHRER für ALUMINIUM mit ZYLINDERSCHAFT — *KURZ*

▶ **Application** : Drilling hard, brittle and short-chip materials. i.e., brass, bronze, phosphor bronze aluminum and magnesium alloys.

▶ **Verwendung** : Zum Bohren von harten und spröden Werkstoffen wie Messing, Magnesium-Legierungen, Bronze, Phosphorbronze.





DIN 338 | HSS | W 38° | h8 | 135° P.216

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1106071	7.1	69	109
D1106072	7.2	69	109
D1106073	7.3	69	109
D1106074	7.4	69	109
D1106075	7.5	69	109
D1106076	7.6	75	117
D1106077	7.7	75	117
D1106078	7.8	75	117
D1106079	7.9	75	117
D1106080	8.0	75	117
D1106081	8.1	75	117
D1106082	8.2	75	117
D1106083	8.3	75	117
D1106084	8.4	75	117
D1106085	8.5	75	117
D1106086	8.6	81	125
D1106087	8.7	81	125
D1106088	8.8	81	125

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D1106089	8.9	81	125
D1106090	9.0	81	125
D1106091	9.1	81	125
D1106092	9.2	81	125
D1106093	9.3	81	125
D1106094	9.4	81	125
D1106095	9.5	81	125
D1106096	9.6	87	133
D1106097	9.7	87	133
D1106098	9.8	87	133
D1106099	9.9	87	133
D1106100	10.0	87	133
D1106105	10.5	87	133
D1106110	11.0	94	142
D1106115	11.5	94	142
D1106120	12.0	101	151
D1106125	12.5	101	151
D1106130	13.0	101	151

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
						◎					○	

STRAIGHT SHANK DRILLS

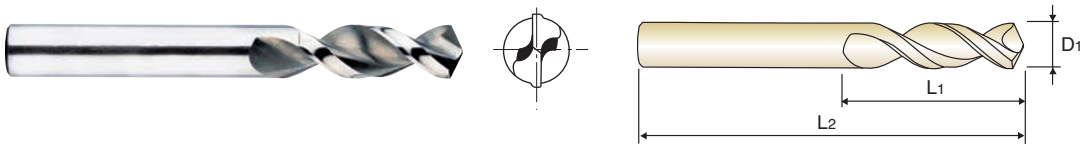
DL510 SERIES

HSS-E, STRAIGHT SHANK TWIST DRILLS for DEEP HOLES *STUB*

HSS-E, SPIRALBOHRER für TIEFLOCH mit ZYLINDERSCHAFT *EXTRA KURZ*

▶ **Application** : Drilling deep holes in non alloy steels, alloy steels, grey cast iron, malleable cast iron, special aluminum or magnesium alloys.

▶ **Verwendung** : Zum Bohren von legiertem und unlegiertem stahl, Grauguß, Temperguß, Sphäroguß, Druckguß, Alu-Legierungen kurzspanend, Bronze, Messing zäh, Neusilber.



DIN 1897 | HSS-E | 42° | h8 | 130°

P.217

▶ **DH100**
worm pattern drills

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL510020	2.0	12	38
DL510021	2.1	12	38
DL510022	2.2	13	40
DL510023	2.3	13	40
DL510024	2.4	14	43
DL510025	2.5	14	43
DL510026	2.6	14	43
DL510027	2.7	16	46
DL510028	2.8	16	46
DL510029	2.9	16	46
DL510030	3.0	16	46
DL510031	3.1	18	49
DL510032	3.2	18	49
DL510033	3.3	18	49
DL510034	3.4	20	52
DL510035	3.5	20	52
DL510036	3.6	20	52
DL510037	3.7	20	52
DL510038	3.8	22	55
DL510039	3.9	22	55
DL510040	4.0	22	55
DL510041	4.1	22	55
DL510042	4.2	22	55
DL510043	4.3	24	58
DL510044	4.4	24	58
DL510045	4.5	24	58
DL510046	4.6	24	58

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL510047	4.7	24	58
DL510048	4.8	26	62
DL510049	4.9	26	62
DL510050	5.0	26	62
DL510051	5.1	26	62
DL510052	5.2	26	62
DL510053	5.3	26	66
DL510054	5.4	28	66
DL510055	5.5	28	66
DL510056	5.6	28	66
DL510057	5.7	28	66
DL510058	5.8	28	66
DL510059	5.9	28	66
DL510060	6.0	28	66
DL510061	6.1	31	70
DL510062	6.2	31	70
DL510063	6.3	31	70
DL510064	6.4	31	70
DL510065	6.5	31	70
DL510066	6.6	31	70
DL510067	6.7	31	70
DL510068	6.8	34	74
DL510069	6.9	34	74
DL510070	7.0	34	74
DL510071	7.1	34	74
DL510072	7.2	34	74
DL510073	7.3	34	74

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○			○			

STRAIGHT SHANK DRILLS

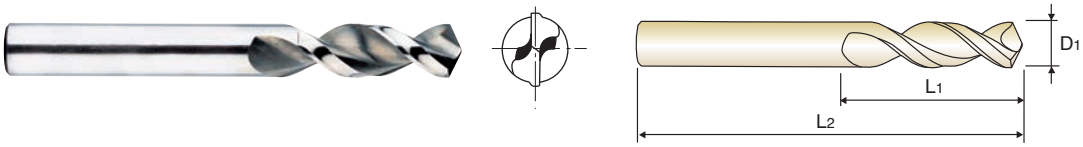
DL510 SERIES

HSS-E, STRAIGHT SHANK TWIST DRILLS for DEEP HOLES *STUB*

HSS-E, SPIRALBOHRER für TIEFLOCH mit ZYLINDERSCHAFT *EXTRA KURZ*

▶ **Application** : Drilling deep holes in non alloy steels, alloy steels, grey cast iron, malleable cast iron, special aluminum or magnesium alloys.

▶ **Verwendung** : Zum Bohren von legiertem und unlegiertem stahl, Grauguß, Temperguß, Sphäroguß, Druckguß, Alu-Legierungen kurzspanend, Bronze, Messing zäh, Neusilber.



DIN 1897 | HSS-E | 42° | h8 | 130°

P.217

▶ **DH100**
worm pattern drills

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL510074	7.4	34	74
DL510075	7.5	34	74
DL510076	7.6	37	79
DL510077	7.7	37	79
DL510078	7.8	37	79
DL510079	7.9	37	79
DL510080	8.0	37	79
DL510081	8.1	37	79
DL510082	8.2	37	79
DL510083	8.3	37	79
DL510084	8.4	37	79
DL510085	8.5	37	79
DL510086	8.6	40	84
DL510087	8.7	40	84
DL510088	8.8	40	84
DL510089	8.9	40	84
DL510090	9.0	40	84
DL510091	9.1	40	84
DL510092	9.2	40	84
DL510093	9.3	40	84
DL510094	9.4	40	84
DL510095	9.5	40	84
DL510096	9.6	43	89
DL510097	9.7	43	89
DL510098	9.8	43	89
DL510099	9.9	43	89

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL510100	10.0	43	89
DL510102	10.2	43	89
DL510105	10.5	43	89
DL510108	10.8	47	95
DL510110	11.0	47	95
DL510112	11.2	47	95
DL510115	11.5	47	95
DL510118	11.8	47	95
DL510120	12.0	51	102
DL510125	12.5	51	102
DL510130	13.0	51	102
DL510135	13.5	54	107
DL510140	14.0	54	107
DL510145	14.5	56	111
DL510150	15.0	56	111
DL510155	15.5	58	115
DL510160	16.0	58	115
DL510165	16.5	60	119
DL510170	17.0	60	119
DL510175	17.5	62	123
DL510180	18.0	62	123
DL510185	18.5	64	127
DL510190	19.0	64	127
DL510195	19.5	66	131
DL510200	20.0	66	131

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○			○			

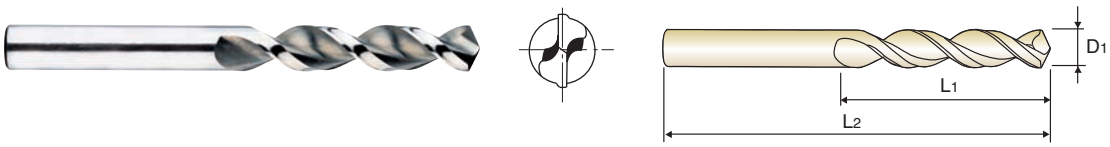
STRAIGHT SHANK DRILLS

DL508 SERIES

HSS-E, STRAIGHT SHANK TWIST DRILLS for DEEP HOLES — *JOBBER*
HSS-E, SPIRALBOHRER für TIEFLOCH mit ZYLINDERSCHAFT — *KURZ*

▶ **Application** : Drilling deep holes in non alloy steels, alloy steels, grey cast iron, malleable cast iron, special aluminum or magnesium alloys.

▶ **Verwendung** : Zum Bohren von legiertem und unlegiertem stahl, Grauguß, Temperguß, Sphäroguß, Druckguß, Alu-Legierungen kurzspanend, Bronze, Messing zäh, Neusilber.



DIN 338 | HSS-E | 42° | h8 | 130°

P.217

▶ **DH100**
worm pattern drills

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL508020	2.0	24	49
DL508021	2.1	24	49
DL508022	2.2	27	53
DL508023	2.3	27	53
DL508024	2.4	30	57
DL508025	2.5	30	57
DL508026	2.6	30	57
DL508027	2.7	33	61
DL508028	2.8	33	61
DL508029	2.9	33	61
DL508030	3.0	33	61
DL508031	3.1	36	65
DL508032	3.2	36	65
DL508033	3.3	36	65
DL508034	3.4	39	70
DL508035	3.5	39	70
DL508036	3.6	39	70
DL508037	3.7	39	70
DL508038	3.8	43	75
DL508039	3.9	43	75
DL508040	4.0	43	75
DL508041	4.1	43	75
DL508042	4.2	43	75
DL508043	4.3	47	80
DL508044	4.4	47	80
DL508045	4.5	47	80
DL508046	4.6	47	80

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL508047	4.7	47	80
DL508048	4.8	52	86
DL508049	4.9	52	86
DL508050	5.0	52	86
DL508051	5.1	52	86
DL508052	5.2	52	86
DL508053	5.3	52	86
DL508054	5.4	57	93
DL508055	5.5	57	93
DL508056	5.6	57	93
DL508057	5.7	57	93
DL508058	5.8	57	93
DL508059	5.9	57	93
DL508060	6.0	57	93
DL508061	6.1	63	101
DL508062	6.2	63	101
DL508063	6.3	63	101
DL508064	6.4	63	101
DL508065	6.5	63	101
DL508066	6.6	63	101
DL508067	6.7	63	101
DL508068	6.8	69	109
DL508069	6.9	69	109
DL508070	7.0	69	109
DL508071	7.1	69	109
DL508072	7.2	69	109
DL508073	7.3	69	109

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○			○			

STRAIGHT SHANK DRILLS

DL508 SERIES

HSS-E, STRAIGHT SHANK TWIST DRILLS for DEEP HOLES

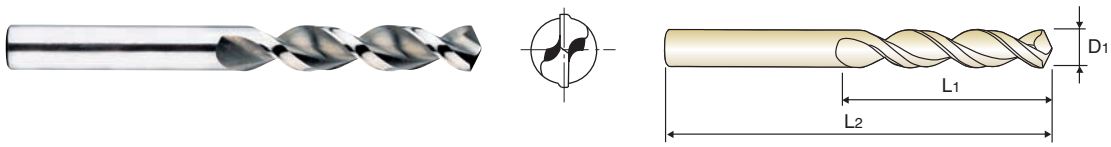
JOBBER

HSS-E, SPIRALBOHRER für TIEFLOCH mit ZYLINDERSCHAFT

KURZ

▶ **Application** : Drilling deep holes in non alloy steels, alloy steels, grey cast iron, malleable cast iron, special aluminum or magnesium alloys.

▶ **Verwendung** : Zum Bohren von legiertem und unlegiertem stahl, Grauguß, Temperguß, Sphäroguß, Druckguß, Alu-Legierungen kurzspanend, Bronze, Messing zäh, Neusilber.



DIN 338 | HSS-E | 42° | h8 | 130° P.217

▶ **DH100**
worm pattern drills

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL508074	7.4	69	109
DL508075	7.5	69	109
DL508076	7.6	75	117
DL508077	7.7	75	117
DL508078	7.8	75	117
DL508079	7.9	75	117
DL508080	8.0	75	117
DL508081	8.1	75	117
DL508082	8.2	75	117
DL508083	8.3	75	117
DL508084	8.4	75	117
DL508085	8.5	75	117
DL508086	8.6	81	125
DL508087	8.7	81	125
DL508088	8.8	81	125
DL508089	8.9	81	125
DL508090	9.0	81	125
DL508091	9.1	81	125
DL508092	9.2	81	125
DL508093	9.3	81	125
DL508094	9.4	81	125

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL508095	9.5	81	125
DL508096	9.6	87	133
DL508097	9.7	87	133
DL508098	9.8	87	133
DL508099	9.9	87	133
DL508100	10.0	87	133
DL508102	10.2	87	133
DL508105	10.5	87	133
DL508110	11.0	94	142
DL508112	11.2	94	142
DL508115	11.5	94	142
DL508120	12.0	101	151
DL508125	12.5	101	151
DL508130	13.0	101	151
DL508135	13.5	108	160
DL508140	14.0	108	160
DL508145	14.5	114	169
DL508150	15.0	114	169
DL508155	15.5	120	178
DL508160	16.0	120	178

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○			○			

STRAIGHT SHANK DRILLS

DL509 SERIES

HSS-E, STRAIGHT SHANK TWIST DRILLS for DEEP HOLES — LONG
HSS-E, SPIRALBOHRER für TIEFLOCH mit ZYLINDERSCHAFT — LANG

▶ **Application** : Drilling deep holes in non alloy steels, alloy steels, grey cast iron, malleable cast iron, special aluminum or magnesium alloys.

▶ **Verwendung** : Zum Bohren von legiertem und unlegiertem stahl, Grauguß, Temperguß, Sphäroguß, Druckguß, Alu-Legierungen kurzspanend, Bronze, Messing zäh, Neusilber.

DIN 340 | HSS-E | 42° | h8 | 130°

P.217

▶ **DH100**
worm pattern drills

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL509020	2.0	56	85
DL509021	2.1	56	85
DL509022	2.2	59	90
DL509023	2.3	59	90
DL509024	2.4	62	95
DL509025	2.5	62	95
DL509026	2.6	62	95
DL509027	2.7	66	100
DL509028	2.8	66	100
DL509029	2.9	66	100
DL509030	3.0	66	100
DL509031	3.1	69	106
DL509032	3.2	69	106
DL509033	3.3	69	106
DL509034	3.4	73	112
DL509035	3.5	73	112
DL509036	3.6	73	112
DL509037	3.7	73	112
DL509038	3.8	78	119
DL509039	3.9	78	119
DL509040	4.0	78	119
DL509041	4.1	78	119
DL509042	4.2	78	119
DL509043	4.3	82	126
DL509044	4.4	82	126
DL509045	4.5	82	126
DL509046	4.6	82	126

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL509047	4.7	82	126
DL509048	4.8	87	132
DL509049	4.9	87	132
DL509050	5.0	87	132
DL509051	5.1	87	132
DL509052	5.2	87	132
DL509053	5.3	87	132
DL509054	5.4	91	139
DL509055	5.5	91	139
DL509056	5.6	91	139
DL509057	5.7	91	139
DL509058	5.8	91	139
DL509059	5.9	91	139
DL509060	6.0	91	139
DL509061	6.1	97	148
DL509062	6.2	97	148
DL509063	6.3	97	148
DL509064	6.4	97	148
DL509065	6.5	97	148
DL509066	6.6	97	148
DL509067	6.7	97	148
DL509068	6.8	102	156
DL509069	6.9	102	156
DL509070	7.0	102	156
DL509071	7.1	102	156
DL509072	7.2	102	156
DL509073	7.3	102	156

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○			○			

STRAIGHT SHANK DRILLS

DL509 SERIES

HSS-E, STRAIGHT SHANK TWIST DRILLS for DEEP HOLES — LONG
HSS-E, SPIRALBOHRER für TIEFLOCH mit ZYLINDERSCHAFT — LANG

▶ **Application** : Drilling deep holes in non alloy steels, alloy steels, grey cast iron, malleable cast iron, special aluminum or magnesium alloys.

▶ **Verwendung** : Zum Bohren von legiertem und unlegiertem stahl, Grauguß, Temperguß, Sphäroguß, Druckguß, Alu-Legierungen kurzspanend, Bronze, Messing zäh, Neusilber.

DIN 340 | HSS-E | 42° | h8 | 130° P.217

▶ DH100
worm pattern drills

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL509074	7.4	102	156
DL509075	7.5	102	156
DL509076	7.6	109	165
DL509077	7.7	109	165
DL509078	7.8	109	165
DL509079	7.9	109	165
DL509080	8.0	109	165
DL509081	8.1	109	165
DL509082	8.2	109	165
DL509083	8.3	109	165
DL509084	8.4	109	165
DL509085	8.5	109	165
DL509086	8.6	115	175
DL509087	8.7	115	175
DL509088	8.8	115	175
DL509089	8.9	115	175

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL509090	9.0	115	175
DL509091	9.1	115	175
DL509092	9.2	115	175
DL509093	9.3	115	175
DL509094	9.4	115	175
DL509095	9.5	115	175
DL509096	9.6	121	184
DL509097	9.7	121	184
DL509098	9.8	121	184
DL509099	9.9	121	184
DL509100	10.0	121	184
DL509102	10.2	121	184
DL509105	10.5	121	184
DL509110	11.0	128	195
DL509115	11.5	128	195
DL509120	12.0	134	205

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○			○			

STRAIGHT SHANK DRILLS

DL505 SERIES

HSS-E, STRAIGHT SHANK TWIST DRILLS for DEEP HOLES — JOBBER
HSS-E, SPIRALBOHRER für TIEFLOCH mit ZYLINDERSCHAFT — KURZ

▶ **Surface treatment** : Steam Tempered(Black Oxide Finish)
▶ **Application** : Drilling deep holes in non alloy steels, alloy steels, grey cast iron, malleable cast iron, special aluminum or magnesium alloys.

▶ **Oberflächenbehandlung** : Steam Homo(Schwarzoxidation)
▶ **Verwendung** : Zum Bohren von legiertem und unlegiertem stahl, Grauguß, Temperguß, Sphäroguß, Druckguß, Alu-Legierungen kurzspanend, Bronze, Messing zäh, Neusilber.

DIN 338 | HSS-E | 38° | h8 | 130° P.217

▶ DH100 worm pattern drills

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL505020	2.0	24	49
DL505021	2.1	24	49
DL505022	2.2	27	53
DL505023	2.3	27	53
DL505024	2.4	30	57
DL505025	2.5	30	57
DL505026	2.6	30	57
DL505027	2.7	33	61
DL505028	2.8	33	61
DL505029	2.9	33	61
DL505030	3.0	33	61
DL505031	3.1	36	65
DL505032	3.2	36	65
DL505033	3.3	36	65
DL505034	3.4	39	70
DL505035	3.5	39	70
DL505036	3.6	39	70
DL505037	3.7	39	70
DL505038	3.8	43	75
DL505039	3.9	43	75
DL505040	4.0	43	75
DL505041	4.1	43	75
DL505042	4.2	43	75
DL505043	4.3	47	80
DL505044	4.4	47	80
DL505045	4.5	47	80
DL505046	4.6	47	80

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL505047	4.7	47	80
DL505048	4.8	52	86
DL505049	4.9	52	86
DL505050	5.0	52	86
DL505051	5.1	52	86
DL505052	5.2	52	86
DL505053	5.3	52	86
DL505054	5.4	57	93
DL505055	5.5	57	93
DL505056	5.6	57	93
DL505057	5.7	57	93
DL505058	5.8	57	93
DL505059	5.9	57	93
DL505060	6.0	57	93
DL505061	6.1	63	101
DL505062	6.2	63	101
DL505063	6.3	63	101
DL505064	6.4	63	101
DL505065	6.5	63	101
DL505066	6.6	63	101
DL505067	6.7	63	101
DL505068	6.8	69	109
DL505069	6.9	69	109
DL505070	7.0	69	109
DL505071	7.1	69	109
DL505072	7.2	69	109
DL505073	7.3	69	109

▶ TiN(DN505), TiCN(DX505) and TiAlN(DT505) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○			○			

STRAIGHT SHANK DRILLS

DL505 SERIES

HSS-E, STRAIGHT SHANK TWIST DRILLS for DEEP HOLES

JOBBER

HSS-E, SPIRALBOHRER für TIEFLOCH mit ZYLINDERSCHAFT

KURZ

▶ **Surface treatment** : Steam Tempered(Black Oxide Finish)
▶ **Application** : Drilling deep holes in non alloy steels, alloy steels, grey cast iron, malleable cast iron, special aluminum or magnesium alloys.

▶ **Oberflächenbehandlung** : Steam Homo(Schwarzoxidation)
▶ **Verwendung** : Zum Bohren von legiertem und unlegiertem stahl, Grauguß, Temperguß, Sphäroguß, Druckguß, Alu-Legierungen kurzspanend, Bronze, Messing zäh, Neusilber.

DIN 338 | HSS-E | 38° | h8 | 130° P.217

▶ DH100 worm pattern drills

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL505074	7.4	69	109
DL505075	7.5	69	109
DL505076	7.6	75	117
DL505077	7.7	75	117
DL505078	7.8	75	117
DL505079	7.9	75	117
DL505080	8.0	75	117
DL505081	8.1	75	117
DL505082	8.2	75	117
DL505083	8.3	75	117
DL505084	8.4	75	117
DL505085	8.5	75	117
DL505086	8.6	81	125
DL505087	8.7	81	125
DL505088	8.8	81	125
DL505089	8.9	81	125
DL505090	9.0	81	125
DL505091	9.1	81	125
DL505092	9.2	81	125
DL505093	9.3	81	125

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL505094	9.4	81	125
DL505095	9.5	81	125
DL505096	9.6	87	133
DL505097	9.7	87	133
DL505098	9.8	87	133
DL505099	9.9	87	133
DL505100	10.0	87	133
DL505101	10.1	87	133
DL505102	10.2	87	133
DL505105	10.5	87	133
DL505108	10.8	94	142
DL505110	11.0	94	142
DL505112	11.2	94	142
DL505115	11.5	94	142
DL505118	11.8	94	142
DL505120	12.0	101	151
DL505122	12.2	101	151
DL505125	12.5	101	151
DL505128	12.8	101	151
DL505130	13.0	101	151

▶ TiN(DN505), TiCN(DX505) and TiAlN(DT505) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○			○			

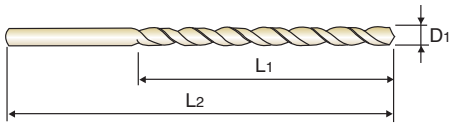
STRAIGHT SHANK DRILLS

DL504 SERIES

HSS-E, STRAIGHT SHANK TWIST DRILLS for DEEP HOLES — LONG
HSS-E, SPIRALBOHRER für TIEFLOCH mit ZYLINDERSCHAFT — LANG

▶ **Surface treatment** : Steam Tempered(Black Oxide Finish)
▶ **Application** : Drilling deep holes in non alloy steels, alloy steels, grey cast iron, malleable cast iron, special aluminum or magnesium alloys.

▶ **Oberflächenbehandlung** : Steam Homo(Schwarzoxidation)
▶ **Verwendung** : Zum Bohren von legiertem und unlegiertem stahl,Grauguß, Temperguß, Sphäroguß, Druckguß, Alu-Legierungen kurzspanend, Bronze, Messing zäh, Neusilber.



DIN 340 | HSS-E | 38° | h8 | 130°

P.217

▶ **DH100**
worm pattern drills

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL504020	2.0	56	85
DL504021	2.1	56	85
DL504022	2.2	59	90
DL504023	2.3	59	90
DL504024	2.4	62	95
DL504025	2.5	62	95
DL504026	2.6	62	95
DL504027	2.7	66	100
DL504028	2.8	66	100
DL504029	2.9	66	100
DL504030	3.0	66	100
DL504031	3.1	69	106
DL504032	3.2	69	106
DL504033	3.3	69	106
DL504034	3.4	73	112
DL504035	3.5	73	112
DL504036	3.6	73	112
DL504037	3.7	73	112
DL504038	3.8	78	119
DL504039	3.9	78	119
DL504040	4.0	78	119
DL504042	4.2	78	119
DL504045	4.5	82	126
DL504048	4.8	87	132
DL504050	5.0	87	132

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL504052	5.2	87	132
DL504055	5.5	91	139
DL504058	5.8	91	139
DL504060	6.0	91	139
DL504062	6.2	97	148
DL504065	6.5	97	148
DL504068	6.8	102	156
DL504070	7.0	102	156
DL504072	7.2	102	156
DL504075	7.5	102	156
DL504078	7.8	109	165
DL504080	8.0	109	165
DL504082	8.2	109	165
DL504085	8.5	109	165
DL504090	9.0	115	175
DL504095	9.5	115	175
DL504098	9.8	121	184
DL504100	10.0	121	184
DL504105	10.5	121	184
DL504110	11.0	128	195
DL504115	11.5	128	195
DL504120	12.0	134	205
DL504125	12.5	134	205
DL504130	13.0	134	205

▶ TiN(DN504), TiCN(DX504) and TiAlN(DT504) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○			○			

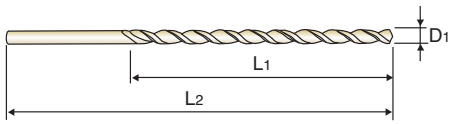
STRAIGHT SHANK DRILLS

DT692 SERIES
DT600 SERIES
DT693 SERIES

HSS-E, STRAIGHT SHANK TWIST DRILLS for DEEP HOLES — EXTRA LONG
HSS-E, SPIRALBOHRER für TIEFLOCH mit ZYLINDERSCHAFT — ÜBERLANG

▶ **Application** : Drilling deep holes in non alloy steels, alloy steels, grey cast iron, malleable cast iron, special aluminum or magnesium alloys.

▶ **Verwendung** : Zum Bohren von legiertem und unlegiertem stahl, Grauguß, Temperguß, Sphäroguß, Druckguß, Alu-Legierungen kurzspanend, Bronze, Messing zäh, Neusilber.



DIN 1869/1 | DIN 1869/2 | DIN 1869/3 | HSS-E | 38° | h8 | 130°

P.217

▶ **DH100**
worm pattern drills

DT600 SERIES (DIN1869/1)

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DT600020	2.0	85	125
DT600025	2.5	95	140
DT600030	3.0	100	150
DT600035	3.5	115	165
DT600040	4.0	120	175
DT600045	4.5	125	185
DT600050	5.0	135	195
DT600055	5.5	140	205
DT600060	6.0	140	205
DT600065	6.5	150	215
DT600070	7.0	155	225
DT600075	7.5	155	225
DT600080	8.0	165	240
DT600085	8.5	165	240
DT600090	9.0	175	250
DT600095	9.5	175	250
DT600100	10.0	175	250
DT600105	10.5	185	265

▶ TiN(DN600) and TiCN(DX600) are available on your request.

DT692 SERIES (DIN1869/2)

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DT692030	3.0	130	190
DT692035	3.5	145	210
DT692040	4.0	150	220
DT692045	4.5	160	235
DT692050	5.0	170	245
DT692055	5.5	180	260
DT692060	6.0	180	260
DT692065	6.5	190	275
DT692070	7.0	200	290
DT692075	7.5	200	290
DT692080	8.0	210	305
DT692085	8.5	210	305
DT692090	9.0	220	320
DT692095	9.5	220	320
DT692100	10.0	235	340
DT692102	10.2	235	340

DT693 SERIES (DIN1869/3)

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DT693040	4.0	190	280
DT693050	5.0	210	315
DT693060	6.0	225	330
DT693080	8.0	265	390
DT693100	10.0	295	430

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○			○			

STRAIGHT SHANK DRILLS

DL608 SERIES

HSS-E, MORSE TAPER SHANK TWIST DRILLS for DEEP HOLES — LONG
HSS-E, SPIRALBOHRER für TIEFLOCH mit MORSEKEGELSCHAFT — LANG

▶ **Application** : Drilling deep holes in non alloy steels, alloy steels, grey cast iron, malleable cast iron, special aluminum or magnesium alloys.

▶ **Verwendung** : Zum Bohren von legiertem und unlegiertem stahl, Grauguß, Temperguß, Sphäroguß, Druckguß, Alu-Legierungen kurzspanend, Bronze, Messing zäh, Neusilber.

DIN 341 | HSS-E | 38° | 1 ~ 3 | h8 | 130° P.217

▶ DH100
worm pattern drills

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	No.of Morse Taper
DL608130	13.0	134	215	1
DL608135	13.5	142	223	1
DL608140	14.0	142	223	1
DL608145	14.5	147	245	2
DL608150	15.0	147	245	2
DL608155	15.5	153	251	2
DL608160	16.0	153	251	2
DL608165	16.5	159	257	2
DL608170	17.0	159	257	2
DL608175	17.5	165	263	2
DL608180	18.0	165	263	2
DL608185	18.5	171	269	2
DL608190	19.0	171	269	2

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	No.of Morse Taper
DL608195	19.5	177	275	2
DL608200	20.0	177	275	2
DL608210	21.0	184	282	2
DL608220	22.0	191	289	2
DL608230	23.0	198	296	2
DL608240	24.0	206	327	3
DL608250	25.0	206	327	3
DL608260	26.0	214	335	3
DL608270	27.0	222	343	3
DL608280	28.0	222	343	3
DL608290	29.0	230	351	3
DL608300	30.0	230	351	3

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○			○			

STRAIGHT SHANK DRILLS

DL507 SERIES

HSS-E, STRAIGHT SHANK TWIST DRILLS for ALUMINUM DEEP HOLES *EXTRA LONG*
HSS-E, SPIRALBOHRER für ALUMINIUM TIEFLOCH mit ZYLINDERSCHAFT *ÜBERLANG*

▶ **Application** : Drilling deep holes in aluminum and its alloys, silumin, zinc, refined copper, wood and other soft synthetic materials.

▶ **Verwendung** : Zum Bohren von weichen und langspanenden Werkstoffen wie Alu-Legierungen, Zink, Kupfer, Kunstoffe und Holz.

HSS-E | W 38° | h8 | 118° | P.217

▶ **DH50**
worm pattern drills

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL507120	2.0	40	75
DL507121	2.1	40	75
DL507220	2.0	50	100
DL507221	2.1	50	100
DL507225	2.5	50	100
DL507227	2.7	50	100
DL507230	3.0	50	100
DL507233	3.3	50	100
DL507235	3.5	50	100
DL507320	2.0	75	150
DL507321	2.1	75	150
DL507325	2.5	75	150
DL507327	2.7	75	150
DL507330	3.0	75	150
DL507333	3.3	75	150
DL507335	3.5	75	150
DL507340	4.0	75	150
DL507342	4.2	75	150
DL507345	4.5	75	150
DL507350	5.0	75	150
DL507353	5.3	75	150
DL507355	5.5	75	150
DL507360	6.0	75	150

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL507430	3.0	100	200
DL507433	3.3	100	200
DL507435	3.5	100	200
DL507440	4.0	100	200
DL507442	4.2	100	200
DL507445	4.5	100	200
DL507450	5.0	100	200
DL507453	5.3	100	200
DL507455	5.5	100	200
DL507460	6.0	100	200
DL507465	6.5	100	200
DL507468	6.8	100	200
DL507470	7.0	100	200
DL507475	7.5	100	200
DL507480	8.0	100	200
DL507485	8.5	100	200
DL507488	8.8	100	200
DL507490	9.0	100	200
DL507495	9.5	100	200
DL507700	10.0	100	200
DL507540	4.0	150	250
DL507542	4.2	150	250
DL507545	4.5	150	250
DL507550	5.0	150	250
DL507553	5.3	150	250

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	◎			○			

STRAIGHT SHANK DRILLS

DL507 SERIES

HSS-E, STRAIGHT SHANK TWIST DRILLS for ALUMINUM DEEP HOLES *EXTRA LONG*
HSS-E, SPIRALBOHRER für ALUMINIUM TIEFLOCH mit ZYLINDERSCHAFT *ÜBERLANG*

▶ **Application** : Drilling deep holes in aluminum and its alloys, silumin, zinc, refined copper, wood and other soft synthetic materials.

▶ **Verwendung** : Zum Bohren von weichen und langspanenden Werkstoffen wie Alu-Legierungen, Zink, Kupfer, Kunststoffe und Holz.

HSS-E | W 38° | h8 | 118° | P.217

▶ DH50 worm pattern drills

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL507555	5.5	150	250
DL507560	6.0	150	250
DL507565	6.5	150	250
DL507568	6.8	150	250
DL507570	7.0	150	250
DL507575	7.5	150	250
DL507580	8.0	150	250
DL507585	8.5	150	250
DL507588	8.8	150	250
DL507590	9.0	150	250
DL507595	9.5	150	250
DL507800	10.0	150	250
DL507803	10.3	150	250
DL507805	10.5	150	250
DL507810	11.0	150	250
DL507815	11.5	150	250
DL507820	12.0	150	250
DL507825	12.5	150	250
DL507830	13.0	150	250

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
DL507650	5.0	180	300
DL507653	5.3	180	300
DL507655	5.5	180	300
DL507660	6.0	180	300
DL507665	6.5	180	300
DL507668	6.8	180	300
DL507670	7.0	180	300
DL507675	7.5	180	300
DL507680	8.0	180	300
DL507685	8.5	180	300
DL507688	8.8	180	300
DL507690	9.0	180	300
DL507695	9.5	180	300
DL507900	10.0	180	300
DL507903	10.3	180	300
DL507905	10.5	180	300
DL507910	11.0	180	300
DL507915	11.5	180	300
DL507920	12.0	180	300
DL507925	12.5	180	300
DL507930	13.0	180	300

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	◎			○			

STRAIGHT SHANK DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

HSS & HSS 8% COBALT DRILLS, DIN1897, DIN338, DIN340, DIN1869
HSS & HSSCo8 SPIRALBOHRER, DIN 1897, DIN 338, DIN 340, DIN 1869

D1107, D2107, D1105, D1125, D2105, DL105, D2104, D1121 SERIES

WORK MATERIAL	CARBON STEELS		CARBON STEELS		CARBON STEELS		ALLOY STEELS		ALLOY STEELS		STAINLESS STEELS		TITANIUM ALLOYS	
HARDNESS			~ HRc23		~ HRc23 ~ 28		HRc23 ~ 34		HRc34 ~ 38		HRc23			
STRENGTH	⌣ 570 N/mm²		~ 830 N/mm²		830 ~ 950 N/mm²		830 ~ 1110 N/mm²		1110 ~ 1260 N/mm²		830 N/mm²		410 N/mm²	
DRILLING SPEED	22 ~ 27 m/min		15 ~ 20 m/min		10 ~ 15 m/min		15 ~ 20 m/min		8 ~ 12 m/min		15 ~ 20 m/min		8 ~ 12 m/min	
DIAMETER	N	S	N	S	N	S	N	S	N	S	N	S	N	S
2.5	3380	0.025	2550	0.025	1900	0.015	2380	0.020	1400	0.015	2550	0.025	1400	0.020
3.0	2700	0.050	2000	0.050	1500	0.025	1880	0.050	1100	0.020	2000	0.050	1100	0.025
5.0	1700	0.063	1280	0.063	960	0.038	1190	0.063	700	0.025	1280	0.063	700	0.038
8.0	1050	0.130	780	0.130	590	0.076	730	0.130	430	0.038	780	0.130	430	0.076
11.0	750	0.150	560	0.150	425	0.076	520	0.180	310	0.050	560	0.150	430	0.076
19.0	440	0.230	330	0.230	255	0.130	300	0.230	180	0.050	330	0.230	180	0.130
31.0	260	0.280	195	0.280	145	0.180	180	0.280	107	0.076	195	0.280	107	0.180

WORK MATERIAL	TOOL STEELS		CAST IRON		ALUMINUM ALLOYS		MAGNESIUM ALLOYS		ZINC ALLOYS		PLASTICS	
HARDNESS			~ HRc21									
STRENGTH	⌣ 270 N/mm²		~ 800 N/mm²									
DRILLING SPEED	20 ~ 25 m/min		15 ~ 20 m/min		45 ~ 50 m/min		55 ~ 65 m/min		40 ~ 50 m/min		20 ~ 25 m/min	
DIAMETER	N	S	N	S	N	S	N	S	N	S	N	S
2.5	3180	0.042	2250	0.025	6400	0.038	8600	0.038	6400	0.038	3380	0.025
3.0	2500	0.050	2000	0.050	5000	0.063	6800	0.063	5000	0.063	2700	0.050
5.0	1590	0.063	1280	0.063	3200	0.076	4300	0.076	3200	0.076	1700	0.063
8.0	970	0.130	780	0.130	2000	0.180	2600	0.180	2000	0.180	1050	0.130
11.0	700	0.180	560	0.150	1400	0.200	1900	0.200	1400	0.200	750	0.150
19.0	440	0.230	330	0.230	820	0.300	1100	0.300	820	0.300	440	0.230
31.0	240	0.300	195	0.280	490	0.380	660	0.380	490	0.380	260	0.280

N = R.P.M
S = Feed per Revolution (mm/rev.)

HSS-E, TWIST DRILLS for HEAVY DUTY, DIN338
HSS-E, SPIRALBOHRER für HOHELEISTUNGEN, DIN 338

DL109 SERIES

WORK MATERIAL	CARBON STEELS		CARBON STEELS		CARBON STEELS		ALLOY STEELS		ALLOY STEELS		STAINLESS STEELS		CAST IRON	
HARDNESS			~ HRc23		~ HRc23 ~ 28		HRc23 ~ 34		HRc34 ~ 38		HRc23		HRc21	
STRENGTH	~ 570 N/mm²		~ 830 N/mm²		830 ~ 950 N/mm²		830 ~ 1110 N/mm²		1110 ~ 1260 N/mm²		830 N/mm²		800 N/mm²	
DRILLING SPEED	25 ~ 30 m/min		20 ~ 25 m/min		15 ~ 20 m/min		18 ~ 23 m/min		10 ~ 15 m/min		27 ~ 33 m/min		27 ~ 33 m/min	
DIAMETER	N	S	N	S	N	S	N	S	N	S	N	S	N	S
2.0	5000	0.03	3750	0.03	2850	0.02	3500	0.02	2070	0.02	5000	0.03	5000	0.03
3.0	3750	0.04	2810	0.04	2150	0.02	2625	0.04	1560	0.02	3750	0.04	3750	0.04
4.0	2500	0.06	1870	0.06	1450	0.03	1750	0.06	1050	0.02	2500	0.06	2500	0.06
5.0	2085	0.07	1560	0.07	1205	0.04	1460	0.07	870	0.03	2085	0.07	2085	0.07
6.0	1670	0.08	1250	0.08	960	0.05	1170	0.09	690	0.03	1670	0.08	1670	0.08
7.0	1460	0.10	1095	0.10	840	0.06	1025	0.11	605	0.03	1460	0.10	1460	0.10
8.0	1250	0.13	940	0.13	720	0.08	880	0.13	520	0.04	1250	0.13	1250	0.13
9.0	1125	0.14	845	0.14	645	0.08	790	0.15	465	0.04	1125	0.14	1125	0.14
10.0	1000	0.14	750	0.14	570	0.08	700	0.16	410	0.05	1000	0.14	1000	0.14
11.0	925	0.15	685	0.15	525	0.08	640	0.18	380	0.05	925	0.15	925	0.15
12.0	850	0.16	620	0.16	480	0.08	580	0.19	350	0.05	850	0.16	850	0.16
13.0	785	0.17	575	0.17	445	0.09	540	0.20	325	0.05	785	0.17	785	0.17

N = R.P.M
S = Feed per Revolution (mm/rev.)

STRAIGHT SHANK DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

HSS, TWIST DRILLS for BRASS/BRONZE, DIN 338
HSS, SPIRALBOHRER für MESSING/BRONZE, DIN338

D1100 SERIES

WORK MATERIAL	BRASS		BRONZE	
DRILLING SPEED	45 ~ 55 m/min		30 ~ 35 m/min	
DIAMETER	n	S	n	S
2.0	8750	0.080	5688	0.052
3.0	5850	0.100	3803	0.065
4.0	4400	0.120	2860	0.078
5.0	3500	0.140	2275	0.091
6.0	2900	0.160	1885	0.104
7.0	2500	0.180	1625	0.117
8.0	2200	0.200	1430	0.130
9.0	1950	0.220	1268	0.143
10.0	1750	0.250	1138	0.163
11.0	1600	0.270	1040	0.176
12.0	1450	0.290	943	0.189
13.0	1350	0.320	878	0.208

N = R.P.M
S = Feed per Revolution (mm/rev.)

HSS, TWIST DRILLS for ALUMINUM, DIN338
HSS, SPIRALBOHRER für ALUMINIUM, DIN338

D1106 SERIES

WORK MATERIAL	LONG CHIP ALUMINUM ALLOYS		SHORT CHIP ALUMINUM ALLOYS	
DRILLING SPEED	40 ~ 50 m/min		30 ~ 35 m/min	
DIAMETER	N	S	N	S
2.0	7950	0.08	5550	0.06
3.0	5300	0.10	3700	0.07
4.0	4000	0.12	2800	0.08
5.0	3200	0.14	2230	0.09
6.0	2650	0.16	1850	0.10
7.0	2250	0.18	1600	0.11
8.0	2000	0.20	1400	0.12
9.0	1750	0.22	1250	0.14
10.0	1600	0.25	1100	0.16
11.0	1450	0.28	1000	0.18
12.0	1330	0.32	930	0.20
13.0	1220	0.35	860	0.22

N = R.P.M
S = Feed per Revolution (mm/rev.)

STRAIGHT SHANK DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

HSS-E, DH100 TYPE WORM PATTERN DRILLS, DIN1897, DIN338, DIN340, DIN1869, DIN341
HSS-E, DH100 TYPE WORM PATTERN SPIRALBOHRER, DIN1897, DIN 338, DIN 340, DIN 1869, DIN 341

DL510, DL508, DL509, DL505, DL504, DT600, DT692, DT693, DL608 SERIES

WORK MATERIAL	CARBON STEELS ALLOY STEELS		TOOL STEELS HARDENED STEELS		SOFT GREY CAST IRON		HARD GREY CAST IRON	
HARDNESS	HRc15 ~ 30		HRc20 ~ 40					
STRENGTH	700 ~ 1000 N/mm²		800 ~ 1200 N/mm²					
DRILLING SPEED	13 ~ 18 m/min		8 ~ 13 m/min		20 ~ 25 m/min		7 ~ 12 m/min	
DIAMETER	N	S	N	S	N	S	N	S
2.0	2630	0.03	2100	0.025	4200	0.06	1680	0.05
2.5	2100	0.04	1680	0.03	3300	0.08	1310	0.06
3.0	1680	0.05	1310	0.04	2630	0.10	1050	0.08
4.0	1310	0.06	1050	0.05	2100	0.13	840	0.10
5.0	1050	0.06	840	0.05	1680	0.13	660	0.10
6.0	840	0.08	660	0.06	1310	0.16	530	0.13
8.0	660	0.10	530	0.08	1050	0.20	420	0.17
10.0	530	0.13	420	0.10	840	0.25	330	0.21
13.0	420	0.13	330	0.10	660	0.25	260	0.21
16.0	330	0.15	260	0.13	530	0.30	210	0.25
20.0	260	0.20	210	0.15	420	0.40	170	0.30
25.0	210	0.25	170	0.20	330	0.50	130	0.50
30.0	170	0.25	130	0.20	260	0.50	110	0.50

N = R.P.M
S = Feed per Revolution (mm/rev.)

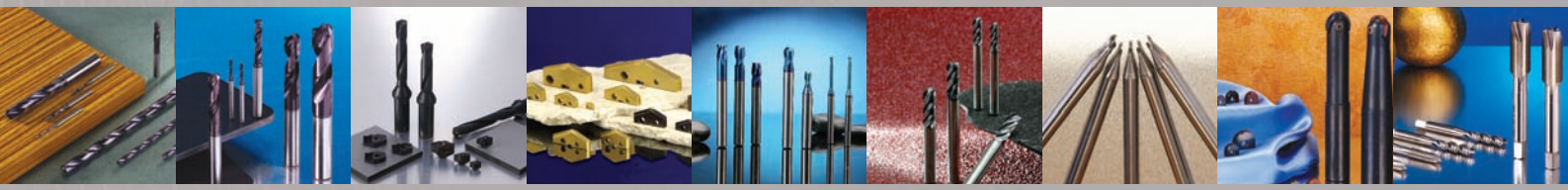
HSS-E, DH50 TYPE WORM PATTERN DRILLS
HSS-E, DH50 TYPE WORM PATTERN SPIRALBOHRER

DL507 SERIES

WORK MATERIAL	CARBON STEELS ALLOY STEELS		SOFT GREY CAST IRON		ALUMINUM ALLOY	
HARDNESS	HRc15 ~ 30					
STRENGTH	700 ~ 1000 N/mm²					
DRILLING SPEED	13 ~ 18 m/min		25 ~ 30 m/min		45 ~ 55 m/min	
DIAMETER	N	S	N	S	N	S
2.0	2630	0.03	4200	0.06	8700	0.04
2.5	2100	0.04	3300	0.08	6950	0.05
3.0	1680	0.05	2630	0.10	5800	0.06
4.0	1310	0.06	2100	0.13	4300	0.08
5.0	1050	0.06	1680	0.13	3500	0.10
6.0	840	0.08	1310	0.16	2900	0.12
8.0	660	0.10	1050	0.20	2200	0.16
10.0	530	0.13	840	0.25	1750	0.20
13.0	420	0.13	660	0.25	1350	0.26

N = R.P.M
S = Feed per Revolution (mm/rev.)

Global Cutting Tool Leader **YG-1**



HSS

Being the best through innovation

MORSE TAPER SHANK DRILLS

BOHRER MIT MK

- General Purpose, HSS & HSS-E & 8% Cobalt
- Für allgemeinen Einsatz, HSS und HSSE-Co8

MORSE TAPER SHANK DRILLS

Morse Taper Shank Twist Drills for wide applications

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
DL205		HSS-E, TAPER SHANK TWIST DRILLS for HEAVY DUTY *JOBBER* HSS-E, SPIRALBOHRER für HOHE LEISTUNGEN mit MORSEKEGELSCHAFT *KURZ*	D13.0	D30.0	222
D1205		HSS, TAPER SHANK TWIST DRILLS *JOBBER* HSS, SPIRALBOHRER mit MORSEKEGELSCHAFT *KURZ*	D5.0	D60.0	223
D1206		HSS, TAPER SHANK TWIST DRILLS *LONG* HSS, SPIRALBOHRER mit MORSEKEGELSCHAFT *LANG*	D13.0	D30.0	226
D1209		HSS, TAPER SHANK TWIST DRILLS *EXTRA LONG* HSS, SPIRALBOHRER mit MORSEKEGELSCHAFT *ÜBERLANG*	D13.0	D50.0	227
D1210		HSS, TAPER SHANK TWIST DRILLS *EXTRA LONG* HSS, SPIRALBOHRER mit MORSEKEGELSCHAFT *ÜBERLANG*	D13.0	D50.0	228
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			229

◎ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○			○	○	○		○			
◎	◎	○			○	○	○		○			
◎	◎	○			○	○	○		○			
◎	◎	○			○	○	○		○			
◎	◎	○			○	○	○		○			

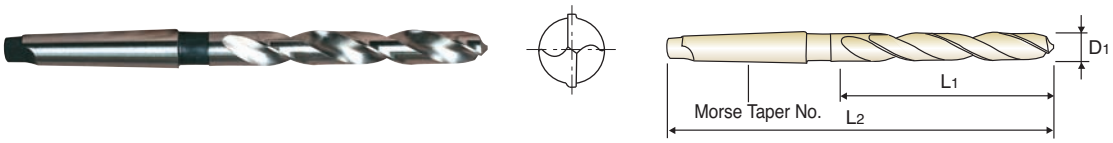
MORSE TAPER SHANK DRILLS

DL205 SERIES

HSS-E, MORSE TAPER SHANK TWIST DRILLS for HEAVY DUTY — *JOBBER*
HSS-E, SPIRALBOHRER für HOHELEISTUNGEN mit MORSEKEGELSCHAFT — *KURZ*

▶ **Application** : Drilling steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron, graphite.

▶ **Verwendung** : Zum Bohren von Stahl und Stahlguß, Grauguß, Temperguß, Sphäroguß, Sintereisen, Graphit.



DIN 345 | HSS-E | N ≈30° | 1~3 | h8 | 118° P.229

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	No.of Morse Taper
DL205130	13.0	101	182	1
DL205135	13.5	108	189	1
DL205140	14.0	108	189	1
DL205145	14.5	114	212	2
DL205150	15.0	114	212	2
DL205155	15.5	120	218	2
DL205160	16.0	120	218	2
DL205165	16.5	125	223	2
DL205170	17.0	125	223	2
DL205175	17.5	130	228	2
DL205180	18.0	130	228	2
DL205185	18.5	135	233	2
DL205190	19.0	135	233	2
DL205195	19.5	140	238	2
DL205200	20.0	140	238	2
DL205205	20.5	145	243	2
DL205210	21.0	145	243	2
DL205215	21.5	150	248	2

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	No.of Morse Taper
DL205220	22.0	150	248	2
DL205225	22.5	155	253	2
DL205230	23.0	155	253	2
DL205235	23.5	155	276	3
DL205240	24.0	160	281	3
DL205245	24.5	160	281	3
DL205250	25.0	160	281	3
DL205255	25.5	165	286	3
DL205260	26.0	165	286	3
DL205265	26.5	165	286	3
DL205270	27.0	170	291	3
DL205275	27.5	170	291	3
DL205280	28.0	170	291	3
DL205285	28.5	175	296	3
DL205290	29.0	175	296	3
DL205295	29.5	175	296	3
DL205300	30.0	175	296	3

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○			○	○	○		○			

MORSE TAPER SHANK DRILLS

D1205 SERIES

HSS, MORSE TAPER SHANK TWIST DRILLS

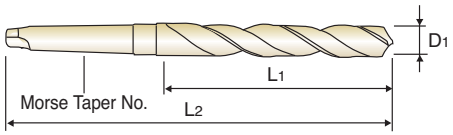
HSS, SPIRALBOHRER mit MORSEKEGELSCHAFT

JOBBER

KURZ

▶ **Surface treatment** : Steam Tempered(Black Oxide Finish)
▶ **Application** : Drilling steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron, graphite.

▶ **Oberflächenbehandlung** : Steam Homo(Schwarzoxidation)
▶ **Verwendung** : Zum Bohren von Stahl und Stahlguß, Grauguß, Temperguß, Sphäroguß, Sintereisen, Graphit.



DIN 345 | HSS | N ≈30° | 1~5 | h8 | 118° P.229

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	No.of Morse Taper
D1205050	5.0	52	133	1
D1205055	5.5	57	138	1
D1205060	6.0	57	138	1
D1205065	6.5	63	144	1
D1205070	7.0	69	150	1
D1205075	7.5	69	150	1
D1205080	8.0	75	156	1
D1205085	8.5	75	156	1
D1205090	9.0	81	162	1
D1205095	9.5	81	162	1
D1205100	10.0	87	168	1
D1205105	10.5	87	168	1
D1205110	11.0	94	175	1
D1205115	11.5	94	175	1
D1205120	12.0	101	182	1
D1205125	12.5	101	182	1
D1205130	13.0	101	182	1
D1205132	13.2	101	182	1
D120513A	13.25	108	189	1
D1205135	13.5	108	189	1
D120513B	13.75	108	189	1
D1205138	13.8	108	189	1
D1205140	14.0	108	189	1
D120514A	14.25	114	212	2
D1205145	14.5	114	212	2
D120514B	14.75	114	212	2
D1205150	15.0	114	212	2

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	No.of Morse Taper
D120515A	15.25	120	218	2
D1205155	15.5	120	218	2
D120515B	15.75	120	218	2
D1205160	16.0	120	218	2
D120516A	16.25	125	223	2
D1205165	16.5	125	223	2
D120516B	16.75	125	223	2
D1205170	17.0	125	223	2
D120517A	17.25	130	228	2
D1205175	17.5	130	228	2
D120517B	17.75	130	228	2
D1205180	18.0	130	228	2
D120518A	18.25	135	233	2
D1205185	18.5	135	233	2
D120518B	18.75	135	233	2
D1205190	19.0	135	233	2
D120519A	19.25	140	238	2
D1205195	19.5	140	238	2
D120519B	19.75	140	238	2
D1205200	20.0	140	238	2
D120520A	20.25	145	243	2
D1205205	20.5	145	243	2
D120520B	20.75	145	243	2
D1205210	21.0	145	243	2
D120521A	21.25	150	248	2
D1205215	21.5	150	248	2
D120521B	21.75	150	248	2

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○			○	○	○		○			

MORSE TAPER SHANK DRILLS

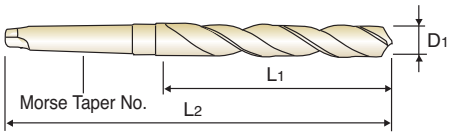
D1205 SERIES

HSS, MORSE TAPER SHANK TWIST DRILLS
HSS, SPIRALBOHRER mit MORSEKEGELSCHAFT

JOBBER
KURZ

▶ **Surface treatment** : Steam Tempered(Black Oxide Finish)
▶ **Application** : Drilling steels, cast steels alloyed and non-alloyed, grey cas tiron, malleable cast iron, graphite.

▶ **Oberflächenbehandlung** : Steam Homo(Schwarzoxidation)
▶ **Verwendung** : Zum Bohren von Stahl und Stahlguß, Grauguß, Temperguß, Sphäroguß, Sintereisen, Graphit.



DIN 345 | HSS | N ≈30° | 1~5 | h8 | 118° P.229

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	No.of Morse Taper
D1205220	22.0	150	248	2
D120522A	22.25	150	248	2
D1205225	22.5	155	253	2
D120522B	22.75	155	253	2
D1205230	23.0	155	253	2
D120523A	23.25	155	276	3
D1205235	23.5	155	276	3
D120523B	23.75	160	281	3
D1205240	24.0	160	281	3
D120524A	24.25	160	281	3
D1205245	24.5	160	281	3
D120524B	24.75	160	281	3
D1205250	25.0	160	281	3
D120525A	25.25	165	286	3
D1205255	25.5	165	286	3
D120525B	25.75	165	286	3
D1205260	26.0	165	286	3
D120526A	26.25	165	286	3
D1205265	26.5	165	286	3
D120526B	26.75	170	291	3
D1205270	27.0	170	291	3
D120527A	27.25	170	291	3
D1205275	27.5	170	291	3
D120527B	27.75	170	291	3
D1205280	28.0	170	291	3
D120528A	28.25	175	296	3
D1205285	28.5	175	296	3

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	No.of Morse Taper
D120528B	28.75	175	296	3
D1205290	29.0	175	296	3
D120529A	29.25	175	296	3
D1205295	29.5	175	296	3
D120529B	29.75	175	296	3
D1205300	30.0	175	296	3
D120530A	30.25	180	301	3
D1205305	30.5	180	301	3
D120530B	30.75	180	301	3
D1205310	31.0	180	301	3
D120531A	31.25	180	301	3
D1205315	31.5	180	301	3
D120531B	31.75	185	306	3
D1205320	32.0	185	334	4
D1205325	32.5	185	334	4
D1205330	33.0	185	334	4
D1205335	33.5	185	334	4
D1205340	34.0	190	339	4
D1205345	34.5	190	339	4
D1205350	35.0	190	339	4
D1205355	35.5	190	339	4
D1205360	36.0	195	344	4
D1205365	36.5	195	344	4
D1205370	37.0	195	344	4
D1205375	37.5	195	344	4
D1205380	38.0	200	349	4
D1205385	38.5	200	349	4

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○			○	○	○		○			

MORSE TAPER SHANK DRILLS

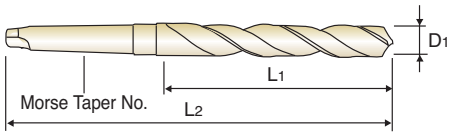
D1205 SERIES

HSS, MORSE TAPER SHANK TWIST DRILLS
HSS, SPIRALBOHRER mit MORSEKEGELSCHAFT

JOBBER
KURZ

▶ **Surface treatment** : Steam Tempered(Black Oxide Finish)
▶ **Application** : Drilling steels, cast steels alloyed and non-alloyed, grey cas tiron, malleable cast iron, graphite.

▶ **Oberflächenbehandlung** : Steam Homo(Schwarzoxidation)
▶ **Verwendung** : Zum Bohren von Stahl und Stahlguß, Grauguß, Temperguß, Sphäroguß, Sintereisen, Graphit.



DIN 345 | HSS | N ≈30° | 1~5 | h8 | 118° P.229

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	No.of Morse Taper
D1205390	39.0	200	349	4
D1205395	39.5	200	349	4
D1205400	40.0	200	349	4
D1205405	40.5	205	354	4
D1205410	41.0	205	354	4
D1205415	41.5	205	354	4
D1205420	42.0	205	354	4
D1205425	42.5	205	354	4
D1205430	43.0	210	359	4
D1205435	43.5	210	359	4
D1205440	44.0	210	359	4
D1205445	44.5	210	359	4
D1205450	45.0	210	359	4
D1205455	45.5	215	364	4
D1205460	46.0	215	364	4
D1205465	46.5	215	364	4
D1205470	47.0	215	364	4

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	No.of Morse Taper
D1205475	47.5	215	364	4
D1205480	48.0	220	369	4
D1205485	48.5	220	369	4
D1205490	49.0	220	369	4
D1205495	49.5	220	369	4
D1205500	50.0	220	369	4
D1205505	50.5	225	374	4
D1205510	51.0	225	412	5
D1205520	52.0	225	412	5
D1205530	53.0	225	412	5
D1205540	54.0	230	417	5
D1205550	55.0	230	417	5
D1205560	56.0	230	417	5
D1205570	57.0	235	422	5
D1205580	58.0	235	422	5
D1205590	59.0	235	422	5
D1205600	60.0	235	422	5

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○			○	○	○		○			

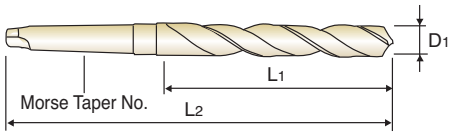
MORSE TAPER SHANK DRILLS

D1206 SERIES

HSS, MORSE TAPER SHANK TWIST DRILLS — LONG
HSS, SPIRALBOHRER mit MORSEKEGELSCHAFT — LANG

▶ **Surface treatment** : Steam Tempered(Black Oxide Finish)
▶ **Application** : Drilling deep holes in steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron, graphite.

▶ **Oberflächenbehandlung** : Steam Homo(Schwarzoxidation)
▶ **Verwendung** : Für Bohrungen mit Bohrbuchsen oder an tief liegenden Stellen. Zum Bohren von Stahl und Stahlguß, Grauß, Temperguß, Sphäroguß, Sintereisen, Neusilber und Graphit.



DIN 341 | HSS | N ≈30° | 1~3 | h8 | 118° P.229

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	No.of Morse Taper
D1206130	13.0	134	215	1
D1206135	13.5	142	223	1
D1206140	14.0	142	223	1
D1206145	14.5	147	245	2
D1206150	15.0	147	245	2
D1206155	15.5	153	251	2
D1206160	16.0	153	251	2
D1206165	16.5	159	257	2
D1206170	17.0	159	257	2
D1206175	17.5	165	263	2
D1206180	18.0	165	263	2
D1206185	18.5	171	269	2
D1206190	19.0	171	269	2

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	No.of Morse Taper
D1206195	19.5	177	275	2
D1206200	20.0	177	275	2
D1206210	21.0	184	282	2
D1206220	22.0	191	289	2
D1206230	23.0	198	296	2
D1206240	24.0	206	327	3
D1206250	25.0	206	327	3
D1206260	26.0	214	335	3
D1206270	27.0	222	343	3
D1206280	28.0	222	343	3
D1206290	29.0	230	351	3
D1206300	30.0	230	351	3

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○			○	○	○		○			

MORSE TAPER SHANK DRILLS

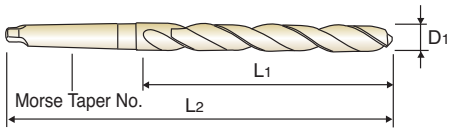
D1209 SERIES

HSS, MORSE TAPER SHANK TWIST DRILLS
HSS, SPIRALBOHRER mit MORSEKEGELSCHAFT

EXTRA LONG
ÜBERLANG

▶ **Surface treatment** : Steam Tempered(Black Oxide Finish)
▶ **Application** : Drilling deep holes in steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron, graphite.

▶ **Oberflächenbehandlung** : Steam Homo(Schwarzoxidation)
▶ **Verwendung** : Für Bohrungen mit Bohrbuchsen oder an tief liegenden Stellen. Zum Bohren von Stahl und Stahlguß, Grauß, Temperguß, Sphäroguß, Sintereisen, Neusilber und Graphit



DIN 1870/1 | HSS | N ≈30° | 1~4 | h8 | 118° P.229

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	No.of Morse Taper
D1209130	13.0	205	310	1
D1209135	13.5	220	325	1
D1209140	14.0	220	325	1
D1209145	14.5	220	340	2
D1209150	15.0	220	340	2
D1209155	15.5	230	355	2
D1209160	16.0	230	355	2
D1209165	16.5	230	355	2
D1209170	17.0	230	355	2
D1209175	17.5	245	370	2
D1209180	18.0	245	370	2
D1209185	18.5	245	370	2
D1209190	19.0	245	370	2
D1209195	19.5	260	385	2
D1209200	20.0	260	385	2
D1209205	20.5	260	385	2
D1209210	21.0	260	385	2
D1209215	21.5	270	405	2
D1209220	22.0	270	405	2
D1209225	22.5	270	405	2
D1209230	23.0	270	405	2
D1209235	23.5	270	425	3
D1209240	24.0	290	440	3
D1209245	24.5	290	440	3
D1209250	25.0	290	440	3
D1209255	25.5	290	440	3
D1209260	26.0	290	440	3
D1209265	26.5	290	440	3

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	No.of Morse Taper
D1209270	27.0	305	460	3
D1209275	27.5	305	460	3
D1209280	28.0	305	460	3
D1209285	28.5	305	460	3
D1209290	29.0	305	460	3
D1209295	29.5	305	460	3
D1209300	30.0	305	460	3
D1209305	30.5	320	480	3
D1209310	31.0	320	480	3
D1209320	32.0	320	505	4
D1209330	33.0	320	505	4
D1209340	34.0	340	530	4
D1209350	35.0	340	530	4
D1209360	36.0	340	530	4
D1209370	37.0	340	530	4
D1209380	38.0	360	555	4
D1209390	39.0	360	555	4
D1209400	40.0	360	555	4
D1209410	41.0	360	555	4
D1209420	42.0	360	555	4
D1209430	43.0	385	585	4
D1209440	44.0	385	585	4
D1209450	45.0	385	585	4
D1209460	46.0	385	585	4
D1209470	47.0	385	585	4
D1209480	48.0	405	605	4
D1209490	49.0	405	605	4
D1209500	50.0	405	605	4

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○			○	○	○		○			

MORSE TAPER SHANK DRILLS

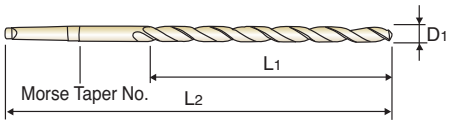
D1210 SERIES

HSS, MORSE TAPER SHANK TWIST DRILLS
HSS, SPIRALBOHRER mit MORSEKEGELSCHAFT

EXTRA LONG
ÜBERLANG

▶ **Surface treatment** : Steam Tempered(Black Oxide Finish)
▶ **Application** : Designed for drilling deep holes or deeply located holes. Drilling into steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron, Spheriodal graphite cast iron, sintered iron, aluminum and aluminum alloys.

▶ **Oberflächenbehandlung** : Steam Homo(Schwarzoxidation)
▶ **Verwendung** : Standardbohrer zum Bohren extrem tiefer Löcher.
Zum Bohren von Stahl und Stahlguß, Grauguß, Temperguß, Sphäroguß, Sintereisen und Graphit



DIN 1870/2 | HSS | N ≈30° | 1~4 | h8 | 118° P.229

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	No.of Morse Taper
D1210130	13.0	260	395	1
D1210135	13.5	275	410	1
D1210140	14.0	275	410	1
D1210145	14.5	275	425	2
D1210150	15.0	275	425	2
D1210155	15.5	295	445	2
D1210160	16.0	295	445	2
D1210165	16.5	295	445	2
D1210170	17.0	295	445	2
D1210175	17.5	310	465	2
D1210180	18.0	310	465	2
D1210185	18.5	310	465	2
D1210190	19.0	310	465	2
D1210195	19.5	325	490	2
D1210200	20.0	325	490	2
D1210205	20.5	325	490	2
D1210210	21.0	325	490	2
D1210215	21.5	345	515	2
D1210220	22.0	345	515	2
D1210225	22.5	345	515	2
D1210230	23.0	345	515	2
D1210235	23.5	345	535	3
D1210240	24.0	365	555	3
D1210245	24.5	365	555	3
D1210250	25.0	365	555	3
D1210255	25.5	365	555	3
D1210260	26.0	365	555	3
D1210265	26.5	365	555	3

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2	No.of Morse Taper
D1210270	27.0	385	580	3
D1210275	27.5	385	580	3
D1210280	28.0	385	580	3
D1210285	28.5	385	580	3
D1210290	29.0	385	580	3
D1210295	29.5	385	580	3
D1210300	30.0	385	580	3
D1210310	31.0	410	610	3
D1210320	32.0	410	635	4
D1210330	33.0	410	635	4
D1210340	34.0	430	665	4
D1210350	35.0	430	665	4
D1210360	36.0	430	665	4
D1210370	37.0	430	665	4
D1210380	38.0	460	695	4
D1210390	39.0	460	695	4
D1210400	40.0	460	695	4
D1210410	41.0	460	695	4
D1210420	42.0	460	695	4
D1210430	43.0	490	735	4
D1210440	44.0	490	735	4
D1210450	45.0	490	735	4
D1210460	46.0	490	735	4
D1210470	47.0	490	735	4
D1210480	48.0	510	765	4
D1210490	49.0	510	765	4
D1210500	50.0	510	765	4

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○			○	○	○		○			

MORSE TAPER SHANK DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

HSS-E, TWIST DRILLS for HEAVY DUTY, DIN345
HSS-E, SPIRALBOHRER für HOHELEISTUNGEN DIN 345

DL205 SERIES

WORK MATERIAL	CARBON STEELS		CARBON STEELS		CARBON STEELS		ALLOY STEELS		ALLOY STEELS		STAINLESS STEELS		CAST IRON	
HARDNESS			~ HRc23		HRc23 ~ 28		HRc23 ~ 34		HRc34 ~ 38		HRc23		HRc21	
STRENGTH	~ 570 N/mm²		~ 830 N/mm²		830 ~ 950 N/mm²		830 ~ 1110 N/mm²		1110 ~ 1260 N/mm²		830 N/mm²		800 N/mm²	
DRILLING SPEED	27 ~ 32 m/min		20 ~ 25 m/min		13 ~ 18 m/min		17 ~ 22 m/min		8 ~ 13 m/min		27 ~ 32 m/min		27 ~ 32 m/min	
DIAMETER	N	S	N	S	N	S	N	S	N	S	N	S	N	S
13.0	785	0.17	575	0.17	445	0.09	540	0.20	325	0.05	785	0.17	785	0.17
14.0	720	0.18	530	0.18	410	0.10	500	0.20	300	0.05	720	0.18	720	0.18
16.0	635	0.20	475	0.20	365	0.11	445	0.22	265	0.05	635	0.20	635	0.20
18.0	550	0.22	420	0.22	320	0.12	390	0.23	230	0.05	550	0.22	550	0.22
20.0	500	0.23	380	0.23	290	0.13	355	0.23	210	0.06	500	0.23	500	0.23
22.0	450	0.24	340	0.24	260	0.14	320	0.23	190	0.06	450	0.24	450	0.24
24.0	420	0.25	320	0.25	240	0.15	295	0.23	175	0.07	420	0.25	420	0.25
26.0	390	0.26	300	0.26	220	0.16	270	0.23	160	0.07	390	0.26	390	0.26
28.0	360	0.27	275	0.27	205	0.17	250	0.23	150	0.07	360	0.27	360	0.27
30.0	330	0.28	250	0.28	190	0.18	230	0.23	140	0.08	330	0.28	330	0.28

N = R.P.M
S = Feed per Revolution (mm/rev.)

HSS DRILLS DIN345, DIN341, DIN1870
HSS SPIRALBOHRER DIN 345, DIN 341, DIN 1870

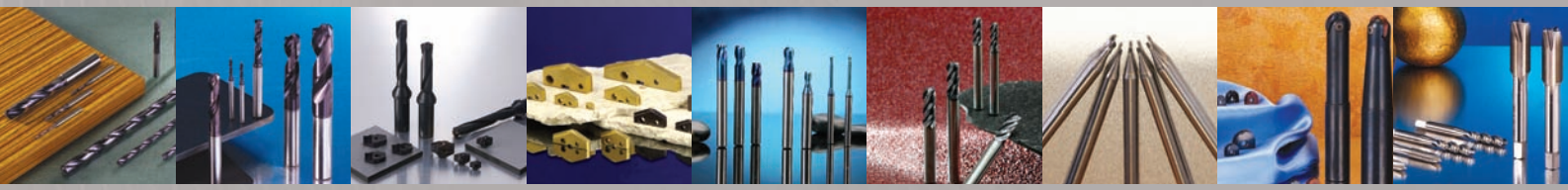
D1205, D1206, D1209, D1210 SERIES

WORK MATERIAL	CARBON STEELS		CARBON STEELS		CARBON STEELS		ALLOY STEELS		ALLOY STEELS		STAINLESS STEELS		TITANIUM ALLOYS	
HARDNESS			~ HRc23		~ HRc23 ~ 28		HRc23 ~ 34		HRc34 ~ 38		HRc23			
STRENGTH	~ 570 N/mm²		~ 830 N/mm²		830 ~ 950 N/mm²		830 ~ 1110 N/mm²		1110 ~ 1260 N/mm²		830 N/mm²		410 N/mm²	
DRILLING SPEED	20 ~ 25 m/min		18 ~ 22 m/min		10 ~ 15 m/min		13 ~ 18 m/min		8 ~ 12 m/min		15 ~ 20 m/min		8 ~ 12 m/min	
DIAMETER	N	S	N	S	N	S	N	S	N	S	N	S	N	S
13.0	645	0.17	480	0.17	370	0.09	440	0.17	265	0.05	480	0.17	265	0.09
19.0	440	0.23	330	0.23	255	0.13	300	0.23	180	0.05	330	0.23	180	0.13
32.0	260	0.28	195	0.28	145	0.18	180	0.28	107	0.08	195	0.28	107	0.18
50.0	165	0.33	125	0.33	93	0.20	115	0.33	68	0.08	125	0.33	68	0.20
60.0	140	0.40	105	0.40	78	0.23	95	0.40	57	0.10	105	0.40	57	0.23

WORK MATERIAL	TOOL STEELS		CAST IRON		ALUMINUM ALLOYS		MAGNESIUM ALLOYS		ZINC ALLOYS		PLASTICS	
HARDNESS			~ HRc21									
STRENGTH	~ 270 N/mm²		~ 800 N/mm²									
DRILLING SPEED	20 ~ 25 m/min		15 ~ 20 m/min		40 ~ 50 m/min		55 ~ 65 m/min		40 ~ 50 m/min		20 ~ 25 m/min	
DIAMETER	N	S	N	S	N	S	N	S	N	S	N	S
13.0	645	0.17	480	0.17	1200	0.26	1600	0.26	1200	0.26	645	0.17
19.0	440	0.23	330	0.23	820	0.30	1100	0.30	820	0.30	440	0.23
32.0	240	0.30	195	0.28	490	0.38	660	0.38	490	0.38	260	0.28
50.0	150	0.43	125	0.33	310	0.46	415	0.46	310	0.46	165	0.33
60.0	125	0.48	105	0.40	260	0.50	345	0.50	260	0.50	140	0.40

N = R.P.M
S = Feed per Revolution (mm/rev.)

Global Cutting Tool Leader **YG-1**



HSS

Being the best through innovation

NC-SPOTTING DRILLS

NC-ANBOHRER

- HSS(8% COBALT)
  Centering and Chamfering of Holes
- HSS-Co8 NC-ANBOHRER
  Zum Zentrieren und Anfasen

HSS(8% Cobalt) NC-SPOTTING DRILLS

Centering and Chamfering of Holes

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
D2306 D2321		HSSCo8, NC-SPOTTING DRILLS 90° HSSCo8, NC-ANBOHRER 90°	D3.0	D20.0	234
D2307 D2322		HSSCo8, NC-SPOTTING DRILLS 120° HSSCo8, NC-ANBOHRER 120°	D3.0 D6.0	D20.0 D12.0	235
D2320 D2323		HSSCo8, NC-SPOTTING DRILLS 142° HSSCo8, NC-ANBOHRER 142°	D3.0 D6.0	D20.0 D12.0	236
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			237

◎ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎					○	○		○		○	
◎	◎					○	○		○		○	
◎	◎					○	○		○		○	

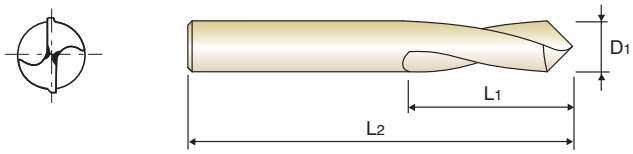
NC-SPOTTING DRILLS

D2306 SERIES
D2321 SERIES

HSSCo8, NC-SPOTTING DRILLS 90°
HSSCo8, NC-ANBOHRER 90°

▶ **Application** : For more precise centering work on NC/CNC Machines.
The large diameter of the tool permits chamfering work after centering continuously.

▶ **Verwendung** : Für positionsgenaues und schnelles Anbohren mit NC/CNC-Maschinen und Bearbeitungszentren, die Ausführung mit Spitzenwinkel 90° ermöglicht sowohl ein Zentrieren, als auch das Vorbohren für einen nächstgrößeren Durchmesser.



NC | HSS Co8 | h6 | h6 | 90° P.237

LONG LENGTH

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2306030	3.0	12	46
D2306040	4.0	12	55
D2306050	5.0	15	60
D2306060	6.0	20	66
D2306080	8.0	25	79
D2306100	10.0	25	89
D2306120	12.0	30	102
D2306160	16.0	35	115
D2306200	20.0	40	131

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2321030	3.0	12	80
D2321040	4.0	12	100
D2321050	5.0	15	120
D2321060	6.0	20	140
D2321080	8.0	25	140
D2321100	10.0	25	170
D2321120	12.0	30	170
D2321160	16.0	35	200
D2321200	20.0	40	200

▶ TiN, TiCN and TiAlN are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎					○	○		○		○	

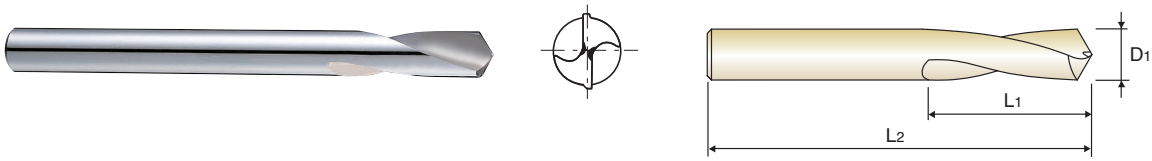
NC-SPOTTING DRILLS

D2307 SERIES
D2322 SERIES

HSSCo8, NC-SPOTTING DRILLS 120°
HSSCo8, NC-ANBOHRER 120°

▶ **Application** : For more precise centering work on NC/CNC Machines.
The large diameter of the tool permits chamfering work after centering continuously.

▶ **Verwendung** : Für positionsgenaues und schnelles Anbohren mit NC/CNC-Maschinen und Bearbeitungszentren, die Ausführung mit Spitzenwinkel 90° ermöglicht sowohl ein Zentrieren, als auch das Vorbohren für einen nächstgrößeren Durchmesser.



NC | HSS Co8 | h6 | h6 | 120° | P.237

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2307030	3.0	12	46
D2307040	4.0	12	55
D2307050	5.0	15	60
D2307060	6.0	20	66
D2307080	8.0	25	79
D2307100	10.0	25	89
D2307120	12.0	30	102
D2307160	16.0	35	115
D2307200	20.0	40	131

LONG LENGTH

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2322060	6.0	20	140
D2322080	8.0	25	140
D2322100	10.0	25	170
D2322120	12.0	30	170

▶ TiN, TiCN and TiAlN are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎					○	○		○		○	

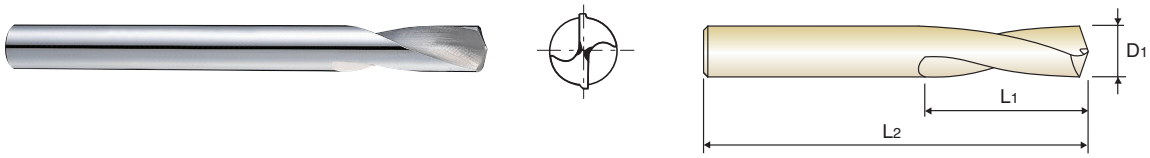
NC-SPOTTING DRILLS

D2320 SERIES
D2323 SERIES

HSSCo8, NC-SPOTTING DRILLS 142°
HSSCo8, NC-ANBOHRER 142°

▶ **Application** : For more precise centering work on NC/CNC Machines.
The large diameter of the tool permits chamfering work after centering continuously.

▶ **Verwendung** : Für positionsgenaues und schnelles Anbohren mit NC/CNC-Maschinen und Bearbeitungszentren, die Ausführung mit Spitzenwinkel 90° ermöglicht sowohl ein Zentrieren, als auch das Vorbohren für einen nächstgrößeren Durchmesser.



NC | HSS Co8 | h6 | h6 | 142° P.237

Unit : mm

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2320030	3.0	12	46
D2320040	4.0	12	55
D2320050	5.0	15	60
D2320060	6.0	20	66
D2320080	8.0	25	79
D2320100	10.0	25	89
D2320120	12.0	30	102
D2320160	16.0	35	115
D2320200	20.0	40	131

LONG LENGTH

EDP No.	Drill Diameter D1	Flute Length L1	Overall Length L2
D2323060	6.0	20	140
D2323080	8.0	25	140
D2323100	10.0	25	170
D2323120	12.0	30	170

▶ TiN, TiCN and TiAlN are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎					○	○		○		○	

NC-SPOTTING DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

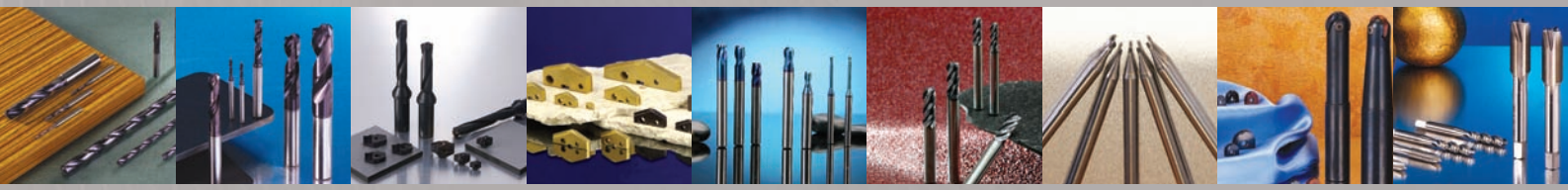
HSSCo8, NC-SPOTTING DRILLS 90°, 120°, 142°
HSSCo8, NC-ANBOHRER 90°, 120°, 142°

D2306, D2321, D2307, D2322, D2320, D2323 SERIES

WORK MATERIAL	CARBON STEELS		ALLOY STEELS		ALLOY STEELS, TOOL STEELS, HARDENED STEELS		STAINLESS STEELS		ALUMINUM, ALUMINUM ALLOYS	
DRILLING SPEED	18 ~ 23 m/min		15 ~ 20 m/min		8 ~ 12 m/min		8 ~ 12 m/min		55 ~ 65 m/min	
DIAMETER	N	S	N	S	N	S	N	S	N	S
3.0	2460	0.06	2110	0.06	1080	0.06	940	0.06	7040	0.14
4.0	1850	0.07	1580	0.07	800	0.07	700	0.07	5280	0.15
5.0	1510	0.08	1300	0.08	670	0.08	580	0.08	4400	0.17
6.0	1170	0.09	1030	0.09	540	0.09	460	0.09	3520	0.19
8.0	880	0.11	790	0.11	400	0.11	350	0.11	2640	0.22
10.0	700	0.12	630	0.12	320	0.12	290	0.12	2110	0.25
12.0	590	0.14	530	0.14	260	0.14	240	0.14	1760	0.28
16.0	460	0.20	400	0.20	200	0.20	180	0.20	1320	0.33
20.0	350	0.24	320	0.24	150	0.24	140	0.24	1060	0.45

N = R.P.M
S = Feed per Revolution (mm/rev.)

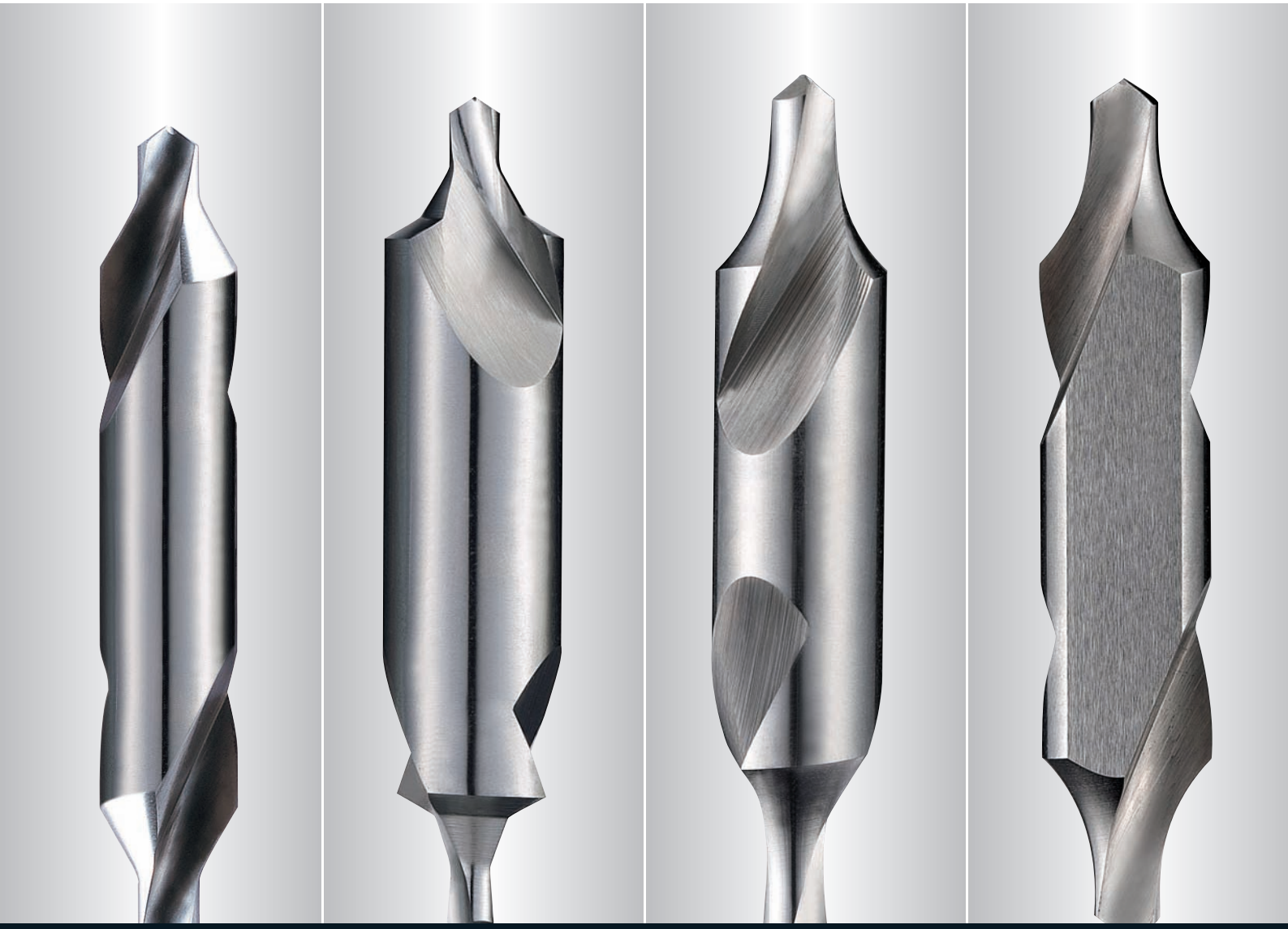
Global Cutting Tool Leader **YG-1**



HSS

YG

Being the best through innovation



CENTER DRILLS

ZENTRIERBOHRER

- General Purpose (HSS & HSS-EX)
- Für allgemeinen Einsatz (HSS & HSS-EX)

CENTER DRILLS
General Purpose

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
DV303		HSS-EX, CENTER DRILLS / FORM A HSS-EX, ZENTRIERBOHRER / FORM A	D0.5	D6.3	242
DV333		HSS-EX, CENTER DRILLS / FORM A HSS-EX, ZENTRIERBOHRER / FORM A	D1.6	D6.3	242
DV334		HSS-EX, CENTER DRILLS EXTRA LONG / FORM A HSS-EX, ZENTRIERBOHRER / FORM A	D1.0	D5.0	243
D1303		HSS, CENTER DRILLS / FORM A HSS, ZENTRIERBOHRER / FORM A	D0.5	D10.0	244
D1343		HSS, CENTER DRILLS LEFT HELIX / FORM A HSS, ZENTRIERBOHRER / FORM A	D0.5	D8.0	244
D1313		HSS, CENTER DRILLS / FORM B HSS, ZENTRIERBOHRER / FORM B	D1.0	D6.3	245
D1353		HSS, CENTER DRILLS LEFT HELIX / FORM B HSS, ZENTRIERBOHRER / FORM B	D2.0	D6.3	245
D1363		HSS, CENTER DRILLS / FORM R HSS, ZENTRIERBOHRER / FORM R	D0.5	D8.0	246
D1373		HSS, CENTER DRILLS LEFT HELIX / FORM R HSS, ZENTRIERBOHRER / FORM R	D0.8	D5.0	246
DV383		HSS-EX, CENTER DRILLS / FORM R HSS-EX, ZENTRIERBOHRER / FORM R	D1.6	D6.3	247
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			248

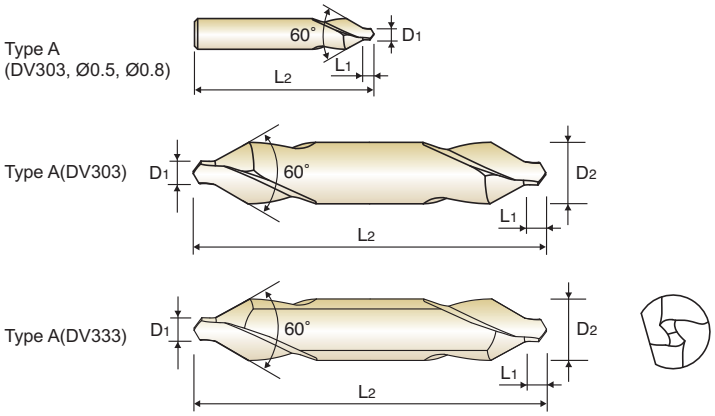
◎ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	○	○	○	○	○	
◎	◎				○	○	○	○	○	○	○	
◎	◎				○	○	○	○	○	○	○	
◎	◎				○	○	○	○	○	○	○	
◎	◎				○	○	○	○	○	○	○	
◎	◎				○	○	○	○	○	○	○	
◎	◎				○	○	○	○	○	○	○	
◎	◎				○	○	○	○	○	○	○	
◎	◎				○	○	○	○	○	○	○	
◎	◎				○	○	○	○	○	○	○	

CENTER DRILLS

DV303 SERIES
DV333 SERIES

HSS-EX, CENTER DRILLS FORM A
HSS-EX, ZENTRIERBOHRER FORM A



DIN 333 | HSS EX | h8 | k12 | 120° P.248

DIN 333 | HSS EX | h8 | k12 | 120° P.248

FORM A (60°)

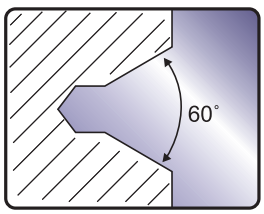
EDP No.	Drill Diameter D1	Shank Diameter D2	Pilot Length L1	Overall Length L2
DV303005	0.5	3.15	0.8	25
DV303008	0.8	3.15	1.1	25
DV303010	1.0	3.15	1.3	31.5
DV303912	1.25	3.15	1.6	31.5
DV303016	1.6	4	2	35.5
DV303020	2.0	5	2.5	40
DV303025	2.5	6.3	3.1	45
DV303931	3.15	8	3.9	50
DV303040	4.0	10	5	56
DV303050	5.0	12.5	6.3	63
DV303063	6.3	16	8	71

▶ Under 1.0mm : Single End

FORM A (60°), FLAT

Unit : mm

EDP No.	Drill Diameter D1	Shank Diameter D2	Pilot Length L1	Overall Length L2
DV333016	1.6	4	2	35.5
DV333020	2.0	5	2.5	40
DV333025	2.5	6.3	3.1	45
DV333931	3.15	8	3.9	50
DV333040	4.0	10	5	56
DV333050	5.0	12.5	6.3	63
DV333063	6.3	16	8	71



◎ : Excellent ○ : Good

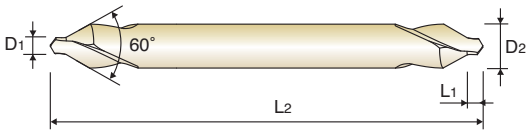
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	○	○	○	○	○	

CENTER DRILLS

DV334 SERIES

HSS-EX, CENTER DRILLS FORM A
HSS-EX, ZENTRIERBOHRER FORM A

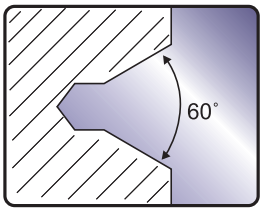
Type A(DV334)



HSS EX | h8 | k12 | 120° | P.248

EXTRA LONG / FORM A (60°)

EDP No.	Drill Diameter D1	Shank Diameter D2	Pilot Length L1	Overall Length L2
DV334010	1.0	4	1.3	120
DV334016	1.6	5	2	120
DV334020	2.0	6	2.5	120
DV334025	2.5	8	3.1	120
DV334931	3.15	10	3.9	120
DV334040	4.0	12	5	120
DV334050	5.0	14	6.3	120



◎ : Excellent ○ : Good

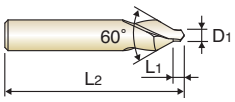
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	○	○	○	○	○	

CENTER DRILLS

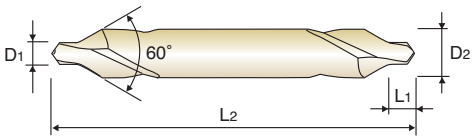
D1303 SERIES
D1343 SERIES

HSS, CENTER DRILLS FORM A
HSS, ZENTRIERBOHRER FORM A

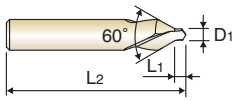
Type A
(D1303, Ø0.5, Ø0.8)



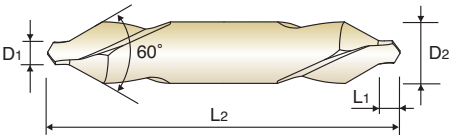
Type A(D1303)



Type A
(D1343, Ø0.5, Ø0.8)



Type A(D1343)



DIN 333 | HSS | h8 | k12 | 120° P.248

DIN 333 | HSS | h8 | k12 | 120° P.248

FORM A (60°)

EDP No.	Drill Diameter D1	Shank Diameter D2	Pilot Length L1	Overall Length L2
D1303005	0.5	3.15	0.8	25
D1303008	0.8	3.15	1.1	25
D1303010	1.0	3.15	1.3	31.5
D1303912	1.25	3.15	1.6	31.5
D1303016	1.6	4	2	35.5
D1303020	2.0	5	2.5	40
D1303025	2.5	6.3	3.1	45
D1303931	3.15	8	3.9	50
D1303040	4.0	10	5	56
D1303050	5.0	12.5	6.3	63
D1303063	6.3	16	8	71
D1303080	8.0	20	10.1	80
D1303100	10.0	25	12.8	100

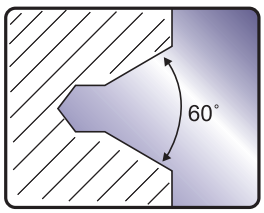
▶ Under 1.0mm : Single End

LEFT HELIX / FORM A (60°)

Unit : mm

EDP No.	Drill Diameter D1	Shank Diameter D2	Pilot Length L1	Overall Length L2
D1343005	0.5	3.15	0.8	25
D1343008	0.8	3.15	1.1	25
D1343010	1.0	3.15	1.3	31.5
D1343912	1.25	3.15	1.6	31.5
D1343016	1.6	4	2	35.5
D1343020	2.0	5	2.5	40
D1343025	2.5	6.3	3.1	45
D1343931	3.15	8	3.9	50
D1343040	4.0	10	5	56
D1343050	5.0	12.5	6.3	63
D1343063	6.3	16	8	71
D1343080	8.0	20	10.1	80

▶ Under 1.0mm : Single End



◎ : Excellent ○ : Good

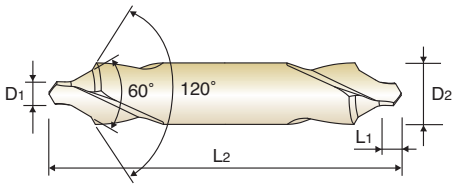
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	○	○	○	○	○	

CENTER DRILLS

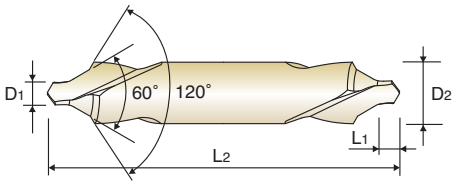
D1313 SERIES
D1353 SERIES

HSS, CENTER DRILLS FORM B
HSS, ZENTRIERBOHRER FORM B

Type B(D1313)



Type B(D1353)



DIN 333 | HSS | h8 | k12 | 120° P.248

FORM B (60° + 120°)

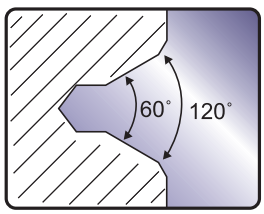
EDP No.	Drill Diameter D1	Shank Diameter D2	Pilot Length L1	Overall Length L2
D1313010	1.0	4	1.3	35.5
D1313912	1.25	5	1.6	40
D1313016	1.6	6.3	2	45
D1313020	2.0	8	2.5	50
D1313025	2.5	10	3.1	55
D1313931	3.15	11.2	3.9	60
D1313040	4.0	14	5	67
D1313050	5.0	18	6.3	75
D1313063	6.3	20	8	80

DIN 333 | HSS | h8 | k12 | 120° P.248

LEFT HELIX / FORM B (60° + 120°)

Unit : mm

EDP No.	Drill Diameter D1	Shank Diameter D2	Pilot Length L1	Overall Length L2
D1353020	2.0	8	2.5	50
D1353025	2.5	10	3.1	55
D1353931	3.15	11.2	3.9	60
D1353040	4.0	14	5	67
D1353063	6.3	20	8	80



◎ : Excellent ○ : Good

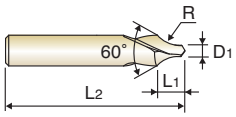
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	○	○	○	○	○	

YG CENTER DRILLS

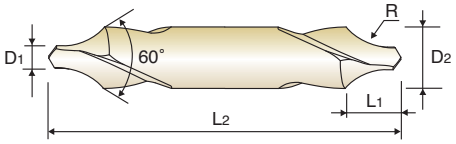
D1363 SERIES
D1373 SERIES

HSS, CENTER DRILLS FORM R
HSS, ZENTRIERBOHRER FORM R

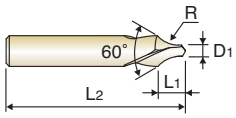
Type R
(D1363, Ø0.5, Ø0.8)



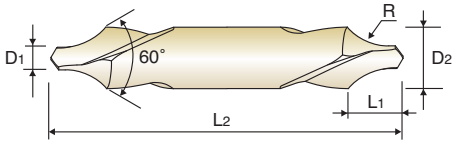
Type R(D1363)



Type R
(D1373, Ø0.8)



Type R (D1373)



DIN 333 | HSS | h8 | k12 | 120° P.248

DIN 333 | HSS | h8 | k12 | 120° P.248

FORM R

EDP No.	Drill Diameter	Shank Diameter	Pilot Length (Include Radius)	Overall Length	Radius
	D1	D2	L1	L2	R
D1363005	0.5	3.15	2.12	25	1.25
D1363008	0.8	3.15	2.65	25	2
D1363010	1.0	3.15	3	31.5	2.5
D1363912	1.25	3.15	3.35	31.5	3.15
D1363016	1.6	4	4.25	35.5	4
D1363020	2.0	5	5.3	40	5
D1363025	2.5	6.3	6.7	45	6.3
D1363931	3.15	8	8.5	50	8
D1363040	4.0	10	10.6	56	10
D1363050	5.0	12.5	13.2	63	12.5
D1363063	6.3	16	17	71	16
D1363080	8.0	20	21.2	80	20

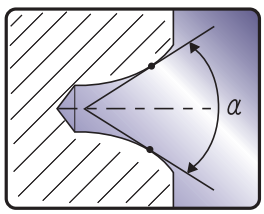
▶ Under 1.0mm : Single End

LEFT HELIX / FORM R

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Pilot Length (Include Radius)	Overall Length	Radius
	D1	D2	L1	L2	R
D1373008	0.8	3.15	2.65	25	2
D1373010	1.0	3.15	3	31.5	2.5
D1373912	1.25	3.15	3.35	31.5	3.15
D1373016	1.6	4	4.25	35.5	4
D1373020	2.0	5	5.3	40	5
D1373025	2.5	6.3	6.7	45	6.3
D1373931	3.15	8	8.5	50	8
D1373040	4.0	10	10.6	56	10
D1373050	5.0	12.5	13.2	63	12.5

▶ Under 1.0mm : Single End



◎ : Excellent ○ : Good

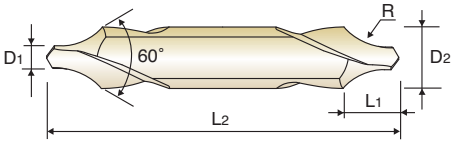
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	○	○	○	○	○	

CENTER DRILLS

DV383 SERIES

HSS-EX, CENTER DRILLS FORM R
HSS-EX, ZENTRIERBOHRER FORM R

Type R (DV383)

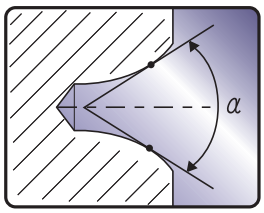


DIN 333 | HSS EX | h8 | k12 | 120° P.248

FORM R / FLAT

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Pilot Length (Include Radius)	Overall Length	Radius
	D1	D2	L1	L2	R
DV383016	1.6	4	4.25	35.5	4
DV383020	2.0	5	5.3	40	5
DV383025	2.5	6.3	6.7	45	6.3
DV383931	3.15	8	8.5	50	8
DV383040	4.0	10	10.6	56	10
DV383050	5.0	12.5	13.2	63	12.5
DV383063	6.3	16	17	71	16



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze	CFRP
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎				○	○	○	○	○	○	○	

CENTER DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

HSS & HSS-EX, CENTER DRILLS
HSS & HSS-EX, ZENTRIERBOHRER

DV303, DV333, DV334, D1303, D1343, D1313, D1353, D1363, D1373, DV383 SERIES

WORK MATERIAL	MILD STEEL		ALLOY STEEL				STAINLESS STEEL	
HARDNESS	< 700 N/mm²		~ HRc 23		~ HRc 32			
DIAMETER	SPEED	FEED	SPEED	FEED	SPEED	FEED	SPEED	FEED
2.0	30 ~ 45	0.02~0.05	25 ~ 30	0.02~0.05	15 ~ 25	0.01~0.03	6 ~ 10	0.01~0.03
3.0		0.06		0.06		0.04		0.04
6.0		0.08		0.08		0.06		0.06
10.0		0.15		0.15		0.10		0.10

SPEED(Shank Dia.) = m/min
FEED(Drill Dia.) = mm/rev

INSERTS & HOLDERS

Being the best through innovation

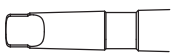
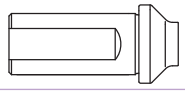
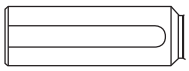
SPADE DRILLS
BOHRMESSER

- **For General Machines and Drilling Large Diameters Longer Tool Life and High Productivity**
- **VHM für lange Standzeit; HSS-PM für große Durchmesserund konventionelle Maschinen. Grßere Produktivität als andere Bohrer**

SPADE DRILL INSERTS

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
SERIES 1~8		SPADE DRILL INSERTS - HSS M4 EINWEG BOHREINSATZ - HSS M4	Ø17.86 (#1)	Ø114.3 (#8)	252
SERIES Y,Z,0,1~4		SPADE DRILL INSERTS - SUPER HSS T15 EINWEG BOHREINSATZ - SUPER HSS T15	Ø9.5 (#Y)	Ø65.09 (#4)	258
SERIES Y,Z,0,1,2		SPADE DRILL INSERTS - PREMIUM HSS M48 EINWEG BOHREINSATZ - PREMIUM HSS M48	Ø9.5 (#Y)	Ø35 (#2)	263
SERIES Y,Z,0,1,2		SPADE DRILL INSERTS for CAST IRON - CARBIDE(K10) EINWEG BOHREINSATZ - VOLLHARTMETALL (K10)	Ø9.5 (#Y)	Ø35 (#2)	266
SERIES Y,Z,0,1~3		SPADE DRILL INSERTS - CARBIDE(K20) EINWEG BOHREINSATZ - VOLLHARTMETALL (K20)	Ø9.5 (#Y)	Ø47.63 (#3)	269
SERIES Y,Z,0,1~3		SPADE DRILL INSERTS - CARBIDE(P40) EINWEG BOHREINSATZ - VOLLHARTMETALL (P40)	Ø9.5 (#Y)	Ø47.63 (#3)	273
SERIES 1~3		SM-POINT SPADE DRILL INSERTS - HSS M4 SM-POINT EINWEG BOHREINSATZ - HSS M4	Ø17.86 (#1)	Ø47.63 (#3)	278
SERIES Y,Z,0,1~3		SM-POINT SPADE DRILL INSERTS - SUPER HSS T15 SM-POINT EINWEG BOHREINSATZ - SUPER HSS T15	Ø9.5 (#Y)	Ø47.63 (#3)	281
SERIES Y,Z,0,1,2		SM-POINT SPADE DRILL INSERTS - PREMIUM HSS M48 SM-POINT EINWEG BOHREINSATZ - PREMIUM HSS M48	Ø9.5 (#Y)	Ø35 (#2)	285
SERIES Y,Z,0,1,2		SM-POINT SPADE DRILL INSERTS for CAST IRON - CARBIDE(K10) SM-POINT EINWEG BOHREINSATZ - VOLLHARTMETALL (K10)	Ø9.5 (#Y)	Ø35 (#2)	288
SERIES Y,Z,0,1~3		SM-POINT SPADE DRILL INSERTS - CARBIDE(K20) SM-POINT EINWEG BOHREINSATZ - VOLLHARTMETALL (K20)	Ø9.5 (#Y)	Ø47.63 (#3)	291
SERIES Y,Z,0,1~3		SM-POINT SPADE DRILL INSERTS - CARBIDE(P40) SM-POINT EINWEG BOHREINSATZ - VOLLHARTMETALL (P40)	Ø9.5 (#Y)	Ø47.63 (#3)	295
SERIES Y,Z,0,1,2		SPADE DRILL INSERTS - SUPER COBALT T15 FLAT BOTTOM SPADE DRILL BOHRER-EINSÄTZE - SUPER COBALT T15(FLACH-NUT)	Ø9.5 (#Y)	Ø35 (#2)	299

SPADE DRILL HOLDERS

TAPER SHANK		TAPER SHANK HOLDERS - INCH/METRIC HALTER MIT MORSEKEGEL	302
FLANGED SHANK		FLANGED STRAIGHT SHANK HOLDERS - INCH/METRIC HALTER MIT ZYLINDERSCHAFT UND SPANNFLÄCHE	312
STRAIGHT SHANK		STRAIGHT SHANK HOLDERS - INCH HALTER MIT ZYLINDERSCHAFT	319

◎ : Excellent
○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
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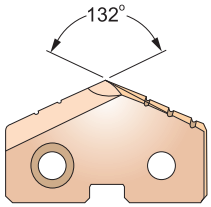
SPADE DRILLS

SERIES 1,2

SPADE DRILL INSERTS - HSS M4
EINWEG BOHREINSATZ - HSS M4

- For general use in steels and cast irons.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Für allgemeine Anwendung in Stahl und Gusseisen
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.325

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	HSS (M4) TiN	HSS (M4) TiCN	HSS (M4) TiAlN
1 17.53 (.690″) to 24.38 (.960″)	45/64″	17.86	.7031″	4.0 (5/32″)	S1405045	S1410045	S1415045
		18.00	.7087″		S1455180	S1460180	S1465180
	23/32″	18.26	.7188″		S1405046	S1410046	S1415046
		18.50	.7283″		S1455185	S1460185	S1465185
	47/64″	18.65	.7344″		S1405047	S1410047	S1415047
		19.00	.7480″		S1455190	S1460190	S1465190
	3/4″	19.05	.7500″		S1405048	S1410048	S1415048
	49/64″	19.45	.7656″		S1405049	S1410049	S1415049
		19.50	.7677″		S1455195	S1460195	S1465195
	25/32″	19.84	.7813″		S1405050	S1410050	S1415050
		20.00	.7874″		S1455200	S1460200	S1465200
	51/64″	20.24	.7969″		S1405051	S1410051	S1415051
		20.50	.8071″		S1455205	S1460205	S1465205
	13/16″	20.64	.8125″		S1405052	S1410052	S1415052
		21.00	.8268″		S1455210	S1460210	S1465210
	27/32″	21.43	.8438″		S1405054	S1410054	S1415054
	55/64″	21.83	.8594″		S1405055	S1410055	S1415055
		22.00	.8661″		S1455220	S1460220	S1465220
	7/8″	22.23	.8750″		S1405056	S1410056	S1415056
	57/64″	22.62	.8906″		S1405057	S1410057	S1415057
		23.00	.9055″		S1455230	S1460230	S1465230
	29/32″	23.02	.9063″		S1405058	S1410058	S1415058
	59/64″	23.42	.9219″		S1405059	S1410059	S1415059
	15/16″	23.81	.9375″		S1405060	S1410060	S1415060
		24.00	.9449″		S1455240	S1460240	S1465240
2 24.41 (.961″) to 35.05 (1.380″)	31/32″	24.61	.9688″	4.8 (3/16″)	S1405062	S1410062	S1415062
	63/64″	25.00	.9843″		S1455250	S1460250	S1465250
	1″	25.40	1.0000″		S1405100	S1410100	S1415100
	1-1/64″	25.80	1.0156″		S1405101	S1410101	S1415101
		26.00	1.0236″		S1455260	S1460260	S1465260
	1-1/32″	26.19	1.0313″		S1405102	S1410102	S1415102
	1-3/64″	26.59	1.0469″		S1405103	S1410103	S1415103
	1-1/16″	26.99	1.0625″		S1405104	S1410104	S1415104
		27.00	1.0630″		S1455270	S1460270	S1465270

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
○	○	○	○		○		○	○			◎	◎	○	◎	◎

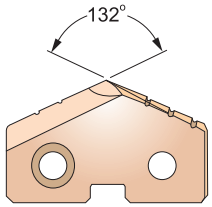
SPADE DRILLS

SERIES 2,3

SPADE DRILL INSERTS - HSS M4
EINWEG BOHREINSATZ - HSS M4

- For general use in steels and cast irons.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Für allgemeine Anwendung in Stahl und Gusseisen
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.325

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	HSS (M4)		
					TiN	TiCN	TiAlN
2 24.41 (.961″) to 35.05 (1.380″)	1-3/32″	27.78	1.0938″	4.8 (3/16″)	S1405106	S1410106	S1415106
		28.00	1.1024″		S1455280	S1460280	S1465280
	1-7/64″	28.18	1.1094″		S1405107	S1410107	S1415107
	1-1/8″	28.58	1.1250″		S1405108	S1410108	S1415108
		29.00	1.1417″		S1455290	S1460290	S1465290
	1-5/32″	29.37	1.1563″		S1405110	S1410110	S1415110
		30.00	1.1811″		S1455300	S1460300	S1465300
	1-3/16″	30.16	1.1875″		S1405112	S1410112	S1415112
	1-7/32″	30.96	1.2188″		S1405114	S1410114	S1415114
		31.00	1.2205″		S1455310	S1460310	S1465310
	1-1/4″	31.75	1.2500″		S1405116	S1410116	S1415116
		32.00	1.2598″		S1455320	S1460320	S1465320
	1-9/32″	32.54	1.2813″		S1405118	S1410118	S1415118
		33.00	1.2992″		S1455330	S1460330	S1465330
	1-5/16″	33.34	1.3125″		S1405120	S1410120	S1415120
		34.00	1.3386″		S1455340	S1460340	S1465340
	1-11/32″	34.13	1.3438″		S1405122	S1410122	S1415122
	1-3/8″	34.93	1.3750″		S1405124	S1410124	S1415124
		35.00	1.3780″		S1455350	S1460350	S1465350
3 34.37 (1.353″) to 47.80 (1.882″)	1-13/32″	35.72	1.4063″	6.4 (1/4″)	S1405126	S1410126	S1415126
		36.00	1.4173″		S1455360	S1460360	S1465360
	1-7/16″	36.51	1.4375″		S1405128	S1410128	S1415128
		37.00	1.4567″		S1455370	S1460370	S1465370
	1-15/32″	37.31	1.4688″		S1405130	S1410130	S1415130
		38.00	1.4961″		S1455380	S1460380	S1465380
	1-1/2″	38.10	1.5000″		S1405132	S1410132	S1415132
	1-17/32″	38.89	1.5313″		S1405134	S1410134	S1415134
		39.00	1.5354″		S1455390	S1460390	S1465390
	1-9/16″	39.69	1.5625″		S1405136	S1410136	S1415136
		40.00	1.5748″		S1455400	S1460400	S1465400
	1-19/32″	40.48	1.5938″		S1405138	S1410138	S1415138
		41.00	1.6142″		S1455410	S1460410	S1465410
	1-5/8″	41.28	1.6250″		S1405140	S1410140	S1415140
		42.00	1.6535″		S1455420	S1460420	S1465420

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
○	○	○	○		○		○	○			◎	◎	○	◎	◎

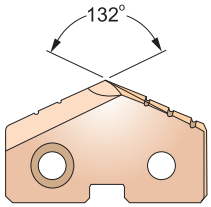
SPADE DRILLS

SERIES 3,4

SPADE DRILL INSERTS - HSS M4
EINWEG BOHREINSATZ - HSS M4

- For general use in steels and cast irons.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Für allgemeine Anwendung in Stahl und Gusseisen
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.325

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	HSS (M4) TiN	HSS (M4) TiCN	HSS (M4) TiAlN
3 34.37 (1.353″) to 47.80 (1.882″)	1-21/32″	42.07	1.6563″	6.4 (1/4″)	S1405142	S1410142	S1415142
	1-11/16″	42.86	1.6875″		S1405144	S1410144	S1415144
		43.00	1.6929″		S1455430	S1460430	S1465430
	1-23/32″	43.66	1.7188″		S1405146	S1410146	S1415146
		44.00	1.7323″		S1455440	S1460440	S1465440
	1-3/4″	44.45	1.7500″		S1405148	S1410148	S1415148
		45.00	1.7717″		S1455450	S1460450	S1465450
	1-25/32″	45.24	1.7813″		S1405150	S1410150	S1415150
		46.00	1.8110″		S1455460	S1460460	S1465460
	1-13/16″	46.04	1.8125″		S1405152	S1410152	S1415152
	1-27/32″	46.83	1.8438″		S1405154	S1410154	S1415154
		47.00	1.8504″		S1455470	S1460470	S1465470
	1-7/8″	47.63	1.8750″		S1405156	S1410156	S1415156
4 46.99 (1.850″) to 65.28 (2.570″)		48.00	1.8898″	7.9 (5/16″)	S1455480	S1460480	S1465480
	1-29/32″	48.42	1.9063″		S1405158	S1410158	S1415158
		49.00	1.9291″		S1455490	S1460490	S1465490
	1-15/16″	49.21	1.9375″		S1405160	S1410160	S1415160
		50.00	1.9685″		S1455500	S1460500	S1465500
	1-31/32″	50.01	1.9688″		S1405162	S1410162	S1415162
	2″	50.80	2.0000″		S1405200	S1410200	S1415200
		51.00	2.0079″		S1455510	S1460510	S1465510
	2-1/32″	51.59	2.0313″		S1405202	S1410202	S1415202
	2-3/64″	52.00	2.0472″		S1455520	S1460520	S1465520
	2-1/16″	52.39	2.0625″		S1405204	S1410204	S1415204
		53.00	2.0866″		S1455530	S1460530	S1465530
	2-3/32″	53.18	2.0938″		S1405206	S1410206	S1415206
	2-1/8″	53.98	2.1250″		S1405208	S1410208	S1415208
		54.00	2.1260″		S1455540	S1460540	S1465540
	2-5/32″	54.77	2.1563″		S1405210	S1410210	S1415210
		55.00	2.1654″		S1455550	S1460550	S1465550
	2-3/16″	55.56	2.1875″		S1405212	S1410212	S1415212
		56.00	2.2047″		S1455560	S1460560	S1465560
	2-7/32″	56.36	2.2188″		S1405214	S1410214	S1415214
		57.00	2.2441″		S1455570	S1460570	S1465570

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
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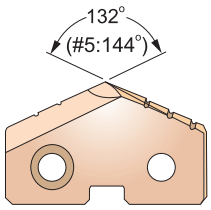
SPADE DRILLS

SERIES 4,5

SPADE DRILL INSERTS - HSS M4
EINWEG BOHREINSATZ - HSS M4

- For general use in steels and cast irons.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Für allgemeine Anwendung in Stahl und Gusseisen
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.325

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	HSS (M4) TiN	HSS (M4) TiCN	HSS (M4) TiAlN
4 46.99 (1.850″) to 65.28 (2.570″)	2-1/4″	57.15	2.2500″	7.9 (5/16″)	S1405216	S1410216	S1415216
	2-9/32″	57.94	2.2813″		S1405218	S1410218	S1415218
		58.00	2.2835″		S1455580	S1460580	S1465580
	2-5/16″	58.74	2.3125″		S1405220	S1410220	S1415220
		59.00	2.3228″		S1455590	S1460590	S1465590
	2-11/32″	59.53	2.3438″		S1405222	S1410222	S1415222
		60.00	2.3622″		S1455600	S1460600	S1465600
	2-3/8″	60.33	2.3750″		S1405224	S1410224	S1415224
		61.00	2.4016″		S1455610	S1460610	S1465610
	2-13/32″	61.12	2.4063″		S1405226	S1410226	S1415226
	2-7/16″	61.91	2.4375″		S1405228	S1410228	S1415228
		62.00	2.4409″		S1455620	S1460620	S1465620
	2-15/32″	62.71	2.4688″		S1405230	S1410230	S1415230
		63.00	2.4803″		S1455630	S1460630	S1465630
	2-1/2″	63.50	2.5000″		S1405232	S1410232	S1415232
		64.00	2.5197″		S1455640	S1460640	S1465640
	2-17/32″	64.29	2.5313″		S1405234	S1410234	S1415234
		65.00	2.5591″		S1455650	S1460650	S1465650
	2-9/16″	65.09	2.5625″		S1405236	S1410236	S1415236
5 62.38 (2.456″) to 76.20 (3.000″)	2-1/2″	63.50	2.5000″	11.1 (7/16″)	S14052D2	S14102D2	S14152D2
		64.00	2.5197″		S145564A	S146064A	S146564A
	2-17/32″	64.29	2.5313″		S14052D4	S14102D4	S14152D4
	2-9/16″	65.09	2.5625″		S14052D6	S14102D6	S14152D6
	2-19/32″	65.88	2.5938″		S1405238	S1410238	S1415238
		66.00	2.5984″		S1455660	S1460660	S1465660
	2-5/8″	66.68	2.6250″		S1405240	S1410240	S1415240
	2-21/32″	67.47	2.6563″		S1405242	S1410242	S1415242
		68.00	2.6772″		S1455680	S1460680	S1465680
	2-11/16″	68.26	2.6875″		S1405244	S1410244	S1415244
	2-23/32″	69.05	2.7188″		S1405246	S1410246	S1415246
	2-3/4″	69.85	2.7500″		S1405248	S1410248	S1415248
		70.00	2.7559″		S1455700	S1460700	S1465700
	2-25/32″	70.64	2.7813″		S1405250	S1410250	S1415250
	2-13/16″	71.44	2.8125″		S1405252	S1410252	S1415252

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
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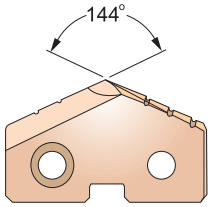
SPADE DRILLS

SERIES 5,6,7

SPADE DRILL INSERTS - HSS M4
EINWEG BOHREINSATZ - HSS M4

- For general use in steels and cast irons.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Für allgemeine Anwendung in Stahl und Gusseisen
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.325

Series Min. to Max. (mm/inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm/inch)	EDP No. HSS (M4) TiN	TiCN	TiAlN
5		72.00	2.8346″	11.1 (7/16″)	S1455720	S1460720	S1465720
62.38 (2.456″) to 76.20 (3.000″)	2-27/32″	72.23	2.8438″		S1405254	S1410254	S1415254
	2-7/8″	73.03	2.8750″		S1405256	S1410256	S1415256
	2-29/32″	73.82	2.9063″		S1405258	S1410258	S1415258
		74.00	2.9134″		S1455740	S1460740	S1465740
	2-15/16″	74.61	2.9375″		S1405260	S1410260	S1415260
	2-31/32″	75.41	2.9688″		S1405262	S1410262	S1415262
		76.00	2.9921″		S1455760	S1460760	S1465760
	3″	76.20	3.0000″		S1405300	S1410300	S1415300
6	3-1/32″	76.99	3.0313″	11.1 (7/16″)	S1405302	S1410302	S1415302
76.23 (3.001″) to 89.08 (3.507″)	3-1/16″	77.79	3.0625″		S1405304	S1410304	S1415304
		78.00	3.0709″		S1455780	S1460780	S1465780
	3-3/32″	78.58	3.0938″		S1405306	S1410306	S1415306
	3-1/8″	79.38	3.1250″		S1405308	S1410308	S1415308
		80.00	3.1496″		S1455800	S1460800	S1465800
	3-5/32″	80.17	3.1563″		S1405310	S1410310	S1415310
	3-3/16″	80.96	3.1875″		S1405312	S1410312	S1415312
	3-7/32″	81.76	3.2188″		S1405314	S1410314	S1415314
		82.00	3.2283″		S1455820	S1460820	S1465820
	3-1/4″	82.55	3.2500″		S1405316	S1410316	S1415316
	3-9/32″	83.34	3.2813″		S1405318	S1410318	S1415318
		84.00	3.3071″		S1455840	S1460840	S1465840
	3-5/16″	84.14	3.3125″		S1405320	S1410320	S1415320
	3-11/32″	84.93	3.3438″		S1405322	S1410322	S1415322
	3-3/8″	85.73	3.3750″		S1405324	S1410324	S1415324
		86.00	3.3858″		S1455860	S1460860	S1465860
	3-13/32″	86.52	3.4063″		S1405326	S1410326	S1415326
	3-7/16″	87.31	3.4375″		S1405328	S1410328	S1415328
		88.00	3.4646″		S1455880	S1460880	S1465880
	3-15/32″	88.11	3.4688″		S1405330	S1410330	S1415330
	3-1/2″	88.90	3.5000″		S1405332	S1410332	S1415332
7	3-17/32″	89.69	3.5313″	11.1 (7/16″)	S1405334	S1410334	S1415334
		90.00	3.5433″		S1455900	S1460900	S1465900
	3-9/16″	90.49	3.5625″		S1405336	S1410336	S1415336

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
○	○	○	○		○		○	○			◎	◎	○	◎	◎

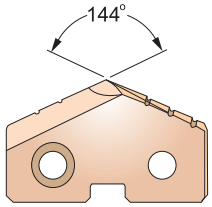
SPADE DRILLS

SERIES 7,8

SPADE DRILL INSERTS - HSS M4
EINWEG BOHREINSATZ - HSS M4

- For general use in steels and cast irons.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Für allgemeine Anwendung in Stahl und Gusseisen
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.325

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	HSS (M4) TiN	HSS (M4) TiCN	HSS (M4) TiAlN
7 87.76 (3.455″) to 101.60 (4.000″)	3-19/32″	91.28	3.5938″	11.1 (7/16″)	S1405338	S1410338	S1415338
		92.00	3.6221″		S1455920	S1460920	S1465920
	3-5/8″	92.08	3.6250″		S1405340	S1410340	S1415340
	3-21/32″	92.87	3.6563″		S1405342	S1410342	S1415342
	3-11/16″	93.66	3.6875″		S1405344	S1410344	S1415344
		94.00	3.7008″		S1455940	S1460940	S1465940
	3-23/32″	94.46	3.7188″		S1405346	S1410346	S1415346
	3-3/4″	95.25	3.7500″		S1405348	S1410348	S1415348
		96.00	3.7795″		S1455960	S1460960	S1465960
	3-25/32″	96.04	3.7813″		S1405350	S1410350	S1415350
	3-13/16″	96.84	3.8125″		S1405352	S1410352	S1415352
	3-27/32″	97.63	3.8438″		S1405354	S1410354	S1415354
		98.00	3.8583″		S1455980	S1460980	S1465980
	3-7/8″	98.43	3.8750″		S1405356	S1410356	S1415356
	3-29/32″	99.22	3.9063″		S1405358	S1410358	S1415358
		100.00	3.9370″		S1455A00	S1460A00	S1465A00
	3-15/16″	100.01	3.9375″		S1405360	S1410360	S1415360
	3-31/32″	100.81	3.9688″		S1405362	S1410362	S1415362
	4″	101.60	4.0000″		S1405400	S1410400	S1415400
8 101.63 (4.001″) to 114.48 (4.507″)	4-1/64″	102.00	4.0157″	11.1 (7/16″)	S1455A20	S1460A20	S1465A20
	4-1/16″	103.19	4.0625″		S1405404	S1410404	S1415404
	4-3/32″	104.00	4.0945″		S1455A40	S1460A40	S1465A40
	4-1/8″	104.78	4.1250″		S1405408	S1410408	S1415408
		106.00	4.1732″		S1455A60	S1460A60	S1465A60
	4-3/16″	106.36	4.1875″		S1405412	S1410412	S1415412
	4-1/4″	107.95	4.2500″		S1405416	S1410416	S1415416
		108.00	4.2520″		S1455A80	S1460A80	S1465A80
	4-5/16″	109.54	4.3125″		S1405420	S1410420	S1415420
		110.00	4.3307″		S1455B00	S1460B00	S1465B00
	4-3/8″	111.13	4.3750″		S1405424	S1410424	S1415424
		112.00	4.4094″		S1455B20	S1460B20	S1465B20
	4-7/16″	112.71	4.4375″		S1405428	S1410428	S1415428
		114.00	4.4882″		S1455B40	S1460B40	S1465B40
	4-1/2″	114.30	4.5000″		S1405432	S1410432	S1415432

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
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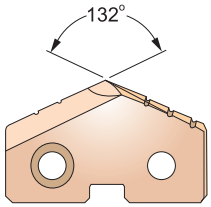
SPADE DRILLS

SERIES Y,Z,0

SPADE DRILL INSERTS - SUPER HSS T15
EINWEG BOHREINSATZ - SUPER HSS T15

- For use in high nickel alloys and materials over 280 Brinell.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Zur Anwendung bei legierten Stählen mit hohem Nickelanteil und Werkstoffen über 280 Brinell
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.325

Series Min. to Max. (mm/inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm/inch)	EDP No. SUPER HSS (T15) TiN	TiCN	TiAlN
Y 9.50 (.374″) to 11.07 (.436″)		9.50	.3740″	2.4 (3/32″)	S1155095	S1160095	S1165095
	3/8″	9.53	.3750″		S1105024	S1110024	S1115024
		9.80	.3860″		S1155098	S1160098	S1165098
	25/64″	9.92	.3906″		S1105025	S1110025	S1115025
		10.00	.3937″		S1155100	S1160100	S1165100
		10.20	.4016″		S1155102	S1160102	S1165102
	13/32″	10.32	.4063″		S1105026	S1110026	S1115026
		10.50	.4134″		S1155105	S1160105	S1165105
	27/64″	10.72	.4219″		S1105027	S1110027	S1115027
		10.80	.4252″		S1155108	S1160108	S1165108
		11.00	.4331″		S1155110	S1160110	S1165110
Z 11.11(.437″) to 12.95(.510″)	7/16″	11.11	.4375″	2.4 (3/32″)	S1105028	S1110028	S1115028
		11.50	.4528″		S1155115	S1160115	S1165115
	29/64″	11.51	.4531″		S1105029	S1110029	S1115029
	15/32″	11.91	.4688″		S1105030	S1110030	S1115030
		12.00	.4724″		S1155120	S1160120	S1165120
	31/64″	12.30	.4844″		S1105031	S1110031	S1115031
		12.50	.4921″		S1155125	S1160125	S1165125
	1/2″	12.70	.5000″		S1105032	S1110032	S1115032
0 12.98 (.511″) to 17.65 (.695″)		13.00	.5118″	3.2 (1/8″)	S1155130	S1160130	S1165130
	33/64″	13.10	.5156″		S1105033	S1110033	S1115033
	17/32″	13.49	.5313″		S1105034	S1110034	S1115034
		13.50	.5315″		S1155135	S1160135	S1165135
	35/64″	13.89	.5469″		S1105035	S1110035	S1115035
		14.00	.5512″		S1155140	S1160140	S1165140
	9/16″	14.29	.5625″		S1105036	S1110036	S1115036
		14.50	.5709″		S1155145	S1160145	S1165145
	37/64″	14.68	.5781″		S1105037	S1110037	S1115037
		15.00	.5906″		S1155150	S1160150	S1165150
	19/32″	15.08	.5938″		S1105038	S1110038	S1115038
	39/64″	15.48	.6094″		S1105039	S1110039	S1115039
		15.50	.6102″		S1155155	S1160155	S1165155
	5/8″	15.88	.6250″		S1105040	S1110040	S1115040
		16.00	.6299″		S1155160	S1160160	S1165160

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
◎	◎	◎	◎	○	○	○	◎	◎	○	○	○	○	◎	○	○

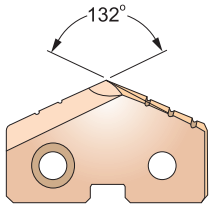
SPADE DRILLS

SERIES 0,1

SPADE DRILL INSERTS - SUPER HSS T15
EINWEG BOHREINSATZ - SUPER HSS T15

- For use in high nickel alloys and materials over 280 Brinell.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Zur Anwendung bei legierten Stählen mit hohem Nickelanteil und Werkstoffen über 280 Brinell
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.325

Series Min. to Max. (mm/inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm/inch)	EDP No. SUPER HSS (T15) TiN	TiCN	TiAlN
0 12.98(.511″) to 17.65(.695″)	41/64″	16.27	.6406″	3.2 (1/8″)	S1105041	S1110041	S1115041
		16.50	.6496″		S1155165	S1160165	S1165165
	21/32″	16.67	.6563″		S1105042	S1110042	S1115042
		17.00	.6693″		S1155170	S1160170	S1165170
	43/64″	17.07	.6719″		S1105043	S1110043	S1115043
	11/16″	17.46	.6875″		S1105044	S1110044	S1115044
		17.50	.6890″		S1155175	S1160175	S1165175
1 17.53 (.690″) to 24.38 (.960″)	45/64″	17.86	.7031″	4.0 (5/32″)	S1105045	S1110045	S1115045
		18.00	.7087″		S1155180	S1160180	S1165180
	23/32″	18.26	.7188″		S1105046	S1110046	S1115046
		18.50	.7283″		S1155185	S1160185	S1165185
	47/64″	18.65	.7344″		S1105047	S1110047	S1115047
		19.00	.7480″		S1155190	S1160190	S1165190
	3/4″	19.05	.7500″		S1105048	S1110048	S1115048
	49/64″	19.45	.7656″		S1105049	S1110049	S1115049
		19.50	.7677″		S1155195	S1160195	S1165195
	25/32″	19.84	.7813″		S1105050	S1110050	S1115050
		20.00	.7874″		S1155200	S1160200	S1165200
	51/64″	20.24	.7969″		S1105051	S1110051	S1115051
		20.50	.8071″		S1155205	S1160205	S1165205
	13/16″	20.64	.8125″		S1105052	S1110052	S1115052
		21.00	.8268″		S1155210	S1160210	S1165210
	27/32″	21.43	.8438″		S1105054	S1110054	S1115054
	55/64″	21.83	.8594″		S1105055	S1110055	S1115055
		22.00	.8661″		S1155220	S1160220	S1165220
	7/8″	22.23	.8750″		S1105056	S1110056	S1115056
	57/64″	22.62	.8906″		S1105057	S1110057	S1115057
		23.00	.9055″		S1155230	S1160230	S1165230
	29/32″	23.02	.9063″		S1105058	S1110058	S1115058
	59/64″	23.42	.9219″		S1105059	S1110059	S1115059
	15/16″	23.81	.9375″		S1105060	S1110060	S1115060
		24.00	.9449″		S1155240	S1160240	S1165240

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
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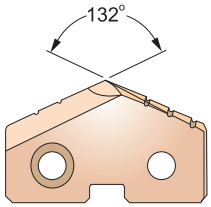
SPADE DRILLS

SERIES 2,3

SPADE DRILL INSERTS - SUPER HSS T15
EINWEG BOHREINSATZ - SUPER HSS T15

- For use in high nickel alloys and materials over 280 Brinell.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Zur Anwendung bei legierten Stählen mit hohem Nickelanteil und Werkstoffen über 280 Brinell
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.325

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No. SUPER HSS (T15)		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN	TiCN	TiAlN
2 24.41 (.961″) to 35.05 (1.380″)	31/32″	24.61	.9688″	4.8 (3/16″)	S1105062	S1110062	S1115062
	63/64″	25.00	.9843″		S1155250	S1160250	S1165250
	1″	25.40	1.0000″		S1105100	S1110100	S1115100
	1-1/64″	25.80	1.0156″		S1105101	S1110101	S1115101
		26.00	1.0236″		S1155260	S1160260	S1165260
	1-1/32″	26.19	1.0313″		S1105102	S1110102	S1115102
	1-3/64″	26.59	1.0469″		S1105103	S1110103	S1115103
	1-1/16″	26.99	1.0625″		S1105104	S1110104	S1115104
		27.00	1.0630″		S1155270	S1160270	S1165270
	1-3/32″	27.78	1.0938″		S1105106	S1110106	S1115106
		28.00	1.1024″		S1155280	S1160280	S1165280
	1-7/64″	28.18	1.1094″		S1105107	S1110107	S1115107
	1-1/8″	28.58	1.1250″		S1105108	S1110108	S1115108
		29.00	1.1417″		S1155290	S1160290	S1165290
	1-5/32″	29.37	1.1563″		S1105110	S1110110	S1115110
		30.00	1.1811″		S1155300	S1160300	S1165300
	1-3/16″	30.16	1.1875″		S1105112	S1110112	S1115112
	1-7/32″	30.96	1.2188″		S1105114	S1110114	S1115114
		31.00	1.2205″		S1155310	S1160310	S1165310
	1-1/4″	31.75	1.2500″		S1105116	S1110116	S1115116
		32.00	1.2598″		S1155320	S1160320	S1165320
	1-9/32″	32.54	1.2813″		S1105118	S1110118	S1115118
	1-5/16″	33.00	1.2992″		S1155330	S1160330	S1165330
		33.34	1.3125″		S1105120	S1110120	S1115120
		34.00	1.3386″		S1155340	S1160340	S1165340
	1-11/32″	34.13	1.3438″		S1105122	S1110122	S1115122
	1-3/8″	34.93	1.3750″		S1105124	S1110124	S1115124
		35.00	1.3780″		S1155350	S1160350	S1165350
3 34.37(1.353″) to 47.80(1.882″)	1-13/32″	35.72	1.4063″	6.4 (1/4″)	S1105126	S1110126	S1115126
		36.00	1.4173″		S1155360	S1160360	S1165360
	1-7/16″	36.51	1.4375″		S1105128	S1110128	S1115128
		37.00	1.4567″		S1155370	S1160370	S1165370
	1-15/32″	37.31	1.4688″		S1105130	S1110130	S1115130
		38.00	1.4961″		S1155380	S1160380	S1165380

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
◎	◎	◎	◎	○	○	○	◎	◎	○	○	○	○	◎	○	○

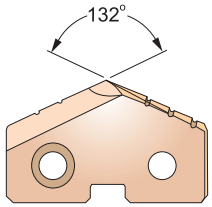
SPADE DRILLS

SERIES 3,4

SPADE DRILL INSERTS - SUPER HSS T15
EINWEG BOHREINSATZ - SUPER HSS T15

- For use in high nickel alloys and materials over 280 Brinell.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Zur Anwendung bei legierten Stählen mit hohem Nickelanteil und Werkstoffen über 280 Brinell
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.325

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	SUPER HSS (T15) TiN	SUPER HSS (T15) TiCN	SUPER HSS (T15) TiAlN
3 34.37 (1.353″) to 47.80 (1.882″)	1-1/2″	38.10	1.5000″	6.4 (1/4″)	S1105132	S1110132	S1115132
	1-17/32″	38.89	1.5313″		S1105134	S1110134	S1115134
		39.00	1.5354″		S1155390	S1160390	S1165390
	1-9/16″	39.69	1.5625″		S1105136	S1110136	S1115136
		40.00	1.5748″		S1155400	S1160400	S1165400
	1-19/32″	40.48	1.5938″		S1105138	S1110138	S1115138
		41.00	1.6142″		S1155410	S1160410	S1165410
	1-5/8″	41.28	1.6250″		S1105140	S1110140	S1115140
		42.00	1.6535″		S1155420	S1160420	S1165420
	1-21/32″	42.07	1.6563″		S1105142	S1110142	S1115142
	1-11/16″	42.86	1.6875″		S1105144	S1110144	S1115144
		43.00	1.6929″		S1155430	S1160430	S1165430
	1-23/32″	43.66	1.7188″		S1105146	S1110146	S1115146
		44.00	1.7323″		S1155440	S1160440	S1165440
	1-3/4″	44.45	1.7500″		S1105148	S1110148	S1115148
		45.00	1.7717″		S1155450	S1160450	S1165450
	1-25/32″	45.24	1.7813″		S1105150	S1110150	S1115150
		46.00	1.8110″		S1155460	S1160460	S1165460
	1-13/16″	46.04	1.8125″		S1105152	S1110152	S1115152
	1-27/32″	46.83	1.8438″		S1105154	S1110154	S1115154
		47.00	1.8504″		S1155470	S1160470	S1165470
	1-7/8″	47.63	1.8750″		S1105156	S1110156	S1115156
4 46.99 (1.850″) to 65.28 (2.570″)		48.00	1.8898″	7.9 (5/16″)	S1155480	S1160480	S1165480
	1-29/32″	48.42	1.9063″		S1105158	S1110158	S1115158
		49.00	1.9291″		S1155490	S1160490	S1165490
	1-15/16″	49.21	1.9375″		S1105160	S1110160	S1115160
		50.00	1.9685″		S1155500	S1160500	S1165500
	1-31/32″	50.01	1.9688″		S1105162	S1110162	S1115162
	2″	50.80	2.0000″		S1105200	S1110200	S1115200
		51.00	2.0079″		S1155510	S1160510	S1165510
	2-1/32″	51.59	2.0313″		S1105202	S1110202	S1115202
	2-3/64″	52.00	2.0472″		S1155520	S1160520	S1165520
	2-1/16″	52.39	2.0625″		S1105204	S1110204	S1115204
		53.00	2.0866″		S1155530	S1160530	S1165530

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
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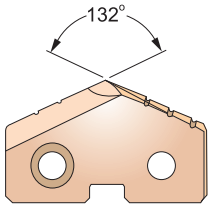
SPADE DRILLS

SERIES 4

SPADE DRILL INSERTS - SUPER HSS T15
EINWEG BOHREINSATZ - SUPER HSS T15

- For use in high nickel alloys and materials over 280 Brinell.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Zur Anwendung bei legierten Stählen mit hohem Nickelanteil und Werkstoffen über 280 Brinell
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.325

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No. SUPER HSS (T15)		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN	TiCN	TiAlN
4 46.99 (1.850″) to 65.28 (2.570″)	2-3/32″	53.18	2.0938″	7.9 (5/16″)	S1105206	S1110206	S1115206
	2-1/8″	53.98	2.1250″		S1105208	S1110208	S1115208
		54.00	2.1260″		S1155540	S1160540	S1165540
	2-5/32″	54.77	2.1563″		S1105210	S1110210	S1115210
		55.00	2.1654″		S1155550	S1160550	S1165550
	2-3/16″	55.56	2.1875″		S1105212	S1110212	S1115212
		56.00	2.2047″		S1155560	S1160560	S1165560
	2-7/32″	56.36	2.2188″		S1105214	S1110214	S1115214
		57.00	2.2441″		S1155570	S1160570	S1165570
	2-1/4″	57.15	2.2500″		S1105216	S1110216	S1115216
	2-9/32″	57.94	2.2813″		S1105218	S1110218	S1115218
		58.00	2.2835″		S1155580	S1160580	S1165580
	2-5/16″	58.74	2.3125″		S1105220	S1110220	S1115220
		59.00	2.3228″		S1155590	S1160590	S1165590
	2-11/32″	59.53	2.3438″		S1105222	S1110222	S1115222
		60.00	2.3622″		S1155600	S1160600	S1165600
	2-3/8″	60.33	2.3750″		S1105224	S1110224	S1115224
		61.00	2.4016″		S1155610	S1160610	S1165610
	2-13/32″	61.12	2.4063″		S1105226	S1110226	S1115226
	2-7/16″	61.91	2.4375″		S1105228	S1110228	S1115228
		62.00	2.4409″		S1155620	S1160620	S1165620
	2-15/32″	62.71	2.4688″		S1105230	S1110230	S1115230
		63.00	2.4803″		S1155630	S1160630	S1165630
	2-1/2″	63.50	2.5000″		S1105232	S1110232	S1115232
		64.00	2.5197″		S1155640	S1160640	S1165640
	2-17/32″	64.29	2.5313″		S1105234	S1110234	S1115234
		65.00	2.5591″		S1155650	S1160650	S1165650
	2-9/16″	65.09	2.5625″		S1105236	S1110236	S1115236

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
◎	◎	◎	◎	○	○	○	◎	◎	○	○	○	○	◎	○	○

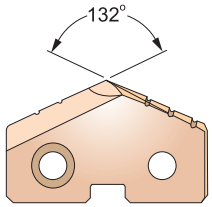
SPADE DRILLS

SERIES Y,Z,0

SPADE DRILL INSERTS - PREMIUM HSS M48
EINWEG BOHREINSATZ - PREMIUM HSS M48

- For use in high temperature alloys and materials with 350~500 Brinell.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Zur Anwendung bei hitzebeständigen Legierungen und Werkstoffen mit 350~500 Brinell
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.325

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
					PREMIUM HSS (M48)		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN	TiCN	TiAlN
Y 9.50 (.374″) to 11.07 (.436″)		9.50	.3740″	2.4 (3/32″)	S1555095	S1560095	S1565095
	3/8″	9.53	.3750″		S1505024	S1510024	S1515024
		9.80	.3860″		S1555098	S1560098	S1565098
	25/64″	9.92	.3906″		S1505025	S1510025	S1515025
		10.00	.3937″		S1555100	S1560100	S1565100
		10.20	.4016″		S1555102	S1560102	S1565102
	13/32″	10.32	.4063″		S1505026	S1510026	S1515026
		10.50	.4134″		S1555105	S1560105	S1565105
	27/64″	10.72	.4219″		S1505027	S1510027	S1515027
		10.80	.4252″		S1555108	S1560108	S1565108
		11.00	.4331″		S1555110	S1560110	S1565110
Z 11.11(.437″) to 12.95(.510″)	7/16″	11.11	.4375″	2.4 (3/32″)	S1505028	S1510028	S1515028
		11.50	.4528″		S1555115	S1560115	S1565115
	29/64″	11.51	.4531″		S1505029	S1510029	S1515029
	15/32″	11.91	.4688″		S1505030	S1510030	S1515030
		12.00	.4724″		S1555120	S1560120	S1565120
	31/64″	12.30	.4844″		S1505031	S1510031	S1515031
		12.50	.4921″		S1555125	S1560125	S1565125
	1/2″	12.70	.5000″		S1505032	S1510032	S1515032
0 12.98 (.511″) to 17.65 (.695″)		13.00	.5118″	3.2 (1/8″)	S1555130	S1560130	S1565130
	33/64″	13.10	.5156″		S1505033	S1510033	S1515033
	17/32″	13.49	.5313″		S1505034	S1510034	S1515034
		13.50	.5315″		S1555135	S1560135	S1565135
	35/64″	13.89	.5469″		S1505035	S1510035	S1515035
		14.00	.5512″		S1555140	S1560140	S1565140
	9/16″	14.29	.5625″		S1505036	S1510036	S1515036
		14.50	.5709″		S1555145	S1560145	S1565145
	37/64″	14.68	.5781″		S1505037	S1510037	S1515037
		15.00	.5906″		S1555150	S1560150	S1565150
	19/32″	15.08	.5938″		S1505038	S1510038	S1515038
	39/64″	15.48	.6094″		S1505039	S1510039	S1515039
		15.50	.6102″		S1555155	S1560155	S1565155
	5/8″	15.88	.6250″		S1505040	S1510040	S1515040
		16.00	.6299″		S1555160	S1560160	S1565160

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	◎	○	○

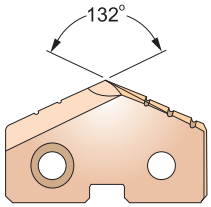
SPADE DRILLS

SERIES 0,1

SPADE DRILL INSERTS - PREMIUM HSS M48
EINWEG BOHREINSATZ - PREMIUM HSS M48

- For use in high temperature alloys and materials with 350~500 Brinell.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Zur Anwendung bei hitzebeständigen Legierungen und Werkstoffen mit 350~500 Brinell
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.325

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	PREMIUM HSS (M48) TiN	TiCN	TiAlN
0 12.98(.511″) to 17.65(.695″)	41/64″	16.27	.6406″	3.2 (1/8″)	S1505041	S1510041	S1515041
		16.50	.6496″		S1555165	S1560165	S1565165
	21/32″	16.67	.6563″		S1505042	S1510042	S1515042
		17.00	.6693″		S1555170	S1560170	S1565170
	43/64″	17.07	.6719″		S1505043	S1510043	S1515043
	11/16″	17.46	.6875″		S1505044	S1510044	S1515044
		17.50	.6890″		S1555175	S1560175	S1565175
1 17.53 (.690″) to 24.38 (.960″)	45/64″	17.86	.7031″	4.0 (5/32″)	S1505045	S1510045	S1515045
		18.00	.7087″		S1555180	S1560180	S1565180
	23/32″	18.26	.7188″		S1505046	S1510046	S1515046
		18.50	.7283″		S1555185	S1560185	S1565185
	47/64″	18.65	.7344″		S1505047	S1510047	S1515047
		19.00	.7480″		S1555190	S1560190	S1565190
	3/4″	19.05	.7500″		S1505048	S1510048	S1515048
	49/64″	19.45	.7656″		S1505049	S1510049	S1515049
		19.50	.7677″		S1555195	S1560195	S1565195
	25/32″	19.84	.7813″		S1505050	S1510050	S1515050
		20.00	.7874″		S1555200	S1560200	S1565200
	51/64″	20.24	.7969″		S1505051	S1510051	S1515051
		20.50	.8071″		S1555205	S1560205	S1565205
	13/16″	20.64	.8125″		S1505052	S1510052	S1515052
		21.00	.8268″		S1555210	S1560210	S1565210
	27/32″	21.43	.8438″		S1505054	S1510054	S1515054
	55/64″	21.83	.8594″		S1505055	S1510055	S1515055
		22.00	.8661″		S1555220	S1560220	S1565220
	7/8″	22.23	.8750″		S1505056	S1510056	S1515056
	57/64″	22.62	.8906″		S1505057	S1510057	S1515057
		23.00	.9055″		S1555230	S1560230	S1565230
	29/32″	23.02	.9063″		S1505058	S1510058	S1515058
	59/64″	23.42	.9219″		S1505059	S1510059	S1515059
	15/16″	23.81	.9375″		S1505060	S1510060	S1515060
		24.00	.9449″		S1555240	S1560240	S1565240

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	◎	○	○

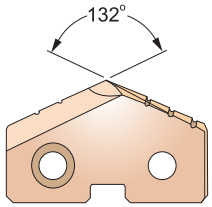
SPADE DRILLS

SERIES 2

SPADE DRILL INSERTS - PREMIUM HSS M48
EINWEG BOHREINSATZ - PREMIUM HSS M48

- For use in high temperature alloys and materials with 350~500 Brinell.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Zur Anwendung bei hitzebeständigen Legierungen und Werkstoffen mit 350~500 Brinell
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.325

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	PREMIUM HSS (M48)		
					TiN	TiCN	TiAlN
2 24.41 (.961″) to 35.05 (1.380″)	31/32″	24.61	.9688″	4.8 (3/16″)	S1505062	S1510062	S1515062
	63/64″	25.00	.9843″		S1555250	S1560250	S1565250
	1″	25.40	1.0000″		S1505100	S1510100	S1515100
	1-1/64″	25.80	1.0156″		S1505101	S1510101	S1515101
		26.00	1.0236″		S1555260	S1560260	S1565260
	1-1/32″	26.19	1.0313″		S1505102	S1510102	S1515102
	1-3/64″	26.59	1.0469″		S1505103	S1510103	S1515103
	1-1/16”	26.99	1.0625″		S1505104	S1510104	S1515104
		27.00	1.0630″		S1555270	S1560270	S1565270
	1-3/32″	27.78	1.0938″		S1505106	S1510106	S1515106
		28.00	1.1024″		S1555280	S1560280	S1565280
	1-7/64″	28.18	1.1094″		S1505107	S1510107	S1515107
	1-1/8″	28.58	1.1250″		S1505108	S1510108	S1515108
		29.00	1.1417″		S1555290	S1560290	S1565290
	1-5/32″	29.37	1.1563″		S1505110	S1510110	S1515110
		30.00	1.1811″		S1555300	S1560300	S1565300
	1-3/16″	30.16	1.1875″		S1505112	S1510112	S1515112
	1-7/32″	30.96	1.2188″		S1505114	S1510114	S1515114
		31.00	1.2205″		S1555310	S1560310	S1565310
	1-1/4″	31.75	1.2500″		S1505116	S1510116	S1515116
		32.00	1.2598″		S1555320	S1560320	S1565320
	1-9/32″	32.54	1.2813″		S1505118	S1510118	S1515118
		33.00	1.2992″		S1555330	S1560330	S1565330
	1-5/16″	33.34	1.3125″		S1505120	S1510120	S1515120
		34.00	1.3386″		S1555340	S1560340	S1565340
	1-11/32″	34.13	1.3438″		S1505122	S1510122	S1515122
	1-3/8″	34.93	1.3750″		S1505124	S1510124	S1515124
		35.00	1.3780″		S1555350	S1560350	S1565350

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
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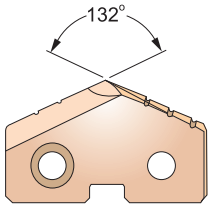
SPADE DRILLS

SERIES Y,Z,0

SPADE DRILL INSERTS FOR CAST IRON - CARBIDE(K10)
EINWEG BOHREINSATZ - VOLLHARTMETALL(K10)

- High performance on Gray cast iron over 220 Brinell, malleable cast iron with short chips, silicon aluminum and copper alloys.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Beste Leistung in Grauguss über 220 Brinell, kurzspanendem Kugelgraphitguss, Si-Aluminium und Kupferlegierungen
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.326

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
					CARBIDE (K10)		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN	TiCN	TiAlN
Y 9.50 (.374″) to 11.07 (.436″)		9.50	.3740″	2.4 (3/32″)	S1655095	S1660095	S1665095
	3/8″	9.53	.3750″		S1605024	S1610024	S1615024
		9.80	.3860″		S1655098	S1660098	S1665098
	25/64″	9.92	.3906″		S1605025	S1610025	S1615025
		10.00	.3937″		S1655100	S1660100	S1665100
		10.20	.4016″		S1655102	S1660102	S1665102
	13/32″	10.32	.4063″		S1605026	S1610026	S1615026
		10.50	.4134″		S1655105	S1660105	S1665105
	27/64″	10.72	.4219″		S1605027	S1610027	S1615027
		10.80	.4252″		S1655108	S1660108	S1665108
		11.00	.4331″		S1655110	S1660110	S1665110
Z 11.11(.437″) to 12.95(.510″)	7/16″	11.11	.4375″	2.4 (3/32″)	S1605028	S1610028	S1615028
		11.50	.4528″		S1655115	S1660115	S1665115
	29/64″	11.51	.4531″		S1605029	S1610029	S1615029
	15/32″	11.91	.4688″		S1605030	S1610030	S1615030
		12.00	.4724″		S1655120	S1660120	S1665120
	31/64″	12.30	.4844″		S1605031	S1610031	S1615031
		12.50	.4921″		S1655125	S1660125	S1665125
	1/2″	12.70	.5000″		S1605032	S1610032	S1615032
0 12.98 (.511″) to 17.65 (.695″)		13.00	.5118″	3.2 (1/8″)	S1655130	S1660130	S1665130
	33/64″	13.10	.5156″		S1605033	S1610033	S1615033
	17/32″	13.49	.5313″		S1605034	S1610034	S1615034
		13.50	.5315″		S1655135	S1660135	S1665135
	35/64″	13.89	.5469″		S1605035	S1610035	S1615035
		14.00	.5512″		S1655140	S1660140	S1665140
	9/16″	14.29	.5625″		S1605036	S1610036	S1615036
		14.50	.5709″		S1655145	S1660145	S1665145
	37/64″	14.68	.5781″		S1605037	S1610037	S1615037
		15.00	.5906″		S1655150	S1660150	S1665150
	19/32″	15.08	.5938″		S1605038	S1610038	S1615038
	39/64″	15.48	.6094″		S1605039	S1610039	S1615039
		15.50	.6102″		S1655155	S1660155	S1665155
	5/8″	15.88	.6250″		S1605040	S1610040	S1615040
		16.00	.6299″		S1655160	S1660160	S1665160

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
												◎	◎		

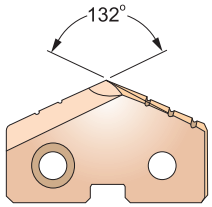
SPADE DRILLS

SERIES 0,1

SPADE DRILL INSERTS FOR CAST IRON - CARBIDE(K10)
EINWEG BOHREINSATZ - VOLLHARTMETALL(K10)

- ▶ High performance on Gray cast iron over 220 Brinell, malleable cast iron with short chips, silicon aluminum and copper alloys.
- ▶ Set up time can be reduced due to changing inserts easily on the machine.
- ▶ Any non-standard size available.

- ▶ Beste Leistung in Grauguss über 220 Brinell, kurzspanendem Kugelgraphitguss, Si-Aluminium und Kupferlegierungen
- ▶ Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- ▶ Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.326

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
					CARBIDE (K10)		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN	TiCN	TiAlN
0 12.98(.511″) to 17.65(.695″)	41/64″	16.27	.6406″	3.2 (1/8″)	S1605041	S1610041	S1615041
		16.50	.6496″		S1655165	S1660165	S1665165
	21/32″	16.67	.6563″		S1605042	S1610042	S1615042
		17.00	.6693″		S1655170	S1660170	S1665170
	43/64″	17.07	.6719″		S1605043	S1610043	S1615043
	11/16″	17.46	.6875″		S1605044	S1610044	S1615044
		17.50	.6890″		S1655175	S1660175	S1665175
1 17.53 (.690″) to 24.38 (.960″)	45/64″	17.86	.7031″	4.0 (5/32″)	S1605045	S1610045	S1615045
		18.00	.7087″		S1655180	S1660180	S1665180
	23/32	18.26	.7188″		S1605046	S1610046	S1615046
		18.50	.7283″		S1655185	S1660185	S1665185
	47/64″	18.65	.7344″		S1605047	S1610047	S1615047
		19.00	.7480″		S1655190	S1660190	S1665190
	3/4″	19.05	.7500″		S1605048	S1610048	S1615048
	49/64″	19.45	.7656″		S1605049	S1610049	S1615049
		19.50	.7677″		S1655195	S1660195	S1665195
	25/32″	19.84	.7813″		S1605050	S1610050	S1615050
		20.00	.7874″		S1655200	S1660200	S1665200
	51/64″	20.24	.7969″		S1605051	S1610051	S1615051
		20.50	.8071″		S1655205	S1660205	S1665205
	13/16″	20.64	.8125″		S1605052	S1610052	S1615052
		21.00	.8268″		S1655210	S1660210	S1665210
	27/32″	21.43	.8438″		S1605054	S1610054	S1615054
	55/64″	21.83	.8594″		S1605055	S1610055	S1615055
		22.00	.8661″		S1655220	S1660220	S1665220
	7/8″	22.23	.8750″		S1605056	S1610056	S1615056
	57/64″	22.62	.8906″		S1605057	S1610057	S1615057
		23.00	.9055″		S1655230	S1660230	S1665230
	29/32″	23.02	.9063″		S1605058	S1610058	S1615058
	59/64″	23.42	.9219″		S1605059	S1610059	S1615059
	15/16″	23.81	.9375″		S1605060	S1610060	S1615060
		24.00	.9449″		S1655240	S1660240	S1665240

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
												◎	◎		

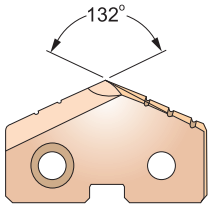
SPADE DRILLS

SERIES 2

SPADE DRILL INSERTS FOR CAST IRON - CARBIDE(K10)
EINWEG BOHREINSATZ - VOLLHARTMETALL(K10)

- High performance on Gray cast iron over 220 Brinell, malleable cast iron with short chips, silicon aluminum and copper alloys.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Beste Leistung in Grauguss über 220 Brinell, kurzspanendem Kugelgraphitguss, Si-Aluminium und Kupferlegierungen
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.326

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
					CARBIDE (K10)		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN	TiCN	TiAlN
2 **24.41 (.961″) to 35.05 (1.380″)**	31/32″	24.61	.9688″	4.8 (3/16″)	S1605062	S1610062	S1615062
	63/64″	25.00	.9843″		S1655250	S1660250	S1665250
	1″	25.40	1.0000″		S1605100	S1610100	S1615100
	1-1/64″	25.80	1.0156″		S1605101	S1610101	S1615101
		26.00	1.0236″		S1655260	S1660260	S1665260
	1-1/32″	26.19	1.0313″		S1605102	S1610102	S1615102
	1-3/64″	26.59	1.0469″		S1605103	S1610103	S1615103
	1-1/16″	26.99	1.0625″		S1605104	S1610104	S1615104
		27.00	1.0630″		S1655270	S1660270	S1665270
	1-3/32″	27.78	1.0938″		S1605106	S1610106	S1615106
		28.00	1.1024″		S1655280	S1660280	S1665280
	1-7/64″	28.18	1.1094″		S1605107	S1610107	S1615107
	1-1/8″	28.58	1.1250″		S1605108	S1610108	S1615108
		29.00	1.1417″		S1655290	S1660290	S1665290
	1-5/32″	29.37	1.1563″		S1605110	S1610110	S1615110
		30.00	1.1811″		S1655300	S1660300	S1665300
	1-3/16″	30.16	1.1875″		S1605112	S1610112	S1615112
	1-7/32″	30.96	1.2188″		S1605114	S1610114	S1615114
		31.00	1.2205″		S1655310	S1660310	S1665310
	1-1/4″	31.75	1.2500″		S1605116	S1610116	S1615116
		32.00	1.2598″		S1655320	S1660320	S1665320
	1-9/32″	32.54	1.2813″		S1605118	S1610118	S1615118
		33.00	1.2992″		S1655330	S1660330	S1665330
	1-5/16″	33.34	1.3125″		S1605120	S1610120	S1615120
		34.00	1.3386″		S1655340	S1660340	S1665340
	1-11/32″	34.13	1.3438″		S1605122	S1610122	S1615122
	1-3/8″	34.93	1.3750″		S1605124	S1610124	S1615124
		35.00	1.3780″		S1655350	S1660350	S1665350

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
												◎	◎		

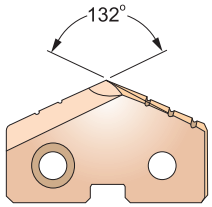
SPADE DRILLS

SERIES Y,Z,0

SPADE DRILL INSERTS - CARBIDE(K20)
EINWEG BOHREINSATZ - VOLLHARTMETALL(K20)

- For use in Gray cast iron up to 220 Brinell, nonferrous metals, copper, brass and aluminum.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Zur Anwendung in Grauguss bis 220 Brinell, Nichteisen - Metallen, Kupfer, Messing und Aluminium
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.326

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No. CARBIDE (K20)		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN	TiCN	TiAlN
Y 9.50 (.374″) to 11.07 (.436″)		9.50	.3740″	2.4 (3/32″)	S1755095	S1760095	S1765095
	3/8″	9.53	.3750″		S1705024	S1710024	S1715024
		9.80	.3860″		S1755098	S1760098	S1765098
	25/64″	9.92	.3906″		S1705025	S1710025	S1715025
		10.00	.3937″		S1755100	S1760100	S1765100
		10.20	.4016″		S1755102	S1760102	S1765102
	13/32″	10.32	.4063″		S1705026	S1710026	S1715026
		10.50	.4134″		S1755105	S1760105	S1765105
	27/64″	10.72	.4219″		S1705027	S1710027	S1715027
		10.80	.4252″		S1755108	S1760108	S1765108
		11.00	.4331″		S1755110	S1760110	S1765110
Z 11.11(.437″) to 12.95(.510″)	7/16″	11.11	.4375″	2.4 (3/32″)	S1705028	S1710028	S1715028
		11.50	.4528″		S1755115	S1760115	S1765115
	29/64″	11.51	.4531″		S1705029	S1710029	S1715029
	15/32″	11.91	.4688″		S1705030	S1710030	S1715030
		12.00	.4724″		S1755120	S1760120	S1765120
	31/64″	12.30	.4844″		S1705031	S1710031	S1715031
		12.50	.4921″		S1755125	S1760125	S1765125
	1/2″	12.70	.5000″		S1705032	S1710032	S1715032
0 12.98 (.511″) to 17.65 (.695″)		13.00	.5118″	3.2 (1/8″)	S1755130	S1760130	S1765130
	33/64″	13.10	.5156″		S1705033	S1710033	S1715033
	17/32″	13.49	.5313″		S1705034	S1710034	S1715034
		13.50	.5315″		S1755135	S1760135	S1765135
	35/64″	13.89	.5469″		S1705035	S1710035	S1715035
		14.00	.5512″		S1755140	S1760140	S1765140
	9/16″	14.29	.5625″		S1705036	S1710036	S1715036
		14.50	.5709″		S1755145	S1760145	S1765145
	37/64″	14.68	.5781″		S1705037	S1710037	S1715037
		15.00	.5906″		S1755150	S1760150	S1765150
	19/32″	15.08	.5938″		S1705038	S1710038	S1715038
	39/64″	15.48	.6094″		S1705039	S1710039	S1715039
		15.50	.6102″		S1755155	S1760155	S1765155
	5/8″	15.88	.6250″		S1705040	S1710040	S1715040
		16.00	.6299″		S1755160	S1760160	S1765160

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
○	○	○	○	○	◎	◎	○	○	○	○	◎	○	○	◎	◎

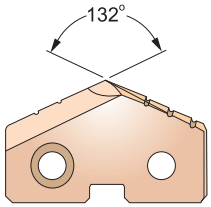
SPADE DRILLS

SERIES 0,1

SPADE DRILL INSERTS - CARBIDE(K20)
EINWEG BOHREINSATZ - VOLLHARTMETALL(K20)

- For use in Gray cast iron up to 220 Brinell, nonferrous metals, copper, brass and aluminum.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Zur Anwendung in Grauguss bis 220 Brinell, Nichteisen - Metallen, Kupfer, Messing und Aluminium
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.326

Series Min. to Max. (mm/inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm/inch)	EDP No. CARBIDE (K20) TiN	TiCN	TiAlN
0 12.98(.511″) to 17.65(.695″)	41/64″	16.27	.6406″	3.2 (1/8″)	S1705041	S1710041	S1715041
		16.50	.6496″		S1755165	S1760165	S1765165
	21/32″	16.67	.6563″		S1705042	S1710042	S1715042
		17.00	.6693″		S1755170	S1760170	S1765170
	43/64″	17.07	.6719″		S1705043	S1710043	S1715043
	11/16″	17.46	.6875″		S1705044	S1710044	S1715044
		17.50	.6890″		S1755175	S1760175	S1765175
1 17.53 (.690″) to 24.38 (.960″)	45/64″	17.86	.7031″	4.0 (5/32″)	S1705045	S1710045	S1715045
		18.00	.7087″		S1755180	S1760180	S1765180
	23/32″	18.26	.7188″		S1705046	S1710046	S1715046
		18.50	.7283″		S1755185	S1760185	S1765185
	47/64″	18.65	.7344″		S1705047	S1710047	S1715047
		19.00	.7480″		S1755190	S1760190	S1765190
	3/4″	19.05	.7500″		S1705048	S1710048	S1715048
	49/64″	19.45	.7656″		S1705049	S1710049	S1715049
		19.50	.7677″		S1755195	S1760195	S1765195
	25/32″	19.84	.7813″		S1705050	S1710050	S1715050
		20.00	.7874″		S1755200	S1760200	S1765200
	51/64″	20.24	.7969″		S1705051	S1710051	S1715051
		20.50	.8071″		S1755205	S1760205	S1765205
	13/16″	20.64	.8125″		S1705052	S1710052	S1715052
		21.00	.8268″		S1755210	S1760210	S1765210
	27/32″	21.43	.8438″		S1705054	S1710054	S1715054
	55/64″	21.83	.8594″		S1705055	S1710055	S1715055
		22.00	.8661″		S1755220	S1760220	S1765220
	7/8″	22.23	.8750″		S1705056	S1710056	S1715056
	57/64″	22.62	.8906″		S1705057	S1710057	S1715057
		23.00	.9055″		S1755230	S1760230	S1765230
	29/32″	23.02	.9063″		S1705058	S1710058	S1715058
	59/64″	23.42	.9219″		S1705059	S1710059	S1715059
	15/16″	23.81	.9375″		S1705060	S1710060	S1715060
		24.00	.9449″		S1755240	S1760240	S1765240

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
○	○	○	○	○	◎	◎	○	○	○	○	◎	○	○	◎	◎

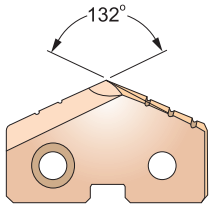
SPADE DRILLS

SERIES 2

SPADE DRILL INSERTS - CARBIDE(K20)
EINWEG BOHREINSATZ - VOLLHARTMETALL(K20)

- For use in Gray cast iron up to 220 Brinell, nonferrous metals, copper, brass and aluminum.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Zur Anwendung in Grauguss bis 220 Brinell, Nichteisen - Metallen, Kupfer, Messing und Aluminium
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.326

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
					CARBIDE (K20)		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN	TiCN	TiAlN
2 24.41 (.961″) to 35.05 (1.380″)	31/32″	24.61	.9688″	4.8 (3/16″)	S1705062	S1710062	S1715062
	63/64″	25.00	.9843″		S1755250	S1760250	S1765250
	1″	25.40	1.0000″		S1705100	S1710100	S1715100
	1-1/64″	25.80	1.0156″		S1705101	S1710101	S1715101
		26.00	1.0236″		S1755260	S1760260	S1765260
	1-1/32″	26.19	1.0313″		S1705102	S1710102	S1715102
	1-3/64″	26.59	1.0469″		S1705103	S1710103	S1715103
	1-1/16″	26.99	1.0625″		S1705104	S1710104	S1715104
		27.00	1.0630″		S1755270	S1760270	S1765270
	1-3/32″	27.78	1.0938″		S1705106	S1710106	S1715106
		28.00	1.1024″		S1755280	S1760280	S1765280
	1-7/64″	28.18	1.1094″		S1705107	S1710107	S1715107
	1-1/8″	28.58	1.1250″		S1705108	S1710108	S1715108
		29.00	1.1417″		S1755290	S1760290	S1765290
	1-5/32″	29.37	1.1563″		S1705110	S1710110	S1715110
		30.00	1.1811″		S1755300	S1760300	S1765300
	1-3/16″	30.16	1.1875″		S1705112	S1710112	S1715112
	1-7/32″	30.96	1.2188″		S1705114	S1710114	S1715114
		31.00	1.2205″		S1755310	S1760310	S1765310
	1-1/4″	31.75	1.2500″		S1705116	S1710116	S1715116
		32.00	1.2598″		S1755320	S1760320	S1765320
	1-9/32″	32.54	1.2813″		S1705118	S1710118	S1715118
		33.00	1.2992″		S1755330	S1760330	S1765330
	1-5/16″	33.34	1.3125″		S1705120	S1710120	S1715120
		34.00	1.3386″		S1755340	S1760340	S1765340
	1-11/32″	34.13	1.3438″		S1705122	S1710122	S1715122
	1-3/8″	34.93	1.3750″		S1705124	S1710124	S1715124
		35.00	1.3780″		S1755350	S1760350	S1765350

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
○	○	○	○	○	◎	◎	○	○	○	○	◎	○	○	◎	◎

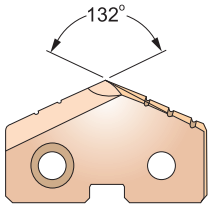
SPADE DRILLS

SERIES 3

SPADE DRILL INSERTS - CARBIDE(K20)
EINWEG BOHREINSATZ - VOLLHARTMETALL(K20)

- For use in Gray cast iron up to 220 Brinell, nonferrous metals, copper, brass and aluminum.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Zur Anwendung in Grauguss bis 220 Brinell, Nichteisen - Metallen, Kupfer, Messing und Aluminium
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.326

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No. CARBIDE (K20)		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN	TiCN	TiAlN
3 34.37 (1.353″) to 47.80 (1.882″)	1-13/32″	35.72	1.4063″	6.4 (1/4″)	S1705126	S1710126	S1715126
		36.00	1.4173″		S1755360	S1760360	S1765360
	1-7/16″	36.51	1.4375″		S1705128	S1710128	S1715128
		37.00	1.4567″		S1755370	S1760370	S1765370
	1-15/32″	37.31	1.4688″		S1705130	S1710130	S1715130
		38.00	1.4961″		S1755380	S1760380	S1765380
	1-1/2″	38.10	1.5000″		S1705132	S1710132	S1715132
	1-17/32″	38.89	1.5313″		S1705134	S1710134	S1715134
		39.00	1.5354″		S1755390	S1760390	S1765390
	1-9/16″	39.69	1.5625″		S1705136	S1710136	S1715136
		40.00	1.5748″		S1755400	S1760400	S1765400
	1-19/32″	40.48	1.5938″		S1705138	S1710138	S1715138
		41.00	1.6142″		S1755410	S1760410	S1765410
	1-5/8″	41.28	1.6250″		S1705140	S1710140	S1715140
		42.00	1.6535″		S1755420	S1760420	S1765420
	1-21/32″	42.07	1.6563″		S1705142	S1710142	S1715142
	1-11/16″	42.86	1.6875″		S1705144	S1710144	S1715144
		43.00	1.6929″		S1755430	S1760430	S1765430
	1-23/32″	43.66	1.7188″		S1705146	S1710146	S1715146
		44.00	1.7323″		S1755440	S1760440	S1765440
	1-3/4″	44.45	1.7500″		S1705148	S1710148	S1715148
		45.00	1.7717″		S1755450	S1760450	S1765450
	1-25/32″	45.24	1.7813″		S1705150	S1710150	S1715150
		46.00	1.8110″		S1755460	S1760460	S1765460
	1-13/16″	46.04	1.8125″		S1705152	S1710152	S1715152
	1-27/32″	46.83	1.8438″		S1705154	S1710154	S1715154
		47.00	1.8504″		S1755470	S1760470	S1765470
	1-7/8″	47.63	1.8750″		S1705156	S1710156	S1715156

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
○	○	○	○	○	◎	◎	○	○	○	○	◎	○	○	◎	◎

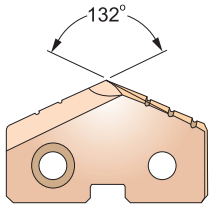
SPADE DRILLS

SERIES Y,Z,0

SPADE DRILL INSERTS - CARBIDE(P40)
EINWEG BOHREINSATZ - VOLLHARTMETALL(P40)

- For general use in carbon steels and alloy steels.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Für allgemeine Anwendung in Kohlenstoffstählen und legierten Stählen
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.326

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No. CARBIDE (P40)		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN	TiCN	TiAlN
Y 9.50 (.374″) to 11.07 (.436″)		9.50	.3740″	2.4 (3/32″)	S1855095	S1860095	S1865095
	3/8″	9.53	.3750″		S1805024	S1810024	S1815024
		9.80	.3860″		S1855098	S1860098	S1865098
	25/64″	9.92	.3906″		S1805025	S1810025	S1815025
		10.00	.3937″		S1855100	S1860100	S1865100
		10.20	.4016″		S1855102	S1860102	S1865102
	13/32″	10.32	.4063″		S1805026	S1810026	S1815026
		10.50	.4134″		S1855105	S1860105	S1865105
	27/64″	10.72	.4219″		S1805027	S1810027	S1815027
		10.80	.4252″		S1855108	S1860108	S1865108
		11.00	.4331″		S1855110	S1860110	S1865110
Z 11.11(.437″) to 12.95(.510″)	7/16″	11.11	.4375″	2.4 (3/32″)	S1805028	S1810028	S1815028
		11.50	.4528″		S1855115	S1860115	S1865115
	29/64″	11.51	.4531″		S1805029	S1810029	S1815029
	15/32″	11.91	.4688″		S1805030	S1810030	S1815030
		12.00	.4724″		S1855120	S1860120	S1865120
	31/64″	12.30	.4844″		S1805031	S1810031	S1815031
		12.50	.4921″		S1855125	S1860125	S1865125
	1/2″	12.70	.5000″		S1805032	S1810032	S1815032
0 12.98 (.511″) to 17.65 (.695″)		13.00	.5118″	3.2 (1/8″)	S1855130	S1860130	S1865130
	33/64″	13.10	.5156″		S1805033	S1810033	S1815033
	17/32″	13.49	.5313″		S1805034	S1810034	S1815034
		13.50	.5315″		S1855135	S1860135	S1865135
	35/64″	13.89	.5469″		S1805035	S1810035	S1815035
		14.00	.5512″		S1855140	S1860140	S1865140
	9/16″	14.29	.5625″		S1805036	S1810036	S1815036
		14.50	.5709″		S1855145	S1860145	S1865145
	37/64″	14.68	.5781″		S1805037	S1810037	S1815037
		15.00	.5906″		S1855150	S1860150	S1865150
	19/32″	15.08	.5938″		S1805038	S1810038	S1815038
	39/64″	15.48	.6094″		S1805039	S1810039	S1815039
		15.50	.6102″		S1855155	S1860155	S1865155
	5/8″	15.88	.6250″		S1805040	S1810040	S1815040
		16.00	.6299″		S1855160	S1860160	S1865160

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○

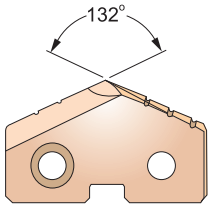
SPADE DRILLS

SERIES 0,1

SPADE DRILL INSERTS - CARBIDE(P40)
EINWEG BOHREINSATZ - VOLLHARTMETALL(P40)

- For general use in carbon steels and alloy steels.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Für allgemeine Anwendung in Kohlenstoffstählen und legierten Stählen
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.326

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No. CARBIDE (P40)		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN	TiCN	TiAlN
0 12.98(.511″) to 17.65(.695″)	41/64″	16.27	.6406″	3.2 (1/8″)	S1805041	S1810041	S1815041
		16.50	.6496″		S1855165	S1860165	S1865165
	21/32″	16.67	.6563″		S1805042	S1810042	S1815042
		17.00	.6693″		S1855170	S1860170	S1865170
	43/64″	17.07	.6719″		S1805043	S1810043	S1815043
	11/16″	17.46	.6875″		S1805044	S1810044	S1815044
		17.50	.6890″		S1855175	S1860175	S1865175
1 17.53 (.690″) to 24.38 (.960″)	45/64″	17.86	.7031″	4.0 (5/32″)	S1805045	S1810045	S1815045
		18.00	.7087″		S1855180	S1860180	S1865180
	23/32″	18.26	.7188″		S1805046	S1810046	S1815046
		18.50	.7283″		S1855185	S1860185	S1865185
	47/64″	18.65	.7344″		S1805047	S1810047	S1815047
		19.00	.7480″		S1855190	S1860190	S1865190
	3/4″	19.05	.7500″		S1805048	S1810048	S1815048
	49/64″	19.45	.7656″		S1805049	S1810049	S1815049
		19.50	.7677″		S1855195	S1860195	S1865195
	25/32″	19.84	.7813″		S1805050	S1810050	S1815050
		20.00	.7874″		S1855200	S1860200	S1865200
	51/64″	20.24	.7969″		S1805051	S1810051	S1815051
		20.50	.8071″		S1855205	S1860205	S1865205
	13/16″	20.64	.8125″		S1805052	S1810052	S1815052
		21.00	.8268″		S1855210	S1860210	S1865210
	27/32″	21.43	.8438″		S1805054	S1810054	S1815054
	55/64″	21.83	.8594″		S1805055	S1810055	S1815055
		22.00	.8661″		S1855220	S1860220	S1865220
	7/8″	22.23	.8750″		S1805056	S1810056	S1815056
	57/64″	22.62	.8906″		S1805057	S1810057	S1815057
		23.00	.9055″		S1855230	S1860230	S1865230
	29/32″	23.02	.9063″		S1805058	S1810058	S1815058
	59/64″	23.42	.9219″		S1805059	S1810059	S1815059
	15/16″	23.81	.9375″		S1805060	S1810060	S1815060
		24.00	.9449″		S1855240	S1860240	S1865240

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○

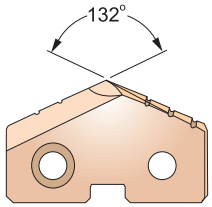
SPADE DRILLS

SERIES 2

SPADE DRILL INSERTS - CARBIDE(P40)
EINWEG BOHREINSATZ - VOLLHARTMETALL(P40)

- For general use in carbon steels and alloy steels.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Für allgemeine Anwendung in Kohlenstoffstählen und legierten Stählen
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.326

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	CARBIDE (P40) TiN	TiCN	TiAlN
2 24.41 (.961″) to 35.05 (1.380″)	31/32″	24.61	.9688″	4.8 (3/16″)	S1805062	S1810062	S1815062
	63/64″	25.00	.9843″		S1855250	S1860250	S1865250
	1″	25.40	1.0000″		S1805100	S1810100	S1815100
	1-1/64″	25.80	1.0156″		S1805101	S1810101	S1815101
		26.00	1.0236″		S1855260	S1860260	S1865260
	1-1/32″	26.19	1.0313″		S1805102	S1810102	S1815102
	1-3/64″	26.59	1.0469″		S1805103	S1810103	S1815103
	1-1/16″	26.99	1.0625″		S1805104	S1810104	S1815104
		27.00	1.0630″		S1855270	S1860270	S1865270
	1-3/32″	27.78	1.0938″		S1805106	S1810106	S1815106
		28.00	1.1024″		S1855280	S1860280	S1865280
	1-7/64″	28.18	1.1094″		S1805107	S1810107	S1815107
	1-1/8″	28.58	1.1250″		S1805108	S1810108	S1815108
		29.00	1.1417″		S1855290	S1860290	S1865290
	1-5/32″	29.37	1.1563″		S1805110	S1810110	S1815110
		30.00	1.1811″		S1855300	S1860300	S1865300
	1-3/16″	30.16	1.1875″		S1805112	S1810112	S1815112
	1-7/32″	30.96	1.2188″		S1805114	S1810114	S1815114
		31.00	1.2205″		S1855310	S1860310	S1865310
	1-1/4″	31.75	1.2500″		S1805116	S1810116	S1815116
		32.00	1.2598″		S1855320	S1860320	S1865320
	1-9/32″	32.54	1.2813″		S1805118	S1810118	S1815118
		33.00	1.2992″		S1855330	S1860330	S1865330
	1-5/16″	33.34	1.3125″		S1805120	S1810120	S1815120
		34.00	1.3386″		S1855340	S1860340	S1865340
	1-11/32″	34.13	1.3438″		S1805122	S1810122	S1815122
	1-3/8″	34.93	1.3750″		S1805124	S1810124	S1815124
		35.00	1.3780″		S1855350	S1860350	S1865350

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○

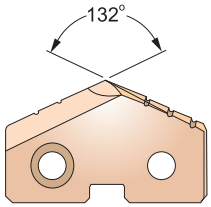
SPADE DRILLS

SERIES 3

SPADE DRILL INSERTS - CARBIDE(P40)
EINWEG BOHREINSATZ - VOLLHARTMETALL(P40)

- For general use in carbon steels and alloy steels.
- Set up time can be reduced due to changing inserts easily on the machine.
- Any non-standard size available.

- Für allgemeine Anwendung in Kohlenstoffstählen und legierten Stählen
- Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.326

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
					CARBIDE (P40)		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN	TiCN	TiAlN
3 34.37 (1.353″) to 47.80 (1.882″)	1-13/32″	35.72	1.4063″	6.4 (1/4″)	S1805126	S1810126	S1815126
		36.00	1.4173″		S1855360	S1860360	S1865360
	1-7/16″	36.51	1.4375″		S1805128	S1810128	S1815128
		37.00	1.4567″		S1855370	S1860370	S1865370
	1-15/32″	37.31	1.4688″		S1805130	S1810130	S1815130
		38.00	1.4961″		S1855380	S1860380	S1865380
	1-1/2″	38.10	1.5000″		S1805132	S1810132	S1815132
	1-17/32″	38.89	1.5313″		S1805134	S1810134	S1815134
		39.00	1.5354″		S1855390	S1860390	S1865390
	1-9/16″	39.69	1.5625″		S1805136	S1810136	S1815136
		40.00	1.5748″		S1855400	S1860400	S1865400
	1-19/32″	40.48	1.5938″		S1805138	S1810138	S1815138
		41.00	1.6142″		S1855410	S1860410	S1865410
	1-5/8″	41.28	1.6250″		S1805140	S1810140	S1815140
		42.00	1.6535″		S1855420	S1860420	S1865420
	1-21/32″	42.07	1.6563″		S1805142	S1810142	S1815142
	1-11/16″	42.86	1.6875″		S1805144	S1810144	S1815144
		43.00	1.6929″		S1855430	S1860430	S1865430
	1-23/32″	43.66	1.7188″		S1805146	S1810146	S1815146
		44.00	1.7323″		S1855440	S1860440	S1865440
	1-3/4″	44.45	1.7500″		S1805148	S1810148	S1815148
		45.00	1.7717″		S1855450	S1860450	S1865450
	1-25/32″	45.24	1.7813″		S1805150	S1810150	S1815150
		46.00	1.8110″		S1855460	S1860460	S1865460
	1-13/16″	46.04	1.8125″		S1805152	S1810152	S1815152
	1-27/32″	46.83	1.8438″		S1805154	S1810154	S1815154
		47.00	1.8504″		S1855470	S1860470	S1865470
	1-7/8″	47.63	1.8750″		S1805156	S1810156	S1815156

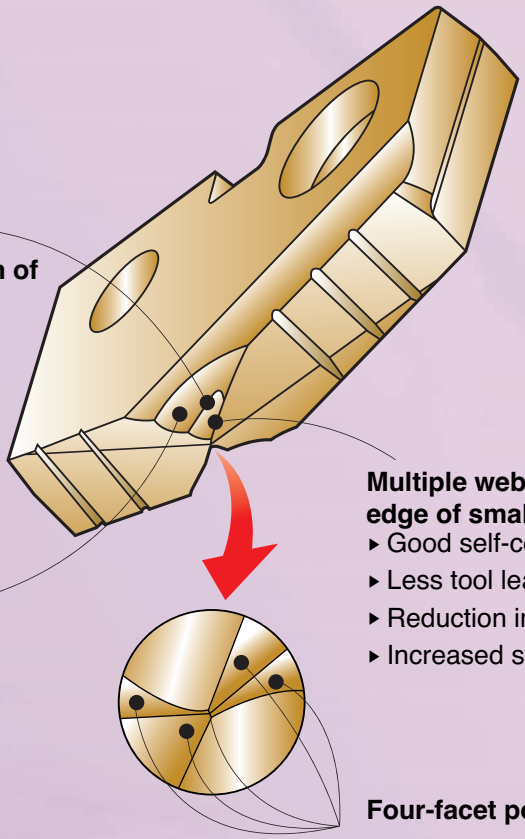
◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○

Special features of SM-Point Spade Drill

This new “Hybrid Point” combines the strength of the standard point with additional “Web Thinning”.

This new point increases stability, reduces thrust, improves centering and allows increased speeds and feeds.



Multiple thinning form at the bottom of the large thinning.

- The optimum thinning for the difference from the cutting speed, the cutting quantity and the cutting load according to the distance from the drill point to the cutting edge.

Radius back face

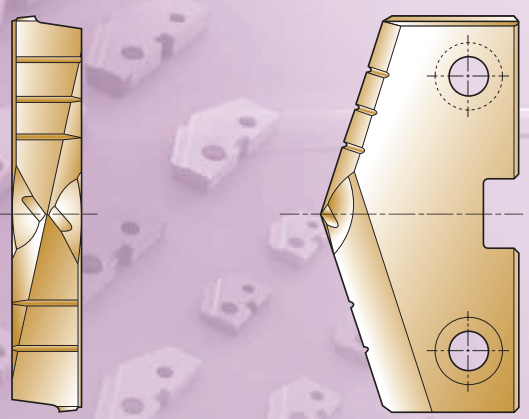
- Wide chip space

Multiple web thinning with the cutting edge of small web thinning.

- Good self-centering
- Less tool lead off
- Reduction in bell mouthing, thrust
- Increased stability

Four-facet point

- Self-centering
- Less thrust force



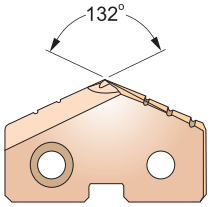
SPADE DRILLS

SERIES 1

SM-POINT SPADE DRILL INSERTS - HSS M4
SM-POINT EINWEG BOHREINSATZ - HSS M4

- For general use in steels and cast irons.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Für allgemeine Anwendung in Stahl und Gusseisen
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelteQuerschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.325

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	HSS (M4)		
					TiN	TiCN	TiAlN
1 17.53 (.690″) to 24.38 (.960″)	45/64″	17.86	.7031"	4.0 (5/32″)	SM405045	SM410045	SM415045
		18.00	.7087"		SM455180	SM460180	SM465180
	23/32″	18.26	.7188"		SM405046	SM410046	SM415046
		18.50	.7283"		SM455185	SM460185	SM465185
	47/64″	18.65	.7344"		SM405047	SM410047	SM415047
		19.00	.7480"		SM455190	SM460190	SM465190
	3/4″	19.05	.7500"		SM405048	SM410048	SM415048
	49/64″	19.45	.7656"		SM405049	SM410049	SM415049
		19.50	.7677"		SM455195	SM460195	SM465195
	25/32″	19.84	.7812"		SM405050	SM410050	SM415050
		20.00	.7874"		SM455200	SM460200	SM465200
	51/64″	20.24	.7969"		SM405051	SM410051	SM415051
		20.50	.8071"		SM455205	SM460205	SM465205
	13/16″	20.64	.8125"		SM405052	SM410052	SM415052
		21.00	.8268"		SM455210	SM460210	SM465210
	27/32″	21.43	.8438"		SM405054	SM410054	SM415054
	55/64″	21.83	.8594"		SM405055	SM410055	SM415055
		22.00	.8661"		SM455220	SM460220	SM465220
	7/8″	22.23	.8750"		SM405056	SM410056	SM415056
	57/64″	22.62	.8906"		SM405057	SM410057	SM415057
		23.00	.9055"		SM455230	SM460230	SM465230
	29/32″	23.02	.9062"		SM405058	SM410058	SM415058
	59/64″	23.42	.9219"		SM405059	SM410059	SM415059
	15/16″	23.81	.9375"		SM405060	SM410060	SM415060
		24.00	.9449"		SM455240	SM460240	SM465240

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
○	○	○	○		○		○	○			◎	◎	○	◎	◎

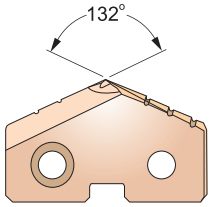
SPADE DRILLS

SERIES 2

SM-POINT SPADE DRILL INSERTS - HSS M4
SM-POINT EINWEG BOHREINSATZ - HSS M4

- For general use in steels and cast irons.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Für allgemeine Anwendung in Stahl und Gusseisen
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelteQuerschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.325

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No. HSS (M4)		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN	TiCN	TiAlN
2 24.41 (.961″) to 35.05 (1.380″)	31/32″	24.61	.9688"	4.8 (3/16″)	SM405062	SM410062	SM415062
	63/64″	25.00	.9843"		SM455250	SM460250	SM465250
	1″	25.40	1.0000"		SM405100	SM410100	SM415100
	1-1/64″	25.80	1.0156"		SM405101	SM410101	SM415101
		26.00	1.0236"		SM455260	SM460260	SM465260
	1-1/32″	26.19	1.0312"		SM405102	SM410102	SM415102
	1-3/64″	26.59	1.0469"		SM405103	SM410103	SM415103
	1-1/16″	26.99	1.0625"		SM405104	SM410104	SM415104
		27.00	1.0630"		SM455270	SM460270	SM465270
	1-3/32″	27.78	1.0938"		SM405106	SM410106	SM415106
		28.00	1.1024"		SM455280	SM460280	SM465280
	1-7/64″	28.18	1.1094"		SM405107	SM410107	SM415107
	1-1/8″	28.58	1.1250"		SM405108	SM410108	SM415108
		29.00	1.1417"		SM455290	SM460290	SM465290
	1-5/32″	29.37	1.1562"		SM405110	SM410110	SM415110
		30.00	1.1811"		SM455300	SM460300	SM465300
	1-3/16″	30.16	1.1875"		SM405112	SM410112	SM415112
	1-7/32″	30.96	1.2188"		SM405114	SM410114	SM415114
		31.00	1.2205"		SM455310	SM460310	SM465310
	1-1/4″	31.75	1.2500"		SM405116	SM410116	SM415116
		32.00	1.2598"		SM455320	SM460320	SM465320
	1-9/32″	32.54	1.2812"		SM405118	SM410118	SM415118
		33.00	1.2992"		SM455330	SM460330	SM465330
	1-5/16″	33.34	1.3125"		SM405120	SM410120	SM415120
		34.00	1.3386"		SM455340	SM460340	SM465340
	1-11/32″	34.13	1.3438"		SM405122	SM410122	SM415122
	1-3/8″	34.93	1.3750"		SM405124	SM410124	SM415124
		35.00	1.3780"		SM455350	SM460350	SM465350

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
○	○	○	○		○		○	○			◎	◎	○	◎	◎

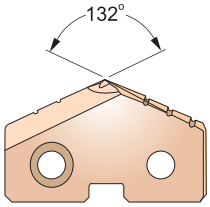
SPADE DRILLS

SERIES 3

SM-POINT SPADE DRILL INSERTS - HSS M4
SM-POINT EINWEG BOHREINSATZ - HSS M4

- For general use in steels and cast irons.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Für allgemeine Anwendung in Stahl und Gusseisen
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelteQuerschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.325

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No. HSS (M4)		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN	TiCN	TiAlN
3 34.37 (1.353″) to 47.80 (1.882″)	1-13/32″	35.72	1.4062"	6.4 (1/4″)	SM405126	SM410126	SM415126
		36.00	1.4173"		SM455360	SM460360	SM465360
	1-7/16″	36.51	1.4375"		SM405128	SM410128	SM415128
		37.00	1.4567"		SM455370	SM460370	SM465370
	1-15/32″	37.31	1.4688"		SM405130	SM410130	SM415130
		38.00	1.4961"		SM455380	SM460380	SM465380
	1-1/2″	38.10	1.5000"		SM405132	SM410132	SM415132
	1-17/32″	38.89	1.5312"		SM405134	SM410134	SM415134
		39.00	1.5354"		SM455390	SM460390	SM465390
	1-9/16″	39.69	1.5625"		SM405136	SM410136	SM415136
		40.00	1.5748"		SM455400	SM460400	SM465400
	1-19/32″	40.48	1.5938"		SM405138	SM410138	SM415138
		41.00	1.6142"		SM455410	SM460410	SM465410
	1-5/8″	41.28	1.6250"		SM405140	SM410140	SM415140
		42.00	1.6535"		SM455420	SM460420	SM465420
	1-21/32″	42.07	1.6562"		SM405142	SM410142	SM415142
	1-11/16″	42.86	1.6875"		SM405144	SM410144	SM415144
		43.00	1.6929"		SM455430	SM460430	SM465430
	1-23/32″	43.66	1.7188"		SM405146	SM410146	SM415146
		44.00	1.7323"		SM455440	SM460440	SM465440
	1-3/4″	44.45	1.7500"		SM405148	SM410148	SM415148
		45.00	1.7717"		SM455450	SM460450	SM465450
	1-25/32″	45.24	1.7812"		SM405150	SM410150	SM415150
		46.00	1.8110"		SM455460	SM460460	SM465460
	1-13/16″	46.04	1.8125"		SM405152	SM410152	SM415152
	1-27/32″	46.83	1.8438"		SM405154	SM410154	SM415154
		47.00	1.8504"		SM455470	SM460470	SM465470
	1-7/8″	47.63	1.8750"		SM405156	SM410156	SM415156

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
○	○	○	○		○		○	○			◎	◎	○	◎	◎

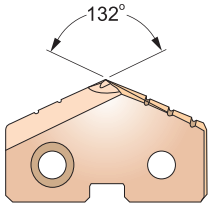
SPADE DRILLS

SERIES Y,Z,0

SM-POINT SPADE DRILL INSERTS - SUPER HSS T15
SM-POINT EINWEG BOHREINSATZ - SUPER HSS T15

- For use in high nickel alloys and materials over 280 Brinell.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Zur Anwendung bei legierten Stählen mit hohem Nickelanteil und Werkstoffen über 280 Brinell
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelteQuerschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.325

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
					SUPER HSS (T15)		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN	TiCN	TiAlN
Y 9.50 (.374″) to 11.07 (.436″)		9.50	.3740"	2.4 (3/32″)	SM155095	SM160095	SM165095
	3/8″	9.53	.3750"		SM105024	SM110024	SM115024
		9.80	.3858"		SM155098	SM160098	SM165098
	25/64″	9.92	.3906"		SM105025	SM110025	SM115025
		10.00	.3937"		SM155100	SM160100	SM165100
		10.20	.4016"		SM155102	SM160102	SM165102
	13/32″	10.32	.4062"		SM105026	SM110026	SM115026
		10.50	.4134"		SM155105	SM160105	SM165105
	27/64″	10.72	.4219"		SM105027	SM110027	SM115027
		10.80	.4252"		SM155108	SM160108	SM165108
		11.00	.4331"		SM155110	SM160110	SM165110
Z 11.11(.437″) to 12.95(.510″)	7/16″	11.11	.4375"	2.4 (3/32″)	SM105028	SM110028	SM115028
		11.50	.4528"		SM155115	SM160115	SM165115
	29/64″	11.51	.4531"		SM105029	SM110029	SM115029
	15/32″	11.91	.4688"		SM105030	SM110030	SM115030
		12.00	.4724"		SM155120	SM160120	SM165120
	31/64″	12.30	.4844"		SM105031	SM110031	SM115031
		12.50	.4921"		SM155125	SM160125	SM165125
	1/2″	12.70	.5000"		SM105032	SM110032	SM115032
0 12.98 (.511″) to 17.65 (.695″)		13.00	.5118"	3.2 (1/8″)	SM155130	SM160130	SM165130
	33/64″	13.10	.5156"		SM105033	SM110033	SM115033
	17/32″	13.49	.5312"		SM105034	SM110034	SM115034
		13.50	.5315"		SM155135	SM160135	SM165135
	35/64″	13.89	.5469"		SM105035	SM110035	SM115035
		14.00	.5512"		SM155140	SM160140	SM165140
	9/16″	14.29	.5625"		SM105036	SM110036	SM115036
		14.50	.5709"		SM155145	SM160145	SM165145
	37/64″	14.68	.5781"		SM105037	SM110037	SM115037
		15.00	.5906"		SM155150	SM160150	SM165150
	19/32″	15.08	.5938"		SM105038	SM110038	SM115038
	39/64″	15.48	.6094"		SM105039	SM110039	SM115039
		15.50	.6102"		SM155155	SM160155	SM165155
	5/8″	15.88	.6250"		SM105040	SM110040	SM115040
		16.00	.6299"		SM155160	SM160160	SM165160

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
◎	◎	◎	◎	○	○	○	◎	◎	○	○	○	○	◎	○	○

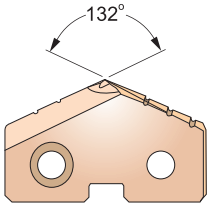
SPADE DRILLS

SERIES 0,1

SM-POINT SPADE DRILL INSERTS - SUPER HSS T15
SM-POINT EINWEG BOHREINSATZ - SUPER HSS T15

- For use in high nickel alloys and materials over 280 Brinell.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Zur Anwendung bei legierten Stählen mit hohem Nickelanteil und Werkstoffen über 280 Brinell
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelteQuerschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.325

Series Min. to Max. (mm/inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm/inch)	EDP No. SUPER HSS (T15) TiN	TiCN	TiAlN
0 12.98(.511″) to 17.65(.695″)	41/64″	16.27	.6406"	3.2 (1/8″)	SM105041	SM110041	SM115041
		16.50	.6496"		SM155165	SM160165	SM165165
	21/32″	16.67	.6562"		SM105042	SM110042	SM115042
		17.00	.6693"		SM155170	SM160170	SM165170
	43/64″	17.07	.6719"		SM105043	SM110043	SM115043
	11/16″	17.46	.6875"		SM105044	SM110044	SM115044
		17.50	.6890"		SM155175	SM160175	SM165175
1 17.53 (.690″) to 24.38 (.960″)	45/64″	17.86	.7031"	4.0 (5/32″)	SM105045	SM110045	SM115045
		18.00	.7087"		SM155180	SM160180	SM165180
	23/32″	18.26	.7188"		SM105046	SM110046	SM115046
		18.50	.7283"		SM155185	SM160185	SM165185
	47/64″	18.65	.7344"		SM105047	SM110047	SM115047
		19.00	.7480"		SM155190	SM160190	SM165190
	3/4″	19.05	.7500"		SM105048	SM110048	SM115048
	49/64″	19.45	.7656"		SM105049	SM110049	SM115049
		19.50	.7677"		SM155195	SM160195	SM165195
	25/32″	19.84	.7812"		SM105050	SM110050	SM115050
		20.00	.7874"		SM155200	SM160200	SM165200
	51/64″	20.24	.7969"		SM105051	SM110051	SM115051
		20.50	.8071"		SM155205	SM160205	SM165205
	13/16″	20.64	.8125"		SM105052	SM110052	SM115052
		21.00	.8268"		SM155210	SM160210	SM165210
	27/32″	21.43	.8438"		SM105054	SM110054	SM115054
	55/64″	21.83	.8594"		SM105055	SM110055	SM115055
		22.00	.8661"		SM155220	SM160220	SM165220
	7/8″	22.23	.8750"		SM105056	SM110056	SM115056
	57/64″	22.62	.8906"		SM105057	SM110057	SM115057
		23.00	.9055"		SM155230	SM160230	SM165230
	29/32″	23.02	.9062"		SM105058	SM110058	SM115058
	59/64″	23.42	.9219"		SM105059	SM110059	SM115059
	15/16″	23.81	.9375"		SM105060	SM110060	SM115060
		24.00	.9449"		SM155240	SM160240	SM165240

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
◎	◎	◎	◎	○	○	○	◎	◎	○	○	○	○	◎	○	○

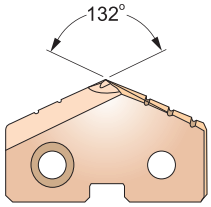
SPADE DRILLS

SERIES 2

SM-POINT SPADE DRILL INSERTS - SUPER HSS T15
SM-POINT EINWEG BOHREINSATZ - SUPER HSS T15

- For use in high nickel alloys and materials over 280 Brinell.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Zur Anwendung bei legierten Stählen mit hohem Nickelanteil und Werkstoffen über 280 Brinell
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelteQuerschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.325

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	SUPER HSS (T15) TiN	TiCN	TiAIN
2 24.41 (.961″) to 35.05 (1.380″)	31/32″	24.61	.9688"	4.8 (3/16″)	SM105062	SM110062	SM115062
	63/64″	25.00	.9843"		SM155250	SM160250	SM165250
	1″	25.40	1.0000"		SM105100	SM110100	SM115100
	1-1/64″	25.80	1.0156"		SM105101	SM110101	SM115101
		26.00	1.0236"		SM155260	SM160260	SM165260
	1-1/32″	26.19	1.0312"		SM105102	SM110102	SM115102
	1-3/64″	26.59	1.0469"		SM105103	SM110103	SM115103
	1-1/16″	26.99	1.0625"		SM105104	SM110104	SM115104
		27.00	1.0630"		SM155270	SM160270	SM165270
	1-3/32″	27.78	1.0938"		SM105106	SM110106	SM115106
		28.00	1.1024"		SM155280	SM160280	SM165280
	1-7/64″	28.18	1.1094"		SM105107	SM110107	SM115107
	1-1/8″	28.58	1.1250"		SM105108	SM110108	SM115108
		29.00	1.1417"		SM155290	SM160290	SM165290
	1-5/32″	29.37	1.1562"		SM105110	SM110110	SM115110
		30.00	1.1811"		SM155300	SM160300	SM165300
	1-3/16″	30.16	1.1875"		SM105112	SM110112	SM115112
	1-7/32″	30.96	1.2188"		SM105114	SM110114	SM115114
		31.00	1.2205"		SM155310	SM160310	SM165310
	1-1/4″	31.75	1.2500"		SM105116	SM110116	SM115116
		32.00	1.2598"		SM155320	SM160320	SM165320
	1-9/32″	32.54	1.2812"		SM105118	SM110118	SM115118
		33.00	1.2992"		SM155330	SM160330	SM165330
	1-5/16″	33.34	1.3125"		SM105120	SM110120	SM115120
		34.00	1.3386"		SM155340	SM160340	SM165340
	1-11/32″	34.13	1.3438"		SM105122	SM110122	SM115122
	1-3/8″	34.93	1.3750"		SM105124	SM110124	SM115124
		35.00	1.3780"		SM155350	SM160350	SM165350

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
◎	◎	◎	◎	○	○	○	◎	◎	○	○	○	○	◎	○	○

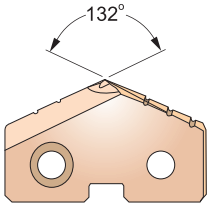
SPADE DRILLS

SERIES 3

SM-POINT SPADE DRILL INSERTS - SUPER HSS T15
SM-POINT EINWEG BOHREINSATZ - SUPER HSS T15

- For use in high nickel alloys and materials over 280 Brinell.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Zur Anwendung bei legierten Stählen mit hohem Nickelanteil und Werkstoffen über 280 Brinell
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelteQuerschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.325

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No. SUPER HSS (T15)		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN	TiCN	TiAlN
3 34.37 (1.353″) to 47.80 (1.882″)	1-13/32″	35.72	1.4062"	6.4 (1/4″)	SM105126	SM110126	SM115126
		36.00	1.4173"		SM155360	SM160360	SM165360
	1-7/16″	36.51	1.4375"		SM105128	SM110128	SM115128
		37.00	1.4567"		SM155370	SM160370	SM165370
	1-15/32″	37.31	1.4688"		SM105130	SM110130	SM115130
		38.00	1.4961"		SM155380	SM160380	SM165380
	1-1/2″	38.10	1.5000"		SM105132	SM110132	SM115132
	1-17/32″	38.89	1.5312"		SM105134	SM110134	SM115134
		39.00	1.5354"		SM155390	SM160390	SM165390
	1-9/16″	39.69	1.5625"		SM105136	SM110136	SM115136
		40.00	1.5748"		SM155400	SM160400	SM165400
	1-19/32″	40.48	1.5938"		SM105138	SM110138	SM115138
		41.00	1.6142"		SM155410	SM160410	SM165410
	1-5/8″	41.28	1.6250"		SM105140	SM110140	SM115140
		42.00	1.6535"		SM155420	SM160420	SM165420
	1-21/32″	42.07	1.6562"		SM105142	SM110142	SM115142
	1-11/16″	42.86	1.6875"		SM105144	SM110144	SM115144
		43.00	1.6929"		SM155430	SM660430	SM165430
	1-23/32″	43.66	1.7188"		SM105146	SM110146	SM115146
		44.00	1.7323"		SM155440	SM160440	SM165440
	1-3/4″	44.45	1.7500"		SM105148	SM110148	SM115148
		45.00	1.7717"		SM155450	SM160450	SM165450
	1-25/32″	45.24	1.7812"		SM105150	SM110150	SM115150
		46.00	1.8110"		SM155460	SM160460	SM165460
	1-13/16″	46.04	1.8125"		SM105152	SM110152	SM115152
	1-27/32″	46.83	1.8438"		SM105154	SM110154	SM115154
		47.00	1.8504"		SM155470	SM160470	SM165470
	1-7/8″	47.63	1.8750"		SM105156	SM110156	SM115156

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
◎	◎	◎	◎	○	○	○	◎	◎	○	○	○	○	◎	○	○

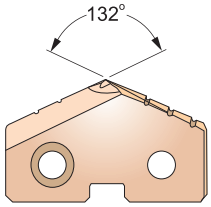
SPADE DRILLS

SERIES Y,Z,0

SM-POINT SPADE DRILL INSERTS - PREMIUM HSS M48
SM-POINT EINWEG BOHREINSATZ - PREMIUM HSS M48

- For use in high temperature alloys and materials with 350~500 Brinell.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Zur Anwendung bei hitzebeständigen Legierungen und Werkstoffen mit 350~500 Brinell
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelte Querschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.325

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
					PREMIUM HSS (M48)		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN	TiCN	TiAlN
Y 9.50 (.374″) to 11.07 (.436″)		9.50	.3740"	2.4 (3/32″)	SM555095	SM560095	SM565095
	3/8″	9.53	.3750"		SM505024	SM510024	SM515024
		9.80	.3858"		SM555098	SM560098	SM565098
	25/64″	9.92	.3906"		SM505025	SM510025	SM515025
		10.00	.3937"		SM555100	SM560100	SM565100
		10.20	.4016"		SM555102	SM560102	SM565102
	13/32″	10.32	.4062"		SM505026	SM510026	SM515026
		10.50	.4134"		SM555105	SM560105	SM565105
	27/64″	10.72	.4219"		SM505027	SM510027	SM515027
		10.80	.4252"		SM555108	SM560108	SM565108
		11.00	.4331"		SM555110	SM560110	SM565110
Z 11.11(.437″) to 12.95(.510″)	7/16″	11.11	.4375"	2.4 (3/32″)	SM505028	SM510028	SM515028
		11.50	.4528"		SM555115	SM560115	SM565115
	29/64″	11.51	.4531"		SM505029	SM510029	SM515029
	15/32″	11.91	.4688"		SM505030	SM510030	SM515030
		12.00	.4724"		SM555120	SM560120	SM565120
	31/64″	12.30	.4844"		SM505031	SM510031	SM515031
		12.50	.4921"		SM555125	SM560125	SM565125
	1/2″	12.70	.5000"		SM505032	SM510032	SM515032
0 12.98 (.511″) to 17.65 (.695″)		13.00	.5118"	3.2 (1/8″)	SM555130	SM560130	SM565130
	33/64″	13.10	.5156"		SM505033	SM510033	SM515033
	17/32″	13.49	.5312"		SM505034	SM510034	SM515034
		13.50	.5315"		SM555135	SM560135	SM565135
	35/64″	13.89	.5469"		SM505035	SM510035	SM515035
		14.00	.5512"		SM555140	SM560140	SM565140
	9/16″	14.29	.5625"		SM505036	SM510036	SM515036
		14.50	.5709"		SM555145	SM560145	SM565145
	37/64″	14.68	.5781"		SM505037	SM510037	SM515037
		15.00	.5906"		SM555150	SM560150	SM565150
	19/32″	15.08	.5938"		SM505038	SM510038	SM515038
	39/64″	15.48	.6094"		SM505039	SM510039	SM515039
		15.50	.6102"		SM555155	SM560155	SM565155
	5/8″	15.88	.6250"		SM505040	SM510040	SM515040
		16.00	.6299"		SM555160	SM560160	SM565160

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	◎	○	○

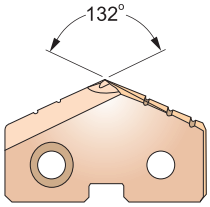
SPADE DRILLS

SERIES 0,1

SM-POINT SPADE DRILL INSERTS - PREMIUM HSS M48
SM-POINT EINWEG BOHREINSATZ - PREMIUM HSS M48

- For use in high temperature alloys and materials with 350~500 Brinell.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Zur Anwendung bei hitzebeständigen Legierungen und Werkstoffen mit 350~500 Brinell
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelte Querschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.325

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	PREMIUM HSS (M48) TiN	TiCN	TiAlN
0 12.98(.511″) to 17.65(.695″)	41/64″	16.27	.6406"	3.2 (1/8″)	SM505041	SM510041	SM515041
		16.50	.6496"		SM555165	SM560165	SM565165
	21/32″	16.67	.6562"		SM505042	SM510042	SM515042
		17.00	.6693"		SM555170	SM560170	SM565170
	43/64″	17.07	.6719"		SM505043	SM510043	SM515043
	11/16″	17.46	.6875"		SM505044	SM510044	SM515044
		17.50	.6890"		SM555175	SM560175	SM565175
1 17.53 (.690″) to 24.38 (.960″)	45/64″	17.86	.7031"	4.0 (5/32″)	SM505045	SM510045	SM515045
		18.00	.7087"		SM555180	SM560180	SM565180
	23/32″	18.26	.7188"		SM505046	SM510046	SM515046
		18.50	.7283"		SM555185	SM560185	SM565185
	47/64″	18.65	.7344"		SM505047	SM510047	SM515047
		19.00	.7480"		SM555190	SM560190	SM565190
	3/4″	19.05	.7500"		SM505048	SM510048	SM515048
	49/64″	19.45	.7656"		SM505049	SM510049	SM515049
		19.50	.7677"		SM555195	SM560195	SM565195
	25/32″	19.84	.7812"		SM505050	SM510050	SM515050
		20.00	.7874"		SM555200	SM560200	SM565200
	51/64″	20.24	.7969"		SM505051	SM510051	SM515051
		20.50	.8071"		SM555205	SM560205	SM565205
	13/16″	20.64	.8125"		SM505052	SM510052	SM515052
		21.00	.8268"		SM555210	SM560210	SM565210
	27/32″	21.43	.8438"		SM505054	SM510054	SM515054
	55/64″	21.83	.8594"		SM505055	SM510055	SM565055
		22.00	.8661"		SM555220	SM560220	SM565220
	7/8″	22.23	.8750"		SM505056	SM510056	SM515056
	57/64″	22.62	.8906"		SM505057	SM510057	SM515057
		23.00	.9055"		SM555230	SM560230	SM565230
	29/32″	23.02	.9062"		SM505058	SM510058	SM515058
	59/64″	23.42	.9219"		SM505059	SM510059	SM515059
	15/16″	23.81	.9375"		SM505060	SM510060	SM515060
		24.00	.9449"		SM555240	SM560240	SM565240

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	◎	○	○

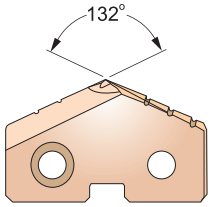
SPADE DRILLS

SERIES 2

SM-POINT SPADE DRILL INSERTS - PREMIUM HSS M48
SM-POINT EINWEG BOHREINSATZ - PREMIUM HSS M48

- For use in high temperature alloys and materials with 350~500 Brinell.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Zur Anwendung bei hitzebeständigen Legierungen und Werkstoffen mit 350~500 Brinell
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelte Querschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.325

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	PREMIUM HSS (M48) TiN	TiCN	TiAlN
2 24.41 (.961″) to 35.05 (1.380″)	31/32″	24.61	.9688"	4.8 (3/16″)	SM505062	SM510062	SM515062
	63/64″	25.00	.9843"		SM555250	SM560250	SM565250
	1″	25.40	1.0000"		SM505100	SM510100	SM515100
	1-1/64″	25.80	1.0156"		SM505101	SM510101	SM515101
		26.00	1.0236"		SM555260	SM560260	SM565260
	1-1/32″	26.19	1.0312"		SM505102	SM510102	SM515102
	1-3/64″	26.59	1.0469"		SM505103	SM510103	SM515103
	1-1/16″	26.99	1.0625"		SM505104	SM510104	SM515104
		27.00	1.0630"		SM555270	SM560270	SM565270
	1-3/32″	27.78	1.0938"		SM505106	SM510106	SM515106
		28.00	1.1024"		SM555280	SM560280	SM565280
	1-7/64″	28.18	1.1094"		SM505107	SM510107	SM515107
	1-1/8″	28.58	1.1250"		SM505108	SM510108	SM515108
		29.00	1.1417"		SM555290	SM560290	SM565290
	1-5/32″	29.37	1.1562"		SM505110	SM510110	SM515110
		30.00	1.1811"		SM555300	SM560300	SM565300
	1-3/16″	30.16	1.1875"		SM505112	SM510112	SM515112
	1-7/32″	30.96	1.2188"		SM505114	SM510114	SM515114
		31.00	1.2205"		SM555310	SM560310	SM565310
	1-1/4″	31.75	1.2500"		SM505116	SM510116	SM515116
		32.00	1.2598"		SM555320	SM560320	SM565320
	1-9/32″	32.54	1.2812"		SM505118	SM510118	SM515118
		33.00	1.2992"		SM555330	SM560330	SM565330
	1-5/16″	33.34	1.3125"		SM505120	SM510120	SM515120
		34.00	1.3386"		SM555340	SM560340	SM565340
	1-11/32″	34.13	1.3438"		SM505122	SM510122	SM515122
	1-3/8″	34.93	1.3750"		SM505124	SM510124	SM515124
		35.00	1.3780"		SM555350	SM560350	SM565350

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	◎	○	○

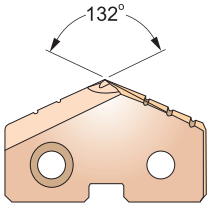
SPADE DRILLS

SERIES Y,Z,0

SM-POINT SPADE DRILL INSERTS FOR CAST IRON - CARBIDE(K10)
SM-POINT EINWEG BOHREINSATZ - VOLLHARTMETALL(K10)

- High performance on Gray cast iron over 220 Brinell, malleable cast iron with short chips, silicon aluminum and copper alloys.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Beste Leistung in Grauguss über 220 Brinell, kurzspanendem Kugelgraphitguss, Si-Aluminium und Kupferlegierungen
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelte Querschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.326

Series Min. to Max. (mm/inch)	Diameter Inch (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	Thick Metric (mm/inch)	EDP No. CARBIDE (K10) TiN	TiCN	TiAlN
Y 9.50 (.374″) to 11.07 (.436″)		9.50	.3740"	2.4 (3/32″)	SM655095	SM660095	SM665095
	3/8″	9.53	.3750"		SM605024	SM610024	SM615024
		9.80	.3858"		SM655098	SM660098	SM665098
	25/64″	9.92	.3906"		SM605025	SM610025	SM615025
		10.00	.3937"		SM655100	SM660100	SM665100
		10.20	.4016"		SM655102	SM660102	SM665102
	13/32″	10.32	.4062"		SM605026	SM610026	SM615026
		10.50	.4134"		SM655105	SM660105	SM665105
	27/64″	10.72	.4219"		SM605027	SM610027	SM615027
		10.80	.4252"		SM655108	SM660108	SM665108
		11.00	.4331"		SM655110	SM660110	SM665110
Z 11.11(.437″) to 12.95(.510″)	7/16″	11.11	.4375"	2.4 (3/32″)	SM605028	SM610028	SM615028
		11.50	.4528"		SM655115	SM660115	SM665115
	29/64″	11.51	.4531"		SM605029	SM610029	SM615029
	15/32″	11.91	.4688"		SM605030	SM610030	SM615030
		12.00	.4724"		SM655120	SM660120	SM665120
	31/64″	12.30	.4844"		SM605031	SM610031	SM615031
		12.50	.4921"		SM655125	SM660125	SM665125
	1/2″	12.70	.5000"		SM605032	SM610032	SM615032
0 12.98 (.511″) to 17.65 (.695″)		13.00	.5118"	3.2 (1/8″)	SM655130	SM660130	SM665130
	33/64″	13.10	.5156"		SM605033	SM610033	SM615033
	17/32″	13.49	.5312"		SM605034	SM610034	SM615034
		13.50	.5315"		SM655135	SM660135	SM665135
	35/64″	13.89	.5469"		SM605035	SM610035	SM615035
		14.00	.5512"		SM655140	SM660140	SM665140
	9/16″	14.29	.5625"		SM605036	SM610036	SM615036
		14.50	.5709"		SM655145	SM660145	SM665145
	37/64″	14.68	.5781"		SM605037	SM610037	SM615037
		15.00	.5906"		SM655150	SM660150	SM665150
	19/32″	15.08	.5938"		SM605038	SM610038	SM615038
	39/64″	15.48	.6094"		SM605039	SM610039	SM615039
		15.50	.6102"		SM655155	SM660155	SM665155
	5/8″	15.88	.6250"		SM605040	SM610040	SM615040
		16.00	.6299"		SM655160	SM660160	SM665160

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
												◎	◎		

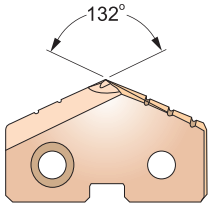
SPADE DRILLS

SERIES 0,1

SM-POINT SPADE DRILL INSERTS FOR CAST IRON - CARBIDE(K10)
SM-POINT EINWEG BOHREINSATZ - VOLLHARTMETALL(K10)

- High performance on Gray cast iron over 220 Brinell, malleable cast iron with short chips, silicon aluminum and copper alloys.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Beste Leistung in Grauguss über 220 Brinell, kurzspanendem Kugelgraphitguss, Si-Aluminium und Kupferlegierungen
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelte Querschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.326

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
					CARBIDE (K10)		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN	TiCN	TiAlN
0 **12.98(.511″) to 17.65(.695″)**	41/64″	16.27	.6406"	3.2 (1/8″)	SM605041	SM610041	SM615041
		16.50	.6496"		SM655165	SM660165	SM665165
	21/32″	16.67	.6562"		SM605042	SM610042	SM615042
		17.00	.6693"		SM655170	SM660170	SM665170
	43/64″	17.07	.6719"		SM605043	SM610043	SM615043
	11/16″	17.46	.6875"		SM605044	SM610044	SM615044
		17.50	.6890"		SM655175	SM660175	SM665175
1 **17.53 (.690″) to 24.38 (.960″)**	45/64″	17.86	.7031"	4.0 (5/32″)	SM605045	SM610045	SM615045
		18.00	.7087"		SM655180	SM660180	SM665180
	23/32″	18.26	.7188"		SM605046	SM610046	SM615046
		18.50	.7283"		SM655185	SM660185	SM665185
	47/64″	18.65	.7344"		SM605047	SM610047	SM615047
		19.00	.7480"		SM655190	SM660190	SM665190
	3/4″	19.05	.7500"		SM605048	SM610048	SM615048
	49/64″	19.45	.7656"		SM605049	SM610049	SM615049
		19.50	.7677"		SM655195	SM660195	SM665195
	25/32″	19.84	.7812"		SM605050	SM610050	SM615050
		20.00	.7874"		SM655200	SM660200	SM665200
	51/64″	20.24	.7969"		SM605051	SM610051	SM615051
		20.50	.8071"		SM655205	SM660205	SM665205
	13/16″	20.64	.8125"		SM605052	SM610052	SM615052
		21.00	.8268"		SM655210	SM660210	SM665210
	27/32″	21.43	.8438"		SM605054	SM610054	SM615054
	55/64″	21.83	.8594"		SM605055	SM610055	SM615055
		22.00	.8661"		SM655220	SM660220	SM665220
	7/8″	22.23	.8750"		SM605056	SM610056	SM615056
	57/64″	22.62	.8906"		SM605057	SM610057	SM615057
		23.00	.9055"		SM655230	SM660230	SM665230
	29/32″	23.02	.9062"		SM605058	SM610058	SM615058
	59/64″	23.42	.9219"		SM605059	SM610059	SM615059
	15/16″	23.81	.9375"		SM605060	SM610060	SM615060
		24.00	.9449"		SM655240	SM660240	SM665240

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
												◎	◎		

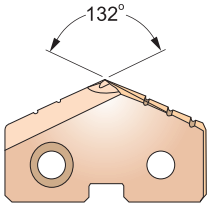
SPADE DRILLS

SERIES 2

SM-POINT SPADE DRILL INSERTS FOR CAST IRON - CARBIDE(K10)
SM-POINT EINWEG BOHREINSATZ - VOLLHARTMETALL(K10)

- High performance on Gray cast iron over 220 Brinell, malleable cast iron with short chips, silicon aluminum and copper alloys.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Beste Leistung in Grauguss über 220 Brinell, kurzspanendem Kugelgraphitguss, Si-Aluminium und Kupferlegierungen
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelte Querschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.326

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
					CARBIDE (K10)		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN	TiCN	TiAlN
2 **24.41 (.961″) to 35.05 (1.380″)**	31/32″	24.61	.9688"	4.8 (3/16″)	SM605062	SM610062	SM615062
	63/64″	25.00	.9843"		SM655250	SM660250	SM665250
	1″	25.40	1.0000"		SM605100	SM610100	SM615100
	1-1/64″	25.80	1.0156"		SM605101	SM610101	SM615101
		26.00	1.0236"		SM655260	SM660260	SM665260
	1-1/32″	26.19	1.0312"		SM605102	SM610102	SM615102
	1-3/64″	26.59	1.0469"		SM605103	SM610103	SM615103
	1-1/16″	26.99	1.0625"		SM605104	SM610104	SM615104
		27.00	1.0630"		SM655270	SM660270	SM665270
	1-3/32″	27.78	1.0938"		SM605106	SM610106	SM615106
		28.00	1.1024"		SM655280	SM660280	SM665280
	1-7/64″	28.18	1.1094"		SM605107	SM610107	SM615107
	1-1/8″	28.58	1.1250"		SM605108	SM610108	SM615108
		29.00	1.1417"		SM655290	SM660290	SM665290
	1-5/32″	29.37	1.1562"		SM605110	SM610110	SM615110
		30.00	1.1811"		SM655300	SM660300	SM665300
	1-3/16″	30.16	1.1875"		SM605112	SM610112	SM615112
	1-7/32″	30.96	1.2188"		SM605114	SM610114	SM615114
		31.00	1.2205"		SM655310	SM660310	SM665310
	1-1/4″	31.75	1.2500"		SM605116	SM610116	SM615116
		32.00	1.2598"		SM655320	SM660320	SM665320
	1-9/32″	32.54	1.2812"		SM605118	SM610118	SM615118
		33.00	1.2992"		SM655330	SM660330	SM665330
	1-5/16″	33.34	1.3125"		SM605120	SM610120	SM615120
		34.00	1.3386"		SM655340	SM660340	SM665340
	1-11/32″	34.13	1.3438"		SM605122	SM610122	SM615122
	1-3/8″	34.93	1.3750"		SM605124	SM610124	SM615124
		35.00	1.3780"		SM655350	SM660350	SM665350

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
												◎	◎		

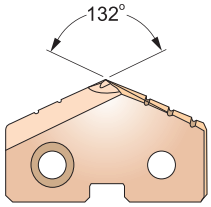
SPADE DRILLS

SERIES Y,Z,0

SM-POINT SPADE DRILL INSERTS - CARBIDE(K20)
SM-POINT EINWEG BOHREINSATZ - VOLLHARTMETALL(K20)

- For use in Gray cast iron up to 220 Brinell, nonferrous metals, copper, brass and aluminum.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Zur Anwendung in Grauguss bis 220 Brinell, Nichteisen - Metallen, Kupfer, Messing und Aluminium
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelte Querschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferba



cutting conditions : P.326

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
					CARBIDE (K20)		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN	TiCN	TiAlN
Y 9.50 (.374″) to 11.07 (.436″)		9.50	.3740"	2.4 (3/32″)	SM755095	SM760095	SM765095
	3/8″	9.53	.3750"		SM705024	SM710024	SM715024
		9.80	.3858"		SM755098	SM760098	SM765098
	25/64″	9.92	.3906"		SM705025	SM710025	SM715025
		10.00	.3937"		SM755100	SM760100	SM765100
		10.20	.4016"		SM755102	SM760102	SM765102
	13/32″	10.32	.4062"		SM705026	SM710026	SM715026
		10.50	.4134"		SM755105	SM760105	SM765105
	27/64″	10.72	.4219"		SM705027	SM710027	SM715027
		10.80	.4252"		SM755108	SM760108	SM765108
		11.00	.4331"		SM755110	SM760110	SM765110
Z 11.11(.437″) to 12.95(.510″)	7/16″	11.11	.4375"	2.4 (3/32″)	SM705028	SM710028	SM715028
		11.50	.4528"		SM755115	SM760115	SM765115
	29/64″	11.51	.4531"		SM705029	SM710029	SM715029
	15/32″	11.91	.4688"		SM705030	SM710030	SM715030
		12.00	.4724"		SM755120	SM760120	SM765120
	31/64″	12.30	.4844"		SM705031	SM710031	SM715031
		12.50	.4921"		SM755125	SM760125	SM765125
	1/2″	12.70	.5000"		SM705032	SM710032	SM715032
0 12.98 (.511″) to 17.65 (.695″)		13.00	.5118"	3.2 (1/8″)	SM755130	SM760130	SM765130
	33/64″	13.10	.5156"		SM705033	SM710033	SM715033
	17/32″	13.49	.5312"		SM705034	SM710034	SM715034
		13.50	.5315"		SM755135	SM760135	SM765135
	35/64″	13.89	.5469"		SM705035	SM710035	SM715035
		14.00	.5512"		SM755140	SM760140	SM765140
	9/16″	14.29	.5625"		SM705036	SM710036	SM715036
		14.50	.5709"		SM755145	SM760145	SM765145
	37/64″	14.68	.5781"		SM705037	SM710037	SM715037
		15.00	.5906"		SM755150	SM760150	SM765150
	19/32″	15.08	.5938"		SM705038	SM710038	SM715038
	39/64″	15.48	.6094"		SM705039	SM710039	SM715039
		15.50	.6102"		SM755155	SM760155	SM765155
	5/8″	15.88	.6250"		SM705040	SM710040	SM715040
		16.00	.6299"		SM755160	SM760160	SM765160

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
○	○	○	○	○	◎	◎	○	○	○	○	◎	○	○	◎	◎

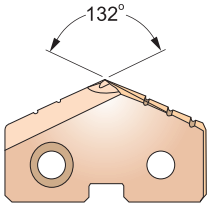
SPADE DRILLS

SERIES 0,1

SM-POINT SPADE DRILL INSERTS - CARBIDE(K20)
SM-POINT EINWEG BOHREINSATZ - VOLLHARTMETALL(K20)

- For use in Gray cast iron up to 220 Brinell, nonferrous metals, copper, brass and aluminum.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Zur Anwendung in Grauguss bis 220 Brinell, Nichteisen - Metallen, Kupfer, Messing und Aluminium
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelte Querschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferba



cutting conditions : P.326

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
					CARBIDE (K20)		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN	TiCN	TiAlN
0 12.98(.511″) to 17.65(.695″)	41/64″	16.27	.6406"	3.2 (1/8″)	SM705041	SM710041	SM715041
		16.50	.6496"		SM755165	SM760165	SM765165
	21/32″	16.67	.6562"		SM705042	SM710042	SM715042
		17.00	.6693"		SM755170	SM760170	SM765170
	43/64″	17.07	.6719"		SM705043	SM710043	SM715043
	11/16″	17.46	.6875"		SM705044	SM710044	SM715044
		17.50	.6890"		SM755175	SM760175	SM765175
1 17.53 (.690″) to 24.38 (.960″)	45/64″	17.86	.7031"	4.0 (5/32″)	SM705045	SM710045	SM715045
		18.00	.7087"		SM755180	SM760180	SM765180
	23/32″	18.26	.7188"		SM705046	SM710046	SM715046
		18.50	.7283"		SM755185	SM760185	SM765185
	47/64″	18.65	.7344"		SM705047	SM710047	SM715047
		19.00	.7480"		SM755190	SM760190	SM765190
	3/4″	19.05	.7500"		SM705048	SM710048	SM715048
	49/64″	19.45	.7656"		SM705049	SM710049	SM715049
		19.50	.7677"		SM755195	SM760195	SM765195
	25/32″	19.84	.7812"		SM705050	SM710050	SM715050
		20.00	.7874"		SM755200	SM760200	SM765200
	51/64″	20.24	.7969"		SM705051	SM710051	SM715051
		20.50	.8071"		SM755205	SM760205	SM765205
	13/16″	20.64	.8125"		SM705052	SM710052	SM715052
		21.00	.8268"		SM755210	SM760210	SM765210
	27/32″	21.43	.8438"		SM705054	SM710054	SM715054
	55/64″	21.83	.8594"		SM705055	SM710055	SM715055
		22.00	.8661"		SM755220	SM760220	SM765220
	7/8″	22.23	.8750"		SM705056	SM710056	SM715056
	57/64″	22.62	.8906"		SM705057	SM710057	SM715057
		23.00	.9055"		SM755230	SM760230	SM765230
	29/32″	23.02	.9062"		SM705058	SM710058	SM715058
	59/64″	23.42	.9219"		SM705059	SM710059	SM715059
	15/16″	23.81	.9375"		SM705060	SM710060	SM715060
		24.00	.9449"		SM755240	SM760240	SM765240

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
○	○	○	○	○	◎	◎	○	○	○	○	◎	○	○	◎	◎

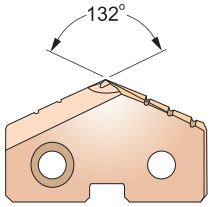
SPADE DRILLS

SERIES 2

SM-POINT SPADE DRILL INSERTS - CARBIDE(K20)
SM-POINT EINWEG BOHREINSATZ - VOLLHARTMETALL(K20)

- For use in Gray cast iron up to 220 Brinell, nonferrous metals, copper, brass and aluminum.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Zur Anwendung in Grauguss bis 220 Brinell, Nichteisen - Metallen, Kupfer, Messing und Aluminium
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelte Querschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferba



cutting conditions : P.326

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No. CARBIDE (K20)		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN	TiCN	TiAlN
2 **24.41 (.961″) to 35.05 (1.380″)**	31/32″	24.61	.9688"	4.8 (3/16″)	SM705062	SM710062	SM715062
	63/64″	25.00	.9843"		SM755250	SM760250	SM765250
	1″	25.40	1.0000"		SM705100	SM710100	SM715100
	1-1/64″	25.80	1.0156"		SM705101	SM710101	SM715101
		26.00	1.0236"		SM755260	SM760260	SM765260
	1-1/32″	26.19	1.0312"		SM705102	SM710102	SM715102
	1-3/64″	26.59	1.0469"		SM705103	SM710103	SM715103
	1-1/16″	26.99	1.0625"		SM705104	SM710104	SM715104
		27.00	1.0630"		SM755270	SM760270	SM765270
	1-3/32″	27.78	1.0938"		SM705106	SM710106	SM715106
		28.00	1.1024"		SM755280	SM760280	SM765280
	1-7/64″	28.18	1.1094"		SM705107	SM710107	SM715107
	1-1/8″	28.58	1.1250"		SM705108	SM710108	SM715108
		29.00	1.1417"		SM755290	SM760290	SM765290
	1-5/32″	29.37	1.1562"		SM705110	SM710110	SM715110
		30.00	1.1811"		SM755300	SM760300	SM765300
	1-3/16″	30.16	1.1875"		SM705112	SM710112	SM715112
	1-7/32″	30.96	1.2188"		SM705114	SM710114	SM715114
		31.00	1.2205"		SM755310	SM760310	SM765310
	1-1/4″	31.75	1.2500"		SM705116	SM710116	SM715116
		32.00	1.2598"		SM755320	SM760320	SM765320
	1-9/32″	32.54	1.2812"		SM705118	SM710118	SM715118
		33.00	1.2992"		SM755330	SM760330	SM765330
	1-5/16″	33.34	1.3125"		SM705120	SM710120	SM715120
		34.00	1.3386"		SM755340	SM760340	SM765340
	1-11/32″	34.13	1.3438"		SM705122	SM710122	SM715122
	1-3/8″	34.93	1.3750"		SM705124	SM710124	SM715124
		35.00	1.3780"		SM755350	SM760350	SM765350

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
○	○	○	○	○	◎	◎	○	○	○	○	◎	○	○	◎	◎

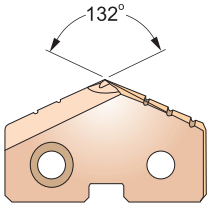
SPADE DRILLS

SERIES 3

SM-POINT SPADE DRILL INSERTS - CARBIDE(K20)
SM-POINT EINWEG BOHREINSATZ - VOLLHARTMETALL(K20)

- For use in Gray cast iron up to 220 Brinell, nonferrous metals, copper, brass and aluminum.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Zur Anwendung in Grauguss bis 220 Brinell, Nichteisen - Metallen, Kupfer, Messing und Aluminium
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelte Querschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferba



cutting conditions : P.326

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
					CARBIDE (K20)		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN	TiCN	TiAlN
3 34.37 (1.353″) to 47.80 (1.882″)	1-13/32″	35.72	1.4062"	6.4 (1/4″)	SM705126	SM710126	SM715126
		36.00	1.4173"		SM755360	SM760360	SM765360
	1-7/16″	36.51	1.4375"		SM705128	SM710128	SM715128
		37.00	1.4567"		SM755370	SM760370	SM765370
	1-15/32″	37.31	1.4688"		SM705130	SM710130	SM715130
		38.00	1.4961"		SM755380	SM760380	SM765380
	1-1/2″	38.10	1.5000"		SM705132	SM710132	SM715132
	1-17/32″	38.89	1.5312"		SM705134	SM710134	SM715134
		39.00	1.5354"		SM755390	SM760390	SM765390
	1-9/16″	39.69	1.5625"		SM705136	SM710136	SM715136
		40.00	1.5748"		SM755400	SM760400	SM765400
	1-19/32″	40.48	1.5938"		SM705138	SM710138	SM715138
		41.00	1.6142"		SM755410	SM760410	SM765410
	1-5/8″	41.28	1.6250"		SM705140	SM710140	SM715140
		42.00	1.6535"		SM755420	SM760420	SM765420
	1-21/32″	42.07	1.6562"		SM705142	SM710142	SM715142
	1-11/16″	42.86	1.6875"		SM705144	SM710144	SM715144
		43.00	1.6929"		SM755430	SM760430	SM765430
	1-23/32″	43.66	1.7188"		SM705146	SM710146	SM715146
		44.00	1.7323"		SM755440	SM760440	SM765440
	1-3/4″	44.45	1.7500"		SM705148	SM710148	SM715148
		45.00	1.7717"		SM755450	SM760450	SM765450
	1-25/32″	45.24	1.7812"		SM705150	SM710150	SM715150
		46.00	1.8110"		SM755460	SM760460	SM765460
	1-13/16″	46.04	1.8125"		SM705152	SM710152	SM715152
	1-27/32″	46.83	1.8438"		SM705154	SM710154	SM715154
		47.00	1.8504"		SM755470	SM760470	SM765470
	1-7/8″	47.63	1.8750"		SM705156	SM710156	SM715156

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
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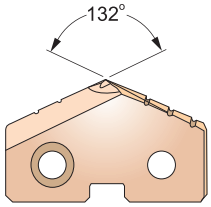
SPADE DRILLS

SERIES Y,Z,0

SM-POINT SPADE DRILL INSERTS - CARBIDE(P40)
SM-POINT EINWEG BOHREINSATZ - VOLLHARTMETALL(P40)

- For general use in carbon steels and alloys steels.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Für allgemeine Anwendung in Kohlenstoffstählen und legierten Stählen
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelte Querschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.326

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
					CARBIDE (P40)		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN	TiCN	TiAlN
Y 9.50 (.374″) to 11.07 (.436″)		9.50	.3740"	2.4 (3/32″)	SM855095	SM860095	SM865095
	3/8″	9.53	.3750"		SM805024	SM810024	SM815024
		9.80	.3858"		SM855098	SM860098	SM865098
	25/64″	9.92	.3906"		SM805025	SM810025	SM815025
		10.00	.3937"		SM855100	SM860100	SM865100
		10.20	.4016"		SM855102	SM860102	SM865102
	13/32″	10.32	.4062"		SM805026	SM810026	SM815026
		10.50	.4134"		SM855105	SM860105	SM865105
	27/64″	10.72	.4219"		SM805027	SM810027	SM815027
		10.80	.4252"		SM855108	SM860108	SM865108
		11.00	.4331"		SM855110	SM860110	SM865110
Z 11.11(.437″) to 12.95(.510″)	7/16″	11.11	.4375"	2.4 (3/32″)	SM805028	SM810028	SM815028
		11.50	.4528"		SM855115	SM860115	SM865115
	29/64″	11.51	.4531"		SM805029	SM810029	SM815029
	15/32″	11.91	.4688"		SM805030	SM810030	SM815030
		12.00	.4724"		SM855120	SM860120	SM865120
	31/64″	12.30	.4844"		SM805031	SM810031	SM815031
		12.50	.4921"		SM855125	SM860125	SM865125
	1/2″	12.70	.5000"		SM805032	SM810032	SM815032
0 12.98 (.511″) to 17.65 (.695″)		13.00	.5118"	3.2 (1/8″)	SM855130	SM860130	SM865130
	33/64″	13.10	.5156"		SM805033	SM810033	SM815033
	17/32″	13.49	.5312"		SM805034	SM810034	SM815034
		13.50	.5315"		SM855135	SM860135	SM865135
	35/64″	13.89	.5469"		SM805035	SM810035	SM815035
		14.00	.5512"		SM855140	SM860140	SM865140
	9/16″	14.29	.5625"		SM805036	SM810036	SM815036
		14.50	.5709"		SM855145	SM860145	SM865145
	37/64″	14.68	.5781"		SM805037	SM810037	SM815037
		15.00	.5906"		SM855150	SM860150	SM865150
	19/32″	15.08	.5938"		SM805038	SM810038	SM815038
	39/64″	15.48	.6094"		SM805039	SM810039	SM815039
		15.50	.6102"		SM855155	SM860155	SM865155
	5/8″	15.88	.6250"		SM805040	SM810040	SM815040
		16.00	.6299"		SM855160	SM860160	SM865160

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○

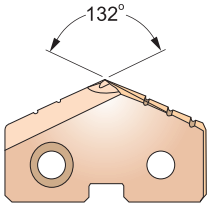
SPADE DRILLS

SERIES 0,1

SM-POINT SPADE DRILL INSERTS - CARBIDE(P40)
SM-POINT EINWEG BOHREINSATZ - VOLLHARTMETALL(P40)

- For general use in carbon steels and alloys steels.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Für allgemeine Anwendung in Kohlenstoffstählen und legierten Stählen
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelte Querschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.326

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
					CARBIDE (P40)		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN	TiCN	TiAlN
0 12.98(.511″) to 17.65(.695″)	41/64″	16.27	.6406"	3.2 (1/8″)	SM805041	SM810041	SM815041
		16.50	.6496"		SM855165	SM860165	SM865165
	21/32″	16.67	.6562"		SM805042	SM810042	SM815042
		17.00	.6693"		SM855170	SM860170	SM865170
	43/64″	17.07	.6719"		SM805043	SM810043	SM815043
	11/16″	17.46	.6875"		SM805044	SM810044	SM815044
		17.50	.6890"		SM855175	SM860175	SM865175
1 17.53 (.690″) to 24.38 (.960″)	45/64″	17.86	.7031"	4.0 (5/32″)	SM805045	SM810045	SM815045
		18.00	.7087"		SM855180	SM860180	SM865180
	23/32″	18.26	.7188"		SM805046	SM810046	SM815046
		18.50	.7283"		SM855185	SM860185	SM865185
	47/64″	18.65	.7344"		SM805047	SM810047	SM815047
		19.00	.7480"		SM855190	SM860190	SM865190
	3/4″	19.05	.7500"		SM805048	SM810048	SM815048
	49/64″	19.45	.7656"		SM805049	SM810049	SM815049
		19.50	.7677"		SM855195	SM860195	SM865195
	25/32″	19.84	.7812"		SM805050	SM810050	SM815050
		20.00	.7874"		SM855200	SM860200	SM865200
	51/64″	20.24	.7969"		SM805051	SM810051	SM815051
		20.50	.8071"		SM855205	SM860205	SM865205
	13/16″	20.64	.8125"		SM805052	SM810052	SM815052
		21.00	.8268"		SM855210	SM860210	SM865210
	27/32″	21.43	.8438"		SM805054	SM810054	SM815054
	55/64″	21.83	.8594"		SM805055	SM810055	SM815055
		22.00	.8661"		SM855220	SM860220	SM865220
	7/8″	22.23	.8750"		SM805056	SM810056	SM815056
	57/64″	22.62	.8906"		SM805057	SM810057	SM815057
		23.00	.9055"		SM855230	SM860230	SM865230
	29/32″	23.02	.9062"		SM805058	SM810058	SM815058
	59/64″	23.42	.9219"		SM805059	SM810059	SM815059
	15/16″	23.81	.9375"		SM805060	SM810060	SM815060
		24.00	.9449"		SM855240	SM860240	SM865240

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○

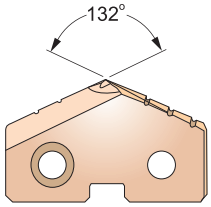
SPADE DRILLS

SERIES 2

SM-POINT SPADE DRILL INSERTS - CARBIDE(P40)
SM-POINT EINWEG BOHREINSATZ - VOLLHARTMETALL(P40)

- For general use in carbon steels and alloys steels.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Für allgemeine Anwendung in Kohlenstoffstählen und legierten Stählen
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelte Querschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.326

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
					CARBIDE (P40)		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN	TiCN	TiAlN
2 24.41 (.961″) to 35.05 (1.380″)	31/32″	24.61	.9688"	4.8 (3/16″)	SM805062	SM810062	SM815062
	63/64″	25.00	.9843"		SM855250	SM860250	SM865250
	1″	25.40	1.0000"		SM805100	SM810100	SM815100
	1-1/64″	25.80	1.0156"		SM805101	SM810101	SM815101
		26.00	1.0236"		SM855260	SM860260	SM865260
	1-1/32″	26.19	1.0312"		SM805102	SM810102	SM815102
	1-3/64″	26.59	1.0469"		SM805103	SM810103	SM815103
	1-1/16″	26.99	1.0625"		SM805104	SM810104	SM815104
		27.00	1.0630"		SM855270	SM860270	SM865270
	1-3/32″	27.78	1.0938"		SM805106	SM810106	SM815106
		28.00	1.1024"		SM855280	SM860280	SM865280
	1-7/64″	28.18	1.1094"		SM805107	SM810107	SM815107
	1-1/8″	28.58	1.1250"		SM805108	SM810108	SM815108
		29.00	1.1417"		SM855290	SM860290	SM865290
	1-5/32″	29.37	1.1562"		SM805110	SM810110	SM815110
		30.00	1.1811"		SM855300	SM860300	SM865300
	1-3/16″	30.16	1.1875"		SM805112	SM810112	SM815112
	1-7/32″	30.96	1.2188"		SM805114	SM810114	SM815114
		31.00	1.2205"		SM855310	SM860310	SM865310
	1-1/4″	31.75	1.2500"		SM805116	SM810116	SM815116
		32.00	1.2598"		SM855320	SM860320	SM865320
	1-9/32″	32.54	1.2812"		SM805118	SM810118	SM815118
		33.00	1.2992"		SM855330	SM860330	SM865330
	1-5/16″	33.34	1.3125"		SM805120	SM810120	SM815120
		34.00	1.3386"		SM855340	SM860340	SM865340
	1-11/32″	34.13	1.3438"		SM805122	SM810122	SM815122
	1-3/8″	34.93	1.3750"		SM805124	SM810124	SM815124
		35.00	1.3780"		SM855350	SM860350	SM865350

◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○

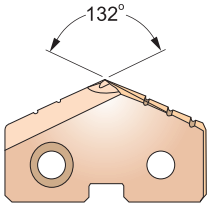
SPADE DRILLS

SERIES 3

SM-POINT SPADE DRILL INSERTS - CARBIDE(P40)
SM-POINT EINWEG BOHREINSATZ - VOLLHARTMETALL(P40)

- For general use in carbon steels and alloys steels.
- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

- Für allgemeine Anwendung in Kohlenstoffstählen und legierten Stählen
- Erhöhte Stabilität und Fluchtgenauigkeit durch neu entwickelte Querschneidengeometrie
- Verminderte Bohrkraft und ausgezeichnete Selbstzentrierung
- Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.326

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
					CARBIDE (P40)		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN	TiCN	TiAlN
3 34.37 (1.353″) to 47.80 (1.882″)	1-13/32″	35.72	1.4062"	6.4 (1/4″)	SM805126	SM810126	SM815126
		36.00	1.4173"		SM855360	SM860360	SM865360
	1-7/16″	36.51	1.4375"		SM805128	SM810128	SM815128
		37.00	1.4567"		SM855370	SM860370	SM865370
	1-15/32″	37.31	1.4688"		SM805130	SM810130	SM815130
		38.00	1.4961"		SM855380	SM860380	SM865380
	1-1/2″	38.10	1.5000"		SM805132	SM810132	SM815132
	1-17/32″	38.89	1.5312"		SM805134	SM810134	SM815134
		39.00	1.5354"		SM855390	SM860390	SM865390
	1-9/16″	39.69	1.5625"		SM805136	SM810136	SM815136
		40.00	1.5748"		SM855400	SM860400	SM865400
	1-19/32″	40.48	1.5938"		SM805138	SM810138	SM815138
		41.00	1.6142"		SM855410	SM860410	SM865410
	1-5/8″	41.28	1.6250"		SM805140	SM810140	SM815140
		42.00	1.6535"		SM855420	SM860420	SM865420
	1-21/32″	42.07	1.6562"		SM805142	SM810142	SM815142
	1-11/16″	42.86	1.6875"		SM805144	SM810144	SM815144
		43.00	1.6929"		SM855430	SM860430	SM865430
	1-23/32″	43.66	1.7188"		SM805146	SM810146	SM815146
		44.00	1.7323"		SM855440	SM860440	SM865440
	1-3/4″	44.45	1.7500"		SM805148	SM810148	SM815148
		45.00	1.7717"		SM855450	SM860450	SM865450
	1-25/32″	45.24	1.7812"		SM805150	SM810150	SM815150
		46.00	1.8110"		SM855460	SM860460	SM865460
	1-13/16″	46.04	1.8125"		SM805152	SM810152	SM815152
	1-27/32″	46.83	1.8438"		SM805154	SM810154	SM815154
		47.00	1.8504"		SM855470	SM860470	SM865470
	1-7/8″	47.63	1.8750"		SM805156	SM810156	SM815156

◎ : Excellent ○ : Good

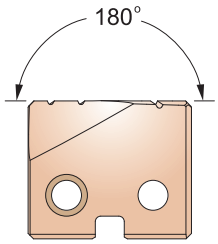
Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○

SPADE DRILLS

SERIES Y,Z,0

SPADE DRILL INSERTS - SUPER COBALT T15 FLAT BOTTOM
SPADE DRILL BOHRER-EINSÄTZE - SUPER COBALT T15(FLACH-NUT)

POINT ANGLE : 180 degree



cutting conditions : P.327

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
					SUPER HSS (T15)		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN	Hardslick	TiAlN
Y 9.50 (.374″) to 11.07 (.436″)		9.50	.3740"	2.4 (3/32″)	S2155095	S2170095	S2165095
	3/8″	9.53	.3750"		S2105024	S2120024	S2115024
		9.80	.3858"		S2155098	S2170098	S2165098
	25/64″	9.92	.3906"		S2105025	S2120025	S2115025
		10.00	.3937"		S2155100	S2170100	S2165100
		10.20	.4016"		S2155102	S2170102	S2165102
	13/32″	10.32	.4062"		S2105026	S2120026	S2115026
		10.50	.4134"		S2155105	S2170105	S2165105
	27/64″	10.72	.4219"		S2105027	S2120027	S2115027
		10.80	.4252"		S2155108	S2170108	S2165108
		11.00	.4331"		S2155110	S2170110	S2165110
Z 11.11(.437″) to 12.95(.510″)	7/16″	11.11	.4375"	2.4 (3/32″)	S2105028	S2120028	S2115028
		11.50	.4528"		S2155115	S2170115	S2165115
	29/64″	11.51	.4531"		S2105029	S2120029	S2115029
	15/32″	11.91	.4688"		S2105030	S2120030	S2115030
		12.00	.4724"		S2155120	S2170120	S2165120
	31/64″	12.30	.4844"		S2105031	S2120031	S2115031
		12.50	.4921"		S2155125	S2170125	S2165125
	1/2″	12.70	.5000"		S2105032	S2120032	S2115032
0 12.98 (.511″) to 17.65 (.695″)		13.00	.5118"	3.2 (1/8″)	S2155130	S2170130	S2165130
	33/64″	13.10	.5156"		S2105033	S2120033	S2115033
	17/32″	13.49	.5312"		S2105034	S2120034	S2115034
		13.50	.5315"		S2155135	S2170135	S2165135
	35/64″	13.89	.5469"		S2105035	S2120035	S2115035
		14.00	.5512"		S2155140	S2170140	S2165140
	9/16″	14.29	.5625"		S2105036	S2120036	S2115036
		14.50	.5709"		S2155145	S2170145	S2165145
	37/64″	14.68	.5781"		S2105037	S2120037	S2115037
		15.00	.5906"		S2155150	S2170150	S2165150
	19/32″	15.08	.5938"		S2105038	S2120038	S2115038
	39/64″	15.48	.6094"		S2105039	S2120039	S2115039
		15.50	.6102"		S2155155	S2170155	S2165155
	5/8″	15.88	.6250"		S2105040	S2120040	S2115040
		16.00	.6299"		S2155160	S2170160	S2165160

◎ : Excellent ○ : Good

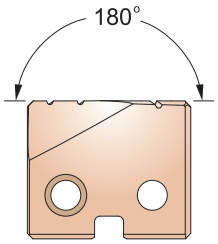
Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
◎	◎	◎	◎	○	○	○	◎	◎	○	○	○	○	◎	○	○

SPADE DRILLS

SERIES 0,1

SPADE DRILL INSERTS - SUPER COBALT T15 FLAT BOTTOM
SPADE DRILL BOHRER-EINSÄTZE - SUPER COBALT T15(FLACH-NUT)

POINT ANGLE : 180 degree



cutting conditions : P.327

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
					SUPER HSS (T15)		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	TiN	Hardslick	TiAlN
0 12.98(.511″) to 17.65(.695″)	41/64″	16.27	.6406"	3.2 (1/8″)	S2105041	S2120041	S2115041
		16.50	.6496"		S2155165	S2170165	S2165165
	21/32″	16.67	.6562"		S2105042	S2120042	S2115042
		17.00	.6693"		S2155170	S2170170	S2165170
	43/64″	17.07	.6719"		S2105043	S2120043	S2115043
	11/16″	17.46	.6875"		S2105044	S2120044	S2115044
		17.50	.6890"		S2155175	S2170175	S2165175
1 17.53 (.690″) to 24.38 (.960″)	45/64″	17.86	.7031"	4.0 (5/32″)	S2105045	S2120045	S2115045
		18.00	.7087"		S2155180	S2170180	S2165180
	23/32″	18.26	.7188"		S2105046	S2120046	S2115046
		18.50	.7283"		S2155185	S2170185	S2165185
	47/64″	18.65	.7344"		S2105047	S2120047	S2115047
		19.00	.7480"		S2155190	S2170190	S2165190
	3/4″	19.05	.7500"		S2105048	S2120048	S2115048
	49/64″	19.45	.7656"		S2105049	S2120049	S2115049
		19.50	.7677"		S2155195	S2170195	S2165195
	25/32″	19.84	.7812"		S2105050	S2120050	S2115050
		20.00	.7874"		S2155200	S2170200	S2165200
	51/64″	20.24	.7969"		S2105051	S2120051	S2115051
		20.50	.8071"		S2155205	S2170205	S2165205
	13/16″	20.64	.8125"		S2105052	S2120052	S2115052
		21.00	.8268"		S2155210	S2170210	S2165210
	27/32″	21.43	.8438"		S2105054	S2120054	S2115054
	55/64″	21.83	.8594"		S2105055	S2120055	S2115055
		22.00	.8661"		S2155220	S2170220	S2165220
	7/8″	22.23	.8750"		S2105056	S2120056	S2115056
	57/64″	22.62	.8906"		S2105057	S2120057	S2115057
		23.00	.9055"		S2155230	S2170230	S2165230
	29/32″	23.02	.9062"		S2105058	S2120058	S2115058
	59/64″	23.42	.9219"		S2105059	S2120059	S2115059
	15/16″	23.81	.9375"		S2105060	S2120060	S2115060
		24.00	.9449"		S2155240	S2170240	S2165240

◎ : Excellent ○ : Good

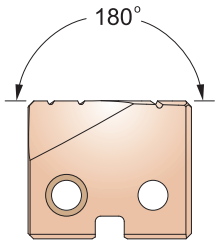
Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
◎	◎	◎	◎	○	○	○	◎	◎	○	○	○	○	◎	○	○

SPADE DRILLS

SERIES 2

SPADE DRILL INSERTS - SUPER COBALT T15 FLAT BOTTOM
SPADE DRILL BOHRER-EINSÄTZE - SUPER COBALT T15(FLACH-NUT)

POINT ANGLE : 180 degree



cutting conditions : P.327

Series Min. to Max. (mm/inch)	Diameter			Thick	EDP No.		
	Inch (inch)	Metric (mm)	Decimal (inch)	Metric (mm/inch)	SUPER HSS (T15)		
					TiN	Hardslick	TiAlN
2 24.41 (.961″) to 35.05 (1.380″)	31/32″	24.61	.9688"	4.8 (3/16″)	S2105062	S2120062	S2115062
	63/64″	25.00	.9843"		S2105063	S2120063	S2115063
	1″	25.40	1.0000"		S2105100	S2120100	S2115100
	1-1/64″	25.80	1.0156"		S2105101	S2120101	S2115101
		26.00	1.0236"		S2155260	S2170260	S2165260
	1-1/32″	26.19	1.0312"		S2105102	S2120102	S2115102
	1-3/64″	26.59	1.0469"		S2105103	S2120103	S2115103
	1-1/16″	26.99	1.0625"		S2105104	S2120104	S2115104
		27.00	1.0630"		S2155270	S2170270	S2165270
	1-3/32″	27.78	1.0938"		S2105106	S2120106	S2115106
		28.00	1.1024"		S2155280	S2170280	S2165280
	1-7/64″	28.18	1.1094"		S2105107	S2120107	S2115107
	1-1/8″	28.58	1.1250"		S2105108	S2120108	S2115108
		29.00	1.1417"		S2155290	S2170290	S2165290
	1-5/32″	29.37	1.1562"		S2105110	S2120110	S2115110
		30.00	1.1811"		S2155300	S2170300	S2165300
	1-3/16″	30.16	1.1875"		S2105112	S2120112	S2115112
	1-7/32″	30.96	1.2188"		S2105114	S2120114	S2115114
		31.00	1.2205"		S2155310	S2170310	S2165310
	1-1/4″	31.75	1.2500"		S2105116	S2120116	S2115116
		32.00	1.2598"		S2155320	S2170320	S2165320
	1-9/32″	32.54	1.2812"		S2105118	S2120118	S2115118
		33.00	1.2992"		S2155330	S2170330	S2165330
	1-5/16″	33.34	1.3125"		S2105120	S2120120	S2115120
		34.00	1.3386"		S2155340	S2170340	S2165340
	1-11/32″	34.13	1.3438"		S2105122	S2120122	S2115122
	1-3/8″	34.93	1.3750"		S2105124	S2120124	S2115124
		35.00	1.3780"		S2155350	S2170350	S2165350

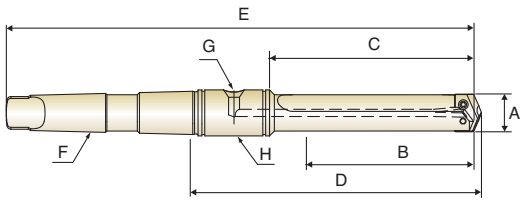
◎ : Excellent ○ : Good

Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
◎	◎	◎	◎	○	○	○	◎	◎	○	○	○	○	◎	○	○

SPADE DRILLS

Z**STSMT SERIES

TAPER SHANK HOLDERS
HALTER MIT MORSEKEGEL

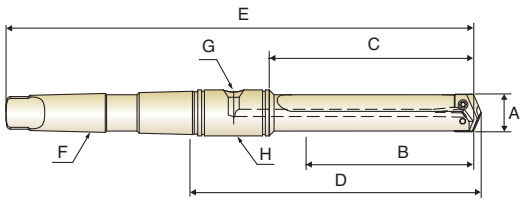


SHORT LENGTH - Straight Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
		A	B	C	D	E	F	G	H
Y	ZY0STSMT02I	3/8″ ~ 27/64″	1-1/4″	2-1/32″	3-15/32″	6-5/16″	#2	1/16″	PR110048
Z	ZZ0STSMT02I	7/16″ ~ 1/2″	1-1/4″	2-1/32″	3-15/32″	6-5/16″	#2	1/16″	PR110048
0	Z00STSMT02I	33/64″ ~ 11/16″	1-3/8″	2-3/16″	3-41/64″	6-15/32″	#2	1/16″	PR110048
0.5	Z05STSMT02I	39/64″ ~ 11/16″	1-3/8″	2-3/16″	3-41/64″	6-15/32″	#2	1/16″	PR110048
1	Z10STSMT03I	45/64″ ~ 15/16″	2-3/4″	3-7/8″	5-39/64″	9-5/32″	#3	1/8″	PR110100
	Z10STSMT04I	45/64″ ~ 15/16″	2-3/4″	3-7/8″	5-43/64″	10-5/32″	#4	1/8″	PR110100
1.5	Z15STSMT03I	55/64″ ~ 15/16″	2-3/4″	3-7/8″	5-39/64″	9-5/32″	#3	1/8″	PR110100
	Z15STSMT04I	55/64″ ~ 15/16″	2-3/4″	3-7/8″	5-43/64″	10-5/32″	#4	1/8″	PR110100
2	Z20STSMT03I	31/32″ ~ 1-3/8″	3-3/8″	4-1/2″	6-15/64″	9-25/32″	#3	1/8″	PR110100
	Z20STSMT04I	31/32″ ~ 1-3/8″	3-3/8″	4-1/2″	6-19/64″	10-25/32″	#4	1/8″	PR110100
2.5	Z25STSMT03I	1-3/16″ ~ 1-3/8″	3-3/8″	4-1/2″	6-15/64″	9-25/32″	#3	1/8″	PR110100
	Z25STSMT04I	1-3/16″ ~ 1-3/8″	3-3/8″	4-1/2″	6-37/64″	11-1/16″	#4	1/4″	PR110116
3	Z30STSMT04I	1-13/32″ ~ 1-7/8″	4-3/4″	6″	8-1/8″	12-9/16″	#4	1/4″	PR110116
	Z30STSMT05I	1-13/32″ ~ 1-7/8″	4-3/4″	6″	8-1/8″	13-13/16″	#5	1/4″	PR110148
4	Z40STSMT04I	1-29/32″ ~ 2-9/16″	5-1/8″	6-1/2″	8-5/8″	13-1/16″	#4	1/4″	PR110116
	Z40STSMT05I	1-29/32″ ~ 2-9/16″	5-1/8″	6-1/2″	8-5/8″	14-5/16″	#5	1/4″	PR110148
5	Z50STSMT05I	2-1/2″ ~ 3-1/2″	6-3/4″	8-1/2″	11-5/16″	16-15/16″	#5	1/2″	PR110216
7	Z70STSMT05I	3-17/32″ ~ 4-1/2″	6-3/4″	8-7/8″	11-11/16″	17-5/16″	#5	1/2″	PR110216

▶ You can also apply **RCA**(**R**otary **C**oolant **A**dapter) for internal cooling. (See page 324)

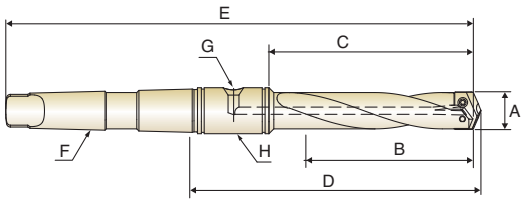
TAPER SHANK HOLDERS
HALTER MIT MORSEKEGEL



INTERMEDIATE LENGTH - Straight Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
		A	B	C	D	E	F	G	H
1	Z10ITSMT03I	45/64″~15/16″	4-3/4″	5-7/8″	7-39/64″	11-5/32″	#3	1/8″	PR110100
1.5	Z15ITSMT03I	55/64″~15/16″	4-3/4″	5-7/8″	7-39/64″	11-5/32″	#3	1/8″	PR110100
2	Z20ITSMT04I	31/32″~1-3/8″	5-3/8″	6-1/2″	8-19/64″	12-25/32″	#4	1/8″	PR110100
2.5	Z25ITSMT04I	1-3/16″~1-3/8″	5-3/8″	6-1/2″	8-37/64″	13-1/16″	#4	1/4″	PR110116
3	Z30ITSMT04I	1-13/32″~1-7/8″	6-1/2″	7-3/4″	9-7/8″	14-5/16″	#4	1/4″	PR110116

▶ You can also apply **RCA**(**R**otary **C**oolant **A**dapter) for internal cooling. (See page 324)



INTERMEDIATE LENGTH - Helical Flute (Inch)

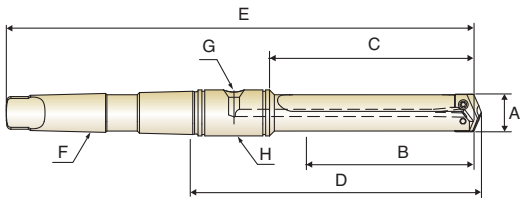
Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
		A	B	C	D	E	F	G	H
1	Z10ITHMT03I	45/64″~15/16″	4-3/4″	5-7/8″	7-39/64″	11-5/32″	#3	1/8″	PR110100
1.5	Z15ITHMT03I	55/64″~15/16″	4-3/4″	5-7/8″	7-39/64″	11-5/32″	#3	1/8″	PR110100
2	Z20ITHMT04I	31/32″~1-3/8″	5-3/8″	6-1/2″	8-19/64″	12-25/32″	#4	1/8″	PR110100
2.5	Z25ITHMT04I	1-3/16″~1-3/8″	5-3/8″	6-1/2″	8-37/64″	13-1/16″	#4	1/4″	PR110116

▶ You can also apply **RCA**(**R**otary **C**oolant **A**dapter) for internal cooling. (See page 324)

SPADE DRILLS

ZSDSMT SERIES

TAPER SHANK HOLDERS
HALTER MIT MORSEKEGEL



STANDARD LENGTH - Straight Flute (Inch)

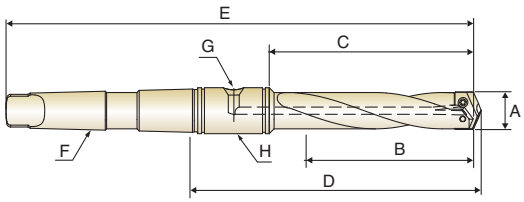
Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
		A	B	C	D	E	F	G	H
Y	ZY0SDSMT02I	3/8″~27/64″	2-3/8″	3-5/32″	4-19/32″	7-7/16″	#2	1/16″	PR110048
Z	ZZ0SDSMT02I	7/16″~1/2″	2-3/8″	3-5/32″	4-19/32″	7-7/16″	#2	1/16″	PR110048
0	Z00SDSMT02I	33/64″~11/16″	2-1/2″	3-5/16″	4-49/64″	7-19/32″	#2	1/16″	PR110048
0.5	Z05SDSMT02I	39/64″~11/16″	2-1/2″	3-5/16″	4-49/64″	7-19/32″	#2	1/16″	PR110048
1	Z10SDSMT03I	45/64″~15/16″	6-3/4″	7-7/8″	9-39/64″	13-5/32″	#3	1/8″	PR110100
	Z10SDSMT04I	45/64″~15/16″	6-3/4″	7-7/8″	9-43/64″	14-5/32″	#4	1/8″	PR110100
1.5	Z15SDSMT03I	55/64″~15/16″	6-3/4″	7-7/8″	9-39/64″	13-5/32″	#3	1/8″	PR110100
	Z15SDSMT04I	55/64″~15/16″	6-3/4″	7-7/8″	9-43/64″	14-5/32″	#4	1/8″	PR110100
2	Z20SDSMT03I	31/32″~1-3/8″	7-3/8″	8-1/2″	10-15/64″	13-25/32″	#3	1/8″	PR110100
	Z20SDSMT04I	31/32″~1-3/8″	7-3/8″	8-1/2″	10-19/64″	14-25/32″	#4	1/8″	PR110100
2.5	Z25SDSMT03I	1-3/16″~1-3/8″	7-3/8″	8-1/2″	10-15/64″	13-25/32″	#3	1/8″	PR110100
	Z25SDSMT04I	1-3/16″~1-3/8″	7-3/8″	8-1/2″	10-37/64″	15-1/16″	#4	1/4″	PR110116
3	Z30SDSMT04I	1-13/32″~1-7/8″	8-1/4″	9-1/2″	11-5/8″	16-1/16″	#4	1/4″	PR110116
	Z30SDSMT05I	1-13/32″~1-7/8″	8-1/4″	9-1/2″	11-5/8″	17-5/16″	#5	1/4″	PR110148
4	Z40SDSMT04I	1-29/32″~2-9/16″	9-1/8″	10-1/2″	12-5/8″	17-1/16″	#4	1/4″	PR110116
	Z40SDSMT05I	1-29/32″~2-9/16″	9-1/8″	10-1/2″	12-5/8″	18-5/16″	#5	1/4″	PR110148
5	Z50SDSMT05I	2-1/2″~3-1/2″	10-3/4″	12-1/2″	15-5/16″	20-15/16″	#5	1/2″	PR110216
7	Z70SDSMT05I	3-17/32″~4-1/2″	10-3/4″	12-7/8″	15-11/16″	21-5/16″	#5	1/2″	PR110216

▶ You can also apply **RCA**(**R**otary **C**oolant **A**dapter) for internal cooling. (See page 324)

SPADE DRILLS

ZSDHMT SERIES**

TAPER SHANK HOLDERS
HALTER MIT MORSEKEGEL



STANDARD LENGTH - Helical Flute (Inch)

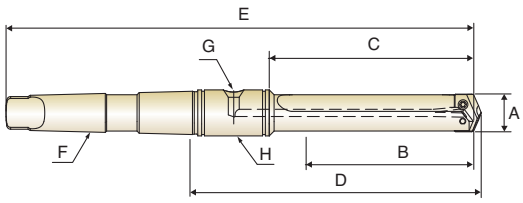
Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
		A	B	C	D	E	F	G	H
Y	ZY0SDHMT02I	3/8″~27/64″	2-3/8″	3-5/32″	4-19/32″	7-7/16″	#2	1/16″	PR110048
Z	ZZ0SDHMT02I	7/16″~1/2″	2-3/8″	3-5/32″	4-19/32″	7-7/16″	#2	1/16″	PR110048
0	Z00SDHMT02I	33/64″~11/16″	2-1/2″	3-5/16″	4-49/64″	7-19/32″	#2	1/16″	PR110048
0.5	Z05SDHMT02I	39/64″~11/16″	2-1/2″	3-5/16″	4-49/64″	7-19/32″	#2	1/16″	PR110048
1	Z10SDHMT03I	45/64″~15/16″	6-3/4″	7-7/8″	9-39/64″	13-5/32″	#3	1/8″	PR110100
	Z10SDHMT04I	45/64″~15/16″	6-3/4″	7-7/8″	9-43/64″	14-5/32″	#4	1/8″	PR110100
1.5	Z15SDHMT03I	55/64″~15/16″	6-3/4″	7-7/8″	9-39/64″	13-5/32″	#3	1/8″	PR110100
	Z15SDHMT04I	55/64″~15/16″	6-3/4″	7-7/8″	9-43/64″	14-5/32″	#4	1/8″	PR110100
2	Z20SDHMT03I	31/32″~1-3/8″	7-3/8″	8-1/2″	10-15/64″	13-25/32″	#3	1/8″	PR110100
	Z20SDHMT04I	31/32″~1-3/8″	7-3/8″	8-1/2″	10-19/64″	14-25/32″	#4	1/8″	PR110100
2.5	Z25SDHMT03I	1-3/16″~1-3/8″	7-3/8″	8-1/2″	10-15/64″	13-25/32″	#3	1/8″	PR110100
	Z25SDHMT04I	1-3/16″~1-3/8″	7-3/8″	8-1/2″	10-37/64″	15-1/16″	#4	1/4″	PR110116

▶ You can also apply **RCA**(**R**otary **C**oolant **A**dapter) for internal cooling. (See page 324)

SPADE DRILLS

Z**EXSMT SERIES
Z**EXHMT SERIES

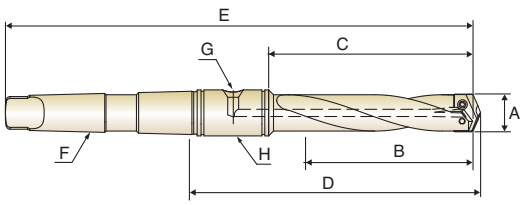
TAPER SHANK HOLDERS
HALTER MIT MORSEKEGEL



EXTENDED LENGTH - Straight Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
		A	B	C	D	E	F	G	H
Y	ZY0EXSMT02I	3/8″~27/64″	4-3/8″	5-5/32″	6-19/32″	9-7/16″	#2	1/16″	PR110048
Z	ZZ0EXSMT02I	7/16″~1/2″	4-3/8″	5-5/32″	6-19/32″	9-7/16″	#2	1/16″	PR110048
0	Z00EXSMT02I	33/64″~11/16″	4-1/2″	5-5/16″	6-49/64″	9-19/32″	#2	1/16″	PR110048
0.5	Z05EXSMT02I	39/64″~11/16″	4-1/2″	5-5/16″	6-49/64″	9-19/32″	#2	1/16″	PR110048
1	Z10EXSMT03I	45/64″~15/16″	10-3/4″	11-7/8″	13-39/64″	17-5/32″	#3	1/8″	PR110100
1.5	Z15EXSMT03I	55/64″~15/16″	10-3/4″	11-7/8″	13-39/64″	17-5/32″	#3	1/8″	PR110100
2	Z20EXSMT04I	31/32″~1-3/8″	11-3/8″	12-1/2″	14-15/64″	18-25/32″	#4	1/8″	PR110100
2.5	Z25EXSMT04I	1-3/16″~1-3/8″	11-3/8″	12-1/2″	14-37/64″	19-1/16″	#4	1/4″	PR110116
3	Z30EXSMT04I	1-13/32″~1-7/8″	13-3/4″	15″	17-1/8″	21-9/16″	#4	1/4″	PR110116
4	Z40EXSMT05I	1-29/32″~2-9/16″	16-5/8″	18″	20-1/8″	25-13/16″	#5	1/4″	PR110148
5	Z50EXSMT05I	2-1/2″~3-1/2″	18-1/4″	20″	22-13/16″	28-7/16″	#5	1/2″	PR110216
7	Z70EXSMT05I	3-17/32″~4-1/2″	21-7/8″	24″	26-13/16″	32-7/16″	#5	1/2″	PR110216

▶ You can also apply **RCA**(**R**otary **C**oolant **A**dapter) for internal cooling. (See page 324)



EXTENDED LENGTH - Helical Flute (Inch)

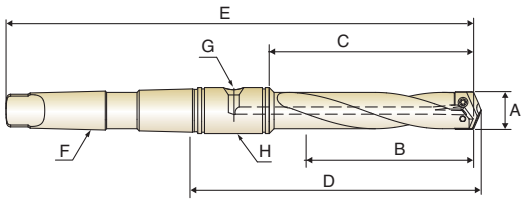
Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
		A	B	C	D	E	F	G	H
Y	ZY0EXHMT02I	3/8″~27/64″	4-3/8″	5-5/32″	6-19/32″	9-7/16″	#2	1/16″	PR110048
Z	ZZ0EXHMT02I	7/16″~1/2″	4-3/8″	5-5/32″	6-19/32″	9-7/16″	#2	1/16″	PR110048
0	Z00EXHMT02I	33/64″~11/16″	4-1/2″	5-5/16″	6-49/64″	9-19/32″	#2	1/16″	PR110048
0.5	Z05EXHMT02I	39/64″~11/16″	4-1/2″	5-5/16″	6-49/64″	9-19/32″	#2	1/16″	PR110048
1	Z10EXHMT03I	45/64″~15/16″	10-3/4″	11-7/8″	13-39/64″	17-5/32″	#3	1/8″	PR110100
1.5	Z15EXHMT03I	55/64″~15/16″	10-3/4″	11-7/8″	13-39/64″	17-5/32″	#3	1/8″	PR110100
2	Z20EXHMT04I	31/32″~1-3/8″	11-3/8″	12-1/2″	14-15/64″	18-25/32″	#4	1/8″	PR110100
2.5	Z25EXHMT04I	1-3/16″~1-3/8″	11-3/8″	12-1/2″	14-37/64″	19-1/16″	#4	1/4″	PR110116

▶ You can also apply **RCA**(**R**otary **C**oolant **A**dapter) for internal cooling. (See page 324)

SPADE DRILLS

Z**LGHMT SERIES

TAPER SHANK HOLDERS
HALTER MIT MORSEKEGEL



LONG LENGTH - Helical Flute (Inch)

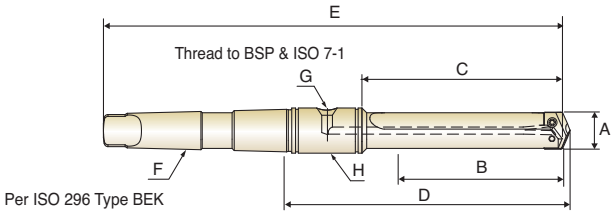
Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
		A	B	C	D	E	F	G	H
0	Z00LGHMT02I	33/64" ~ 11/16"	7"	7-13/16"	8-17/64"	12-3/32"	#2	1/16"	PR110048
0.5	Z05LGHMT02I	39/64" ~ 11/16"	7"	7-13/16"	8-17/64"	12-3/32"	#2	1/16"	PR110048

▶ You can also apply **RCA**(**R**otary **C**oolant **A**dapter) for internal cooling. (See page 324)

SPADE DRILLS

Z**STSMT SERIES
Z**ITHMT SERIES

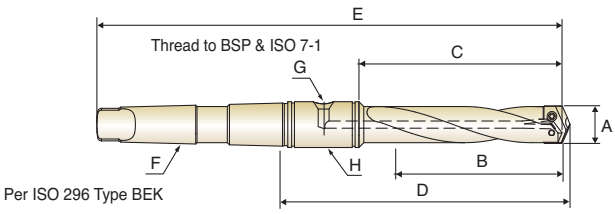
TAPER SHANK HOLDERS
HALTER MIT MORSEKEGEL



SHORT LENGTH - Straight Flute (Metric)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
		A	B	C	D	E	F	G	H
Y	ZY0STSMT02M	9.5 ~ 11.0	31.8	51.5	88.0	160.3	#2	1/16″	PR120190
Z	ZZ0STSMT02M	11.5 ~ 12.5	31.8	51.5	88.0	160.3	#2	1/16″	PR120190
0	Z00STSMT02M	13.0 ~ 17.5	35.0	55.5	92.4	164.3	#2	1/16″	PR120190
0.5	Z05STSMT02M	15.5 ~ 17.5	35.0	55.5	92.4	164.3	#2	1/16″	PR120190
1	Z10STSMT03M	18.0 ~ 24.0	69.8	98.4	142.5	232.5	#3	1/8″	PR120254
1.5	Z15STSMT03M	22.0 ~ 24.0	69.8	98.4	142.5	232.5	#3	1/8″	PR120254
2	Z20STSMT04M	25.0 ~ 35.0	85.7	114.3	160.4	273.8	#4	1/8″	PR120254
2.5	Z25STSMT04M	30.0 ~ 35.0	85.7	114.3	167.6	281.0	#4	1/4″	PR120317
3	Z30STSMT04M	36.0 ~ 47.0	120.6	152.4	206.4	319.1	#4	1/4″	PR120317
4	Z40STSMT05M	48.0 ~ 65.0	130.1	165.1	219.1	363.5	#5	1/4″	PR120444
5	Z50STSMT05M	64.0 ~ 88.0	171.5	215.9	287.3	430.2	#5	1/2″	PR120571
7	Z70STSMT05M	90.0 ~ 114.0	171.5	225.4	296.8	439.7	#5	1/2″	PR120571

▶ You can also apply **RCA**(**R**otary **C**oolant **A**dapter) for internal cooling. (See page 324)



INTERMEDIATE LENGTH - Helical Flute (Metric)

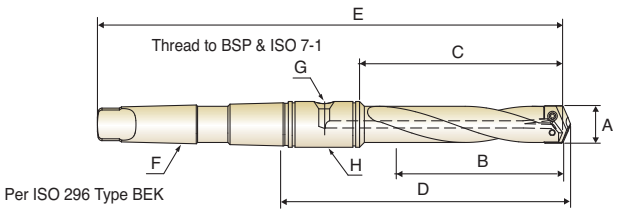
Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
		A	B	C	D	E	F	G	H
1	Z10ITHMT03M	18.0 ~ 24.0	120.7	149.2	193.3	283.3	#3	1/8″	PR120254
1.5	Z15ITHMT03M	22.0 ~ 24.0	120.7	149.2	193.3	283.3	#3	1/8″	PR120254
2	Z20ITHMT04M	25.0 ~ 35.0	136.5	165.1	211.2	324.6	#4	1/8″	PR120254
2.5	Z25ITHMT04M	30.0 ~ 35.0	136.5	165.1	218.4	331.8	#4	1/4″	PR120317
3	Z30ITHMT04M	36.0 ~ 47.0	165.1	196.9	250.9	363.6	#4	1/4″	PR120317

▶ You can also apply **RCA**(**R**otary **C**oolant **A**dapter) for internal cooling. (See page 324)

SPADE DRILLS

ZSDHMT SERIES**

TAPER SHANK HOLDERS
HALTER MIT MORSEKEGEL



STANDARD LENGTH - Helical Flute (Metric)

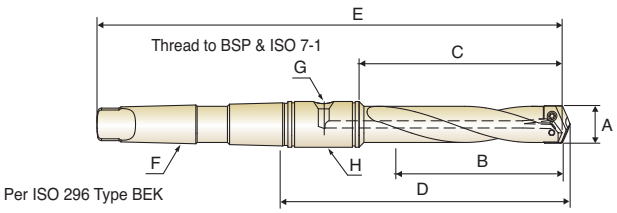
Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
		A	B	C	D	E	F	G	H
Y	ZY0SDHMT02M	9.5 ~ 11.0	60.3	80.2	116.7	188.9	#2	1/16″	PR120190
Z	ZZ0SDHMT02M	11.5 ~ 12.5	60.3	80.2	116.7	188.9	#2	1/16″	PR120190
0	Z00SDHMT02M	13.0 ~ 17.5	63.5	84.1	121.0	192.9	#2	1/16″	PR120190
0.5	Z05SDHMT02M	15.5 ~ 17.5	63.5	84.1	121.0	192.9	#2	1/16″	PR120190
1	Z10SDHMT03M	18.0 ~ 24.0	171.5	200.0	244.1	334.2	#3	1/8″	PR120254
1.5	Z15SDHMT03M	22.0 ~ 24.0	171.5	200.0	244.1	334.2	#3	1/8″	PR120254
2	Z20SDHMT04M	25.0 ~ 35.0	187.3	215.9	262.0	375.4	#4	1/8″	PR120254
2.5	Z25SDHMT04M	30.0 ~ 35.0	187.3	215.9	269.2	382.6	#4	1/4″	PR120317
3	Z30SDHMT04M	36.0 ~ 47.0	209.5	241.3	295.3	408.0	#4	1/4″	PR120317
4	Z40SDHMT05M	48.0 ~ 65.0	231.8	266.7	320.7	465.1	#5	1/4″	PR120444
5	Z50SDHMT05M	64.0 ~ 88.0	273.1	317.5	388.9	531.8	#5	1/2″	PR120571
7	Z70SDHMT05M	90.0 ~ 114.0	273.1	327.0	398.5	541.3	#5	1/2″	PR120571

▶ You can also apply **RCA**(**R**otary **C**oolant **A**dapter) for inernal cooling. (See page 324)

SPADE DRILLS

Z**EXHMT SERIES
Z**EXSMT SERIES

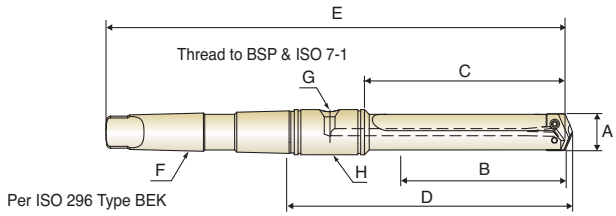
TAPER SHANK HOLDERS
HALTER MIT MORSEKEGEL



EXTENDED LENGTH - Helical Flute (Metric)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
		A	B	C	D	E	F	G	H
Y	ZY0EXHMT02M	9.5 ~ 11.0	111.1	130.9	167.4	239.7	#2	1/16″	PR120190
Z	ZZ0EXHMT02M	11.5 ~ 12.5	111.1	130.9	167.4	239.7	#2	1/16″	PR120190
0	Z00EXHMT02M	13.0 ~ 17.5	114.3	135.0	171.8	243.7	#2	1/16″	PR120190
0.5	Z05EXHMT02M	15.5 ~ 17.5	114.3	135.0	171.8	243.7	#2	1/16″	PR120190
1	Z10EXHMT03M	18.0 ~ 24.0	273.1	301.6	345.7	435.8	#3	1/8″	PR120254
1.5	Z15EXHMT03M	22.0 ~ 24.0	273.1	301.6	345.7	435.8	#3	1/8″	PR120254
2	Z20EXHMT04M	25.0 ~ 35.0	289.0	317.5	363.6	477.0	#4	1/8″	PR120254
2.5	Z25EXHMT04M	30.0 ~ 35.0	289.0	317.5	370.8	484.2	#4	1/4″	PR120317

▶ You can also apply **RCA**(**R**otary **C**oolant **A**dapter) for internal cooling. (See page 324)



EXTENDED LENGTH - Straight Flute (Metric)

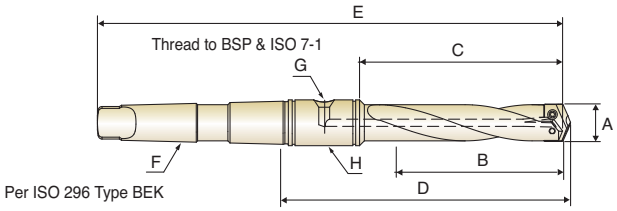
Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
		A	B	C	D	E	F	G	H
3	Z30EXSMT04M	36.0 ~ 47.0	349.3	381.0	435.0	547.7	#4	1/4″	PR120317
4	Z40EXSMT05M	48.0 ~ 65.0	422.3	457.2	511.2	655.6	#5	1/4″	PR120444
5	Z50EXSMT05M	64.0 ~ 88.0	463.6	508.0	579.4	722.3	#5	1/2″	PR120571
7	Z70EXSMT05M	90.0 ~ 114.0	555.6	609.6	681.1	823.9	#5	1/2″	PR120571

▶ You can also apply **RCA**(**R**otary **C**oolant **A**dapter) for internal cooling. (See page 324)

SPADE DRILLS

Z**LGHMT SERIES

TAPER SHANK HOLDERS
HALTER MIT MORSEKEGEL



LONG LENGTH - Helical Flute (Metric)

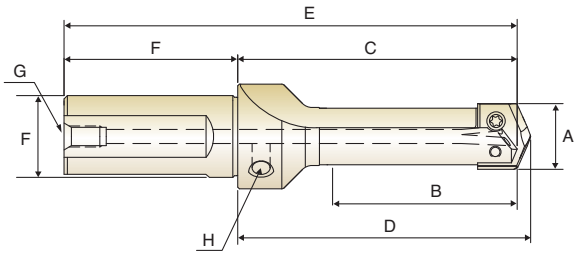
Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	MT	Pipe Tap	RCA
		A	B	C	D	E	F	G	H
0	Z00LGHMT02M	13.0 ~ 17.5	177.8	198.5	235.3	307.2	#2	1/16"	PR120190
0.5	Z05LGHMT02M	15.5 ~ 17.5	177.8	198.5	235.3	307.2	#2	1/16"	PR120190

▶ You can also apply **RCA**(**R**otary **C**oolant **A**dapter) for internal cooling. (See page 324)

SPADE DRILLS

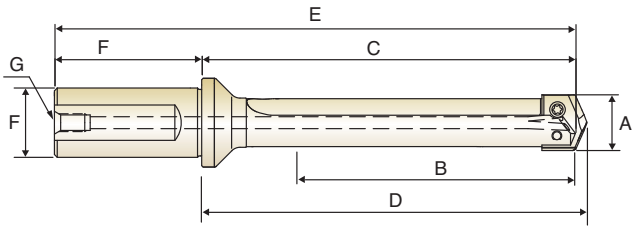
Z**SBSF SERIES
Z**STSF SERIES

FLANGED STRAIGHT SHANK HOLDERS
HALTER MIT ZYLINDERSCHAFT UND SPANNFLÄCHE



STUB LENGTH - Straight Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap	
							Dia.	Length	Rear	Side
		A	B	C	D	E	F		G	H
Y	ZY0SBSF063I	3/8″~27/64″	3/4″	1-7/8″	1-31/32″	3-3/4″	5/8″	1-7/8″	1/16″	1/8″
Z	ZZ0SBSF063I	7/16″~1/2″	3/4″	1-7/8″	1-31/32″	3-3/4″	5/8″	1-7/8″	1/16″	1/8″
0	Z00SBSF075I	33/64″~11/16″	7/8″	1-7/8″	1-63/64″	3-29/32″	3/4″	2-1/32″	1/8″	1/8″
0.5	Z05SBSF075I	39/64″~11/16″	7/8″	1-7/8″	1-63/64″	3-29/32″	3/4″	2-1/32″	1/8″	1/8″
1	Z10SBSF100I	45/64″~15/16″	1-7/8″	2-63/64″	3-1/8″	5-17/64″	1″	2-9/32″	1/8″	1/8″
1.5	Z15SBSF100I	55/64″~15/16″	2-1/4″	3-31/64″	3-5/8″	5-49/64″	1″	2-9/32″	1/8″	1/8″
2	Z20SBSF125I	31/32″~1-3/8″	2-1/4″	3-31/64″	3-5/8″	5-49/64″	1-1/4″	2-9/32″	1/4″	1/8″
2.5	Z25SBSF125I	1-3/16″~1-3/8″	3-5/8″	4-55/64″	5″	7-9/64″	1-1/4″	2-9/32″	1/4″	1/8″
3	Z30SBSF150I	1-13/32″~1-7/8″	3″	4-59/64″	5-7/64″	7-39/64″	1-1/2″	2-11/16″	1/4″	1/4″



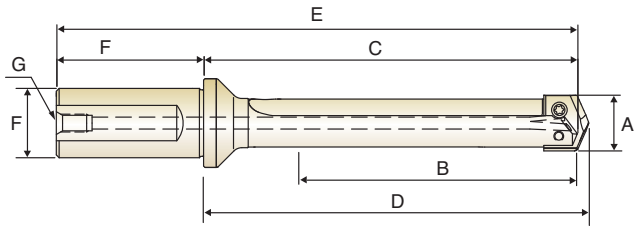
SHORT LENGTH - Straight Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	ZY0STSF075I	3/8″~27/64″	1-1/4″	2-13/32″	2-1/2″	4-7/16″	3/4″	2-1/32″	1/8″
Z	ZZ0STSF075I	7/16″~1/2″	1-1/4″	2-13/32″	2-1/2″	4-7/16″	3/4″	2-1/32″	1/8″
0	Z00STSF075I	33/64″~11/16″	1-3/8″	2-1/2″	2-39/64″	4-17/32″	3/4″	2-1/32″	1/8″
0.5	Z05STSF075I	39/64″~11/16″	1-3/8″	2-1/2″	2-39/64″	4-17/32″	3/4″	2-1/32″	1/8″
1	Z10STSF100I	45/64″~15/16″	2-5/8″	4-7/32″	4-23/64″	6-1/2″	1″	2-9/32″	1/8″
1.5	Z15STSF100I	55/64″~15/16	2-5/8″	4-7/32″	4-23/64″	6-1/2″	1″	2-9/32″	1/8″
2	Z20STSF125I	31/32″~1-3/8″	3-3/8″	5-1/16″	5-13/64″	7-11/32″	1-1/4″	2-9/32″	1/4″
2.5	Z25STSF125I	1-3/16″~1-3/8″	3-3/8″	5-1/16″	5-13/64″	7-11/32″	1-1/4″	2-9/32″	1/4″
3	Z30STSF150I	1-13/32″~1-7/8″	4-3/4″	6-13/16″	7″	9-1/2″	1-1/2″	2-11/16″	1/4″
4	Z40STSF150I	1-29/32″~2-9/16″	5-1/8″	7-1/16″	7-1/4″	9-3/4″	1-1/2″	2-11/16″	1/4″

SPADE DRILLS

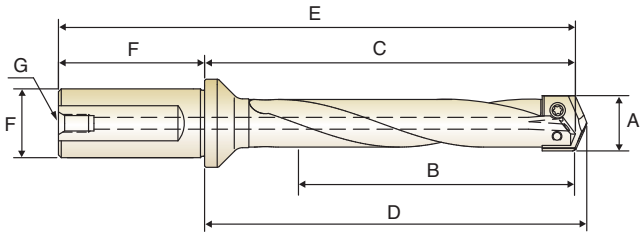
Z**ITSF SERIES
Z**ITHF SERIES

FLANGED STRAIGHT SHANK HOLDERS
HALTER MIT ZYLINDERSCHAFT UND SPANNFLÄCHE



INTERMEDIATE LENGTH - Straight Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
1	Z10ITSF100I	45/64″~15/16″	4-5/8″	6-3/32″	6-15/64″	8-3/8″	1″	2-9/32″	1/8″
1.5	Z15ITSF100I	55/64″~15/16″	4-5/8″	6-3/32″	6-15/64″	8-3/8″	1″	2-9/32″	1/8″
2	Z20ITSF125I	31/32″~1-3/8″	5-3/8″	7-1/16″	7-13/64″	9-11/32″	1-1/4″	2-9/32″	1/4″
2.5	Z25ITSF125I	1-3/16″~1-3/8″	5-3/8″	7-1/16″	7-13/64″	9-11/32″	1-1/4″	2-9/32″	1/4″
3	Z30ITSF150I	1-13/32″~1-7/8″	6-1/2″	8-9/16″	8-3/4″	11-1/4″	1-1/2″	2-11/32″	1/4″



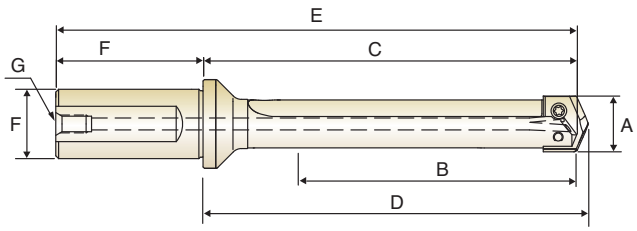
INTERMEDIATE LENGTH - Helical Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
1	Z10ITHF100I	45/64″~15/16″	4-5/8″	6-3/32″	6-15/64″	8-3/8″	1″	2-9/32″	1/8″
1.5	Z15ITHF100I	55/64″~15/16″	4-5/8″	6-3/32″	6-15/64″	8-3/8″	1″	2-9/32″	1/8″
2	Z20ITHF125I	31/32″~1-3/8″	5-3/8″	7-1/16″	7-13/64″	9-11/32″	1-1/4″	2-9/32″	1/4″
2.5	Z25ITHF125I	1-3/16″~1-3/8″	5-3/8″	7-1/16″	7-13/64″	9-11/32″	1-1/4″	2-9/32″	1/4″
3	Z30ITHF150I	1-13/32″~1-7/8″	6-1/2″	8-9/16″	8-3/4″	11-1/4″	1-1/2″	2-11/32″	1/4″

SPADE DRILLS

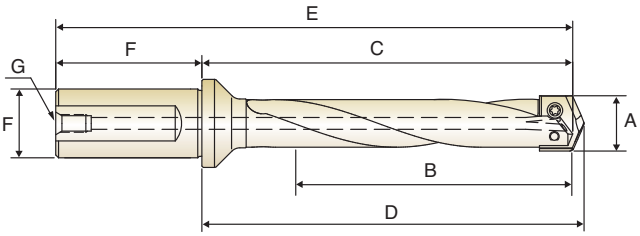
Z**SDSF SERIES
Z**SDHF SERIES

FLANGED STRAIGHT SHANK HOLDERS
HALTER MIT ZYLINDERSCHAFT UND SPANNFLÄCHE



STANDARD LENGTH - Straight Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	ZY0SDSF075I	3/8″~27/64″	2-3/8″	3-17/32″	3-5/8″	5-9/16″	3/4″	2-1/32″	1/8″
Z	ZZ0SDSF075I	7/16″~1/2″	2-3/8″	3-17/32″	3-5/8″	5-9/16″	3/4″	2-1/32″	1/8″
0	Z00SDSF075I	33/64″~11/16″	2-1/2″	3-5/8″	3-47/64″	5-21/32″	3/4″	2-1/32″	1/8″
0.5	Z05SDSF075I	39/64″~11/16″	2-1/2″	3-5/8″	3-47/64″	5-21/32″	3/4″	2-1/32″	1/8″
1	Z10SDSF100I	45/64″~15/16″	6-5/8″	8-3/32″	8-15/64″	10-3/8″	1″	2-9/32″	1/8″
1.5	Z15SDSF100I	55/64″~15/16″	6-5/8″	8-3/32″	8-15/64″	10-3/8″	1″	2-9/32″	1/8″
2	Z20SDSF125I	31/32″~1-3/8″	7-3/8″	9-1/16″	9-13/64″	11-11/32″	1-1/4″	2-9/32″	1/4″
2.5	Z25SDSF125I	1-3/16″~1-3/8″	7-3/8″	9-1/16″	9-13/64″	11-11/32″	1-1/4″	2-9/32″	1/4″
3	Z30SDSF150I	1-13/32″~1-7/8″	8-1/4″	10-5/16″	10-1/2″	13″	1-1/2″	2-11/16″	1/4″
4	Z40SDSF150I	1-29/32″~2-9/16″	9-1/8″	11-1/16″	11-1/4″	13-3/4″	1-1/2″	2-11/16″	1/4″



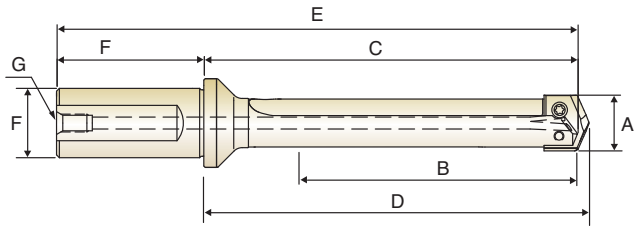
STANDARD LENGTH - Helical Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	ZY0SDHF075I	3/8″~27/64″	2-3/8″	3-17/32″	3-5/8″	5-9/16″	3/4″	2-1/32″	1/8″
Z	ZZ0SDHF075I	7/16″~1/2″	2-3/8″	3-17/32″	3-5/8″	5-9/16″	3/4″	2-1/32″	1/8″
0	Z00SDHF075I	33/64″~11/16″	2-1/2″	3-5/8″	3-47/64″	5-21/32″	3/4″	2-1/32″	1/8″
0.5	Z05SDHF075I	39/64″~11/16″	2-1/2″	3-5/8″	3-47/64″	5-21/32″	3/4″	2-1/32″	1/8″
1	Z10SDHF100I	45/64″~15/16″	6-5/8″	8-3/32″	8-15/64″	10-3/8″	1″	2-9/32″	1/8″
1.5	Z15SDHF100I	55/64″~15/16″	6-5/8″	8-3/32″	8-15/64″	10-3/8″	1″	2-9/32″	1/8″
2	Z20SDHF125I	31/32″~1-3/8″	7-3/8″	9-1/16″	9-13/64″	11-11/32″	1-1/4″	2-9/32″	1/4″
2.5	Z25SDHF125I	1-3/16″~1-3/8″	7-3/8″	9-1/16″	9-13/64″	11-11/32″	1-1/4″	2-9/32″	1/4″
3	Z30SDHF150I	1-13/32″~1-7/8″	8-1/4″	10-5/16″	10-1/2″	13″	1-1/2″	2-11/16″	1/4″
4	Z40SDHF150I	1-29/32″~2-9/16″	9-1/8″	11-1/16″	11-1/4″	13-3/4″	1-1/2″	2-11/16″	1/4″

SPADE DRILLS

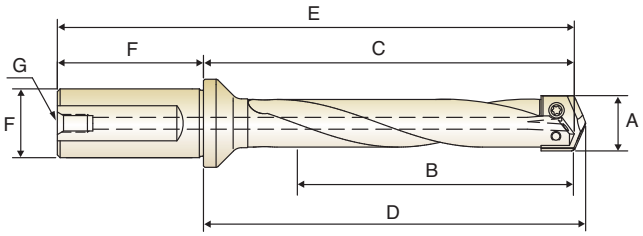
Z**EXSF SERIES
Z**EXHF SERIES

FLANGED STRAIGHT SHANK HOLDERS
HALTER MIT ZYLINDERSCHAFT UND SPANNFLÄCHE



EXTENDED LENGTH - Straight Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	ZY0EXSF075I	3/8″~27/64″	4-3/8″	5-17/32″	5-5/8″	7-9/16″	3/4″	2-1/32″	1/8″
Z	ZZ0EXSF075I	7/16″~1/2″	4-3/8″	5-17/32″	5-5/8″	7-9/16″	3/4″	2-1/32″	1/8″
0	Z00EXSF075I	33/64″~11/16″	4-1/2″	5-5/8″	5-47/64″	7-21/32″	3/4″	2-1/32″	1/8″
0.5	Z05EXSF075I	39/64″~11/16″	4-1/2″	5-5/8″	5-47/64″	7-21/32″	3/4″	2-1/32″	1/8″
1	Z10EXSF100I	45/64″~15/16″	10-5/8″	12-3/32″	12-15/64″	14-3/8″	1″	2-9/32″	1/8″
1.5	Z15EXSF100I	55/64″~15/16″	10-5/8″	12-3/32″	12-15/64″	14-3/8″	1″	2-9/32″	1/8″
2	Z20EXSF125I	31/32″~1-3/8″	11-3/8″	13-1/16″	13-13/64″	15-11/32″	1-1/4″	2-9/32″	1/4″
2.5	Z25EXSF125I	1-3/16″~1-3/8″	11-3/8″	13-1/16″	13-13/64″	15-11/32″	1-1/4″	2-9/32″	1/4″



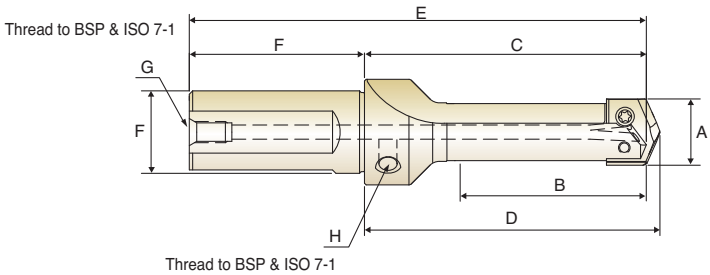
EXTENDED LENGTH - Helical Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	ZY0EXHF075I	3/8″~27/64″	4-3/8″	5-17/32″	5-5/8″	7-9/16″	3/4″	2-1/32″	1/8″
Z	ZZ0EXHF075I	7/16″~1/2″	4-3/8″	5-17/32″	5-5/8″	7-9/16″	3/4″	2-1/32″	1/8″
0	Z00EXHF075I	33/64″~11/16″	4-1/2″	5-5/8″	5-47/64″	7-21/32″	3/4″	2-1/32″	1/8″
0.5	Z05EXHF075I	39/64″~11/16″	4-1/2″	5-5/8″	5-47/64″	7-21/32″	3/4″	2-1/32″	1/8″
1	Z10EXHF100I	45/64″~15/16″	10-5/8″	12-3/32″	12-15/64″	14-3/8″	1″	2-9/32″	1/8″
1.5	Z15EXHF100I	55/64″~15/16″	10-5/8″	12-3/32″	12-15/64″	14-3/8″	1″	2-9/32″	1/8″
2	Z20EXHF125I	31/32″~1-3/8″	11-3/8″	13-1/16″	13-13/64″	15-11/32″	1-1/4″	2-9/32″	1/4″
2.5	Z25EXHF125I	1-3/16″~1-3/8″	11-3/8″	13-1/16″	13-13/64″	15-11/32″	1-1/4″	2-9/32″	1/4″

SPADE DRILLS

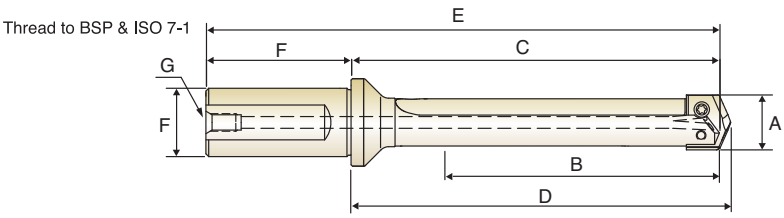
Z**SBSF SERIES
Z**STSF SERIES

FLANGED STRAIGHT SHANK HOLDERS
HALTER MIT ZYLINDERSCHAFT UND SPANNFLÄCHE



STUB LENGTH - Straight Flute (Metric)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap	
							Dia.	Length	Rear	Side
		A	B	C	D	E	F		G	H
Y	ZY0SBSF016M	9.5 ~ 11.0	19.1	47.6	50.0	95.6	16.0	48.0	1/16″	1/8″
Z	ZZ0SBSF016M	11.5 ~ 12.5	19.1	47.6	50.0	95.6	16.0	48.0	1/16″	1/8″
0	Z00SBSF020M	13.0 ~ 17.5	22.2	47.6	50.4	97.6	20.0	50.0	1/8″	1/8″
0.5	Z05SBSF020M	15.5 ~ 17.5	22.2	47.6	50.4	97.6	20.0	50.0	1/8″	1/8″
1	Z10SBSF025M	18.0 ~ 24.0	47.6	75.8	79.4	131.8	25.0	56.0	1/8″	1/8″
1.5	Z15SBSF025M	22.0 ~ 24.0	57.2	88.5	92.1	144.5	25.0	56.0	1/8″	1/8″
2	Z20SBSF032M	25.0 ~ 35.0	57.2	88.5	92.1	148.5	32.0	60.0	1/4″	1/8″
2.5	Z25SBSF032M	30.0 ~ 35.0	92.1	123.4	127.0	183.4	32.0	60.0	1/4″	1/8″
3	Z30SBSF040M	36.0 ~ 47.0	76.2	125.0	129.8	195.0	40.0	70.0	1/4″	1/4″



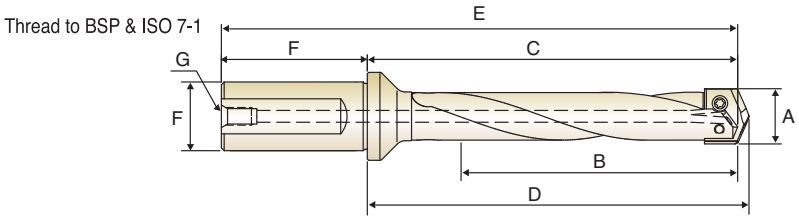
SHORT LENGTH - Straight Flute (Metric)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	ZY0STSF020M	9.5 ~ 11.0	31.8	61.1	63.5	111.1	20.0	50.0	1/8″
Z	ZZ0STSF020M	11.5 ~ 12.5	31.8	61.1	63.5	111.1	20.0	50.0	1/8″
0	Z00STSF020M	13.0 ~ 17.5	34.9	63.5	66.3	113.5	20.0	50.0	1/8″
0.5	Z05STSF020M	15.5 ~ 17.5	34.9	63.5	66.3	113.5	20.0	50.0	1/8″
1	Z10STSF025M	18.0 ~ 24.0	66.7	107.2	110.7	163.2	25.0	56.0	1/8″
1.5	Z15STSF025M	22.0 ~ 24.0	66.7	107.2	110.7	163.2	25.0	56.0	1/8″
2	Z20STSF032M	25.0 ~ 35.0	85.7	128.6	132.2	188.6	32.0	60.0	1/4″
2.5	Z25STSF032M	30.0 ~ 35.0	85.7	128.6	132.2	188.6	32.0	60.0	1/4″
3	Z30STSF040M	36.0 ~ 47.0	120.7	173.0	177.8	243.0	40.0	70.0	1/4″
4	Z40STSF040M	48.0 ~ 65.0	130.2	179.4	184.0	249.4	40.0	70.0	1/4″

SPADE DRILLS

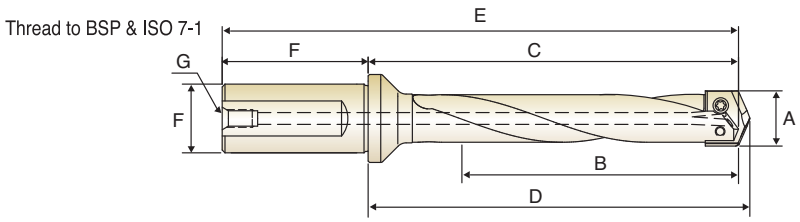
Z**ITHF SERIES
Z**SDHF SERIES

FLANGED STRAIGHT SHANK HOLDERS
HALTER MIT ZYLINDERSCHAFT UND SPANNFLÄCHE



INTERMEDIATE LENGTH - Helical Flute (Metric)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
1	Z10ITHF025M	18.0 ~ 24.0	117.5	154.8	158.4	210.8	25.0	56.0	1/8″
1.5	Z15ITHF025M	22.0 ~ 24.0	117.5	154.8	158.4	210.8	25.0	56.0	1/8″
2	Z20ITHF032M	25.0 ~ 35.0	136.5	179.4	183.0	239.4	32.0	60.0	1/4″
2.5	Z25ITHF032M	30.0 ~ 35.0	136.5	179.4	183.0	239.4	32.0	60.0	1/4″
3	Z30ITHF040M	36.0 ~ 47.0	165.1	217.5	222.3	287.5	40.0	70.0	1/4″



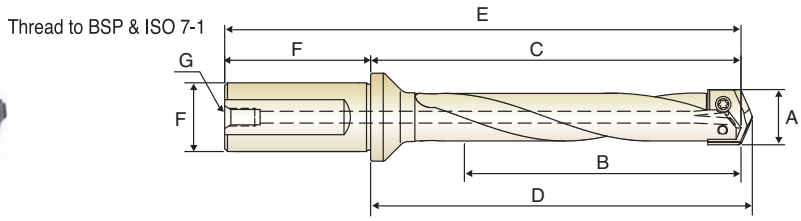
STANDARD LENGTH - Helical Flute (Metric)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	ZY0SDHF020M	9.5 ~ 11.0	60.3	89.7	92.1	139.7	20.0	50.0	1/8″
Z	ZZ0SDHF020M	11.5 ~ 12.5	60.3	89.7	92.1	139.7	20.0	50.0	1/8″
0	Z00SDHF020M	13.0 ~ 17.5	63.5	92.1	94.9	142.1	20.0	50.0	1/8″
0.5	Z05SDHF020M	15.5 ~ 17.5	63.5	92.1	94.9	142.1	20.0	50.0	1/8″
1	Z10SDHF025M	18.0 ~ 24.0	168.3	205.6	209.2	261.6	25.0	56.0	1/8″
1.5	Z15SDHF025M	22.0 ~ 24.0	168.3	205.6	209.2	261.6	25.0	56.0	1/8″
2	Z20SDHF032M	25.0 ~ 35.0	187.3	230.2	233.8	290.2	32.0	60.0	1/4″
2.5	Z25SDHF032M	30.0 ~ 35.0	187.3	230.2	233.8	290.2	32.0	60.0	1/4″
3	Z30SDHF040M	36.0 ~ 47.0	209.6	261.9	266.7	331.9	40.0	70.0	1/4″
4	Z40SDHF040M	48.0 ~ 65.0	231.8	281.0	285.8	351.0	40.0	70.0	1/4″

SPADE DRILLS

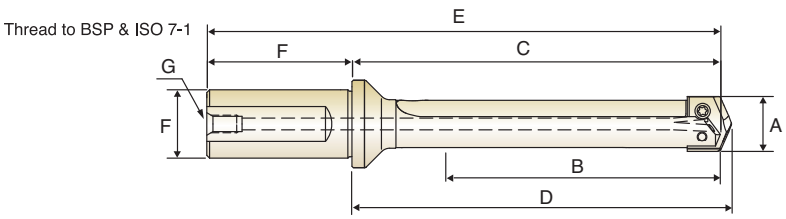
Z**EXHF SERIES
Z**EXSF SERIES

FLANGED STRAIGHT SHANK HOLDERS
HALTER MIT ZYLINDERSCHAFT UND SPANNFLÄCHE



EXTENDED LENGTH - Helical Flute (Metric)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	ZY0EXHF020M	9.5 ~ 11.0	111.1	140.5	142.9	190.5	20.0	50.0	1/8"
Z	ZZ0EXHF020M	11.5 ~ 12.5	111.1	140.5	142.9	190.5	20.0	50.0	1/8"
0	Z00EXHF020M	13.0 ~ 17.5	114.3	142.9	145.7	192.9	20.0	50.0	1/8"
0.5	Z05EXHF020M	15.5 ~ 17.5	114.3	142.9	145.7	192.9	20.0	50.0	1/8"
1	Z10EXHF025M	18.0 ~ 24.0	269.9	307.2	310.8	363.2	25.0	56.0	1/8"
1.5	Z15EXHF025M	22.0 ~ 24.0	269.9	307.2	310.8	363.2	25.0	56.0	1/8"
2	Z20EXHF032M	25.0 ~ 35.0	288.9	331.8	335.4	391.8	32.0	60.0	1/4"
2.5	Z25EXHF032M	30.0 ~ 35.0	288.9	331.8	335.4	391.8	32.0	60.0	1/4"



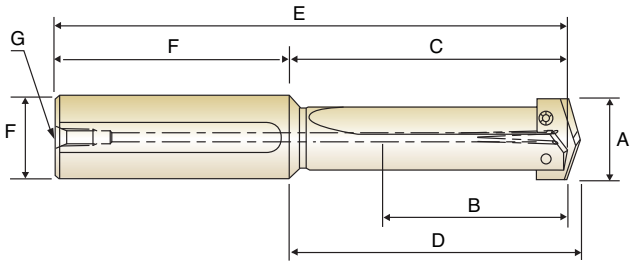
EXTENDED LENGTH - Straight Flute (Metric)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
3	Z30EXSF040M	36.0 ~ 47.0	349.3	401.6	406.4	471.6	40.0	70.0	1/4"
4	Z40EXSF040M	48.0 ~ 65.0	422.3	471.5	476.3	541.5	40.0	70.0	1/4"

SPADE DRILLS

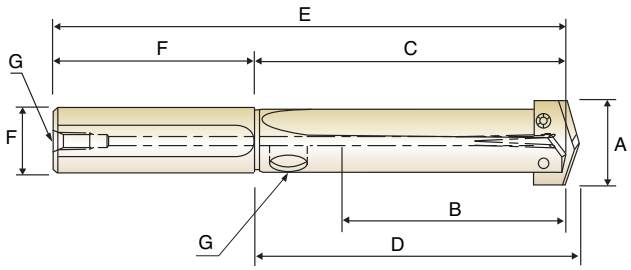
Z**STSS SERIES

STRAIGHT SHANK HOLDERS
HALTER MIT ZYLINDERSCHAFT



SHORT LENGTH - Straight Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	ZY0STSS075I	3/8″~27/64″	1-1/4″	2-1/32″	2-1/8″	4-13/32″	3/4″	2-3/8″	1/8″
Z	ZZ0STSS075I	7/16″~1/2″	1-1/4″	2-1/32″	2-1/8″	4-13/32″	3/4″	2-3/8″	1/8″
0	Z00STSS075I	33/64″~11/16″	1-3/8″	2-3/16″	2-19/64″	4-9/16″	3/4″	2-3/8″	1/8″
0.5	Z05STSS075I	39/64″~11/16″	1-3/8″	2-3/16″	2-19/64″	4-9/16″	3/4″	2-3/8″	1/8″



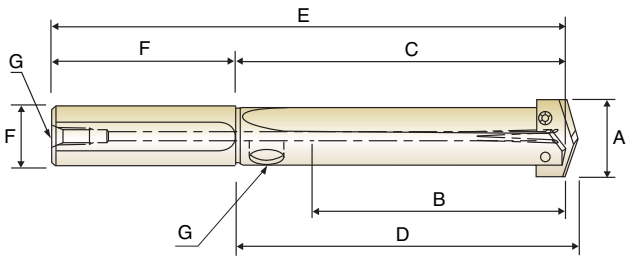
SHORT LENGTH - Straight Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
1	Z10STSS075I	45/64″~15/16″	2-5/8″	3-7/8″	4-1/64″	6-7/8″	3/4″	3″	1/8″
	Z10STSS100I	45/64″~15/16″	2-5/8″	3-7/8″	4-1/64″	6-7/8″	1″	3″	1/8″
1.5	Z15STSS075I	55/64″~15/16″	2-5/8″	3-7/8″	4-1/64″	6-7/8″	3/4″	3″	1/8″
	Z15STSS100I	55/64″~15/16″	2-5/8″	3-7/8″	4-1/64″	6-7/8″	1″	3″	1/8″
2	Z20STSS100I	31/32″~1-3/8″	3-3/8″	4-1/2″	4-41/64″	8″	1″	3-1/2″	1/8″
	Z20STSS125I	31/32″~1-3/8″	3-3/8″	4-1/2″	4-41/64″	8″	1-1/4″	3-1/2″	1/8″
2.5	Z25STSS100I	1-3/16″~1-3/8″	3-3/8″	4-1/2″	4-41/64″	8″	1″	3-1/2″	1/8″
	Z25STSS125I	1-3/16″~1-3/8″	3-3/8″	4-1/2″	4-41/64″	8″	1-1/4″	3-1/2″	1/8″
3	Z30STSS125I	1-13/32″~1-7/8″	4-3/4″	6″	6-3/16″	10″	1-1/4″	4″	1/4″
	Z30STSS150I	1-13/32″~1-7/8″	4-3/4″	6″	6-3/16″	10″	1-1/2″	4″	1/4″
4	Z40STSS150I	1-29/32″~2-9/16″	5-1/8″	6-1/2″	6-11/16″	10-1/2″	1-1/2″	4″	1/4″
	Z40STSS175I	1-29/32″~2-9/16″	5-1/8″	6-1/2″	6-11/16″	10-1/2″	1-3/4″	4″	1/4″
5	Z50STSS200I	2-1/2″~3-1/2″	6-3/4″	8-1/2″	8-3/4″	12-1/2″	2″	4″	1/2″

SPADE DRILLS

Z**ITSS SERIES

STRAIGHT SHANK HOLDERS
HALTER MIT ZYLINDERSCHAFT



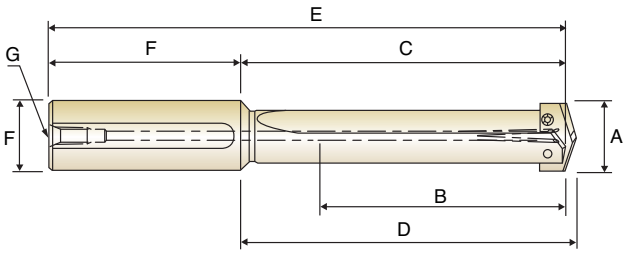
INTERMEDIATE LENGTH - Straight Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
1	Z10ITSS100I	45/64″~15/16″	4-5/8″	5-7/8″	6-1/64″	8-7/8″	1″	3″	1/8″
1.5	Z15ITSS100I	55/64″~15/16″	4-5/8″	5-7/8″	6-1/64″	8-7/8″	1″	3″	1/8″
2	Z20ITSS125I	31/32″~1-3/8″	5-3/8″	6-1/2″	6-41/64″	10″	1-1/4″	3-1/2″	1/8″
2.5	Z25ITSS125I	1-3/16″~1-3/8″	5-3/8″	6-1/2″	6-41/64″	10″	1-1/4″	3-1/2″	1/8″
3	Z30ITSS150I	1-13/32″~1-7/8″	6-1/2″	7-3/4″	7-15/16″	11-3/4″	1-1/2″	4″	1/4″

SPADE DRILLS

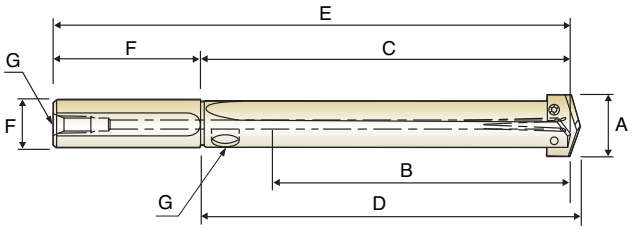
Z**SDSS SERIES

STRAIGHT SHANK HOLDERS
HALTER MIT ZYLINDERSCHAFT



STANDARD LENGTH - Straight Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	ZY0SDSS075I	3/8″~27/64″	2-3/8″	3-5/32″	3-1/4″	5-17/32″	3/4″	2-3/8″	1/8″
Z	ZZ0SDSS075I	7/16″~1/2″	2-3/8″	3-5/32″	3-1/4″	5-17/32″	3/4″	2-3/8″	1/8″
0	Z00SDSS075I	33/64″~11/16″	2-1/2″	3-5/16″	3-27/64″	5-11/16″	3/4″	2-3/8″	1/8″
0.5	Z05SDSS075I	39/64″~11/16″	2-1/2″	3-5/16″	3-27/64″	5-11/16″	3/4″	2-3/8″	1/8″



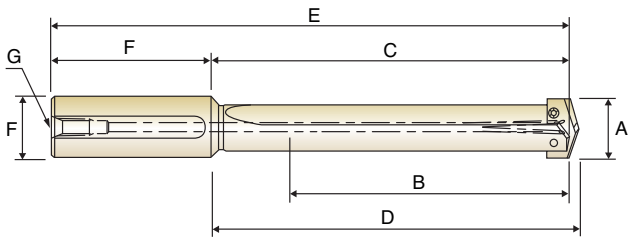
STANDARD LENGTH - Straight Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
1	Z10SDSS075I	45/64″~15/16″	6-5/8″	7-7/8″	8-1/64″	10-7/8″	3/4″	3″	1/8″
	Z10SDSS100I	45/64″~15/16″	6-5/8″	7-7/8″	8-1/64″	10-7/8″	1″	3″	1/8″
1.5	Z15SDSS075I	55/64″~15/16″	6-5/8″	7-7/8″	8-1/64″	10-7/8″	3/4″	3″	1/8″
	Z15SDSS100I	55/64″~15/16″	6-5/8″	7-7/8″	8-1/64″	10-7/8″	1″	3″	1/8″
2	Z20SDSS100I	31/32″~1-3/8″	7-3/8″	8-1/2″	8-41/64″	12″	1″	3-1/2″	1/8″
	Z20SDSS125I	31/32″~1-3/8″	7-3/8″	8-1/2″	8-41/64″	12″	1-1/4″	3-1/2″	1/8″
2.5	Z25SDSS100I	1-3/16″~1-3/8″	7-3/8″	8-1/2″	8-41/64″	12″	1″	3-1/2″	1/8″
	Z25SDSS125I	1-3/16″~1-3/8″	7-3/8″	8-1/2″	8-41/64″	12″	1-1/4″	3-1/2″	1/8″
3	Z30SDSS125I	1-13/32″~1-7/8″	8-1/4″	9-1/2″	9-11/16″	13-1/2″	1-1/4″	4″	1/4″
	Z30SDSS150I	1-13/32″~1-7/8″	8-1/4″	9-1/2″	9-11/16″	13-1/2″	1-1/2″	4″	1/4″
4	Z40SDSS150I	1-29/32″~2-9/16″	9-1/8″	10-1/2″	10-11/16″	14-1/2″	1-1/2″	4″	1/4″
	Z40SDSS175I	1-29/32″~2-9/16″	9-1/8″	10-1/2″	10-11/16″	14-1/2″	1-3/4″	4″	1/4″
5	Z50SDSS200I	2-1/2″~3-1/2″	10-3/4″	12-1/2″	12-3/4″	16-1/2″	2″	4″	1/2″
7	Z70SDSS300I	3-17/32″~4-1/2″	10-3/4″	12-7/8″	13-1/8″	17-7/8″	3″	5″	1/2″

SPADE DRILLS

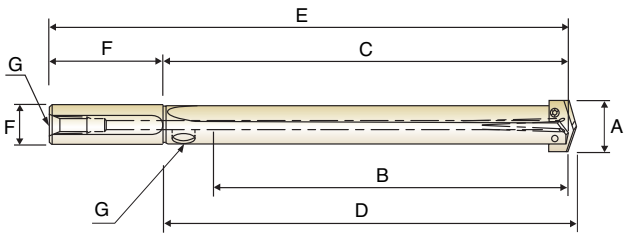
Z**EXSS SERIES

STRAIGHT SHANK HOLDERS
HALTER MIT ZYLINDERSCHAFT



EXTENDED LENGTH - Straight Flute (Inch)

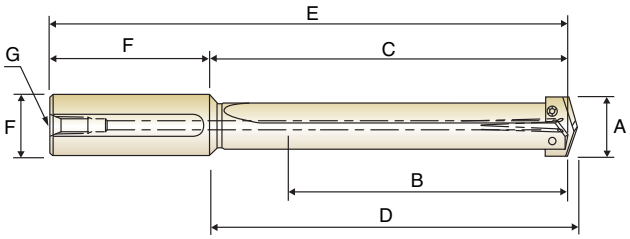
Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	ZY0EXSS075I	3/8″~27/64″	4-3/8″	5-5/32″	5-1/4″	7-17/32″	3/4″	2-3/8″	1/8″
Z	ZZ0EXSS075I	7/16″~1/2″	4-3/8″	5-5/32″	5-1/4″	7-17/32″	3/4″	2-3/8″	1/8″
0	Z00EXSS075I	33/64″~11/16″	4-1/2″	5-5/16″	5-27/64″	7-11/16″	3/4″	2-3/8″	1/8″
0.5	Z05EXSS075I	39/64″~11/16″	4-1/2″	5-5/16″	5-27/64″	7-11/16″	3/4″	2-3/8″	1/8″



EXTENDED LENGTH - Straight Flute (Inch)

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
1	Z10EXSS100I	45/64″~15/16″	10-5/8″	11-7/8″	12-1/64″	14-7/8″	1″	3″	1/8″
1.5	Z15EXSS100I	55/64″~15/16″	10-5/8″	11-7/8″	12-1/64″	14-7/8″	1″	3″	1/8″
2	Z20EXSS125I	31/32″~1-3/8″	11-3/8″	12-1/2″	12-41/64″	16″	1-1/4″	3-1/2″	1/8″
2.5	Z25EXSS125I	1-3/16″~1-3/8″	11-3/8″	12-1/2″	12-41/64″	16″	1-1/4″	3-1/2″	1/8″
3	Z30EXSS125I	1-13/32″~1-7/8″	13-3/4″	15″	15-3/16″	19″	1-1/4″	4″	1/4″
4	Z40EXSS150I	1-29/32″~2-9/16″	16-5/8″	18″	18-3/16″	22″	1-1/2″	4″	1/4″
5	Z50EXSS200I	2-1/2″~3-1/2″	18-1/4″	20″	20-1/4″	24″	2″	4″	1/2″
7	Z70EXSS300I	3-17/32″~4-1/2″	21-7/8″	24″	24-1/4″	29″	3″	5″	1/2″

STRAIGHT SHANK HOLDERS
HALTER MIT ZYLINDERSCHAFT



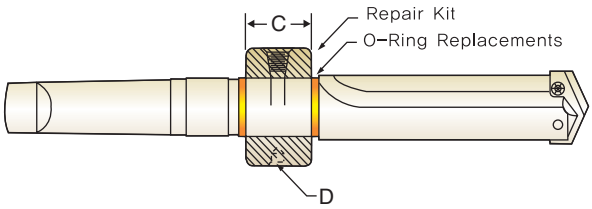
LONG LENGTH - Straight Flute (Inch)

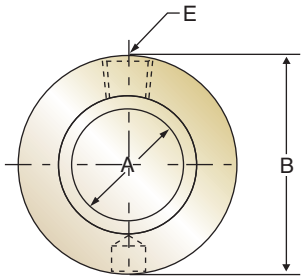
Series	EDP No.	Drill Insert Range	Max. Drill Depth	Body Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
0	Z00LGSS075I	33/64" ~ 11/16"	7"	7-13/16"	7-59/64"	10-3/16"	3/4"	2-3/8"	1/8"
0.5	Z05LGSS075I	39/64" ~ 11/16"	7"	7-13/16"	7-59/64"	10-3/16"	3/4"	2-3/8"	1/8"

SPADE DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

HOLDER ACCESSORIES
ROTARY COOLANT ADAPTER (RCA) AND ACCESSORIES





Inch

Item No.	I.D.	O.D.	Length	Thread for Driving Rod	Pipe Tap	RCA Repair Kit Item No.	RCA O-Ring Replacements Item No.
	A	B	C	D	E		
PR110048	3/4″	1-3/4″	7/8″	5/16″-NC	◈1/8″	PR210048	PR310048
PR110100	1″	2-1/8″	1-1/8″	5/16″-NC	◈1/8″	PR210100	PR310100
PR110116	1-1/4″	2-1/2″	1-3/8″	3/8″-NC	◈1/4″	PR210116	PR310116
PR110148	1-3/4″	3″	1-3/8″	3/8″-NC	◈1/4″	PR210148	PR310148
PR110216	2-1/4″	3-3/4″	1-3/4″	1/2″-NC	◈1/2″	PR210216	PR310216

Metric

Item No.	I.D.	O.D.	Length	Thread for Driving Rod	Pipe Tap	RCA Repair Kit Item No.	RCA O-Ring Replacements Item No.
	A	B	C	D	E		
PR120190	19.05	44.45	22.23	M8 ×1.25	◈1/8″	PR220190	PR320190
PR120254	25.40	53.97	28.57	M8 ×1.25	◈1/8″	PR220254	PR320254
PR120317	31.75	63.50	34.92	M10×1.5	◈1/4″	PR220317	PR320317
PR120444	44.45	76.20	34.92	M10×1.5	◈1/4″	PR220444	PR320444
PR120571	57.15	95.27	44.45	M12×1.75	◈1/2″	PR220571	PR320571

◈ Thread to BSP & ISO 7-1

TORX SCREWS

Holder Series	Item No.	TORX Hand Driver	Drill Range Used With	
			Inch	Metric
Y	J07Y0010	J05Y0070	3/8″ ~ 27/64″	9.5 mm ~ 11.0 mm
Z	J07Z0110		7/16″ ~ 1/2″	11.5 mm ~ 12.5 mm
0	J0800210	J0500080	33/64″ ~ 11/16″	13.0 mm ~ 17.5 mm
0.5	J0805310		39/64″ ~ 11/16″	15.5 mm ~ 17.5 mm
1	J0910410	J0510090	45/64″ ~ 15/16″	18.0 mm ~ 24.0 mm
1.5	J0915510		55/64″ ~ 15/16″	22.0 mm ~ 24.0 mm
2	J1520610	J0520150	31/32″ ~ 1-3/8″	25.0 mm ~ 35.0 mm
2.5	J1525710		1-3/16″ ~ 1-3/8″	30.0 mm ~ 35.0 mm
3,4	J2030810	J0530200	1-13/32″ ~ 2-9/16″	36.0 mm ~ 65.0 mm
5 ~ 8	J2550910	J0550250	2-1/2″ ~ 4-1/2″	64.0 mm ~ 114.0 mm

** Note : Replacement screws sold in packages(10 screws per package)

DRILL INSERT (METRIC) - HSS
BOHREINSATZ (METRISCH) - HSS

Material	Material Hardness (Bhn)	Material Hardness (HRc)	* HSS Grade	Speed (M/min) TiN	Speed (M/min) TiCN	Speed (M/min) TiAlN	Feed (mm/rev) Ø9.5~12.5	Ø13~17.5	Ø18~24	Ø25~35	Ø36~47	Ø48~65	Ø66~114
Free machining Steels 9SMn36, 9SMnPb28 10SPb20 etc	100 - 150		HSS	63	79	84	0.16	0.23	0.31	0.40	0.48	0.55	0.67
	150 - 200	- 13	HSS	58	70	81	0.16	0.23	0.31	0.40	0.48	0.55	0.67
	200 - 250	13 - 24	HSS	51	66	72	0.14	0.23	0.31	0.38	0.48	0.57	0.69
Low Carbon Steels C10, C15, C22, C25 etc	85 - 125		HSS	54	67	75	0.15	0.22	0.28	0.37	0.46	0.56	0.67
	125 - 175	- 7	HSS	51	63	72	0.15	0.22	0.28	0.37	0.46	0.56	0.67
	175 - 225	7 - 20	HSS	49	58	69	0.13	0.19	0.24	0.34	0.43	0.50	0.57
	225 - 275	20 - 28	HSS	45	56	66	0.13	0.19	0.24	0.34	0.43	0.50	0.57
Medium Carbon Steels C35, C40, C45 etc	125 - 175	- 7	HSS	52	63	75	0.14	0.22	0.28	0.35	0.45	0.55	0.65
	175 - 225	7 - 20	HSS	48	59	69	0.13	0.19	0.23	0.34	0.43	0.50	0.58
	225 - 275	20 - 28	HSS	45	56	63	0.13	0.19	0.23	0.34	0.43	0.50	0.58
	275 - 325	28 - 34	SH, PH	42	52	58	0.10	0.17	0.21	0.28	0.38	0.45	0.55
Structural Steels St33, St37-2, St44-2 St52, St60 etc	100 - 150		HSS	44	56	63	0.14	0.23	0.29	0.35	0.44	0.50	0.63
	150 - 250	- 24	HSS	39	47	55	0.13	0.22	0.24	0.28	0.38	0.46	0.59
	250 - 350	24 - 37	SH, PH	32	41	45	0.10	0.20	0.22	0.24	0.34	0.40	0.48
Cast Iron / S,G Iron GG10, 20 ,25, 35, 40 GGG50, 70 GTW35, GTS70 etc	120 - 150		HSS	52	64	75	0.16	0.30	0.40	0.49	0.59	0.69	0.75
	150 - 200	- 13	HSS	48	58	70	0.14	0.26	0.35	0.45	0.56	0.64	0.68
	200 - 220	13 - 19	HSS	42	53	58	0.14	0.23	0.30	0.41	0.46	0.52	0.60
	220 - 260	19 - 26	SH, PH	35	44	52	0.13	0.17	0.23	0.30	0.35	0.43	0.50
	260 - 320	26 - 34	SH, PH	29	35	41	0.10	0.15	0.16	0.23	0.28	0.35	0.40
Alloy Steels 45CrMo4, 42CrMo4 16MnCr5, Ck75 35CrMo4, 16MnCr5 etc	125 - 175	- 7	HSS	48	58	63	0.15	0.20	0.24	0.36	0.43	0.47	0.53
	175 - 225	7 - 20	HSS	45	56	58	0.13	0.20	0.24	0.36	0.42	0.46	0.55
	225 - 275	20 - 28	HSS	41	50	56	0.13	0.16	0.23	0.35	0.41	0.44	0.55
	275 - 325	28 - 34	SH, PH	39	47	53	0.09	0.15	0.22	0.28	0.38	0.41	0.50
	325 - 375	34 - 40	SH, PH	36	43	46	0.08	0.15	0.21	0.27	0.38	0.40	0.51
Tool Steels 102Cr6, 105WCr6, C75W etc	150 - 200	- 13	SH	25	34	36	0.09	0.15	0.19	0.25	0.28	0.36	0.41
	200 - 250	13 - 24	SH, PH	19	27	29	0.09	0.15	0.19	0.25	0.28	0.36	0.41
High Temp. Alloy Hastelloy B,Inconel etc	140 - 220	- 19	SH, PH	9	11	12	0.08	0.17	0.20	0.24	0.30	0.37	0.39
	220 - 310	19 - 33	PH	8	9	11	0.08	0.14	0.18	0.19	0.25	0.29	0.34
High Strength Alloy 36CrNiMo4, 34CrNiMo8 40NiCrMo73 etc	225 - 300	- 32	SH, PH	25	34	35	0.13	0.18	0.23	0.24	0.36	0.43	0.50
	300 - 350	32 - 37	SH, PH	19	26	27	0.10	0.18	0.23	0.24	0.36	0.43	0.50
	350 - 400	37 - 43	PH	16	21	22	0.08	0.15	0.20	0.22	0.30	0.48	0.46
Aluminum AlCuSiMn, AlMgSi0.5, AlZnMgCu1.5 etc	30		HSS	187	229	244	0.19	0.33	0.41	0.50	0.54	0.64	0.62
	180	- 8	HSS	92	137	137	0.19	0.33	0.41	0.46	0.54	0.64	0.62
Stainless Steels X7Cr13, X10CrA118, X5CrNi189, X5CrNiMo18 10 etc	135 - 185	- 9	HSS	24	29	34	0.14	0.20	0.23	0.26	0.36	0.41	0.50
	185 - 275	9 - 28	HSS	20	23	29	0.12	0.18	0.20	0.24	0.30	0.36	0.46

RPM= revolution per minute (rev/min)
M/min= surface meter per minute(M/min)
DIA= diameter of drill (mm)
mm/rev = feed rate(mm/rev)

*** Formulas :**

$$M/min = \frac{(RPM) \cdot (\pi) \cdot (DIA.)}{1000}$$

$$mm/min = (RPM) \cdot (mm/rev)$$

$$RPM = \frac{(M/min) \cdot (1000)}{(\pi) \cdot (DIA.)}$$

* **HSS Grade : HSS** = HSS M4, **SH** = Super HSS T15, **PH** = Premium HSS M48
The recommendations for speeds, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points.
Speed and feed reductions (20% reduction in speed and 10% reduction in feed) are recommended.

SPADE DRILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

DRILL INSERT (METRIC) - CARBIDE
BOHREINSATZ (METRISCH) - VOLLHARTMETALL

Material	Material Hardness (Bhn)	Material Hardness (HRc)	CARBIDE Grade	Speed (M/min) TiN	Speed (M/min) TiCN	Speed (M/min) TiAlN	Feed (mm/rev) Ø 9.5 ~12.5	Feed (mm/rev) Ø 13 ~17.5	Feed (mm/rev) Ø 18 ~24	Feed (mm/rev) Ø 25 ~35	Feed (mm/rev) Ø 36 ~47
Free machining Steels 9SMn36, 9SMnPb28 10SPb20 etc	100 - 150		P40	101	113	125	0.18	0.28	0.36	0.44	0.50
	150 - 200	- 13	P40	88	99	110	0.16	0.26	0.33	0.39	0.45
	200 - 250	13 - 24	P40	82	88	101	0.14	0.23	0.31	0.41	0.42
Low Carbon Steels C10, C15, C22, C25 etc	85 - 125		P40	94	110	119	0.20	0.24	0.31	0.42	0.46
	125 - 175	- 7	P40	82	88	107	0.18	0.24	0.31	0.39	0.43
	175 - 225	7 - 20	P40	76	82	96	0.15	0.22	0.29	0.36	0.40
	225 - 275	20 - 28	P40	62	73	84	0.13	0.22	0.29	0.36	0.40
Medium Carbon Steels C35, C40, C45 etc	125 - 175	- 7	P40	82	88	102	0.17	0.24	0.31	0.37	0.42
	175 - 225	7 - 20	P40	75	84	93	0.15	0.22	0.28	0.36	0.40
	225 - 275	20 - 28	P40	66	70	84	0.15	0.22	0.28	0.36	0.40
	275 - 325	28 - 34	P40	56	64	67	0.13	0.19	0.26	0.33	0.37
Structural Steels St33, St37-2, St44-2 St52, St60 etc	100 - 150		P40	75	82	91	0.19	0.26	0.34	0.39	0.43
	150 - 250	- 24	P40	62	70	75	0.15	0.24	0.29	0.33	0.37
	250 - 350	24 - 37	P40	55	64	73	0.13	0.23	0.27	0.29	0.33
Cast Iron / S,G Iron GG10, 20 ,25, 35, 40 GGG50, 70 GTW35, GTS70 etc	120 - 150		K20,K10	98	125	137	0.18	0.30	0.37	0.46	0.56
	150 - 200	- 13	K20,K10	95	101	125	0.17	0.26	0.32	0.42	0.53
	200 - 220	13 - 19	K20,K10	75	91	111	0.14	0.23	0.30	0.38	0.45
	220 - 260	19 - 26	K20,K10	66	81	93	0.13	0.15	0.28	0.33	0.37
	260 - 320	26 - 34	K20,K10	56	70	79	0.13	0.18	0.23	0.28	0.33
Alloy Steels 45CrMo4, 42CrMo4 16MnCr5, Ck75 35CrMo4, 16MnCr5 etc	125 - 175	- 7	P40	79	85	98	0.18	0.25	0.32	0.40	0.45
	175 - 225	7 - 20	P40	73	81	88	0.15	0.23	0.29	0.38	0.42
	225 - 275	20 - 28	P40	66	73	81	0.15	0.21	0.28	0.37	0.41
	275 - 325	28 - 34	P40	62	70	78	0.12	0.20	0.27	0.33	0.40
	325 - 375	34 - 40	P40	53	58	64	0.10	0.18	0.23	0.30	0.38
Tool Steels 102Cr6, 105WCr6, C75W etc	150 - 200	- 13	P40	50	56	67	0.09	0.18	0.22	0.28	0.31
	200 - 250	13 - 24	P40	37	46	50	0.09	0.18	0.22	0.28	0.31
High Temp. Alloy Hastelloy B,Inconel etc	140 - 220	- 19	K20	26	27	30	0.10	0.17	0.23	0.27	0.33
	220 - 310	19 - 33	K20	20	23	24	0.10	0.14	0.20	0.24	0.30
High Strength Alloy 36CrNiMo4, 34CrNiMo8 40NiCrMo73 etc	225 - 300	- 32	P40	49	55	62	0.15	0.23	0.25	0.29	0.38
	300 - 350	32 - 37	P40	43	49	55	0.12	0.20	0.23	0.27	0.35
	350 - 400	37 - 43	P40	38	43	47	0.10	0.18	0.20	0.24	0.30
Aluminum AlCuSiMn, AlMgSi0.5, AlZnMgCu1.5 etc	30		K20	366	396	427	0.24	0.38	0.45	0.50	0.53
	180	- 8	K20	244	290	291	0.22	0.33	0.40	0.45	0.48
Stainless Steels X7Cr13, X10CrA118, X5CrNi189, X5CrNiMo18 10 etc	135 - 185	- 9	K20	50	55	62	0.19	0.19	0.21	0.24	0.30
	185 - 275	9 - 28	K20	38	44	46	0.15	0.17	0.20	0.21	0.25

RPM= revolution per minute (rev/min)
M/min= surface meter per minute(M/min)
DIA= diameter of drill (mm)
mm/rev = feed rate(mm/rev)

*** Formulas :**

$$M/min = \frac{(RPM) \cdot (\pi) \cdot (DIA.)}{1000}$$

$$mm/min = (RPM) \cdot (mm/rev)$$

$$RPM = \frac{(M/min) \cdot (1000)}{(\pi) \cdot (DIA.)}$$

The recommendations for speeds, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points.
Speed and feed reductions (20% reduction in speed and 10% reduction in feed) are recommended.

SUPER HSS T-15 FLAT BOTTOM
SPADE DRILL BOHRER-EINSÄTZE - SUPER COBALT T15(FLACH-NUT)

Material	Material Hardness		Speed		Feed			
	(Bhn)	(HRc)	TiN	TiAlN (Hardslick)	Ø 9.5 ~12.5	Ø 13 ~17.5	Ø 18 ~24	Ø 25 ~35
Free machining Steels 9SMn36, 9SMnPb28 10SPb20 etc	100 - 150		63	67	0.13	0.18	0.25	0.32
	150 - 200	- 13	56	65	0.13	0.18	0.25	0.32
	200 - 250	13 - 24	53	58	0.11	0.18	0.25	0.30
Low Carbon Steels C10, C15, C22, C25 etc	85 - 125		54	60	0.12	0.18	0.22	0.30
	125 - 175	- 7	50	58	0.12	0.18	0.22	0.30
	175 - 225	7 - 20	46	55	0.10	0.15	0.19	0.27
	225 - 275	20 - 28	45	53	0.10	0.15	0.19	0.27
Medium Carbon Steels C35, C40, C45 etc	125 - 175	- 7	50	60	0.11	0.18	0.22	0.28
	175 - 225	7 - 20	47	55	0.10	0.15	0.18	0.27
	225 - 275	20 - 28	45	50	0.10	0.15	0.18	0.27
	275 - 325	28 - 34	42	46	0.08	0.14	0.17	0.22
Structural Steels St33, St37-2, St44-2 St52, St60 etc	100 - 150		45	50	0.11	0.18	0.23	0.28
	150 - 250	- 24	38	44	0.10	0.18	0.19	0.22
	250 - 350	24 - 37	33	36	0.08	0.16	0.18	0.19
Cast Iron / S,G Iron GG10, 20 ,25, 35, 40 GGG50, 70 GTW35, GTS70 etc	120 - 150		56	66	0.13	0.25	0.35	0.41
	150 - 200	- 13	51	60	0.12	0.21	0.29	0.40
	200 - 220	13 - 19	47	51	0.12	0.20	0.25	0.36
	220 - 260	19 - 26	38	48	0.10	0.14	0.20	0.25
	260 - 320	26 - 34	30	37	0.10	0.13	0.13	0.20
Alloy Steels 45CrMo4, 42CrMo4 16MnCr5, Ck75 35CrMo4, 16MnCr5 etc	125 - 175	- 7	46	50	0.12	0.16	0.19	0.29
	175 - 225	7 - 20	45	46	0.10	0.16	0.19	0.29
	225 - 275	20 - 28	40	45	0.10	0.13	0.18	0.28
	275 - 325	28 - 34	38	42	0.07	0.12	0.18	0.22
	325 - 375	34 - 40	34	37	0.06	0.12	0.17	0.22
Tool Steels 102Cr6, 105WCr6, C75W etc	150 - 200	- 13	27	29	0.07	0.12	0.15	0.20
	200 - 250	13 - 24	22	23	0.07	0.12	0.15	0.20
High Temp. Alloy Hastelloy B,Inconel etc	140 - 220	- 19	9	10	0.06	0.14	0.16	0.19
	220 - 310	19 - 33	7	9	0.06	0.11	0.14	0.15
High Strength Alloy 36CrNiMo4, 34CrNiMo8 40NiCrMo73 etc	225 - 300	- 32	27	28	0.10	0.14	0.18	0.19
	300 - 350	32 - 37	21	22	0.08	0.14	0.18	0.19
	350 - 400	37 - 43	17	18	0.06	0.12	0.16	0.18
Aluminum AlCuSiMn, AlMgSi0.5, AlZnMgCu1.5 etc	30		208	213	0.17	0.28	0.36	0.43
	180	- 8	112	121	0.17	0.28	0.36	0.41
Stainless Steels X7Cr13, X10CrA118, X5CrNi189, X5CrNiMo18 10 etc	135 - 185	- 9	26	29	0.12	0.18	0.20	0.23
	185 - 275	9 - 28	20	25	0.09	0.15	0.18	0.22

RPM= revolution per minute (rev/min)
M/min= surface meter per minute(M/min)
DIA= diameter of drill (mm)
mm/rev = feed rate(mm/rev)

*** Formulas :**

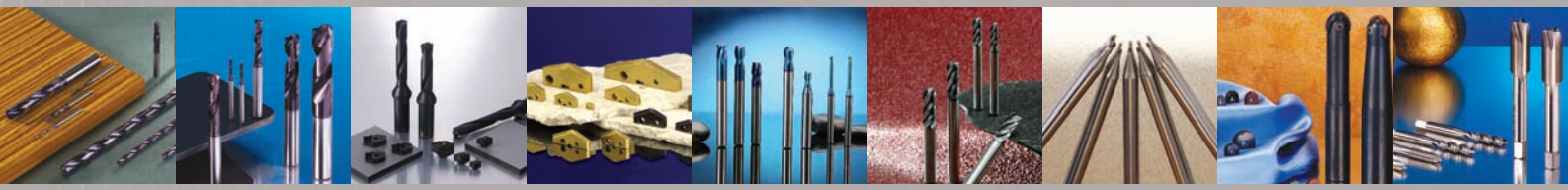
$$M/min = \frac{(RPM) \cdot (\pi) \cdot (DIA.)}{1000}$$

$$mm/min = (RPM) \cdot (mm/rev)$$

$$RPM = \frac{(M/min) \cdot (1000)}{(\pi) \cdot (DIA.)}$$

The recommendations for speeds, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points.
Speed and feed reductions (20% reduction in speed and 10% reduction in feed) are recommended.

Global Cutting Tool Leader **YG-1**



DRILLS

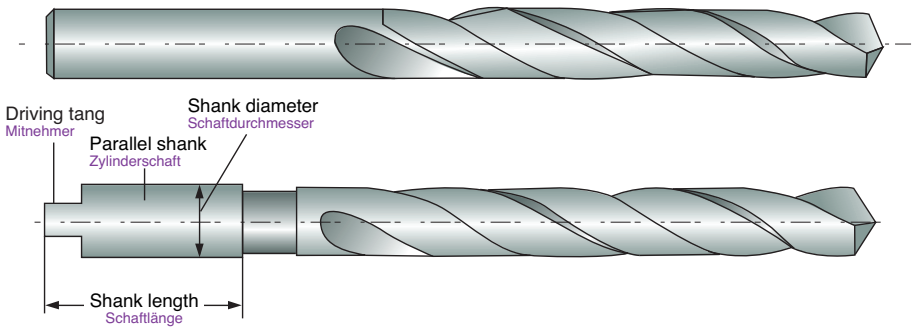
YG

Being the best through innovation

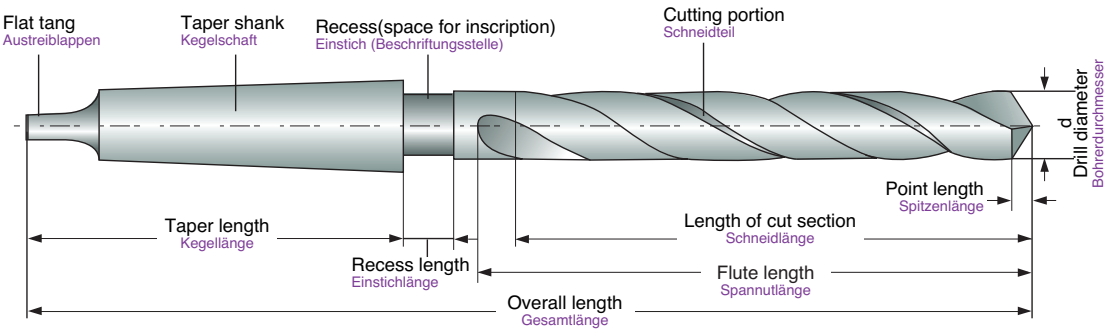
TECHNICAL DATA
TECHNISCHE DATEN

TECHNICAL DATA

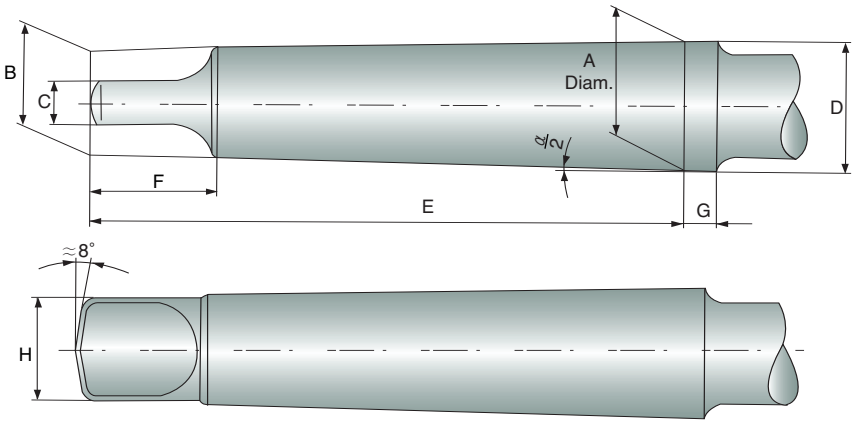
1 Twist Drill with parallel shank
Spiralbohrer mit Zylinderschaft



2 Twist Drill with taper shank
Spiralbohrer mit kegelschaft

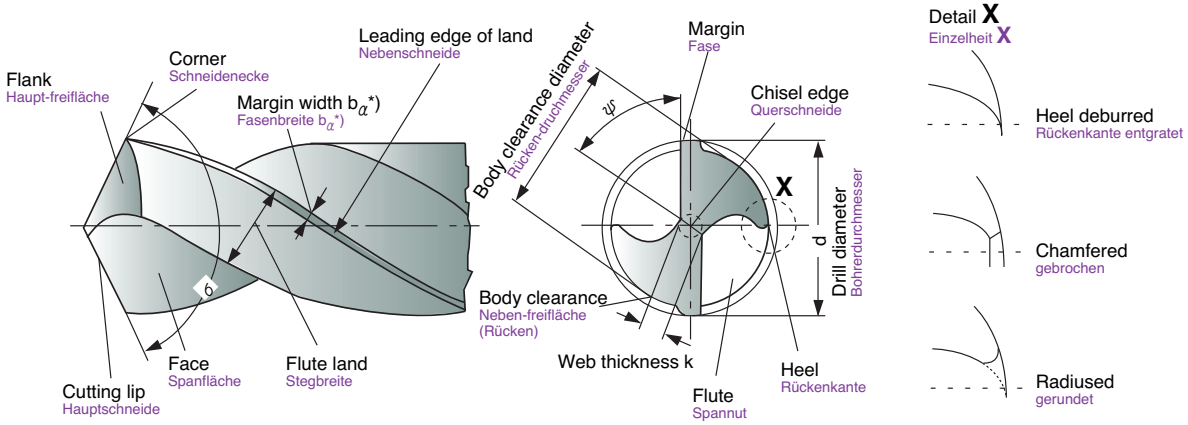


3 General dimensions of morse taper shanks
Toleranzen des kegelschaftes



Morse Taper Shank Morsekegelschaft	A mm	B mm	C(h13) mm	D mm	E mm	F(max.) mm	G mm	H(max.) mm	α/2
No.1	12.065	9	5.2	12.2	62	13.5	3.5	8.7	1°25′43″
No.2	17.780	14	6.3	18.0	75	16	5	13.5	1°25′50″
No.3	23.825	19.1	7.9	24.1	94	20	5	18.5	1°26′16″
No.4	31.267	25.2	11.9	31.6	117.5	24	6.5	24.5	1°29′15″
No.5	44.399	36.5	15.9	44.7	149.5	29	6.5	35.7	1°30′26″
No.6	63.348	52.4	19	63.8	210	40	8	51	1°29′36″

4 Cutting portion
Schneidteil



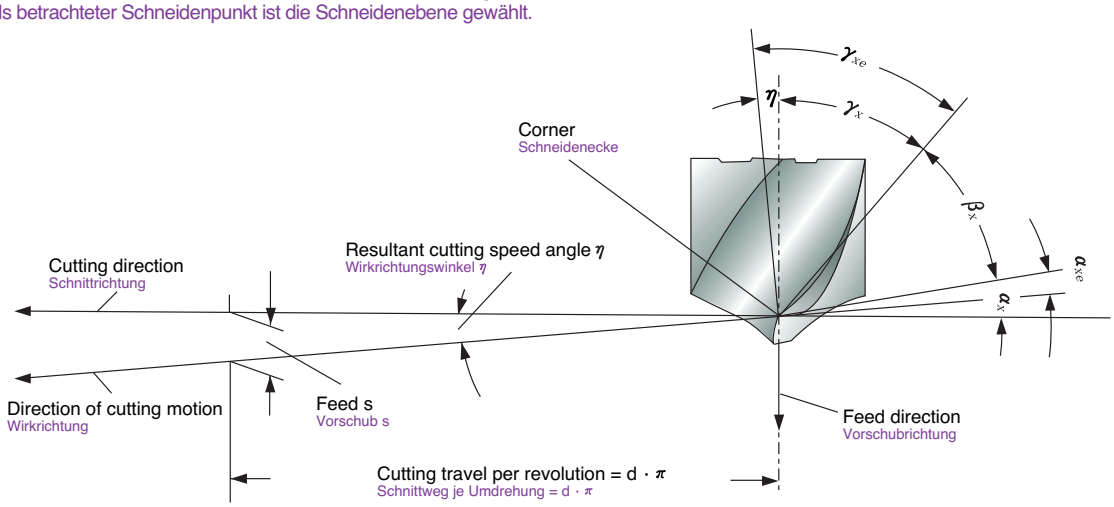
σ = Point angle (sigma) Spitzenwinkel (Sigma)

ψ = Chisel edge angle (psi) Querschneidenwinkel(Psi)

* In the context of cutting technology, land width b_α is the body clearance land width which is to be by $b_{f\alpha n}$, see DIN 6581.
Die Fasenbreite b_α ist bei zerspanungstechnischen Betrachtungen die Fasenbreite der Nebenfreifläche und mit $b_{f\alpha n}$ zu bezeichnen, siehe DIN 6581.

5 Angle at the cutting edges
Winkel an den Schneiden

The corner has been adopted as the observed edge point.
Als betrachteter Schneidenpunkt ist die Schneidenebene gewählt.



α_x = Side clearance angle (alpha) Seitenfreiwinkel (Alpa)

α_{xe} = Effective side clearance angle Wirk-Seitenfreiwinkel

β_x = Side wedge angle (beta) Seitenkeilwinkel (Beta)

γ_x = Front rake angle (gamma) Seitenspanwinkel (Gamma)

γ_{xe} = Working front rake angle Wirk-Seitenspanwinkel

η = Resultant cutting speed angle (eta) Wirkrichtungswinkel (Eta)

Clearance angle α, wedge angle β and rake angle γ are measured in the tool orthogonal plane. For details, see DIN 6581, definitions of metal-cutting technology; geometry at the tool edge.

Freiwinkel α, keilwinkel β und Spanwinkel γ werden in der keilmeßebene gemessen.
Einzelheiten siehe DIN 6581, Begriffe der Zerspantechnik; Geometrie am Schneidkeil des Werkzeuges.

TECHNICAL DATA

6 Web thickness k
kerndicke k

Test values : The web thickness according to Fig. 1 shall not be less than the minimum value k_{min} indicated in Fig. 2.
Prüfwerte : Die kerndicke nach Bild 1 soll den Bild 2 angegebenen Mindestwert k_{min} nicht unterschreiten.
Test point : At the point of the drill. **Prüfstelle :** An der Bohrerspitze
Testing equipment : Slide gauge with measuring points. **Prüfmittel :** Meßschieber (Schieblehre) mit Messerspitzen

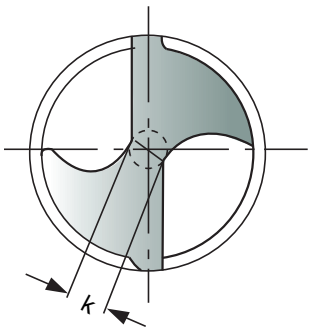


Figure 1. Web thickness k
Bild 1. kerndicke k

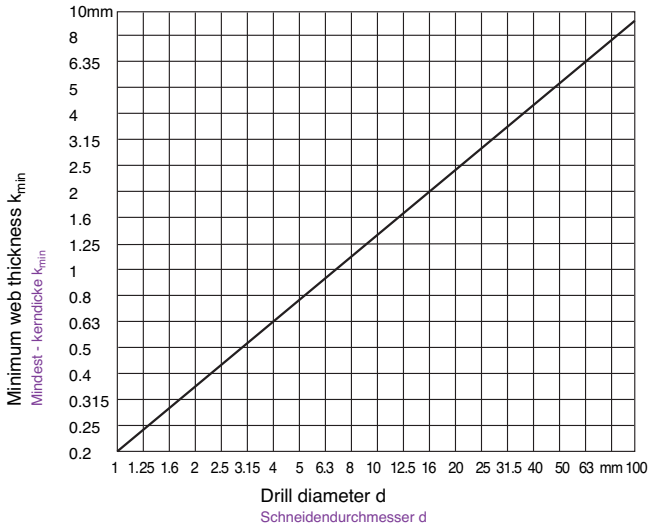


Figure 2. Web thickness k_{min}
Bild 2. Kerndicke k_{min}

7 Margin width bα
Fasenbreite b_α

Test values : The land width as in Fig. 3 shall lie within the limitting values indicated in Fig. 4.
Prüfwerte : Die Fasenbreite nach Bild 3 soll im Bereich der Grenzwerte liegen, die im Bild 4 angegeben sind.
Test point : 5mm behind the corner **Prüfstell :** 5mm hinter der Schneidenecke
Testing equipment : Slide gauge **Prüfmittel :** Meßschieber

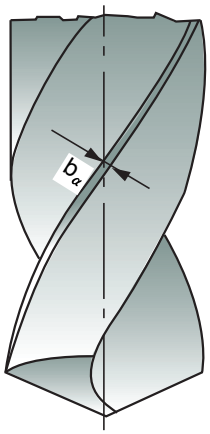


Figure 3. Margin width b_α
Bild 3. Fasenbreite b_α

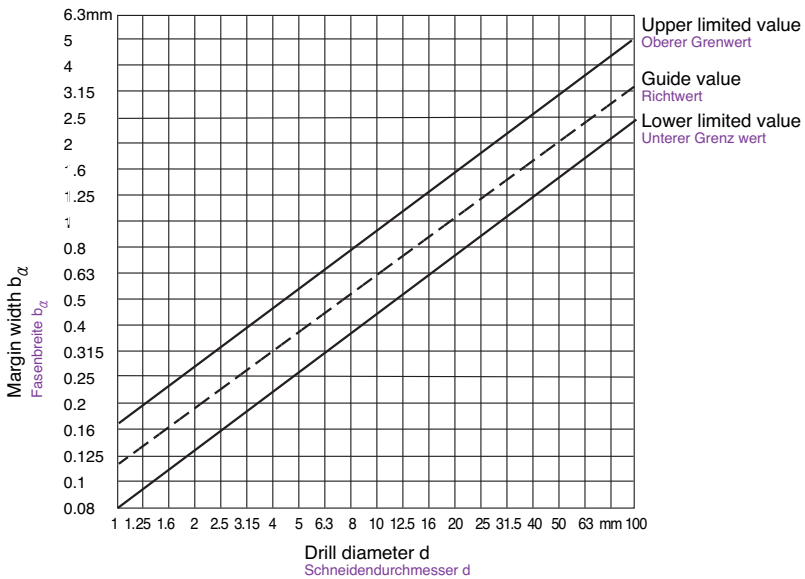


Figure 4. Margin width b_α
Bild 4. Fasenbreite b_α

Angle on Twist Drills
Winkel an Spiralbohrern

(1) Side rake angle γ_f (Helix angle)

Seitenspanwinkel (Spiralwinkel) γ_f

Recommended test value : Recommended ranges depending on the tool types N,H and W according to DIN 1836 and the diameter of the drill included in Fig. 5.

Empfohlene Prüfwerte : Empfohlene Bereiche in Abhängigkeit der Werzeugtypen N, H und W nach DIN 1836 und des Schneidendurchmessers sind in Bild 5.

Test point : At the corner, see Fig. 6.

Prüfstell : An der Schneidenecke, siehe Bild 6

Testing equipment : According to VDI Guideline 3331 Part 1, Section Margin width b_α

Prüfmittel : Nach der VDI-Richtlinie 3331 Blatt 1, Abschnitt Fasenbreite b_α

Note : The side rake angle γ_f is measured in place of the orthogonal rake angle γ_O found in the wedge measuring plane (see DIN 6581), as this changes along the cutting edge (becoming smaller towards the point of the drill).

Anmerkung : Der Seitenspanwinkel γ_f wird an Stelle des in der Keilmeßebene befindlichen Orthogonal-Spanwinkels γ_O (Siehe DIN 6581) gemessen, da sich dieser entlang der Hauptschneide Verändert (er wird zur Bohrerspitze hin kleiner)

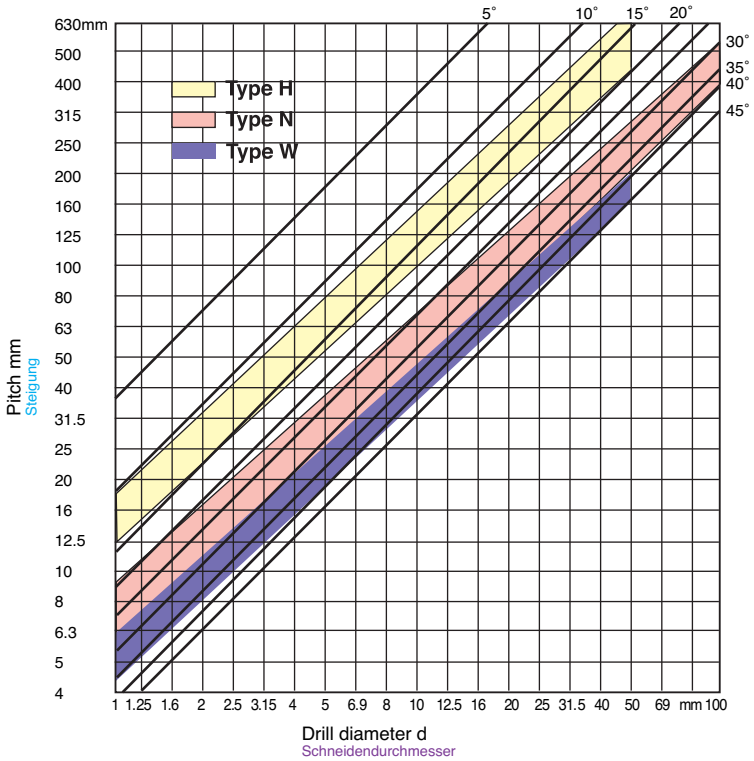


Figure 6. Side rake angle γ_f
Build 6. Seitenspanwinkel γ_f

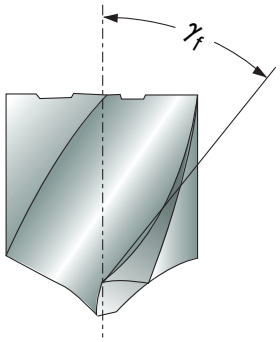


Figure 5. Side rake angle γ_f
Build 5. Seitenspanwinkel γ_f

(2) Point angle σ

Spitzenwinkel σ

Test value : Usual execution for tool types N and H : σ=118°, for tool type W : σ=130°

Prüfwerte : Regelausführung bei Werkzeugtyp N und H : σ=118° bei Werkzeugtyp W : σ=130°

Test point : At the cutting , see Fig. 7.

Prüfstelle : An den Hauptschneiden, siehe Bild 7.

Testing equipment : According to VDI Guideline 3331 Part 1, Section Margin width b_{α}.

Prüfmittel : Nach der VDI-Richtlinie 3331 Blatt 1, Abschnitt Fasenbreite b_{α}.

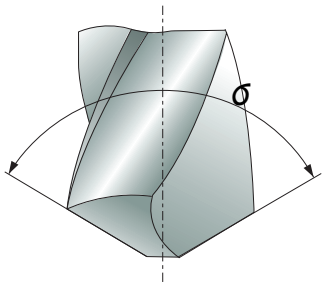


Figure 7. Point angle σ
Bild 7. Spitzenwinkel σ

Resharpening Twist Drills
Nachschleifen von Spiralbohrern

(1) Drills are worn off irregularly. It should be sharpened prior to developing into excessive wear.
Unregelmäßiger Verschleiß von Bohrern. Bohrer soll vor übermäßigern Verschleiß nachgeschilffen werden.

(2) Resharpening (Nachschleifen)

① Grind the correct point angle to suit your application.(figure 8)
Den für Ihre Anwendung passenden korrekten Spltzenwinkel schleifen (Bild 8)

② Check that both cutting lips have the same angle. On a 130° point, each lip should be 65° toward the axis. The point must be on center, i.e., the chisel edge must produce cutting lips of equal length.(figure 8)
Überprüfen, dass beide Hauptschneiden den gleichen Winkel haben. Bei einem 130° Spitzenwinkel, sollte jede Hauptschneide 65° haben (Bild 8)

③ Grind Primary relief and Secondary clearance.(figure 9)
Primärer Hinterschliff und Sekundärer Freiwinkel (Bild 9)

④ Grind web thinning. (figure 10)
Den ausgespitzten Kern schleifen (Bild 10)

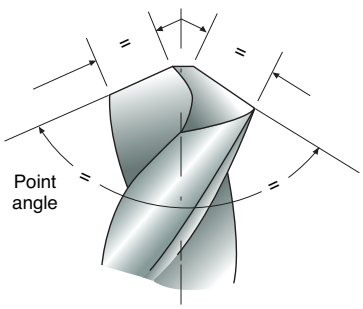


Figure 8
Bild 8

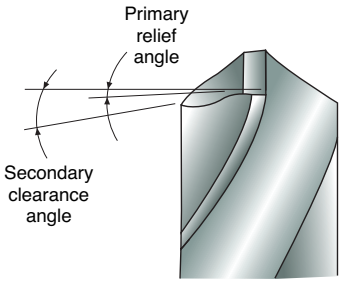


Figure 9
Bild 9

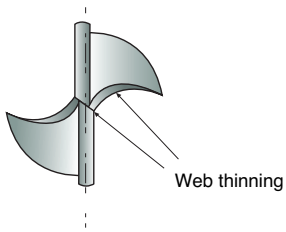


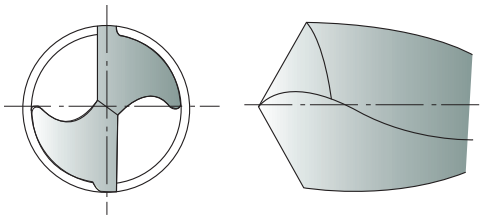
Figure 10
Bild 10

10 Web thinning
Kegelmantelschliff

(1) Without thinning

Normalanschliff

Suitable for drill of general purpose.
Thanks to thin web thickness, web thinning is not needed.
This without web thinning type is applied to design of drills for mild steels, alloy steels, cast iron, stainless steels, titanium, inconel, etc. and conventional cutting conditons.

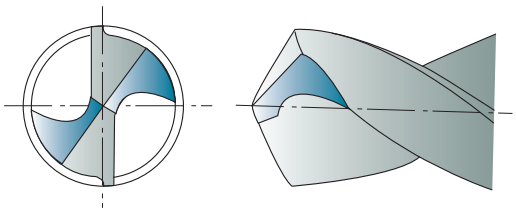


Zum Bohren für allgemeine Zwecke.
Dank dünner Kerndicke, ist Kegelmantelanschliff nicht nötig.
Geeignet für Stahl, Stahl-Legierungen, Gusseisen, Edeistahl, Tian, Inconel usw, und für konventionelle Schneidbedingungen

(2) Type C thinning (DIN1412 FORM C, SPLIT POINT)

DiN 1412 Form C kegelmantelanschliff mit Kreuzanschliff

Because Split point enables good centering when drilling and breaks the chips, chip removals are easy.
Suitable for drill design in high hardened tough materials, i.e, heat treated steels, titanium alloys, stainless steels, incoroy inconel, nimonic, etc.

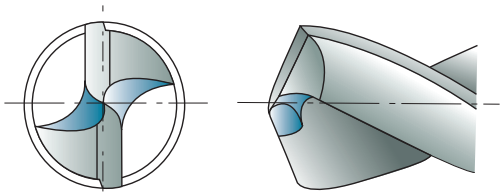


Da Kreuzanschliff gute Zentrierung und Spanbruch während des Bohrens ermöglicht, wird die Spanentfernung erleichtert.
Geeignet für zähe Werkstücke oder Werkstücke mit hoher Härte, z.B. hitzebehandelten Stahl, Titan-Legierungen, Edelstahl, Incoroy Inconel, Nimonic usw.

(3) Type R thinning (HELICAL THINNING)

Form R Kegelmantelanschliff (Spiralanschliff)

Helical thinning ensures to frequent chip breaking and removal. The different direction force of cutting edges and helical thinning parts enable that chips curl, break and remove through the flutes. In addition, helical thinning makes the chip room up to center, remove the chisel and enables good centering

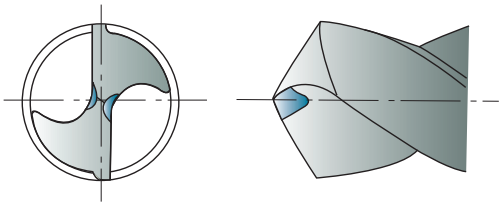


Häufiger Spanbruch und Spanentfernung durch Spiralanschliff, es wird ausreichend Raum für Späne geschaffen, und gute Zentrierung ist möglich.

(4) Type A thinning (DIN1412 FORM A)

DIN 1412 Form A Kegelmantelanschliff mit ausgespitzer Querschneide

A type thinnings makes thin chisel, good chip removal and favorable centering.
This type is the easiest type to grind the thinning. In narrow web and wide fluted drills, keeping of the rigidity and smooth chip removal are possible.



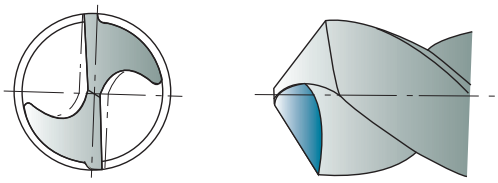
Diese Form hat eine dünne Querschneide, dadurch ist gute Spanentfernung und Zentrierung möglich.
Der Kegelmantelschliff ist bei dieser Form am einfachsten nachszuchleifen, Ein enger Kern und breite Schneiden erhalten die Stabilität.

TECHNICAL DATA

(5) Type B thinning (DIN1412 FORM B)

DIN 1412 Form B Kegelmantelanschliff mit ausgespitzer Querschneide

In case of work materials with low cutting resistance and good chip removal, i.e., cast iron, aluminum, plastic etc., B type thinning is suitable.
Especially when drills for high hardended steels are designed, this type is applied to decrease rake angle and avoid chipping of cutting lips.

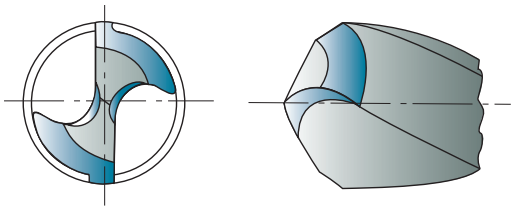


Geeignet für Werkstücke mit geringern Schneidwiderstand und guter Spanentfernung, z.B. Gusseisen, Aluminium, Plastik usw.
Diese Form wird besonders dann angewendet, wenn der Bohrer für Stähle mit hoher Härte produziert wurde, da dadurch der Seitenspanwinkel verkleinert wird und Brüche an der Schneidkante vermieden werden.

(6) Type D thinning (DIN1412 FORM D)

DIN 1412 Form D Kegelmantelanschliff mit ausgespitzern Kern

Grey cast iron thinning; bevelling of external edges strengthens the cutting edge.
Used for medium to high grey cast iron hardness and for abrasives.

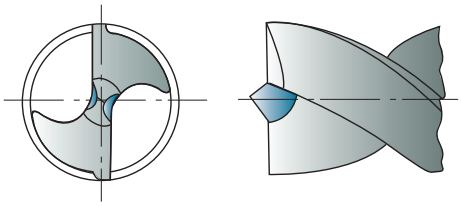


GG-Anschliff; Fasen auf dem Steg verstärken die Schneidkante.
Geeignet für medium bis hohe Härte GG und für abrasive Materialien.

(7) Type E thinning (DIN1412 FORM E)

DIN 1412 Form E Zentrumspitze

Center drill bit thinning; ensures optimal center drilling and does not leave burs in through holes.
As the bit and cutting edges are delicate, this bit should be used far drilling thin sheet metal.



Zentrisches Bohren, Niedrige Gratbildung, Geeignet zum Bohren von dünnen Blechen und Rohren.

11 Surface Finishes for high speed steels Twist Drills
Oberflächenbeschaffenheit von HSS-Spiralbohrern

(1) Bright Finish **Helle Beschaffenheit**

Drills with a bright finish are without surface treatment and ground condition.
Especially bright finished drills are used in machining of non ferrous materials.
Ohne Oberflächenbehandlung, geeignet zum Bearbeiten von Nichteisen Materiallen.

(2) Coloring (Gold color) **Farbe (Bernstein)**

The coloring is a thin oxide layer formed on the tool surfaces. Dies ist eine dünne Oxidschicht.
This is often applied to cobalt high speed steels twist drills. Geeignet für Kobalt-HSS-Spiralbohrer.

(3) Steam Tempered (black oxide finish) **Dampfoxidierte Ausführung**

This is a black oxide layer 1-2㎛ formed on the tool surfaces.
Steam Tempered treated drill is the result of a steam tempering operation. Because the oxide layer retains some coolant on the tool surface, and aids chip flow, helps to dissipate heat, steam homo treated drills are recommended for ferrous applications.
Eine schwarze Oxidschicht 1-2 ㎛.
Da die Oxidschicht Kühlmitteleigenschaften auf der Werkzeugoberfläche beinhaltet und den Spanfluss verbessert und die Hitze verteilt, sind diese Bohrer für die Bearbeitung von Metal-Werkstücken empfohlen.

12 Coating
Beschichtungen

The use of coated cutting tools reduce production costs.
For example

- Avoidance of machine downtime due to premature tool wear.
- Higher cutting capabilities to reduce actual machining times.
- Reproducible tool life.
- Improvement of component surface quality.

Durch den Gebrauch von beschichteten Werkzeugen werden Produktionskosten reduziert, z.B.

- Vermeidung von Maschinen-Ausfallzeiten wegen frühzeitigem Verschieiß des Bohrers.
- Höhere Bohrleistung, dadurch Verminderung von Arbeitszeit.
- Längere Standzeit.
- Verbesserte Oberflächengüte des Werkstücks.

(1) TiN (Titanium Nitride) coating TiN (Titan-Nitrid) Beschichtung

Titanium Nitride gives the tool a higher performance in comparison to traditional non-coated drills.
TiN coating, with good all-around properties, is recommended for the general application, i.e., attack by abrasive, adhesive and chemical wear in equal proportions.

Bessere Leistung im Vergleich zu unbeschichteten Werkzeugen
TiN-Beschichtung wird für allgemeine Anwendungen empfohlen guten.

(2) TiCN (Titanium Carbon Nitride) coating TiCN(Titan karbon Nitrid) Beschichtung

TiCN coating should be employed when severe thermodynamic stress is expected, for example when drilling in high hardened steels or in mild steels with high speed and feed.

Diese Beschichtung soll bei extremen thermodynamischen Bedingungen verwendet werden, z.B. bei Bohren von Stählen mit hoher Härte und Stähle mit hoher Geschwindigkeit und Vorschub.

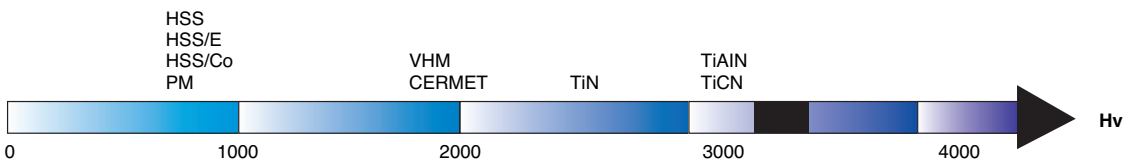
(3) TiAlN (Titanium Alumium Nitride) coating TiAlN(Titan Aluminium Nitrid) Beschichtung

The addition of Aluminum to the Titanium Nitride produces an increase in hardness and an exceptional increase in resistance to oxidation at high temperature.
TiAlN coating is applied to drilling with severe thermal stress on cutting edges when continuous non-step feed, dry cutting or high speed cutting.

Der Zusatz von Aluminium zum Titan-Nitrid ermöglicht eine höhere Härte und einen auß erordentlich guten Widerstand gegen Oxidation und hohe Temperaturen.
Geeignet zum Bohren unter extremen thermischen Bedingungen auf der Hauptschneide bei kontinuierlichem Vorschub, Trockenschnitt oder Hochgeschwindigkeitsbohren.

(4) Properties of coating Beschichtungs-Eigenschaften

Properties	TiN	TiCN	TiAlN
Coating color Beschichtungsfarbe	gold - yellow	blue - grey	violet - grey
Hardness (Hv 0.05) h rtegrad (Hv 0.05)	2300	3000	3000
Coating thickness(㎛) Beschlchtungsdicke (㎛)	1~4	1~4	1~5
Max. working temperature (°C) Max. Arbeitstemperatur (°C)	600	400	800
Coefficient of friction against steels(dry) Reibungskoeffizient f r stahl (trocken)	0.4	0.4	0.4



TECHNICAL DATA

(5) Selection of coating Verschiedene Beschichtungen

Work-material	HSS TWIST DRILLS	CARBIDE DRILLS
Unalloyed steels Unlegierter Stahl	TiCN, TiAlN	TiCN, TiAlN
Steels < 1000 N/mm² Stahls < 1000 N/mm²	TiCN, TiAlN	TiCN, TiAlN
Steels > 1000 N/mm² Stahls > 1000 N/mm²	TiCN, TiAlN	TiCN, TiAlN
Stainless steels Edelst le	TiCN, TiAlN	TiCN, TiAlN
Cast iron Gusseisen	TiCN, TiAlN	TiAlN
Al-wrought alloys Al-Knetlegierungen	TiN	TiN
Al-cast alloys Al-Gusslegierungen	TiCN	TiCN
Copper (pure) Kupfer (pur)	CrN	CrN
Brass Messing	TiCN	TiCN
Bronze Bronze	TiCN	TiCN

Drill sizes before Tapping
Durchmesser für Bohrwerkzeuge für Gewindekernlöcher

(1) Metric - ISO threads coarse pitch Metrisch - ISO Gewinde, grobverzahnt

Nominal diameter	Drill diameter	Nominal diameter	Drill diameter	Nominal diameter	Drill diameter	Nominal diameter	Drill diameter
		M3	2.5	M11	9.5	M30	26.5
M1	0.75	M3.5	2.9	M12	10.2	M33	29.5
M1.2	0.95	M4	3.3	M14	12.0	M36	32.0
M1.4	1.1	M5	4.2	M16	14.0	M39	35.0
M1.6	1.25	M6	5.0	M18	15.5	M42	37.5
M1.8	1.45	M7	6.0	M20	17.5	M45	40.5
M2	1.6	M8	6.8	M22	19.5	M48	43.0
M2.2	1.75	M9	7.8	M24	21.0	M52	47.0
M2.5	2.05	M10	8.5	M27	24.0	M56	50.5

(2) Metric ISO threads fine pitch
Metrisch - ISO Gewinde, feinverzahnt

Nominal diameter	Tap Pitch	Drill diameter
2.5	0.35	2.15
3	0.35	2.65
3.5	0.35	3.15
4	0.5	3.5
4.5	0.5	4
5	0.5	4.5
5.5	0.5	5
6	0.75	5.2

Nominal diameter	Tap Pitch	Drill diameter
7	0.75	6.2
8	0.75	7.2
8	1	7
9	0.75	8.2
9	1	8
10	0.75	9.2
10	1	9
10	1.25	8.8

Nominal diameter	Tap Pitch	Drill diameter
11	0.75	10.2
11	1	10
12	1	11
12	1.25	10.8
12	1.5	10.5
14	1	13
14	1.25	12.8
14	1.5	12.5
15	1	14
15	1.5	13.5
16	1	15
16	1.5	14.5
17	1	16
17	1.5	15.5
18	1	17
18	1.5	16.5
18	2	16
20	1	19
20	1.5	18.5
20	2	18
22	1	21
22	1.5	20.5
22	2	20
24	1	23
24	1.5	22.5
24	2	22
25	1	24
25	1.5	23.5
25	2	23
26	1.5	24.5
27	1	26
27	1.5	25.5
27	2	25
28	1	27
28	1.5	26.5
28	2	26

Nominal diameter	Tap Pitch	Drill diameter
30	1	29
30	1.5	28.5
30	2	28
30	3	27
32	1.5	30.5
32	2	30
33	1.5	31.5
33	2	31
33	3	30
35	1.5	33.5
36	1.5	34.5
36	2	34
36	3	33
38	1.5	36.5
39	1.5	37.5
39	2	37
39	3	36
40	1.5	38.5
40	2	38
40	3	37
42	1.5	40.5
42	2	40
42	3	39
45	1.5	43.5
45	2	43
45	3	42
48	1.5	46.5
48	2	46
48	3	45
50	1.5	48.5
50	2	48
50	3	47
52	1.5	50.5
52	2	50
52	3	49

(3) WITHWORTH pipe threads (BSP)

WITHWORTH Rohrgewinde (BSP)

Nominal size	Drill diameter	Nominal size	Drill diameter
inches	mm	inches	mm
G1/8	8.8	G1 * 1/4	39.5
G1/4	11.8	G1 * 3/8	42.0
G3/8	15.25	G1 * 1/2	45.0
G1/2	19.0	G1 * 3/4	51.0
G5/8	21.0	G2	57.0
G3/4	24.5	G2 * 1/4	63.0
G7/8	28.25	G2 * 1/2	73.0
G1	30.75	G2 * 3/4	79.0
G11/8	35.5	G3	85.0

TECHNICAL DATA

(4) American unified coarse threads Amerikanischer Standard, Grobverzahnung

UNC	Drill diameter		UNC	Drill diameter	
	inches	mm		inches	mm
No. 1	53	1.51	7/16	U	9.35
No. 2	50	1.78	1/2	27/64	10.71
No. 3	47	1.99	9/16	31/64	12.30
No. 4	43	2.26	5/8	17/32	13.49
No. 5	38	2.58	3/4	21/32	16.67
No. 6	36	2.71	7/8	49/64	19.44
No. 8	29	3.45	1	7/8	22.22
No. 10	25	3.8	1 * 1/8	63/64	25.00
No. 12	16	4.5	1 * 1/4	1 * 7/64	28.18
1/4	7	5.11	1 * 3/8	1 * 7/32	30.95
5/16	F	6.53	1 * 1/2	1 * 11/32	34.13
3/8	5/16	7.94			

(5) American unified fine threads Amerikanischer Standard, Feinverzahnung

NF	Drill diameter		NF	Drill diameter	
	inches	mm		inches	mm
No. 0	3/64	1.19	3/8	Q	8.43
No. 1	53	1.51	7/16	25/64	9.92
No. 2	50	1.78	1/2	29/64	11.51
No. 3	45	2.08	9/16	33/64	13.10
No. 4	42	2.37	5/8	37/64	14.86
No. 5	37	2.64	3/4	11/16	17.46
No. 6	33	2.87	7/8	13/16	20.64
No. 8	29	3.45	1	59/64	23.42
No. 10	21	4.04	1 * 1/8	1 * 3/64	26.59
No. 12	14	4.62	1 * 1/4	1 * 11/32	29.76
1/4	3	5.41	1 * 3/8	1 * 19/32	32.94
5/16	1	6.91	1 * 1/2	1 * 27/64	36.11

ISO Tolerance
ISO Toleranz

㎛=1/1000mm

Diameter (mm)	1 - 3 from to	3 - 6 over to	6 - 10 over to	10 - 18 over to	18 - 30 over to	30 - 50 over to
Tolerance range in ㎛ / Toleranzwerte in ㎛						
h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13	0 - 16
h7	0 - 10	0 - 12	0 - 15	0 - 18	0 - 21	0 - 25
h8	0 - 14	0 - 18	0 - 22	0 - 27	0 - 33	0 - 39
m7	+ 12 + 2	+ 16 + 4	+ 21 + 6	+ 25 + 7	+ 29 + 8	+ 34 + 9

Trouble Shooting in Drilling
Probleme und Abhilfe

Occurrence of trouble	Cause of trouble	Countermeasures
Drill will not enter work **Bohrer dringt nicht durch werkstück**	1. Drill is dull. 2. Lip relief too small. 3. Too thick a web. 1. Bohrer ist stumpf 2. Hauptschneide ist zu klein 3. Kern ist zu dick	1. Grind lip relief sufficiently. 2. Grind web thinning. 3. Choose a drill with narrow web. 1. Schleifen der Hauptschneide 2. Kegeimantel schleifen 3. Bohrer mit engerem kern wählen
Margin chipping **Fasenbruch**	1.Oversized jig bushing. 1. Bohrbuchse ist zu ungleich.	1. Choose the suitable jig bushing for drill diameter 1. Den passenden Bohrbuchse wählen.
Cutting lip breaks **Bruch der Hauptschneide**	1. Lip relief too much. 2. Feed too heavy. 1. Zu große Entlastung der Hauptschneide 2. Vorschub zu stark	1. Grind lip relief sufficiently. 2. Decrease feed rate. 1. Schleifen der Hauptschneide 2. Vorschub verringern
Tang breaks **Bruch der Austrieblappen am kagelschaft**	1. Imperfect fit between taper shank and socket. 2. Burred or Badly worn sockets. 1. Befestigung zwischen Morsekegel und Aufnahme ungenügend 2. Verschleiß der Aufnahme	1. Clean the dirt or chips in sockets. 2. Change the worn sockets to new ones. 1. Schmutz oder Späne in der Aufnahme entfernen 2. Aufnahme wechseln
Drill breaks in brass **Bohrer bricht in Messing**	1. Unsuitable drill 2. Flutes clogged with chips 1. Unpassender Bohrer 2. Schneiden durch Späne verstopft	1. Choose the suitable drill for work material. 1. Den passenden Bohrer wählen
Chipping of drill center **Brüche auf der Querschneide**	1. Lip relief too much. 2. Feed too heavy. 1. Zu große Entlastung der Hauptschneide 2. Vorschub zu stark	1. Grind lip relief sufficiently. 2. Decrease feed rate. 1. Schleifen der Hauptschneide 2. Vorschub verringern
Hole oversize **Übergröße des Lochs**	1. Unequal angle or length of cutting edges. 2. Loosen spindle. 1. Ungleicher Winkel oder Länge der Hauptschneiden 2. Lockere Spindel	1. Resharpening point, choose correct drills. 2. Tighten spindle sufficiently. 1. Nachschleifen der Bohrspitze, passenden Bohrer wählen 2. Spindel ausreichend befestigen
Outer corners broken down. **Brüche in der Schneidenecke**	1. Cutting speed too high. 2. Hard spots in work material. 3. Flutes clogged with chips. 4. Too wear of drills. 1. Schnittgeschwindigkeit zu hoch 2. Harte Flächen im Werkstück 3. Schneiden durch Späne verstopft 4. Verschieiß des Bohrers zu groß	1. Grind point to suit work material. 2. Decrease the feed rates. 3. Resharpening early beforce too wear. 1. Bohrspitge nachschleifen und ans Werkstück anpassen 2. Vorschub verringern 3. Nachschleifen vor zu groß ern Verschleiß
Large chip of one flute and small chip of other flute **Ungleiche Späne auf den Schneiden**	1. Improperly ground point. 2. Only one lip doing all the cutting 1. Bohrspitze nicht richtig geschliffen 2. Nur eine Schneide bohrt	1. Properly grind point. 2. Grind point with same point angle and length of lip 3. Grind with small lip height. 1. Bohrspitze richtig schleifen 2. Bohrspitze mit dern gleichen Spitzenwinkel und Länge nachschleifen 3. Schleifen mit geringer Hauptschneidenhöhe
Hole rough **Grobes Loch**	1. Improperly ground point. 2. Unenough coolant supply 3. Too much feed. 4. Fixture not rigid. 1. Bohrspitze nicht richtig geschliffen 2. Ungenügende Kühlmittelzufuhr 3. Vorschub zu hoch 4. Befestigung nicht stabil	1. Properly grind point. 2. Supply coolant enough. 3. Decrease the feed rate. 4. Tighten the fixture or replace. 1. Bohrspitze richtig schleifen 2. Genügend Kühlmittel züfuren 3. Vorschub verringern 4. Befestigung stabilisieren oder erneuern

TECHNICAL DATA

16 Characteristic of DREAM DRILLS
Merkmale von DREAM BOHRER

- YG-1's Dream Drill Series are suitable for high speed and accurate drilling operations by special design and high quality.
  YG-1's DREAM Bohrer Serien sind durch ihre spezielle konstruktion und höchste Genauigkeit geeignet zum Hochgeschwindigkeitsbohren und für genaue Bohrvorgänge.

- Good performance for Steels, Cast Irons, Tool steels, Alloy steels and Stainless steels.
  Gute Leistung bei Stählen, Grauguss, Werkzeugstählen, Stahllegierungen sowie bei Rost-und Säurebeständigen Stählen.

- Rapid chip evacuation and excellent chip breaking can be achieved by special designed cutting edges on point and chip breakers on leading edges.
  Schnelle Spanabfuhr und hervorragender Spanbruch durch speziell entwickelte Schneidengeometrien und Spanbrechern.

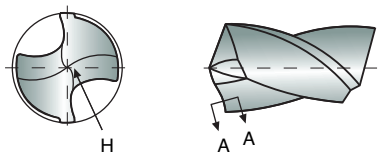
- High accuracy and stability.
  Hohe Genauigkeit und Stabilität.

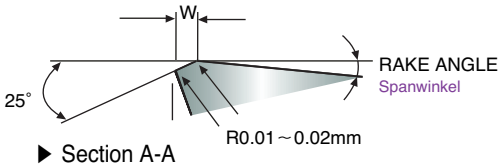
- Longer tool life with TiAlN coating.
  Höhere Standzeiten mit TiAlN-Beschichtungen.

- Self-centering
  Selbstzentrierend

17 Honing Guide of DREAM DRILLS
Hinweis zum Honen von DREAM BOHRER

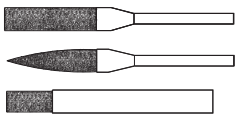
■ Dimension of Honing
Abmessung beim Honen





▶ Section A-A

■ Scraper
Schaben

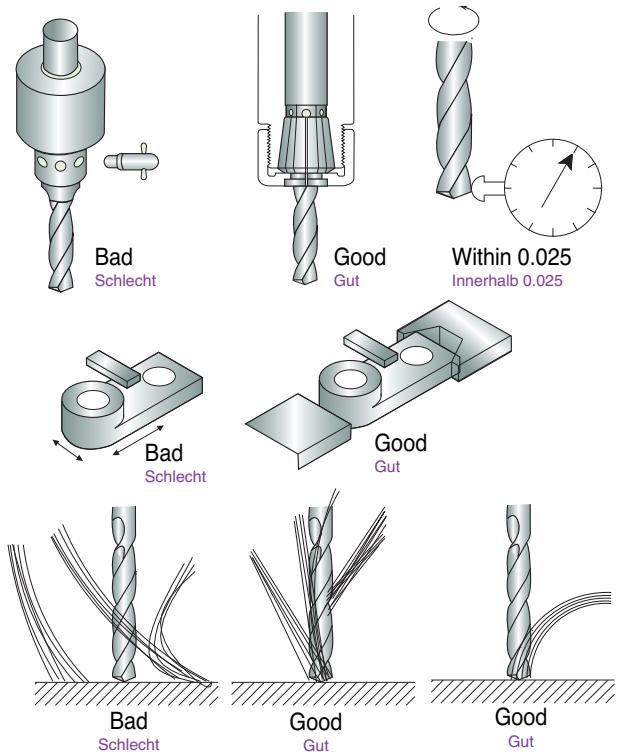


for Roughing (#140)
Grob
for Finishing (#230~#400)
Finish

Work Material	Alloy Steels	Mild Steels	Cast Iron
W(mm)	0.15~0.2	0.1~0.15	0.03

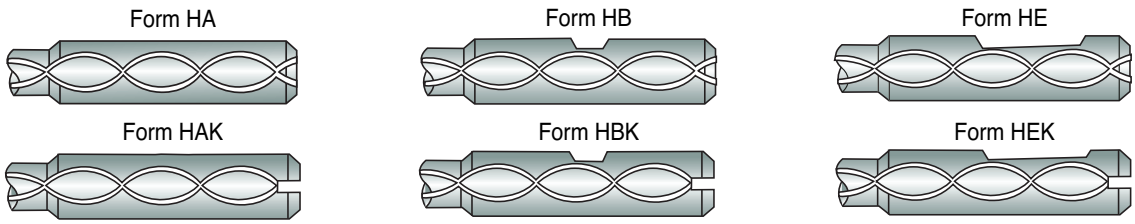
▶ The dimension W of stocked products is 0.1~0.15.
Das Maß w ist bei lagerhaltigen Produkten 0.1~0.15.

18 Use of DREAM DRILLS
Verwendung von DREAM BOHRER



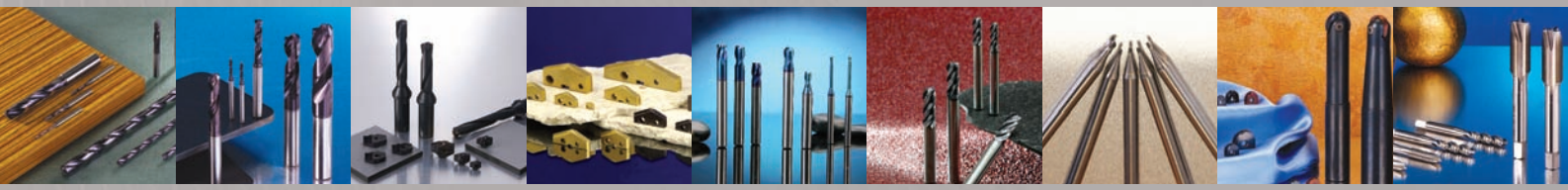
- Chucking with spring collet correctly.
  Richtiges Spannen mit Spannzangen.
- Radial run out at cutting lip must not exceed 0.025 mm.
  Radialer Rundlauf und der Schneidlippe darf nicht 0.025 überschreiten.
- Tighten clamp of work piece.
  Sicheres Spannen des Werkstückes
- Supply coolant enough to the entrance of hole.
  Ausreichend Kühlmittelzufluss am Bohrloch.
- When using Dream Drills with Coolant holes, supply high pressure coolant.
  Beim Verwenden von DREAM BOHRER mit Kühlkanal wird Hochdruckkühlung benötigt.

19 Shank Type DREAM DRILLS with Coolant Holes
Schaftausführung DREAM BOHRER mit Kühlkanal



- Shank Type of stocked products is Form HA.
  Schaftausführung von lagerhaltigen Produkten ist HA.
- Other shank types are available on your request.
  Andere Schaftausführungen können geliefert werden.

Global Cutting Tool Leader **YG-1**



THREADING TOOLS

■ HSS THREADING TOOLS

COMBO TAPS
(Spiral Flute & Spiral Point)

SPIRAL FLUTE TAPS

SPIRAL POINT TAPS

STRAIGHT FLUTE TAPS

COLD FORMING TAPS

NUT TAPS

SCREW THREAD INSERT TAPS

HAND TAPS

PIPE TAPS

■ CARBIDE THREADING TOOLS

SOLID CARBIDE TAPS

SOLID CARBIDE THREAD MILLS
(with & without coolant Holes)

YG-1 CO., LTD.

Contents

THREADING TOOLS

HSS MACHINE TAPS

HSS HAND TAPS

HSS PIPE TAPS

SOLID CARBIDE MACHINE TAPS

SOLID CARBIDE THREAD MILLS

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YG-1 CO., LTD.

Contents / THREADING TOOLS

COMBO TAPS (Spiral Flute & Spiral point)
For Multi Purpose Tapping, YG-1's Patent (HSS-E) — COMBO TAPS

SPIRAL FLUTE TAPS
Tapping Through Holes (HSS-E & HSS-PM) — SPIRAL FLUTE TAPS

SPIRAL POINT TAPS
Tapping Blind Holes (HSS-E & HSS-PM) — SPIRAL POINT TAPS

STRAIGHT FLUTE TAPS
Tapping Shallow Holes of Cast Iron, Mild Steels and Brass (HSS-E) — STRAIGHT FLUTE TAPS

COLD FORMING TAPS
Tapping by Forming Soft Materials (HSS-E & HSS-PM) — COLD FORMING TAPS

NUT TAPS
Nut Tapping Machines (HSS-E) — NUT TAPS

SCREW THREAD INSERT TAPS
Tapping STI Threads of Soft Materials (HSS-E) — STI TAPS

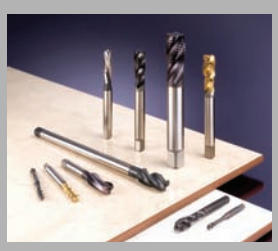
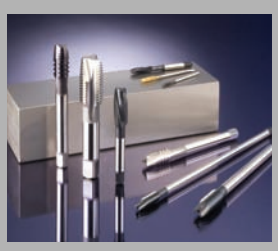
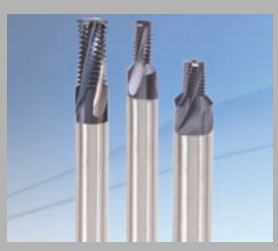
HAND TAPS
General Tapping (HSS & HSS-E) — HAND TAPS

PIPE TAPS
Tapping Whitworth Pipe threads (HSS & HSS-E) — PIPE TAPS

SOLID CARBIDE TAPS
Tapping Cast Iron and High Silicon Aluminium Mass Production and High Productivity achievable — CARBIDE TAPS

SOLID CARBIDE THREAD MILLS (with & without coolant holes)
Threading Large Diameter in High Quality Available with Chamfer — THREAD MILLS

TECHNICAL DATA — TECHNICAL DATA

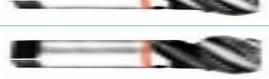
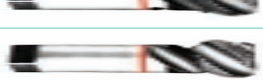
COMBO TAPS

● SPIRAL POINT TAP ● SPIRAL FLUTE TAP

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Surface Treatment	PAGE
●	**TC804 TD804**		HSS-E	M	**MU**	DIN371/376	ISO 6H	C	Bright TiN	**375**
●	**TC844 TD844**		HSS-E	MF	**MU**	DIN374	ISO 6H	C	Bright TiN	**376**
●	**TC804-IC**	with Internal Coolant	HSS-E	M	**MU**	DIN371/376	ISO 6H	C	Bright	**378**
●	**TC807**		HSS-E	M	**MU**	DIN371/376	ISO 6H	E	Bright	**379**
●	**TC633**		HSS-E	M	**MU**	LONG	ISO 6H	C	Bright	**380**
●	**TQ744 TB744**		HSS-PM HSS-E	M	**VA**	DIN371/376	ISO 6H	C	Vap	**381**
●	**TQ754 TB754**		HSS-PM HSS-E	MF	**VA**	DIN374	ISO 6H	C	Vap	**382**
●	**TC824 TD824**		HSS-E	UNC	**MU**	DIN371/376	2B	C	Bright TiN	**384**
●	**TC864 TD864**		HSS-E	UNF	**MU**	DIN371/374	2B	C	Bright TiN	**385**
●	**TC814 TD814**		HSS-E	M	**MU**	DIN371/376	ISO 6H	B	Bright TiN	**386**
●	**TC854 TD854**		HSS-E	MF	**MU**	DIN374	ISO 6H	B	Bright TiN	**387**
●	**TC814-IC**	with Internal Coolant	HSS-E	M	**MU**	DIN371/376	ISO 6H	B	Bright	**389**
●	**TC445**		HSS-E	M	**MU**	LONG	ISO 6H	B	Bright	**390**
●	**TQ428 TB428**		HSS-PM HSS-E	M	**VA**	DIN371/376	ISO 6H	B	Vap	**391**
●	**TQ438 TB438**		HSS-PM HSS-E	MF	**VA**	DIN374	ISO 6H	B	Vap	**392**
●	**TC834 TD834**		HSS-E	UNC	**MU**	DIN371/376	2B	B	Bright TiN	**394**
●	**TC874 TD874**		HSS-E	UNF	**MU**	DIN371/374	2B	B	Bright TiN	**395**

SPIRAL FLUTE TAPS

◆ SYNCHRO TYPE

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Surface Treatment	PAGE
◆	**TTS31**		HSS-PM	M	**GS**	DIN 371/376	ISO 2/6H	C	TiN	**400**
	TC612		HSS-E	M	**GS**	DIN 352	ISO 2/6H	C	Bright	**401**
	TC211		HSS-E	M	**GS**	DIN 371/376	ISO 2/6H	C	Bright	**402**
	TC517		HSS-E	M	**GS**	DIN 371/376	ISO 2/6H	C	Bright	**403**
	TC711		HSS-E	M	**GS**	DIN 371/376	ISO 2/6H	C	Bright	**404**
	TD711		HSS-E	M	**GS**	DIN 371/376	ISO 2/6H	C	TiN	**405**
	TQ823		HSS-PM	M	**VG**	DIN 371/376	ISO 2/6H	C	Vap	**406**
	TR823		HSS-PM	M	**VG**	DIN 371/376	ISO 2/6H	C	Bright	**407**
	TB312		HSS-E	M	**VG**	DIN 371/376	ISO 2/6H	C	Vap	**408**
	TB913		HSS-E	M	**VG**	DIN 371/376	ISO 2/6H	C	Vap	**409**

SPIRAL FLUTE TAPS

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Surface Treatment	PAGE
TC312		HSS-E	M	**VG**	DIN 371/376	ISO 2/6H	C	Bright	**410**
TD312		HSS-E	M	**VG**	DIN 371/376	ISO 2/6H	C	TiN	**411**
TY312		HSS-E	M	**VG**	DIN 371/376	ISO 2/6H	C	TiAlN	**412**
TQ813		HSS-PM	M	**VA**	DIN 371/376	ISO 2/6H	C	Vap	**413**
TR813		HSS-PM	M	**VA**	DIN 371/376	ISO 2/6H	C	Bright	**414**
TB313		HSS-E	M	**HR**	DIN 371/376	ISO 2/6H	C	Vap	**415**
TC313		HSS-E	M	**HR**	DIN 371/376	ISO 2/6H	C	Bright	**416**
TY313		HSS-E	M	**HR**	DIN 371/376	ISO 2/6H	C	TiAlN	**417**
TB914		HSS-E	M	**VA NW**	DIN 371/376	ISO 2/6H	C	Vap	**418**
TCH14		HSS-E	M	**VA NW**	DIN 371/376	ISO 2/6H	C	Hardslick	**419**
TB711		HSS-E	M	**NW**	DIN 371/376	ISO 2/6H	C	Vap	**420**
TM903		HSS-PM	M	**Ti**	DIN 371/376	ISO 2/6H	C	Bright	**421**
TZ903		HSS-PM	M	**Ti**	DIN 371/376	ISO 2/6H	C	TiAlN	**422**
TQ833		HSS-PM	M	**Ti Ni**	DIN 371/376	ISO 2/6H	C	Vap	**423**
TR833		HSS-PM	M	**Ti Ni**	DIN 371/376	ISO 2/6H	C	Bright	**424**
TM933		HSS-PM	M	**Ni**	DIN 371/376	ISO 2/6H	C	Bright	**425**
TZ933		HSS-PM	M	**Ni**	DIN 371/376	ISO 2/6H	C	TiAlN	**426**
TC163		HSS-E	M	**Al**	DIN 371/376	ISO 2/6H	C	Bright	**427**
TE953		HSS-E	M	**Al**	DIN 371/376	ISO 2/6H	C	NI	**428**
TC411		HSS-E	MF	**GS**	DIN 374	ISO 2/6H	C	Bright	**429**
TD411		HSS-E	MF	**GS**	DIN 374	ISO 2/6H	C	TiN	**431**
TC413		HSS-E	MF	**VG**	DIN 374	ISO 2/6H	C	Bright	**433**
TD413		HSS-E	MF	**VG**	DIN 374	ISO 2/6H	C	TiN	**434**
TB183		HSS-E	MF	**VA NW**	DIN 374	ISO 2/6H	C	Vap	**435**
TC963		HSS-E	MF	**Al**	DIN 374	ISO 2/6H	C	Bright	**436**
TC144		HSS-E	UNC	**GS**	DIN 371/376	2B	C	Bright	**437**
TC174		HSS-E	UNC	**VG**	DIN 371/376	2B	C	Bright	**438**
TD174		HSS-E	UNC	**VG**	DIN 371/376	2B	C	TiN	**439**
TB904		HSS-E	UNC	**VA NW**	DIN 371/376	2B	C	Vap	**440**

SPIRAL FLUTE TAPS

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Surface Treatment	PAGE
TC169		HSS-E	UNC	**Al**	DIN 371/376	2B	C	Bright	**441**
TC124		HSS-E	UNF	**GS**	DIN 371/374	2B	C	Bright	**442**
TC184		HSS-E	UNF	**VG**	DIN 371/374	2B	C	Bright	**443**
TB924		HSS-E	UNF	**VA NW**	DIN 371/374	2B	C	Vap	**444**
TC170		HSS-E	UNF	**Al**	DIN 371/374	2B	C	Bright	**445**
TC134		HSS-E	BSW	**GS**	DIN 2182/2183	-	C	Bright	**446**

SPIRAL POINT TAPS

◆ SYNCHRO TYPE

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Surface Treatment	PAGE
◆ **TTS33**		HSS-PM	M	**GS**	DIN 371/376	ISO 2/6H	B	TiN	**450**
TC122		HSS-E	M	**GS**	DIN 352	ISO 2/6H	B	Bright	**451**
TC127		HSS-E	M	**GS**	DIN 371	ISO 2/6H	B	Bright	**452**
TC227		HSS-E	M	**GS**	DIN 376	ISO 2/6H	B	Bright	**453**
TD127		HSS-E	M	**GS**	DIN 371	ISO 2/6H	B	TiN	**454**
TD227		HSS-E	M	**GS**	DIN 376	ISO 2/6H	B	TiN	**455**
TQ863		HSS-PM	M	**VG**	DIN 371/376	ISO 2/6H	B	Vap	**456**
TR863		HSS-PM	M	**VG**	DIN 371/376	ISO 2/6H	B	Bright	**457**
TC422		HSS-E	M	**VG**	DIN 371/376	ISO 2/6H	B	Bright	**458**
TE422		HSS-E	M	**VG**	DIN 371/376	ISO 2/6H	B	NI	**459**
TD422		HSS-E	M	**VG**	DIN 371/376	ISO 2/6H	B	TiN	**460**
TY422		HSS-E	M	**VG**	DIN 371/376	ISO 2/6H	B	TiAlN	**461**
TQ853		HSS-PM	M	**VA**	DIN 371/376	ISO 2/6H	B	Vap	**462**
TR853		HSS-PM	M	**VA**	DIN 371/376	ISO 2/6H	B	Bright	**463**
TC283		HSS-E	M	**HR**	DIN 371/376	ISO 2/6H	B	Bright	**464**
TY283		HSS-E	M	**HR**	DIN 371/376	ISO 2/6H	B	TiAlN	**465**
TB623		HSS-E	M	**VA NW**	DIN 371/376	ISO 2X/6HX	B	Vap	**466**
TCH23		HSS-E	M	**VA NW**	DIN 371/376	ISO 2X/6HX	B	Hardslick	**467**
TM293		HSS-PM	M-Az	**Ti**	DIN 371/376	ISO 2/6H	B	Bright	**468**
TZ293		HSS-PM	M-Az	**Ti**	DIN 371/376	ISO 2/6H	B	TiAlN	**469**
TQ873		HSS-PM	M	**Ti Ni**	DIN 371/376	ISO 2/6H	B	Vap	**470**

SPIRAL POINT TAPS

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Surface Treatment	PAGE
TR873		HSS-PM	M	**Ti Ni**	DIN 371/376	ISO 2/6H	B	Bright	**471**
TM923		HSS-PM	M	**Ni**	DIN 371/376	ISO 2/6H	B	Bright	**472**
TZ923		HSS-PM	M	**Ni**	DIN 371/376	ISO 2/6H	B	TiAlN	**473**
TE943		HSS-E	M	**Al**	DIN 371/376	ISO 2/6H	B	NI	**474**
TC622		HSS-E	M-Az	**Al**	DIN 371/376	ISO 2/6H	B	Bright	**475**
TC222		HSS-E	MF	**GS**	DIN 374	ISO 2/6H	B	Bright	**476**
TD222		HSS-E	MF	**GS**	DIN 374	ISO 2/6H	B	TiN	**478**
TC263		HSS-E	MF	**VG**	DIN 374	ISO 2/6H	B	Bright	**480**
TD263		HSS-E	MF	**VG**	DIN 374	ISO 2/6H	B	TiN	**481**
TB123		HSS-E	MF	**VA NW**	DIN 374	ISO 2X/6HX	B	Vap	**482**
TC214		HSS-E	UNC	**GS**	DIN 371/376	2B	B	Bright	**483**
TC244		HSS-E	UNC	**VG**	DIN 371/376	2B	B	Bright	**484**
TD244		HSS-E	UNC	**VG**	DIN 371/376	2B	B	TiN	**485**
TB264		HSS-E	UNC	**VA NW**	DIN 371/376	2B	B	Vap	**486**
TC234		HSS-E	UNF	**GS**	DIN 371/374	2B	B	Bright	**487**
TC254		HSS-E	UNF	**VG**	DIN 371/374	2B	B	Bright	**488**
TB274		HSS-E	UNF	**VA NW**	DIN 371/374	2B	B	Vap	**489**
TC224		HSS-E	BSW	**GS**	DIN 2182/2183	-	B	Bright	**490**

STRAIGHT FLUTE TAPS

◆ SYNCHRO TYPE

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Surface Treatment	PAGE
◆ **TKS35**		HSS-PM	M	**GS**	DIN 371/376	ISO 2X/6HX	C	TiCN	**493**
TC463		HSS-E	M	**GS**	DIN 371/376	ISO 2/6H	C	Bright	**494**
TE821		HSS-E	M	**GG**	DIN 371/376	ISO 2X/6HX	C	NI	**495**
TD821		HSS-E	M	**GG**	DIN 371/376	ISO 2X/6HX	C	TiN	**496**
TY821		HSS-E	M	**GG**	DIN 371/376	ISO 2X/6HX	C	TiAlN	**497**
TI821		HSS-E	M	**GG**	DIN 371/376	ISO 2X/6HX	C	TiCN	**498**
TC433		HSS-E	M	**Ms**	DIN 371/376	ISO 2/6H	C	Bright	**499**
TE443		HSS-E	M	**Ms**	DIN 371/376	ISO 2X/6HX	C	NI	**500**
TY433		HSS-E	M	**Ms**	DIN 371/376	ISO 2/6H	C	TiAlN	**501**

STRAIGHT FLUTE TAPS

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Surface Treatment	PAGE
TC473		HSS-E	MF	**GS**	DIN 374	ISO 2/6H	C	Bright	**502**
TE403		HSS-E	MF	**GG**	DIN 374	ISO 2X/6HX	C	NI	**503**
TC424		HSS-E	UNC	**GS**	DIN 371/376	2B	C	Bright	**504**
TE434		HSS-E	UNC	**GG**	DIN 371/376	2BX	C	NI	**505**
TE454		HSS-E	UNF	**GG**	DIN 371/374	2BX	C	NI	**506**

COLD FORMING TAPS

◆ SYNCHRO TYPE

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Surface Treatment	PAGE
◆ **TTS37**		HSS-PM	M	**GS**	DIN 371/376	ISO 2X/6HX	C	TiN	**509**
TQ703		HSS-PM	M	**GV**	DIN 371/376	ISO 2X/6HX	C	Vap	**510**
TQ723		HSS-PM	M	**GV**	DIN 371/376	ISO 2X/6HX	C	Vap	**511**
TE703		HSS-E	M	**GV**	DIN 371/376	ISO 2X/6HX	C	NI	**512**
TE713		HSS-E	M	**GV**	DIN 371/376	ISO 3X/6GX	C	NI	**513**
TE723		HSS-E	M	**GV**	DIN 371/376	ISO 2X/6HX	C	NI	**514**
TD713		HSS-E	M	**GV**	DIN 371/376	ISO 3X/6GX	C	TiN	**515**
TD723		HSS-E	M	**GV**	DIN 371/376	ISO 2X/6HX	C	TiN	**516**
TD703		HSS-E	M	**GV**	DIN 371/376	ISO 2X/6HX	C	TiN	**517**
TY703		HSS-E	M	**GV**	DIN 371/376	ISO 2X/6HX	C	TiAlN	**518**
TE733		HSS-E	MF	**GV**	DIN 374	ISO 2X/6HX	C	NI	**519**
TD733		HSS-E	MF	**GV**	DIN 374	ISO 2X/6HX	C	TiN	**520**
TE704		HSS-E	UNC	**GV**	DIN 371/376	2BX	C	NI	**521**
TD704		HSS-E	UNC	**GV**	DIN 371/376	2BX	C	TiN	**522**

NUT TAPS

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Surface Treatment	PAGE
TC803		HSS-E	M	**GS**	DIN 357	ISO 2/6H	LONG	Bright	**524**

SCREW THREAD INSERT TAPS

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Surface Treatment	PAGE
TC973		HSS-E	EG-M	**Al**	DIN 371/376	6H Mod.	B	Bright	**527**
TC909		HSS-E	EG-M	**Al**	DIN 371/376	6H Mod.	C	Bright	**528**
TC934		HSS-E	EG-UNC	**Al**	DIN 371/376	2B	B	Bright	**529**
TC944		HSS-E	EG-UNC	**Al**	DIN 371/376	2B	C	Bright	**530**
TC954		HSS-E	EG-UNF	**Al**	DIN 371/374	2B	B	Bright	**531**

HSS HAND TAPS

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Surface Treatment	PAGE
T7109		HSS	M	**GS**	DIN 352	ISO 2/6H	I / II / III	Bright	**535**
T7343		HSS	M-LH	**GS**	DIN 352	ISO 2/6H	I / II / III	Bright	**536**
TC353		HSS-E	M	**VG**	DIN 352	ISO 2/6H	I / II / III	Bright	**537**
TB373		HSS-E	M	**VA**	DIN 352	ISO 2X/6HX	I / II / III	Vap	**538**
T7309		HSS	MF	**GS**	DIN 2181	ISO 2/6H	I / III	Bright	**539**
T7363		HSS	UNC	**GS**	DIN 351	2B	I / II / III	Bright	**541**
T7509		HSS	UNF	**GS**	DIN 2181	2B	I / III	Bright	**542**
T7609		HSS	BSW	**GS**	DIN 351	-	I / II / III	Bright	**543**

PIPE TAPS

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Surface Treatment	PAGE
T7709		HSS	G(BSP)	**GS**	DIN 5157	-	I / III	Bright	**547**
TC727		HSS-E	G(BSP)	**GS**	DIN 5156	-	B	Bright	**548**
TC728		HSS-E	G(BSP)	**GS**	DIN 5156	-	C	Bright	**549**
TC729		HSS-E	G(BSP)	**VG**	DIN 5156	-	C	Bright	**550**
TB514		HSS-E	G(BSP)	**VA NW**	DIN 5156	-	C	Vap	**551**

SOLID CARBIDE TAPS

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Surface Treatment	PAGE
T0993		CARBIDE	M	**GG**	DIN 371/376	ISO 2X/6HX	C	Bright	**555**
T0997 T0999		CARBIDE	M	**HR**	DIN 371/376	ISO 2X/6HX	C / D	TiCN	**556**

SOLID CARBIDE THREAD MILL

EDP No.	MODEL		Description	PAGE
Solid Carbide Thread Mill without Coolant Hole				
L1211		M	Solid Carbide Thread Mill for ISO Metric Internal Thread - DIN 13 VOLLHARTMETALL GEWINDEFRÄSER für ISO METRISCHES INNENGEWINDE - DIN 13	560
L1212		MF	Solid Carbide Thread Mill for ISO Metric Internal Thread - DIN 13 VOLLHARTMETALL GEWINDEFRÄSER für ISO METRISCH - FEIN INNENGEWINDE - DIN 13	561
L1213		UNC	Solid Carbide Thread Mill for UNC Internal Thread - ANSI B 1.1 VOLLHARTMETALL GEWINDEFRÄSER für UNC INNENGEWINDE, ANSI B 1.1	562
L1214		UNF	Solid Carbide Thread Mill for UNF Internal Thread - ANSI B 1.1 VOLLHARTMETALL GEWINDEFRÄSER für UNF INNENGEWINDE, ANSI B 1.1	563
Solid Carbide Thread Mill with Coolant Hole				
L4211		M	Solid Carbide Thread Mill with Coolant Hole for ISO Metric Internal Thread - DIN 13 VOLLHARTMETALL GEWINDEFRÄSER mit KÜHLKANAL für ISO METRISCHES INNENGEWINDE - DIN 13	564
L4212		MF	Solid Carbide Thread Mill with Coolant Hole for ISO Metric Internal Thread - DIN 13 VOLLHARTMETALL GEWINDEFRÄSER mit KÜHLKANAL für ISO METRISCH - FEIN INNENGEWINDE - DIN 13	565
L6215		BSP(G)	Solid Carbide Thread Mill with Coolant Hole for BSP(G) Internal/External Thread VOLLHARTMETALL GEWINDEFRÄSER MIT KÜHLKANAL für BSP (G) INNEN- / AUßENGEWINDE	566
Solid Carbide Thread Mill with Coolant Hole & Chamfer				
L4271		M	Solid Carbide Thread Mill with Coolant Hole & Chamfer for ISO Metric Internal Thread - DIN 13 VOLLHARTMETALL GEWINDEFRÄSER mit KÜHLKANAL & FASE für METRISCHES INNENGEWINDE - DIN 13	567
L4272		MF	Solid Carbide Thread Mill with Coolant Hole & Chamfer for ISO Metric Internal Thread - DIN 13 VOLLHARTMETALL GEWINDEFRÄSER mit KÜHLKANAL & FASE für METRISCH - FEIN INNENGEWINDE - DIN 13	568
L4273		UNC	Solid Carbide Thread Mill with Coolant Hole & Chamfer for UNC Internal Thread - ANSI B 1.1 VOLLHARTMETALL GEWINDEFRÄSER mit KÜHLKANAL & FASE für UNC INNENGEWINDE - ANSI B 1.1	569
L4274		UNF	Solid Carbide Thread Mill with Coolant Hole & Chamfer for UNF Internal Thread - ANSI B 1.1 VOLLHARTMETALL GEWINDEFRÄSER mit KÜHLKANAL & FASE für UNF INNENGEWINDE - ANSI B 1.1	570
L4276		NPT	Solid Carbide Thread Mill with Coolant Hole & Chamfer for NPT Thread - ANSI B 1.20.1 VOLLHARTMETALL GEWINDEFRÄSER mit KÜHLKANAL & FASE für NPT INNENGEWINDE - ANSI B 1.20.1	571
Solid Carbide Miniature Thread Mill				
L12D1		M	Solid Carbide Miniature Thread Mill for ISO Metric Internal Thread - DIN13 VOLLHARTMETALL MINI-GEWINDEFRÄSER für ISO METRISCHE INNENGEWINDE - DIN13	572
L12D3		UNC	Solid Carbide Miniature Thread Mill for UNC Internal Thread - ANSI B 1.1 VOLLHARTMETALL MINI-GEWINDEFRÄSER für UNC INNENGEWINDE - ANSI B 1.1	573
L19E1		M	Solid Carbide Miniature Thread Mill for Hard Materials, ISO Metric Internal Thread - DIN13 VOLLHARTMETALL MINI-GEWINDEFRÄSER für GEHÄRTETE MATERIALIEN, ISO METRISCHE INNENGEWINDE - DIN13	574
L19E3		UNC	Solid Carbide Miniature Thread Mill for Hard Materials,UNC Internal Thread - ANSI B 1.1 VOLLHARTMETALL MINI-GEWINDEFRÄSER für GEHÄRTETE MATERIALIEN, UNC INNENGEWINDE - ANSI B 1.1	575
Solid Carbide Drill and Thread Mill				
L41A1 L42A1		M	Solid Carbide Drill and Thread Mill with Chamfer for ISO Metric Internal Thread - DIN 13 VOLLHARTMETALL BOHRGEWINDEFRÄSER MIT SENKFASE für ISO METRISCHE INNENGEWINDE - DIN 13	576

◎ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
◎	◎	◎		◎	○	○	○	◎
◎	◎	◎		◎	○	○	○	◎
◎	◎	◎		◎	○	○	○	◎
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◎	◎	◎		◎	○	○	○	◎
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	○	◎	◎	◎	○	○	◎	
	○	◎	◎	◎	○	○	◎	
				◎				◎

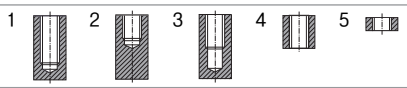
MACHINE TAPS

RECOMMENDATION TABLE

USE

◎ = EXCELLENT

○ = GOOD



MATERIAL GROUPS			MU	MU	MU
DIN 371/376	M	EDP No. (Page)	TC804 (p.375)	TD804 (p.375)	TC804-IC (p.378)
DIN 371/376	EG-M	EDP No. (Page)			
DIN 352	M	EDP No. (Page)			
DIN 374	MF	EDP No. (Page)	TC844 (p.376)	TD844 (p.376)	
DIN 371/376	UNC	EDP No. (Page)	TC824 (p.384)	TD824 (p.384)	
DIN 371/376	EG-UNC	EDP No. (Page)			
DIN 371/374	UNF	EDP No. (Page)	TC864 (p.385)	TD864 (p.385)	
DIN 371/376	EG-UNF	EDP No. (Page)			
DIN 2182/2183	BSW	EDP No. (Page)			
DIN 357/5156	M/G(BSP)	EDP No. (Page)			
LONG	M	EDP No. (Page)			
SURFACE TREATMENT / COATING			Bright	TiN	Bright
SPIRAL FLUTE ANGLE			R40	R40	R40
CHAMFER LEAD ACC. DIN 2197			C	C	C
HOLE TYPE			1-2-3	1-2-3	1-2-3

COOLANT

A = Cutting Oil
T = Oil Emulsion
X = Cutting Oil/Oil Emulsion
S = Dry
Z = Dry/Oil Emulsion

MATERIAL GROUPS			LIST OF MATERIALS	HARDNESS HB	TENSILE STRENGTH Rm N/mm²	CHIP	CUTTING SPEED Vc m/min	COOLANT			
10. STEELS	11	Steel < 400	Magnetic soft steels	< 120	< 400	Extra long	15-20	T	◎	◎	◎
	12	Steel < 700	Structure steels	< 200	< 700	Medium/long	15-20	T	◎	◎	◎
	13	Steel < 850	Plain carbon steels	< 250	< 850	Long	12-18	T	◎	◎	◎
	14	St. Alloy < 850	Alloy steels	< 250	< 850	Long	10-15	X	◎	◎	◎
	15	St. Alloy ≤ 1,200	Alloy steels, Hardened steels	< 350	≤1,200	Long	6-10	X	◎	◎	◎
	16	St. Alloy > 1,200	Alloy steels, Hardened steels	> 350	> 1,200	Long	3-5	A			
20. STAINLESS STEELS	21	INOX Free < 850	Free machining	< 250	< 850	Medium	7-10	A	◎	◎	◎
	22	INOX Aust.< 850	Austenitic	< 250	< 850	Long	5-8	A	◎	◎	◎
	23	INOX < 1,100	Ferritic, Ferritic+Austenitic, Martensitic	< 300	< 1,100	Long	4-6	A	◎	◎	◎
30. CAST IRON	31	GG Cast < 500	Grey cast iron	< 150	< 500	Extra short	10-15	X	◎	◎	◎
	32	GG Cast < 1,000	Grey cast iron	< 300	< 1,000	Extra short	5-8	T	◎	◎	◎
	33	GGG Cast < 700	Nodular graphite, Malleable cast iron	< 200	< 700	Short	10-15	X	◎	◎	◎
	34	GGG Cast < 1,000	Nodular graphite, Malleable cast iron	< 300	< 1,000	Short	5-8	X	◎	◎	◎
40. TITANIUM	41	Ti < 700	Titanium, Unalloyed	< 200	< 700	Extra long	10-15	T	◎	◎	◎
	42	Ti Alloy < 900	Titanium, Alloyed	< 270	< 900	Medium/Short	8-12	A	○	○	○
	43	Ti Alloy ≤ 1,300	Titanium, Alloyed	< 350	≤1,300	Medium/Short	4-6	A			
50. NICKEL	51	Ni < 500	Nickel, Unalloyed	< 150	< 500	Extra long	8-12	A	◎	◎	◎
	52	Ni Alloy < 900	Nickel, Alloyed	< 270	< 900	Long	10-15	A	○	○	○
	53	Ni Alloy ≤ 1,400	Nickel, Alloyed	< 410	≤1,400	Long	2-4	A			
60. COPPER, BRASS, BRONZE	61	Cu < 350	Copper, Unalloyed	< 100	< 350	Extra long	8-12	T	◎	◎	◎
	62	Cu Alloy (Short)	Short chip Brass, Bronze, Copper	< 200	< 700	Medium/Short	25-35	T	◎	◎	◎
	63	Cu Alloy (Long)	Long chip Brass, Bronze, Copper	< 200	< 700	Long	15-20	T	◎	◎	◎
	64	Cu-Al-Fe < 1,500	Cu-Al-Fe alloys	< 470	< 1,500	Short	3-5	A			
70. ALUMINUM	71	Al/Mg < 350	Aluminum, Magnesium, Unalloyed	< 100	< 350	Extra long	10-15	T			
	72	Al Wrought	Aluminum, Alloyed Si < 0.5%	< 150	< 500	Medium	25-35	T	◎	◎	◎
	73	Al (Si ≤ 10%)	Aluminum, Alloyed, Si ≤ 10%	< 120	< 400	Medium/Short	15-20	T	◎	◎	◎
	74	Al (Si > 10%)	Aluminum, Alloyed, Si > 10%	< 120	< 400	Short	10-15	T	◎	◎	◎
80. PLASTICS	81	Thermosoft.	Thermoplastics			Extra long	20-30	T			
	82	Thermoset.	Thermosseting Plastics			Short	8-12	Z			
	83	FRP	Fiber Reinforced Plastics			Extra short	5-7	Z			

MU	MU	VA	VA	MU	MU	MU	MU	VA	VA	GS	GS	GS	GS	GS	GS	GS	GS	GS	GS
TC807 (p.379)		TQ744 (p.381)	TB744 (p.381)	TC814 (p.386)	TD814 (p.386)	TC814-IC (p.389)		TQ428 (p.391)	TB428 (p.391)	TTS31 (p.400)	TTS33 (p.450)	TKS35 (p.493)	TTS37 (p.509)	TC127 (p.452)	TC227 (p.453)	TD127 (p.454)	TD227 (p.455)	TC463 (p.494)	TC211 (p.402)
														TC122 (p.451)					
		TQ754 (p.382)	TB754 (p.382)	TC854 (p.387)	TD854 (p.387)			TQ438 (p.392)	TB438 (p.392)					TC222 (p.476)		TD222 (p.478)		TC473 (p.502)	
				TC834 (p.394)	TD834 (p.394)									TC214 (p.483)				TC424 (p.504)	
				TC874 (p.395)	TD874 (p.395)									TC234 (p.487)					
														TC224 (p.490)					
														TC727 (p.548)				TC803 (p.524)	
	TC633 (p.380)						TC445 (p.390)												
Bright	Bright	Vap	Vap	Bright	TiN	Bright	Bright	Vap	Vap	TiN	TiN	TiCN	TiN	Bright	Bright	TiN	TiN	Bright	Bright
R40	R40	R45	R45							R45									L20
E	C	C	C	B	B	B	B	B	B	C	B	C	C	B	B	B	B	C/Long	C
1-2-3	1-2-3	1-2-3	1-2-3	4-5	4-5	4-5	4-5	4-5	4-5	2-3	4-5	1-2-3 4-5	1-2-3 4-5	4-5	4-5	4-5	4-5	1-2-3 4-5	4-5

Synchro Type

Applicable to 2-3 times faster cutting speed than minimum general GS Taps cutting speeds

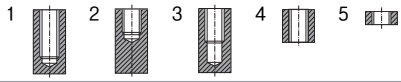
MACHINE TAPS

RECOMMENDATION TABLE

USE

◎ = EXCELLENT

○ = GOOD



MATERIAL GROUPS			GS	GS
DIN 371/376	M	EDP No. (Page)	TC517 (p.403)	TC711 (p.404)
DIN 371/376	EG-M	EDP No. (Page)		
DIN 352	M	EDP No. (Page)	TC612 (p.401)	
DIN 374	MF	EDP No. (Page)		TC411 (p.429)
DIN 371/376	UNC	EDP No. (Page)		TC144 (p.437)
DIN 371/376	EG-UNC	EDP No. (Page)		
DIN 371/374	UNF	EDP No. (Page)		TC124 (p.442)
DIN 371/376	EG-UNF	EDP No. (Page)		
DIN 2182/2183	BSW	EDP No. (Page)		TC134 (p.446)
DIN 357/5156	M/G(BSP)	EDP No. (Page)		TC728 (p.549)
LONG	M	EDP No. (Page)		
SURFACE TREATMENT / COATING			Bright	Bright
SPIRAL FLUTE ANGLE			R20	R40
CHAMFER LEAD ACC. DIN 2197			C	C
HOLE TYPE			2-3	1-2-3

COOLANT

A = Cutting Oil
T = Oil Emulsion
X = Cutting Oil/Oil Emulsion
S = Dry
Z = Dry/Oil Emulsion

MATERIAL GROUPS			LIST OF MATERIALS	HARDNESS HB	TENSILE STRENGTH Rm N/mm²	CHIP	CUTTING SPEED Vc m/min	COOLANT		
10. STEELS	11	Steel < 400	Magnetic soft steels	< 120	< 400	Extra long	15-20	T		
	12	Steel < 700	Structure steels	< 200	< 700	Medium/long	15-20	T	◎	◎
	13	Steel < 850	Plain carbon steels	< 250	< 850	Long	12-18	T	◎	◎
	14	St. Alloy < 850	Alloy steels	< 250	< 850	Long	10-15	X	◎	◎
	15	St. Alloy ≤ 1,200	Alloy steels, Hardened steels	< 350	≤1,200	Long	6-10	X		
	16	St. Alloy > 1,200	Alloy steels, Hardened steels	> 350	> 1,200	Long	3-5	A		
20. STAINLESS STEELS	21	INOX Free < 850	Free machining	< 250	< 850	Medium	7-10	A		
	22	INOX Aust.< 850	Austenitic	< 250	< 850	Long	5-8	A		
	23	INOX < 1,100	Ferritic, Ferritic+Austenitic, Martensitic	< 300	< 1,100	Long	4-6	A		
30. CAST IRON	31	GG Cast < 500	Grey cast iron	< 150	< 500	Extra short	10-15	X		
	32	GG Cast < 1,000	Grey cast iron	< 300	< 1,000	Extra short	5-8	T		
	33	GGG Cast < 700	Nodular graphite, Malleable cast iron	< 200	< 700	Short	10-15	X	◎	◎
	34	GGG Cast < 1,000	Nodular graphite, Malleable cast iron	< 300	< 1,000	Short	5-8	X	◎	◎
40. TITANIUM	41	Ti < 700	Titanium, Unalloyed	< 200	< 700	Extra long	10-15	T	○	○
	42	Ti Alloy < 900	Titanium, Alloyed	< 270	< 900	Medium/Short	8-12	A		
	43	Ti Alloy ≤ 1,300	Titanium, Alloyed	< 350	≤1,300	Medium/Short	4-6	A		
50. NICKEL	51	Ni < 500	Nickel, Unalloyed	< 150	< 500	Extra long	8-12	A	○	○
	52	Ni Alloy < 900	Nickel, Alloyed	< 270	< 900	Long	10-15	A		
	53	Ni Alloy ≤ 1,400	Nickel, Alloyed	< 410	≤1,400	Long	2-4	A		
60. COPPER, BRASS, BRONZE	61	Cu < 350	Copper, Unalloyed	< 100	< 350	Extra long	8-12	T	○	○
	62	Cu Alloy (Short)	Short chip Brass, Bronze, Copper	< 200	< 700	Medium/Short	25-35	T		
	63	Cu Alloy (Long)	Long chip Brass, Bronze, Copper	< 200	< 700	Long	15-20	T	◎	◎
	64	Cu-Al-Fe < 1,500	Cu-Al-Fe alloys	< 470	< 1,500	Short	3-5	A		
70. ALUMINUM	71	Al/Mg < 350	Aluminum, Magnesium, Unalloyed	< 100	< 350	Extra long	10-15	T	○	○
	72	Al Wrought	Aluminum, Alloyed Si < 0.5%	< 150	< 500	Medium	25-35	T	○	○
	73	Al (Si ≤ 10%)	Aluminum, Alloyed, Si ≤ 10%	< 120	< 400	Medium/Short	15-20	T	○	○
	74	Al (Si > 10%)	Aluminum, Alloyed, Si > 10%	< 120	< 400	Short	10-15	T	◎	◎
80. PLASTICS	81	Thermosoft.	Thermoplastics			Extra long	20-30	T	○	○
	82	Thermoset.	Thermosseting Plastics			Short	8-12	Z		
	83	FRP	Fiber Reinforced Plastics			Extra short	5-7	Z		

GS	VG	VG	VG	VG	VG	VG	VG	VG	VG	VG	VG	VG	VG	HR	HR	HR	HR	HR	HR
TD711 (p.405)	TQ863 (p.456)	TR863 (p.457)	TC422 (p.458)	TE422 (p.459)	TD422 (p.460)	TY422 (p.461)	TQ823 (p.406)	TR823 (p.407)	TC312 (p.410)	TB312 (p.408)	TD312 (p.411)	TY312 (p.412)	TB913 (p.409)	T0997 (p.556)	T0999 (p.556)	TC283 (p.464)	TY283 (p.465)	TC313 (p.416)	TB313 (p.415)
TD411 (p.431)			TC263 (p.480)		TD263 (p.481)				TC413 (p.433)		TD413 (p.434)								
			TC244 (p.484)		TD244 (p.485)				TC174 (p.438)		TD174 (p.439)								
			TC254 (p.488)						TC184 (p.443)										
			TC729 (p.550)																
TiN	Vap	Bright	Bright	NI	TiN	TiAlN	Vap	Bright	Bright	Vap	TiN	TiAlN	Vap	TiCN	TiCN	Bright	TiAlN	Bright	Vap
R40							R40	R40	R40	R40	R40	R40	R40					R40	R40
C	B	B	B	B	B	B	C	C	C	C	C	C	C	C	D	B	B	C	C
1-2-3	4-5	4-5	4-5	4-5	4-5	4-5	1-2-3	1-2-3	1-2-3	1-2-3	1-2-3	1-2-3	1-2-3	1-2-3 4-5	1-2-3 4-5	4-5	4-5	1-2-3	1-2-3
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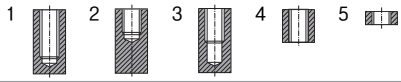
MACHINE TAPS

RECOMMENDATION TABLE

USE

◎ = EXCELLENT

○ = GOOD



MATERIAL GROUPS			HR	VA
DIN 371/376	M	EDP No. (Page)	TY313 (p.417)	TQ853 (p.462)
DIN 371/376	EG-M	EDP No. (Page)		
DIN 352	M	EDP No. (Page)		
DIN 374	MF	EDP No. (Page)		
DIN 371/376	UNC	EDP No. (Page)		
DIN 371/376	EG-UNC	EDP No. (Page)		
DIN 371/374	UNF	EDP No. (Page)		
DIN 371/376	EG-UNF	EDP No. (Page)		
DIN 2182/2183	BSW	EDP No. (Page)		
DIN 357/5156	M/G(BSP)	EDP No. (Page)		
LONG	M	EDP No. (Page)		
SURFACE TREATMENT / COATING			TiAlN	Vap
SPIRAL FLUTE ANGLE			R40	
CHAMFER LEAD ACC. DIN 2197			C	B
HOLE TYPE			1-2-3	4-5

COOLANT

A = Cutting Oil
T = Oil Emulsion
X = Cutting Oil/Oil Emulsion
S = Dry
Z = Dry/Oil Emulsion

MATERIAL GROUPS			LIST OF MATERIALS	HARDNESS HB	TENSILE STRENGTH Rm N/mm²	CHIP	CUTTING SPEED Vc m/min	COOLANT		
10. STEELS	11	Steel < 400	Magnetic soft steels	< 120	< 400	Extra long	15-20	T		○
	12	Steel < 700	Structure steels	< 200	< 700	Medium/long	15-20	T		◎
	13	Steel < 850	Plain carbon steels	< 250	< 850	Long	12-18	T		
	14	St. Alloy < 850	Alloy steels	< 250	< 850	Long	10-15	X		
	15	St. Alloy ≤ 1,200	Alloy steels, Hardened steels	< 350	≤1,200	Long	6-10	X	○	
	16	St. Alloy > 1,200	Alloy steels, Hardened steels	> 350	> 1,200	Long	3-5	A	◎	
20. STAINLESS STEELS	21	INOX Free < 850	Free machining	< 250	< 850	Medium	7-10	A		◎
	22	INOX Aust.< 850	Austenitic	< 250	< 850	Long	5-8	A		◎
	23	INOX < 1,100	Ferritic, Ferritic+Austenitic, Martensitic	< 300	< 1,100	Long	4-6	A	○	◎
30. CAST IRON	31	GG Cast < 500	Grey cast iron	< 150	< 500	Extra short	10-15	X		
	32	GG Cast < 1,000	Grey cast iron	< 300	< 1,000	Extra short	5-8	T		
	33	GGG Cast < 700	Nodular graphite, Malleable cast iron	< 200	< 700	Short	10-15	X		
	34	GGG Cast < 1,000	Nodular graphite, Malleable cast iron	< 300	< 1,000	Short	5-8	X		
40. TITANIUM	41	Ti < 700	Titanium, Unalloyed	< 200	< 700	Extra long	10-15	T		
	42	Ti Alloy < 900	Titanium, Alloyed	< 270	< 900	Medium/Short	8-12	A		○
	43	Ti Alloy ≤ 1,300	Titanium, Alloyed	< 350	≤1,300	Medium/Short	4-6	A		
50. NICKEL	51	Ni < 500	Nickel, Unalloyed	< 150	< 500	Extra long	8-12	A		
	52	Ni Alloy < 900	Nickel, Alloyed	< 270	< 900	Long	10-15	A		○
	53	Ni Alloy ≤ 1,400	Nickel, Alloyed	< 410	≤1,400	Long	2-4	A		
60. COPPER, BRASS, BRONZE	61	Cu < 350	Copper, Unalloyed	< 100	< 350	Extra long	8-12	T		
	62	Cu Alloy (Short)	Short chip Brass, Bronze, Copper	< 200	< 700	Medium/Short	25-35	T	○	
	63	Cu Alloy (Long)	Long chip Brass, Bronze, Copper	< 200	< 700	Long	15-20	T		
	64	Cu-Al-Fe < 1,500	Cu-Al-Fe alloys	< 470	< 1,500	Short	3-5	A	◎	
70. ALUMINUM	71	Al/Mg < 350	Aluminum, Magnesium, Unalloyed	< 100	< 350	Extra long	10-15	T		
	72	Al Wrought	Aluminum, Alloyed Si < 0.5%	< 150	< 500	Medium	25-35	T		
	73	Al (Si ≤ 10%)	Aluminum, Alloyed, Si ≤ 10%	< 120	< 400	Medium/Short	15-20	T		
	74	Al (Si > 10%)	Aluminum, Alloyed, Si > 10%	< 120	< 400	Short	10-15	T		
80. PLASTICS	81	Thermosoft.	Thermoplastics			Extra long	20-30	T		
	82	Thermoset.	Thermosseting Plastics			Short	8-12	Z	○	
	83	FRP	Fiber Reinforced Plastics			Extra short	5-7	Z	○	

VA	VA NW	VA NW	VA	VA	VA NW	VA NW	NW	Ti	Ti	Ti	Ti	Ti Ni	Ti Ni	Ni	Ni	Ti Ni	Ti Ni	Ni	Ni
TR853 (p.463)	TB623 (p.466)	TCH23 (p.467)	TQ813 (p.413)	TR813 (p.414)	TB914 (p.418)	TCH14 (p.419)	TB711 (p.420)	TM293 (p.468)	TZ293 (p.469)	TM903 (p.421)	TZ903 (p.422)	TQ873 (p.470)	TR873 (p.471)	TM923 (p.472)	TZ923 (p.473)	TQ833 (p.423)	TR833 (p.424)	TM933 (p.425)	TZ933 (p.426)
	TB123 (p.482)				TB183 (p.435)														
	TB264 (p.486)				TB904 (p.440)														
	TB274 (p.489)				TB924 (p.444)														
					TB514 (p.551)														
Bright	Vap	Hardslick	Vap	Bright	Vap	Hardslick	Vap	Bright	TiAlN	Bright	TiAlN	Vap	Bright	Bright	TiAlN	Vap	Bright	Bright	TiAlN
			R40	R40	R40	R40	R40			R25	R25					R40	R40	R25	R25
B	B	B	C	C	C	C	C	B	B	C	C	B	B	B	B	C	C	C	C
4-5	4-5	4-5	1-2-3	1-2-3	1-2-3	1-2-3	1-2-3	4-5	4-5	1-2-3	1-2-3	4-5	4-5	4-5	4-5	1-2-3	1-2-3	1-2-3	1-2-3
○	◎	◎	○	○	◎	◎	◎												
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												○	○	○	○	○	○	○	○
							○												

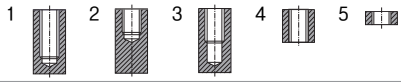
MACHINE TAPS

RECOMMENDATION TABLE

USE

◎ = EXCELLENT

○ = GOOD



MATERIAL GROUPS			GV	GV
DIN 371/376	**M**	EDP No. (Page)	TQ703 (p.510)	TE703 (p.512)
DIN 371/376	**EG-M**	EDP No. (Page)		
DIN 352	**M**	EDP No. (Page)		
DIN 374	**MF**	EDP No. (Page)		TE733 (p.519)
DIN 371/376	**UNC**	EDP No. (Page)		TE704 (p.522)
DIN 371/376	**EG-UNC**	EDP No. (Page)		
DIN 371/374	**UNF**	EDP No. (Page)		
DIN 371/376	**EG-UNF**	EDP No. (Page)		
DIN 2182/2183	**BSW**	EDP No. (Page)		
DIN 357/5156	**M/G(BSP)**	EDP No. (Page)		
LONG	**M**	EDP No. (Page)		
SURFACE TREATMENT / COATING			Vap	NI
SPIRAL FLUTE ANGLE				
CHAMFER LEAD ACC. DIN 2197			C	C
HOLE TYPE			1-2-3 4-5	1-2-3 4-5

COOLANT

A = Cutting Oil
T = Oil Emulsion
X = Cutting Oil/Oil Emulsion
S = Dry
Z = Dry/Oil Emulsion

MATERIAL GROUPS			LIST OF MATERIALS	HARDNESS HB	TENSILE STRENGTH Rm N/mm²	CHIP	CUTTING SPEED Vc m/min	COOLANT		
10. STEELS	**11**	Steel < 400	Magnetic soft steels	< 120	< 400	Extra long	15-20	T	◎	◎
	12	Steel < 700	Structure steels	< 200	< 700	Medium/long	15-20	T	◎	◎
	13	Steel < 850	Plain carbon steels	< 250	< 850	Long	12-18	T	◎	◎
	14	St. Alloy < 850	Alloy steels	< 250	< 850	Long	10-15	X	◎	◎
	15	St. Alloy ≤ 1,200	Alloy steels, Hardened steels	< 350	≤1,200	Long	6-10	X		
	16	St. Alloy > 1,200	Alloy steels, Hardened steels	> 350	> 1,200	Long	3-5	A		
20. STAINLESS STEELS	**21**	INOX Free < 850	Free machining	< 250	< 850	Medium	7-10	A	○	○
	22	INOX Aust.< 850	Austenitic	< 250	< 850	Long	5-8	A	○	○
	23	INOX < 1,100	Ferritic, Ferritic+Austenitic, Martensitic	< 300	< 1,100	Long	4-6	A		
30. CAST IRON	**31**	GG Cast < 500	Grey cast iron	< 150	< 500	Extra short	10-15	X		
	32	GG Cast < 1,000	Grey cast iron	< 300	< 1,000	Extra short	5-8	T		
	33	GGG Cast < 700	Nodular graphite, Malleable cast iron	< 200	< 700	Short	10-15	X		
	34	GGG Cast < 1,000	Nodular graphite, Malleable cast iron	< 300	< 1,000	Short	5-8	X		
40. TITANIUM	**41**	Ti < 700	Titanium, Unalloyed	< 200	< 700	Extra long	10-15	T	○	○
	42	Ti Alloy < 900	Titanium, Alloyed	< 270	< 900	Medium/Short	8-12	A		
	43	Ti Alloy ≤ 1,300	Titanium, Alloyed	< 350	≤1,300	Medium/Short	4-6	A		
50. NICKEL	**51**	Ni < 500	Nickel, Unalloyed	< 150	< 500	Extra long	8-12	A	◎	◎
	52	Ni Alloy < 900	Nickel, Alloyed	< 270	< 900	Long	10-15	A		
	53	Ni Alloy ≤ 1,400	Nickel, Alloyed	< 410	≤1,400	Long	2-4	A		
60. COPPER, BRASS, BRONZE	**61**	Cu < 350	Copper, Unalloyed	< 100	< 350	Extra long	8-12	T	○	○
	62	Cu Alloy (Short)	Short chip Brass, Bronze, Copper	< 200	< 700	Medium/Short	25-35	T		
	63	Cu Alloy (Long)	Long chip Brass, Bronze, Copper	< 200	< 700	Long	15-20	T	○	○
	64	Cu-Al-Fe < 1,500	Cu-Al-Fe alloys	< 470	< 1,500	Short	3-5	A		
70. ALUMINUM	**71**	Al/Mg < 350	Aluminum, Magnesium, Unalloyed	< 100	< 350	Extra long	10-15	T	◎	◎
	72	Al Wrought	Aluminum, Alloyed Si < 0.5%	< 150	< 500	Medium	25-35	T		
	73	Al (Si ≤ 10%)	Aluminum, Alloyed, Si ≤ 10%	< 120	< 400	Medium/Short	15-20	T	○	○
	74	Al (Si > 10%)	Aluminum, Alloyed, Si > 10%	< 120	< 400	Short	10-15	T		
80. PLASTICS	**81**	Thermosoft.	Thermoplastics			Extra long	20-30	T		
	82	Thermoset.	Thermosseting Plastics			Short	8-12	Z		
	83	FRP	Fiber Reinforced Plastics			Extra short	5-7	Z		

GV	GV	GV	GV	GV	GV	GV	Al	Al	Al	Al	Al	GG	GG	GG	GG	GG	Ms	Ms	Ms
TE713 (p.513)	TD703 (p.517)	TD713 (p.515)	TY703 (p.518)	TQ723 (p.511)	TE723 (p.514)	TD723 (p.516)	TC622 (p.475)		TE943 (p.474)	TC163 (p.427)	TE953 (p.428)	TE821 (p.495)	TD821 (p.496)	TI821 (p.498)	TY821 (p.497)	T0993 (p.555)	TC433 (p.499)	TE443 (p.500)	TY433 (p.501)
								TC973 (p.527)		TC909 (p.528)									
	TD733 (p.520)									TC963 (p.436)		TE403 (p.503)							
	TD704 (p.521)									TC169 (p.441)		TE434 (p.505)							
								TC934 (p.529)		TC944 (p.530)									
										TC170 (p.445)		TE454 (p.506)							
								TC954 (p.531)											
Nl	TiN	TiN	TiAlN	Vap	Nl	TiN	Bright	Bright	Nl	Bright	Nl	Nl	TiN	TiCN	TiAlN	Bright	Bright	Nl	TiAlN
										R45/40	R40								
C	C	C	C	C	C	C	B	B	B	C	C	C	C	C	C	C	C	C	C
1-2-3 4-5	1-2-3 4-5	1-2-3 4-5	1-2-3 4-5	1-2-3 4-5	1-2-3 4-5	1-2-3 4-5	4-5	4-5	4-5	1-2-3	1-2-3	1-2-3 4-5	1-2-3 4-5	1-2-3 4-5	1-2-3 4-5	1-2-3 4-5	1-2-3 4-5	1-2-3 4-5	1-2-3 4-5
◎	◎	◎	◎	◎	◎	◎	○	○		○									
◎	◎	◎	◎	◎	◎	◎	○	○		○									
◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○								
◎	◎	◎	◎	◎	◎	◎													
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												○	◎	◎	◎	◎	◎	◎	◎
○	○	○	○	○	○	○											○		○
◎	◎	◎	◎	◎	◎	◎	◎	◎		◎									
				◎	◎	◎	◎	◎		◎									
○	○	○	○	○	○	○	◎	◎		◎									
									◎		◎					◎			
												◎	◎	◎	◎	◎			

CUTTING SPEED TABLE SCHNITTGESCHWINDIGKEITSTABELLE
Cutting Speeds m/min. into revolutions per minute

TOOL R.P.M.(rev/min)																
Tool Dia.	Cutting Speed (m/min)															
	1	2	3	4	5	6	8	10	12	15	20	25	30	40	50	60
1	318	637	955	1274	1592	1910	2548	3185	3822	4777	6396	7962	9554	12739	15924	19108
2	159	318	478	637	796	955	1274	1592	1911	2388	3185	3981	4777	6369	7962	9554
3	106	212	318	425	531	637	849	1062	1274	1592	2123	2654	3185	4246	5308	6369
4	80	159	239	318	398	478	637	796	955	1194	1592	1990	2389	3185	3981	4777
5	64	127	191	255	318	382	510	637	764	955	1274	1592	1911	2548	3185	3822
6	53	106	159	212	265	318	425	531	637	796	1062	1327	1592	2123	2653	3185
8	40	80	119	159	199	239	318	398	478	597	796	955	1194	1592	1990	2388
10	31	64	96	127	159	191	255	318	382	478	637	796	955	1274	1592	1911
12	26	53	80	106	133	159	212	265	318	398	531	663	796	1062	1327	1592
14	23	45	68	91	114	136	182	227	273	341	455	569	682	910	1137	1365
16	20	40	60	80	100	119	159	199	239	299	398	498	597	796	995	1194
18	18	35	53	71	88	106	142	177	212	265	354	442	531	708	885	1062
20	16	32	48	64	80	96	127	159	191	239	318	398	478	637	796	955
25	13	25	38	51	64	76	102	127	153	191	255	318	382	510	637	764
30	11	21	32	42	53	64	85	106	127	159	212	265	318	425	531	637
35	9	18	27	36	45	55	73	91	109	136	182	227	273	364	455	546
40	8	16	24	32	40	48	64	80	96	119	159	199	239	118	398	478

RPM = rev/min
V = m/min
D = Dia.(mm)

$$V = \frac{RPM \cdot \pi \cdot D}{1000}$$

$$RPM = \frac{1000 \cdot V}{\pi \cdot D}$$

The High Speed Steels we use grant a good wear resistance and toughness. Therefore we normally deliver our taps with bright, untreated surface. In machining certain materials, various surface treatments are of advantage.

STEAM TEMPERED - Vap

The Steam Tempered is a Fe_3O_4-oxyd-coating which reduces the friction between tool and workpiece and prevents cold welding.

NITRIDING - NI

We recommend this surface treatment for machining materials which effect a hard wear abrasion, such as grey cast iron, alu-alloys with high Si-percentage more than 10%.

These are surface finishes of good value and suitable for many application. We do these surface treatments within our own company.

Further surface finishes are the various coatings.

TiN-COATING

The TiN-coating has a hardness of approx. **2,300 HV** and is temperature-resistant up to approx. **600**℃. This is an excellent all-round coating for normal applications.
Colour : **Golden** Coefficient of friction against steel : 0.4

TiCN-COATING

TiCN takes place of TiN when the conditions require the coating to have a different hardness and toughness.
The TiCN brings advantage in machining very difficult steels or cutting interrupted bores.
The TiCN-coating has a hardness of approx. **3,000 HV**, but is temperature-resistant up to approx. **400**℃ only. That means TiCN needs an excellent cooling for long service life.
Colour : **Blue-Grey** Coefficient of friction against steel : 0.4

TiAlN-COATING

This is a special coating for machining abrasive materials such as : grey cast iron, alu-alloys with silicon, fiber reinforced plastics, etc., or machining under high temperatures, which means with insufficient cooling, or high speeds ≥ 600m/min. The TiAlN has a hardness of approx. **3,000 HV** and is temperature resistant up to approx. **800**℃.
Colour : **Violet-Grey** Coefficient of friction against steel : 0.4

Hardslick-COATING

Hardslick combines the advantages of an extremely hard, thermally stable TiAlN-coating with the sliding and lubricating properties of an outer WC/C(Tungsten carbide/carbon)-coating in a novel way. The Hardslick coating has a hardness of approx. **3,000 HV** and is temperature-resistant up to approx. **800**℃.
Colour : **Violet-Grey** Coefficient of friction against steel : 0.2

EXAMPLES FOR APPLICATION MATERIAL GROUPS

11 Magnetic Soft Steels < 400 N/mm²

1.1013	RFe 100
1.1014	RFe 80
1.1015	RFe 60
1.0718	9 S MnPb 28

12 Structure/Case Carburizing Steels < 700 N/mm²

1.0037	St 37-2
1.0050	St 50-2
1.0060	St 60-2
1.0070	St 70-2
1.0401	C 15
1.1141	Ck 15

13 Plain Carbon Steels < 850 N/mm²

1.0501	C 35
1.0503	C 45
1.0535	C 55
1.0601	C 60
1.1181	Ck 35
1.1191	Ck 45

14 Alloy Steels < 850 N/mm²

1.2080	X210Cr12
1.2363	X100CrMoV5-1
1.3243	S 6-5-2-5
1.3343	S 6-5-2
1.7218	25CrMo4
1.7220	34CrMo4

15 Alloy, Hardened & Tempered Steels < 1,200 N/mm²

1.2581	X30WCrV9 3
1.2622	X60WCrMoV9
1.2550	60WCrV7
1.6580	30CrNiMo8
1.7361	32CrMo12
1.8515	31CrMo12

16 Alloy, Hardened & Tempered Steels > 1,200 N/mm²

To this group belong most of the materials of group 15, but present a higher tensile strength.

21 Free machining stainless Steels < 850 N/mm²

1.4005	X12CrS13
1.4006	X10Cr13
1.4016	X6Cr17
1.4104	X12CrMoS17
1.4305	X10CrNiS18 9

22 Austenitic stainless Steels < 850 N/mm²

1.4301	X5CrNi18 10
1.4406	X2CrNiMoN17 12 2
1.4435	X2CrNiMo18 14 3
1.4541	X6CrNiTi18 10
1.4571	X6CrNiMoTi17 12 2
1.4828	X15CrNiSi20 12

23 Matensitic/Ferritic/Fer.-Aus. Stainless Steels < 1,000 N/mm²

1.4112	X90CrMoV18
1.4125	X105CrMo17
1.4002	X6CrAl13
1.4512	X6CrTi12
1.4582	X4CrNiMoNb25 7
1.4821	X20CrNiSi25 4

31 Grey graphite cast irons < 500 N/mm²

0.6015	GG-15
0.6020	GG-20
0.6025	GG-25
0.6030	GG-30
0.6035	GG-35
0.6040	GG-40

32 Grey graphite cast irons < 1,000 N/mm²

0.6020	GG-20
0.6025	GG-25
0.6030	GG-30
0.6035	GG-35
0.6040	GG-40

33 Nodular graphite, Malleable cast irons < 700 N/mm²

0.7040	GGG-40
0.7043	GGG-40.3
0.7050	GGG-50
0.7060	GGG-60
0.8040	GTW-40
0.8065	GTW-65

34 Nodular graphite, Malleable cast irons < 1,000 N/mm²

0.7040	GGG-40
0.7043	GGG-40.3
0.7050	GGG-50
0.7060	GGG-60
0.7070	GGG-70
0.7080	GGG-80

41 Titanium unalloys < 700 N/mm²

3.7024	Ti99.5
3.7034	Ti99.7
3.7035	Ti2
3.7055	Ti99.4
3.7064	Ti99.2
3.7065	Ti4

42 Titanium alloys < 900 N/mm²

	TiA14Mn4
3.7114	TiA15Sn2
3.7124	TiCu2
3.7164	TiA16V4
3.7174	TiA16V6Sn2

43 Titanium alloys < 1,300 N/mm²

3.7124	TiCu2
3.7144	TiA16Sn2Zr4Mo2
3.7154	TiAl6Zr5
3.7164	TiA16V4
3.7174	TiA16V6Sn2
3.7184	TiAl4Mo4Sn2

51 Nickel unalloys < 500 N/mm²

2.1504	NiAlBz
2.4042	Ni99CSi
2.4060	Ni99.6
2.4062	Ni99.4Fe

52 Heat resisting Nickel alloys < 900 N/mm²

2.4360	Monel 400
2.4374	Monel 500
2.4665	Hastelloy X
2.4812	Hastelloy C
2.4816	Inconel 600
1.4876	Incoloy 800

53 Heat resisting Nickel alloys < 1,400 N/mm²

2.4631	Nimonic80A
2.4632	Nimonic90
2.4634	Nimonic105
2.4662	Nimonic901
2.4668	Inconel 718
2.4669	Inconel X-750

61 Copper unalloys < 350 N/mm²

2.0060	E-Cu57
2.0070	SE-Cu
2.0090	SF-Cu
2.1356	CuMn3
2.1522	CuSi2Mn

62 Short chip Brass, Bronze copper alloys < 700N/mm²

2.0360	CuZn40 (Ms60)
2.0380	CuZn39Pb2 (Ms58)
2.0410	CuZn44Pb2
2.0580	CuZn40Mn1Pb
2.1086	G-CuSn10Zn
2.1096	G-CuSn5ZnPb

63 Long chip Brass, Bronze copper alloys < 700 N/mm²

2.0250	CuZn20
2.0321	CuZn37
2.1020	CuSn6
2.1080	CuSn6Zn6
2.1245	CuBel.7
2.1293	CuCrZr

64 Cu-Al-Fe alloys < 1,500 N/mm²

71 Aluminum-Magnesium unalloys < 350 N/mm²

3.0250	Al99.5H
3.0280	Al99.8H
3.0305	Al99.9
3.3308	Al99.9Mg0.5

72 Aluminum alloys, Si < 0.5% < 600 N/mm²

3.0515	AlMn1
3.0525	AlMn1Mg0.5
3.1325	AlCuMg1
3.3315	AlMg1
3.3241	G-AlMg3Si
3.3292	GD-AlMg9

73 Aluminum alloys, 0.5-10% Si < 600 N/mm²

3.2134	G-AlSi5Cu1Mg
3.2152	GD-AlSi6Cu4
3.2162	GD-AlSi8Cu3
3.2373	G-AlSi9Mg

74 Aluminum alloys, Si > 10% < 600 N/mm²

3.2381	G-AlSi10Mg
3.2383	G-AlSi10Mg(Cu)
3.2581	G-AlSi12
3.2583	G-AlSi12(Cu)
3.5662	G-MgA16
3.5812	G-MgA18Zn1

81 Thermoplastics

Delrin(POM)
Teflon
Nylon

82 Thermosseting plastics

Bakelit
Novopan

83 Reinforced plastics materials

Glass fiber reinforced
Thermo and Duroplastics

Referance:DIN

MATERIAL GROUP

STANDARDS

GERMANY W.Nr	GERMANY DIN	FRANCE AFNOR	GREAT BRITAIN B.S.	EN & OTHER CLASSIFICATIONS	U.S.A. AISI
10 - STEEL					
11 - Magnetic soft steels - Hardness < 120 HB 30 - Tensile strength < 400 N/mm²					
1.1013	RFe 100		OSOA12	EN2	
1.1014	RFe 80				
1.1015	RFe 60		230Mo7	EN1	
1.0718	9 S MnPb 28				
12 - Structural steels - Hardness < 200 HB 30 - Tensile strength < 700 N/mm²					
12.1 - Structural steels					
1.0034	RSt 34-2	A34-2 EN	1449 34/20 HR		
1.0035	St 33	A33	Fe 310-0		
1.0036	St 37-2		060A35	EN3A,4,5,6,7,8	
1.0037	RSt 37-2				
1.0044	St 44-2				
1.0050	St 50-2		4360-50B	EN 207	
1.0060	St 60-2				
1.0070	St 70-2				
1.0116	St 37-3				
1.0144	St 44-3				
12.2 - Case carburizing steels					
1.0301	C 10	AF 34 C 10	040 A 10		M 1010
1.0401	C 15	AF 37 C 12	080 A 15		M 1015
1.1121	Ck 10	XC 10	040 A 10		1010
1.1141	Ck 15	XC 12	040 A 15		1015
1.5732	14 Ni Cr 10	14 NC 11			3415
1.7015	15 Cr 3	12 C 3	523 M 15		5015
1.7131	16 Mn Cr 5	16 MC 4	527 M 17	EN 32	5115
1.7147	20 Mn Cr 5	20 MC 5			5120
12.3 - Free machining steels					
1.0710	15 S 10				
1.0715	9 S Mn 28	S 250	230 M 07		1213
1.0718	9 S Mn Pb 28	S 250 Pb			12 L 13
1.0721	10 S 20	10 F1	210 M 15		1108 1109
1.0722	10 S Pb 20	10 Pb F 2			11 L 08
1.0723	15 S 20	.....	210 A 15		
1.0726	35 S 20	35 MF 6	212 M 36		1140
1.0727	45 S 20	45 MF 4			1146
1.0736	9 S Mn 36	S 300			1215
1.0737	9 S Mn Pb 36	S 300 Pb			12 L 14
12.4 - Cast structural steels					
1.0416	GS - 38				
1.0446	GS - 45				
1.0552	GS - 52				
1.0553	GS - 60	E 36 - 3			
1.0554	GS - 70				
13 - Plain carbon steels - tempered					
13.1 - Steels, tempered - Hardness < 250 HB 30 - Tensile strength < 850 N/mm²					
1.0402	C 22	1 C 22	070 M 20		M 1023
1.0501	C 35	1 C 35	080 A 32		1035
1.0503	C 45	1 C 45	060 A 47		1045
1.0535	C 55	1 C 55	070 M 55		1055
1.0601	C 60	1 C 60	060 A 62	EN 43	1060
1.1157	40 Mn 4	35 M 5	150 M 36		1035 1041
1.1151	Ck 22	2 C 22	055 M 15		1020 1023
1.1181	Ck 35	2 C 35	080 A 35		1035 1038
1.1191	Ck 45	2 C 45	080 M 46	EN 9, 10	1045
1.1203	Ck 55	2 C 55	060 A 57		1055
1.1221	Ck 60	2 C 60	060 A 62		1060 1064

MATERIAL GROUP

STANDARDS

GERMANY W.Nr	GERMANY DIN	FRANCE AFNOR	GREAT BRITAIN B.S.	EN & OTHER CLASSIFICATIONS	U.S.A. AISI
14 - Alloy steels - Hardness < 250 HB 30, < 25 HRC - Tensile strength < 850 N/mm²					
14.1 - Cold work tool steels					
1.2056	90 Cr 3				
1.2067	100 Cr 6	Y 100 C 6	BL 3		L 1 L 3
1.2080	X 210 Cr 12	Z 200 C 12	BD 3		D3
1.2083	X 42 Cr 13	Z 40 C 14			420
1.2363	X 100 CrMoV5 1	Z 100 CDV 5	BA 2		A 2
1.2379	X 155 CrVMo 12 1	Z 160 CDV 12	BD 2		D 2
1.2510	100 MnCrW 4	90 MWCV 5	BO 1		O1
1.2550	60 WCrV 7	55WC 20	BS 1		S1
1.2823	70 Si 7				
1.2826	60 Mn Si Cr 4				
1.2842	90 MnCrV 8	90 MV 8	BO 2		O 2
14.2 - High speed steels					
1.3202	S 12-4-4-5	Z 130 WKCV 12-05-04-04	BT 15		T 15
1.3207	S 10-4-3-10	Z130 WKCDV10-10-04-04-03	BT 42		T 42
1.3243	S 6-5-2-5	Z85 WDKCV 06-05-05-04-02	BM 35		M 35
1.3247	S 2-10-1-8	Z110 DKCWV 09-08-04-02-01	BM 42		M 42
1.3343	S 6-5-2	Z 85 WDCV 06-05-04-02	BM 2		M 2
1.3344	S 6-5-3	Z 120 WDCV 06-05-04-03			M 3 / 2
1.3348	S 2-9-2	Z 100 DCWV 09-04-02-02			M 7
ASP 23	(S 6-5-3)				
ASP 30					
ASP 60					
14.3 - Alloy cast irons					
1.5919	GS-15Cr Ni 6	16 NC 6			3115
1.7218	GS-25Cr Mo 4	25 C D 4	70 8A 25		4130
1.7220	GS-34Cr Mo 4	35 C D 4	70 8A 37		4135 4137
1.7379	GS-18 Cr Mo 9 10				
14.4 - Tempered steels					
1.0503	C 45	1 C 45	060 A 47		1045
1.7220	34 Cr Mo 4	34 Cr Mo 4	708 A 37		4135, 4137
1.7225	42 Cr Mo 4	42 CD 4	708 A 42	EN 16, 17, 19	4140, 4142
1.7228	50 Cr Mo 4	50 Cr Mo 4	708 A 47		4150
14.5 - Nitriding steels					
1.7779	20 Cr Mo V 13.5				
1.8504	34 Cr Al 6				
1.8506	34 Cr Al S 5				
1.8507	34 Cr Al Mo 5	30 CAD 6.12			A 355 Cl.D
1.8509	41 Cr Al Mo 7	40 CAD 6.12	905 M 39		A 355 Cl.A
1.8515	31 Cr Mo 12	30 CD 12	722 M 24		
15 - Alloy steels / Tempered steels - Hardness 250-350 HB 30, 25-38 HRC - Tensile strength 850-1,200 N/mm²					
15.1 - Alloy steels for tools					
1.2311	40 Cr Mn Mo 7				
1.2312	40 Cr Mn Mo S 86				
1.2436	X 210 Cr W 12	Z 200 CW 12			
1.2711	54 Ni Cr Mo V 6				
1.2713	55 Ni Cr Mo V 6	55 NCDV 7	826 M 40	S 95, S 97, S 98	L 6
1.2714	56 Ni Cr Mo V 7				
1.2743	60 Ni Cr Mo V 12 4				
1.2766	35 Ni Cr Mo 16				
15.2 - Alloy steels for hot work					
1.2343	X 38 Cr Mo V 5 1	Z 38 CDV 5	BH 11		H 11
1.2344	X 40 Cr Mo V 5 1	Z 40 CDV 5	BH 13		H 13
1.2365	X 32 Cr Mo V 3 3	32 DCV 28	BH 10		H 10
1.2367	X 40 Cr Mo V 5 3	Z 38 CDV 5.3			
1.2581	X 30 W Cr V 9 3	Z 30 WCV 9.3	BH 21		H 21
1.2622	X 60 W Cr Mo V 9				
1.2678	X 45 CoCrWV 5 5 5				
1.2550	60 WCr V 7	55 WC 20	BS 1		S 1
1.2567	X 30 W Cr V 5 3	Z 32 WCV 5			

MATERIAL GROUP

STANDARDS

GERMANY W.Nr	GERMANY DIN	FRANCE AFNOR	GREAT BRITAIN B.S.	EN & OTHER CLASSIFICATIONS	U.S.A. AISI
15.3 - Hardened tempered steels - Hardness may be different according to presentation and dimensions of material					
1.5864	35 Ni Cr 18				
1.6580	30 Cr Ni Mo 8	30 Cr Ni Mo 8			
1.7361	32 Cr Mo 12	30 CD 12	722 M 24		
1.7707	30 Cr Mo V 9				
1.8161	58 Cr V 4				
15.4 - Nitriding steels					
1.8515	31 Cr Mo 12	30 CD 12	722 M 24		
1.8519	31 Cr Mo V 9		830 M 31		
1.8523	39 Cr Mo V 13 9		897 M 39		
1.8550	34 Cr Al Ni 7		826 M 40		
16 - Alloy steels / Hardened tempered steels - Hardness > 38 HRC - Tensile strength > 1,200 N/mm²					
To this group belong most of the materials of group 15, but present a higher tensile strength					
20 - STAINLESS STEELS					
21 - Free machining stainless steels - Hardness < 250 HB 30 - Tensile strength < 850 N/mm²					
1.4104	X 12 Cr Mo S 17	Z 13 CF 17	416 S 37	EN 56	430 F
1.4305	X 10 Cr Ni S 18 09	Z 8 CNF 18-09	303 S 21	EN 60	303
22 - Austenitic stainless steels - Hardness < 250 HB 30 - Tensile strength < 850 N/mm²					
1.4300	X 12 Cr Ni 18 8		320 S 12		
1.4301	X 5 Cr Ni 18 10	Z 6 CN 18-09	304 S 15	EN 80, EN 58 + C	304
1.4311	X 2 CrNiN 18 10	Z 3 CN 18-07 Az	304 S 61		304 LN
1.4406	X 2 CrNiMoN 17 12 2	Z 3 CND 17 11 02	316 S 61		316 LN
1.4433	X 2 CrNiMo 18 15		316 S		
1.4435	X 2 CrNiMo 18 14 3	Z3 CND 17-12-03	316 S 11		316 L
1.4539	X 1 CrNiMoCu 25 20 5	Z 1 NCDU 25-20	321 S 17		UNS N08904
1.4541	X 6 CrNiTi 18 10	Z 6 CNT 18 10	321 S 18	EN 58 J, 316	321
1.4571	X 6 CrNiMoTi 17 12 2	Z 6 CNDT 17 12	320 S 18		316 Ti
1.4573	X 10 CrNiMoTi 18 12		320 S 33		
1.4828	X 15 CrNiSi 20 12	Z 15 CNS 20-12	309 S 24		309
22.1 - Cast austenitic stainless steels					
1.4308	G-X 6 CrNi 18 9	Z 6 CN 18.10 M	304 C 15(LT196)		CF-8
1.4313	G-X 5 CrNi 13 4	Z 8 CD 17-01	425 C 12		CA 6 -NM
1.4408	G-X 6 CrNiMo 18 10		316 C 16(LT196)		CF-8M
1.4581	G-X 5 CrNiMoNb 18 10	Z 4 CNDNb 18.12M	318 C 17		
23 - Martensitic stainless steels - Hardness < 320 HB 30 - Tensile strength < 1,100 N/mm²					
1.4021	X 20 Cr 13	Z 20 C 13	420 S 37		420
1.4034	X 46 Cr 13	Z 44 C 14	(420 S 45)		
1.4057	X 20 CrNi 17 2	Z 15 CN 16-02	431 S 29		431
1.4112	X 90 CrMoV 18				
1.4116	X 45 CrMoV 15			EN 58, b.e.j.t	
1.4125	X 105 CrMo 17	Z 100 CD 17		Duplex alloys	440 C
1.4718	X 45 CrSi 9 3	Z 45 CS 9	401 S 45		HNV 3
1.4747	X 80 CrNiSi 20	Z 80 CSN 20-02	443 S 65		HNV 6
1.4086	G-X 120 Cr 29				
1.4106	G-X 10 CrMo 13				
1.4138	G-X 120 CrMo 29 2				
24 - Ferritic stainless steels - Hardness < 320 HB 30 - Tensile strength < 1,100 N/mm²					
1.4002	X 6 Cr Al 13	Z 8 CA 12	405 S 17		405
1.4006	X 10 Cr 13	Z 10 C 13	410 C 21		410
1.4016	X 6 Cr 17	Z 8 C 17	430 S 17		430
1.4510	X 6 Cr Ti 17	Z 8 CT 17			430 Ti
1.4512	X 6 Cr Ti 12	Z 6 CT 12	409 S 19		409
25 - Ferritic-Austenitic stainless steels - Hardness < 320 HB 30 - Tensile strength < 1,100 N/mm²					
1.4460	X 8 CrNiMo 27 5	Z 5 CND 27-05 Az			329
1.4582	X 4 CrNiMoNb 25 7				
1.4821	X 20 CrNiSi 25 4				

MATERIAL GROUP

STANDARDS

GERMANY W.Nr	GERMANY DIN	FRANCE AFNOR	GREAT BRITAIN B.S.	EN & OTHER CLASSIFICATIONS	U.S.A. AISI
30 - CAST IRONS					
31 - Grey graphite cast irons - Hardness < 150 HB 30 - Tensile strength < 500 N/mm²					
0.6010	GG-10	Ft 10 D			A 48-20 B
0.6015	GG-15	Ft 20 D	Grade 150	Grey cast iron soft	A 48-25 B
0.6020	GG-20	Ft 25 D	Grade 220		A 48-30 B
0.6025	GG-25	Ft 30 D	Grade 260		A 48-40 B
0.6030	GG-30	Ft 30 D	Grade 300		A 48-45 B
0.6035	GG-35	Ft 35 D	Grade 350		A 48-50 B
0.6040	GG-40	Ft 40 D	Grade 400		A 48-60 B
31.1 - Meehanite - Hardness < 150 HB 30 - Tensile strength < 500 N/mm²					
.....	GF - 150				
.....	GD - 260				
32 - Grey graphite cast irons - Hardness 150 - 300 HB 30 - Tensile strength 500 - 1,000 N/mm²					
0.6020	GG - 20	Ft 25 D	Grade 220	Grey cast iron hard	A 48-30 B
0.6025	GG - 25	Ft 30 D	Grade 260		A 48-40 B
0.6030	GG - 30	Ft 30 D	Grade 300		A 48-45 B
0.6035	GG - 35	Ft 35 D	Grade 350		A 48-50 B
0.6040	GG - 40	Ft 40 D	Grade 400		A 48-60 B
32.1 - Meehanite - Hardness 150-300 HB 30 - Tensile strength 500-1,000 N/mm²					
.....	GF - 150				
.....	GD - 260				
33 - Nodular graphite, malleable cast irons - Hardness < 200 HB 30 - Tensile strength < 700 N/mm²					
0.7033	GGG-35.3				
0.7040	GGG-40	FGS 400-12	420 / 12		60-40-18
0.7043	GGG-40.3	FGS 370-17	370 / 17		
0.7050	GGG-50	FGS 500-7	500 / 7		65-45-12
0.7060	GGG-60	FGS 600-3	600 / 3	S.G.iron, Meehanite	80-55-06
0.8035	GTW-35		700/2,30g/72	Black & White Heart	
0.8040	GTW-40				
0.8045	GTW-45				
0.8065	GTW-65				
0.8135	GTS-35				
0.8145	GTS-45				
0.8155	GTS-55				
0.8165	GTS-65				
33.1 - Meehanite - Hardness < 200 HB 30 -Tensile strength < 700 N/mm²					
SF 400					
SPF 600					
34 - Nodular graphite, tempered malleable cast irons - Hardness 200-300 HB 30 - Tensile strength 700-1,000 N/mm²					
0.7070	GGG-70	FGS 700-2	700 / 2	S.G.iron,Meehanite	100-70-03
0.7080	GGG-80	FGS 800-2	800 / 2	Black & White Heart	120-90-02
And materials from group 33 tempered					
34.1 - Meehanite - Hardness 200-300 HB 30 - Tensile strength 700-1,000 N/mm²					
	SH 800		420/12, P 440/7		
	SH 1000				
40 - TITANIUM					
41 - Titanium, unalloys - Hardness < 200 HB 30 - Tensile strength < 700 N/mm²					
3.7024.1LN	Ti 99.5				
3.7034.1LN	Ti 99.7				
3.7035	Ti 2				
3.7055	Ti 99.4		TA 1-9	Ti 99.0	
3.7064.1LN	Ti 99.2				
3.7065	Ti 4				
3.7255	Ti 3 Pd				

MATERIAL GROUP

STANDARDS

GERMANY W.Nr	GERMANY DIN	FRANCE AFNOR	GREAT BRITAIN B.S.	EN & OTHER CLASSIFICATIONS	U.S.A. AISI
42 - Titanium, alloys - Hardness < 270 HB 30 - Tensile strength < 900 N/mm²					
	Ti Al 4 Mn 4				
3.7144 LN	Ti Al 5 Sn 2				
3.7124 LN	Ti Cu 2		TA 10-14, TA 17	Ti - 2AL	
3.7164 LN	Ti Al 6 V 4		TA 18		
3.7174 LN	Ti Al 6 V 6 Sn 2				
43 - Titanium, alloys - Hardness 270-300 HB 30 - Tensile strength 900-1,300 N/mm²					
3.7124 LN	Ti Cu 2				
3.7144 LN	Ti Al 6 Sn 2 Zr4 Mo2			Ti AL	
3.7154 LN	Ti Al 6 Zr 5		TA 10-13, TA 28	3.7174LN, 3.7148LN	
3.7164 LN	Ti Al 6 V 4				
3.7174 LN	Ti Al 6 V Sn 2				
3.7184 LN	Ti Al 4 Mo 4 Sn 2				
50 - NICKEL					
51 - Nickel, unalloys - Hardness < 150 HB 30 - Tensile strength < 500 N/mm²					
2.1504 LN	Ni Al Bz				
2.4042	Ni 99 CSi		NA 11, NA 12	Nickel 200	
2.4060	Ni 99.6			Nickel 270	
2.4062	Ni 99.4 Fe				
52 - Heat resisting nickel alloys - Hardness < 270 HB 30 - Tensile strength < 900 N/mm²					
2.4360 LN	Monel 400				
2.4374 LN	Monel 500				
2.4617	Hastelloy B 2			Nimonic 75	
2.4665	Hastelloy X		HR 203		
2.4812	Hastelloy C		3027-76	Hastelloy C	
2.4816	Inconel 600			Haynes Alloys 263	
1.4876	Incoloy 800				
2.4983	Udimet 500				
53 - Heat resisting nickel alloys - Hardness 270-410 HB 30 - Tensile strength 900-1,400 N/mm²					
2.4631	Nimonic 80 A			Nimonic 80	
2.4632	Nimonic 90				
2.4634	Nimonic 105				
2.4662	Nimonic 901		HR 8		
2.4668	Inconel 718		HR 401, 601	Rene 41	
2.4669	Inconel X-750				
2.4670 LN	Nimocast 713				
2.4674 LN	Nimocast PK 24				
2.4856	Inconel 625				
2.6554 LN	Waspaloy				
60 - COPPER					
61 - Copper, unalloys - Hardness < 100 HB 30 - Tensile strength < 350 N/mm²					
2.0060	E - Cu 57				
2.0070	SE - Cu			Commerially Pure	
2.0090	SF - Cu		C 101		
2.1356	Cu Mn 3				
2.1522	Cu Si 2 Mn				
62 - Short chip copper alloys - Hardness < 200 HB 30 - Tensile strength < 700 N/mm²					
62.1 - Brass					
2.0360	Cu Zn 40(MS 60)				
2.0380	Cu Zn 39 Pb 2 (MS 58)		CZ120, CZ109		
2.0410	Cu Zn 44 Pb 2		PB104		
2.0561	Cu Zn 40 Al 1			2.1030, 2.1080	
2.0580	Cu Zn 40 Mn 1 Pb				
2.0771	Cu Ni 7 Zn 39 Mn 5 Pb3				
62.2 - Bronzes					
2.1086	G-Cu Sn 10 Zn				
2.1093	G-Cu Sn 6 Zn Ni				
2.1096	G-Cu Sn 5 Zn Pb				

MATERIAL GROUP

STANDARDS

GERMANY W.Nr	GERMANY DIN	FRANCE AFNOR	GREAT BRITAIN B.S.	EN & OTHER CLASSIFICATIONS	U.S.A. AISI
63 - **Long chip copper alloys - Hardness < 200 HB 30 - Tensile strength < 700 N/mm²**					
63.1 - Brass					
2.0250	Cu Zn 20				
2.0265	Cu Zn 30				
2.0321	Cu Zn 37		CZ108, CZ106		
2.0335	Cu Zn 36 (Ms 63)				
63.2 - Bronzes					
2.1020	Cu Sn 6				
2.1030	Cu Sn 8				
2.1080	Cu Sn 6 Zn 6				
63.3 - Copper alloys tempered by forging					
2.1245	Cu Be 1.7				
2.1247	Cu Be 2				
2.1293	Cu Cr Zr				
64 - **Cu - Al - Fe alloys Hardness < 440 HB 30 - Tensile strength < 1,500 N/mm²**					
70 - **ALUMINIUM - MAGNESIUM**					
71 - **Aluminum - Magnesium, unalloys - Hardness < 100 HB 30 - Tensile strength < 350 N/mm²**					
3.0250	Al 99.5 H				
3.0280	Al 99.8 H				
3.0305	Al 99.9				
3.3308	Al 99.9 Mg 0.5				
72 - **Aluminum alloys, Si < 0.5% - Hardness < 180 HB 30 - Tensile strength < 600 N/mm²**					
72.1 - Forging aluminum alloys					
3.0515	Al Mn 1				
3.0516	S-Al Mn				
3.0525	Al Mn 1 Mg 0.5				
3.0615	Al Mg Si Pb				
3.1325	Al Cu Mg 1				
3.1355	Al Cu Mg 2				
3.3315	Al Mg 1				
3.3535	Al Mg 3				
3.4365	Al Zn Mg Cu 1.5				
72.2 - Cast aluminum alloys					
3.1841	G - Al Cu 4 Ti				
3.3241	G - Al Mg 3 Si				
3.3292	GD - Al Mg 9				
73 - **Aluminum alloys, 0.5-10% Si - Hardness < 180 HB 30 - Tensile strength < 600 N/mm²**					
73.1 - Cast aluminum alloys					
3.2134	G - Al Si 5 Cu 1 Mg				
3.2152	GD - Al Si 6 Cu 4				
3.2162	GD - Al Si 8 Cu 3				
3.2373	G - Al Si 9 Mg				
74 - **Aluminum alloys, Si > 10% - Hardnes < 180 HB 30 - Tensile strength < 600 N/mm²**					
74.1 - Cast aluminum alloys					
3.2381	G - Al Si 10 Mg				
3.2383	G - Al Si 10 Mg (Cu)				
3.2581	G - Al Si 12				
3.2583	G - Al Si 12 (Cu)				
3.2982	GD - Al Si 12 (Cu)				
74.2 - Cast aluminum - magnesium alloys					
3.5106	G - Mg Ag 3 SE 2 Zr 1				
3.5662	G - Mg Al 6				
3.5812	G - Mg Al 8 Zn 1				
3.5912	G - Mg Al 9 Zn 1				

HSS

Being the best through innovation

COMBO TAPS
COMBO GEWINDEBOHRER

- **Spiral Point, Spiral Flute Type**
  Excellent performance on various work materials. YG-1's Patent

- **Schälanschnitt, Spiralgenutet**
  Ausgezeichnete Leistung in verschiedenen Arbeitsmaterialien. YG-1 Patent

COMBO TAPS (Spiral Point & Spiral Flute)

Excellent performance on various work materials. YG-1's Patent

COMBO TAPS

● SPIRAL POINT TAP ● SPIRAL FLUTE TAP

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Surface Treatment	PAGE
● TC804 TD804		HSS-E	M	MU	DIN371/376	ISO 6H	C	Bright TiN	375
● TC844 TD844		HSS-E	MF	MU	DIN374	ISO 6H	C	Bright TiN	376
● TC804-IC	with Internal Coolant	HSS-E	M	MU	DIN371/376	ISO 6H	C	Bright	378
● TC807		HSS-E	M	MU	DIN371/376	ISO 6H	E	Bright	379
● TC633		HSS-E	M	MU	LONG	ISO 6H	C	Bright	380
● TQ744 TB744		HSS-PM HSS-E	M	VA	DIN371/376	ISO 6H	C	Vap	381
● TQ754 TB754		HSS-PM HSS-E	MF	VA	DIN374	ISO 6H	C	Vap	382
● TC824 TD824		HSS-E	UNC	MU	DIN371/376	2B	C	Bright TiN	384
● TC864 TD864		HSS-E	UNF	MU	DIN371/374	2B	C	Bright TiN	385
● TC814 TD814		HSS-E	M	MU	DIN371/376	ISO 6H	B	Bright TiN	386
● TC854 TD854		HSS-E	MF	MU	DIN374	ISO 6H	B	Bright TiN	387
● TC814-IC	with Internal Coolant	HSS-E	M	MU	DIN371/376	ISO 6H	B	Bright	389
● TC445		HSS-E	M	MU	LONG	ISO 6H	B	Bright	390
● TQ428 TB428		HSS-PM HSS-E	M	VA	DIN371/376	ISO 6H	B	Vap	391
● TQ438 TB438		HSS-PM HSS-E	MF	VA	DIN374	ISO 6H	B	Vap	392
● TC834 TD834		HSS-E	UNC	MU	DIN371/376	2B	B	Bright TiN	394
● TC874 TD874		HSS-E	UNF	MU	DIN371/374	2B	B	Bright TiN	395

COMBO TAPS

Combo TAP

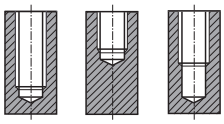
TC804 SERIES Bright
TD804 SERIES TiN

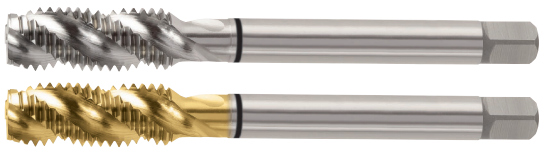
M ISO Metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ For using multi-purpose and correct thread profiles & long tool life due to special tap geometry. YG-1 company has a patent.

▶ Für vielfältigen Einsatz, genaue Gewindeprofile und lange Standzeitendank einer besonderen Schneidengeometrie. Von YG-1 patentiert.

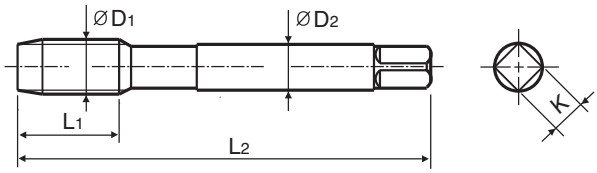
Hole type





Material groups **MU** | HSS-E | DIN 371/376 | 6H | 60° | C | Bright TiN | R40

Machine taps
Maschinengewindebohrer



Unit : mm

SIZE	Pitch	EDP No.		Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P	Bright	TiN	L1	L2	ØD2	K	Ød1
M2	× 0.4	TC804136	TD804136	8	45	2.8	2.1	1.6
M2.2	× 0.45	TC804156	TD804156	8	45	2.8	2.1	1.75
M2.3	× 0.4	TC804196	TD804196	8	45	2.8	2.1	1.9
M2.5	× 0.45	TC804176	TD804176	9	50	2.8	2.1	2.05
M2.6	× 0.45	TC804496	TD804496	9	50	2.8	2.1	2.1
M3	× 0.5	TC804206	TD804206	6	56	3.5	2.7	2.5
M3.5	× 0.6	TC804226	TD804226	7	56	4	3	2.9
M4	× 0.7	TC804246	TD804246	7	63	4.5	3.4	3.3
M4.5	× 0.75	TC804266	TD804266	8	70	6	4.9	3.7
M5	× 0.8	TC804286	TD804286	8	70	6	4.9	4.2
M6	× 1.0	TC804316	TD804316	10	80	6	4.9	5
M7	× 1.0	TC804346	TD804346	10	80	7	5.5	6
M8	× 1.25	TC804366	TD804366	13	90	8	6.2	6.8
M9	× 1.25	TC804396	TD804396	13	90	9	7	7.8
M10	× 1.5	TC804426	TD804426	15	100	10	8	8.5
M11	× 1.5	TC804466	TD804466	17	100	8	6.2	9.5
M12	× 1.75	TC804506	TD804506	18	110	9	7	10.2
M14	× 2.0	TC804546	TD804546	20	110	11	9	12
M16	× 2.0	TC804606	TD804606	20	110	12	9	14
M18	× 2.5	TC804656	TD804656	25	125	14	11	15.5
M20	× 2.5	TC804706	TD804706	25	140	16	12	17.5
M22	× 2.5	TC804746	TD804746	25	140	18	14.5	19.5
M24	× 3.0	TC804786	TD804786	30	160	18	14.5	21
M27	× 3.0	TC804866	TD804866	30	160	20	16	24
M30	× 3.5	TC804946	TD804946	35	180	22	18	26.5

▶ DIN371 (M2~M10) and DIN376 (M11~M30)

* The other coating(TiCN or TiAlN) or Surface Treatment(Steam Homo) is available on your request.

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	◎	◎	○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	◎	○		◎	◎	◎			◎	◎	◎			

YG COMBO TAPS

Combo TAP

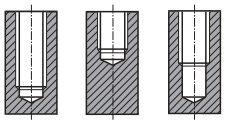
TC844 SERIES Bright
TD844 SERIES TiN

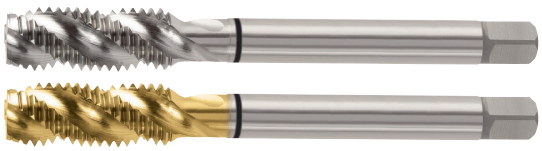
MF ISO Metric fine threads DIN 13
Metrisches ISO-Feingewinde DIN 13

▶ For using multi-purpose and correct thread profiles & long tool life due to special tap geometry. YG-1 company has a patent.

▶ Für vielfältigen Einsatz, genaue Gewindeprofile und lange Standzeitendank einer besonderen Schneidengeometrie. Von YG-1 patentiert.

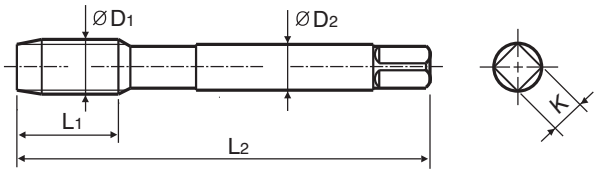
Hole type

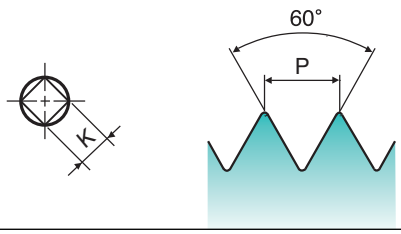


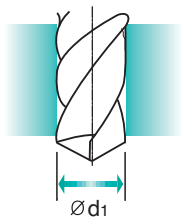


Material groups **MU** | HSS-E | DIN 374 | 6H | 60° | C | Bright TiN | R40

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE	Pitch	EDP No.		Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P	Bright	TiN	L1	L2	ØD2	K	Ød1
M4	× 0.5	TC844256	TD844256	5	63	2.8	2.1	3.5
M5	× 0.5	TC844296	TD844296	5	70	3.5	2.7	4.5
M6	× 0.75	TC844326	TD844326	8	80	4.5	3.4	5.2
M6	× 0.5	TC844336	TD844336	5	80	4.5	3.4	5.5
M7	× 0.75	TC844356	TD844356	10	80	5.5	4.3	6.2
M8	× 1.0	TC844376	TD844376	10	90	6	4.9	7
M8	× 0.75	TC844386	TD844386	8	80	6	4.9	7.2
M10	× 1.25	TC844436	TD844436	16	100	7	5.5	8.8
M10	× 1.0	TC844446	TD844446	10	90	7	5.5	9
M10	× 0.75	TC844456	TD844456	10	90	7	5.5	9.2
M12	× 1.5	TC844516	TD844516	15	100	9	7	10.5
M12	× 1.25	TC844526	TD844526	15	100	9	7	10.8
M12	× 1.0	TC844536	TD844536	11	100	9	7	11
M14	× 1.5	TC844556	TD844556	15	100	11	9	12.5
M14	× 1.25	TC844566	TD844566	15	100	11	9	12.8
M14	× 1.0	TC844576	TD844576	11	100	11	9	13

* The other coating(TiCN or TiAlN) or Surface Treatment(Steam Homo) is available on your request.

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	◎	◎	○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	◎	○		◎	◎	◎			◎	◎	◎			

COMBO TAPS

Combo TAP

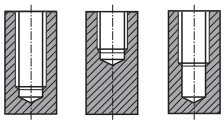
TC844 SERIES Bright
TD844 SERIES TiN

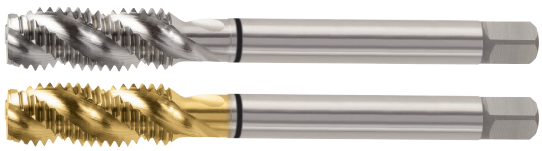
MF ISO Metric fine threads DIN 13
Metrisches ISO-Feingewinde DIN 13

▶ For using multi-purpose and correct thread profiles & long tool life due to special tap geometry. YG-1 company has a patent.

▶ Für vielfältigen Einsatz, genaue Gewindeprofile und lange Standzeitendank einer besonderen Schneidengeometrie. Von YG-1 patentiert.

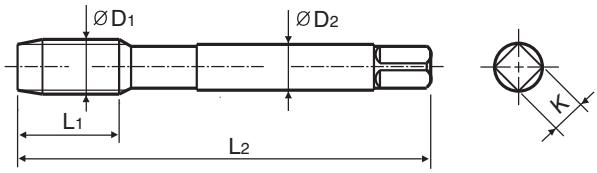
Hole type





Material groups **MU** | HSS-E | DIN 374 | 6H | 60° | C | Bright TiN | R40

Machine taps
Maschinengewindebohrer



Unit : mm

SIZE	Pitch	EDP No.		Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P	Bright	TiN	L1	L2	ØD2	K	Ød1
M16 ×	1.5	TC844616	TD844616	15	100	12	9	14.5
M16 ×	1.0	TC844626	TD844626	12	100	12	9	15
M18 ×	1.5	TC844676	TD844676	17	110	14	11	16.5
M18 ×	1.0	TC844686	TD844686	13	110	14	11	17
M20 ×	1.5	TC844726	TD844726	17	125	16	12	18.5
M20 ×	1.0	TC844736	TD844736	14	125	16	12	19
M22 ×	1.5	TC844766	TD844766	17	125	18	14.5	20.5
M22 ×	1.0	TC844776	TD844776	14	125	18	14.5	21
M24 ×	2.0	TC844796	TD844796	20	140	18	14.5	22
M24 ×	1.5	TC844806	TD844806	20	140	18	14.5	22.5
M26 ×	1.5	TC844856	TD844856	20	140	18	14.5	24.5
M27 ×	2.0	TC844876	TD844876	20	140	20	16	25
M27 ×	1.5	TC844886	TD844886	20	140	20	16	25.5
M28 ×	1.5	TC844916	TD844916	20	140	20	16	26.5
M30 ×	2.0	TC844966	TD844966	22	150	22	18	28
M30 ×	1.5	TC844976	TD844976	22	150	22	18	28.5

* The other coating(TiCN or TiAlN) or Surface Treatment(Steam Homo) is available on your request.

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	◎	◎	○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	◎	○		◎	◎	◎			◎	◎	◎			

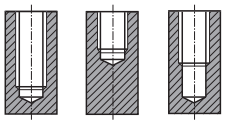
YG COMBO TAPS — Combo TAP — TC804-IC SERIES

M ISO Metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ For using multi-purpose and correct thread profiles & long tool life due to special tap geometry. YG-1 company has a patent.

▶ Für vielfältigen Einsatz, genaue Gewindeprofile und lange Standzeitendank einer besonderen Schneidengeometrie. Von YG-1 patentiert.

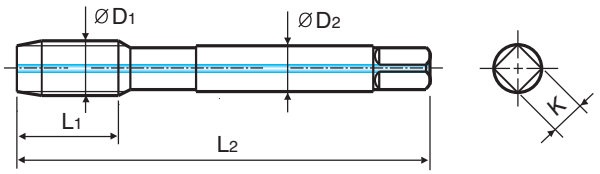
Hole type

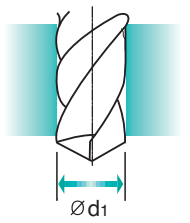


with Internal Coolant

Material groups **MU** | HSS-E | DIN 371/376 | 6H | 60° | C | Bright | R40

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M6	× 1.0	TC804316IC	10	80	6	4.9	5
M8	× 1.25	TC804366IC	13	90	8	6.2	6.8
M10	× 1.5	TC804426IC	15	100	10	8	8.5
M12	× 1.75	TC804506IC	18	110	9	7	10.2
M14	× 2.0	TC804546IC	20	110	11	9	12
M16	× 2.0	TC804606IC	20	110	12	9	14
M18	× 2.5	TC804656IC	25	125	14	11	15.5
M20	× 2.5	TC804706IC	25	140	16	12	17.5

▶ DIN371 (M6~M10) and DIN376 (M12~M20)

* Coating(TiN, TiCN or TiAlN) or Surface Treatment(Steam Homo) is available on your request.

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	◎	◎	○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	◎	○		◎	◎	◎			◎	◎	◎			

COMBO TAPS

Combo TAP

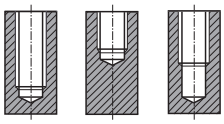
TC807 SERIES

M ISO Metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ For using multi-purpose and correct thread profiles & long tool life due to special tap geometry. YG-1 company has a patent.

▶ Für vielfältigen Einsatz, genaue Gewindeprofile und lange Standzeitendank einer besonderen Schneidengeometrie. Von YG-1 patentiert.

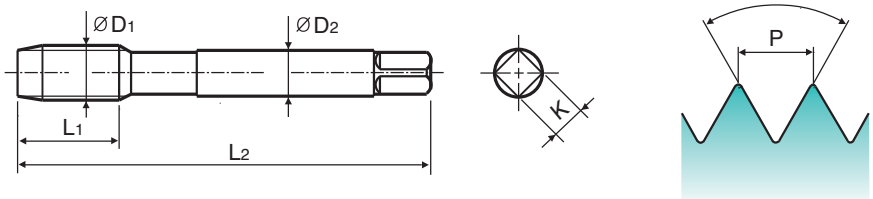
Hole type

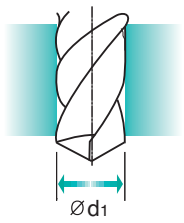


Short Chamfer

Material groups **MU** | HSS-E | DIN 371/376 | 6H | 60° | E | Bright | R40

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE ØD1		Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	×	0.4	TC807136	8	45	2.8	2.1	1.6
M2.2	×	0.45	TC807156	8	45	2.8	2.1	1.75
M2.3	×	0.4	TC807196	8	45	2.8	2.1	1.9
M2.5	×	0.45	TC807176	9	50	2.8	2.1	2.05
M2.6	×	0.45	TC807496	9	50	2.8	2.1	2.1
M3	×	0.5	TC807206	6	56	3.5	2.7	2.5
M3.5	×	0.6	TC807226	7	56	4	3	2.9
M4	×	0.7	TC807246	7	63	4.5	3.4	3.3
M4.5	×	0.75	TC807266	8	70	6	4.9	3.7
M5	×	0.8	TC807286	8	70	6	4.9	4.2
M6	×	1.0	TC807316	10	80	6	4.9	5
M7	×	1.0	TC807346	10	80	7	5.5	6
M8	×	1.25	TC807366	13	90	8	6.2	6.8
M9	×	1.25	TC807396	13	90	9	7	7.8
M10	×	1.5	TC807426	15	100	10	8	8.5
M11	×	1.5	TC807466	17	100	8	6.2	9.5
M12	×	1.75	TC807506	18	110	9	7	10.2
M14	×	2.0	TC807546	20	110	11	9	12
M16	×	2.0	TC807606	20	110	12	9	14
M18	×	2.5	TC807656	25	125	14	11	15.5
M20	×	2.5	TC807706	25	140	16	12	17.5
M22	×	2.5	TC807746	25	140	18	14.5	18.5
M24	×	3.0	TC807786	30	160	18	14.5	21
M27	×	3.0	TC807866	30	160	20	16	24
M30	×	3.5	TC807946	35	180	22	18	26.5

▶ DIN371 (M2~M10) and DIN376 (M11~M30)

* Coating(TiN, TiCN or TiAlN) or Surface Treatment(Steam Homo) is available on your request.

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	◎	◎	○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	◎	○		◎	◎	◎			◎	◎	◎			

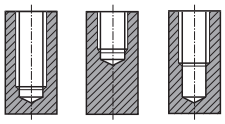
YG COMBO TAPS — Combo TAP — TC633 SERIES

M ISO Metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ For using multi-purpose and correct thread profiles & long tool life due to special tap geometry. YG-1 company has a patent.

▶ Für vielfältigen Einsatz, genaue Gewindeprofile und lange Standzeitendank einer besonderen Schneidengeometrie. Von YG-1 patentiert.

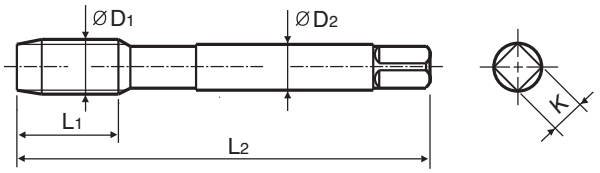
Hole type

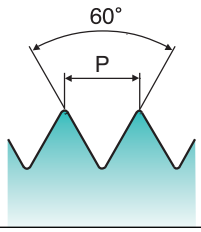


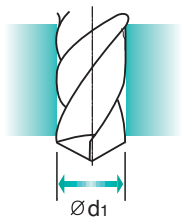
Long Shank

Material groups **MU** | HSS-E | LONG | 6H | 60° | C | Bright | R40

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M3	× 0.5	TC633206	11	100	3.5	2.7	2.5
M4	× 0.7	TC633246	13	125	4.5	3.4	3.3
M5	× 0.8	TC633286	15	140	6	4.9	4.2
M6	× 1.0	TC633316	17	160	6	4.9	5
M8	× 1.25	TC633366	20	180	6	4.9	6.8
M10	× 1.5	TC633426	22	200	7	5.5	8.5
M12	× 1.75	TC633506	24	220	9	7	10.2
M14	× 2.0	TC633546	26	220	11	9	12
M16	2.0	TC633606	27	220	12	9	14
M20	2.5	TC633706	32	280	16	12	17.5

* Coating(TiN, TiCN or TiAlN) or Surface Treatment(Steam Homo) is available on your request.

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	◎	◎	○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	◎	○		◎	◎	◎			◎	◎	◎			

COMBO TAPS

Combo TAP

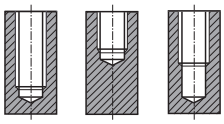
TQ744 SERIES
TB744 SERIES

M ISO Metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ For stainless steels and correct thread profiles & long tool life due to special tap geometry. YG-1 company has a patent.

▶ Für rostfreie stähle, genaue Gewindeprofile und lange Standzeitendank einer besonderen Schneidengeometrie. Von YG-1 patentiert.

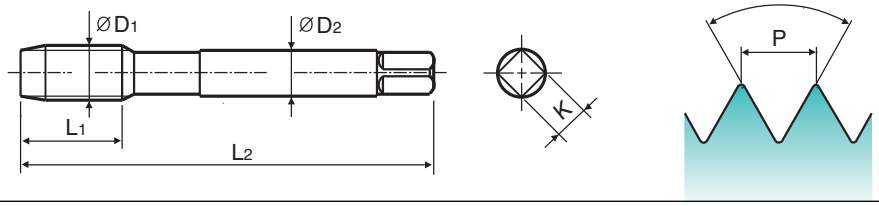
Hole type

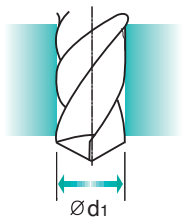


Material groups **VA**

up to M12 **HSS-PM** | over M12 **HSS-E** | **DIN 371/376** | **6H** | **60°** | **C** | **Vap** | **R45**

Machine taps
Maschinen-gewindebohrer





Unit : mm

SIZE		Pitch	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1		P		L1	L2	ØD2	K	Ød1
M2	×	0.4	**TQ744136**	8	45	2.8	2.1	1.6
M2.2	×	0.45	**TQ744156**	8	45	2.8	2.1	1.75
M2.3	×	0.4	**TQ744196**	8	45	2.8	2.1	1.9
M2.5	×	0.45	**TQ744176**	9	50	2.8	2.1	2.05
M2.6	×	0.45	**TQ744496**	9	50	2.8	2.1	2.1
M3	×	0.5	**TQ744206**	6	56	3.5	2.7	2.5
M3.5	×	0.6	**TQ744226**	7	56	4	3	2.9
M4	×	0.7	**TQ744246**	7	63	4.5	3.4	3.3
M4.5	×	0.75	**TQ744266**	8	70	6	4.9	3.7
M5	×	0.8	**TQ744286**	8	70	6	4.9	4.2
M6	×	1.0	**TQ744316**	10	80	6	4.9	5
M7	×	1.0	**TQ744346**	10	80	7	5.5	6
M8	×	1.25	**TQ744366**	13	90	8	6.2	6.8
M9	×	1.25	**TQ744396**	13	90	9	7	7.8
M10	×	1.5	**TQ744426**	15	100	10	8	8.5
M11	×	1.5	**TQ744466**	17	100	8	6.2	9.5
M12	×	1.75	**TQ744506**	18	110	9	7	10.2
M14	×	2.0	**TB744546**	20	110	11	9	12
M16	×	2.0	**TB744606**	20	110	12	9	14
M18	×	2.5	**TB744656**	25	125	14	11	15.5
M20	×	2.5	**TB744706**	25	140	16	12	17.5
M22	×	2.5	**TB744746**	25	140	18	14.5	18.5
M24	×	3.0	**TB744786**	30	160	18	14.5	21
M27	×	3.0	**TB744866**	30	160	20	16	24
M30	×	3.5	**TB744946**	35	180	22	18	26.5

▶ DIN371 (M2~M10) and DIN376 (M11~M30)

▶ HSS-PM(M2~M12/TQ744) and HSS-E(M14~M30/TB744)

* Coating(TiN, TiCN or TiAlN) is available on your request.

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	○		○			◎	◎							

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
				○										

YG COMBO TAPS

Combo TAP

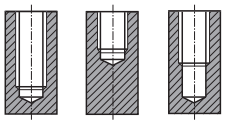
TQ754 SERIES
TB754 SERIES

MF ISO Metric fine threads DIN 13
Metrisches ISO-Feingewinde DIN 13

▶ For stainless steels and correct thread profiles & long tool life due to special tap geometry. YG-1 company has a patent.

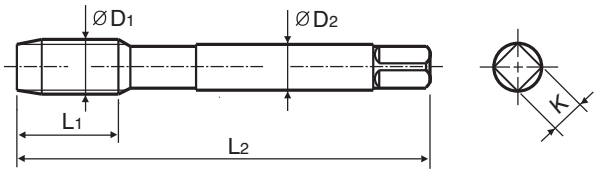
▶ Für rostfreie stähle, genaue Gewindeprofile und lange Standzeitendank einer besonderen Schneidengeometrie. Von YG-1 patentiert.

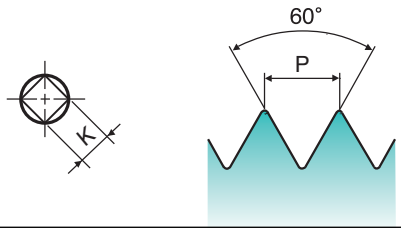
Hole type

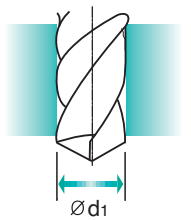


Material groups **VA** | up to M12 **HSS-PM** | over M12 **HSS-E** | **DIN 374** | **6H** | 60° | **C** | **Vap** | **R45**

Machine taps
Maschinen-gewindebohrer







Unit : mm

SIZE ØD1		Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M4	×	0.5	TQ754256	5	63	2.8	2.1	3.5
M5	×	0.5	TQ754296	5	70	3.5	2.7	4.5
M6	×	0.75	TQ754326	8	80	4.5	3.4	5.2
M6	×	0.5	TQ754336	5	80	4.5	3.4	5.5
M7	×	0.75	TQ754356	10	80	5.5	4.3	6.2
M8	×	1.0	TQ754376	10	90	6	4.9	7
M8	×	0.75	TQ754386	8	80	6	4.9	7.2
M10	×	1.25	TQ754436	16	100	7	5.5	8.8
M10	×	1.0	TQ754446	10	90	7	5.5	9
M10	×	0.75	TQ754456	10	90	7	5.5	9.2
M12	×	1.5	TQ754516	15	100	9	7	10.5
M12	×	1.25	TQ754526	15	100	9	7	10.8
M12	×	1.0	TQ754536	11	100	9	7	11
M14	×	1.5	TB754556	15	100	11	9	12.5
M14	×	1.25	TB754566	15	100	11	9	12.8
M14	×	1.0	TB754576	11	100	11	9	13

▶ HSS-PM(M4~M12/TQ754) and HSS-E(M14~M30/TB754)
* Coating(TiN, TiCN or TiAlN) s available on your request.

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	○		○			◎	◎							

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
				○										

COMBO TAPS

Combo TAP

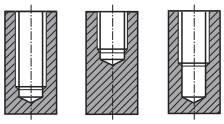
TQ754 SERIES
TB754 SERIES

MF ISO Metric fine threads DIN 13
Metrisches ISO-Feingewinde DIN 13

▶ For stainless steels and correct thread profiles & long tool life due to special tap geometry. YG-1 company has a patent.

▶ Für rostfreie stähle, genaue Gewindeprofile und lange Standzeitendank einer besonderen Schneidengeometrie. Von YG-1 patentiert.

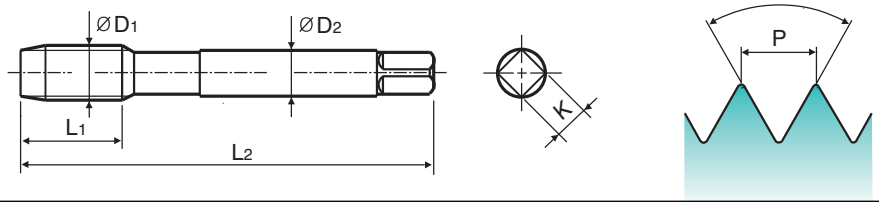
Hole type

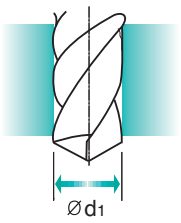


Material groups **VA**

up to M12 **HSS-PM** | over M12 **HSS-E** | **DIN 374** | **6H** | **60°** | **C** | **Vap** | **R45**

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P		L1	L2	ØD2	K	Ød1
M16	× 1.5	TB754616	15	100	12	9	14.5
M16	× 1.0	TB754626	12	100	12	9	15
M18	× 1.5	TB754676	17	110	14	11	16.5
M18	× 1.0	TB754686	13	110	14	11	17
M20	× 1.5	TB754726	17	125	16	12	18.5
M20	× 1.0	TB754736	14	125	16	12	19
M22	× 1.5	TB754766	17	125	18	14.5	20.5
M22	× 1.0	TB754776	14	125	18	14.5	21
M24	× 2.0	TB754796	20	140	18	14.5	22
M24	× 1.5	TB754806	20	140	18	14.5	22.5
M26	× 1.5	TB754856	20	140	18	14.5	24.5
M27	× 2.0	TB754876	20	140	20	16	25
M27	× 1.5	TB754886	20	140	20	16	25.5
M28	× 1.5	TB754916	20	140	20	16	26.5
M30	× 2.0	TB754966	22	150	22	18	28
M30	× 1.5	TB754976	22	150	22	18	28.5

▶ HSS-PM(M4~M12/TQ754) and HSS-E(M14~M30/TB754)
* Coating(TiN, TiCN or TiAlN) is available on your request.

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	○		○			◎	◎							

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
				○										

YG COMBO TAPS

Combo TAP

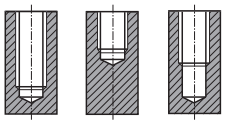
TC824 SERIES Bright
TD824 SERIES TiN

UNC Unified coarse threads
Unified Grobgewinde

▶ For using multi-purpose and correct thread profiles & long tool life due to special tap geometry. YG-1 company has a patent.

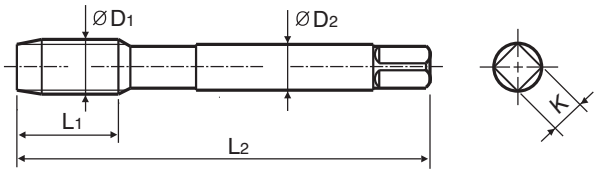
▶ Für vielfältigen Einsatz, genaue Gewindeprofile und lange Standzeitendank einer besonderen Schneidengeometrie. Von YG-1 patentiert.

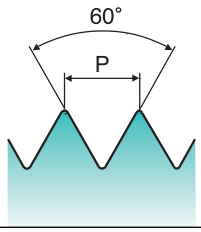
Hole type

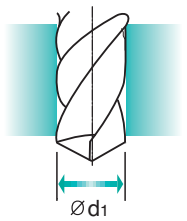


Material groups **MU** | HSS-E | DIN 371/376 | 2B | 60° | C | Bright TiN | R40

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE	TPI	EDP No.		Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1		Bright	TiN	L1	L2	ØD2	K	Ød1
#4	- 40 UNC	TC824162	TD824162	6	56	3.5	2.7	2.3
#5	- 40 UNC	TC824202	TD824202	7	56	3.5	2.7	2.6
#6	- 32 UNC	TC824242	TD824242	7	56	4	3	2.85
#8	- 32 UNC	TC824282	TD824282	8	63	4.5	3.4	3.5
#10	- 24 UNC	TC824322	TD824322	10	70	6	4.9	3.9
#12	- 24 UNC	TC824362	TD824362	10	80	6	4.9	4.5
1/4"	- 20 UNC	TC824402	TD824402	13	80	7	5.5	5.2
5/16"	- 18 UNC	TC824442	TD824442	14	90	8	6.2	6.6
3/8"	- 16 UNC	TC824482	TD824482	16	100	9	7	8
7/16"	- 14 UNC	TC824522	TD824522	17	100	8	6.2	9.4
1/2"	- 13 UNC	TC824562	TD824562	20	110	9	7	10.75
9/16"	- 12 UNC	TC824602	TD824602	20	110	11	9	12.25
5/8"	- 11 UNC	TC824642	TD824642	22	110	12	9	13.5
3/4"	- 10 UNC	TC824702	TD824702	25	125	14	11	16.5
7/8"	- 9 UNC	TC824742	TD824742	27	140	18	14.5	19.5
1"	- 8 UNC	TC824782	TD824782	30	160	20	16	22.25

▶ DIN371 (#4~3/8) and DIN376 (7/16~1")

* The other coating(TiCN or TiAlN) or Surface Treatment(Steam Homo) is available on your request.

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	◎	◎	○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	◎	○		◎	◎	◎			◎	◎	◎			

YG COMBO TAPS

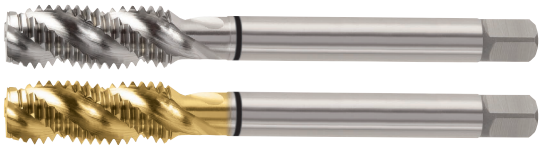
Combo TAP

TC864 SERIES Bright
TD864 SERIES TiN

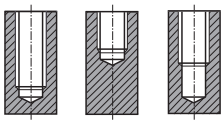
UNF Unified fine threads
Unified Feingewinde

▶ For using multi-purpose and correct thread profiles & long tool life due to special tap geometry. YG-1 company has a patent.

▶ Für vielfältigen Einsatz, genaue Gewindeprofile und lange Standzeitendank einer besonderen Schneidengeometrie. Von YG-1 patentiert.

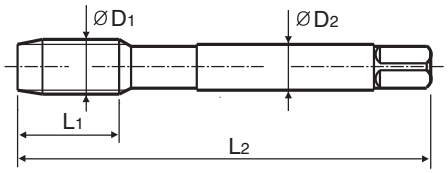


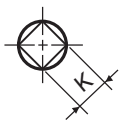
Hole type

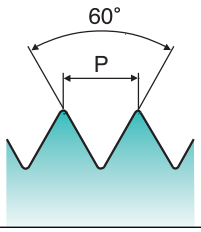


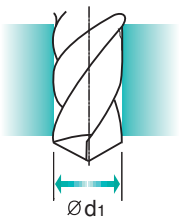
Material groups **MU** | HSS-E | DIN 371/374 | 2B | 60° | C | Bright TiN | R40

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE TPI	EDP No.		Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	Bright	TiN	L1	L2	ØD2	K	Ød1
#4 - 48UNF	TC864182	TD864182	6	56	3.5	2.7	2.4
#5 - 44UNF	TC864222	TD864222	7	56	3.5	2.7	2.7
#6 - 40UNF	TC864262	TD864262	7	56	4	3	3
#8 - 36UNF	TC864302	TD864302	8	63	4.5	3.4	3.5
#10 - 32UNF	TC864342	TD864342	10	70	6	4.9	4.1
#12 - 28UNF	TC864382	TD864382	10	80	6	4.9	4.7
1/4" - 28UNF	TC864422	TD864422	10	80	7	5.5	5.5
5/16" - 24UNF	TC864462	TD864462	10	90	8	6.2	6.9
3/8" - 24UNF	TC864502	TD864502	10	100	9	7	8.5
7/16" - 20UNF	TC864542	TD864542	13	100	8	6.2	9.9
1/2" - 20UNF	TC864582	TD864582	13	100	9	7	11.5
9/16" - 18UNF	TC864622	TD864622	15	100	11	9	12.9
5/8" - 18UNF	TC864662	TD864662	15	100	12	9	14.5
3/4" - 16UNF	TC864722	TD864722	17	110	14	11	17.5
7/8" - 14UNF	TC864762	TD864762	17	125	18	14.5	20.5
1" - 12UNF	TC864802	TD864802	20	140	20	16	23.25

▶ DIN371 (#4~3/8) and DIN374 (7/16~1")

* The other coating(TiCN or TiAlN) or Surface Treatment(Steam Homo) is available on your request.

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	◎	◎	○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	◎	○		◎	◎	◎			◎	◎	◎			

YG COMBO TAPS

Combo TAP

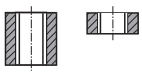
TC814 SERIES Bright
TD814 SERIES TiN

M ISO Metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ For using multi-purpose and correct thread profiles & long tool life due to special tap geometry. YG-1 company has a patent.

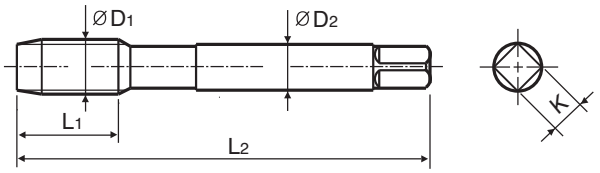
▶ Für vielfältigen Einsatz, genaue Gewindeprofile und lange Standzeitendank einer besonderen Schneidengeometrie. Von YG-1 patentiert.

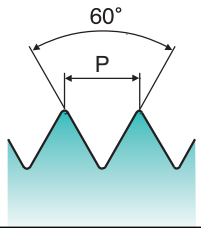
Hole type

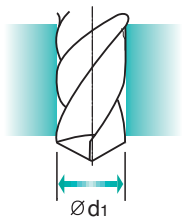


Material groups **MU** | HSS-E | DIN 371/376 | 6H | 60° | B | Bright | TiN

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE	Pitch	EDP No.		Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P	Bright	TiN	L1	L2	ØD2	K	Ød1
M2	× 0.4	TC814136	TD814136	8	45	2.8	2.1	1.6
M2.2	× 0.45	TC814156	TD814156	8	45	2.8	2.1	1.75
M2.3	× 0.4	TC814196	TD814196	8	45	2.8	2.1	1.9
M2.5	× 0.45	TC814176	TD814176	9	50	2.8	2.1	2.05
M2.6	× 0.45	TC814496	TD814496	9	50	2.8	2.1	2.1
M3	× 0.5	TC814206	TD814206	11	56	3.5	2.7	2.5
M3.5	× 0.6	TC814226	TD814226	12	56	4	3	2.9
M4	× 0.7	TC814246	TD814246	13	63	4.5	3.4	3.3
M4.5	× 0.75	TC814266	TD814266	14	70	6	4.9	3.7
M5	× 0.8	TC814286	TD814286	15	70	6	4.9	4.2
M6	× 1.0	TC814316	TD814316	17	80	6	4.9	5
M7	× 1.0	TC814346	TD814346	17	80	7	5.5	6
M8	× 1.25	TC814366	TD814366	20	90	8	6.2	6.8
M9	× 1.25	TC814396	TD814396	20	90	9	7	7.8
M10	× 1.5	TC814426	TD814426	22	100	10	8	8.5
M11	× 1.5	TC814466	TD814466	22	100	8	6.2	9.5
M12	× 1.75	TC814506	TD814506	24	110	9	7	10.2
M14	× 2.0	TC814546	TD814546	26	110	11	9	12
M16	× 2.0	TC814606	TD814606	27	110	12	9	14
M18	× 2.5	TC814656	TD814656	30	125	14	11	15.5
M20	× 2.5	TC814706	TD814706	32	140	16	12	17.5
M22	× 2.5	TC814746	TD814746	32	140	18	14.5	18.5
M24	× 3.0	TC814786	TD814786	34	160	18	14.5	21
M27	× 3.0	TC814866	TD814866	36	160	20	16	24
M30	× 3.5	TC814946	TD814946	40	180	22	18	26.5

▶ DIN371 (M2~M10) and DIN376 (M11~M30)

* The other coating(TiCN or TiAlN) or Surface Treatment(Steam Homo) is available on your request.

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	◎	◎	○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	◎	○		◎	◎	◎			◎	◎	◎			

COMBO TAPS

Combo TAP

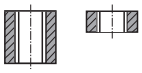
TC854 SERIES Bright
TD854 SERIES TiN

MF ISO Metric fine threads DIN 13
Metrisches ISO-Feingewinde DIN 13

▶ For using multi-purpose and correct thread profiles & long tool life due to special tap geometry. YG-1 company has a patent.

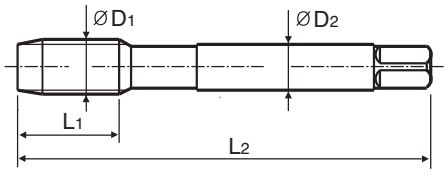
▶ Für vielfältigen Einsatz, genaue Gewindeprofile und lange Standzeitendank einer besonderen Schneidengeometrie. Von YG-1 patentiert.

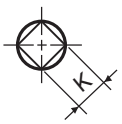
Hole type

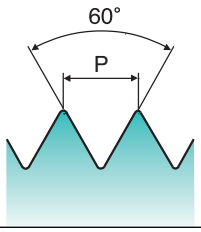


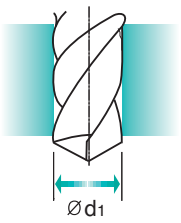
Material groups **MU** | HSS-E | DIN 374 | 6H | 60° | B | Bright | TiN

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE	Pitch	EDP No.		Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P	Bright	TiN	L1	L2	ØD2	K	Ød1
M4	× 0.5	TC854256	TD854256	10	63	2.8	2.1	3.5
M5	× 0.5	TC854296	TD854296	11	70	3.5	2.7	4.5
M6	× 0.75	TC854326	TD854326	13	80	4.5	3.4	5.2
M6	× 0.5	TC854336	TD854336	13	80	4.5	3.4	5.5
M7	× 0.75	TC854356	TD854356	14	80	5.5	4.3	6.2
M8	× 1.0	TC854376	TD854376	17	90	6	4.9	7
M8	× 0.75	TC854386	TD854386	14	80	6	4.9	7.2
M10	× 1.25	TC854436	TD854436	22	100	7	5.5	8.8
M10	× 1.0	TC854446	TD854446	18	90	7	5.5	9
M10	× 0.75	TC854456	TD854456	18	90	7	5.5	9.2
M12	× 1.5	TC854516	TD854516	22	100	9	7	10.5
M12	× 1.25	TC854526	TD854526	22	100	9	7	10.8
M12	× 1.0	TC854536	TD854536	18	100	9	7	11
M14	× 1.5	TC854556	TD854556	22	100	11	9	12.5
M14	× 1.25	TC854566	TD854566	22	100	11	9	12.8
M14	× 1.0	TC854576	TD854576	18	100	11	9	13

* The other coating(TiCN or TiAlN) or Surface Treatment(Steam Homo) is available on your request.

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	◎	◎	○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	◎	○		◎	◎	◎			◎	◎	◎			

YG COMBO TAPS

Combo TAP

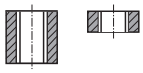
TC854 SERIES Bright
TD854 SERIES TiN

MF ISO Metric fine threads DIN 13
Metrisches ISO-Feingewinde DIN 13

▶ For using multi-purpose and correct thread profiles & long tool life due to special tap geometry. YG-1 company has a patent.

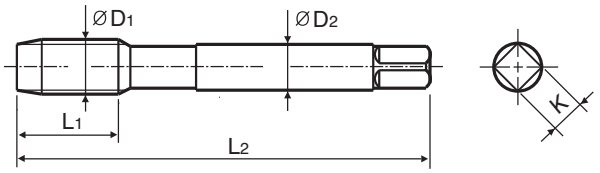
▶ Für vielfältigen Einsatz, genaue Gewindeprofile und lange Standzeitendank einer besonderen Schneidengeometrie. Von YG-1 patentiert.

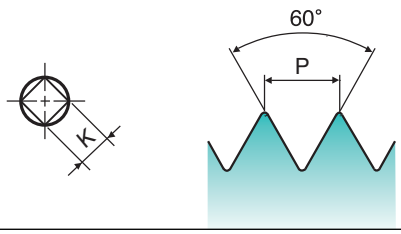
Hole type

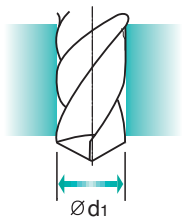


Material groups **MU** | HSS-E | DIN 374 | 6H | 60° | B | Bright | TiN

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE	Pitch	EDP No.		Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P	Bright	TiN	L1	L2	ØD2	K	Ød1
M16 ×	1.5	TC854616	TD854616	22	100	12	9	14.5
M16 ×	1.0	TC854626	TD854626	18	100	12	9	15
M18 ×	1.5	TC854676	TD854676	25	110	14	11	16.5
M18 ×	1.0	TC854686	TD854686	20	110	14	11	17
M20 ×	1.5	TC854726	TD854726	25	125	16	12	18.5
M20 ×	1.0	TC854736	TD854736	20	125	16	12	19
M22 ×	1.5	TC854766	TD854766	25	125	18	14.5	20.5
M22 ×	1.0	TC854776	TD854776	20	125	18	14.5	21
M24 ×	2.0	TC854796	TD854796	27	140	18	14.5	22
M24 ×	1.5	TC854806	TD854806	27	140	18	14.5	22.5
M26 ×	1.5	TC854856	TD854856	28	140	18	14.5	24.5
M27 ×	2.0	TC854876	TD854876	28	140	20	16	25
M27 ×	1.5	TC854886	TD854886	28	140	20	16	25.5
M28 ×	1.5	TC854916	TD854916	28	140	20	16	26.5
M30 ×	2.0	TC854966	TD854966	30	150	22	18	28
M30 ×	1.5	TC854976	TD854976	30	150	22	18	28.5

* The other coating(TiCN or TiAlN) or Surface Treatment(Steam Homo) is available on your request.

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	◎	◎	○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si ≤ 10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	◎	○		◎	◎	◎			◎	◎	◎			

YG COMBO TAPS

Combo TAP

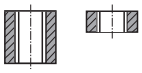
TC814-IC SERIES

M ISO Metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ For using multi-purpose and correct thread profiles & long tool life due to special tap geometry. YG-1 company has a patent.

▶ Für vielfältigen Einsatz, genaue Gewindeprofile und lange Standzeitendank einer besonderen Schneidengeometrie. Von YG-1 patentiert.

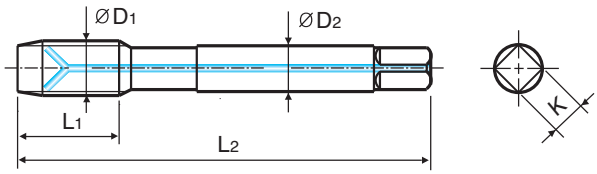
Hole type

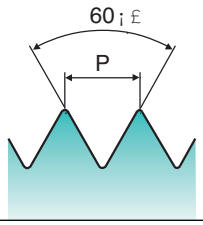


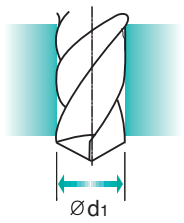
with Internal Coolant

Material groups **MU** | HSS-E | DIN 371/376 | 6H | 60° | B | Bright

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE ØD1	×	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M6	×	1.0	TC814316IC	17	80	6	4.9	5
M8	×	1.25	TC814366IC	20	90	8	6.2	6.8
M10	×	1.5	TC814426IC	22	100	10	8	8.5
M12	×	1.75	TC814506IC	24	110	9	7	10.2
M14	×	2.0	TC814546IC	26	110	11	9	12
M16	×	2.0	TC814606IC	27	110	12	9	14
M18	×	2.5	TC814656IC	30	125	14	11	15.5
M20	×	2.5	TC814706IC	32	140	16	12	17.5

▶DIN371 (M6~M10) and DIN376 (M12~M20)

* Coating(TiN, TiCN or TiAlN) or Surface Treatment(Steam Homo) is available on your request.

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	◎	◎	○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	◎	○		◎	◎	◎			◎	◎	◎			

COMBO TAPS

Combo TAP

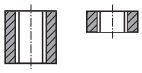
TC445 SERIES

M ISO Metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ For using multi-purpose and correct thread profiles & long tool life due to special tap geometry. YG-1 company has a patent.

▶ Für vielfältigen Einsatz, genaue Gewindeprofile und lange Standzeitendank einer besonderen Schneidengeometrie. Von YG-1 patentiert.

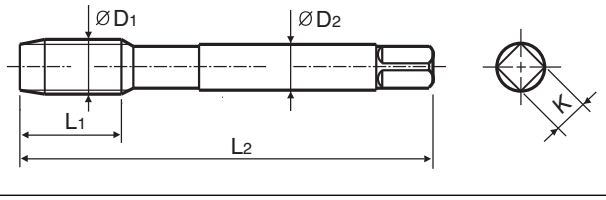
Hole type

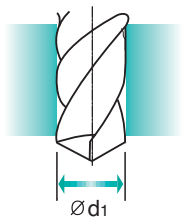


Long Shank

Material groups **MU** | HSS-E | LONG | 6H | 60° | B | Bright

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P		L1	L2	ØD2	K	Ød1
M3	× 0.5	TC445206	11	100	3.5	2.7	2.5
M4	× 0.7	TC445246	13	125	4.5	3.4	3.3
M5	× 0.8	TC445286	15	140	6	4.9	4.2
M6	× 1.0	TC445316	17	160	6	4.9	5
M8	× 1.25	TC445366	20	180	6	4.9	6.8
M10	× 1.5	TC445426	22	200	7	5.5	8.5
M12	× 1.75	TC445506	24	220	9	7	10.2
M14	× 2.0	TC445546	26	220	11	9	12
M16	2.0	TC445606	27	220	12	9	14
M20	2.5	TC445706	32	280	16	12	17.5

* Coating(TiN, TiCN or TiAlN) or Surface Treatment(Steam Homo) is available on your request.

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	◎	◎	○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	◎	○		◎	◎	◎			◎	◎	◎			

COMBO TAPS

Combo TAP

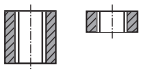
TQ428 SERIES
TB428 SERIES

M ISO Metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ For stainless steels and correct thread profiles & long tool life due to special tap geometry. YG-1 company has a patent.

▶ Für rostfreie stähle, genaue Gewindeprofile und lange Standzeitendank einer besonderen Schneidengeometrie. Von YG-1 patentiert.

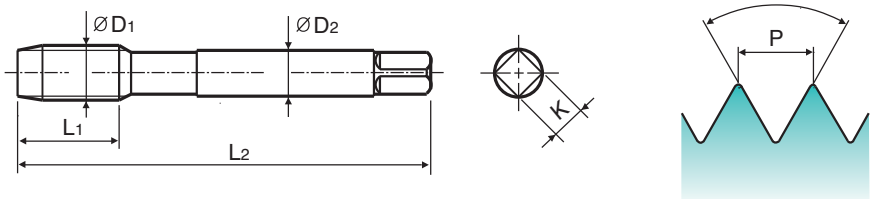
Hole type

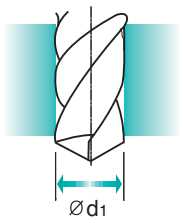


Material groups **VA**

up to M12 **HSS-PM** | over M12 **HSS-E** | **DIN 371/376** | **6H** | **60°** | **B** | **Vap**

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P		L1	L2	ØD2	K	Ød1
M2	× 0.4	TQ428136	8	45	2.8	2.1	1.6
M2.2	× 0.45	TQ428156	8	45	2.8	2.1	1.75
M2.3	× 0.4	TQ428196	8	45	2.8	2.1	1.9
M2.5	× 0.45	TQ428176	9	50	2.8	2.1	2.05
M2.6	× 0.45	TQ428496	9	50	2.8	2.1	2.1
M3	× 0.5	TQ428206	11	56	3.5	2.7	2.5
M3.5	× 0.6	TQ428226	12	56	4	3	2.9
M4	× 0.7	TQ428246	13	63	4.5	3.4	3.3
M4.5	× 0.75	TQ428266	14	70	6	4.9	3.7
M5	× 0.8	TQ428286	15	70	6	4.9	4.2
M6	× 1.0	TQ428316	17	80	6	4.9	5
M7	× 1.0	TQ428346	17	80	7	5.5	6
M8	× 1.25	TQ428366	20	90	8	6.2	6.8
M9	× 1.25	TQ428396	20	90	9	7	7.8
M10	× 1.5	TQ428426	22	100	10	8	8.5
M11	× 1.5	TQ428466	22	100	8	6.2	9.5
M12	× 1.75	TQ428506	24	110	9	7	10.2
M14	× 2.0	TB428546	26	110	11	9	12
M16	× 2.0	TB428606	27	110	12	9	14
M18	× 2.5	TB428656	30	125	14	11	15.5
M20	× 2.5	TB428706	32	140	16	12	17.5
M22	× 2.5	TB428746	32	140	18	14.5	18.5
M24	× 3.0	TB428786	34	160	18	14.5	21
M27	× 3.0	TB428866	36	160	20	16	24
M30	× 3.5	TB428946	40	180	22	18	26.5

▶ DIN371 (M2~M10) and DIN376 (M11~M30)
▶ HSS-PM(M2~M12/TQ428) and HSS-E(M14~M30/TB428)
* Coating(TiN, TiCN or TiAlN) is available on your request.

Unit : N/mm²
◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	○		○			◎	◎							

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
				○										

COMBO TAPS

Combo TAP

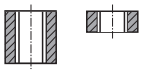
TQ438 SERIES
TB438 SERIES

MF ISO Metric fine threads DIN 13
Metrisches ISO-Feingewinde DIN 13

▶ For stainless steels and correct thread profiles & long tool life due to special tap geometry. YG-1 company has a patent.

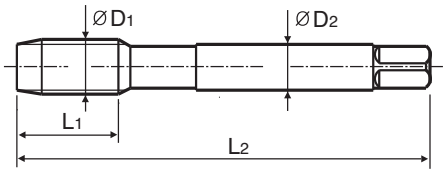
▶ Für rostfreie stähle, genaue Gewindeprofile und lange Standzeitendank einer besonderen Schneidengeometrie. Von YG-1 patentiert.

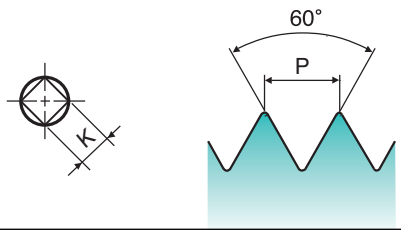
Hole type

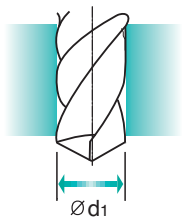


Material groups **VA** | up to M12 **HSS-PM** | over M12 **HSS-E** | **DIN 374** | **6H** | **60°** | **B** | **Vap**

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE		Pitch	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1		P		L1	L2	ØD2	K	Ød1
M4	×	0.5	TQ438256	10	63	2.8	2.1	3.5
M5	×	0.5	TQ438296	11	70	3.5	2.7	4.5
M6	×	0.75	TQ438326	13	80	4.5	3.4	5.2
M6	×	0.5	TQ438336	13	80	4.5	3.4	5.5
M7	×	0.75	TQ438356	14	80	5.5	4.3	6.2
M8	×	1.0	TQ438376	17	90	6	4.9	7
M8	×	0.75	TQ438386	14	80	6	4.9	7.2
M10	×	1.25	TQ438436	22	100	7	5.5	8.8
M10	×	1.0	TQ438446	18	90	7	5.5	9
M10	×	0.75	TQ438456	18	90	7	5.5	9.2
M12	×	1.5	TQ438516	22	100	9	7	10.5
M12	×	1.25	TQ438526	22	100	9	7	10.8
M12	×	1.0	TQ438536	18	100	9	7	11
M14	×	1.5	TB438556	22	100	11	9	12.5
M14	×	1.25	TB438566	22	100	11	9	12.8
M14	×	1.0	TB438576	18	100	11	9	13

▶ HSS-PM(M4~M12/TQ438) and HSS-E(M14~M30/TB438)
* Coating(TiN, TiCN or TiAlN) is available on your request.

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	○		○			◎	◎							

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
				○										

COMBO TAPS

Combo TAP

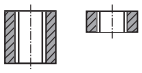
TQ438 SERIES
TB438 SERIES

MF ISO Metric fine threads DIN 13
Metrisches ISO-Feingewinde DIN 13

▶ For stainless steels and correct thread profiles & long tool life due to special tap geometry. YG-1 company has a patent.

▶ Für rostfreie stähle, genaue Gewindeprofile und lange Standzeitendank einer besonderen Schneidengeometrie. Von YG-1 patentiert.

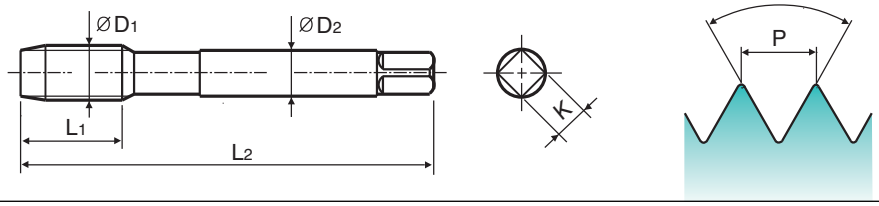
Hole type

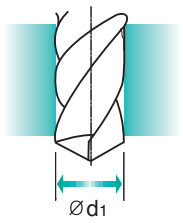


Material groups **VA**

up to M12 / over M12 | HSS-PM | HSS-E | DIN 374 | 6H | 60° | B | Vap

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M16	1.5	TB438616	22	100	12	9	14.5
M16	1.0	TB438626	18	100	12	9	15
M18	1.5	TB438676	25	110	14	11	16.5
M18	1.0	TB438686	20	110	14	11	17
M20	1.5	TB438726	25	125	16	12	18.5
M20	1.0	TB438736	20	125	16	12	19
M22	1.5	TB438766	25	125	18	14.5	20.5
M22	1.0	TB438776	20	125	18	14.5	21
M24	2.0	TB438796	27	140	18	14.5	22
M24	1.5	TB438806	27	140	18	14.5	22.5
M26	1.5	TB438856	28	140	18	14.5	24.5
M27	2.0	TB438876	28	140	20	16	25
M27	1.5	TB438886	28	140	20	16	25.5
M28	1.5	TB438916	28	140	20	16	26.5
M30	2.0	TB438966	30	150	22	18	28
M30	1.5	TB438976	30	150	22	18	28.5

▶ HSS-PM(M4~M12/TQ438) and HSS-E(M14~M30/TB438)
* Coating(TiN, TiCN or TiAlN) is available on your request.

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	○		○			◎	◎							

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
				○										

YG COMBO TAPS

Combo TAP

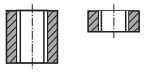
TC834 SERIES Bright
TD834 SERIES TiN

UNC Unified coarse threads
Unified Grobgewinde

▶ For using multi-purpose and correct thread profiles & long tool life due to special tap geometry. YG-1 company has a patent.

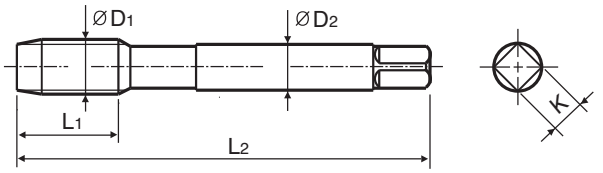
▶ Für vielfältigen Einsatz, genaue Gewindeprofile und lange Standzeitendank einer besonderen Schneidengeometrie. Von YG-1 patentiert.

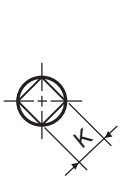
Hole type

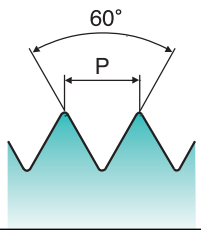


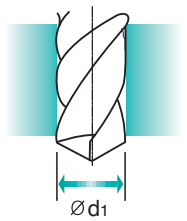
Material groups **MU** | HSS-E | DIN 371/376 | 2B | 60° | B | Bright | TiN

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE TPI	EDP No.		Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	Bright	TiN	L1	L2	ØD2	K	Ød1
#4 - 40 UNC	TC834162	TD834162	11	56	3.5	2.7	2.3
#5 - 40 UNC	TC834202	TD834202	11	56	3.5	2.7	2.6
#6 - 32 UNC	TC834242	TD834242	12	56	4	3	2.85
#8 - 32 UNC	TC834282	TD834282	13	63	4.5	3.4	3.5
#10 - 24 UNC	TC834322	TD834322	15	70	6	4.9	3.9
#12 - 24 UNC	TC834362	TD834362	16	80	6	4.9	4.5
1/4" - 20 UNC	TC834402	TD834402	17	80	7	5.5	5.2
5/16" - 18 UNC	TC834442	TD834442	20	90	8	6.2	6.6
3/8" - 16 UNC	TC834482	TD834482	22	100	9	7	8
7/16" - 14 UNC	TC834522	TD834522	22	100	8	6.2	9.4
1/2" - 13 UNC	TC834562	TD834562	25	110	9	7	10.75
9/16" - 12 UNC	TC834602	TD834602	26	110	11	9	12.25
5/8" - 11 UNC	TC834642	TD834642	27	110	12	9	13.5
3/4" - 10 UNC	TC834702	TD834702	30	125	14	11	16.5
7/8" - 9 UNC	TC834742	TD834742	32	140	18	14.5	19.5
1" - 8 UNC	TC834782	TD834782	36	160	20	16	22.25

▶ DIN371 (#4~3/8) and DIN376 (7/16~1")

* The other coating(TiCN or TiAlN) or Surface Treatment(Steam Homo) is available on your request.

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	◎	◎	○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	◎	○		◎	◎	◎			◎	◎	◎			

COMBO TAPS

Combo TAP

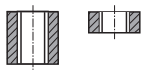
TC874 SERIES Bright
TD874 SERIES TiN

UNF Unified fine threads
Unified Feingewinde

▶ For using multi-purpose and correct thread profiles & long tool life due to special tap geometry. YG-1 company has a patent.

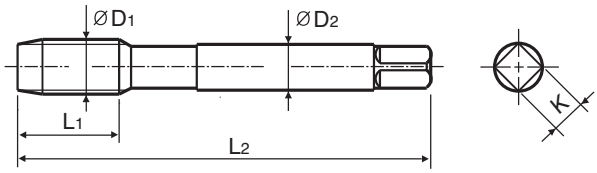
▶ Für vielfältigen Einsatz, genaue Gewindeprofile und lange Standzeitendank einer besonderen Schneidengeometrie. Von YG-1 patentiert.

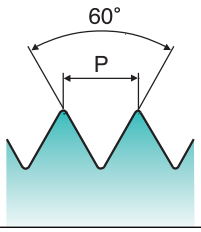
Hole type

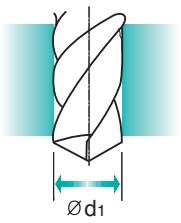


Material groups **MU** | HSS-E | DIN 371/374 | 2B | 60° | B | Bright | TiN

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE	TPI	EDP No.		Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1		Bright	TiN	L1	L2	ØD2	K	Ød1
#4	- 48UNF	TC874182	TD874182	11	56	3.5	2.7	2.4
#5	- 44UNF	TC874222	TD874222	11	56	3.5	2.7	2.7
#6	- 40UNF	TC874262	TD874262	12	56	4	3	3
#8	- 36UNF	TC874302	TD874302	13	63	4.5	3.4	3.5
#10	- 32UNF	TC874342	TD874342	15	70	6	4.9	4.1
#12	- 28UNF	TC874382	TD874382	16	80	6	4.9	4.7
1/4"	- 28UNF	TC874422	TD874422	17	80	7	5.5	5.5
5/16"	- 24UNF	TC874462	TD874462	17	90	8	6.2	6.9
3/8"	- 24UNF	TC874502	TD874502	18	100	9	7	8.5
7/16"	- 20UNF	TC874542	TD874542	22	100	8	6.2	9.9
1/2"	- 20UNF	TC874582	TD874582	22	100	9	7	11.5
9/16"	- 18UNF	TC874622	TD874622	22	100	11	9	12.9
5/8"	- 18UNF	TC874662	TD874662	22	100	12	9	14.5
3/4"	- 16UNF	TC874722	TD874722	25	110	14	11	17.5
7/8"	- 14UNF	TC874762	TD874762	26	125	18	14.5	20.5
1"	- 12UNF	TC874802	TD874802	28	140	20	16	23.25

▶ DIN371 (#4~3/8) and DIN374 (7/16~1")

* The other coating(TiCN or TiAlN) or Surface Treatment(Steam Homo) is available on your request.

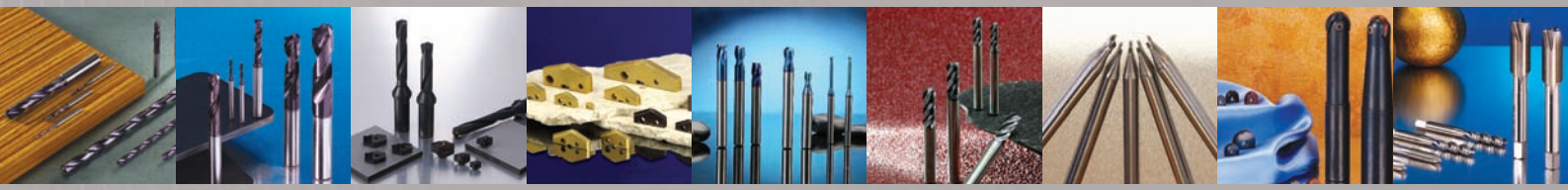
Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎	◎		◎	◎	◎	◎	◎	◎	◎	◎	○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	◎	○		◎	◎	◎			◎	◎	◎			

Global Cutting Tool Leader **YG-1**



HSS

Being the best through innovation

SPIRAL FLUTE TAPS

GEWINDEBOHRER MIT DRALL

- Tapping Blind Holes, HSS-E & HSS-PM
- Für Sacklöcher. HSS-E und HSS-PM

SPIRAL FLUTE TAPS

Tapping Blind Holes, HSS-E & HSS-PM

SPIRAL FLUTE TAPS

◆ SYNCHRO TYPE

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Surface Treatment	PAGE
◆ TTS31		HSS-PM	M	GS	DIN 371/376	ISO 2/6H	C	TiN	400
TC612		HSS-E	M	GS	DIN 352	ISO 2/6H	C	Bright	401
TC211		HSS-E	M	GS	DIN 371/376	ISO 2/6H	C	Bright	402
TC517		HSS-E	M	GS	DIN 371/376	ISO 2/6H	C	Bright	403
TC711		HSS-E	M	GS	DIN 371/376	ISO 2/6H	C	Bright	404
TD711		HSS-E	M	GS	DIN 371/376	ISO 2/6H	C	TiN	405
TQ823		HSS-PM	M	VG	DIN 371/376	ISO 2/6H	C	Vap	406
TR823		HSS-PM	M	VG	DIN 371/376	ISO 2/6H	C	Bright	407
TB312		HSS-E	M	VG	DIN 371/376	ISO 2/6H	C	Vap	408
TB913		HSS-E	M	VG	DIN 371/376	ISO 2/6H	C	Vap	409
TC312		HSS-E	M	VG	DIN 371/376	ISO 2/6H	C	Bright	410
TD312		HSS-E	M	VG	DIN 371/376	ISO 2/6H	C	TiN	411
TY312		HSS-E	M	VG	DIN 371/376	ISO 2/6H	C	TiAlN	412
TQ813		HSS-PM	M	VA	DIN 371/376	ISO 2/6H	C	Vap	413
TR813		HSS-PM	M	VA	DIN 371/376	ISO 2/6H	C	Bright	414
TB313		HSS-E	M	HR	DIN 371/376	ISO 2/6H	C	Vap	415
TC313		HSS-E	M	HR	DIN 371/376	ISO 2/6H	C	Bright	416
TY313		HSS-E	M	HR	DIN 371/376	ISO 2/6H	C	TiAlN	417
TB914		HSS-E	M	VA NW	DIN 371/376	ISO 2/6H	C	Vap	418
TCH14		HSS-E	M	VA NW	DIN 371/376	ISO 2/6H	C	Hardslick	419
TB711		HSS-E	M	NW	DIN 371/376	ISO 2/6H	C	Vap	420
TM903		HSS-PM	M	Ti	DIN 371/376	ISO 2/6H	C	Bright	421
TZ903		HSS-PM	M	Ti	DIN 371/376	ISO 2/6H	C	TiAlN	422

SPIRAL FLUTE TAPS

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Surface Treatment	PAGE
TQ833		HSS-PM	M	Ti Ni	DIN 371/376	ISO 2/6H	C	Vap	423
TR833		HSS-PM	M	Ti Ni	DIN 371/376	ISO 2/6H	C	Bright	424
TM933		HSS-PM	M	Ni	DIN 371/376	ISO 2/6H	C	Bright	425
TZ933		HSS-PM	M	Ni	DIN 371/376	ISO 2/6H	C	TiAlN	426
TC163		HSS-E	M	Al	DIN 371/376	ISO 2/6H	C	Bright	427
TE953		HSS-E	M	Al	DIN 371/376	ISO 2/6H	C	NI	428
TC411		HSS-E	MF	GS	DIN 374	ISO 2/6H	C	Bright	429
TD411		HSS-E	MF	GS	DIN 374	ISO 2/6H	C	TiN	431
TC413		HSS-E	MF	VG	DIN 374	ISO 2/6H	C	Bright	433
TD413		HSS-E	MF	VG	DIN 374	ISO 2/6H	C	TiN	434
TB183		HSS-E	MF	VA NW	DIN 374	ISO 2/6H	C	Vap	435
TC963		HSS-E	MF	Al	DIN 374	ISO 2/6H	C	Bright	436
TC144		HSS-E	UNC	GS	DIN 371/376	2B	C	Bright	437
TC174		HSS-E	UNC	VG	DIN 371/376	2B	C	Bright	438
TD174		HSS-E	UNC	VG	DIN 371/376	2B	C	TiN	439
TB904		HSS-E	UNC	VA NW	DIN 371/376	2B	C	Vap	440
TC169		HSS-E	UNC	Al	DIN 371/376	2B	C	Bright	441
TC124		HSS-E	UNF	GS	DIN 371/374	2B	C	Bright	442
TC184		HSS-E	UNF	VG	DIN 371/374	2B	C	Bright	443
TB924		HSS-E	UNF	VA NW	DIN 371/374	2B	C	Vap	444
TC170		HSS-E	UNF	Al	DIN 371/374	2B	C	Bright	445
TC134		HSS-E	BSW	GS	DIN 2182/2183	-	C	Bright	446

SPIRAL FLUTE TAPS

TTS31 SERIES

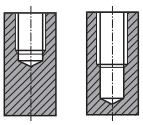
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for high speed machining and high precision threads

▶ Geeignet für die High-Speed-Bearbeitung (HSC) und hoher Gewinde-Präzision

DIN 371/376

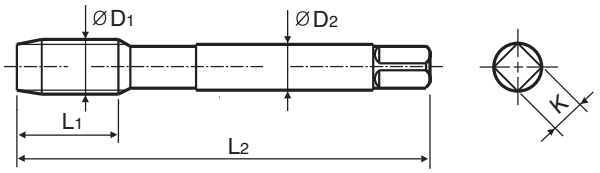
Hole type

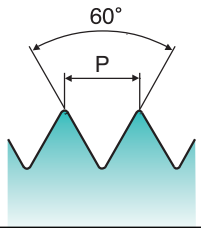


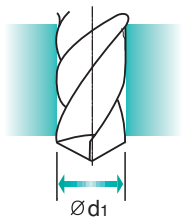
Synchro Type Applicable to 2-3 times faster cutting speed than minimum general GS Taps cutting speeds

Material groups **GS** | HSS-PM | DIN 371/376 | 6H | 60° | C | TiN | R45

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M3	0.5	TTS31206	6	56	3.5	2.7	2.5
M4	0.7	TTS31246	7	63	4.5	3.4	3.3
M5	0.8	TTS31286	8	70	6	4.9	4.2
M6	1	TTS31316	10	80	6	4.9	5
M8	1.25	TTS31366	13	90	8	6.2	6.8
M10	1.5	TTS31426	15	100	10	8	8.5
M12	1.75	TTS31506	18	110	9	7	10.2
M14	2	TTS31546	20	110	11	9	12
M16	2	TTS31606	20	110	12	9	14
M18	2.5	TTS31656	25	125	14	11	15.5
M20	2.5	TTS31706	25	140	16	12	17.5

▶ DIN371 (M3~M10) and DIN376 (M11~M20)
▶ Coating(TiAlN) is available on your request.

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	◎	◎	◎								◎	◎	○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	○			○		◎		○	○	○	◎	○		

SPIRAL FLUTE TAPS

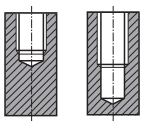
TC612 SERIES

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

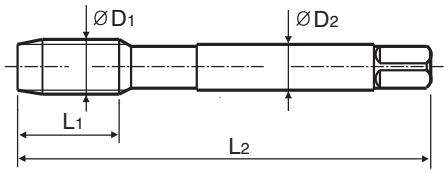
Hole type

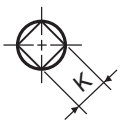


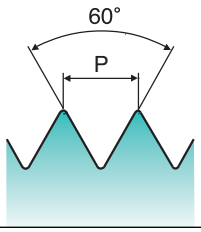
DIN 352

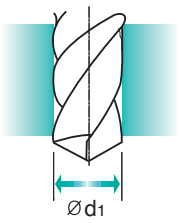
Material groups **GS** | HSS-E | DIN 352 | 6H | 60° | C | Bright | R20

Short machine taps
Maschinengewindebohrer kurz









Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M3	0.5	TC612206	11	40	3.5	2.7	2.5
M4	0.7	TC612246	13	45	4.5	3.4	3.3
M5	0.8	TC612286	16	52	6	4.9	4.2
M6	1	TC612316	18	56	6	4.9	5
M8	1.25	TC612366	20	63	6	4.9	6.8
M10	1.5	TC612426	22	70	7	5.5	8.5
M12	1.75	TC612506	24	80	9	7	10.2
M14	2	TC612546	26	80	11	9	12
M16	2	TC612606	27	80	12	9	14
M18	2.5	TC612656	30	95	14	11	15.5
M20	2.5	TC612706	32	95	16	12	17.5

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	◎	◎	◎								◎	◎	○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	○			○		◎		○	○	○	◎	○		

SPIRAL FLUTE TAPS

TC211 SERIES

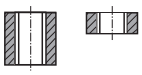
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Left spiral flute and right hand thread tap to push chips ahead in powerful than spiral point taps.

▶ Rechtsschneidender Gewindebohrer mit Linksdrall um kraftvoller nach vorne zu entspanen als mit Gewindebohrern mit Rechtsdrall.

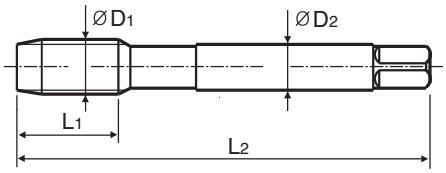
DIN 371

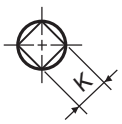
DIN 376

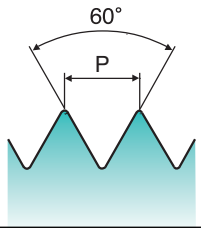
Hole type 

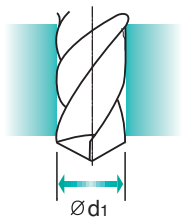
Material groups **GS** | HSS-E | DIN 371/376 | 6H | 60° | C | Bright | L20

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE ØD1	×	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	×	0.4	TC211136	8	45	2.8	2.1	1.6
M2.2	×	0.45	TC211156	8	45	2.8	2.1	1.75
* M2.3	×	0.4	TC211196	8	45	2.8	2.1	1.9
M2.5	×	0.45	TC211176	9	50	2.8	2.1	2.05
* M2.6	×	0.45	TC211496	9	50	2.8	2.1	2.1
M3	×	0.5	TC211206	11	56	3.5	2.7	2.5
M3.5	×	0.6	TC211226	12	56	4	3	2.9
M4	×	0.7	TC211246	13	63	4.5	3.4	3.3
M4.5	×	0.75	TC211266	14	70	6	4.9	3.7
M5	×	0.8	TC211286	15	70	6	4.9	4.2
M6	×	1	TC211316	17	80	6	4.9	5
M7	×	1	TC211346	17	80	7	5.5	6
M8	×	1.25	TC211366	20	90	8	6.2	6.8
M9	×	1.25	TC211396	20	90	9	7	7.8
M10	×	1.5	TC211426	22	100	10	8	8.5
M11	×	1.5	TC211466	22	100	8	6.2	9.5
M12	×	1.75	TC211506	24	110	9	7	10.2
M14	×	2	TC211546	26	110	11	9	12
M16	×	2	TC211606	27	110	12	9	14
M18	×	2.5	TC211656	30	125	14	11	15.5
M20	×	2.5	TC211706	32	140	16	12	17.5
M22	×	2.5	TC211746	32	140	18	14.5	19.5
M24	×	3	TC211786	34	160	18	14.5	21
M27	×	3	TC211866	36	160	20	16	24
M30	×	3.5	TC211946	40	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ * DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	◎	◎	◎								◎	◎	○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	○			○		◎		○	○	○	◎	○		

SPIRAL FLUTE TAPS

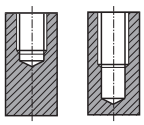
TC517 SERIES

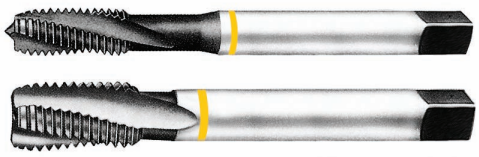
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

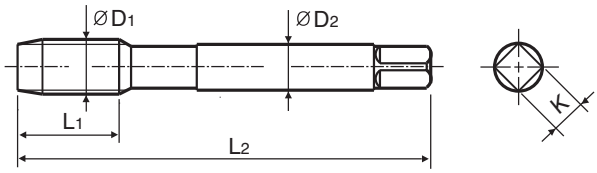
Hole type

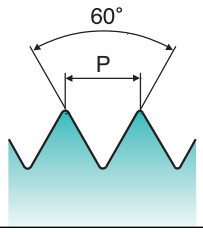


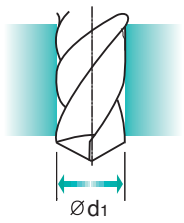


Material groups **GS** | HSS-E | DIN 371/376 | 6H | 60° | C | Bright | R20

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	0.4	TC517136	8	45	2.8	2.1	1.6
M2.2	0.45	TC517156	8	45	2.8	2.1	1.75
✳ M2.3	0.4	TC517196	8	45	2.8	2.1	1.9
M2.5	0.45	TC517176	9	50	2.8	2.1	2.05
✳ M2.6	0.45	TC517496	9	50	2.8	2.1	2.1
M3	0.5	TC517206	6	56	3.5	2.7	2.5
M3.5	0.6	TC517226	7	56	4	3	2.9
M4	0.7	TC517246	7	63	4.5	3.4	3.3
M4.5	0.75	TC517266	8	70	6	4.9	3.7
M5	0.8	TC517286	8	70	6	4.9	4.2
M6	1	TC517316	10	80	6	4.9	5
M7	1	TC517346	10	80	7	5.5	6
M8	1.25	TC517366	13	90	8	6.2	6.8
M9	1.25	TC517396	13	90	9	7	7.8
M10	1.5	TC517426	15	100	10	8	8.5
M11	1.5	TC517466	17	100	8	6.2	9.5
M12	1.75	TC517506	18	110	9	7	10.2
M14	2	TC517546	20	110	11	9	12
M16	2	TC517606	20	110	12	9	14
M18	2.5	TC517656	25	125	14	11	15.5
M20	2.5	TC517706	25	140	16	12	17.5
M22	2.5	TC517746	25	140	18	14.5	19.5
M24	3	TC517786	30	160	18	14.5	21
M27	3	TC517866	30	160	20	16	24
M30	3.5	TC517946	35	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	◎	◎	◎								◎	◎	○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	○			○		◎		○	○	○	◎	○		

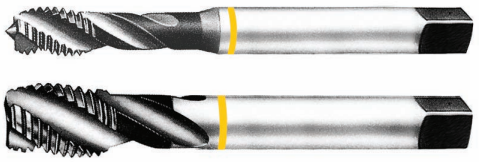
SPIRAL FLUTE TAPS

TC711 SERIES

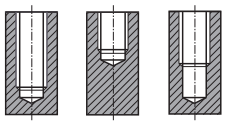
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

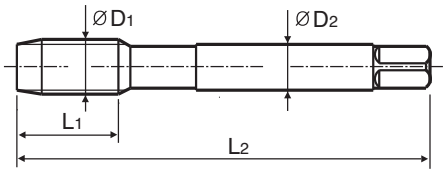


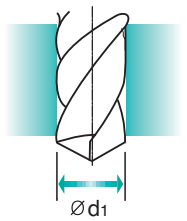
Hole type



Material groups **GS** | HSS-E | DIN 371/376 | 6H | 60° | C | Bright | R40

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE ØD1		Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	×	0.4	TC711136	8	45	2.8	2.1	1.6
M2.2	×	0.45	TC711156	8	45	2.8	2.1	1.75
* M2.3	×	0.4	TC711196	8	45	2.8	2.1	1.9
M2.5	×	0.45	TC711176	9	50	2.8	2.1	2.05
* M2.6	×	0.45	TC711496	9	50	2.8	2.1	2.1
M3	×	0.5	TC711206	6	56	3.5	2.7	2.5
M3.5	×	0.6	TC711226	7	56	4	3	2.9
M4	×	0.7	TC711246	7	63	4.5	3.4	3.3
M4.5	×	0.75	TC711266	8	70	6	4.9	3.7
M5	×	0.8	TC711286	8	70	6	4.9	4.2
M6	×	1	TC711316	10	80	6	4.9	5
M7	×	1	TC711346	10	80	7	5.5	6
M8	×	1.25	TC711366	13	90	8	6.2	6.8
M9	×	1.25	TC711396	13	90	9	7	7.8
M10	×	1.5	TC711426	15	100	10	8	8.5
M11	×	1.5	TC711466	17	100	8	6.2	9.5
M12	×	1.75	TC711506	18	110	9	7	10.2
M14	×	2	TC711546	20	110	11	9	12
M16	×	2	TC711606	20	110	12	9	14
M18	×	2.5	TC711656	25	125	14	11	15.5
M20	×	2.5	TC711706	25	140	16	12	17.5
M22	×	2.5	TC711746	25	140	18	14.5	19.5
M24	×	3	TC711786	30	160	18	14.5	21
M27	×	3	TC711866	30	160	20	16	24
M30	×	3.5	TC711946	35	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ * DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	◎	◎	◎								◎	◎	○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	○			○		◎		○	○	○	◎	○		

SPIRAL FLUTE TAPS

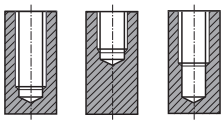
TD711 SERIES

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

Hole type

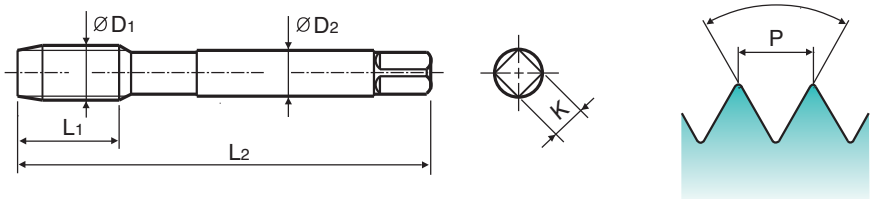


DIN 371

DIN 376

Material groups **GS** | HSS-E | DIN 371/376 | 6H | 60° | C | TiN | R40

Machine taps
Maschinengewindebohrer



Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P		L1	L2	ØD2	K	Ød1
M2	× 0.4	TD711136	8	45	2.8	2.1	1.6
M2.2	× 0.45	TD711156	8	45	2.8	2.1	1.75
✳ M2.3	× 0.4	TD711196	8	45	2.8	2.1	1.9
M2.5	× 0.45	TD711176	9	50	2.8	2.1	2.05
✳ M2.6	× 0.45	TD711496	9	50	2.8	2.1	2.1
M3	× 0.5	TD711206	6	56	3.5	2.7	2.5
M3.5	× 0.6	TD711226	7	56	4	3	2.9
M4	× 0.7	TD711246	7	63	4.5	3.4	3.3
M4.5	× 0.75	TD711266	8	70	6	4.9	3.7
M5	× 0.8	TD711286	8	70	6	4.9	4.2
M6	× 1	TD711316	10	80	6	4.9	5
M7	× 1	TD711346	10	80	7	5.5	6
M8	× 1.25	TD711366	13	90	8	6.2	6.8
M9	× 1.25	TD711396	13	90	9	7	7.8
M10	× 1.5	TD711426	15	100	10	8	8.5
M11	× 1.5	TD711466	17	100	8	6.2	9.5
M12	× 1.75	TD711506	18	110	9	7	10.2
M14	× 2	TD711546	20	110	11	9	12
M16	× 2	TD711606	20	110	12	9	14
M18	× 2.5	TD711656	25	125	14	11	15.5
M20	× 2.5	TD711706	25	140	16	12	17.5
M22	× 2.5	TD711746	25	140	18	14.5	19.5
M24	× 3	TD711786	30	160	18	14.5	21
M27	× 3	TD711866	30	160	20	16	24
M30	× 3.5	TD711946	35	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	◎	◎	◎								◎	◎	○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	○			○		◎		○	○	○	◎	○		

SPIRAL FLUTE TAPS

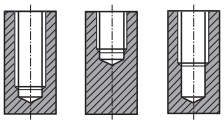
TQ823 SERIES

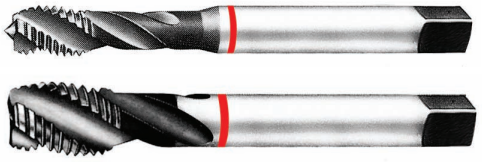
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

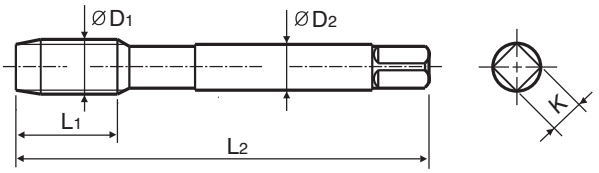
Hole type

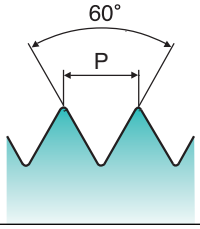


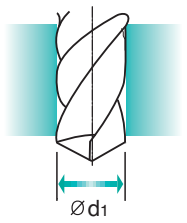


Material groups **VG** | HSS-PM | DIN 371/376 | 6H | 60° | C | Vap | R40

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	0.4	TQ823136	8	45	2.8	2.1	1.6
M2.2	0.45	TQ823156	8	45	2.8	2.1	1.75
M2.5	0.45	TQ823176	9	50	2.8	2.1	2.05
M3	0.5	TQ823206	6	56	3.5	2.7	2.5
M3.5	0.6	TQ823226	7	56	4	3	2.9
M4	0.7	TQ823246	7	63	4.5	3.4	3.3
M4.5	0.75	TQ823266	8	70	6	4.9	3.7
M5	0.8	TQ823286	8	70	6	4.9	4.2
M6	1	TQ823316	10	80	6	4.9	5
M7	1	TQ823346	10	80	7	5.5	6
M8	1.25	TQ823366	13	90	8	6.2	6.8
M10	1.5	TQ823426	15	100	10	8	8.5
M12	1.75	TQ823506	18	110	9	7	10.2

▶ DIN (M2~M10) and DIN 376(M12)

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
			○	◎				○						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

SPIRAL FLUTE TAPS

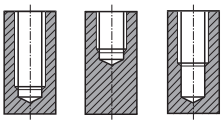
TR823 SERIES

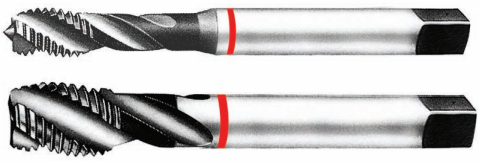
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

Hole type



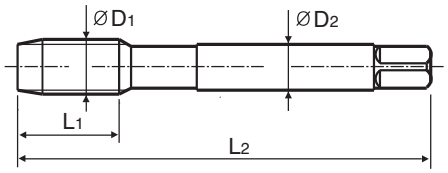


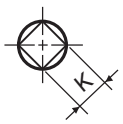
DIN 371

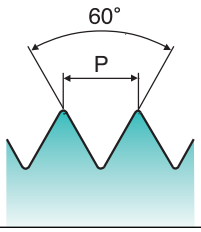
DIN 376

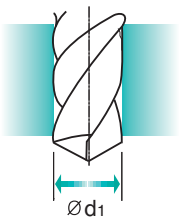
Material groups **VG** | HSS-PM | DIN 371/376 | 6H | 60° | C | Bright | R40

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE ØD1	×	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	×	0.4	**TR823136**	8	45	2.8	2.1	1.6
M2.2	×	0.45	**TR823156**	8	45	2.8	2.1	1.75
M2.5	×	0.45	**TR823176**	9	50	2.8	2.1	2.05
M3	×	0.5	**TR823206**	6	56	3.5	2.7	2.5
M3.5	×	0.6	**TR823226**	7	56	4	3	2.9
M4	×	0.7	**TR823246**	7	63	4.5	3.4	3.3
M4.5	×	0.75	**TR823266**	8	70	6	4.9	3.7
M5	×	0.8	**TR823286**	8	70	6	4.9	4.2
M6	×	1	**TR823316**	10	80	6	4.9	5
M7	×	1	**TR823346**	10	80	7	5.5	6
M8	×	1.25	**TR823366**	13	90	8	6.2	6.8
M10	×	1.5	**TR823426**	15	100	10	8	8.5
M12	×	1.75	**TR823506**	18	110	9	7	10.2

▶ DIN (M2~M10) and DIN 376(M12)

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
			○	◎				○						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

SPIRAL FLUTE TAPS

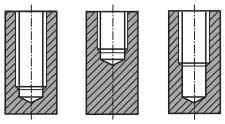
TB312 SERIES

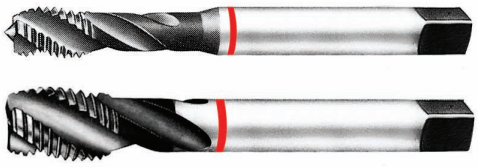
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for threading blind holes due to excellent chip evacuation of tempered steels or similar work materials.

▶ Geeignet zum Gewinden von Sacklöchern dank ausgezeichneter Spanabfuhr von angelassenen Stählen oder ähnlichen Werkstoffen.

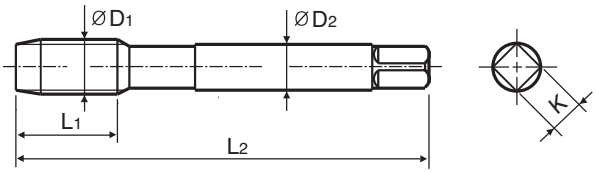
Hole type

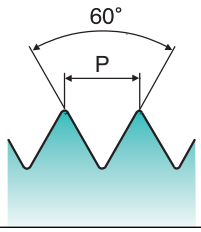


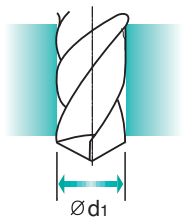


Material groups **VG** | HSS-E | DIN 371/376 | 6H | 60° | C | Vap | R40

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE ØD1	×	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	×	0.4	TB312136	8	45	2.8	2.1	1.6
M2.2	×	0.45	TB312156	8	45	2.8	2.1	1.75
✳ M2.3	×	0.4	TB312196	8	45	2.8	2.1	1.9
M2.5	×	0.45	TB312176	9	50	2.8	2.1	2.05
✳ M2.6	×	0.45	TB312496	9	50	2.8	2.1	2.1
M3	×	0.5	TB312206	6	56	3.5	2.7	2.5
M3.5	×	0.6	TB312226	7	56	4	3	2.9
M4	×	0.7	TB312246	7	63	4.5	3.4	3.3
M4.5	×	0.75	TB312266	8	70	6	4.9	3.7
M5	×	0.8	TB312286	8	70	6	4.9	4.2
M6	×	1	TB312316	10	80	6	4.9	5
M7	×	1	TB312346	10	80	7	5.5	6
M8	×	1.25	TB312366	13	90	8	6.2	6.8
M9	×	1.25	TB312396	13	90	9	7	7.8
M10	×	1.5	TB312426	15	100	10	8	8.5
M11	×	1.5	TB312466	17	100	8	6.2	9.5
M12	×	1.75	TB312506	18	110	9	7	10.2
M14	×	2	TB312546	20	110	11	9	12
M16	×	2	TB312606	20	110	12	9	14
M18	×	2.5	TB312656	25	125	14	11	15.5
M20	×	2.5	TB312706	25	140	16	12	17.5
M22	×	2.5	TB312746	25	140	18	14.5	19.5
M24	×	3	TB312786	30	160	18	14.5	21
M27	×	3	TB312866	30	160	20	16	24
M30	×	3.5	TB312946	35	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
			○	◎				○						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

SPIRAL FLUTE TAPS

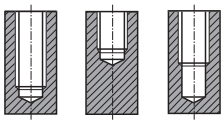
TB913 SERIES

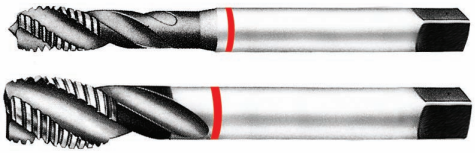
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

- With recessed threads for machine tapping of deep blind holes.
- Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

- Mit abgesetztem Gewinde zum Schneiden von tiefen Sacklochgewinden.
- Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

Hole type



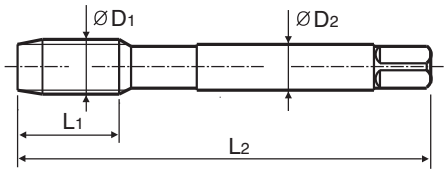


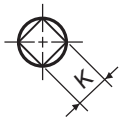
DIN 371

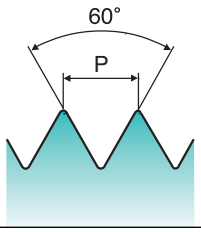
DIN 376

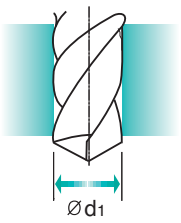
Material groups **VG** | HSS-E | DIN 371/376 | 6H | 60° | C | Vap | R40

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	0.4	TB913136	8	45	2.8	2.1	1.6
M2.2	0.45	TB913156	8	45	2.8	2.1	1.75
✳ M2.3	0.4	TB913196	8	45	2.8	2.1	1.9
M2.5	0.45	TB913176	9	50	2.8	2.1	2.05
✳ M2.6	0.45	TB913496	9	50	2.8	2.1	2.1
M3	0.5	TB913206	6	56	3.5	2.7	2.5
M3.5	0.6	TB913226	7	56	4	3	2.9
M4	0.7	TB913246	7	63	4.5	3.4	3.3
M4.5	0.75	TB913266	8	70	6	4.9	3.7
M5	0.8	TB913286	8	70	6	4.9	4.2
M6	1	TB913316	10	80	6	4.9	5
M7	1	TB913346	10	80	7	5.5	6
M8	1.25	TB913366	13	90	8	6.2	6.8
M9	1.25	TB913396	13	90	9	7	7.8
M10	1.5	TB913426	15	100	10	8	8.5
M11	1.5	TB913466	17	100	8	6.2	9.5
M12	1.75	TB913506	18	110	9	7	10.2
M14	2	TB913546	20	110	11	9	12
M16	2	TB913606	20	110	12	9	14
M18	2.5	TB913656	25	125	14	11	15.5
M20	2.5	TB913706	25	140	16	12	17.5
M22	2.5	TB913746	25	140	18	14.5	19.5
M24	3	TB913786	30	160	18	14.5	21
M27	3	TB913866	30	160	20	16	24
M30	3.5	TB913946	35	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
			○	◎				○						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

SPIRAL FLUTE TAPS

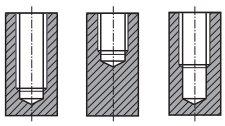
TC312 SERIES

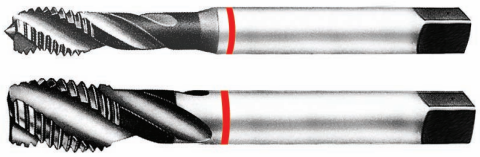
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

Hole type



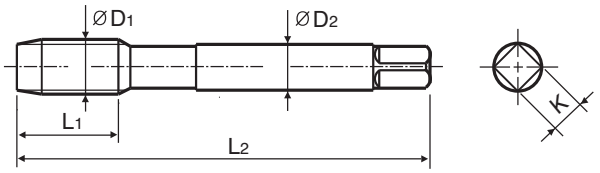


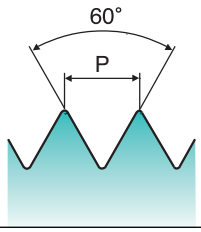
DIN 371

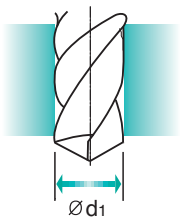
DIN 376

Material groups **VG** | HSS-E | DIN 371/376 | 6H | 60° | C | Bright | R40

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE ØD1	×	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	×	0.4	TC312136	8	45	2.8	2.1	1.6
M2.2	×	0.45	TC312156	8	45	2.8	2.1	1.75
✳ M2.3	×	0.4	TC312196	8	45	2.8	2.1	1.9
M2.5	×	0.45	TC312176	9	50	2.8	2.1	2.05
✳ M2.6	×	0.45	TC312496	9	50	2.8	2.1	2.1
M3	×	0.5	TC312206	6	56	3.5	2.7	2.5
M3.5	×	0.6	TC312226	7	56	4	3	2.9
M4	×	0.7	TC312246	7	63	4.5	3.4	3.3
M4.5	×	0.75	TC312266	8	70	6	4.9	3.7
M5	×	0.8	TC312286	8	70	6	4.9	4.2
M6	×	1	TC312316	10	80	6	4.9	5
M7	×	1	TC312346	10	80	7	5.5	6
M8	×	1.25	TC312366	13	90	8	6.2	6.8
M9	×	1.25	TC312396	13	90	9	7	7.8
M10	×	1.5	TC312426	15	100	10	8	8.5
M11	×	1.5	TC312466	17	100	8	6.2	9.5
M12	×	1.75	TC312506	18	110	9	7	10.2
M14	×	2	TC312546	20	110	11	9	12
M16	×	2	TC312606	20	110	12	9	14
M18	×	2.5	TC312656	25	125	14	11	15.5
M20	×	2.5	TC312706	25	140	16	12	17.5
M22	×	2.5	TC312746	25	140	18	14.5	19.5
M24	×	3	TC312786	30	160	18	14.5	21
M27	×	3	TC312866	30	160	20	16	24
M30	×	3.5	TC312946	35	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
			○	◎				○						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

SPIRAL FLUTE TAPS

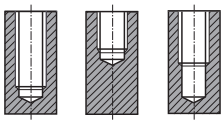
TD312 SERIES

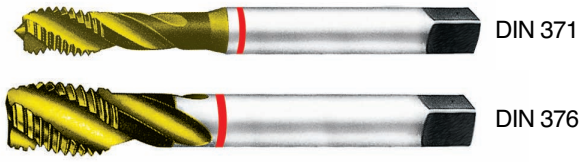
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

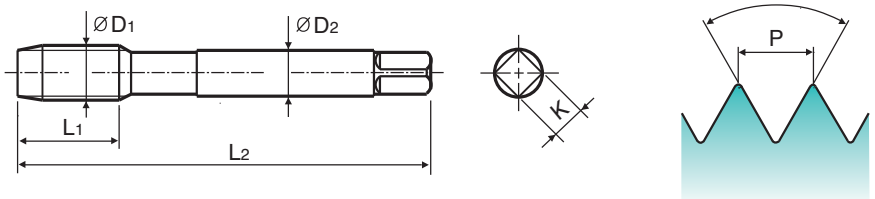
Hole type

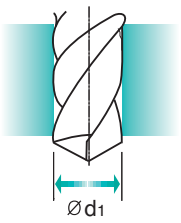




Material groups **VG** | HSS-E | DIN 371/376 | 6H | 60° | C | TiN | R40

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P		L1	L2	ØD2	K	Ød1
M2	0.4	TD312136	8	45	2.8	2.1	1.6
M2.2	0.45	TD312156	8	45	2.8	2.1	1.75
✳ M2.3	0.4	TD312196	8	45	2.8	2.1	1.9
M2.5	0.45	TD312176	9	50	2.8	2.1	2.05
✳ M2.6	0.45	TD312496	9	50	2.8	2.1	2.1
M3	0.5	TD312206	6	56	3.5	2.7	2.5
M3.5	0.6	TD312226	7	56	4	3	2.9
M4	0.7	TD312246	7	63	4.5	3.4	3.3
M4.5	0.75	TD312266	8	70	6	4.9	3.7
M5	0.8	TD312286	8	70	6	4.9	4.2
M6	1	TD312316	10	80	6	4.9	5
M7	1	TD312346	10	80	7	5.5	6
M8	1.25	TD312366	13	90	8	6.2	6.8
M9	1.25	TD312396	13	90	9	7	7.8
M10	1.5	TD312426	15	100	10	8	8.5
M11	1.5	TD312466	17	100	8	6.2	9.5
M12	1.75	TD312506	18	110	9	7	10.2
M14	2	TD312546	20	110	11	9	12
M16	2	TD312606	20	110	12	9	14
M18	2.5	TD312656	25	125	14	11	15.5
M20	2.5	TD312706	25	140	16	12	17.5
M22	2.5	TD312746	25	140	18	14.5	19.5
M24	3	TD312786	30	160	18	14.5	21
M27	3	TD312866	30	160	20	16	24
M30	3.5	TD312946	35	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
			○	◎				○						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

SPIRAL FLUTE TAPS

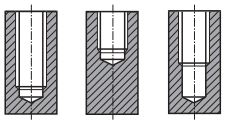
TY312 SERIES

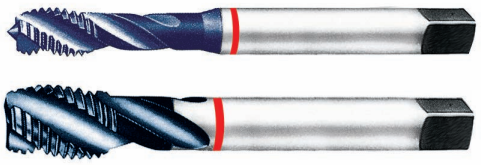
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

Hole type



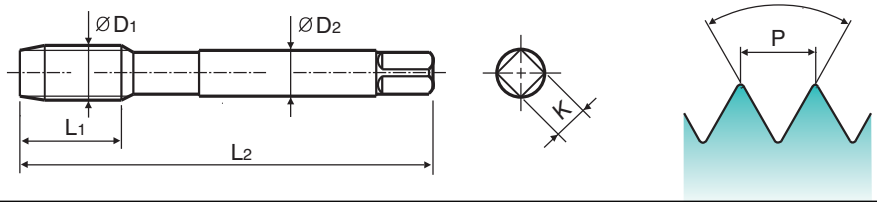


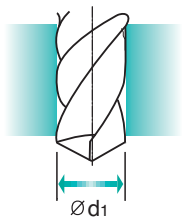
DIN 371

DIN 376

Material groups **VG** | HSS-E | DIN 371/376 | 6H | 60° | C | TiAlN | R40

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	0.4	TY312136	8	45	2.8	2.1	1.6
M2.2	0.45	TY312156	8	45	2.8	2.1	1.75
* M2.3	0.4	TY312196	8	45	2.8	2.1	1.9
M2.5	0.45	TY312176	9	50	2.8	2.1	2.05
* M2.6	0.45	TY312496	9	50	2.8	2.1	2.1
M3	0.5	TY312206	6	56	3.5	2.7	2.5
M3.5	0.6	TY312226	7	56	4	3	2.9
M4	0.7	TY312246	7	63	4.5	3.4	3.3
M4.5	0.75	TY312266	8	70	6	4.9	3.7
M5	0.8	TY312286	8	70	6	4.9	4.2
M6	1	TY312316	10	80	6	4.9	5
M7	1	TY312346	10	80	7	5.5	6
M8	1.25	TY312366	13	90	8	6.2	6.8
M9	1.25	TY312396	13	90	9	7	7.8
M10	1.5	TY312426	15	100	10	8	8.5
M11	1.5	TY312466	17	100	8	6.2	9.5
M12	1.75	TY312506	18	110	9	7	10.2
M14	2	TY312546	20	110	11	9	12
M16	2	TY312606	20	110	12	9	14
M18	2.5	TY312656	25	125	14	11	15.5
M20	2.5	TY312706	25	140	16	12	17.5
M22	2.5	TY312746	25	140	18	14.5	19.5
M24	3	TY312786	30	160	18	14.5	21
M27	3	TY312866	30	160	20	16	24
M30	3.5	TY312946	35	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ * DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
			○	◎				○						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

SPIRAL FLUTE TAPS

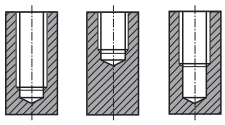
TQ813 SERIES

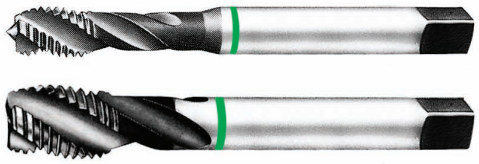
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

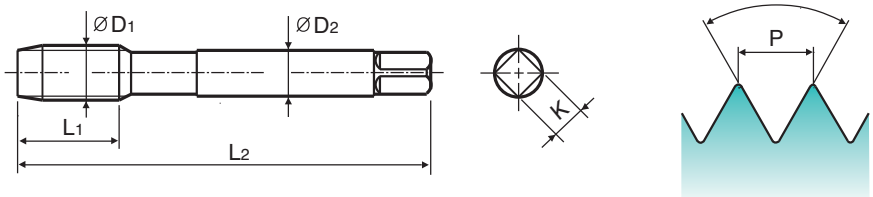
Hole type

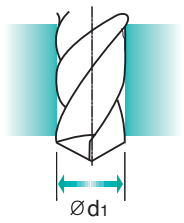




Material groups **VA** | HSS-PM | DIN 371/376 | 6H | 60° | C | Vap | R40

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	0.4	TQ813136	8	45	2.8	2.1	1.6
M2.2	0.45	TQ813156	8	45	2.8	2.1	1.75
M2.5	0.45	TQ813176	9	50	2.8	2.1	2.05
M3	0.5	TQ813206	6	56	3.5	2.7	2.5
M3.5	0.6	TQ813226	7	56	4	3	2.9
M4	0.7	TQ813246	7	63	4.5	3.4	3.3
M4.5	0.75	TQ813266	8	70	6	4.9	3.7
M5	0.8	TQ813286	8	70	6	4.9	4.2
M6	1	TQ813316	10	80	6	4.9	5
M7	1	TQ813346	10	80	7	5.5	6
M8	1.25	TQ813366	13	90	8	6.2	6.8
M10	1.5	TQ813426	15	100	10	8	8.5
M12	1.75	TQ813506	18	110	9	7	10.2

▶ DIN 371(M2~M10) and DIN 376(M12)

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
○	◎					◎	◎	◎						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

SPIRAL FLUTE TAPS

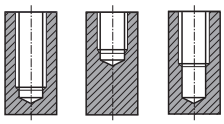
TR813 SERIES

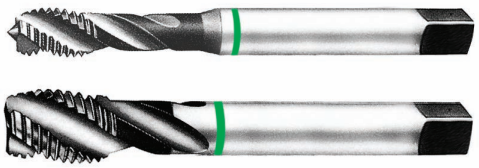
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

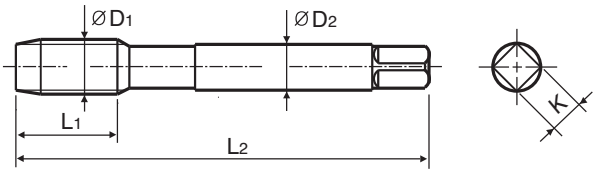
Hole type

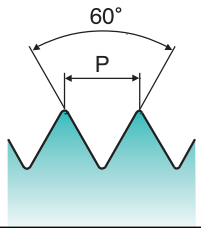


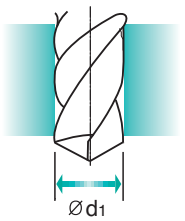


Material groups **VA** | HSS-PM | DIN 371/376 | 6H | 60° | C | Bright | R40

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	0.4	TR813136	8	45	2.8	2.1	1.6
M2.2	0.45	TR813156	8	45	2.8	2.1	1.75
M2.5	0.45	TR813176	9	50	2.8	2.1	2.05
M3	0.5	TR813206	6	56	3.5	2.7	2.5
M3.5	0.6	TR813226	7	56	4	3	2.9
M4	0.7	TR813246	7	63	4.5	3.4	3.3
M4.5	0.75	TR813266	8	70	6	4.9	3.7
M5	0.8	TR813286	8	70	6	4.9	4.2
M6	1	TR813316	10	80	6	4.9	5
M7	1	TR813346	10	80	7	5.5	6
M8	1.25	TR813366	13	90	8	6.2	6.8
M10	1.5	TR813426	15	100	10	8	8.5
M12	1.75	TR813506	18	110	9	7	10.2

▶ DIN 371(M2~M10) and DIN 376(M12)

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
○	◎					◎	◎	◎						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

SPIRAL FLUTE TAPS

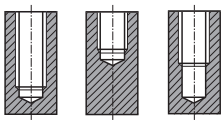
TB313 SERIES

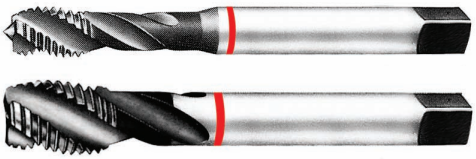
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

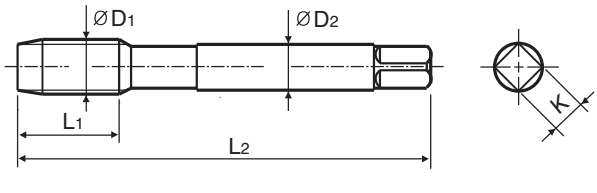
Hole type





Material groups **HR** | HSS-E | DIN 371/376 | 6H | 60° | C | Vap | R40

Machine taps
Maschinengewindebohrer



Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P		L1	L2	ØD2	K	Ød1
M2	0.4	TB313136	8	45	2.8	2.1	1.6
M2.2	0.45	TB313156	8	45	2.8	2.1	1.75
✳ M2.3	0.4	TB313196	8	45	2.8	2.1	1.9
M2.5	0.45	TB313176	9	50	2.8	2.1	2.05
✳ M2.6	0.45	TB313496	9	50	2.8	2.1	2.1
M3	0.5	TB313206	6	56	3.5	2.7	2.5
M3.5	0.6	TB313226	7	56	4	3	2.9
M4	0.7	TB313246	7	63	4.5	3.4	3.3
M4.5	0.75	TB313266	8	70	6	4.9	3.7
M5	0.8	TB313286	8	70	6	4.9	4.2
M6	1	TB313316	10	80	6	4.9	5
M7	1	TB313346	10	80	7	5.5	6
M8	1.25	TB313366	13	90	8	6.2	6.8
M9	1.25	TB313396	13	90	9	7	7.8
M10	1.5	TB313426	15	100	10	8	8.5
M11	1.5	TB313466	17	100	8	6.2	9.5
M12	1.75	TB313506	18	110	9	7	10.2
M14	2	TB313546	20	110	11	9	12
M16	2	TB313606	20	110	12	9	14
M18	2.5	TB313656	25	125	14	11	15.5
M20	2.5	TB313706	25	140	16	12	17.5
M22	2.5	TB313746	25	140	18	14.5	19.5
M24	3	TB313786	30	160	18	14.5	21
M27	3	TB313866	30	160	20	16	24
M30	3.5	TB313946	35	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
				○	◎			○						

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
					○		◎						○	○

SPIRAL FLUTE TAPS

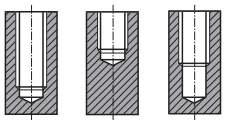
TC313 SERIES

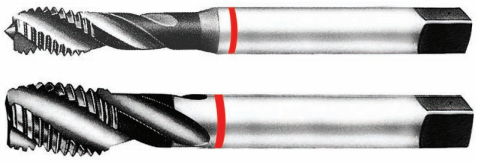
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

Hole type



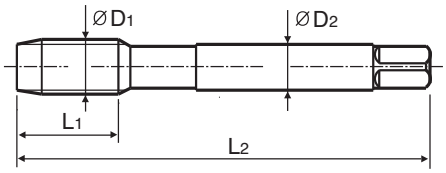


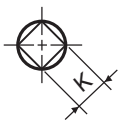
DIN 371

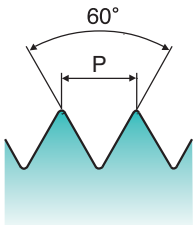
DIN 376

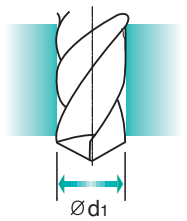
Material groups **HR** | HSS-E | DIN 371/376 | 6H | 60° | C | Bright | R40

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE ØD1	×	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	×	0.4	TC313136	8	45	2.8	2.1	1.6
M2.2	×	0.45	TC313156	8	45	2.8	2.1	1.75
✳ M2.3	×	0.4	TC313196	8	45	2.8	2.1	1.9
M2.5	×	0.45	TC313176	9	50	2.8	2.1	2.05
✳ M2.6	×	0.45	TC313496	9	50	2.8	2.1	2.1
M3	×	0.5	TC313206	6	56	3.5	2.7	2.5
M3.5	×	0.6	TC313226	7	56	4	3	2.9
M4	×	0.7	TC313246	7	63	4.5	3.4	3.3
M4.5	×	0.75	TC313266	8	70	6	4.9	3.7
M5	×	0.8	TC313286	8	70	6	4.9	4.2
M6	×	1	TC313316	10	80	6	4.9	5
M7	×	1	TC313346	10	80	7	5.5	6
M8	×	1.25	TC313366	13	90	8	6.2	6.8
M9	×	1.25	TC313396	13	90	9	7	7.8
M10	×	1.5	TC313426	15	100	10	8	8.5
M11	×	1.5	TC313466	17	100	8	6.2	9.5
M12	×	1.75	TC313506	18	110	9	7	10.2
M14	×	2	TC313546	20	110	11	9	12
M16	×	2	TC313606	20	110	12	9	14
M18	×	2.5	TC313656	25	125	14	11	15.5
M20	×	2.5	TC313706	25	140	16	12	17.5
M22	×	2.5	TC313746	25	140	18	14.5	19.5
M24	×	3	TC313786	30	160	18	14.5	21
M27	×	3	TC313866	30	160	20	16	24
M30	×	3.5	TC313946	35	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
				○	◎			○						

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
					○		◎						○	○

SPIRAL FLUTE TAPS

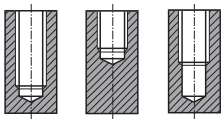
TY313 SERIES

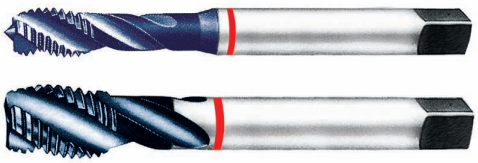
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

Hole type



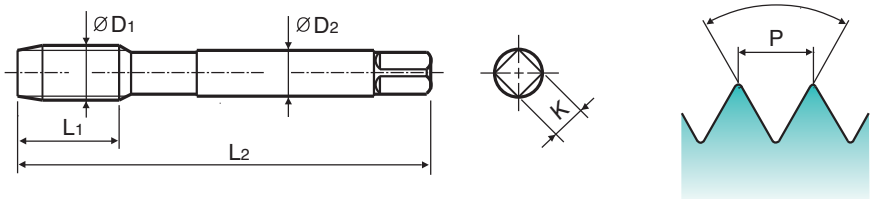


DIN 371

DIN 376

Material groups **HR** | HSS-E | DIN 371/376 | 6H | 60° | C | TiAlN | R40

Machine taps
Maschinengewindebohrer



Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P		L1	L2	ØD2	K	Ød1
M2	× 0.4	TY313136	8	45	2.8	2.1	1.6
M2.2	× 0.45	TY313156	8	45	2.8	2.1	1.75
✳ M2.3	× 0.4	TY313196	8	45	2.8	2.1	1.9
M2.5	× 0.45	TY313176	9	50	2.8	2.1	2.05
✳ M2.6	× 0.45	TY313496	9	50	2.8	2.1	2.1
M3	× 0.5	TY313206	6	56	3.5	2.7	2.5
M3.5	× 0.6	TY313226	7	56	4	3	2.9
M4	× 0.7	TY313246	7	63	4.5	3.4	3.3
M4.5	× 0.75	TY313266	8	70	6	4.9	3.7
M5	× 0.8	TY313286	8	70	6	4.9	4.2
M6	× 1	TY313316	10	80	6	4.9	5
M7	× 1	TY313346	10	80	7	5.5	6
M8	× 1.25	TY313366	13	90	8	6.2	6.8
M9	× 1.25	TY313396	13	90	9	7	7.8
M10	× 1.5	TY313426	15	100	10	8	8.5
M11	× 1.5	TY313466	17	100	8	6.2	9.5
M12	× 1.75	TY313506	18	110	9	7	10.2
M14	× 2	TY313546	20	110	11	9	12
M16	× 2	TY313606	20	110	12	9	14
M18	× 2.5	TY313656	25	125	14	11	15.5
M20	× 2.5	TY313706	25	140	16	12	17.5
M22	× 2.5	TY313746	25	140	18	14.5	19.5
M24	× 3	TY313786	30	160	18	14.5	21
M27	× 3	TY313866	30	160	20	16	24
M30	× 3.5	TY313946	35	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
				○	◎			○						

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
					○		◎						○	○

SPIRAL FLUTE TAPS

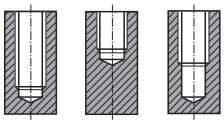
TB914 SERIES

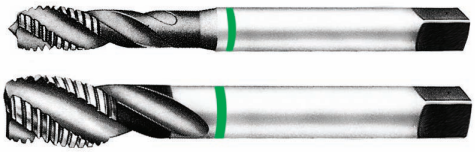
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

- With recessed threads for machine tapping of deep blind holes.
- Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

- Mit abgesetztem Gewinde zum Schneiden von tiefen Sacklochgewinden.
- Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

Hole type



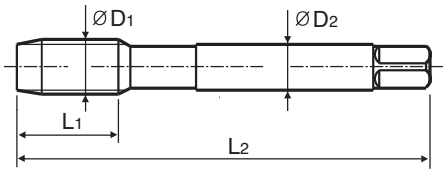


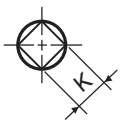
DIN 371

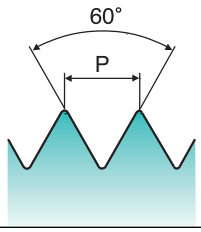
DIN 376

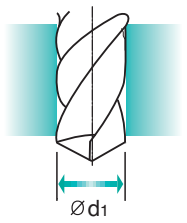
Material groups **VA NW** | HSS-E | DIN 371/376 | 6H | 60° | C | Vap | R40

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE ØD1	×	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	×	0.4	TB914136	8	45	2.8	2.1	1.6
M2.2	×	0.45	TB914156	8	45	2.8	2.1	1.75
* M2.3	×	0.4	TB914196	8	45	2.8	2.1	1.9
M2.5	×	0.45	TB914176	9	50	2.8	2.1	2.05
* M2.6	×	0.45	TB914496	9	50	2.8	2.1	2.1
M3	×	0.5	TB914206	6	56	3.5	2.7	2.5
M3.5	×	0.6	TB914226	7	56	4	3	2.9
M4	×	0.7	TB914246	7	63	4.5	3.4	3.3
M4.5	×	0.75	TB914266	8	70	6	4.9	3.7
M5	×	0.8	TB914286	8	70	6	4.9	4.2
M6	×	1	TB914316	10	80	6	4.9	5
M7	×	1	TB914346	10	80	7	5.5	6
M8	×	1.25	TB914366	13	90	8	6.2	6.8
M9	×	1.25	TB914396	13	90	9	7	7.8
M10	×	1.5	TB914426	15	100	10	8	8.5
M11	×	1.5	TB914466	17	100	8	6.2	9.5
M12	×	1.75	TB914506	18	110	9	7	10.2
M14	×	2	TB914546	20	110	11	9	12
M16	×	2	TB914606	20	110	12	9	14
M18	×	2.5	TB914656	25	125	14	11	15.5
M20	×	2.5	TB914706	25	140	16	12	17.5
M22	×	2.5	TB914746	25	140	18	14.5	19.5
M24	×	3	TB914786	30	160	18	14.5	21
M27	×	3	TB914866	30	160	20	16	24
M30	×	3.5	TB914946	35	180	22	18	26.5

- DIN 371(M2~M10) and DIN 376(M11~M30)
- * DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎					◎	◎	◎						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

SPIRAL FLUTE TAPS

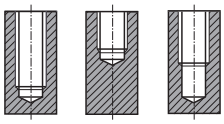
TCH14 SERIES

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

- With recessed threads for machine tapping of deep blind holes.
- Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

- Mit abgesetztem Gewinde zum Schneiden von tiefen Sacklochgewinden.
- Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

Hole type

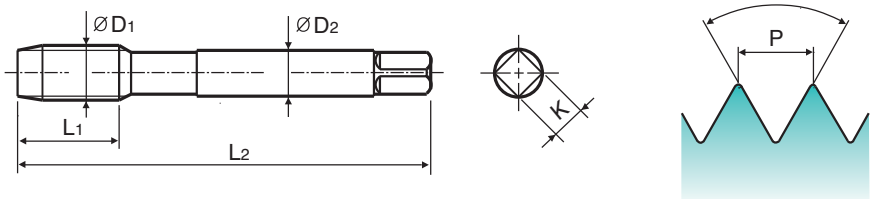


DIN 371

DIN 376

Material groups **VA NW** | HSS-E | DIN 371/376 | 6H | 60° | C | Hardslick | R40

Machine taps
Maschinengewindebohrer



Unit : mm

SIZE		Pitch	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1		P		L1	L2	ØD2	K	Ød1
M2	×	0.4	**TCH14136**	8	45	2.8	2.1	1.6
M2.2	×	0.45	**TCH14156**	8	45	2.8	2.1	1.75
✳ M2.3	×	0.4	**TCH14196**	8	45	2.8	2.1	1.9
M2.5	×	0.45	**TCH14176**	9	50	2.8	2.1	2.05
✳ M2.6	×	0.45	**TCH14496**	9	50	2.8	2.1	2.1
M3	×	0.5	**TCH14206**	6	56	3.5	2.7	2.5
M3.5	×	0.6	**TCH14226**	7	56	4	3	2.9
M4	×	0.7	**TCH14246**	7	63	4.5	3.4	3.3
M4.5	×	0.75	**TCH14266**	8	70	6	4.9	3.7
M5	×	0.8	**TCH14286**	8	70	6	4.9	4.2
M6	×	1	**TCH14316**	10	80	6	4.9	5
M7	×	1	**TCH14346**	10	80	7	5.5	6
M8	×	1.25	**TCH14366**	13	90	8	6.2	6.8
M9	×	1.25	**TCH14396**	13	90	9	7	7.8
M10	×	1.5	**TCH14426**	15	100	10	8	8.5
M11	×	1.5	**TCH14466**	17	100	8	6.2	9.5
M12	×	1.75	**TCH14506**	18	110	9	7	10.2
M14	×	2	**TCH14546**	20	110	11	9	12
M16	×	2	**TCH14606**	20	110	12	9	14
M18	×	2.5	**TCH14656**	25	125	14	11	15.5
M20	×	2.5	**TCH14706**	25	140	16	12	17.5
M22	×	2.5	**TCH14746**	25	140	18	14.5	19.5
M24	×	3	**TCH14786**	30	160	18	14.5	21
M27	×	3	**TCH14866**	30	160	20	16	24
M30	×	3.5	**TCH14946**	35	180	22	18	26.5

- ▶ DIN 371(M2~M10) and DIN 376(M11~M30)
- ▶ ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎					◎	◎	◎						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

SPIRAL FLUTE TAPS

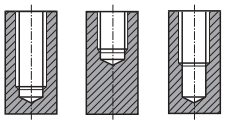
TB711 SERIES

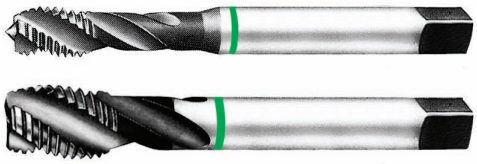
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

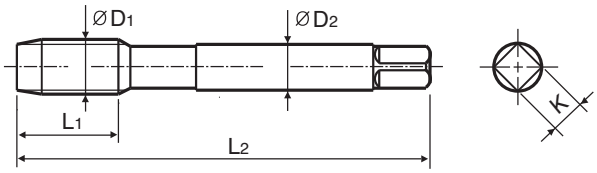
Hole type

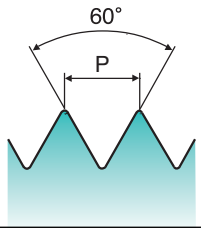


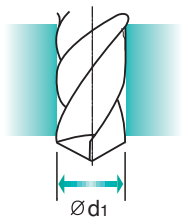


Material groups **NW** | HSS-E | DIN 371/376 | 6H | 60° | C | Vap | R40

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE ØD1	×	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	×	0.4	TB711136	8	45	2.8	2.1	1.6
M2.2	×	0.45	TB711156	8	45	2.8	2.1	1.75
✳ M2.3	×	0.4	TB711196	8	45	2.8	2.1	1.9
M2.5	×	0.45	TB711176	9	50	2.8	2.1	2.05
✳ M2.6	×	0.45	TB711496	9	50	2.8	2.1	2.1
M3	×	0.5	TB711206	6	56	3.5	2.7	2.5
M3.5	×	0.6	TB711226	7	56	4	3	2.9
M4	×	0.7	TB711246	7	63	4.5	3.4	3.3
M4.5	×	0.75	TB711266	8	70	6	4.9	3.7
M5	×	0.8	TB711286	8	70	6	4.9	4.2
M6	×	1	TB711316	10	80	6	4.9	5
M7	×	1	TB711346	10	80	7	5.5	6
M8	×	1.25	TB711366	13	90	8	6.2	6.8
M9	×	1.25	TB711396	13	90	9	7	7.8
M10	×	1.5	TB711426	15	100	10	8	8.5
M11	×	1.5	TB711466	17	100	8	6.2	9.5
M12	×	1.75	TB711506	18	110	9	7	10.2
M14	×	2	TB711546	20	110	11	9	12
M16	×	2	TB711606	20	110	12	9	14
M18	×	2.5	TB711656	25	125	14	11	15.5
M20	×	2.5	TB711706	25	140	16	12	17.5
M22	×	2.5	TB711746	25	140	18	14.5	19.5
M24	×	3	TB711786	30	160	18	14.5	21
M27	×	3	TB711866	30	160	20	16	24
M30	×	3.5	TB711946	35	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎													

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
				○				○						

SPIRAL FLUTE TAPS

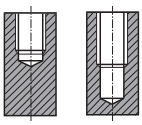
TM903 SERIES

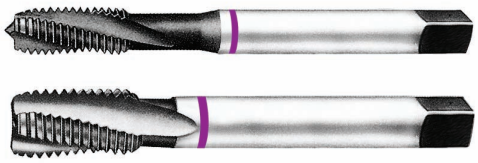
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

Hole type



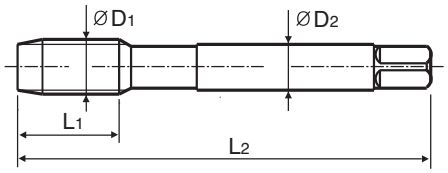


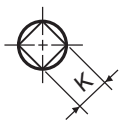
DIN 371

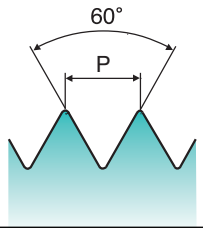
DIN 376

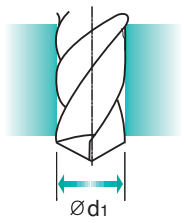
Material groups **Ti** | HSS-PM | DIN 371/376 | 6H | 60° | C | Bright | R25

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	0.4	TM903136	8	45	2.8	2.1	1.6
M2.2	0.45	TM903156	8	45	2.8	2.1	1.75
✳ M2.3	0.4	TM903196	8	45	2.8	2.1	1.9
M2.5	0.45	TM903176	9	50	2.8	2.1	2.05
✳ M2.6	0.45	TM903496	9	50	2.8	2.1	2.1
M3	0.5	TM903206	6	56	3.5	2.7	2.5
M3.5	0.6	TM903226	7	56	4	3	2.9
M4	0.7	TM903246	7	63	4.5	3.4	3.3
M4.5	0.75	TM903266	8	70	6	4.9	3.7
M5	0.8	TM903286	8	70	6	4.9	4.2
M6	1	TM903316	10	80	6	4.9	5
M7	1	TM903346	10	80	7	5.5	6
M8	1.25	TM903366	13	90	8	6.2	6.8
M9	1.25	TM903396	13	90	9	7	7.8
M10	1.5	TM903426	15	100	10	8	8.5
M11	1.5	TM903466	17	100	8	6.2	9.5
M12	1.75	TM903506	18	110	9	7	10.2
M14	2	TM903546	20	110	11	9	12
M16	2	TM903606	20	110	12	9	14
M18	2.5	TM903656	25	125	14	11	15.5
M20	2.5	TM903706	25	140	16	12	17.5
M22	2.5	TM903746	25	140	18	14.5	19.5
M24	3	TM903786	30	160	18	14.5	21
M27	3	TM903866	30	160	20	16	24
M30	3.5	TM903946	35	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)

▶ ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
				○									○	◎

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
◎														

SPIRAL FLUTE TAPS

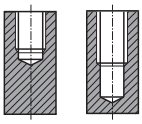
TZ903 SERIES

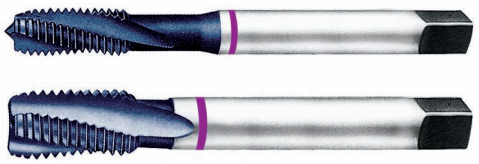
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

Hole type



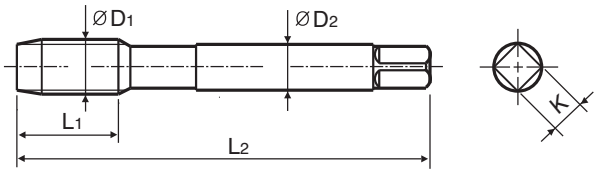


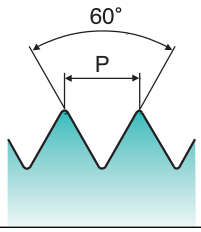
DIN 371

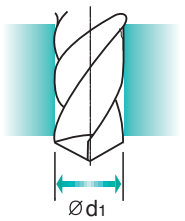
DIN 376

Material groups: **Ti** | HSS-PM | DIN 371/376 | 6H | 60° | C | TiAlN | R25

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	0.4	TZ903136	8	45	2.8	2.1	1.6
M2.2	0.45	TZ903156	8	45	2.8	2.1	1.75
✳ M2.3	0.4	TZ903196	8	45	2.8	2.1	1.9
M2.5	0.45	TZ903176	9	50	2.8	2.1	2.05
✳ M2.6	0.45	TZ903496	9	50	2.8	2.1	2.1
M3	0.5	TZ903206	6	56	3.5	2.7	2.5
M3.5	0.6	TZ903226	7	56	4	3	2.9
M4	0.7	TZ903246	7	63	4.5	3.4	3.3
M4.5	0.75	TZ903266	8	70	6	4.9	3.7
M5	0.8	TZ903286	8	70	6	4.9	4.2
M6	1	TZ903316	10	80	6	4.9	5
M7	1	TZ903346	10	80	7	5.5	6
M8	1.25	TZ903366	13	90	8	6.2	6.8
M9	1.25	TZ903396	13	90	9	7	7.8
M10	1.5	TZ903426	15	100	10	8	8.5
M11	1.5	TZ903466	17	100	8	6.2	9.5
M12	1.75	TZ903506	18	110	9	7	10.2
M14	2	TZ903546	20	110	11	9	12
M16	2	TZ903606	20	110	12	9	14
M18	2.5	TZ903656	25	125	14	11	15.5
M20	2.5	TZ903706	25	140	16	12	17.5
M22	2.5	TZ903746	25	140	18	14.5	19.5
M24	3	TZ903786	30	160	18	14.5	21
M27	3	TZ903866	30	160	20	16	24
M30	3.5	TZ903946	35	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
				○									○	◎

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
◎														

SPIRAL FLUTE TAPS

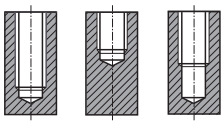
TQ833 SERIES

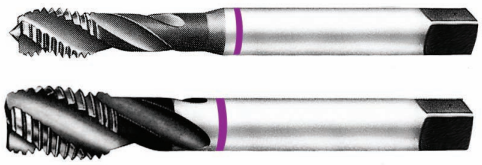
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

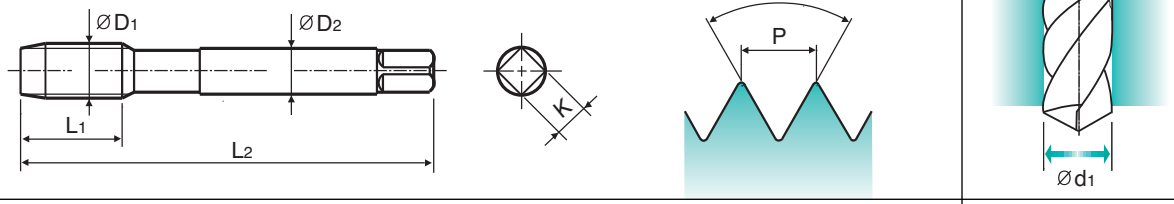
Hole type





Material groups: Ti Ni | HSS-PM | DIN 371/376 | 6H | 60° | C | Vap | R40

Machine taps
Maschinengewindebohrer



Unit : mm

SIZE ØD1	×	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	×	0.4	TQ833136	8	45	2.8	2.1	1.6
M2.2	×	0.45	TQ833156	8	45	2.8	2.1	1.75
M2.5	×	0.45	TQ833176	9	50	2.8	2.1	2.05
M3	×	0.5	TQ833206	6	56	3.5	2.7	2.5
M3.5	×	0.6	TQ833226	7	56	4	3	2.9
M4	×	0.7	TQ833246	7	63	4.5	3.4	3.3
M4.5	×	0.75	TQ833266	8	70	6	4.9	3.7
M5	×	0.8	TQ833286	8	70	6	4.9	4.2
M6	×	1	TQ833316	10	80	6	4.9	5
M7	×	1	TQ833346	10	80	7	5.5	6
M8	×	1.25	TQ833366	13	90	8	6.2	6.8
M10	×	1.5	TQ833426	15	100	10	8	8.5
M12	×	1.75	TQ833506	18	110	9	7	10.2

▶ DIN 371(M2~M10) and DIN 376(M12)

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
				◎	◎								○	◎

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
◎		◎	◎				○							

SPIRAL FLUTE TAPS

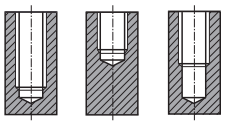
TR833 SERIES

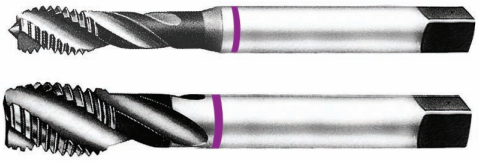
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

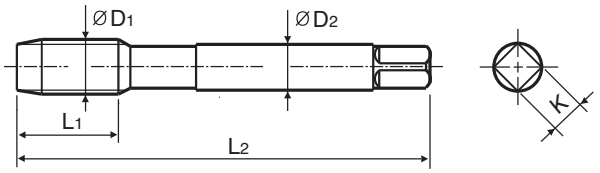
Hole type

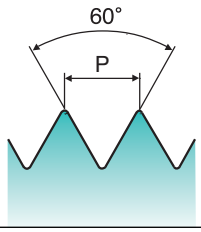


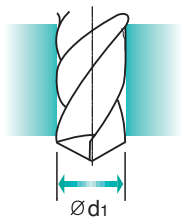


Material groups: **Ti Ni** | HSS-PM | DIN 371/376 | 6H | 60° | C | Bright | R40

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	0.4	TR833136	8	45	2.8	2.1	1.6
M2.2	0.45	TR833156	8	45	2.8	2.1	1.75
M2.5	0.45	TR833176	9	50	2.8	2.1	2.05
M3	0.5	TR833206	6	56	3.5	2.7	2.5
M3.5	0.6	TR833226	7	56	4	3	2.9
M4	0.7	TR833246	7	63	4.5	3.4	3.3
M4.5	0.75	TR833266	8	70	6	4.9	3.7
M5	0.8	TR833286	8	70	6	4.9	4.2
M6	1	TR833316	10	80	6	4.9	5
M7	1	TR833346	10	80	7	5.5	6
M8	1.25	TR833366	13	90	8	6.2	6.8
M10	1.5	TR833426	15	100	10	8	8.5
M12	1.75	TR833506	18	110	9	7	10.2

▶ DIN 371(M2~M10) and DIN 376(M12)

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
				◎	◎								○	◎

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
◎		◎	◎				○							

SPIRAL FLUTE TAPS

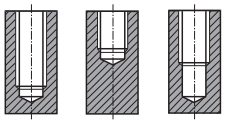
TM933 SERIES

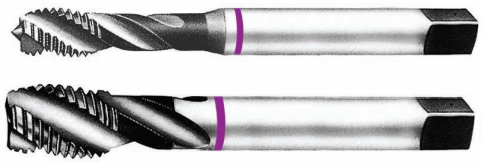
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ For tapping Nickel alloys and heat resistant alloy steels which are used in aerospace and checmical industries.

▶ Zum Gewindeschneiden von Nickellegierungen und hitzefesten Legierungsstählen, die in der Luftfahrtindustrie und chemischen Industrie verwendet werden.

Hole type

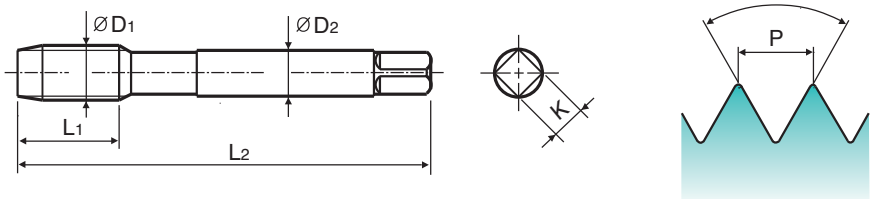


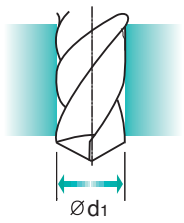


Material groups **Ni**

HSS-PM | DIN 371/376 | 6H | 60° | C | Bright | R40

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P		L1	L2	ØD2	K	Ød1
M2	× 0.4	TM933136	8	45	2.8	2.1	1.6
M2.2	× 0.45	TM933156	8	45	2.8	2.1	1.75
＊ M2.3	× 0.4	TM933196	8	45	2.8	2.1	1.9
M2.5	× 0.45	TM933176	9	50	2.8	2.1	2.05
＊ M2.6	× 0.45	TM933496	9	50	2.8	2.1	2.1
M3	× 0.5	TM933206	6	56	3.5	2.7	2.5
M3.5	× 0.6	TM933226	7	56	4	3	2.9
M4	× 0.7	TM933246	7	63	4.5	3.4	3.3
M4.5	× 0.75	TM933266	8	70	6	4.9	3.7
M5	× 0.8	TM933286	8	70	6	4.9	4.2
M6	× 1	TM933316	10	80	6	4.9	5
M7	× 1	TM933346	10	80	7	5.5	6
M8	× 1.25	TM933366	13	90	8	6.2	6.8
M9	× 1.25	TM933396	13	90	9	7	7.8
M10	× 1.5	TM933426	15	100	10	8	8.5
M11	× 1.5	TM933466	17	100	8	6.2	9.5
M12	× 1.75	TM933506	18	110	9	7	10.2
M14	× 2	TM933546	20	110	11	9	12
M16	× 2	TM933606	20	110	12	9	14
M18	× 2.5	TM933656	25	125	14	11	15.5
M20	× 2.5	TM933706	25	140	16	12	17.5
M22	× 2.5	TM933746	25	140	18	14.5	19.5
M24	× 3	TM933786	30	160	18	14.5	21
M27	× 3	TM933866	30	160	20	16	24
M30	× 3.5	TM933946	35	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ ＊ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
				◎	◎									

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
○		◎	◎				○							

SPIRAL FLUTE TAPS

TZ933 SERIES

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

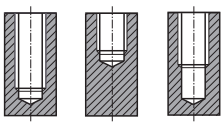
▶ For tapping Nickel alloys and heat resistant alloy steels which are used in aerospace and checmical industries.

▶ Zum Gewindeschneiden von Nickellegierungen und hitzefesten Legierungsstählen, die in der Luftfahrtindustrie und chemischen Industrie verwendet werden.

DIN 371

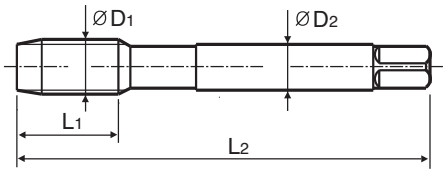
DIN 376

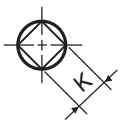
Hole type

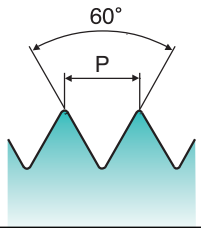


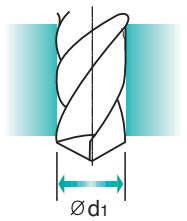
Material groups **Ni** | HSS-PM | DIN 371/376 | 6H | 60° | C | TiAlN | R40

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE ØD1	×	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	×	0.4	TZ933136	8	45	2.8	2.1	1.6
M2.2	×	0.45	TZ933156	8	45	2.8	2.1	1.75
✳ M2.3	×	0.4	TZ933196	8	45	2.8	2.1	1.9
M2.5	×	0.45	TZ933176	9	50	2.8	2.1	2.05
✳ M2.6	×	0.45	TZ933496	9	50	2.8	2.1	2.1
M3	×	0.5	TZ933206	6	56	3.5	2.7	2.5
M3.5	×	0.6	TZ933226	7	56	4	3	2.9
M4	×	0.7	TZ933246	7	63	4.5	3.4	3.3
M4.5	×	0.75	TZ933266	8	70	6	4.9	3.7
M5	×	0.8	TZ933286	8	70	6	4.9	4.2
M6	×	1	TZ933316	10	80	6	4.9	5
M7	×	1	TZ933346	10	80	7	5.5	6
M8	×	1.25	TZ933366	13	90	8	6.2	6.8
M9	×	1.25	TZ933396	13	90	9	7	7.8
M10	×	1.5	TZ933426	15	100	10	8	8.5
M11	×	1.5	TZ933466	17	100	8	6.2	9.5
M12	×	1.75	TZ933506	18	110	9	7	10.2
M14	×	2	TZ933546	20	110	11	9	12
M16	×	2	TZ933606	20	110	12	9	14
M18	×	2.5	TZ933656	25	125	14	11	15.5
M20	×	2.5	TZ933706	25	140	16	12	17.5
M22	×	2.5	TZ933746	25	140	18	14.5	19.5
M24	×	3	TZ933786	30	160	18	14.5	21
M27	×	3	TZ933866	30	160	20	16	24
M30	×	3.5	TZ933946	35	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
				◎	◎									

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
○		◎	◎				○							

SPIRAL FLUTE TAPS

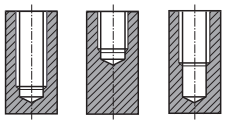
TC163 SERIES

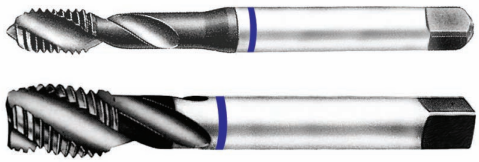
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

Hole type



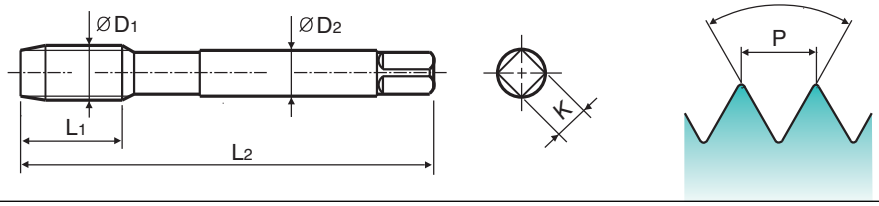


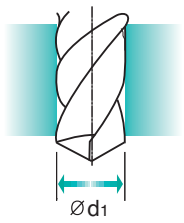
DIN 371

DIN 376

Material groups **Al** | HSS-E | DIN 371/376 | 6H | 60° | C | Bright | R45

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	0.4	TC163136	8	45	2.8	2.1	1.6
M2.2	0.45	TC163156	8	45	2.8	2.1	1.75
✳ M2.3	0.4	TC163196	8	45	2.8	2.1	1.9
M2.5	0.45	TC163176	9	50	2.8	2.1	2.05
✳ M2.6	0.45	TC163496	9	50	2.8	2.1	2.1
M3	0.5	TC163206	6	56	3.5	2.7	2.5
M3.5	0.6	TC163226	7	56	4	3	2.9
M4	0.7	TC163246	7	63	4.5	3.4	3.3
M4.5	0.75	TC163266	8	70	6	4.9	3.7
M5	0.8	TC163286	8	70	6	4.9	4.2
M6	1	TC163316	10	80	6	4.9	5
M7	1	TC163346	10	80	7	5.5	6
M8	1.25	TC163366	13	90	8	6.2	6.8
M9	1.25	TC163396	13	90	9	7	7.8
M10	1.5	TC163426	15	100	10	8	8.5
M11	1.5	TC163466	17	100	8	6.2	9.5
M12	1.75	TC163506	18	110	9	7	10.2
M14	2	TC163546	20	110	11	9	12
M16	2	TC163606	20	110	12	9	14
M18	2.5	TC163656	25	125	14	11	15.5
M20	2.5	TC163706	25	140	16	12	17.5
M22	2.5	TC163746	25	140	18	14.5	19.5
M24	3	TC163786	30	160	18	14.5	21
M27	3	TC163866	30	160	20	16	24
M30	3.5	TC163946	35	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
○	○	○											○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
				◎				◎	◎	◎				

SPIRAL FLUTE TAPS

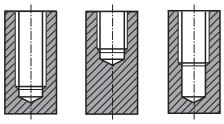
TE953 SERIES

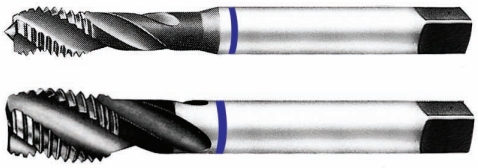
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

Hole type



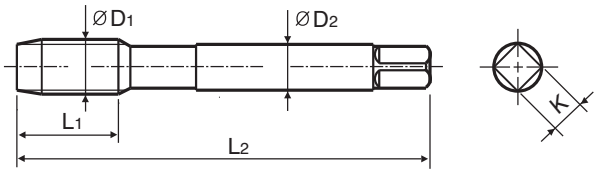


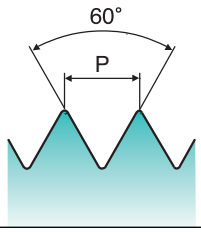
DIN 371

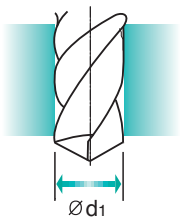
DIN 376

Material groups **Al** | HSS-E | DIN 371/376 | 6H | 60° | C | NI | R40

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	0.4	TE953136	8	45	2.8	2.1	1.6
M2.2	0.45	TE953156	8	45	2.8	2.1	1.75
* M2.3	0.4	TE953196	8	45	2.8	2.1	1.9
M2.5	0.45	TE953176	9	50	2.8	2.1	2.05
* M2.6	0.45	TE953496	9	50	2.8	2.1	2.1
M3	0.5	TE953206	6	56	3.5	2.7	2.5
M3.5	0.6	TE953226	7	56	4	3	2.9
M4	0.7	TE953246	7	63	4.5	3.4	3.3
M4.5	0.75	TE953266	8	70	6	4.9	3.7
M5	0.8	TE953286	8	70	6	4.9	4.2
M6	1	TE953316	10	80	6	4.9	5
M7	1	TE953346	10	80	7	5.5	6
M8	1.25	TE953366	13	90	8	6.2	6.8
M9	1.25	TE953396	13	90	9	7	7.8
M10	1.5	TE953426	15	100	10	8	8.5
M11	1.5	TE953466	17	100	8	6.2	9.5
M12	1.75	TE953506	18	110	9	7	10.2
M14	2	TE953546	20	110	11	9	12
M16	2	TE953606	20	110	12	9	14
M18	2.5	TE953656	25	125	14	11	15.5
M20	2.5	TE953706	25	140	16	12	17.5
M22	2.5	TE953746	25	140	18	14.5	19.5
M24	3	TE953786	30	160	18	14.5	21
M27	3	TE953866	30	160	20	16	24
M30	3.5	TE953946	35	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ * DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
		○												

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
											◎			

SPIRAL FLUTE TAPS

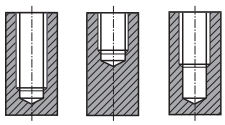
TC411 SERIES

MF ISO metric fine threads DIN 13
Metrisches ISO-Feingewinde DIN 13

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

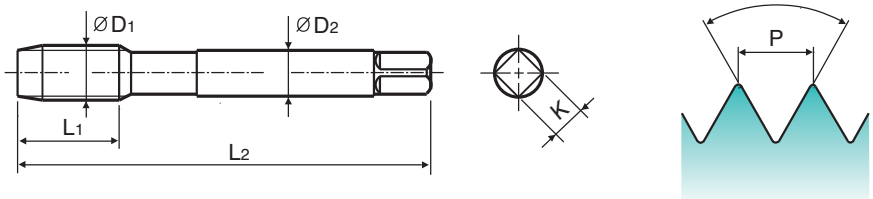
Hole type

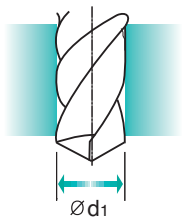


DIN 374

Material groups **GS** | HSS-E | DIN 374 | 6H | 60° | C | Bright | R40

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE ØD1		Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M4	×	0.5	TC411256	5	63	2.8	2.1	3.5
M5	×	0.5	TC411296	5	70	3.5	2.7	4.5
M6	×	0.75	TC411326	8	80	4.5	3.4	5.2
M6	×	0.5	TC411336	5	80	4.5	3.4	5.5
M7	×	0.75	TC411356	10	80	5.5	4.3	6.2
M8	×	1	TC411376	10	90	6	4.9	7
M8	×	0.75	TC411386	8	80	6	4.9	7.2
M8	×	0.5	TC411936	5	80	6	4.9	7.5
M10	×	1.25	TC411436	16	100	7	5.5	8.8
M10	×	1	TC411446	10	90	7	5.5	9
M10	×	0.75	TC411456	10	90	7	5.5	9.2
M12	×	1.5	TC411516	15	100	9	7	10.5
M12	×	1.25	TC411526	15	100	9	7	10.8
M12	×	1	TC411536	11	100	9	7	11
M14	×	1.5	TC411556	15	100	11	9	12.5
M14	×	1.25	TC411566	15	100	11	9	12.8
M14	×	1	TC411576	11	100	11	9	13

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	◎	◎	◎								◎	◎	○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	○			○		◎		○	○	○	◎	○		

SPIRAL FLUTE TAPS

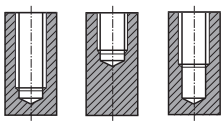
TC411 SERIES

MF ISO metric fine threads DIN 13
Metrisches ISO-Feingewinde DIN 13

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

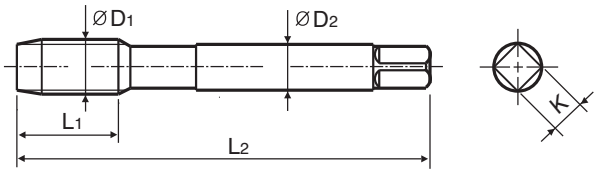
Hole type

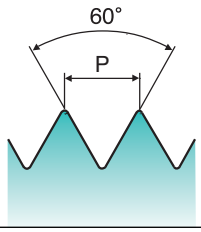


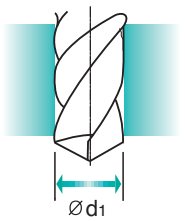
DIN 374

Material groups **GS** | HSS-E | DIN 374 | 6H | 60° | C | Bright | R40

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M16	1.5	TC411616	15	100	12	9	14.5
M16	1	TC411626	12	100	12	9	15
M18	1.5	TC411676	17	110	14	11	16.5
M18	1	TC411686	13	110	14	11	17
M20	1.5	TC411726	17	125	16	12	18.5
M20	1	TC411736	14	125	16	12	19
M22	1.5	TC411766	17	125	18	14.5	20.5
M22	1	TC411776	14	125	18	14.5	21
M24	2	TC411796	20	140	18	14.5	22
M24	1.5	TC411806	20	140	18	14.5	22.5
M26	1.5	TC411856	20	140	18	14.5	24.5
M27	2	TC411876	20	140	20	16	25
M27	1.5	TC411886	20	140	20	16	25.5
M28	1.5	TC411916	20	140	20	16	26.5
M30	2	TC411966	22	150	22	18	28
M30	1.5	TC411976	22	150	22	18	28.5

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	◎	◎	◎								◎	◎	○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	○			○		◎		○	○	○	◎	○		

SPIRAL FLUTE TAPS

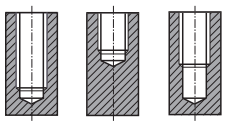
TD411 SERIES

MF ISO metric fine threads DIN 13
Metrisches ISO-Feingewinde DIN 13

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

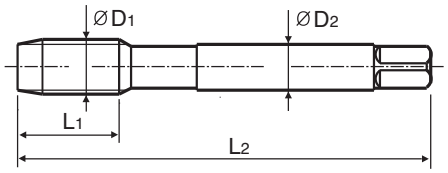
Hole type

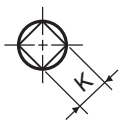


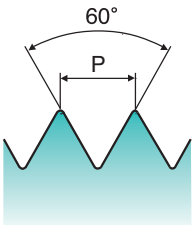
DIN 374

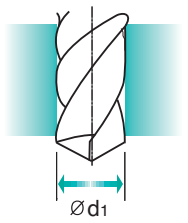
Material groups **GS** | HSS-E | DIN 374 | 6H | 60° | C | TiN | R40

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE ØD1		Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M4	×	0.5	TD411256	5	63	2.8	2.1	3.5
M5	×	0.5	TD411296	5	70	3.5	2.7	4.5
M6	×	0.75	TD411326	8	80	4.5	3.4	5.2
M6	×	0.5	TD411336	5	80	4.5	3.4	5.5
M7	×	0.75	TD411356	10	80	5.5	4.3	6.2
M8	×	1	TD411376	10	90	6	4.9	7
M8	×	0.75	TD411386	8	80	6	4.9	7.2
M8	×	0.5	TD411936	5	80	6	4.9	7.5
M10	×	1.25	TD411436	16	100	7	5.5	8.8
M10	×	1	TD411446	10	90	7	5.5	9
M10	×	0.75	TD411456	10	90	7	5.5	9.2
M12	×	1.5	TD411516	15	100	9	7	10.5
M12	×	1.25	TD411526	15	100	9	7	10.8
M12	×	1	TD411536	11	100	9	7	11
M14	×	1.5	TD411556	15	100	11	9	12.5
M14	×	1.25	TD411566	15	100	11	9	12.8
M14	×	1	TD411576	11	100	11	9	13

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	◎	◎	◎								◎	◎	○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	○			○		◎		○	○	○	◎	○		

SPIRAL FLUTE TAPS

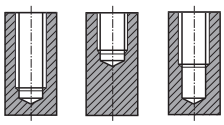
TD411 SERIES

MF ISO metric fine threads DIN 13
Metrisches ISO-Feingewinde DIN 13

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

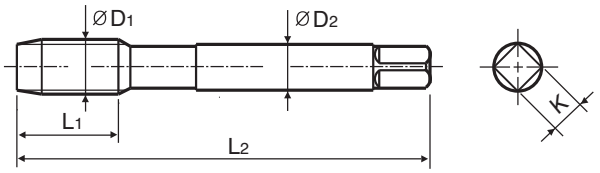
Hole type

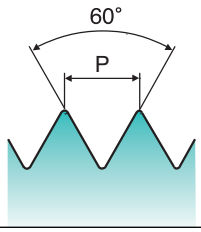


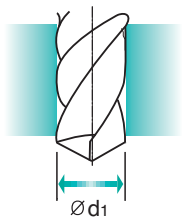
DIN 374

Material groups **GS** | HSS-E | DIN 374 | 6H | 60° | C | TiN | R40

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M16	1.5	TD411616	15	100	12	9	14.5
M16	1	TD411626	12	100	12	9	15
M18	1.5	TD411676	17	110	14	11	16.5
M18	1	TD411686	13	110	14	11	17
M20	1.5	TD411726	17	125	16	12	18.5
M20	1	TD411736	14	125	16	12	19
M22	1.5	TD411766	17	125	18	14.5	20.5
M22	1	TD411776	14	125	18	14.5	21
M24	2	TD411796	20	140	18	14.5	22
M24	1.5	TD411806	20	140	18	14.5	22.5
M26	1.5	TD411856	20	140	18	14.5	24.5
M27	2	TD411876	20	140	20	16	25
M27	1.5	TD411886	20	140	20	16	25.5
M28	1.5	TD411916	20	140	20	16	26.5
M30	2	TD411966	22	150	22	18	28
M30	1.5	TD411976	22	150	22	18	28.5

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	◎	◎	◎								◎	◎	○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	○			○		◎		○	○	○	◎	○		

SPIRAL FLUTE TAPS

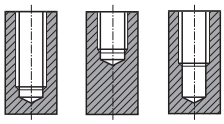
TC413 SERIES

MF ISO metric fine threads DIN 13
Metrisches ISO-Feingewinde DIN 13

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

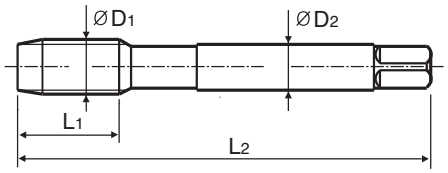
Hole type

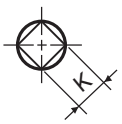


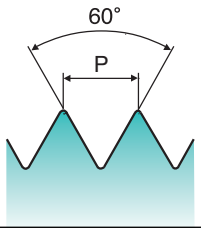
DIN 374

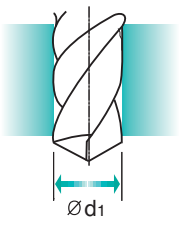
Material groups **VG** | HSS-E | DIN 374 | 6H | 60° | C | Bright | R40

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE		Pitch	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1		P		L1	L2	ØD2	K	Ød1
M4	×	0.5	TC413256	5	63	2.8	2.1	3.5
M5	×	0.5	TC413296	5	70	3.5	2.7	4.5
M6	×	0.75	TC413326	8	80	4.5	3.4	5.2
M6	×	0.5	TC413336	5	80	4.5	3.4	5.5
M7	×	0.75	TC413356	10	80	5.5	4.3	6.2
M8	×	1	TC413376	10	90	6	4.9	7
M8	×	0.75	TC413386	8	80	6	4.9	7.2
M10	×	1.25	TC413436	16	100	7	5.5	8.8
M10	×	1	TC413446	10	90	7	5.5	9
M10	×	0.75	TC413456	10	90	7	5.5	9.2
M12	×	1.5	TC413516	15	100	9	7	10.5
M12	×	1.25	TC413526	15	100	9	7	10.8
M12	×	1	TC413536	11	100	9	7	11
M14	×	1.5	TC413556	15	100	11	9	12.5
M14	×	1.25	TC413566	15	100	11	9	12.8
M16	×	1.5	TC413616	15	100	12	9	14.5
M18	×	1.5	TC413676	17	110	14	11	16.5
M20	×	1.5	TC413726	17	125	16	12	18.5
M22	×	1.5	TC413766	17	125	18	14.5	20.5
M24	×	1.5	TC413806	20	140	18	14.5	22.5

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
			○	◎				○						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

SPIRAL FLUTE TAPS

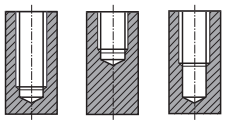
TD413 SERIES

MF ISO metric fine threads DIN 13
Metrisches ISO-Feingewinde DIN 13

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

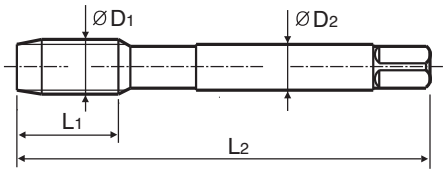
Hole type

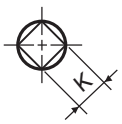


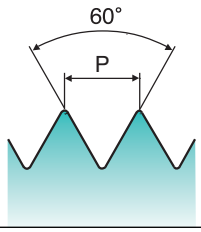
DIN 374

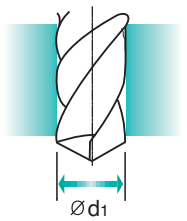
Material groups **VG** | HSS-E | DIN 374 | 6H | 60° | C | TiN | R40

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P		L1	L2	ØD2	K	Ød1
M4	× 0.5	TD413256	5	63	2.8	2.1	3.5
M5	× 0.5	TD413296	5	70	3.5	2.7	4.5
M6	× 0.75	TD413326	8	80	4.5	3.4	5.2
M6	× 0.5	TD413336	5	80	4.5	3.4	5.5
M7	× 0.75	TD413356	10	80	5.5	4.3	6.2
M8	× 1	TD413376	10	90	6	4.9	7
M8	× 0.75	TD413386	8	80	6	4.9	7.2
M10	× 1.25	TD413436	16	100	7	5.5	8.8
M10	× 1	TD413446	10	90	7	5.5	9
M10	× 0.75	TD413456	10	90	7	5.5	9.2
M12	× 1.5	TD413516	15	100	9	7	10.5
M12	× 1.25	TD413526	15	100	9	7	10.8
M12	× 1	TD413536	11	100	9	7	11
M14	× 1.5	TD413556	15	100	11	9	12.5
M14	× 1.25	TD413566	15	100	11	9	12.8
M16	× 1.5	TD413616	15	100	12	9	14.5
M18	× 1.5	TD413676	17	110	14	11	16.5
M20	× 1.5	TD413726	17	125	16	12	18.5
M22	× 1.5	TD413766	17	125	18	14.5	20.5
M24	× 1.5	TD413806	20	140	18	14.5	22.5

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
			○	◎				○						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

SPIRAL FLUTE TAPS

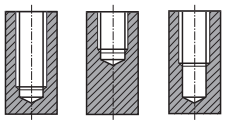
TB183 SERIES

MF ISO metric fine threads DIN 13
Metrisches ISO-Feingewinde DIN 13

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

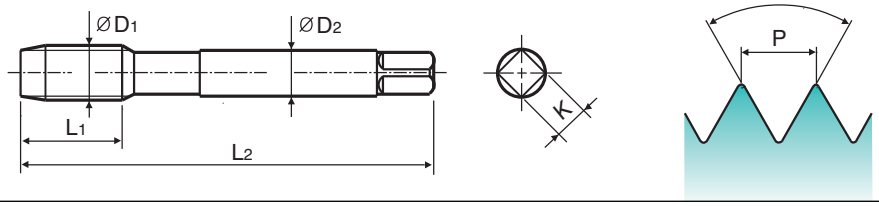
Hole type

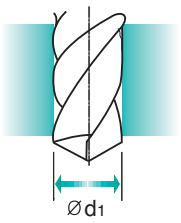


DIN 374

Material groups **VA NW** | HSS-E | DIN 374 | 6H | 60° | C | Vap | R40

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE ØD1		Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M4	×	0.5	TB183256	5	63	2.8	2.1	3.5
M5	×	0.5	TB183296	5	70	3.5	2.7	4.5
M6	×	0.75	TB183326	8	80	4.5	3.4	5.2
M6	×	0.5	TB183336	5	80	4.5	3.4	5.5
M7	×	0.75	TB183356	10	80	5.5	4.3	6.2
M8	×	1	TB183376	10	90	6	4.9	7
M8	×	0.75	TB183386	8	80	6	4.9	7.2
M10	×	1.25	TB183436	16	100	7	5.5	8.8
M10	×	1	TB183446	10	90	7	5.5	9
M10	×	0.75	TB183456	10	90	7	5.5	9.2
M12	×	1.5	TB183516	15	100	9	7	10.5
M12	×	1.25	TB183526	15	100	9	7	10.8
M12	×	1	TB183536	11	100	9	7	11
M14	×	1.5	TB183556	15	100	11	9	12.5
M14	×	1.25	TB183566	15	100	11	9	12.8
M16	×	1.5	TB183616	15	100	12	9	14.5
M18	×	1.5	TB183676	17	110	14	11	16.5
M20	×	1.5	TB183726	17	125	16	12	18.5
M22	×	1.5	TB183766	17	125	18	14.5	20.5
M24	×	1.5	TB183806	20	140	18	14.5	22.5

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎					◎	◎	◎						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

SPIRAL FLUTE TAPS

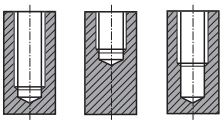
TC963 SERIES

MF ISO metric fine threads DIN 13
Metrisches ISO-Feingewinde DIN 13

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

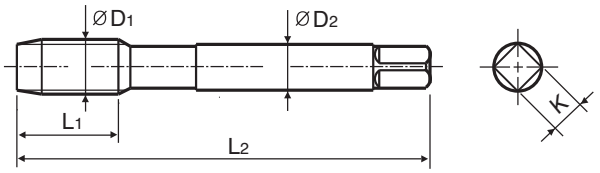
Hole type

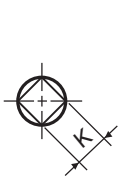


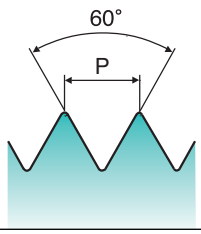
DIN 374

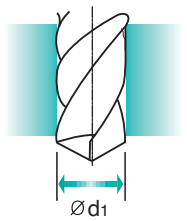
Material groups **Al** | HSS-E | DIN 374 | 6H | 60° | C | Bright | R45

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P		L1	L2	ØD2	K	Ød1
M4	× 0.5	TC963256	5	63	2.8	2.1	3.5
M5	× 0.5	TC963296	5	70	3.5	2.7	4.5
M6	× 0.75	TC963326	8	80	4.5	3.4	5.2
M6	× 0.5	TC963336	5	80	4.5	3.4	5.5
M7	× 0.75	TC963356	10	80	5.5	4.3	6.2
M8	× 1	TC963376	10	90	6	4.9	7
M8	× 0.75	TC963386	8	80	6	4.9	7.2
M10	× 1.25	TC963436	16	100	7	5.5	8.8
M10	× 1	TC963446	10	90	7	5.5	9
M10	× 0.75	TC963456	10	90	7	5.5	9.2
M12	× 1.5	TC963516	15	100	9	7	10.5
M12	× 1.25	TC963526	15	100	9	7	10.8
M12	× 1	TC963536	11	100	9	7	11
M14	× 1.5	TC963556	15	100	11	9	12.5
M14	× 1.25	TC963566	15	100	11	9	12.8
M16	× 1.5	TC963616	15	100	12	9	14.5
M18	× 1.5	TC963676	17	110	14	11	16.5
M20	× 1.5	TC963726	17	125	16	12	18.5
M22	× 1.5	TC963766	17	125	18	14.5	20.5
M24	× 1.5	TC963806	20	140	18	14.5	22.5

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
○	○	○											○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
				◎				◎	◎	◎				

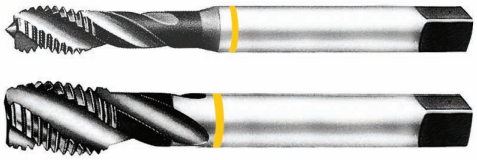
SPIRAL FLUTE TAPS

TC144 SERIES

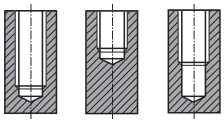
UNC Unified coarse threads
Unified Grobgewinde

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

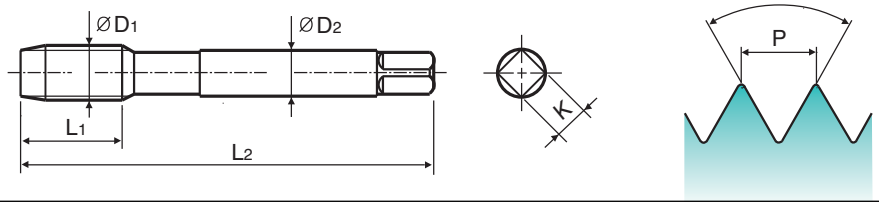


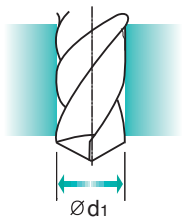
Hole type



Material groups **GS** | HSS-E | DIN 371/376 | 2B | 60° | C | Bright | R40

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1			L1	L2	ØD2	K	Ød1
#4	– 40 UNC	TC144162	6	56	3.5	2.7	2.3
#5	– 40 UNC	TC144202	7	56	3.5	2.7	2.6
#6	– 32 UNC	TC144242	7	56	4	3	2.85
#8	– 32 UNC	TC144282	8	63	4.5	3.4	3.5
#10	– 24 UNC	TC144322	10	70	6	4.9	3.9
#12	– 24 UNC	TC144362	10	80	6	4.9	4.5
1/4"	– 20 UNC	TC144402	13	80	7	5.5	5.2
5/16 "	– 18 UNC	TC144442	14	90	8	6.2	6.6
3/8"	– 16 UNC	TC144482	16	100	9	7	8
7/16"	– 14 UNC	TC144522	17	100	8	6.2	9.4
1/2"	– 13 UNC	TC144562	20	110	9	7	10.75
9/16"	– 12 UNC	TC144602	20	110	11	9	12.25
5/8"	– 11 UNC	TC144642	22	110	12	9	13.5
3/4"	– 10 UNC	TC144702	25	125	14	11	16.5
7/8"	– 9 UNC	TC144742	27	140	18	14.5	19.5
1"	– 8 UNC	TC144782	30	160	20	16	22.25
1∗1/8"	– 7 UNC	TC144822	35	180	22	18	25

▶ DIN 371(#4~3/8") and DIN 376(7/16"~1∗1/8")

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	◎	◎	◎								◎	◎	○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	○			○		◎		○	○	○	◎	○		

SPIRAL FLUTE TAPS

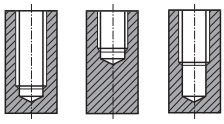
TC174 SERIES

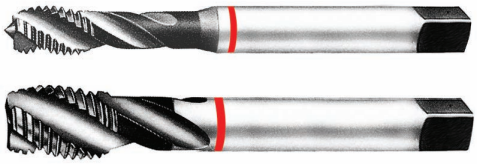
UNC Unified coarse threads
Unified Grobgewinde

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

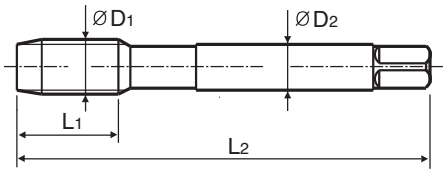
Hole type

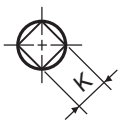


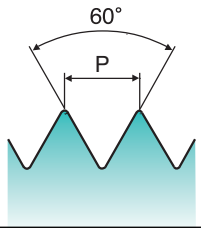


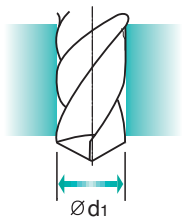
Material groups VG | HSS-E | DIN 371/376 | 2B | 60° | C | Bright | R40

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1			L1	L2	ØD2	K	Ød1
#4	– 40 UNC	TC174162	6	56	3.5	2.7	2.3
#5	– 40 UNC	TC174202	7	56	3.5	2.7	2.6
#6	– 32 UNC	TC174242	7	56	4	3	2.85
#8	– 32 UNC	TC174282	8	63	4.5	3.4	3.5
#10	– 24 UNC	TC174322	10	70	6	4.9	3.9
#12	– 24 UNC	TC174362	10	80	6	4.9	4.5
1/4"	– 20 UNC	TC174402	13	80	7	5.5	5.2
5/16"	– 18 UNC	TC174442	14	90	8	6.2	6.6
3/8"	– 16 UNC	TC174482	16	100	9	7	8
7/16"	– 14 UNC	TC174522	17	100	8	6.2	9.4
1/2"	– 13 UNC	TC174562	20	110	9	7	10.75
9/16"	– 12 UNC	TC174602	20	110	11	9	12.25
5/8"	– 11 UNC	TC174642	22	110	12	9	13.5
3/4"	– 10 UNC	TC174702	25	125	14	11	16.5
7/8"	– 9 UNC	TC174742	27	140	18	14.5	19.5
1"	– 8 UNC	TC174782	30	160	20	16	22.25
1*1/8"	– 7 UNC	TC174822	35	180	22	18	25

▶ DIN 371(#4~3/8") and DIN 376(7/16"~1*1/8")

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
			○	◎				○						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

SPIRAL FLUTE TAPS

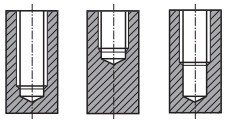
TD174 SERIES

UNC Unified coarse threads
Unified Grobgewinde

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

Hole type

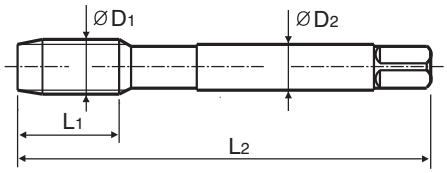


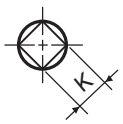
DIN 371

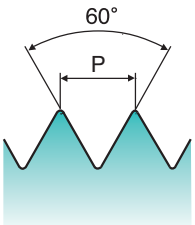
DIN 376

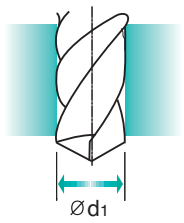
Material groups **VG** | HSS-E | DIN 371/376 | 2B | 60° | C | TiN | R40

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1			L1	L2	ØD2	K	Ød1
#4	– 40 UNC	TD174162	6	56	3.5	2.7	2.3
#5	– 40 UNC	TD174202	7	56	3.5	2.7	2.6
#6	– 32 UNC	TD174242	7	56	4	3	2.85
#8	– 32 UNC	TD174282	8	63	4.5	3.4	3.5
#10	– 24 UNC	TD174322	10	70	6	4.9	3.9
#12	– 24 UNC	TD174362	10	80	6	4.9	4.5
1/4"	– 20 UNC	TD174402	13	80	7	5.5	5.2
5/16"	– 18 UNC	TD174442	14	90	8	6.2	6.6
3/8"	– 16 UNC	TD174482	16	100	9	7	8
7/16"	– 14 UNC	TD174522	17	100	8	6.2	9.4
1/2"	– 13 UNC	TD174562	20	110	9	7	10.75
9/16"	– 12 UNC	TD174602	20	110	11	9	12.25
5/8"	– 11 UNC	TD174642	22	110	12	9	13.5
3/4"	– 10 UNC	TD174702	25	125	14	11	16.5
7/8"	– 9 UNC	TD174742	27	140	18	14.5	19.5
1"	– 8 UNC	TD174782	30	160	20	16	22.25
1*1/8"	– 7 UNC	TD174822	35	180	22	18	25

▶ DIN 371(#4~3/8") and DIN 376(7/16"~1*1/8")

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
			○	◎				○						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

SPIRAL FLUTE TAPS

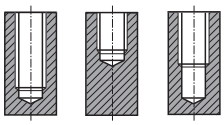
TB904 SERIES

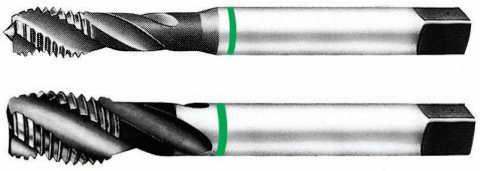
UNC Unified coarse threads
Unified Grobgewinde

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

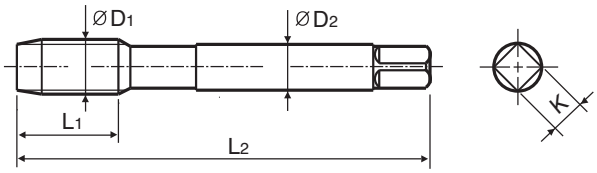
Hole type

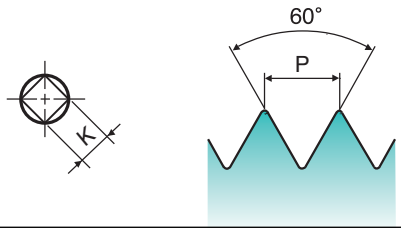


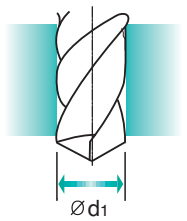


Material groups VA NW | HSS-E | DIN 371/376 | 2B | 60° | C | Vap | R40

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE ØD1	TPI	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
#4	40 UNC	TB904162	6	56	3.5	2.7	2.3
#5	40 UNC	TB904202	7	56	3.5	2.7	2.6
#6	32 UNC	TB904242	7	56	4	3	2.85
#8	32 UNC	TB904282	8	63	4.5	3.4	3.5
#10	24 UNC	TB904322	10	70	6	4.9	3.9
#12	24 UNC	TB904362	10	80	6	4.9	4.5
1/4"	20 UNC	TB904402	13	80	7	5.5	5.2
5/16"	18 UNC	TB904442	14	90	8	6.2	6.6
3/8"	16 UNC	TB904482	16	100	9	7	8
7/16"	14 UNC	TB904522	17	100	8	6.2	9.4
1/2"	13 UNC	TB904562	20	110	9	7	10.75
9/16"	12 UNC	TB904602	20	110	11	9	12.25
5/8"	11 UNC	TB904642	22	110	12	9	13.5
3/4"	10 UNC	TB904702	25	125	14	11	16.5
7/8"	9 UNC	TB904742	27	140	18	14.5	19.5
1"	8 UNC	TB904782	30	160	20	16	22.25
1*1/8"	7 UNC	TB904822	35	180	22	18	25

▶ DIN 371(#4~3/8") and DIN 376(7/16"~1*1/8")

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎					◎	◎	◎						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

SPIRAL FLUTE TAPS

TC169 SERIES

UNC Unified coarse threads
Unified Grobgewinde

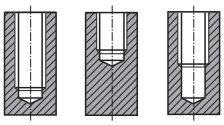
▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

DIN 371

DIN 376

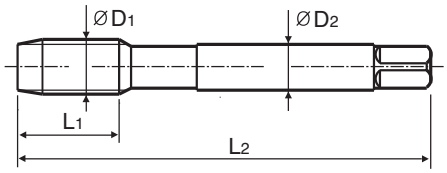
Hole type

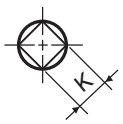


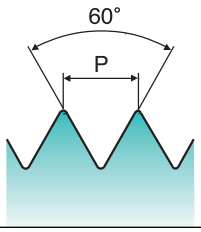
Material groups **Al**

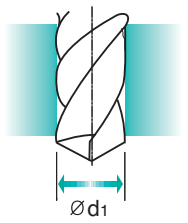
HSS-E | DIN 371/376 | 2B | 60° | C | Bright | R45

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1			L1	L2	ØD2	K	Ød1
#4	– 40 UNC	TC169162	6	56	3.5	2.7	2.3
#5	– 40 UNC	TC169202	7	56	3.5	2.7	2.6
#6	– 32 UNC	TC169242	7	56	4	3	2.85
#8	– 32 UNC	TC169282	8	63	4.5	3.4	3.5
#10	– 24 UNC	TC169322	10	70	6	4.9	3.9
#12	– 24 UNC	TC169362	10	80	6	4.9	4.5
1/4"	– 20 UNC	TC169402	13	80	7	5.5	5.2
5/16"	– 18 UNC	TC169442	14	90	8	6.2	6.6
3/8 "	– 16 UNC	TC169482	16	100	9	7	8
7/16"	– 14 UNC	TC169522	17	100	8	6.2	9.4
1/2"	– 13 UNC	TC169562	20	110	9	7	10.75
9/16"	– 12 UNC	TC169602	20	110	11	9	12.25
5/8"	– 11 UNC	TC169642	22	110	12	9	13.5
3/4"	– 10 UNC	TC169702	25	125	14	11	16.5
7/8"	– 9 UNC	TC169742	27	140	18	14.5	19.5
1"	– 8 UNC	TC169782	30	160	20	16	22.25
1∗1/8"	– 7 UNC	TC169822	35	180	22	18	25

▶ DIN 371(#4~3/8") and DIN 376(7/16"~1∗1/8")

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
○	○	○											○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
				◎				◎	◎	◎				

SPIRAL FLUTE TAPS

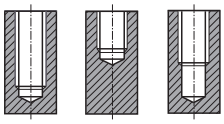
TC124 SERIES

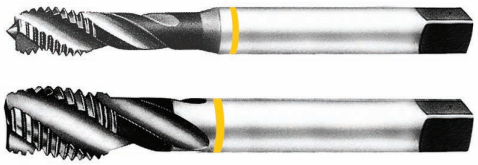
UNF Unified fine threads
Unified Feingewinde

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

Hole type



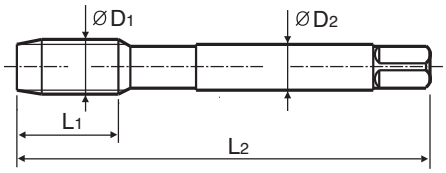


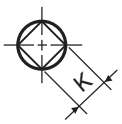
DIN 371

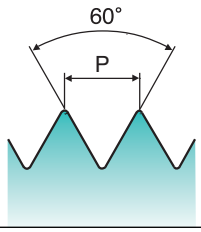
DIN 374

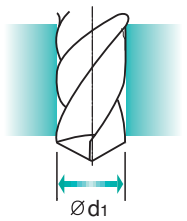
Material groups **GS** | HSS-E | DIN 371/374 | 2B | 60° | C | Bright | R40

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1			L1	L2	ØD2	K	Ød1
#4	– 48 UNF	TC124182	6	56	3.5	2.7	2.4
#5	– 44 UNF	TC124222	7	56	3.5	2.7	2.7
#6	– 40 UNF	TC124262	7	56	4	3	3
#8	– 36 UNF	TC124302	8	63	4.5	3.4	3.5
#10	– 32 UNF	TC124342	10	70	6	4.9	4.1
#12	– 28 UNF	TC124382	10	80	6	4.9	4.7
1/4"	– 28 UNF	TC124422	10	80	7	5.5	5.5
5/16"	– 24 UNF	TC124462	10	90	8	6.2	6.9
3/8"	– 24 UNF	TC124502	10	100	9	7	8.5
7/16"	– 20 UNF	TC124542	13	100	8	6.2	9.9
1/2"	– 20 UNF	TC124582	13	100	9	7	11.5
9/16"	– 18 UNF	TC124622	15	100	11	9	12.9
5/8"	– 18 UNF	TC124662	15	100	12	9	14.5
3/4"	– 16 UNF	TC124722	17	110	14	11	17.5
7/8"	– 14 UNF	TC124762	17	125	18	14.5	20.5
1"	– 12 UNF	TC124802	20	140	20	16	23.25
1∗1/8"	– 12 UNF	TC124842	22	150	22	18	26.5

▶ DIN 371(#4~3/8") and DIN 374(7/16"~1∗1/8")

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	◎	◎	◎								◎	◎	○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	○			○		◎		○	○	○	◎	○		

SPIRAL FLUTE TAPS

TC184 SERIES

UNF Unified fine threads
Unified Feingewinde

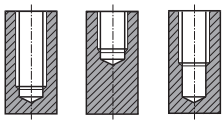
▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

DIN 371

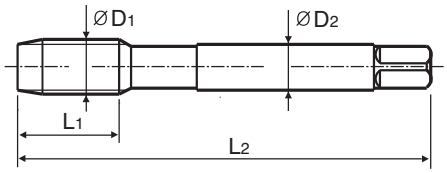
DIN 374

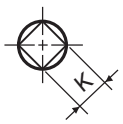
Hole type

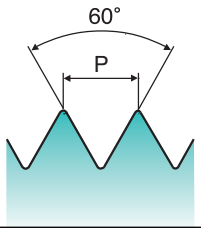


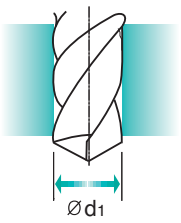
Material groups **VG** | HSS-E | DIN 371/374 | 2B | 60° | C | Bright | R40

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1			L1	L2	ØD2	K	Ød1
#4	– 48 UNF	TC184182	6	56	3.5	2.7	2.4
#5	– 44 UNF	TC184222	7	56	3.5	2.7	2.7
#6	– 40 UNF	TC184262	7	56	4	3	3
#8	– 36 UNF	TC184302	8	63	4.5	3.4	3.5
#10	– 32 UNF	TC184342	10	70	6	4.9	4.1
#12	– 28 UNF	TC184382	10	80	6	4.9	4.7
1/4"	– 28 UNF	TC184422	10	80	7	5.5	5.5
5/16"	– 24 UNF	TC184462	10	90	8	6.2	6.9
3/8"	– 24 UNF	TC184502	10	100	9	7	8.5
7/16"	– 20 UNF	TC184542	13	100	8	6.2	9.9
1/2"	– 20 UNF	TC184582	13	100	9	7	11.5
9/16"	– 18 UNF	TC184622	15	100	11	9	12.9
5/8"	– 18 UNF	TC184662	15	100	12	9	14.5
3/4"	– 16 UNF	TC184722	17	110	14	11	17.5
7/8"	– 14 UNF	TC184762	17	125	18	14.5	20.5
1"	– 12 UNF	TC184802	20	140	20	16	23.25
1∗1/8"	– 12 UNF	TC184842	22	150	22	18	26.5

▶ DIN 371(#4~3/8") and DIN 374(7/16"~1∗1/8")

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
			○	◎				○						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

SPIRAL FLUTE TAPS

TB924 SERIES

UNF Unified fine threads
Unified Feingewinde

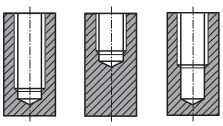
▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

DIN 371

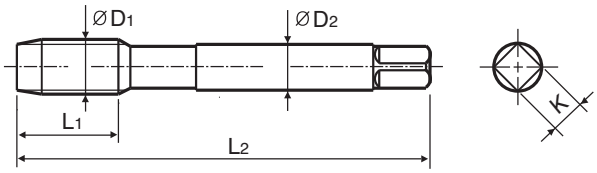
DIN 374

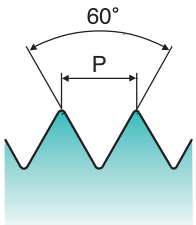
Hole type

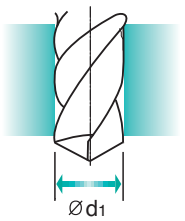


Material groups **VA NW** | **HSS-E** | **DIN 371/374** | **2B** | **60°** | **C** | **Vap** | **R40**

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1			L1	L2	ØD2	K	Ød1
#4	– 48 UNF	TB924182	6	56	3.5	2.7	2.4
#5	– 44 UNF	TB924222	7	56	3.5	2.7	2.7
#6	– 40 UNF	TB924262	7	56	4	3	3
#8	– 36 UNF	TB924302	8	63	4.5	3.4	3.5
#10	– 32 UNF	TB924342	10	70	6	4.9	4.1
#12	– 28 UNF	TB924382	10	80	6	4.9	4.7
1/4"	– 28 UNF	TB924422	10	80	7	5.5	5.5
5/16"	– 24 UNF	TB924462	10	90	8	6.2	6.9
3/8"	– 24 UNF	TB924502	10	100	9	7	8.5
7/16"	– 20 UNF	TB924542	13	100	8	6.2	9.9
1/2"	– 20 UNF	TB924582	13	100	9	7	11.5
9/16"	– 18 UNF	TB924622	15	100	11	9	12.9
5/8"	– 18 UNF	TB924662	15	100	12	9	14.5
3/4"	– 16 UNF	TB924722	17	110	14	11	17.5
7/8"	– 14 UNF	TB924762	17	125	18	14.5	20.5
1"	– 12 UNF	TB924802	20	140	20	16	23.25
1∗1/8"	– 12 UNF	TB924842	22	150	22	18	26.5

▶ DIN 371(#4~3/8") and DIN 374(7/16"~1∗1/8")

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎					◎	◎	◎						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

SPIRAL FLUTE TAPS

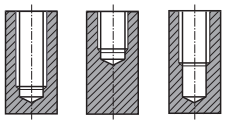
TC170 SERIES

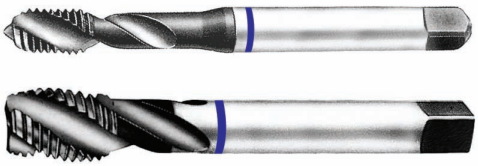
UNF Unified fine threads
Unified Feingewinde

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

Hole type





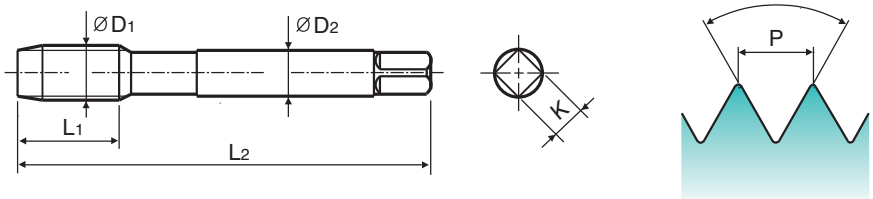
DIN 371

DIN 374

Material groups **Al**

HSS-E | DIN 371/374 | 2B | 60° | C | Bright | R45

Machine taps
Maschinengewindebohrer



Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1			L1	L2	ØD2	K	Ød1
#4	– 48 UNF	TC170182	6	56	3.5	2.7	2.4
#5	– 44 UNF	TC170222	7	56	3.5	2.7	2.7
#6	– 40 UNF	TC170262	7	56	4	3	3
#8	– 36 UNF	TC170302	8	63	4.5	3.4	3.5
#10	– 32 UNF	TC170342	10	70	6	4.9	4.1
#12	– 28 UNF	TC170382	10	80	6	4.9	4.7
1/4"	– 28 UNF	TC170422	10	80	7	5.5	5.5
5/16"	– 24 UNF	TC170462	10	90	8	6.2	6.9
3/8"	– 24 UNF	TC170502	10	100	9	7	8.5
7/16"	– 20 UNF	TC170542	13	100	8	6.2	9.9
1/2"	– 20 UNF	TC170582	13	100	9	7	11.5
9/16"	– 18 UNF	TC170622	15	100	11	9	12.9
5/8"	– 18 UNF	TC170662	15	100	12	9	14.5
3/4"	– 16 UNF	TC170722	17	110	14	11	17.5
7/8"	– 14 UNF	TC170762	17	125	18	14.5	20.5
1"	– 12 UNF	TC170802	20	140	20	16	23.25
1∗1/8"	– 12 UNF	TC170842	22	150	22	18	26.5

▶ DIN 371(#4~3/8") and DIN 374(7/16"~1∗1/8")

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
○	○	○											○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
				◎				◎	◎	◎				

SPIRAL FLUTE TAPS

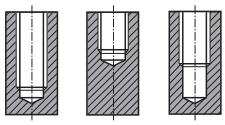
TC134 SERIES

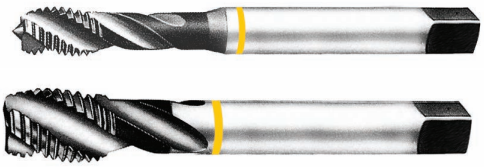
BSW Whitworth threads
Whitworth Gewinde

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

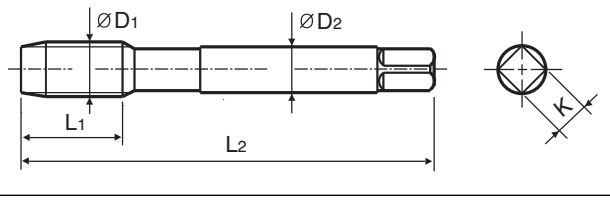
Hole type





Material groups **GS** | HSS-E | DIN 2182/2183 | 55° | C | Bright | R40

Machine taps
Maschinengewindebohrer



Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1			L1	L2	ØD2	K	Ød1
W1/8"	– 40	TC134200	7	56	3.5	2.7	2.5
W5/32"	– 32	TC134280	7	63	4.5	3.4	3.1
W3/16"	– 24	TC134320	10	70	6	4.9	3.6
W7/32"	– 24	TC134360	10	80	6	4.9	4.4
W1/4"	– 20	TC134400	13	80	7	5.5	5.1
W5/16"	– 18	TC134440	14	90	8	6.2	6.5
W3/8"	– 16	TC134480	16	100	9	7	7.9
W7/16"	– 14	TC134520	17	100	8	6.2	9.3
W1/2"	– 12	TC134560	20	110	9	7	10.5
W9/16"	– 12	TC134600	20	110	11	9	12
W5/8"	– 11	TC134640	22	110	12	9	13.5
W3/4"	– 10	TC134700	25	125	14	11	16.5
W7/8"	– 9	TC134740	27	140	18	14.5	19.25
W1"	– 8	TC134780	30	160	20	16	22
W1∗1/8"	– 7	TC134820	35	180	22	18	24.75

▶ DIN 2182(W1/8"~W3/8") and DIN 2183(W7/16"~W1∗1/8")

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
○	○	○	○								○	○		

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
					○	○					○			

HSS

Being the best through innovation

SPIRAL POINT TAPS
GEWINDEBOHRER MIT SCHÄLANSCHNITT

- Tapping Through Holes, HSS-E & HSS-PM
- Für Durchgangslöcher. HSS-E und HSS-PM

SPIRAL POINT TAPS

Tapping Through Holes, HSS-E & HSS-PM

SPIRAL POINT TAPS

◆ SYNCHRO TYPE

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Surface Treatment	PAGE
◆ **TTS33**		HSS-PM	M	**GS**	DIN 371/376	ISO 2/6H	B	TiN	**450**
TC122		HSS-E	M	**GS**	DIN 352	ISO 2/6H	B	Bright	**451**
TC127		HSS-E	M	**GS**	DIN 371	ISO 2/6H	B	Bright	**452**
TC227		HSS-E	M	**GS**	DIN 376	ISO 2/6H	B	Bright	**453**
TD127		HSS-E	M	**GS**	DIN 371	ISO 2/6H	B	TiN	**454**
TD227		HSS-E	M	**GS**	DIN 376	ISO 2/6H	B	TiN	**455**
TQ863		HSS-PM	M	**VG**	DIN 371/376	ISO 2/6H	B	Vap	**456**
TR863		HSS-PM	M	**VG**	DIN 371/376	ISO 2/6H	B	Bright	**457**
TC422		HSS-E	M	**VG**	DIN 371/376	ISO 2/6H	B	Bright	**458**
TE422		HSS-E	M	**VG**	DIN 371/376	ISO 2/6H	B	NI	**459**
TD422		HSS-E	M	**VG**	DIN 371/376	ISO 2/6H	B	TiN	**460**
TY422		HSS-E	M	**VG**	DIN 371/376	ISO 2/6H	B	TiAlN	**461**
TQ853		HSS-PM	M	**VA**	DIN 371/376	ISO 2/6H	B	Vap	**462**
TR853		HSS-PM	M	**VA**	DIN 371/376	ISO 2/6H	B	Bright	**463**
TC283		HSS-E	M	**HR**	DIN 371/376	ISO 2/6H	B	Bright	**464**
TY283		HSS-E	M	**HR**	DIN 371/376	ISO 2/6H	B	TiAlN	**465**
TB623		HSS-E	M	**VA NW**	DIN 371/376	ISO 2X/6HX	B	Vap	**466**
TCH23		HSS-E	M	**VA NW**	DIN 371/376	ISO 2X/6HX	B	Hardslick	**467**
TM293		HSS-PM	M-Az	**Ti**	DIN 371/376	ISO 2/6H	B	Bright	**468**
TZ293		HSS-PM	M-Az	**Ti**	DIN 371/376	ISO 2/6H	B	TiAlN	**469**
TQ873		HSS-PM	M	**Ti Ni**	DIN 371/376	ISO 2/6H	B	Vap	**470**

SPIRAL POINT TAPS

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Surface Treatment	PAGE
TR873		HSS-PM	M	**Ti Ni**	DIN 371/376	ISO 2/6H	B	Bright	**471**
TM923		HSS-PM	M	**Ni**	DIN 371/376	ISO 2/6H	B	Bright	**472**
TZ923		HSS-PM	M	**Ni**	DIN 371/376	ISO 2/6H	B	TiAlN	**473**
TE943		HSS-E	M	**Al**	DIN 371/376	ISO 2/6H	B	NI	**474**
TC622		HSS-E	M-Az	**Al**	DIN 371/376	ISO 2/6H	B	Bright	**475**
TC222		HSS-E	MF	**GS**	DIN 374	ISO 2/6H	B	Bright	**476**
TD222		HSS-E	MF	**GS**	DIN 374	ISO 2/6H	B	TiN	**478**
TC263		HSS-E	MF	**VG**	DIN 374	ISO 2/6H	B	Bright	**480**
TD263		HSS-E	MF	**VG**	DIN 374	ISO 2/6H	B	TiN	**481**
TB123		HSS-E	MF	**VA NW**	DIN 374	ISO 2X/6HX	B	Vap	**482**
TC214		HSS-E	UNC	**GS**	DIN 371/376	2B	B	Bright	**483**
TC244		HSS-E	UNC	**VG**	DIN 371/376	2B	B	Bright	**484**
TD244		HSS-E	UNC	**VG**	DIN 371/376	2B	B	TiN	**485**
TB264		HSS-E	UNC	**VA NW**	DIN 371/376	2B	B	Vap	**486**
TC234		HSS-E	UNF	**GS**	DIN 371/374	2B	B	Bright	**487**
TC254		HSS-E	UNF	**VG**	DIN 371/374	2B	B	Bright	**488**
TB274		HSS-E	UNF	**VA NW**	DIN 371/374	2B	B	Vap	**489**
TC224		HSS-E	BSW	**GS**	DIN 2182/2183	-	B	Bright	**490**

SPIRAL POINT TAPS

TTS33 SERIES

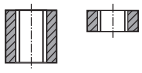
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for high speed machining and high precision threads

▶ Geeignet für die High-Speed-Bearbeitung (HSC) und hoher Gewinde-Präzision

DIN 371/376

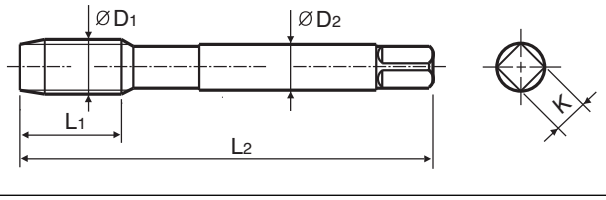
Hole type

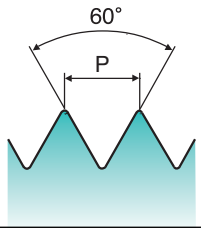


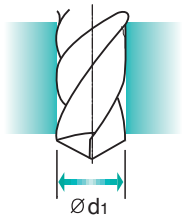
Synchro Type Applicable to 2-3 times faster cutting speed than minimum general GS Taps cutting speeds

Material groups **GS** | HSS-PM | DIN 371/376 | 6HX | 60° | B | TiN

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE ØD1		Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M3	×	0.5	TTS33206	11	56	3.5	2.7	2.5
M4	×	0.7	TTS33246	13	63	4.5	3.4	3.3
M5	×	0.8	TTS33286	15	70	6	4.9	4.2
M6	×	1.0	TTS33316	17	80	6	4.9	5
M8	×	1.25	TTS33366	20	90	8	6.2	6.8
M10	×	1.5	TTS33426	22	100	10	8	8.5
M12	×	1.75	TTS33506	24	110	9	7	10.2
M14	×	2.0	TTS33546	26	110	11	9	12
M16	×	2.0	TTS33606	27	110	12	9	14
M18	×	2.5	TTS33656	30	125	14	11	15.5
M20	×	2.5	TTS33706	32	140	16	12	17.5

▶ DIN371 (M3~M10) and DIN376 (M11~M20)
▶ Coating(TiAlN) is available on your request.

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	◎	◎	◎								◎	◎	○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	○			○		◎		○	○	○	◎	○		

SPIRAL POINT TAPS

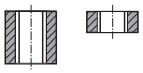
TC122 SERIES

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for through hole in more cutting speed than other taps due to thick web.

▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke.

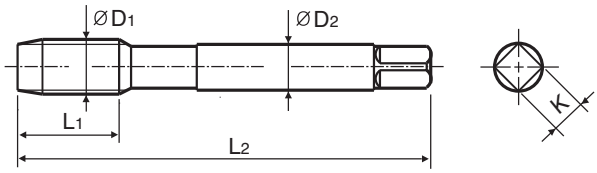
Hole type

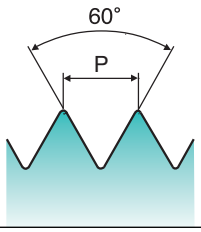


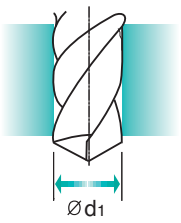
DIN 352

Material groups **GS** | HSS-E | DIN 352 | 6H | 60° | B | Bright

Short machine taps
Maschinengewindebohrer kurz







Unit : mm

SIZE ØD1		Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	×	0.4	TC122136	8	36	2.8	2.1	1.6
M2.5	×	0.45	TC122176	9	40	2.8	2.1	2.05
M3	×	0.5	TC122206	11	40	3.5	2.7	2.5
M4	×	0.7	TC122246	13	45	4.5	3.4	3.3
M5	×	0.8	TC122286	16	52	6	4.9	4.2
M6	×	1	TC122316	18	56	6	4.9	5
M8	×	1.25	TC122366	20	63	6	4.9	6.8
M10	×	1.5	TC122426	22	70	7	5.5	8.5
M12	×	1.75	TC122506	24	80	9	7	10.2
M14	×	2	TC122546	26	80	11	9	12
M16	×	2	TC122606	27	80	12	9	14

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	◎	◎	◎								◎	◎	○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	○			○		◎		○	○	○	◎	○		

SPIRAL POINT TAPS

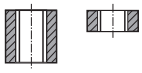
TC127 SERIES

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for through hole in more cutting speed than other taps due to thick web.

▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke.

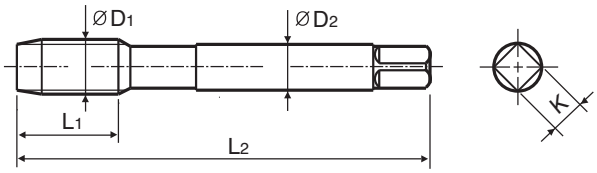
Hole type

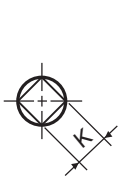


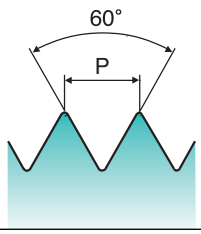
DIN 371

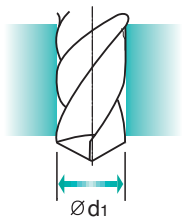
Material groups **GS** | HSS-E | DIN 371 | 6H | 60° | B | Bright

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE ØD1	×	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	×	0.4	TC127136	8	45	2.8	2.1	1.6
M2.2	×	0.45	TC127156	8	45	2.8	2.1	1.75
✳ M2.3	×	0.4	TC127196	8	45	2.8	2.1	1.9
M2.5	×	0.45	TC127176	9	50	2.8	2.1	2.05
✳ M2.6	×	0.45	TC127496	9	50	2.8	2.1	2.1
M3	×	0.5	TC127206	11	56	3.5	2.7	2.5
M3.5	×	0.6	TC127226	12	56	4	3	2.9
M4	×	0.7	TC127246	13	63	4.5	3.4	3.3
M4.5	×	0.75	TC127266	14	70	6	4.9	3.7
M5	×	0.8	TC127286	15	70	6	4.9	4.2
M6	×	1	TC127316	17	80	6	4.9	5
M7	×	1	TC127346	17	80	7	5.5	6
M8	×	1.25	TC127366	20	90	8	6.2	6.8
M9	×	1.25	TC127396	20	90	9	7	7.8
M10	×	1.5	TC127426	22	100	10	8	8.5
M11	×	1.5	TC127466	22	100	11	9	9.5
M12	×	1.75	TC127506	24	110	12	9	10.2

▶ ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	◎	◎	◎								◎	◎	○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	○			○		◎		○	○	○	◎	○		

SPIRAL POINT TAPS

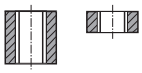
TC227 SERIES

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for through hole in more cutting speed than other taps due to thick web.

▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke.

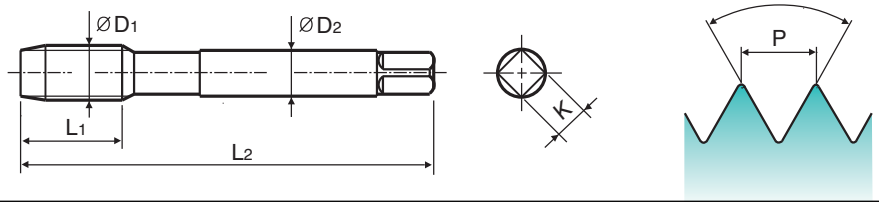
Hole type

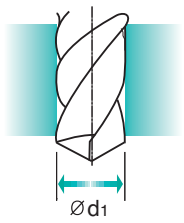


DIN 376

Material groups **GS** | HSS-E | DIN 376 | 6H | 60° | B | Bright

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M3	0.5	TC227206	11	56	2.2	1.8	2.5
M3.5	0.6	TC227226	12	56	2.5	2.1	2.9
M4	0.7	TC227246	13	63	2.8	2.1	3.3
M4.5	0.75	TC227266	14	70	3.5	2.7	3.7
M5	0.8	TC227286	15	70	3.5	2.7	4.2
M6	1	TC227316	17	80	4.5	3.4	5
M7	1	TC227346	17	80	5.5	4.3	6
M8	1.25	TC227366	20	90	6	4.9	6.8
M9	1.25	TC227396	20	90	7	5.5	7.8
M10	1.5	TC227426	22	100	7	5.5	8.5
M11	1.5	TC227466	22	100	8	6.2	9.5
M12	1.75	TC227506	24	110	9	7	10.2
M14	2	TC227546	26	110	11	9	12
M16	2	TC227606	27	110	12	9	14
M18	2.5	TC227656	30	125	14	11	15.5
M20	2.5	TC227706	32	140	16	12	17.5
M22	2.5	TC227746	32	140	18	14.5	19.5
M24	3	TC227786	34	160	18	14.5	21
M27	3	TC227866	36	160	20	16	24
M30	3.5	TC227946	40	180	22	18	26.5

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	◎	◎	◎								◎	◎	○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	○			○		◎		○	○	○	◎	○		

SPIRAL POINT TAPS

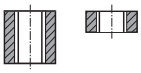
TD127 SERIES

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for through hole in more cutting speed than other taps due to thick web.

▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke.

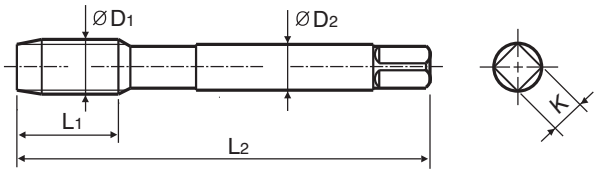
Hole type

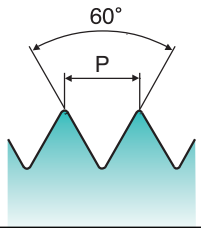


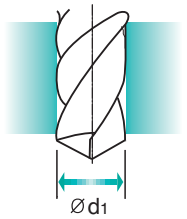
DIN 371

Material groups **GS** | HSS-E | DIN 371 | 6H | 60° | B | TiN

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	0.4	TD127136	8	45	2.8	2.1	1.6
M2.2	0.45	TD127156	8	45	2.8	2.1	1.75
✳ M2.3	0.4	TD127196	8	45	2.8	2.1	1.9
M2.5	0.45	TD127176	9	50	2.8	2.1	2.05
✳ M2.6	0.45	TD127496	9	50	2.8	2.1	2.1
M3	0.5	TD127206	11	56	3.5	2.7	2.5
M3.5	0.6	TD127226	12	56	4	3	2.9
M4	0.7	TD127246	13	63	4.5	3.4	3.3
M4.5	0.75	TD127266	14	70	6	4.9	3.7
M5	0.8	TD127286	15	70	6	4.9	4.2
M6	1	TD127316	17	80	6	4.9	5
M7	1	TD127346	17	80	7	5.5	6
M8	1.25	TD127366	20	90	8	6.2	6.8
M9	1.25	TD127396	20	90	9	7	7.8
M10	1.5	TD127426	22	100	10	8	8.5
M11	1.5	TD127466	22	100	11	9	9.5
M12	1.75	TD127506	24	110	12	9	10.2

▶ ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	◎	◎	◎								◎	◎	○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	○			○		◎		○	○	○	◎	○		

SPIRAL POINT TAPS

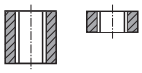
TD227 SERIES

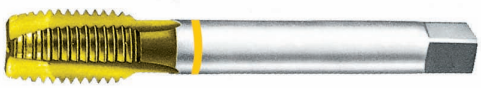
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for through hole in more cutting speed than other taps due to thick web.

▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke.

Hole type

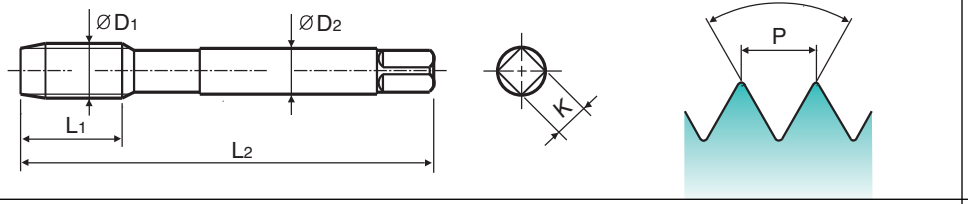




DIN 376

Material groups **GS** | HSS-E | DIN 376 | 6H | 60° | B | TiN

Machine taps
Maschinengewindebohrer



Unit : mm

SIZE		Pitch	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1		P		L1	L2	ØD2	K	Ød1
M3	×	0.5	TD227206	11	56	2.2	1.8	2.5
M3.5	×	0.6	TD227226	12	56	2.5	2.1	2.9
M4	×	0.7	TD227246	13	63	2.8	2.1	3.3
M4.5	×	0.75	TD227266	14	70	3.5	2.7	3.7
M5	×	0.8	TD227286	15	70	3.5	2.7	4.2
M6	×	1	TD227316	17	80	4.5	3.4	5
M7	×	1	TD227346	17	80	5.5	4.3	6
M8	×	1.25	TD227366	20	90	6	4.9	6.8
M9	×	1.25	TD227396	20	90	7	5.5	7.8
M10	×	1.5	TD227426	22	100	7	5.5	8.5
M11	×	1.5	TD227466	22	100	8	6.2	9.5
M12	×	1.75	TD227506	24	110	9	7	10.2
M14	×	2	TD227546	26	110	11	9	12
M16	×	2	TD227606	27	110	12	9	14
M18	×	2.5	TD227656	30	125	14	11	15.5
M20	×	2.5	TD227706	32	140	16	12	17.5
M22	×	2.5	TD227746	32	140	18	14.5	19.5
M24	×	3	TD227786	34	160	18	14.5	21
M27	×	3	TD227866	36	160	20	16	24
M30	×	3.5	TD227946	40	180	22	18	26.5

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	◎	◎	◎								◎	◎	○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	○			○		◎		○	○	○	◎	○		

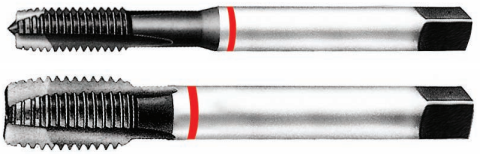
SPIRAL POINT TAPS

TQ863 SERIES

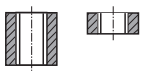
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for through hole in more cutting speed than other taps due to thick web and the best substrate.

▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke und bestem Werkstoff.

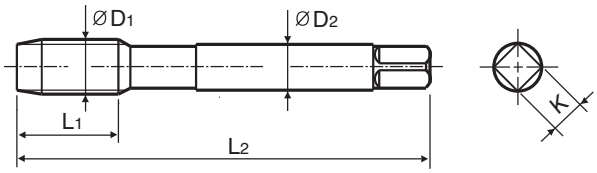


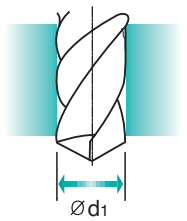
Hole type



Material groups **VG** | HSS-PM | DIN 371/376 | 6H | 60° | B | Vap

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	0.4	TQ863136	8	45	2.8	2.1	1.6
M2.2	0.45	TQ863156	8	45	2.8	2.1	1.75
M2.5	0.45	TQ863176	9	50	2.8	2.1	2.05
M3	0.5	TQ863206	11	56	3.5	2.7	2.5
M3.5	0.6	TQ863226	12	56	4	3	2.9
M4	0.7	TQ863246	13	63	4.5	3.4	3.3
M4.5	0.75	TQ863266	14	70	6	4.9	3.7
M5	0.8	TQ863286	15	70	6	4.9	4.2
M6	1	TQ863316	17	80	6	4.9	5
M7	1	TQ863346	17	80	7	5.5	6
M8	1.25	TQ863366	20	90	8	6.2	6.8
M10	1.5	TQ863426	22	100	10	8	8.5
M12	1.75	TQ863506	24	110	9	7	10.2

▶ DIN 371(M2~M10) and DIN 376(M12)

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
			○	◎				○						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

SPIRAL POINT TAPS

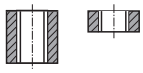
TR863 SERIES

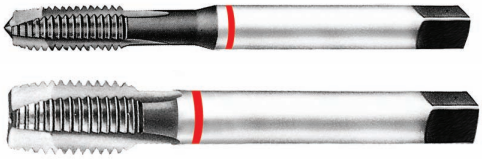
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for through hole in more cutting speed than other taps due to thick web and the best substrate.

▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke und bestem Werkstoff.

Hole type



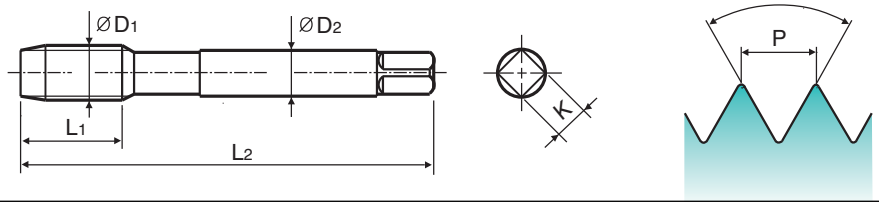


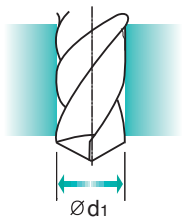
DIN 371

DIN 376

Material groups **VG** | HSS-PM | DIN 371/376 | 6H | 60° | B | Bright

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE ØD1	×	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	×	0.4	TR863136	8	45	2.8	2.1	1.6
M2.2	×	0.45	TR863156	8	45	2.8	2.1	1.75
M2.5	×	0.45	TR863176	9	50	2.8	2.1	2.05
M3	×	0.5	TR863206	11	56	3.5	2.7	2.5
M3.5	×	0.6	TR863226	12	56	4	3	2.9
M4	×	0.7	TR863246	13	63	4.5	3.4	3.3
M4.5	×	0.75	TR863266	14	70	6	4.9	3.7
M5	×	0.8	TR863286	15	70	6	4.9	4.2
M6	×	1	TR863316	17	80	6	4.9	5
M7	×	1	TR863346	17	80	7	5.5	6
M8	×	1.25	TR863366	20	90	8	6.2	6.8
M10	×	1.5	TR863426	22	100	10	8	8.5
M12	×	1.75	TR863506	24	110	9	7	10.2

▶ DIN 371(M2~M10) and DIN 376(M12)

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
			○	◎				○						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

SPIRAL POINT TAPS

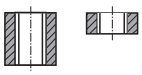
TC422 SERIES

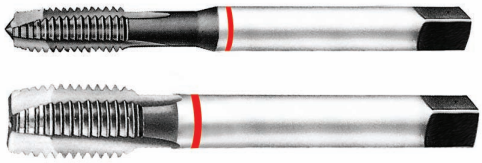
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for through hole in more cutting speed than other taps due to thick web.

▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke.

Hole type



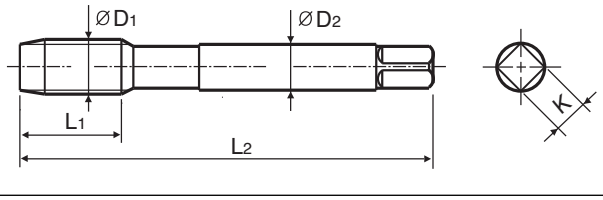


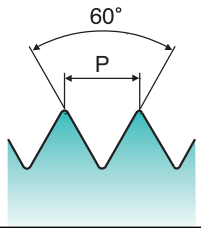
DIN 371

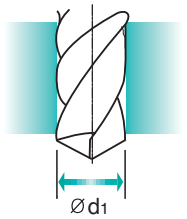
DIN 376

Material groups **VG** | HSS-E | DIN 371/376 | 6H | 60° | B | Bright

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE ØD1	×	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	×	0.4	TC422136	8	45	2.8	2.1	1.6
M2.2	×	0.45	TC422156	8	45	2.8	2.1	1.75
✳ M2.3	×	0.4	TC422196	8	45	2.8	2.1	1.9
M2.5	×	0.45	TC422176	9	50	2.8	2.1	2.05
✳ M2.6	×	0.45	TC422496	9	50	2.8	2.1	2.1
M3	×	0.5	TC422206	11	56	3.5	2.7	2.5
M3.5	×	0.6	TC422226	12	56	4	3	2.9
M4	×	0.7	TC422246	13	63	4.5	3.4	3.3
M4.5	×	0.75	TC422266	14	70	6	4.9	3.7
M5	×	0.8	TC422286	15	70	6	4.9	4.2
M6	×	1	TC422316	17	80	6	4.9	5
M7	×	1	TC422346	17	80	7	5.5	6
M8	×	1.25	TC422366	20	90	8	6.2	6.8
M9	×	1.25	TC422396	20	90	9	7	7.8
M10	×	1.5	TC422426	22	100	10	8	8.5
M11	×	1.5	TC422466	22	100	8	6.2	9.5
M12	×	1.75	TC422506	24	110	9	7	10.2
M14	×	2	TC422546	26	110	11	9	12
M16	×	2	TC422606	27	110	12	9	14
M18	×	2.5	TC422656	30	125	14	11	15.5
M20	×	2.5	TC422706	32	140	16	12	17.5
M22	×	2.5	TC422746	32	140	18	14.5	19.5
M24	×	3	TC422786	34	160	18	14.5	21
M27	×	3	TC422866	36	160	20	16	24
M30	×	3.5	TC422946	40	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
			○	◎				○						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

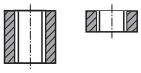
SPIRAL POINT TAPS

TE422 SERIES

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Recommended for tapping abrasive materials due to nitriding, not suitable for tapping tough or high strength materials.

▶ Empfohlen für das Gewindeschneiden verschleißfordernder Werkstoffe wegen der Nitrierung; nicht geeignet für das Gewinden zaher oder hochfester Werkstoffe.

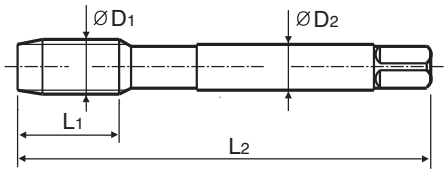
Hole type 

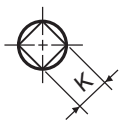
DIN 371

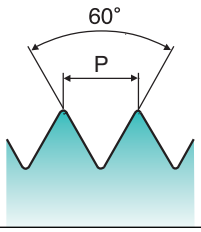
DIN 376

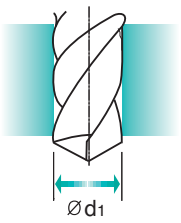
Material groups **VG** | HSS-E | DIN 371/376 | 6H | 60° | B | NI

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P		L1	L2	ØD2	K	Ød1
M2	0.4	TE422136	8	45	2.8	2.1	1.6
M2.2	0.45	TE422156	8	45	2.8	2.1	1.75
✳ M2.3	0.4	TE422196	8	45	2.8	2.1	1.9
M2.5	0.45	TE422176	9	50	2.8	2.1	2.05
✳ M2.6	0.45	TE422496	9	50	2.8	2.1	2.1
M3	0.5	TE422206	11	56	3.5	2.7	2.5
M3.5	0.6	TE422226	12	56	4	3	2.9
M4	0.7	TE422246	13	63	4.5	3.4	3.3
M4.5	0.75	TE422266	14	70	6	4.9	3.7
M5	0.8	TE422286	15	70	6	4.9	4.2
M6	1	TE422316	17	80	6	4.9	5
M7	1	TE422346	17	80	7	5.5	6
M8	1.25	TE422366	20	90	8	6.2	6.8
M9	1.25	TE422396	20	90	9	7	7.8
M10	1.5	TE422426	22	100	10	8	8.5
M11	1.5	TE422466	22	100	8	6.2	9.5
M12	1.75	TE422506	24	110	9	7	10.2
M14	2	TE422546	26	110	11	9	12
M16	2	TE422606	27	110	12	9	14
M18	2.5	TE422656	30	125	14	11	15.5
M20	2.5	TE422706	32	140	16	12	17.5
M22	2.5	TE422746	32	140	18	14.5	19.5
M24	3	TE422786	34	160	18	14.5	21
M27	3	TE422866	36	160	20	16	24
M30	3.5	TE422946	40	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
			○	○				○						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

SPIRAL POINT TAPS

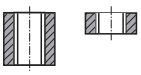
TD422 SERIES

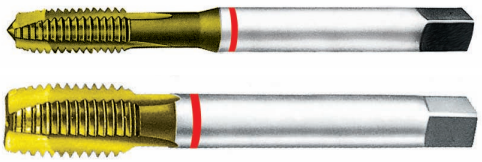
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for through hole in more cutting speed than other taps due to thick web.

▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke.

Hole type



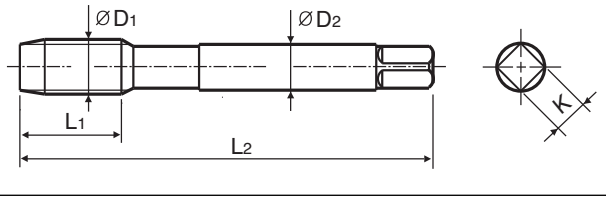


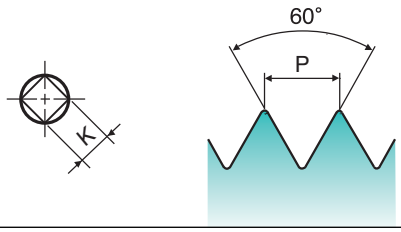
DIN 371

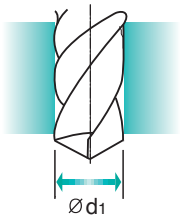
DIN 376

Material groups **VG** | HSS-E | DIN 371/376 | 6H | 60° | B | TiN

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE ØD1	×	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	×	0.4	TD422136	8	45	2.8	2.1	1.6
M2.2	×	0.45	TD422156	8	45	2.8	2.1	1.75
* M2.3	×	0.4	TD422196	8	45	2.8	2.1	1.9
M2.5	×	0.45	TD422176	9	50	2.8	2.1	2.05
* M2.6	×	0.45	TD422496	9	50	2.8	2.1	2.1
M3	×	0.5	TD422206	11	56	3.5	2.7	2.5
M3.5	×	0.6	TD422226	12	56	4	3	2.9
M4	×	0.7	TD422246	13	63	4.5	3.4	3.3
M4.5	×	0.75	TD422266	14	70	6	4.9	3.7
M5	×	0.8	TD422286	15	70	6	4.9	4.2
M6	×	1	TD422316	17	80	6	4.9	5
M7	×	1	TD422346	17	80	7	5.5	6
M8	×	1.25	TD422366	20	90	8	6.2	6.8
M9	×	1.25	TD422396	20	90	9	7	7.8
M10	×	1.5	TD422426	22	100	10	8	8.5
M11	×	1.5	TD422466	22	100	8	6.2	9.5
M12	×	1.75	TD422506	24	110	9	7	10.2
M14	×	2	TD422546	26	110	11	9	12
M16	×	2	TD422606	27	110	12	9	14
M18	×	2.5	TD422656	30	125	14	11	15.5
M20	×	2.5	TD422706	32	140	16	12	17.5
M22	×	2.5	TD422746	32	140	18	14.5	19.5
M24	×	3	TD422786	34	160	18	14.5	21
M27	×	3	TD422866	36	160	20	16	24
M30	×	3.5	TD422946	40	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ * DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
			○	◎				○						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

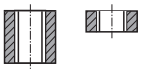
SPIRAL POINT TAPS

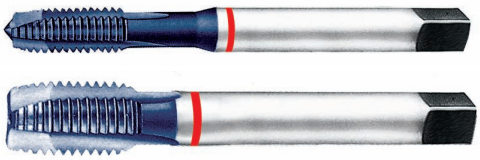
TY422 SERIES

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for through hole in more cutting speed than other taps due to thick web.

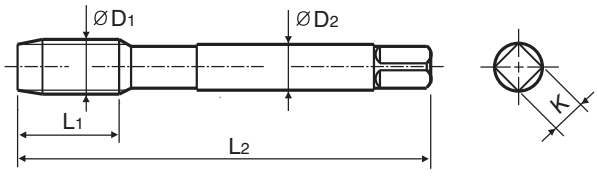
▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke.

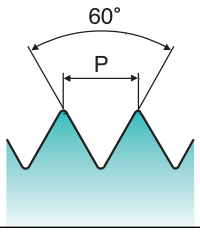
Hole type 

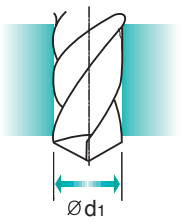


Material groups **VG** | HSS-E | DIN 371/376 | 6H | 60° | B | TiAlN

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	0.4	TY422136	8	45	2.8	2.1	1.6
M2.2	0.45	TY422156	8	45	2.8	2.1	1.75
✳ M2.3	0.4	TY422196	8	45	2.8	2.1	1.9
M2.5	0.45	TY422176	9	50	2.8	2.1	2.05
✳ M2.6	0.45	TY422496	9	50	2.8	2.1	2.1
M3	0.5	TY422206	11	56	3.5	2.7	2.5
M3.5	0.6	TY422226	12	56	4	3	2.9
M4	0.7	TY422246	13	63	4.5	3.4	3.3
M4.5	0.75	TY422266	14	70	6	4.9	3.7
M5	0.8	TY422286	15	70	6	4.9	4.2
M6	1	TY422316	17	80	6	4.9	5
M7	1	TY422346	17	80	7	5.5	6
M8	1.25	TY422366	20	90	8	6.2	6.8
M9	1.25	TY422396	20	90	9	7	7.8
M10	1.5	TY422426	22	100	10	8	8.5
M11	1.5	TY422466	22	100	8	6.2	9.5
M12	1.75	TY422506	24	110	9	7	10.2
M14	2	TY422546	26	110	11	9	12
M16	2	TY422606	27	110	12	9	14
M18	2.5	TY422656	30	125	14	11	15.5
M20	2.5	TY422706	32	140	16	12	17.5
M22	2.5	TY422746	32	140	18	14.5	19.5
M24	3	TY422786	34	160	18	14.5	21
M27	3	TY422866	36	160	20	16	24
M30	3.5	TY422946	40	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
			○	◎				○						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

SPIRAL POINT TAPS

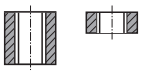
TQ853 SERIES

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for through hole in more cutting speed than other taps due to thick web and the best substrate.

▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke und bestem Werkstoff.

Hole type

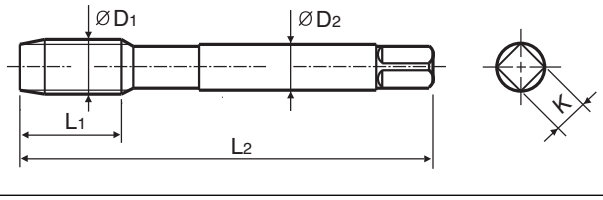


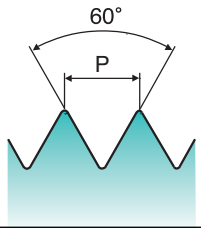
DIN 371

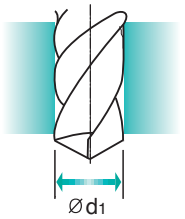
DIN 376

Material groups **VA** | HSS-PM | DIN 371/376 | 6H | 60° | B | Vap

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	0.4	TQ853136	8	45	2.8	2.1	1.6
M2.2	0.45	TQ853156	8	45	2.8	2.1	1.75
M2.5	0.45	TQ853176	9	50	2.8	2.1	2.05
M3	0.5	TQ853206	11	56	3.5	2.7	2.5
M3.5	0.6	TQ853226	12	56	4	3	2.9
M4	0.7	TQ853246	13	63	4.5	3.4	3.3
M4.5	0.75	TQ853266	14	70	6	4.9	3.7
M5	0.8	TQ853286	15	70	6	4.9	4.2
M6	1	TQ853316	17	80	6	4.9	5
M7	1	TQ853346	17	80	7	5.5	6
M8	1.25	TQ853366	20	90	8	6.2	6.8
M10	1.5	TQ853426	22	100	10	8	8.5
M12	1.75	TQ853506	24	110	9	7	10.2

▶ DIN 371(M2~M10) and DIN 376(M12)

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
○	◎					◎	◎	◎						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

SPIRAL POINT TAPS

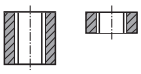
TR853 SERIES

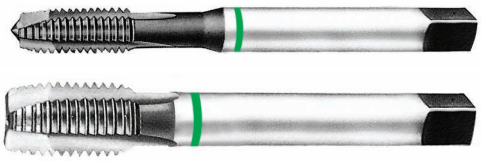
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for through hole in more cutting speed than other taps due to thick web and the best substrate.

▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke und bestem Werkstoff.

Hole type



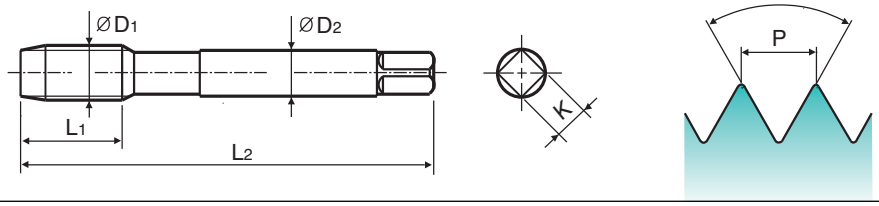


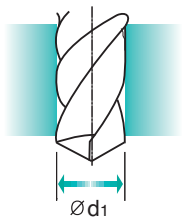
DIN 371

DIN 376

Material groups **VA** | HSS-PM | DIN 371/376 | 6H | 60° | B | Bright

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE ØD1	×	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	×	0.4	TR853136	8	45	2.8	2.1	1.6
M2.2	×	0.45	TR853156	8	45	2.8	2.1	1.75
M2.5	×	0.45	TR853176	9	50	2.8	2.1	2.05
M3	×	0.5	TR853206	11	56	3.5	2.7	2.5
M3.5	×	0.6	TR853226	12	56	4	3	2.9
M4	×	0.7	TR853246	13	63	4.5	3.4	3.3
M4.5	×	0.75	TR853266	14	70	6	4.9	3.7
M5	×	0.8	TR853286	15	70	6	4.9	4.2
M6	×	1	TR853316	17	80	6	4.9	5
M7	×	1	TR853346	17	80	7	5.5	6
M8	×	1.25	TR853366	20	90	8	6.2	6.8
M10	×	1.5	TR853426	22	100	10	8	8.5
M12	×	1.75	TR853506	24	110	9	7	10.2

▶ DIN 371(M2~M10) and DIN 376(M12)

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
○	◎					◎	◎	◎						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

SPIRAL POINT TAPS

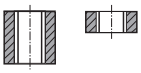
TC283 SERIES

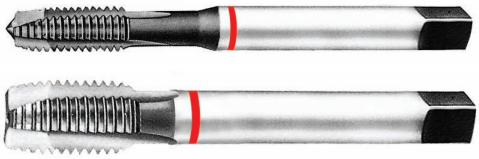
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for through hole in more cutting speed than other taps due to thick web.

▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke.

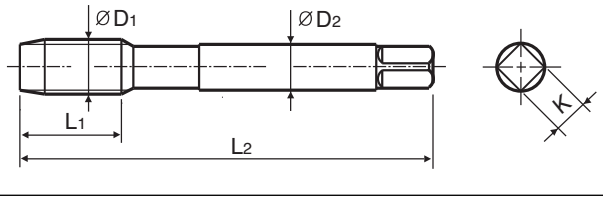
Hole type

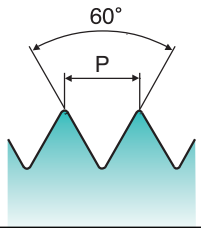


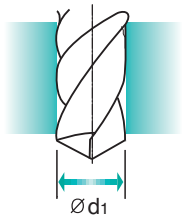


Material groups **HR** | HSS-E | DIN 371/376 | 6H | 60° | B | Bright

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE ØD1	×	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	×	0.4	TC283136	8	45	2.8	2.1	1.6
M2.2	×	0.45	TC283156	8	45	2.8	2.1	1.75
* M2.3	×	0.4	TC283196	8	45	2.8	2.1	1.9
M2.5	×	0.45	TC283176	9	50	2.8	2.1	2.05
* M2.6	×	0.45	TC283496	9	50	2.8	2.1	2.1
M3	×	0.5	TC283206	11	56	3.5	2.7	2.5
M3.5	×	0.6	TC283226	12	56	4	3	2.9
M4	×	0.7	TC283246	13	63	4.5	3.4	3.3
M4.5	×	0.75	TC283266	14	70	6	4.9	3.7
M5	×	0.8	TC283286	15	70	6	4.9	4.2
M6	×	1	TC283316	17	80	6	4.9	5
M7	×	1	TC283346	17	80	7	5.5	6
M8	×	1.25	TC283366	20	90	8	6.2	6.8
M9	×	1.25	TC283396	20	90	9	7	7.8
M10	×	1.5	TC283426	22	100	10	8	8.5
M11	×	1.5	TC283466	22	100	8	6.2	9.5
M12	×	1.75	TC283506	24	110	9	7	10.2
M14	×	2	TC283546	26	110	11	9	12
M16	×	2	TC283606	27	110	12	9	14
M18	×	2.5	TC283656	30	125	14	11	15.5
M20	×	2.5	TC283706	32	140	16	12	17.5
M22	×	2.5	TC283746	32	140	18	14.5	19.5
M24	×	3	TC283786	34	160	18	14.5	21
M27	×	3	TC283866	36	160	20	16	24
M30	×	3.5	TC283946	40	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ * DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
				○	◎			○						

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
					○		◎						○	○

SPIRAL POINT TAPS

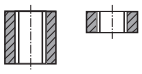
TY283 SERIES

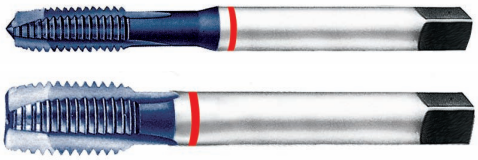
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for through hole in more cutting speed than other taps due to thick web.

▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke.

Hole type



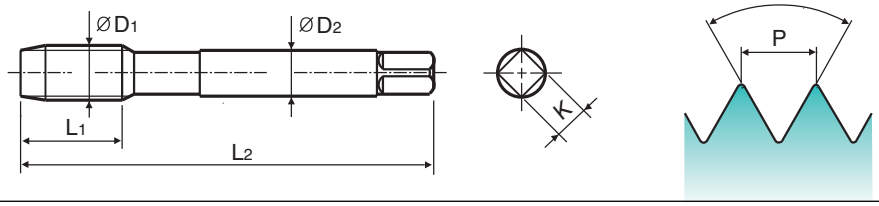


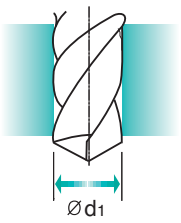
DIN 371

DIN 376

Material groups **HR** | HSS-E | DIN 371/376 | 6H | 60° | B | TiAlN

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P		L1	L2	ØD2	K	Ød1
M2	× 0.4	TY283136	8	45	2.8	2.1	1.6
M2.2	× 0.45	TY283156	8	45	2.8	2.1	1.75
✳ M2.3	× 0.4	TY283196	8	45	2.8	2.1	1.9
M2.5	× 0.45	TY283176	9	50	2.8	2.1	2.05
✳ M2.6	× 0.45	TY283496	9	50	2.8	2.1	2.1
M3	× 0.5	TY283206	11	56	3.5	2.7	2.5
M3.5	× 0.6	TY283226	12	56	4	3	2.9
M4	× 0.7	TY283246	13	63	4.5	3.4	3.3
M4.5	× 0.75	TY283266	14	70	6	4.9	3.7
M5	× 0.8	TY283286	15	70	6	4.9	4.2
M6	× 1	TY283316	17	80	6	4.9	5
M7	× 1	TY283346	17	80	7	5.5	6
M8	× 1.25	TY283366	20	90	8	6.2	6.8
M9	× 1.25	TY283396	20	90	9	7	7.8
M10	× 1.5	TY283426	22	100	10	8	8.5
M11	× 1.5	TY283466	22	100	8	6.2	9.5
M12	× 1.75	TY283506	24	110	9	7	10.2
M14	× 2	TY283546	26	110	11	9	12
M16	× 2	TY283606	27	110	12	9	14
M18	× 2.5	TY283656	30	125	14	11	15.5
M20	× 2.5	TY283706	32	140	16	12	17.5
M22	× 2.5	TY283746	32	140	18	14.5	19.5
M24	× 3	TY283786	34	160	18	14.5	21
M27	× 3	TY283866	36	160	20	16	24
M30	× 3.5	TY283946	40	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
				○	◎			○						

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
					○		◎						○	○

SPIRAL POINT TAPS

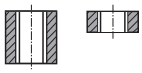
TB623 SERIES

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for through hole in more cutting speed than other taps due to thick web.

▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke.

Hole type

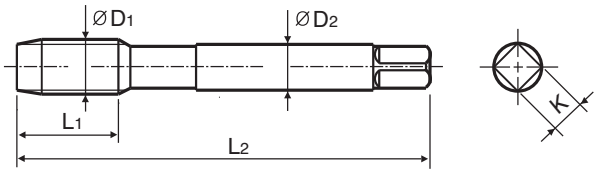


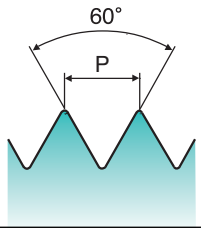
DIN 371

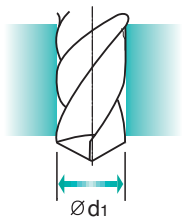
DIN 376

Material groups VA NW | HSS-E | DIN 371/376 | 6HX | 60° | B | Vap

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	0.4	TB623136	8	45	2.8	2.1	1.6
M2.2	0.45	TB623156	8	45	2.8	2.1	1.75
* M2.3	0.4	TB623196	8	45	2.8	2.1	1.9
M2.5	0.45	TB623176	9	50	2.8	2.1	2.05
* M2.6	0.45	TB623496	9	50	2.8	2.1	2.1
M3	0.5	TB623206	11	56	3.5	2.7	2.5
M3.5	0.6	TB623226	12	56	4	3	2.9
M4	0.7	TB623246	13	63	4.5	3.4	3.3
M4.5	0.75	TB623266	14	70	6	4.9	3.7
M5	0.8	TB623286	15	70	6	4.9	4.2
M6	1	TB623316	17	80	6	4.9	5
M7	1	TB623346	17	80	7	5.5	6
M8	1.25	TB623366	20	90	8	6.2	6.8
M9	1.25	TB623396	20	90	9	7	7.8
M10	1.5	TB623426	22	100	10	8	8.5
M11	1.5	TB623466	22	100	8	6.2	9.5
M12	1.75	TB623506	24	110	9	7	10.2
M14	2	TB623546	26	110	11	9	12
M16	2	TB623606	27	110	12	9	14
M18	2.5	TB623656	30	125	14	11	15.5
M20	2.5	TB623706	32	140	16	12	17.5
M22	2.5	TB623746	32	140	18	14.5	19.5
M24	3	TB623786	34	160	18	14.5	21
M27	3	TB623866	36	160	20	16	24
M30	3.5	TB623946	40	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ * DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎					◎	◎	◎						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

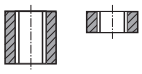
SPIRAL POINT TAPS

TCH23 SERIES

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for through hole in more cutting speed than other taps due to thick web.

▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke.

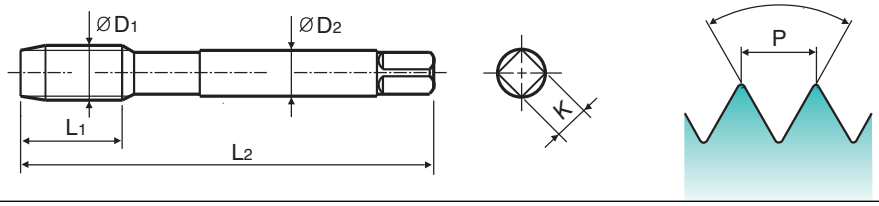
Hole type 

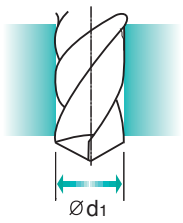
DIN 371

DIN 376

Material groups **VA NW** | HSS-E | DIN 371/376 | 6HX | 60° | B | Hardslick

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P		L1	L2	ØD2	K	Ød1
M2	× 0.4	TCH23136	8	45	2.8	2.1	1.6
M2.2	× 0.45	TCH23156	8	45	2.8	2.1	1.75
✳ M2.3	× 0.4	TCH23196	8	45	2.8	2.1	1.9
M2.5	× 0.45	TCH23176	9	50	2.8	2.1	2.05
✳ M2.6	× 0.45	TCH23496	9	50	2.8	2.1	2.1
M3	× 0.5	TCH23206	11	56	3.5	2.7	2.5
M3.5	× 0.6	TCH23226	12	56	4	3	2.9
M4	× 0.7	TCH23246	13	63	4.5	3.4	3.3
M4.5	× 0.75	TCH23266	14	70	6	4.9	3.7
M5	× 0.8	TCH23286	15	70	6	4.9	4.2
M6	× 1	TCH23316	17	80	6	4.9	5
M7	× 1	TCH23346	17	80	7	5.5	6
M8	× 1.25	TCH23366	20	90	8	6.2	6.8
M9	× 1.25	TCH23396	20	90	9	7	7.8
M10	× 1.5	TCH23426	22	100	10	8	8.5
M11	× 1.5	TCH23466	22	100	8	6.2	9.5
M12	× 1.75	TCH23506	24	110	9	7	10.2
M14	× 2	TCH23546	26	110	11	9	12
M16	× 2	TCH23606	27	110	12	9	14
M18	× 2.5	TCH23656	30	125	14	11	15.5
M20	× 2.5	TCH23706	32	140	16	12	17.5
M22	× 2.5	TCH23746	32	140	18	14.5	19.5
M24	× 3	TCH23786	34	160	18	14.5	21
M27	× 3	TCH23866	36	160	20	16	24
M30	× 3.5	TCH23946	40	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎					◎	◎	◎						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

SPIRAL POINT TAPS

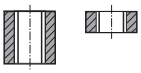
TM293 SERIES

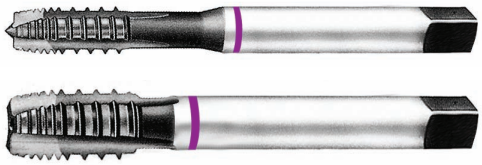
M-Az ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Interrupted tap to reduce contact area and tapping torque, and to give more chip space.

▶ Gewindebohrer mit ausgesetzten Zahnen um die Kontaktzone mit dem Werkstuck und das Drehmoment zu minimieren und dem Span mehr Raum zu geben.

Hole type



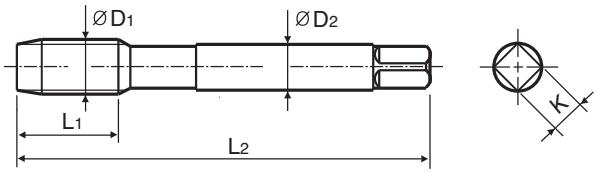


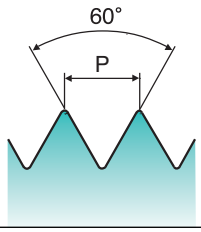
DIN 371

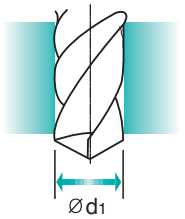
DIN 376

Material groups **Ti** | HSS-PM | DIN 371/376 | 6H | 60° | B | Bright

Macnhine taps
Maschinengewindebohrer







Unit : mm

SIZE ØD1	×	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	×	0.4	TM293136	8	45	2.8	2.1	1.6
M2.2	×	0.45	TM293156	8	45	2.8	2.1	1.75
* M2.3	×	0.4	TM293196	8	45	2.8	2.1	1.9
M2.5	×	0.45	TM293176	9	50	2.8	2.1	2.05
* M2.6	×	0.45	TM293496	9	50	2.8	2.1	2.1
M3	×	0.5	TM293206	11	56	3.5	2.7	2.5
M3.5	×	0.6	TM293226	12	56	4	3	2.9
M4	×	0.7	TM293246	13	63	4.5	3.4	3.3
M4.5	×	0.75	TM293266	14	70	6	4.9	3.7
M5	×	0.8	TM293286	15	70	6	4.9	4.2
M6	×	1	TM293316	17	80	6	4.9	5
M7	×	1	TM293346	17	80	7	5.5	6
M8	×	1.25	TM293366	20	90	8	6.2	6.8
M9	×	1.25	TM293396	20	90	9	7	7.8
M10	×	1.5	TM293426	22	100	10	8	8.5
M11	×	1.5	TM293466	22	100	8	6.2	9.5
M12	×	1.75	TM293506	24	110	9	7	10.2
M14	×	2	TM293546	26	110	11	9	12
M16	×	2	TM293606	27	110	12	9	14
M18	×	2.5	TM293656	30	125	14	11	15.5
M20	×	2.5	TM293706	32	140	16	12	17.5
M22	×	2.5	TM293746	32	140	18	14.5	19.5
M24	×	3	TM293786	34	160	18	14.5	21
M27	×	3	TM293866	36	160	20	16	24
M30	×	3.5	TM293946	40	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ * DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
				○									○	◎

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
◎														

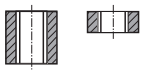
SPIRAL POINT TAPS

TZ293 SERIES

M-Az ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Interrupted tap to reduce contact area and tapping torque, and to give more chip space.

▶ Gewindebohrer mit ausgesetzten Zahnen um die Kontaktzone mit dem Werkstuck und das Drehmoment zu minimieren und dem Span mehr Raum zu geben.

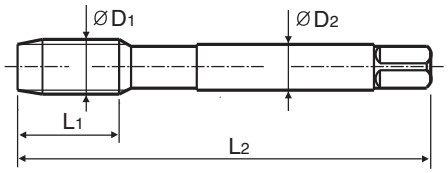
Hole type 

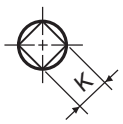
DIN 371

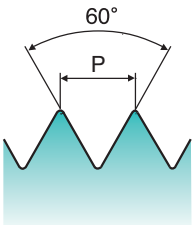
DIN 376

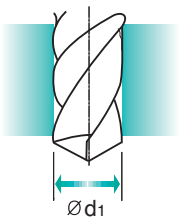
Material groups **Ti** | HSS-PM | DIN 371/376 | 6H | 60° | B | TiAlN

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	0.4	TZ293136	8	45	2.8	2.1	1.6
M2.2	0.45	TZ293156	8	45	2.8	2.1	1.75
✳ M2.3	0.4	TZ293196	8	45	2.8	2.1	1.9
M2.5	0.45	TZ293176	9	50	2.8	2.1	2.05
✳ M2.6	0.45	TZ293496	9	50	2.8	2.1	2.1
M3	0.5	TZ293206	11	56	3.5	2.7	2.5
M3.5	0.6	TZ293226	12	56	4	3	2.9
M4	0.7	TZ293246	13	63	4.5	3.4	3.3
M4.5	0.75	TZ293266	14	70	6	4.9	3.7
M5	0.8	TZ293286	15	70	6	4.9	4.2
M6	1	TZ293316	17	80	6	4.9	5
M7	1	TZ293346	17	80	7	5.5	6
M8	1.25	TZ293366	20	90	8	6.2	6.8
M9	1.25	TZ293396	20	90	9	7	7.8
M10	1.5	TZ293426	22	100	10	8	8.5
M11	1.5	TZ293466	22	100	8	6.2	9.5
M12	1.75	TZ293506	24	110	9	7	10.2
M14	2	TZ293546	26	110	11	9	12
M16	2	TZ293606	27	110	12	9	14
M18	2.5	TZ293656	30	125	14	11	15.5
M20	2.5	TZ293706	32	140	16	12	17.5
M22	2.5	TZ293746	32	140	18	14.5	19.5
M24	3	TZ293786	34	160	18	14.5	21
M27	3	TZ293866	36	160	20	16	24
M30	3.5	TZ293946	40	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
				○									○	◎

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
◎														

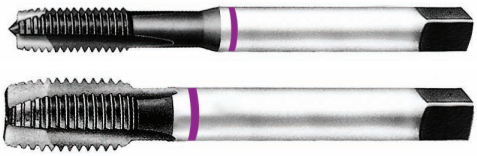
SPIRAL POINT TAPS

TQ873 SERIES

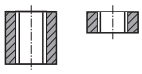
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for through hole in more cutting speed than other taps due to thick web and the best substrate.

▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke und bestem Werkstoff.

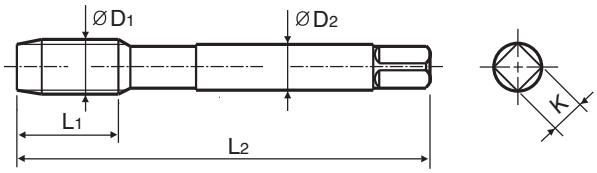


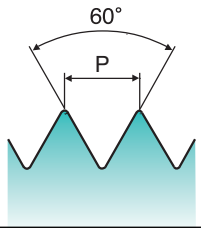
Hole type

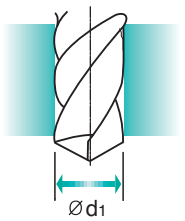


Material groups: **Ti Ni** | HSS-PM | DIN 371/376 | 6H | 60° | B | Vap

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	0.4	TQ873136	8	45	2.8	2.1	1.6
M2.2	0.45	TQ873156	8	45	2.8	2.1	1.75
M2.5	0.45	TQ873176	9	50	2.8	2.1	2.05
M3	0.5	TQ873206	11	56	3.5	2.7	2.5
M3.5	0.6	TQ873226	12	56	4	3	2.9
M4	0.7	TQ873246	13	63	4.5	3.4	3.3
M4.5	0.75	TQ873266	14	70	6	4.9	3.7
M5	0.8	TQ873286	15	70	6	4.9	4.2
M6	1	TQ873316	17	80	6	4.9	5
M7	1	TQ873346	17	80	7	5.5	6
M8	1.25	TQ873366	20	90	8	6.2	6.8
M10	1.5	TQ873426	22	100	10	8	8.5
M12	1.75	TQ873506	24	110	9	7	10.2

▶ DIN 371(M2~M10) and DIN 376(M12)

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
				◎	◎								○	◎

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
◎		◎	◎				○							

SPIRAL POINT TAPS

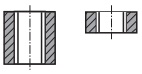
TR873 SERIES

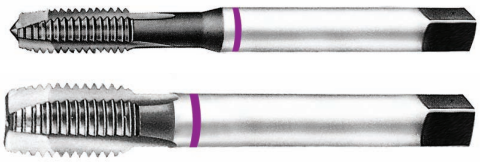
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for through hole in more cutting speed than other taps due to thick web and the best substrate.

▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke und bestem Werkstoff.

Hole type



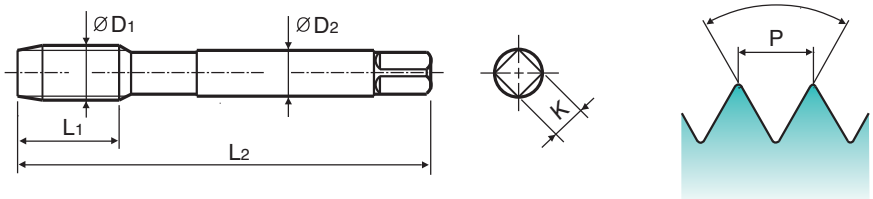


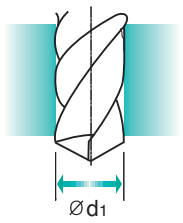
DIN 371

DIN 376

Material groups: Ti Ni | HSS-PM | DIN 371/376 | 6H | 60° | B | Bright

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE ØD1	×	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	×	0.4	TR873136	8	45	2.8	2.1	1.6
M2.2	×	0.45	TR873156	8	45	2.8	2.1	1.75
M2.5	×	0.45	TR873176	9	50	2.8	2.1	2.05
M3	×	0.5	TR873206	11	56	3.5	2.7	2.5
M3.5	×	0.6	TR873226	12	56	4	3	2.9
M4	×	0.7	TR873246	13	63	4.5	3.4	3.3
M4.5	×	0.75	TR873266	14	70	6	4.9	3.7
M5	×	0.8	TR873286	15	70	6	4.9	4.2
M6	×	1	TR873316	17	80	6	4.9	5
M7	×	1	TR873346	17	80	7	5.5	6
M8	×	1.25	TR873366	20	90	8	6.2	6.8
M10	×	1.5	TR873426	22	100	10	8	8.5
M12	×	1.75	TR873506	24	110	9	7	10.2

▶ DIN 371(M2~M10) and DIN 376(M12)

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
				◎	◎								○	◎

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
◎		◎	◎				○							

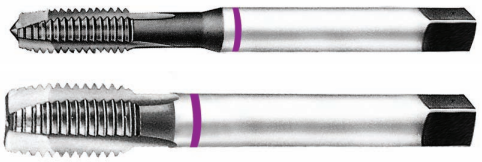
SPIRAL POINT TAPS

TM923 SERIES

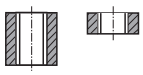
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ For tapping Nickel alloys and heat resistant alloy steels which are used in aero space and checmical industries.

▶ Zum Gewindeschneiden von Nickellegierungen und hitzefesten Legierungsstählen, die in der Luftfahrtindustrie und chemischen Industrie verwendet werden.

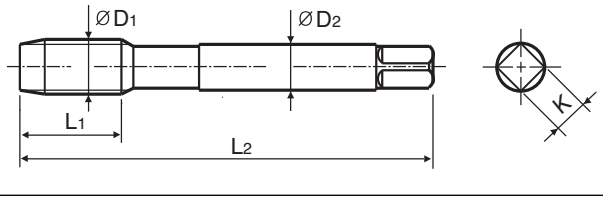


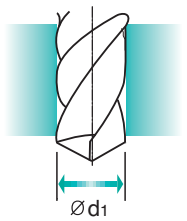
Hole type



Material groups **Ni** | HSS-PM | DIN 371/376 | 6H | 60° | B | Bright

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	0.4	TM923136	8	45	2.8	2.1	1.6
M2.2	0.45	TM923156	8	45	2.8	2.1	1.75
* M2.3	0.4	TM923196	8	45	2.8	2.1	1.9
M2.5	0.45	TM923176	9	50	2.8	2.1	2.05
* M2.6	0.45	TM923496	9	50	2.8	2.1	2.1
M3	0.5	TM923206	11	56	3.5	2.7	2.5
M3.5	0.6	TM923226	12	56	4	3	2.9
M4	0.7	TM923246	13	63	4.5	3.4	3.3
M4.5	0.75	TM923266	14	70	6	4.9	3.7
M5	0.8	TM923286	15	70	6	4.9	4.2
M6	1	TM923316	17	80	6	4.9	5
M7	1	TM923346	17	80	7	5.5	6
M8	1.25	TM923366	20	90	8	6.2	6.8
M9	1.25	TM923396	20	90	9	7	7.8
M10	1.5	TM923426	22	100	10	8	8.5
M11	1.5	TM923466	22	100	8	6.2	9.5
M12	1.75	TM923506	24	110	9	7	10.2
M14	2	TM923546	26	110	11	9	12
M16	2	TM923606	27	110	12	9	14
M18	2.5	TM923656	30	125	14	11	15.5
M20	2.5	TM923706	32	140	16	12	17.5
M22	2.5	TM923746	32	140	18	14.5	19.5
M24	3	TM923786	34	160	18	14.5	21
M27	3	TM923866	36	160	20	16	24
M30	3.5	TM923946	40	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ * DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
				◎	◎									

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
○		◎	◎				○							

SPIRAL POINT TAPS

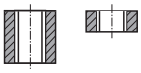
TZ923 SERIES

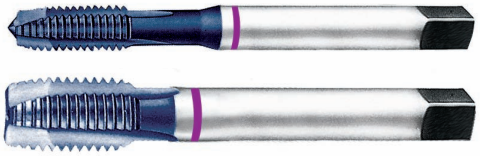
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ For tapping Nickel alloys and heat resistant alloy steels which are used in aero space and checmical industries.

▶ Zum Gewindeschneiden von Nickellegierungen und hitzefesten Legierungsstählen, die in der Luftfahrtindustrie und chemischen Industrie verwendet werden.

Hole type



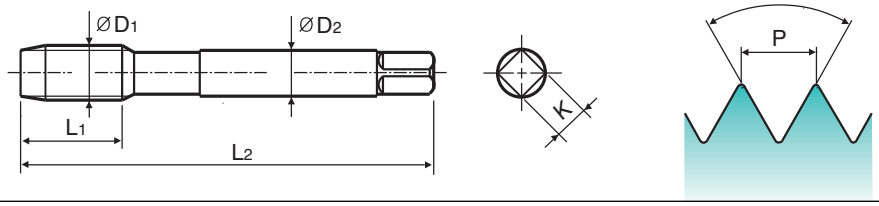


DIN 371

DIN 376

Material groups **Ni** | HSS-PM | DIN 371/376 | 6H | 60° | B | TiAlN

Machine taps
Maschinengewindebohrer



Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P		L1	L2	ØD2	K	Ød1
M2	× 0.4	TZ923136	8	45	2.8	2.1	1.6
M2.2	× 0.45	TZ923156	8	45	2.8	2.1	1.75
✳ M2.3	× 0.4	TZ923196	8	45	2.8	2.1	1.9
M2.5	× 0.45	TZ923176	9	50	2.8	2.1	2.05
✳ M2.6	× 0.45	TZ923496	9	50	2.8	2.1	2.1
M3	× 0.5	TZ923206	11	56	3.5	2.7	2.5
M3.5	× 0.6	TZ923226	12	56	4	3	2.9
M4	× 0.7	TZ923246	13	63	4.5	3.4	3.3
M4.5	× 0.75	TZ923266	14	70	6	4.9	3.7
M5	× 0.8	TZ923286	15	70	6	4.9	4.2
M6	× 1	TZ923316	17	80	6	4.9	5
M7	× 1	TZ923346	17	80	7	5.5	6
M8	× 1.25	TZ923366	20	90	8	6.2	6.8
M9	× 1.25	TZ923396	20	90	9	7	7.8
M10	× 1.5	TZ923426	22	100	10	8	8.5
M11	× 1.5	TZ923466	22	100	8	6.2	9.5
M12	× 1.75	TZ923506	24	110	9	7	10.2
M14	× 2	TZ923546	26	110	11	9	12
M16	× 2	TZ923606	27	110	12	9	14
M18	× 2.5	TZ923656	30	125	14	11	15.5
M20	× 2.5	TZ923706	32	140	16	12	17.5
M22	× 2.5	TZ923746	32	140	18	14.5	19.5
M24	× 3	TZ923786	34	160	18	14.5	21
M27	× 3	TZ923866	36	160	20	16	24
M30	× 3.5	TZ923946	40	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
				◎	◎									

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
○		◎	◎				○							

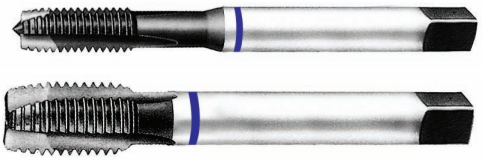
SPIRAL POINT TAPS

TE943 SERIES

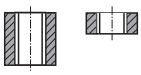
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for through hole in more cutting speed than other taps due to thick web.

▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke.

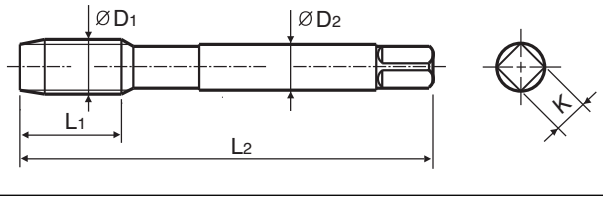


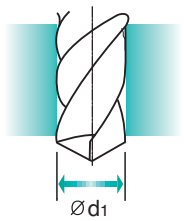
Hole type



Material groups **Al** | HSS-E | DIN 371/376 | 6H | 60° | B | NI

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	0.4	TE943136	8	45	2.8	2.1	1.6
M2.2	0.45	TE943156	8	45	2.8	2.1	1.75
* M2.3	0.4	TE943196	8	45	2.8	2.1	1.9
M2.5	0.45	TE943176	9	50	2.8	2.1	2.05
* M2.6	0.45	TE943496	9	50	2.8	2.1	2.1
M3	0.5	TE943206	11	56	3.5	2.7	2.5
M3.5	0.6	TE943226	12	56	4	3	2.9
M4	0.7	TE943246	13	63	4.5	3.4	3.3
M4.5	0.75	TE943266	14	70	6	4.9	3.7
M5	0.8	TE943286	15	70	6	4.9	4.2
M6	1	TE943316	17	80	6	4.9	5
M7	1	TE943346	17	80	7	5.5	6
M8	1.25	TE943366	20	90	8	6.2	6.8
M9	1.25	TE943396	20	90	9	7	7.8
M10	1.5	TE943426	22	100	10	8	8.5
M11	1.5	TE943466	22	100	8	6.2	9.5
M12	1.75	TE943506	24	110	9	7	10.2
M14	2	TE943546	26	110	11	9	12
M16	2	TE943606	27	110	12	9	14
M18	2.5	TE943656	30	125	14	11	15.5
M20	2.5	TE943706	32	140	16	12	17.5
M22	2.5	TE943746	32	140	18	14.5	19.5
M24	3	TE943786	34	160	18	14.5	21
M27	3	TE943866	36	160	20	16	24
M30	3.5	TE943946	40	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ * DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
		○												

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
											◎			

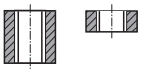
SPIRAL POINT TAPS

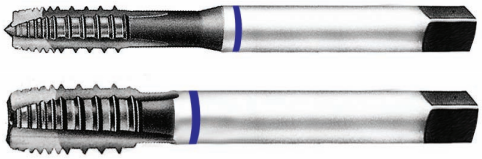
TC622 SERIES

M-Az ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Interrupted tap to reduce contact area and tapping torque, and to give more chip space.

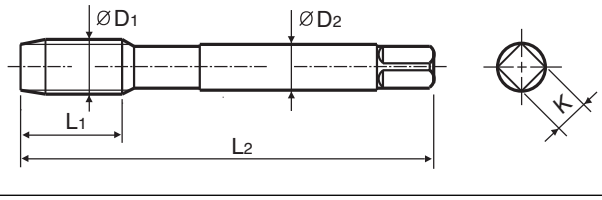
▶ Gewindebohrer mit ausgesetzten Zähnen um die Kontaktzone mit dem Werkstuck und das Drehmoment zu minimieren und dem Span mehr Raum zu geben.

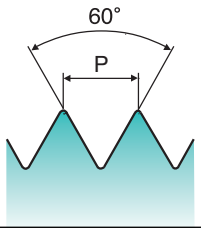
Hole type 

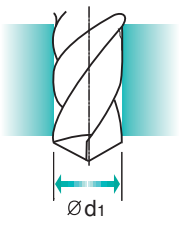


Material groups **Al** | HSS-E | DIN 371/376 | 6H | 60° | B | Bright

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	0.4	TC622136	8	45	2.8	2.1	1.6
M2.2	0.45	TC622156	8	45	2.8	2.1	1.75
✳ M2.3	0.4	TC622196	8	45	2.8	2.1	1.9
M2.5	0.45	TC622176	9	50	2.8	2.1	2.05
✳ M2.6	0.45	TC622496	9	50	2.8	2.1	2.1
M3	0.5	TC622206	11	56	3.5	2.7	2.5
M3.5	0.6	TC622226	12	56	4	3	2.9
M4	0.7	TC622246	13	63	4.5	3.4	3.3
M4.5	0.75	TC622266	14	70	6	4.9	3.7
M5	0.8	TC622286	15	70	6	4.9	4.2
M6	1	TC622316	17	80	6	4.9	5
M7	1	TC622346	17	80	7	5.5	6
M8	1.25	TC622366	20	90	8	6.2	6.8
M9	1.25	TC622396	20	90	9	7	7.8
M10	1.5	TC622426	22	100	10	8	8.5
M11	1.5	TC622466	22	100	8	6.2	9.5
M12	1.75	TC622506	24	110	9	7	10.2
M14	2	TC622546	26	110	11	9	12
M16	2	TC622606	27	110	12	9	14
M18	2.5	TC622656	30	125	14	11	15.5
M20	2.5	TC622706	32	140	16	12	17.5
M22	2.5	TC622746	32	140	18	14.5	19.5
M24	3	TC622786	34	160	18	14.5	21
M27	3	TC622866	36	160	20	16	24
M30	3.5	TC622946	40	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
○	○	○											○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
				◎				◎	◎	◎				

SPIRAL POINT TAPS

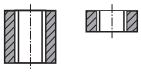
TC222 SERIES

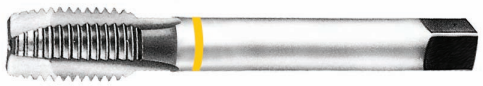
MF ISO metric fine threads DIN 13
Metrisches ISO-Feingewinde DIN 13

▶ Suitable for through hole in more cutting speed than other taps due to thick web.

▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke.

Hole type

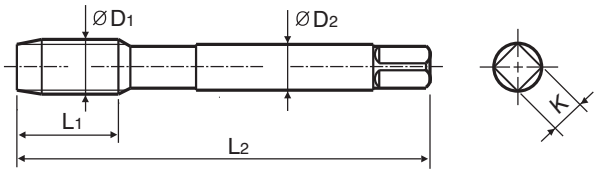


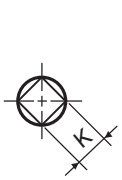


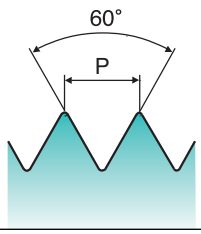
DIN 374

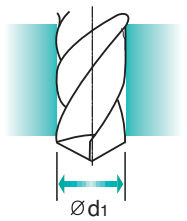
Material groups **GS** | HSS-E | DIN 374 | 6H | 60° | B | Bright

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P		L1	L2	ØD2	K	Ød1
M4	× 0.5	TD222256	10	63	2.8	2.1	3.5
M5	× 0.5	TD222296	11	70	3.5	2.7	4.5
M6	× 0.75	TD222326	13	80	4.5	3.4	5.2
M6	× 0.5	TD222336	13	80	4.5	3.4	5.5
M7	× 0.75	TD222356	14	80	5.5	4.3	6.2
M8	× 1	TD222376	17	90	6	4.9	7
M8	× 0.75	TD222386	14	80	6	4.9	7.2
M8	× 0.5	TD222936	14	80	6	4.9	7.5
M10	× 1.25	TD222436	22	100	7	5.5	8.8
M10	× 1	TD222446	18	90	7	5.5	9
M10	× 0.75	TD222456	18	90	7	5.5	9.2
M12	× 1.5	TD222516	22	100	9	7	10.5
M12	× 1.25	TD222526	22	100	9	7	10.8
M12	× 1	TD222536	18	100	9	7	11
M14	× 1.5	TD222556	22	100	11	9	12.5
M14	× 1.25	TD222566	22	100	11	9	12.8
M14	× 1	TD222576	18	100	11	9	13

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	◎	◎	◎								◎	◎	○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	○			○		◎		○	○	○	◎	○		

SPIRAL POINT TAPS

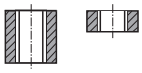
TC222 SERIES

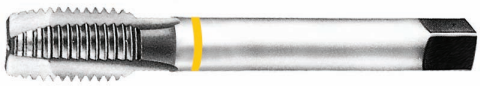
MF ISO metric fine threads DIN 13
Metrisches ISO-Feingewinde DIN 13

▶ Suitable for through hole in more cutting speed than other taps due to thick web.

▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke.

Hole type

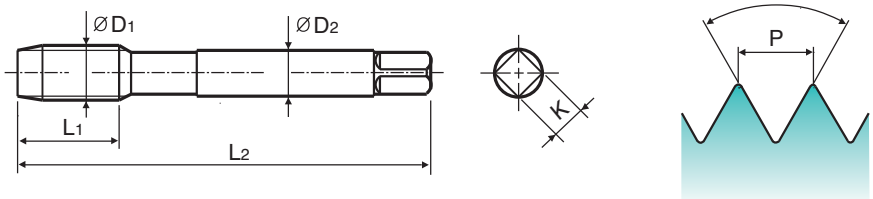


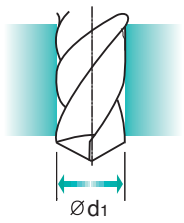


DIN 374

Material groups **GS** | HSS-E | DIN 374 | 6H | 60° | B | Bright

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P		L1	L2	ØD2	K	Ød1
M16 ×	1.5	TC222616	22	100	12	9	14.5
M16 ×	1	TC222626	18	100	12	9	15
M18 ×	1.5	TC222676	25	110	14	11	16.5
M18 ×	1	TC222686	20	110	14	11	17
M20 ×	1.5	TC222726	25	125	16	12	18.5
M20 ×	1	TC222736	20	125	16	12	19
M22 ×	1.5	TC222766	25	125	18	14.5	20.5
M22 ×	1	TC222776	20	125	18	14.5	21
M24 ×	2	TC222796	27	140	18	14.5	22
M24 ×	1.5	TC222806	27	140	18	14.5	22.5
M26 ×	1.5	TC222856	28	140	18	14.5	24.5
M27 ×	2	TC222876	28	140	20	16	25
M27 ×	1.5	TC222886	28	140	20	16	25.5
M28 ×	1.5	TC222916	28	140	20	16	26.5
M30 ×	2	TC222966	30	150	22	18	28
M30 ×	1.5	TC222976	30	150	22	18	28.5

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	◎	◎	◎								◎	◎	○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	○			○		◎		○	○	○	◎	○		

SPIRAL POINT TAPS

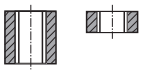
TD222 SERIES

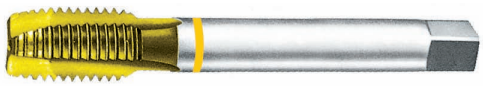
MF ISO metric fine threads DIN 13
Metrisches ISO-Feingewinde DIN 13

▶ Suitable for through hole in more cutting speed than other taps due to thick web.

▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke.

Hole type

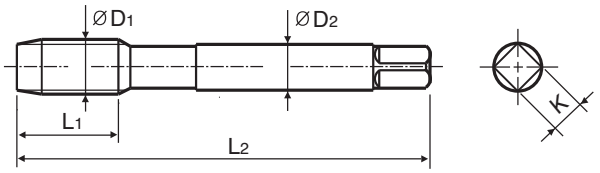


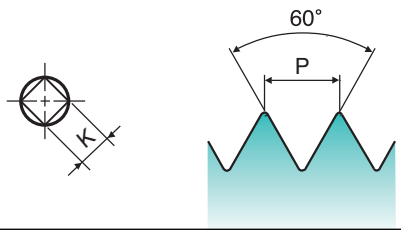


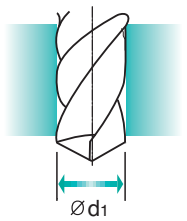
DIN 374

Material groups **GS** | HSS-E | DIN 374 | 6H | 60° | B | TiN

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P		L1	L2	ØD2	K	Ød1
M4	× 0.5	TD222256	10	63	2.8	2.1	3.5
M5	× 0.5	TD222296	11	70	3.5	2.7	4.5
M6	× 0.75	TD222326	13	80	4.5	3.4	5.2
M6	× 0.5	TD222336	13	80	4.5	3.4	5.5
M7	× 0.75	TD222356	14	80	5.5	4.3	6.2
M8	× 1	TD222376	17	90	6	4.9	7
M8	× 0.75	TD222386	14	80	6	4.9	7.2
M8	× 0.5	TD222936	14	80	6	4.9	7.5
M10	× 1.25	TD222436	22	100	7	5.5	8.8
M10	× 1	TD222446	18	90	7	5.5	9
M10	× 0.75	TD222456	18	90	7	5.5	9.2
M12	× 1.5	TD222516	22	100	9	7	10.5
M12	× 1.25	TD222526	22	100	9	7	10.8
M12	× 1	TD222536	18	100	9	7	11
M14	× 1.5	TD222556	22	100	11	9	12.5
M14	× 1.25	TD222566	22	100	11	9	12.8
M14	× 1	TD222576	18	100	11	9	13

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	◎	◎	◎								◎	◎	○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	○			○		◎		○	○	○	◎	○		

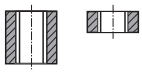
SPIRAL POINT TAPS

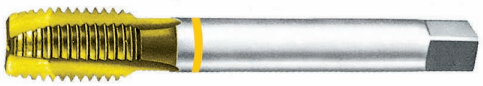
TD222 SERIES

MF ISO metric fine threads DIN 13
Metrisches ISO-Feingewinde DIN 13

▶ Suitable for through hole in more cutting speed than other taps due to thick web.

▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke.

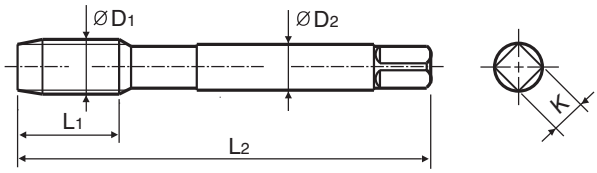
Hole type 

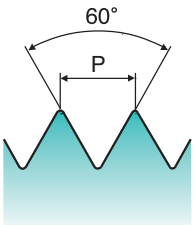


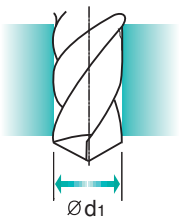
DIN 374

Material groups **GS** | HSS-E | DIN 374 | 6H | 60° | B | TiN

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M16 ×	1.5	TD222616	22	100	12	9	14.5
M16 ×	1	TD222626	18	100	12	9	15
M18 ×	1.5	TD222676	25	110	14	11	16.5
M18 ×	1	TD222686	20	110	14	11	17
M20 ×	1.5	TD222726	25	125	16	12	18.5
M20 ×	1	TD222736	20	125	16	12	19
M22 ×	1.5	TD222766	25	125	18	14.5	20.5
M22 ×	1	TD222776	20	125	18	14.5	21
M24 ×	2	TD222796	27	140	18	14.5	22
M24 ×	1.5	TD222806	27	140	18	14.5	22.5
M26 ×	1.5	TD222856	28	140	18	14.5	24.5
M27 ×	2	TD222876	28	140	20	16	25
M27 ×	1.5	TD222886	28	140	20	16	25.5
M28 ×	1.5	TD222916	28	140	20	16	26.5
M30 ×	2	TD222966	30	150	22	18	28
M30 ×	1.5	TD222976	30	150	22	18	28.5

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	◎	◎	◎								◎	◎	○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	○			○		◎		○	○	○	◎	○		

SPIRAL POINT TAPS

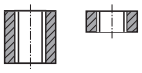
TC263 SERIES

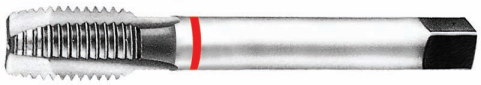
MF ISO metric fine threads DIN 13
Metrisches ISO-Feingewinde DIN 13

▶ Suitable for through hole in more cutting speed than other taps due to thick web.

▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke.

Hole type

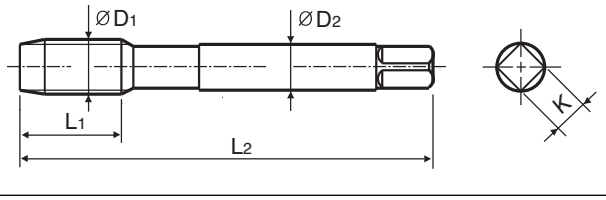




DIN 374

Material groups VG | HSS-E | DIN 374 | 6H | 60° | B | Bright

Machine taps
Maschinengewindebohrer



Unit : mm

SIZE		Pitch	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1		P		L1	L2	ØD2	K	Ød1
M4	×	0.5	TC263256	10	63	2.8	2.1	3.5
M5	×	0.5	TC263296	11	70	3.5	2.7	4.5
M6	×	0.75	TC263326	13	80	4.5	3.4	5.2
M6	×	0.5	TC263336	13	80	4.5	3.4	5.5
M7	×	0.75	TC263356	14	80	5.5	4.3	6.2
M8	×	1	TC263376	17	90	6	4.9	7
M8	×	0.75	TC263386	14	80	6	4.9	7.2
M10	×	1.25	TC263436	22	100	7	5.5	8.8
M10	×	1	TC263446	18	90	7	5.5	9
M10	×	0.75	TC263456	18	90	7	5.5	9.2
M12	×	1.5	TC263516	22	100	9	7	10.5
M12	×	1.25	TC263526	22	100	9	7	10.8
M12	×	1	TC263536	18	100	9	7	11
M14	×	1.5	TC263556	22	100	11	9	12.5
M14	×	1.25	TC263566	22	100	11	9	12.8
M16	×	1.5	TC263616	22	100	12	9	14.5
M18	×	1.5	TC263676	25	110	14	11	16.5
M20	×	1.5	TC263726	25	125	16	12	18.5
M22	×	1.5	TC263766	25	125	18	14.5	20.5
M24	×	1.5	TC263806	27	140	18	14.5	22.5

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
			○	◎				○						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

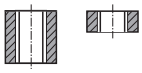
SPIRAL POINT TAPS

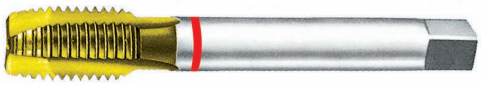
TD263 SERIES

MF ISO metric fine threads DIN 13
Metrisches ISO-Feingewinde DIN 13

▶ Suitable for through hole in more cutting speed than other taps due to thick web.

▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke.

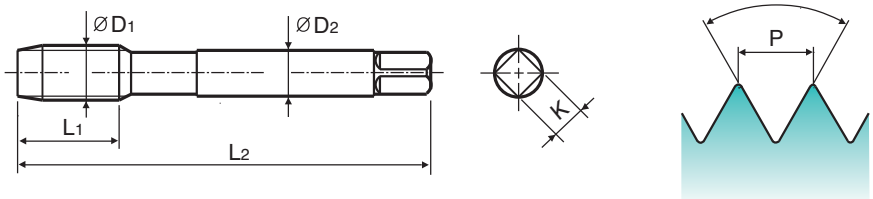
Hole type 

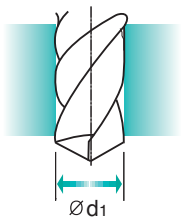


DIN 374

Material groups **VG** | HSS-E | DIN 374 | 6H | 60° | B | TiN

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE ØD1		Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M4	×	0.5	TD263256	10	63	2.8	2.1	3.5
M5	×	0.5	TD263296	11	70	3.5	2.7	4.5
M6	×	0.75	TD263326	13	80	4.5	3.4	5.2
M6	×	0.5	TD263336	13	80	4.5	3.4	5.5
M7	×	0.75	TD263356	14	80	5.5	4.3	6.2
M8	×	1	TD263376	17	90	6	4.9	7
M8	×	0.75	TD263386	14	80	6	4.9	7.2
M10	×	1.25	TD263436	22	100	7	5.5	8.8
M10	×	1	TD263446	18	90	7	5.5	9
M10	×	0.75	TD263456	18	90	7	5.5	9.2
M12	×	1.5	TD263516	22	100	9	7	10.5
M12	×	1.25	TD263526	22	100	9	7	10.8
M12	×	1	TD263536	18	100	9	7	11
M14	×	1.5	TD263556	22	100	11	9	12.5
M14	×	1.25	TD263566	22	100	11	9	12.8
M16	×	1.5	TD263616	22	100	12	9	14.5
M18	×	1.5	TD263676	25	110	14	11	16.5
M20	×	1.5	TD263726	25	125	16	12	18.5
M22	×	1.5	TD263766	25	125	18	14.5	20.5
M24	×	1.5	TD263806	27	140	18	14.5	22.5

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
			○	◎				○						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

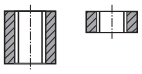
SPIRAL POINT TAPS

TB123 SERIES

MF ISO metric fine threads DIN 13
Metrisches ISO-Feingewinde DIN 13

▶ Suitable for through hole in more cutting speed than other taps due to thick web.

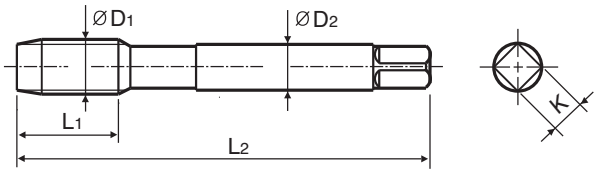
▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke.

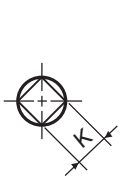
Hole type 

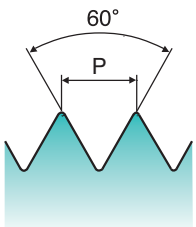
DIN 374

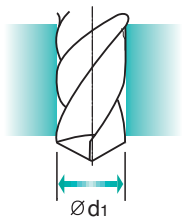
Material groups VA NW | HSS-E | DIN 374 | 6HX | 60° | B | Vap

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M4	0.5	TB123256	10	63	2.8	2.1	3.5
M5	0.5	TB123296	11	70	3.5	2.7	4.5
M6	0.75	TB123326	13	80	4.5	3.4	5.2
M6	0.5	TB123336	13	80	4.5	3.4	5.5
M7	0.75	TB123356	14	80	5.5	4.3	6.2
M8	1	TB123376	17	90	6	4.9	7
M8	0.75	TB123386	14	80	6	4.9	7.2
M10	1.25	TB123436	22	100	7	5.5	8.8
M10	1	TB123446	18	90	7	5.5	9
M10	0.75	TB123456	18	90	7	5.5	9.2
M12	1.5	TB123516	22	100	9	7	10.5
M12	1.25	TB123526	22	100	9	7	10.8
M12	1	TB123536	18	100	9	7	11
M14	1.5	TB123556	22	100	11	9	12.5
M14	1.25	TB123566	22	100	11	9	12.8
M16	1.5	TB123616	22	100	12	9	14.5
M18	1.5	TB123676	25	110	14	11	16.5
M20	1.5	TB123726	25	125	16	12	18.5
M22	1.5	TB123766	25	125	18	14.5	20.5
M24	1.5	TB123806	27	140	18	14.5	22.5

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎					◎	◎	◎						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

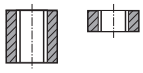
SPIRAL POINT TAPS

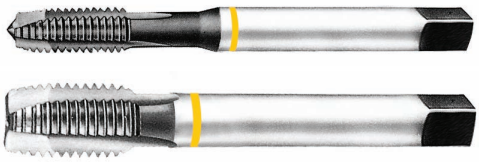
TC214 SERIES

UNC Unified coarse threads
Unified Grobgewinde

▶ Suitable for through hole in more cutting speed than other taps due to thick web.

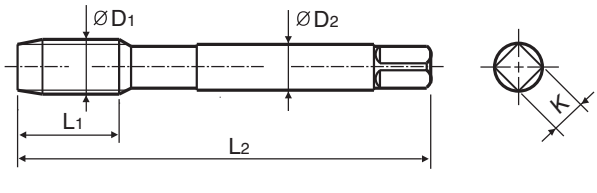
▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke.

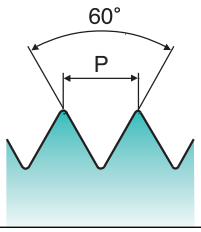
Hole type 

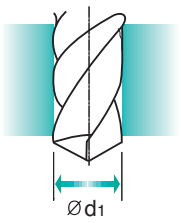


Material groups **GS** | HSS-E | DIN 371/376 | 2B | 60° | B | Bright

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1			L1	L2	ØD2	K	Ød1
#4	– 40 UNC	TC214162	11	56	3.5	2.7	2.3
#5	– 40 UNC	TC214202	11	56	3.5	2.7	2.6
#6	– 32 UNC	TC214242	12	56	4	3	2.85
#8	– 32 UNC	TC214282	13	63	4.5	3.4	3.5
#10	– 24 UNC	TC214322	15	70	6	4.9	3.9
#12	– 24 UNC	TC214362	16	80	6	4.9	4.5
1/4"	– 20 UNC	TC214402	17	80	7	5.5	5.2
5/16"	– 18 UNC	TC214442	20	90	8	6.2	6.6
3/8"	– 16 UNC	TC214482	22	100	9	7	8
7/16"	– 14 UNC	TC214522	22	100	8	6.2	9.4
1/2"	– 13 UNC	TC214562	25	110	9	7	10.75
9/16"	– 12 UNC	TC214602	26	110	11	9	12.25
5/8"	– 11 UNC	TC214642	27	110	12	9	13.5
3/4"	– 10 UNC	TC214702	30	125	14	11	16.5
7/8"	– 9 UNC	TC214742	32	140	18	14.5	19.5
1"	– 8 UNC	TC214782	36	160	20	16	22.25
1∗1/8"	– 7 UNC	TC214822	40	180	22	18	25

▶ DIN 371(#4~3/8") and DIN 376(7/16"~1∗1/8")

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	◎	◎	◎								◎	◎	○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	○			○		◎		○	○	○	◎	○		

SPIRAL POINT TAPS

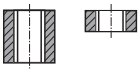
TC244 SERIES

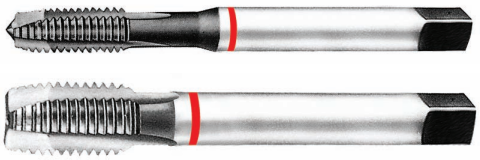
UNC Unified coarse threads
Unified Grobgewinde

▶ Suitable for through hole in more cutting speed than other taps due to thick web.

▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke.

Hole type



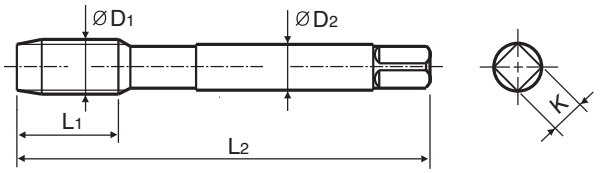


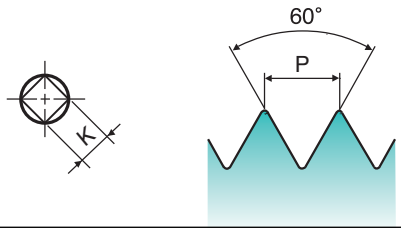
DIN 371

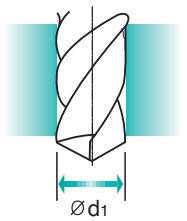
DIN 376

Material groups VG | HSS-E | DIN 371/376 | 2B | 60° | B | Bright

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1		L1	L2	ØD2	K	Ød1
#4 – 40 UNC	TC244162	11	56	3.5	2.7	2.3
#5 – 40 UNC	TC244202	11	56	3.5	2.7	2.6
#6 – 32 UNC	TC244242	12	56	4	3	2.85
#8 – 32 UNC	TC244282	13	63	4.5	3.4	3.5
#10 – 24 UNC	TC244322	15	70	6	4.9	3.9
#12 – 24 UNC	TC244362	16	80	6	4.9	4.5
1/4" – 20 UNC	TC244402	17	80	7	5.5	5.2
5/16" – 18 UNC	TC244442	20	90	8	6.2	6.6
3/8" – 16 UNC	TC244482	22	100	9	7	8
7/16" – 14 UNC	TC244522	22	100	8	6.2	9.4
1/2" – 13 UNC	TC244562	25	110	9	7	10.75
9/16" – 12 UNC	TC244602	26	110	11	9	12.25
5/8" – 11 UNC	TC244642	27	110	12	9	13.5
3/4" – 10 UNC	TC244702	30	125	14	11	16.5
7/8" – 9 UNC	TC244742	32	140	18	14.5	19.5
1" – 8 UNC	TC244782	36	160	20	16	22.25
1∗1/8" – 7 UNC	TC244822	40	180	22	18	25

▶ DIN 371(#4~3/8") and DIN 376(7/16"~1∗1/8")

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
			○	◎				○						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

SPIRAL POINT TAPS

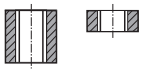
TD244 SERIES

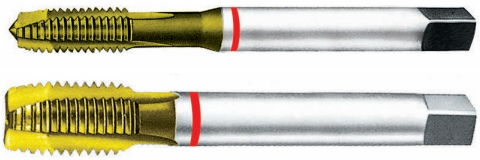
UNC Unified coarse threads
Unified Grobgewinde

▶ Suitable for through hole in more cutting speed than other taps due to thick web.

▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke.

Hole type



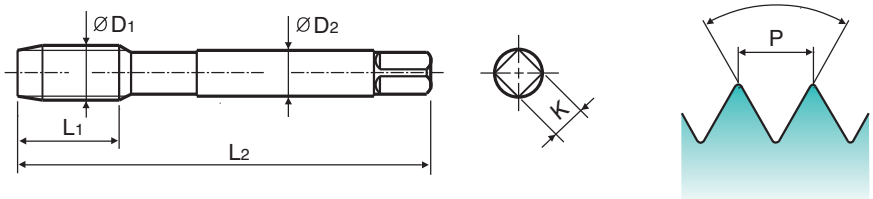


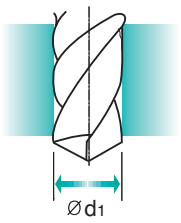
DIN 371

DIN 376

Material groups **VG** | HSS-E | DIN 371/376 | 2B | 60° | B | TiN

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1			L1	L2	ØD2	K	Ød1
#4	– 40 UNC	TD244162	11	56	3.5	2.7	2.3
#5	– 40 UNC	TD244202	11	56	3.5	2.7	2.6
#6	– 32 UNC	TD244242	12	56	4	3	2.85
#8	– 32 UNC	TD244282	13	63	4.5	3.4	3.5
#10	– 24 UNC	TD244322	15	70	6	4.9	3.9
#12	– 24 UNC	TD244362	16	80	6	4.9	4.5
1/4"	– 20 UNC	TD244402	17	80	7	5.5	5.2
5/16"	– 18 UNC	TD244442	20	90	8	6.2	6.6
3/8"	– 16 UNC	TD244482	22	100	9	7	8
7/16"	– 14 UNC	TD244522	22	100	8	6.2	9.4
1/2"	– 13 UNC	TD244562	25	110	9	7	10.75
9/16"	– 12 UNC	TD244602	26	110	11	9	12.25
5/8"	– 11 UNC	TD244642	27	110	12	9	13.5
3/4"	– 10 UNC	TD244702	30	125	14	11	16.5
7/8"	– 9 UNC	TD244742	32	140	18	14.5	19.5
1"	– 8 UNC	TD244782	36	160	20	16	22.25
1*1/8"	– 7 UNC	TD244822	40	180	22	18	25

▶ DIN 371(#4~3/8") and DIN 376(7/16"~1*1/8")

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
			○	◎				○						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

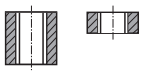
SPIRAL POINT TAPS

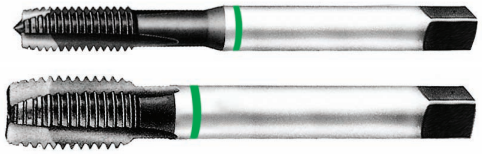
TB264 SERIES

UNC Unified coarse threads
Unified Grobgewinde

▶ Suitable for through hole in more cutting speed than other taps due to thick web.

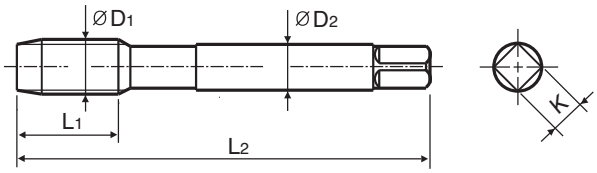
▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke.

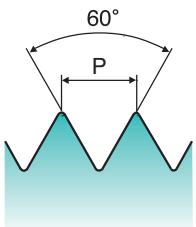
Hole type 

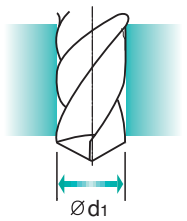


Material groups VA NW | HSS-E | DIN 371/376 | 2B | 60° | B | Vap

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1			L1	L2	ØD2	K	Ød1
#4	– 40 UNC	TB264162	11	56	3.5	2.7	2.3
#5	– 40 UNC	TB264202	11	56	3.5	2.7	2.6
#6	– 32 UNC	TB264242	12	56	4	3	2.85
#8	– 32 UNC	TB264282	13	63	4.5	3.4	3.5
#10	– 24 UNC	TB264322	15	70	6	4.9	3.9
#12	– 24 UNC	TB264362	16	80	6	4.9	4.5
1/4"	– 20 UNC	TB264402	17	80	7	5.5	5.2
5/16"	– 18 UNC	TB264442	20	90	8	6.2	6.6
3/8"	– 16 UNC	TB264482	22	100	9	7	8
7/16"	– 14 UNC	TB264522	22	100	8	6.2	9.4
1/2"	– 13 UNC	TB264562	25	110	9	7	10.75
9/16"	– 12 UNC	TB264602	26	110	11	9	12.25
5/8"	– 11 UNC	TB264642	27	110	12	9	13.5
3/4"	– 10 UNC	TB264702	30	125	14	11	16.5
7/8"	– 9 UNC	TB264742	32	140	18	14.5	19.5
1"	– 8 UNC	TB264782	36	160	20	16	22.25
1*1/8"	– 7 UNC	TB264822	40	180	22	18	25

▶ DIN 371(#4~3/8") and DIN 376(7/16"~1*1/8")

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎					◎	◎	◎						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

SPIRAL POINT TAPS

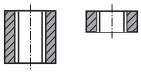
TC234 SERIES

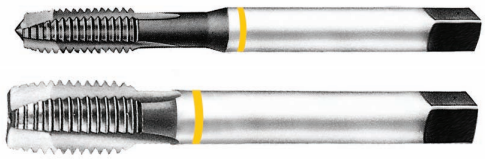
UNF Unified fine threads
Unified Feingewinde

▶ Suitable for through hole in more cutting speed than other taps due to thick web.

▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke.

Hole type



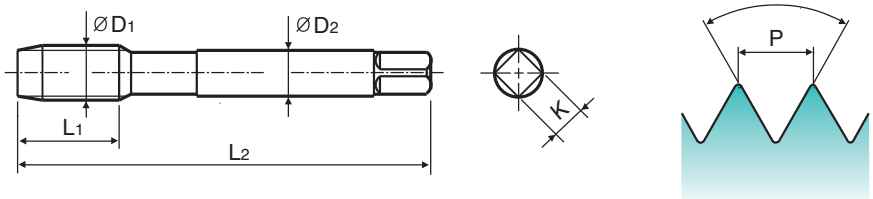


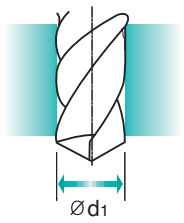
DIN 371

DIN 374

Material groups **GS** | HSS-E | DIN 371/374 | 2B | 60° | B | Bright

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1			L1	L2	ØD2	K	Ød1
#4	– 48 UNF	TC234182	11	56	3.5	2.7	2.4
#5	– 44 UNF	TC234222	11	56	3.5	2.7	2.7
#6	– 40 UNF	TC234262	12	56	4	3	3
#8	– 36 UNF	TC234302	13	63	4.5	3.4	3.5
#10	– 32 UNF	TC234342	13	70	6	4.9	4.1
#12	– 28 UNF	TC234382	16	80	6	4.9	4.7
1/4"	– 28 UNF	TC234422	17	80	7	5.5	5.5
5/16"	– 24 UNF	TC234462	17	90	8	6.2	6.9
3/8"	– 24 UNF	TC234502	18	100	9	7	8.5
7/16"	– 20 UNF	TC234542	22	100	8	6.2	9.9
1/2"	– 20 UNF	TC234582	22	100	9	7	11.5
9/16"	– 18 UNF	TC234622	22	100	11	9	12.9
5/8"	– 18 UNF	TC234662	22	100	12	9	14.5
3/4"	– 16 UNF	TC234722	25	110	14	11	17.5
7/8"	– 14 UNF	TC234762	26	125	18	14.5	20.5
1"	– 12 UNF	TC234802	28	140	20	16	23.25
1*1/8"	– 12 UNF	TC234842	30	150	22	18	26.5

▶ DIN 371(#4~3/8") and DIN 374(7/16"~1*1/8")

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	◎	◎	◎								◎	◎	○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	○			○		◎		○	○	○	◎	○		

SPIRAL POINT TAPS

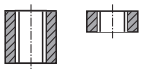
TC254 SERIES

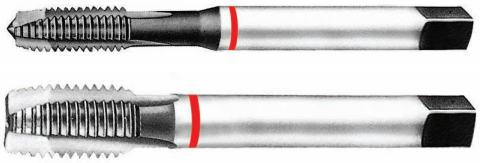
UNF Unified fine threads
Unified Feingewinde

▶ Suitable for through hole in more cutting speed than other taps due to thick web.

▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke.

Hole type



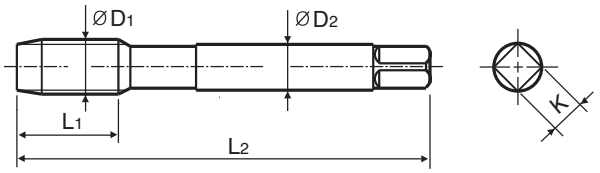


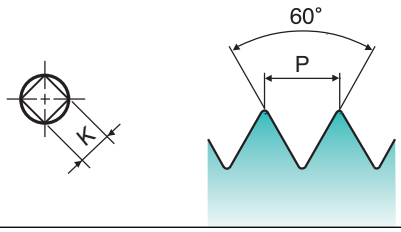
DIN 371

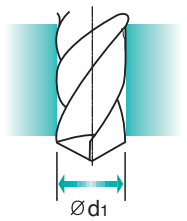
DIN 374

Material groups **VG** | HSS-E | DIN 371/374 | 2B | 60° | B | Bright

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1			L1	L2	ØD2	K	Ød1
#4	– 48 UNF	TC254182	11	56	3.5	2.7	2.4
#5	– 44 UNF	TC254222	11	56	3.5	2.7	2.7
#6	– 40 UNF	TC254262	12	56	4	3	3
#8	– 36 UNF	TC254302	13	63	4.5	3.4	3.5
#10	– 32 UNF	TC254342	13	70	6	4.9	4.1
#12	– 28 UNF	TC254382	16	80	6	4.9	4.7
1/4"	– 28 UNF	TC254422	17	80	7	5.5	5.5
5/16"	– 24 UNF	TC254462	17	90	8	6.2	6.9
3/8"	– 24 UNF	TC254502	18	100	9	7	8.5
7/16"	– 20 UNF	TC254542	22	100	8	6.2	9.9
1/2 "	– 20 UNF	TC254582	22	100	9	7	11.5
9/16"	– 18 UNF	TC254622	22	100	11	9	12.9
5/8"	– 18 UNF	TC254662	22	100	12	9	14.5
3/4"	– 16 UNF	TC254722	25	110	14	11	17.5
7/8"	– 14 UNF	TC254762	26	125	18	14.5	20.5
1"	– 12 UNF	TC254802	28	140	20	16	23.25
1∗1/8"	– 12 UNF	TC254842	30	150	22	18	26.5

▶ DIN 371(#4~3/8") and DIN 374(7/16"~1∗1/8")

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
			○	◎				○						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

SPIRAL POINT TAPS

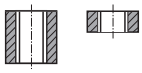
TB274 SERIES

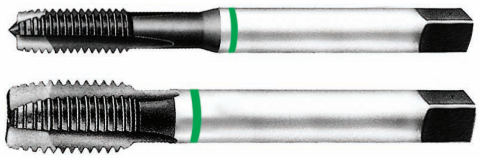
UNF Unified fine threads
Unified Feingewinde

▶ Suitable for through hole in more cutting speed than other taps due to thick web.

▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke.

Hole type



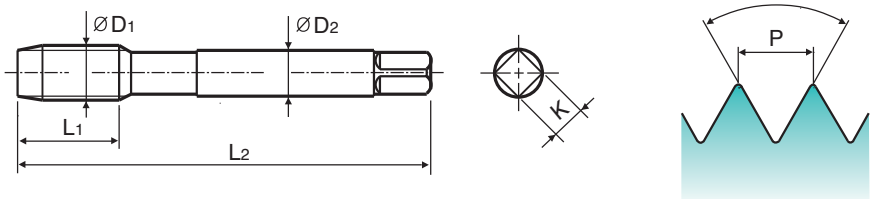


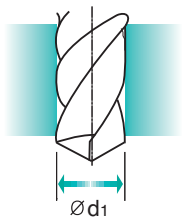
DIN 371

DIN 374

Material groups **VA NW** | HSS-E | DIN 371/374 | 2B | 60° | B | Vap

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1			L1	L2	ØD2	K	Ød1
#4	– 48 UNF	TB274182	11	56	3.5	2.7	2.4
#5	– 44 UNF	TB274222	11	56	3.5	2.7	2.7
#6	– 40 UNF	TB274262	12	56	4	3	3
#8	– 36 UNF	TB274302	13	63	4.5	3.4	3.5
#10	– 32 UNF	TB274342	13	70	6	4.9	4.1
#12	– 28 UNF	TB274382	16	80	6	4.9	4.7
1/4"	– 28 UNF	TB274422	17	80	7	5.5	5.5
5/16"	– 24 UNF	TB274462	17	90	8	6.2	6.9
3/8"	– 24 UNF	TB274502	18	100	9	7	8.5
7/16"	– 20 UNF	TB274542	22	100	8	6.2	9.9
1/2"	– 20 UNF	TB274582	22	100	9	7	11.5
9/16"	– 18 UNF	TB274622	22	100	11	9	12.9
5/8"	– 18 UNF	TB274662	22	100	12	9	14.5
3/4"	– 16 UNF	TB274722	25	110	14	11	17.5
7/8"	– 14 UNF	TB274762	26	125	18	14.5	20.5
1"	– 12 UNF	TB274802	28	140	20	16	23.25
1*1/8"	– 12 UNF	TB274842	30	150	22	18	26.5

▶ DIN 371(#4~3/8") and DIN 374(7/16"~1*1/8")

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎					◎	◎	◎						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

SPIRAL POINT TAPS

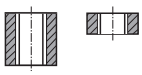
TC224 SERIES

BSW Whitworth threads
Whitworth Gewinde

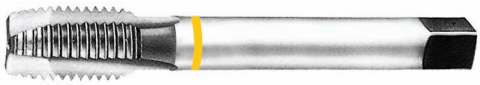
▶ Suitable for through hole in more cutting speed than other taps due to thick web.

▶ Geeignet für Durchgangslöcher in höherer Schnittgeschwindigkeit als bei anderen Gewindebohrern dank größerer Kerndicke.

Hole type



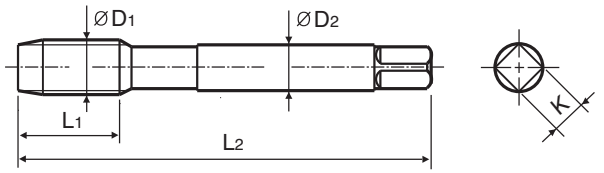
DIN 2182

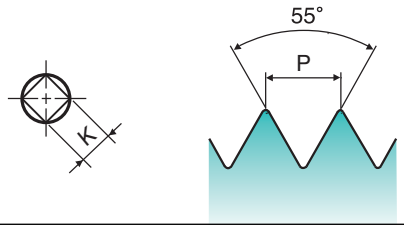


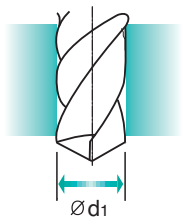
DIN 2183

Material groups **GS** | HSS-E | DIN 2182/2183 | 55° | B | Bright

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1			L1	L2	ØD2	K	Ød1
W1/8"	– 40	TC224200	11	56	3.5	2.7	2.5
W5/32"	– 32	TC224280	13	63	4.5	3.4	3.1
W3/16"	– 24	TC224320	15	70	6	4.9	3.6
W7/32"	– 24	TC224360	16	80	6	4.9	4.4
W1/4"	– 20	TC224400	17	80	7	5.5	5.1
W5/16"	– 18	TC224440	20	90	8	6.2	6.5
W3/8"	– 16	TC224480	22	100	9	7	7.9
W7/16"	– 14	TC224520	22	100	8	6.2	9.3
W1/2"	– 12	TC224560	25	110	9	7	10.5
W9/16"	– 12	TC224600	26	110	11	9	12
W5/8"	– 11	TC224640	27	110	12	9	13.5
W3/4"	– 10	TC224700	30	125	14	11	16.5
W7/8"	– 9	TC224740	32	140	18	14.5	19.25
W1"	– 8	TC224780	36	160	20	16	22
W1∗1/8"	– 7	TC224820	40	180	22	18	24.75

▶ DIN 2182(W1/8"~W3/8") and DIN 2183(W7/16"~W1∗1/8")

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	◎	◎	◎								◎	◎	○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	○			○		◎		○	○	○	◎	○		

HSS

Being the best through innovation

STRAIGHT FLUTE TAPS

GEWINDEBOHRER GERADE GENUTET

- Tapping Shallow Holes of Cast Iron, Mild Steels and Brass.
- Für flache Bohrungen von Grauguss, Stähle und Messing.

STRAIGHT FLUTE TAPS

Tapping Shallow Holes of Cast Iron, Mild Steels and Brass.

STRAIGHT FLUTE TAPS

◆ SYNCHRO TYPE

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Surface Treatment	PAGE
◆ **TKS35**		HSS-PM	M	**GS**	DIN 371/376	ISO 2X/6HX	C	TiCN	**493**
TC463		HSS-E	M	**GS**	DIN 371/376	ISO 2/6H	C	Bright	**494**
TE821		HSS-E	M	**GG**	DIN 371/376	ISO 2X/6HX	C	NI	**495**
TD821		HSS-E	M	**GG**	DIN 371/376	ISO 2X/6HX	C	TiN	**496**
TY821		HSS-E	M	**GG**	DIN 371/376	ISO 2X/6HX	C	TiAlN	**497**
TI821		HSS-E	M	**GG**	DIN 371/376	ISO 2X/6HX	C	TiCN	**498**
TC433		HSS-E	M	**Ms**	DIN 371/376	ISO 2/6H	C	Bright	**499**
TE443		HSS-E	M	**Ms**	DIN 371/376	ISO 2X/6HX	C	NI	**500**
TY433		HSS-E	M	**Ms**	DIN 371/376	ISO 2/6H	C	TiAlN	**501**
TC473		HSS-E	MF	**GS**	DIN 374	ISO 2/6H	C	Bright	**502**
TE403		HSS-E	MF	**GG**	DIN 374	ISO 2X/6HX	C	NI	**503**
TC424		HSS-E	UNC	**GS**	DIN 371/376	2B	C	Bright	**504**
TE434		HSS-E	UNC	**GG**	DIN 371/376	2BX	C	NI	**505**
TE454		HSS-E	UNF	**GG**	DIN 371/374	2BX	C	NI	**506**

STRAIGHT FLUTE TAPS

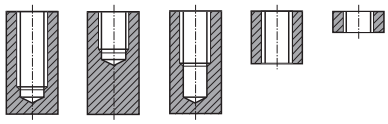
TKS35 SERIES

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for high speed machining and high precision threads

▶ Geeignet für die High-Speed-Bearbeitung (HSC) und hoher Gewinde-Präzision

Hole type

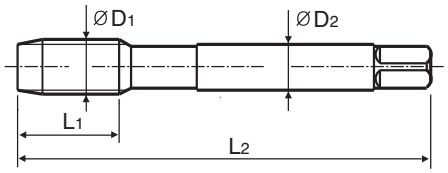


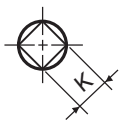
DIN 371/376

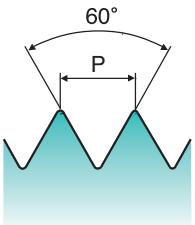
Synchro Type Applicable to 2-3 times faster cutting speed than minimum general GS Taps cutting speeds

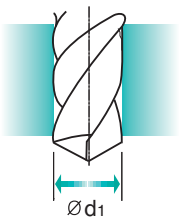
Material groups **GS** | HSS-PM | DIN 371/376 | 6HX | 60° | C | TiCN

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M3	× 0.5	TKS35206	11	56	3.5	2.7	2.5
M4	× 0.7	TKS35246	13	63	4.5	3.4	3.3
M5	× 0.8	TKS35286	15	70	6	4.9	4.2
M6	× 1.0	TKS35316	17	80	6	4.9	5
M8	× 1.25	TKS35366	20	90	8	6.2	6.8
M10	× 1.5	TKS35426	22	100	10	8	8.5
M12	× 1.75	TKS35506	24	110	9	7	10.2
M14	× 2.0	TKS35546	26	110	11	9	12
M16	× 2.0	TKS35606	27	110	12	9	14
M18	× 2.5	TKS35656	30	125	14	11	15.5
M20	× 2.5	TKS35706	32	140	16	12	17.5

▶ DIN371 (M3~M10) and DIN376 (M11~M20)
▶ Coating(TiAlN) is available on your request.

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	◎	◎	◎								◎	◎	○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	○			○		◎		○	○	○	◎	○		

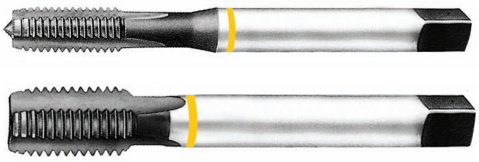
STRAIGHT FLUTE TAPS

TC463 SERIES

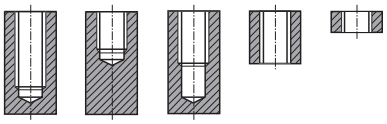
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for tapping shallow holes and the blind holes having enough chip space at the bottom of holes.

▶ Geeignet zum Schneiden von kurzem Durchgangsgewinde und in Sacklöchern mit ausreichendem Raum für Späne am Bohrungsgrund.

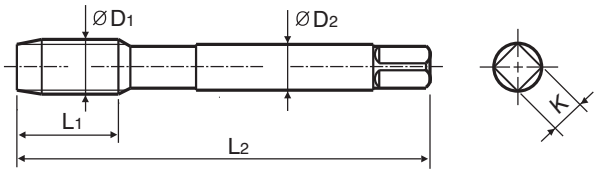


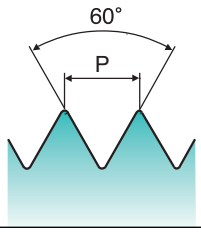
Hole type

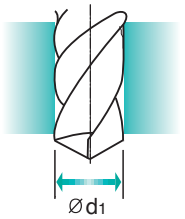


Material groups **GS** | HSS-E | DIN 371/376 | 6H | 60° | C | Bright

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	0.4	TC463136	8	45	2.8	2.1	1.6
M2.2	0.45	TC463156	8	45	2.8	2.1	1.75
* M2.3	0.4	TC463196	8	45	2.8	2.1	1.9
M2.5	0.45	TC463176	9	50	2.8	2.1	2.05
* M2.6	0.45	TC463496	9	50	2.8	2.1	2.1
M3	0.5	TC463206	11	56	3.5	2.7	2.5
M3.5	0.6	TC463226	12	56	4	3	2.9
M4	0.7	TC463246	13	63	4.5	3.4	3.3
M4.5	0.75	TC463266	14	70	6	4.9	3.7
M5	0.8	TC463286	15	70	6	4.9	4.2
M6	1	TC463316	17	80	6	4.9	5
M7	1	TC463346	17	80	7	5.5	6
M8	1.25	TC463366	20	90	8	6.2	6.8
M9	1.25	TC463396	20	90	9	7	7.8
M10	1.5	TC463426	22	100	10	8	8.5
M11	1.5	TC463466	22	100	8	6.2	9.5
M12	1.75	TC463506	24	110	9	7	10.2
M14	2	TC463546	26	110	11	9	12
M16	2	TC463606	27	110	12	9	14
M18	2.5	TC463656	30	125	14	11	15.5
M20	2.5	TC463706	32	140	16	12	17.5
M22	2.5	TC463746	32	140	18	14.5	19.5
M24	3	TC463786	34	160	18	14.5	21
M27	3	TC463866	36	160	20	16	24
M30	3.5	TC463946	40	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ * DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
○	○	○	○								○	○		

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
					○	○					○			

STRAIGHT FLUTE TAPS

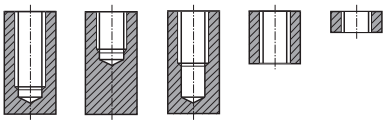
TE821 SERIES

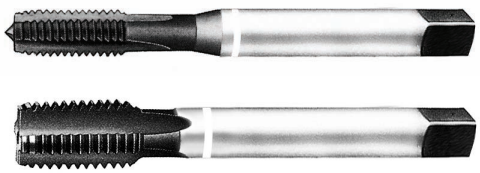
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for tapping cast iron or similar work materials.

▶ Geeignet zum Gewindeschneiden von Guss oder ähnlichen Werkstoffen

Hole type



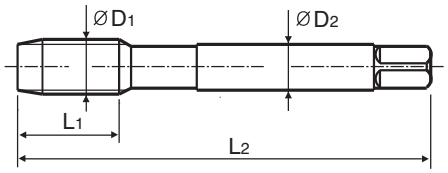


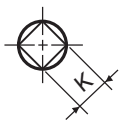
DIN 371

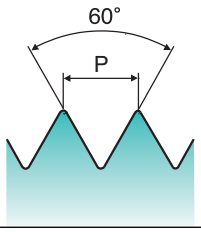
DIN 376

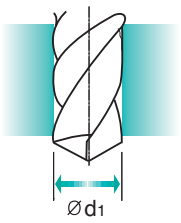
Material groups **GG** | HSS-E | DIN 371/376 | 6HX | 60° | C | NI

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	0.4	TE821136	8	45	2.8	2.1	1.6
M2.2	0.45	TE821156	8	45	2.8	2.1	1.75
✳ M2.3	0.4	TE821196	8	45	2.8	2.1	1.9
M2.5	0.45	TE821176	9	50	2.8	2.1	2.05
✳ M2.6	0.45	TE821496	9	50	2.8	2.1	2.1
M3	0.5	TE821206	11	56	3.5	2.7	2.5
M3.5	0.6	TE821226	12	56	4	3	2.9
M4	0.7	TE821246	13	63	4.5	3.4	3.3
M4.5	0.75	TE821266	14	70	6	4.9	3.7
M5	0.8	TE821286	15	70	6	4.9	4.2
M6	1	TE821316	17	80	6	4.9	5
M7	1	TE821346	17	80	7	5.5	6
M8	1.25	TE821366	20	90	8	6.2	6.8
M9	1.25	TE821396	20	90	9	7	7.8
M10	1.5	TE821426	22	100	10	8	8.5
M11	1.5	TE821466	22	100	8	6.2	9.5
M12	1.75	TE821506	24	110	9	7	10.2
M14	2	TE821546	26	110	11	9	12
M16	2	TE821606	27	110	12	9	14
M18	2.5	TE821656	30	125	14	11	15.5
M20	2.5	TE821706	32	140	16	12	17.5
M22	2.5	TE821746	32	140	18	14.5	19.5
M24	3	TE821786	34	160	18	14.5	21
M27	3	TE821866	36	160	20	16	24
M30	3.5	TE821946	40	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
									◎	◎				

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
					○									◎

STRAIGHT FLUTE TAPS

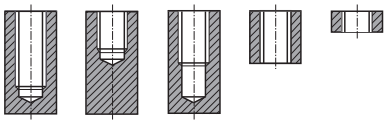
TD821 SERIES

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for tapping cast iron or similar work materials.

▶ Geeignet zum Gewindeschneiden von Guss oder ähnlichen Werkstoffen

Hole type

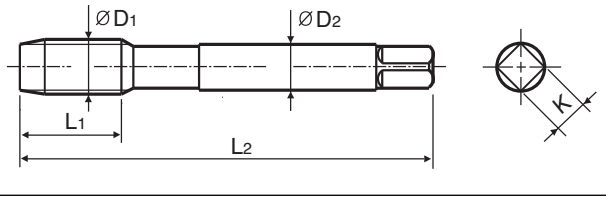


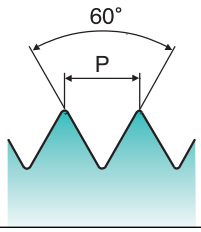
DIN 371

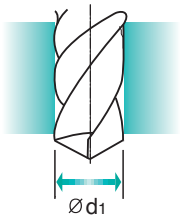
DIN 376

Material groups **GG** | HSS-E | DIN 371/376 | 6HX | 60° | C | TiN

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE ØD1	×	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	×	0.4	TD821136	8	45	2.8	2.1	1.6
M2.2	×	0.45	TD821156	8	45	2.8	2.1	1.75
* M2.3	×	0.4	TD821196	8	45	2.8	2.1	1.9
M2.5	×	0.45	TD821176	9	50	2.8	2.1	2.05
* M2.6	×	0.45	TD821496	9	50	2.8	2.1	2.1
M3	×	0.5	TD821206	11	56	3.5	2.7	2.5
M3.5	×	0.6	TD821226	12	56	4	3	2.9
M4	×	0.7	TD821246	13	63	4.5	3.4	3.3
M4.5	×	0.75	TD821266	14	70	6	4.9	3.7
M5	×	0.8	TD821286	15	70	6	4.9	4.2
M6	×	1	TD821316	17	80	6	4.9	5
M7	×	1	TD821346	17	80	7	5.5	6
M8	×	1.25	TD821366	20	90	8	6.2	6.8
M9	×	1.25	TD821396	20	90	9	7	7.8
M10	×	1.5	TD821426	22	100	10	8	8.5
M11	×	1.5	TD821466	22	100	8	6.2	9.5
M12	×	1.75	TD821506	24	110	9	7	10.2
M14	×	2	TD821546	26	110	11	9	12
M16	×	2	TD821606	27	110	12	9	14
M18	×	2.5	TD821656	30	125	14	11	15.5
M20	×	2.5	TD821706	32	140	16	12	17.5
M22	×	2.5	TD821746	32	140	18	14.5	19.5
M24	×	3	TD821786	34	160	18	14.5	21
M27	×	3	TD821866	36	160	20	16	24
M30	×	3.5	TD821946	40	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ * DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
									◎	◎				

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
					◎									◎

STRAIGHT FLUTE TAPS

TY821 SERIES

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

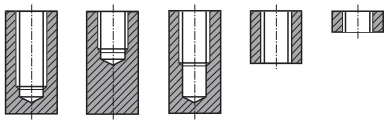
▶ Suitable for tapping cast iron or similar work materials.

▶ Geeignet zum Gewindeschneiden von Guss oder ähnlichen Werkstoffen

DIN 371

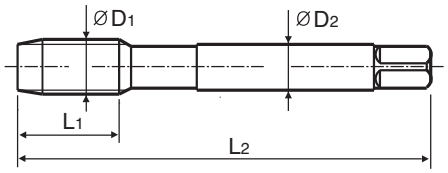
DIN 376

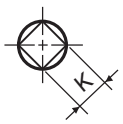
Hole type

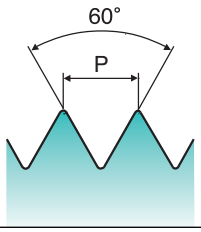


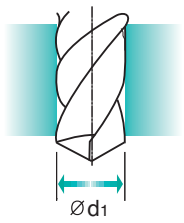
Material groups **GG** | HSS-E | DIN 371/376 | 6HX | 60° | C | TiAlN

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	0.4	TY821136	8	45	2.8	2.1	1.6
M2.2	0.45	TY821156	8	45	2.8	2.1	1.75
✳ M2.3	0.4	TY821196	8	45	2.8	2.1	1.9
M2.5	0.45	TY821176	9	50	2.8	2.1	2.05
✳ M2.6	0.45	TY821496	9	50	2.8	2.1	2.1
M3	0.5	TY821206	11	56	3.5	2.7	2.5
M3.5	0.6	TY821226	12	56	4	3	2.9
M4	0.7	TY821246	13	63	4.5	3.4	3.3
M4.5	0.75	TY821266	14	70	6	4.9	3.7
M5	0.8	TY821286	15	70	6	4.9	4.2
M6	1	TY821316	17	80	6	4.9	5
M7	1	TY821346	17	80	7	5.5	6
M8	1.25	TY821366	20	90	8	6.2	6.8
M9	1.25	TY821396	20	90	9	7	7.8
M10	1.5	TY821426	22	100	10	8	8.5
M11	1.5	TY821466	22	100	8	6.2	9.5
M12	1.75	TY821506	24	110	9	7	10.2
M14	2	TY821546	26	110	11	9	12
M16	2	TY821606	27	110	12	9	14
M18	2.5	TY821656	30	125	14	11	15.5
M20	2.5	TY821706	32	140	16	12	17.5
M22	2.5	TY821746	32	140	18	14.5	19.5
M24	3	TY821786	34	160	18	14.5	21
M27	3	TY821866	36	160	20	16	24
M30	3.5	TY821946	40	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
									◎	◎				

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
					◎									◎

STRAIGHT FLUTE TAPS

TI821 SERIES

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

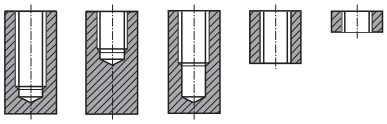
▶ Suitable for tapping cast iron or similar work materials.

▶ Geeignet zum Gewindeschneiden von Guss oder ähnlichen Werkstoffen

DIN 371

DIN 376

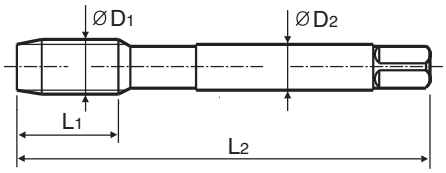
Hole type

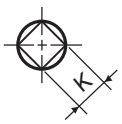


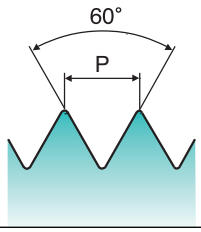
Material groups **GG**

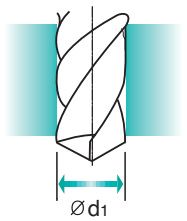
HSS-E | DIN 371/376 | 6HX | 60° | C | TiCN

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE ØD1	×	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	×	0.4	TI821136	8	45	2.8	2.1	1.6
M2.2	×	0.45	TI821156	8	45	2.8	2.1	1.75
* M2.3	×	0.4	TI821196	8	45	2.8	2.1	1.9
M2.5	×	0.45	TI821176	9	50	2.8	2.1	2.05
* M2.6	×	0.45	TI821496	9	50	2.8	2.1	2.1
M3	×	0.5	TI821206	11	56	3.5	2.7	2.5
M3.5	×	0.6	TI821226	12	56	4	3	2.9
M4	×	0.7	TI821246	13	63	4.5	3.4	3.3
M4.5	×	0.75	TI821266	14	70	6	4.9	3.7
M5	×	0.8	TI821286	15	70	6	4.9	4.2
M6	×	1	TI821316	17	80	6	4.9	5
M7	×	1	TI821346	17	80	7	5.5	6
M8	×	1.25	TI821366	20	90	8	6.2	6.8
M9	×	1.25	TI821396	20	90	9	7	7.8
M10	×	1.5	TI821426	22	100	10	8	8.5
M11	×	1.5	TI821466	22	100	8	6.2	9.5
M12	×	1.75	TI821506	24	110	9	7	10.2
M14	×	2	TI821546	26	110	11	9	12
M16	×	2	TI821606	27	110	12	9	14
M18	×	2.5	TI821656	30	125	14	11	15.5
M20	×	2.5	TI821706	32	140	16	12	17.5
M22	×	2.5	TI821746	32	140	18	14.5	19.5
M24	×	3	TI821786	34	160	18	14.5	21
M27	×	3	TI821866	36	160	20	16	24
M30	×	3.5	TI821946	40	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ * DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
									◎	◎				

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
					◎									◎

STRAIGHT FLUTE TAPS

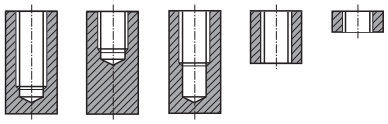
TC433 SERIES

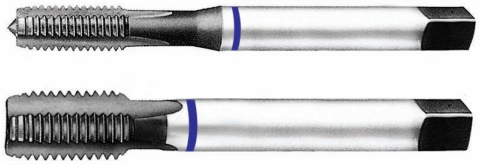
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for brass and short chip work materials.

▶ Geeignet zum Gewindeschneiden von Messing und anderen kurzspanenden Werkstoffen

Hole type



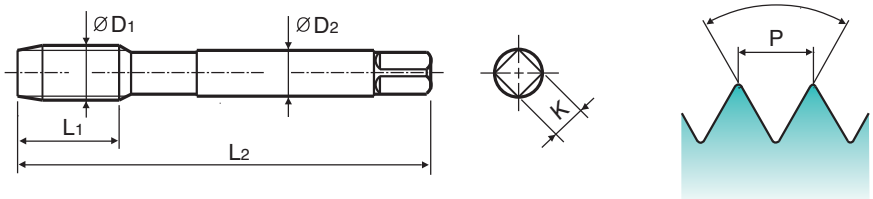


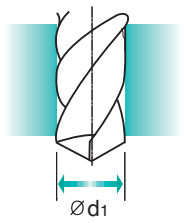
DIN 371

DIN 376

Material groups **Ms** | HSS-E | DIN 371/376 | 6H | 60° | C | Bright

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P		L1	L2	ØD2	K	Ød1
M2	× 0.4	TC433136	8	45	2.8	2.1	1.6
M2.2	× 0.45	TC433156	8	45	2.8	2.1	1.75
＊ M2.3	× 0.4	TC433196	8	45	2.8	2.1	1.9
M2.5	× 0.45	TC433176	9	50	2.8	2.1	2.05
＊ M2.6	× 0.45	TC433496	9	50	2.8	2.1	2.1
M3	× 0.5	TC433206	11	56	3.5	2.7	2.5
M3.5	× 0.6	TC433226	12	56	4	3	2.9
M4	× 0.7	TC433246	13	63	4.5	3.4	3.3
M4.5	× 0.75	TC433266	14	70	6	4.9	3.7
M5	× 0.8	TC433286	15	70	6	4.9	4.2
M6	× 1	TC433316	17	80	6	4.9	5
M7	× 1	TC433346	17	80	7	5.5	6
M8	× 1.25	TC433366	20	90	8	6.2	6.8
M9	× 1.25	TC433396	20	90	9	7	7.8
M10	× 1.5	TC433426	22	100	10	8	8.5
M11	× 1.5	TC433466	22	100	8	6.2	9.5
M12	× 1.75	TC433506	24	110	9	7	10.2
M14	× 2	TC433546	26	110	11	9	12
M16	× 2	TC433606	27	110	12	9	14
M18	× 2.5	TC433656	30	125	14	11	15.5
M20	× 2.5	TC433706	32	140	16	12	17.5
M22	× 2.5	TC433746	32	140	18	14.5	19.5
M24	× 3	TC433786	34	160	18	14.5	21
M27	× 3	TC433866	36	160	20	16	24
M30	× 3.5	TC433946	40	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)

▶ ＊ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
					◎	○								

STRAIGHT FLUTE TAPS

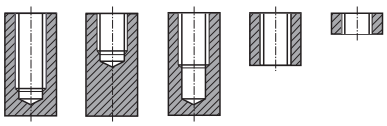
TE443 SERIES

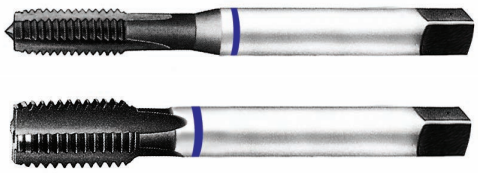
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for brass and short chip work materials.

▶ Geeignet zum Gewindeschneiden von Messing und anderen kurzspanenden Werkstoffen

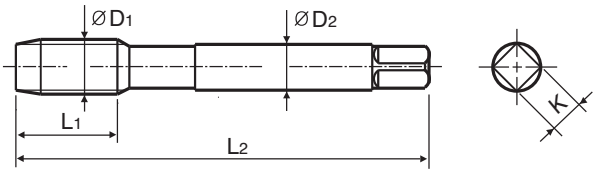
Hole type

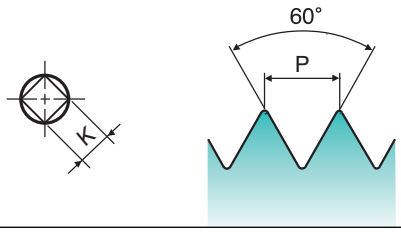


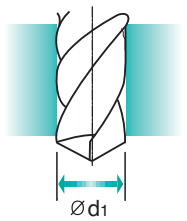


Material groups **Ms** | HSS-E | DIN 371/376 | 6HX | 60° | C | NI

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	0.4	TE443136	8	45	2.8	2.1	1.6
M2.2	0.45	TE443156	8	45	2.8	2.1	1.75
* M2.3	0.4	TE443196	8	45	2.8	2.1	1.9
M2.5	0.45	TE443176	9	50	2.8	2.1	2.05
* M2.6	0.45	TE443496	9	50	2.8	2.1	2.1
M3	0.5	TE443206	11	56	3.5	2.7	2.5
M3.5	0.6	TE443226	12	56	4	3	2.9
M4	0.7	TE443246	13	63	4.5	3.4	3.3
M4.5	0.75	TE443266	14	70	6	4.9	3.7
M5	0.8	TE443286	15	70	6	4.9	4.2
M6	1	TE443316	17	80	6	4.9	5
M7	1	TE443346	17	80	7	5.5	6
M8	1.25	TE443366	20	90	8	6.2	6.8
M9	1.25	TE443396	20	90	9	7	7.8
M10	1.5	TE443426	22	100	10	8	8.5
M11	1.5	TE443466	22	100	8	6.2	9.5
M12	1.75	TE443506	24	110	9	7	10.2
M14	2	TE443546	26	110	11	9	12
M16	2	TE443606	27	110	12	9	14
M18	2.5	TE443656	30	125	14	11	15.5
M20	2.5	TE443706	32	140	16	12	17.5
M22	2.5	TE443746	32	140	18	14.5	19.5
M24	3	TE443786	34	160	18	14.5	21
M27	3	TE443866	36	160	20	16	24
M30	3.5	TE443946	40	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ * DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
					◎									

STRAIGHT FLUTE TAPS

TY433 SERIES

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

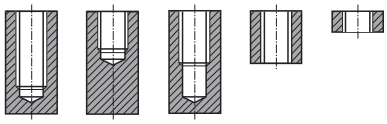
▶ Suitable for brass and short chip work materials.

▶ Geeignet zum Gewindeschneiden von Messing und anderen kurzspanenden Werkstoffen

DIN 371

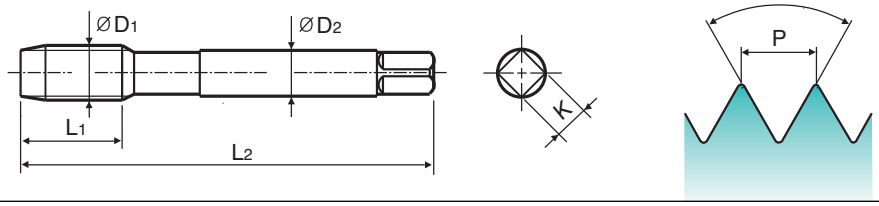
DIN 376

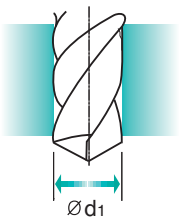
Hole type



Material groups **Ms** | HSS-E | DIN 371/376 | 6H | 60° | C | TiAlN

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE ØD1		Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	×	0.4	TY433136	8	45	2.8	2.1	1.6
M2.2	×	0.45	TY433156	8	45	2.8	2.1	1.75
✳ M2.3	×	0.4	TY433196	8	45	2.8	2.1	1.9
M2.5	×	0.45	TY433176	9	50	2.8	2.1	2.05
✳ M2.6	×	0.45	TY433496	9	50	2.8	2.1	2.1
M3	×	0.5	TY433206	11	56	3.5	2.7	2.5
M3.5	×	0.6	TY433226	12	56	4	3	2.9
M4	×	0.7	TY433246	13	63	4.5	3.4	3.3
M4.5	×	0.75	TY433266	14	70	6	4.9	3.7
M5	×	0.8	TY433286	15	70	6	4.9	4.2
M6	×	1	TY433316	17	80	6	4.9	5
M7	×	1	TY433346	17	80	7	5.5	6
M8	×	1.25	TY433366	20	90	8	6.2	6.8
M9	×	1.25	TY433396	20	90	9	7	7.8
M10	×	1.5	TY433426	22	100	10	8	8.5
M11	×	1.5	TY433466	22	100	8	6.2	9.5
M12	×	1.75	TY433506	24	110	9	7	10.2
M14	×	2	TY433546	26	110	11	9	12
M16	×	2	TY433606	27	110	12	9	14
M18	×	2.5	TY433656	30	125	14	11	15.5
M20	×	2.5	TY433706	32	140	16	12	17.5
M22	×	2.5	TY433746	32	140	18	14.5	19.5
M24	×	3	TY433786	34	160	18	14.5	21
M27	×	3	TY433866	36	160	20	16	24
M30	×	3.5	TY433946	40	180	22	18	26.5

▶ DIN 371(M2~M10) and DIN 376(M11~M30)
▶ ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
					◎	○								

STRAIGHT FLUTE TAPS

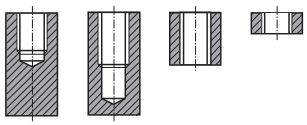
TC473 SERIES

MF ISO metric fine threads DIN 13
Metrisches ISO-Feingewinde DIN 13

▶ Suitable for tapping shallow holes.

▶ Geeignet zum Gewindeschneiden flacher Sacklöcher.

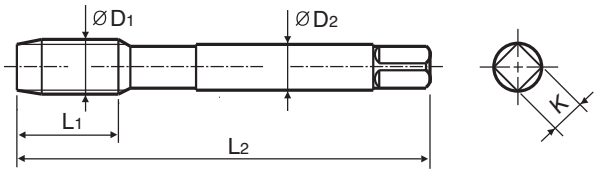
Hole type

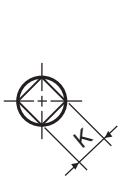


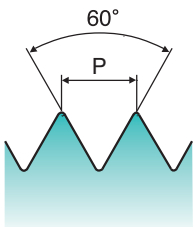
DIN 374

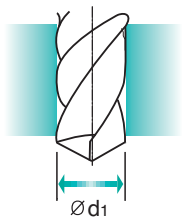
Material groups **GS** | HSS-E | DIN 374 | 6H | 60° | C | Bright

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P		L1	L2	ØD2	K	Ød1
M4	× 0.5	TC473256	10	63	2.8	2.1	3.5
M5	× 0.5	TC473296	11	70	3.5	2.7	4.5
M6	× 0.75	TC473326	13	80	4.5	3.4	5.2
M6	× 0.5	TC473336	13	80	4.5	3.4	5.5
M7	× 0.75	TC473356	14	80	5.5	4.3	6.2
M8	× 1	TC473376	17	90	6	4.9	7
M8	× 0.75	TC473386	14	80	6	4.9	7.2
M8	× 0.5	TC473936	14	80	6	4.9	7.5
M10	× 1.25	TC473436	22	100	7	5.5	8.8
M10	× 1	TC473446	18	90	7	5.5	9
M10	× 0.75	TC473456	18	90	7	5.5	9.2
M12	× 1.5	TC473516	22	100	9	7	10.5
M12	× 1.25	TC473526	22	100	9	7	10.8
M12	× 1	TC473536	18	100	9	7	11
M14	× 1.5	TC473556	22	100	11	9	12.5
M14	× 1.25	TC473566	22	100	11	9	12.8
M14	× 1	TC473576	18	100	11	9	13
M16	× 1.5	TC473616	22	100	12	9	14.5
M18	× 1.5	TC473676	25	110	14	11	16.5
M20	× 1.5	TC473726	25	125	16	12	18.5
M22	× 1.5	TC473766	25	125	18	14.5	20.5
M24	× 1.5	TC473806	27	140	18	14.5	22.5

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
○	○	○	○								○	○		

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
					○	○					○			

STRAIGHT FLUTE TAPS

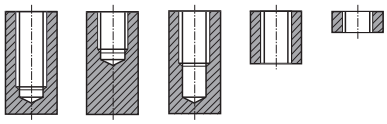
TE403 SERIES

MF ISO metric fine threads DIN 13
Metrisches ISO-Feingewinde DIN 13

▶ Suitable for tapping cast iron or similar work materials due to nitriding.

▶ Geeignet zum Gewindeschneiden von Guss oder ähnlichen Werkstoffen dank der Nitrierung

Hole type

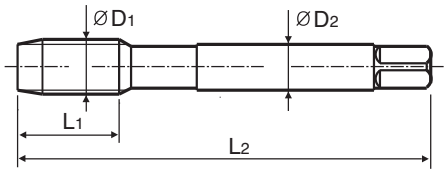


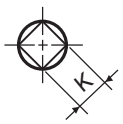
DIN 374

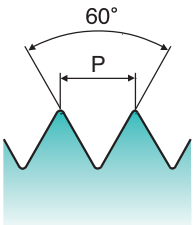
Material groups **GG**

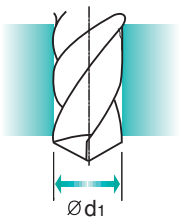
HSS-E | DIN 374 | 6HX | 60° | C | NI

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE ØD1		Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M4	×	0.5	TE403256	10	63	2.8	2.1	3.5
M5	×	0.5	TE403296	11	70	3.5	2.7	4.5
M6	×	0.75	TE403326	13	80	4.5	3.4	5.2
M6	×	0.5	TE403336	13	80	4.5	3.4	5.5
M7	×	0.75	TE403356	14	80	5.5	4.3	6.2
M8	×	1	TE403376	17	90	6	4.9	7
M8	×	0.75	TE403386	14	80	6	4.9	7.2
M10	×	1.25	TE403436	22	100	7	5.5	8.8
M10	×	1	TE403446	18	90	7	5.5	9
M10	×	0.75	TE403456	18	90	7	5.5	9.2
M12	×	1.5	TE403516	22	100	9	7	10.5
M12	×	1.25	TE403526	22	100	9	7	10.8
M12	×	1	TE403536	18	100	9	7	11
M14	×	1.5	TE403556	22	100	11	9	12.5
M14	×	1.25	TE403566	22	100	11	9	12.8
M16	×	1.5	TE403616	22	100	12	9	14.5
M18	×	1.5	TE403676	25	110	14	11	16.5
M20	×	1.5	TE403726	25	125	16	12	18.5
M22	×	1.5	TE403766	25	125	18	14.5	20.5
M24	×	1.5	TE403806	27	140	18	14.5	22.5

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
									◎	◎				

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
					○									◎

STRAIGHT FLUTE TAPS

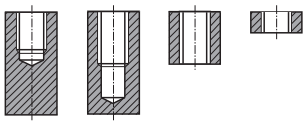
TC424 SERIES

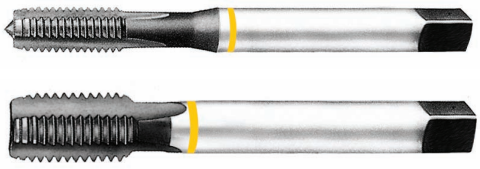
UNC Unified coarse threads
Unified Grobgewinde

▶ Suitable for tapping shallow holes.

▶ Geeignet zum Gewindeschneiden flacher Sacklöcher.

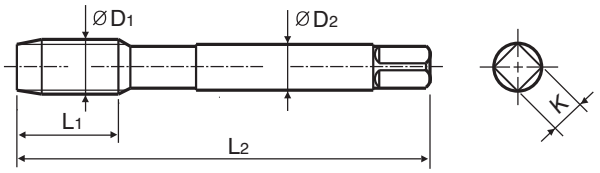
Hole type

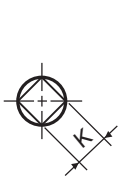


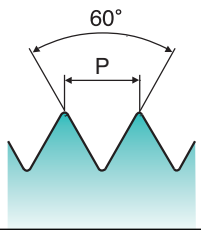


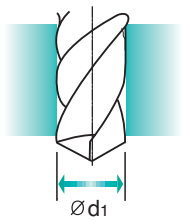
Material groups **GS** | HSS-E | DIN 371/376 | 2B | 60° | C | Bright

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1		L1	L2	ØD2	K	Ød1
#4 – 40 UNC	TC424162	11	56	3.5	2.7	2.3
#5 – 40 UNC	TC424202	11	56	3.5	2.7	2.6
#6 – 32 UNC	TC424242	12	56	4	3	2.85
#8 – 32 UNC	TC424282	13	63	4.5	3.4	3.5
#10 – 24 UNC	TC424322	15	70	6	4.9	3.9
#12 – 24 UNC	TC424362	16	80	6	4.9	4.5
1/4" – 20 UNC	TC424402	17	80	7	5.5	5.2
5/16" – 18 UNC	TC424442	20	90	8	6.2	6.6
3/8" – 16 UNC	TC424482	22	100	9	7	8
7/16" – 14 UNC	TC424522	22	100	8	6.2	9.4
1/2" – 13 UNC	TC424562	25	110	9	7	10.75
9/16" – 12 UNC	TC424602	26	110	11	9	12.25
5/8" – 11 UNC	TC424642	27	110	12	9	13.5
3/4" – 10 UNC	TC424702	30	125	14	11	16.5
7/8" – 9 UNC	TC424742	32	140	18	14.5	19.5
1" – 8 UNC	TC424782	36	160	20	16	22.25
1∗1/8" – 7 UNC	TC424822	40	180	22	18	25

▶ DIN 371(#4~3/8") and DIN 376(7/16"~1∗1/8")

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
○	○	○	○								○	○		

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
					○	○					○			

STRAIGHT FLUTE TAPS

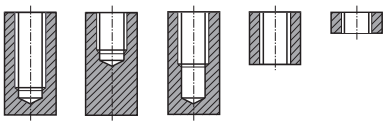
TE434 SERIES

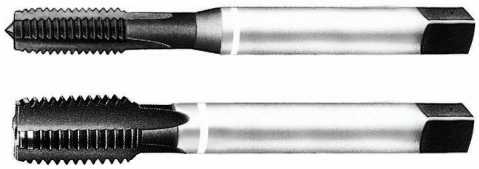
UNC Unified coarse threads
Unified Grobgewinde

▶ Suitable for tapping cast iron or similar work materials due to nitriding.

▶ Geeignet zum Gewindeschneiden von Guss oder ähnlichen Werkstoffen dank der Nitrierung

Hole type





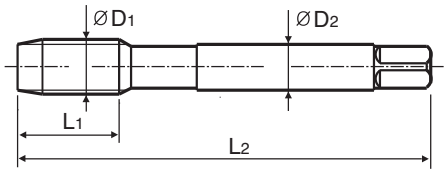
DIN 371

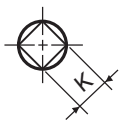
DIN 376

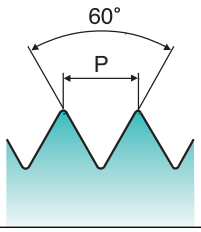
Material groups **GG**

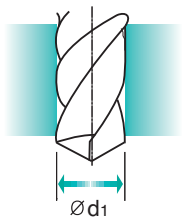
HSS-E | DIN 371/376 | 2BX | 60° | C | NI

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1			L1	L2	ØD2	K	Ød1
#4	– 40 UNC	TE434162	11	56	3.5	2.7	2.3
#5	– 40 UNC	TE434202	11	56	3.5	2.7	2.6
#6	– 32 UNC	TE434242	12	56	4	3	2.85
#8	– 32 UNC	TE434282	13	63	4.5	3.4	3.5
#10	– 24 UNC	TE434322	15	70	6	4.9	3.9
#12	– 24 UNC	TE434362	16	80	6	4.9	4.5
1/4"	– 20 UNC	TE434402	17	80	7	5.5	5.2
5/16"	– 18 UNC	TE434442	20	90	8	6.2	6.6
3/8"	– 16 UNC	TE434482	22	100	9	7	8
7/16"	– 14 UNC	TE434522	22	100	8	6.2	9.4
1/2"	– 13 UNC	TE434562	25	110	9	7	10.75
9/16"	– 12 UNC	TE434602	26	110	11	9	12.25
5/8"	– 11 UNC	TE434642	27	110	12	9	13.5
3/4"	– 10 UNC	TE434702	30	125	14	11	16.5
7/8"	– 9 UNC	TE434742	32	140	18	14.5	19.5
1"	– 8 UNC	TE434782	36	160	20	16	22.25
1∗1/8"	– 7 UNC	TE434822	40	180	22	18	25

▶ DIN 371(#4~3/8") and DIN 376(7/16"~1∗1/8")

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
									◎	◎				

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
					○									◎

STRAIGHT FLUTE TAPS

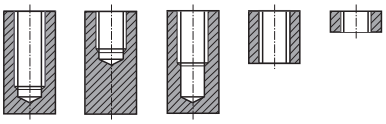
TE454 SERIES

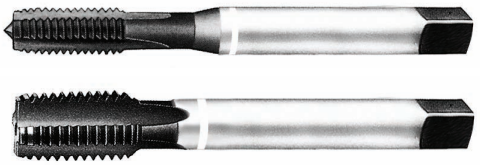
UNF Unified fine threads
Unified Feingewinde

▶ Suitable for tapping cast iron or similar work materials due to nitriding.

▶ Geeignet zum Gewindeschneiden von Guss oder ähnlichen Werkstoffen dank der Nitrierung

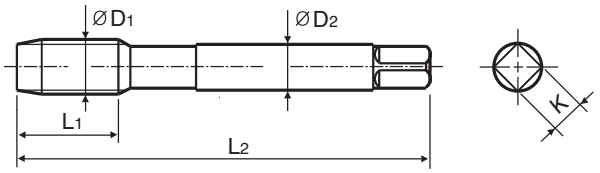
Hole type

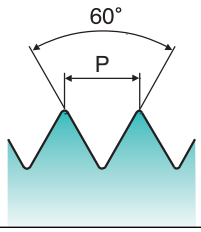


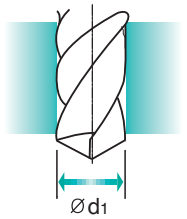


Material groups **GG** | HSS-E | DIN 371/374 | 2B | 60° | C | NI

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1		L1	L2	ØD2	K	Ød1
#4 – 48 UNF	TE454182	11	56	3.5	2.7	2.4
#5 – 44 UNF	TE454222	11	56	3.5	2.7	2.7
#6 – 40 UNF	TE454262	12	56	4	3	3
#8 – 36 UNF	TE454302	13	63	4.5	3.4	3.5
#10 – 32 UNF	TE454342	13	70	6	4.9	4.1
#12 – 28 UNF	TE454382	16	80	6	4.9	4.7
1/4" – 28 UNF	TE454422	17	80	7	5.5	5.5
5/16" – 24 UNF	TE454462	17	90	8	6.2	6.9
3/8" – 24 UNF	TE454502	18	100	9	7	8.5
7/16" – 20 UNF	TE454542	22	100	8	6.2	9.9
1/2" – 20 UNF	TE454582	22	100	9	7	11.5
9/16" – 18 UNF	TE454622	22	100	11	9	12.9
5/8" – 18 UNF	TE454662	22	100	12	9	14.5
3/4" – 16 UNF	TE454722	25	110	14	11	17.5
7/8" – 14 UNF	TE454762	26	125	18	14.5	20.5
1" – 12 UNF	TE454802	28	140	20	16	23.25
1*1/8" – 12 UNF	TE454842	30	150	22	18	26.5

▶ DIN 371(#4~3/8") and DIN 374(7/16"~1*1/8")

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
									◎	◎				

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
					○									◎

HSS

Being the best through innovation

COLD FORMING TAPS
INNENGEWINDEFORMER

- Tapping by Forming Soft Materials, HSS-E & HSS-PM
- Zum Gewindedrücken in weichen Werkstoffen, HSS-E und HSS-PM

COLD FORMING TAPS

Tapping by Forming Soft Materials, HSS-E & HSS-PM

COLD FORMING TAPS

◆ SYNCHRO TYPE

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Surface Treatment	PAGE
◆ **TTS37**		HSS-PM	M	**GS**	DIN 371/376	ISO 2X/6HX	C	TiN	**509**
TQ703		HSS-PM	M	**GV**	DIN 371/376	ISO 2X/6HX	C	Vap	**510**
TQ723		HSS-PM	M	**GV**	DIN 371/376	ISO 2X/6HX	C	Vap	**511**
TE703		HSS-E	M	**GV**	DIN 371/376	ISO 2X/6HX	C	NI	**512**
TE713		HSS-E	M	**GV**	DIN 371/376	ISO 3X/6GX	C	NI	**513**
TE723		HSS-E	M	**GV**	DIN 371/376	ISO 2X/6HX	C	NI	**514**
TD713		HSS-E	M	**GV**	DIN 371/376	ISO 3X/6GX	C	TiN	**515**
TD723		HSS-E	M	**GV**	DIN 371/376	ISO 2X/6HX	C	TiN	**516**
TD703		HSS-E	M	**GV**	DIN 371/376	ISO 2X/6HX	C	TiN	**517**
TY703		HSS-E	M	**GV**	DIN 371/376	ISO 2X/6HX	C	TiAlN	**518**
TE733		HSS-E	MF	**GV**	DIN 374	ISO 2X/6HX	C	NI	**519**
TD733		HSS-E	MF	**GV**	DIN 374	ISO 2X/6HX	C	TiN	**520**
TE704		HSS-E	UNC	**GV**	DIN 371/376	2BX	C	NI	**521**
TD704		HSS-E	UNC	**GV**	DIN 371/376	2BX	C	TiN	**522**

COLD FORMING TAPS

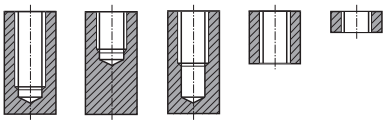
TTS37 SERIES

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Suitable for high speed machining and high precision threads

▶ Geeignet für die High-Speed-Bearbeitung (HSC) und hoher Gewinde-Präzision

Hole type

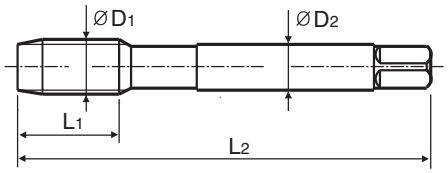


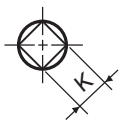
DIN 371/376

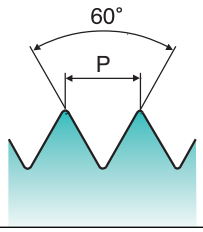
Synchro Type Applicable to 2-3 times faster cutting speed than minimum general GS Taps cutting speeds

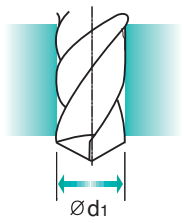
Material groups **GS** | HSS-PM | DIN 371/376 | 6HX | 60° | C | TiN

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P		L1	L2	ØD2	K	Ød1
M3	× 0.5	TTS37206	6	56	3.5	2.7	2.5
M4	× 0.7	TTS37246	7	63	4.5	3.4	3.3
M5	× 0.8	TTS37286	8	70	6	4.9	4.2
M6	× 1.0	TTS37316	10	80	6	4.9	5
M8	× 1.25	TTS37366	13	90	8	6.2	6.8
M10	× 1.5	TTS37426	15	100	10	8	8.5
M12	× 1.75	TTS37506	18	110	9	7	10.2

▶ DIN371 (M3~M10) and DIN376 (M11~M12)

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	◎	◎	◎								◎	◎	○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	○			○		◎		○	○	○	◎	○		

COLD FORMING TAPS

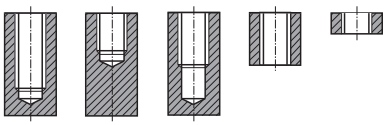
TQ703 SERIES

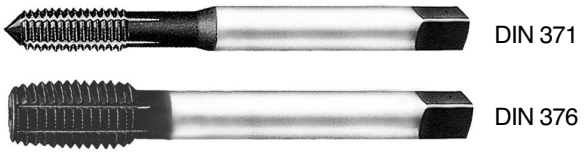
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

- Suitable for threading soft materials with at least 8-10% elongation in the best substrate.
- The pre-drilling holes are bigger than normal sized holes.

- Aus bestem Werkstoff geeignet zum Gewindeformen weicher Werkstoffe mit mindestens 8-10% Dehnung.
- Die Kernlochbohrungen sind größer als normale Kernlöcher.

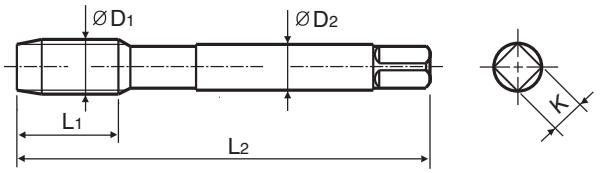
Hole type

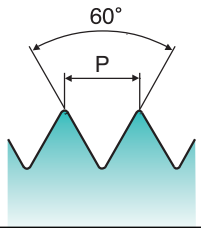


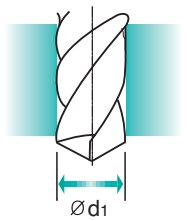


Material groups **GV** | HSS-PM | DIN 371/376 | 6HX | 60° | C | Vap

Cold forming taps with oil grooves
Gewindeformer mit Schmiernuten







Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	0.4	TQ703136	8	45	2.8	2.1	1.83
M2.2	0.45	TQ703156	8	45	2.8	2.1	2
✳ M2.3	0.4	TQ703196	8	45	2.8	2.1	2.1
M2.5	0.45	TQ703176	9	50	2.8	2.1	2.3
✳ M2.6	0.45	TQ703496	9	50	2.8	2.1	2.4
M3	0.5	TQ703206	11	56	3.5	2.7	2.8
M3.5	0.6	TQ703226	12	56	4	3	3.25
M4	0.7	TQ703246	13	63	4.5	3.4	3.7
M4.5	0.75	TQ703266	14	70	6	4.9	4.15
M5	0.8	TQ703286	15	70	6	4.9	4.65
M6	1	TQ703316	17	80	6	4.9	5.55
M7	1	TQ703346	17	80	7	5.5	6.55
M8	1.25	TQ703366	20	90	8	6.2	7.4
M9	1.25	TQ703396	20	90	9	7	8.4
M10	1.5	TQ703426	22	100	10	8	9.3
M11	1.5	TQ703466	22	100	8	6.2	10.3
M12	1.75	TQ703506	24	110	9	7	11.2
M14	2	TQ703546	26	110	11	9	13
M16	2	TQ703606	27	110	12	9	15
M18	2.5	TQ703656	30	125	14	11	16.8
M20	2.5	TQ703706	32	140	16	12	18.8

- DIN 371(M2~M10) and DIN 376(M11~M20)
- ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎			○	○						○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	◎			○		○		◎		○				

COLD FORMING TAPS

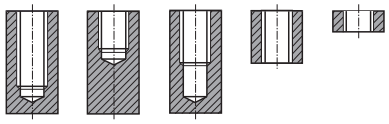
TQ723 SERIES

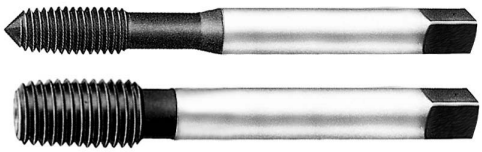
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

- Suitable for threading soft materials with at least 8-10% elongation in the best substrate.
- The pre-drilling holes are bigger than normal sized holes.

- Aus bestem Werkstoff geeignet zum Gewindeformen weicher Werkstoffe mit mindestens 8-10% Dehnung.
- Die Kernlochbohrungen sind größer als normale Kernlöcher.

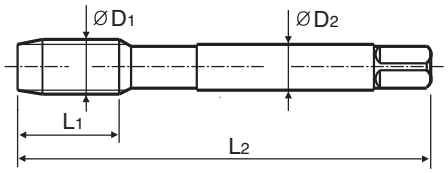
Hole type

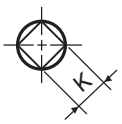


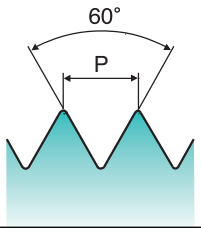


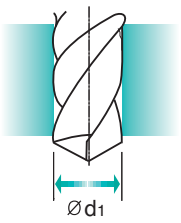
Material groups **GV** | HSS-PM | DIN 371/376 | 6HX | 60° | C | Vap

Cold forming taps
Gewindeformer









Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P		L1	L2	ØD2	K	Ød1
M2	0.4	TQ723136	8	45	2.8	2.1	1.83
M2.2	0.45	TQ723156	8	45	2.8	2.1	2
✳ M2.3	0.4	TQ723196	8	45	2.8	2.1	2.1
M2.5	0.45	TQ723176	9	50	2.8	2.1	2.3
✳ M2.6	0.45	TQ723496	9	50	2.8	2.1	2.4
M3	0.5	TQ723206	11	56	3.5	2.7	2.8
M3.5	0.6	TQ723226	12	56	4	3	3.25
M4	0.7	TQ723246	13	63	4.5	3.4	3.7
M4.5	0.75	TQ723266	14	70	6	4.9	4.15
M5	0.8	TQ723286	15	70	6	4.9	4.65
M6	1	TQ723316	17	80	6	4.9	5.55
M7	1	TQ723346	17	80	7	5.5	6.55
M8	1.25	TQ723366	20	90	8	6.2	7.4
M9	1.25	TQ723396	20	90	9	7	8.4
M10	1.5	TQ723426	22	100	10	8	9.3
M11	1.5	TQ723466	22	100	8	6.2	10.3
M12	1.75	TQ723506	24	110	9	7	11.2
M14	2	TQ723546	26	110	11	9	13
M16	2	TQ723606	27	110	12	9	15
M18	2.5	TQ723656	30	125	14	11	16.8
M20	2.5	TQ723706	32	140	16	12	18.8

- DIN 371(M2~M10) and DIN 376(M11~M20)
- ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎										○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	◎			○		○		◎	◎	○				

COLD FORMING TAPS

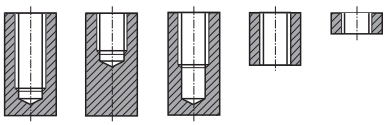
TE703 SERIES

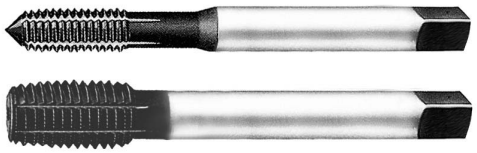
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

- Suitable for threading soft materials with at least 8-10% elongation.
- The pre-drilling holes are bigger than normal sized holes.

- Geeignet zum Gewindeformen weicher Werkstoffe mit mindestens 8-10% Dehnung.
- Die Kernlochbohrungen sind größer als normale Kernlöcher.

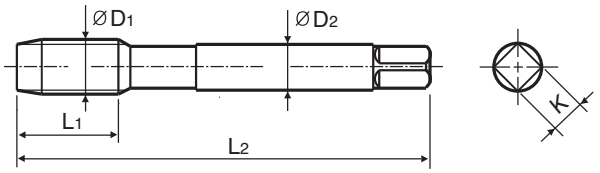
Hole type

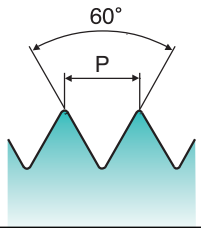


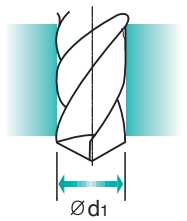


Material groups **GV** | HSS-E | DIN 371/376 | 6HX | 60° | C | NI

Cold forming taps with oil grooves
Gewindeformer mit Schmiernuten







Unit : mm

SIZE ØD1	×	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	×	0.4	TE703136	8	45	2.8	2.1	1.83
M2.2	×	0.45	TE703156	8	45	2.8	2.1	2
✳ M2.3	×	0.4	TE703196	8	45	2.8	2.1	2.1
M2.5	×	0.45	TE703176	9	50	2.8	2.1	2.3
✳ M2.6	×	0.45	TE703496	9	50	2.8	2.1	2.4
M3	×	0.5	TE703206	11	56	3.5	2.7	2.8
M3.5	×	0.6	TE703226	12	56	4	3	3.25
M4	×	0.7	TE703246	13	63	4.5	3.4	3.7
M4.5	×	0.75	TE703266	14	70	6	4.9	4.15
M5	×	0.8	TE703286	15	70	6	4.9	4.65
M6	×	1	TE703316	17	80	6	4.9	5.55
M7	×	1	TE703346	17	80	7	5.5	6.55
M8	×	1.25	TE703366	20	90	8	6.2	7.4
M9	×	1.25	TE703396	20	90	9	7	8.4
M10	×	1.5	TE703426	22	100	10	8	9.3
M11	×	1.5	TE703466	22	100	8	6.2	10.3
M12	×	1.75	TE703506	24	110	9	7	11.2
M14	×	2	TE703546	26	110	11	9	13
M16	×	2	TE703606	27	110	12	9	15
M18	×	2.5	TE703656	30	125	14	11	16.8
M20	×	2.5	TE703706	32	140	16	12	18.8

- DIN 371(M2~M10) and DIN 376(M11~M20)
- ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎			○	○						○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	◎			○		○		◎		○				

COLD FORMING TAPS

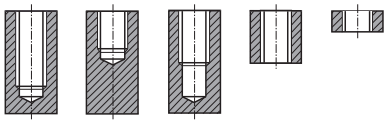
TE713 SERIES

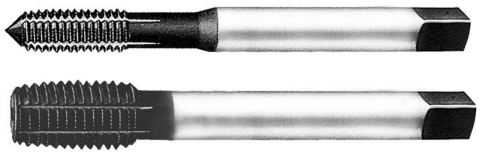
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

- Suitable for threading soft materials with at least 8-10% elongation.
- The pre-drilling holes are bigger than normal sized holes.

- Geeignet zum Gewindeformen weicher Werkstoffe mit mindestens 8-10% Dehnung.
- Die Kernlochbohrungen sind größer als normale Kernlöcher.

Hole type



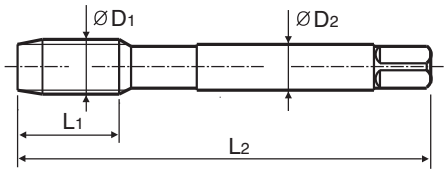


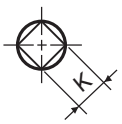
DIN 371

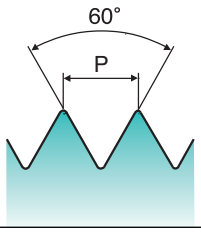
DIN 376

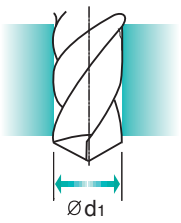
Material groups **GV** | HSS-E | DIN 371/376 | 6GX | 60° | C | NI

Cold forming taps with oil grooves
Gewindeformer mit Schmiernuten









Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P		L1	L2	ØD2	K	Ød1
M2	0.4	TE713136	8	45	2.8	2.1	1.83
M2.2	0.45	TE713156	8	45	2.8	2.1	2
✳ M2.3	0.4	TE713196	8	45	2.8	2.1	2.1
M2.5	0.45	TE713176	9	50	2.8	2.1	2.3
✳ M2.6	0.45	TE713496	9	50	2.8	2.1	2.4
M3	0.5	TE713206	11	56	3.5	2.7	2.8
M3.5	0.6	TE713226	12	56	4	3	3.25
M4	0.7	TE713246	13	63	4.5	3.4	3.7
M4.5	0.75	TE713266	14	70	6	4.9	4.15
M5	0.8	TE713286	15	70	6	4.9	4.65
M6	1	TE713316	17	80	6	4.9	5.55
M7	1	TE713346	17	80	7	5.5	6.55
M8	1.25	TE713366	20	90	8	6.2	7.4
M9	1.25	TE713396	20	90	9	7	8.4
M10	1.5	TE713426	22	100	10	8	9.3
M11	1.5	TE713466	22	100	8	6.2	10.3
M12	1.75	TE713506	24	110	9	7	11.2
M14	2	TE713546	26	110	11	9	13
M16	2	TE713606	27	110	12	9	15
M18	2.5	TE713656	30	125	14	11	16.8
M20	2.5	TE713706	32	140	16	12	18.8

- DIN 371(M2~M10) and DIN 376(M11~M20)
- ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎			○	○						○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	◎			○		○		◎		○				

COLD FORMING TAPS

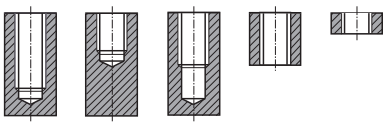
TE723 SERIES

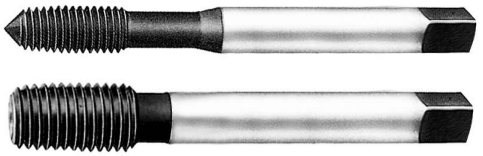
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

- Suitable for threading soft materials with at least 8-10% elongation.
- The pre-drilling holes are bigger than normal sized holes.

- Geeignet zum Gewindeformen weicher Werkstoffe mit mindestens 8-10% Dehnung.
- Die Kernlochbohrungen sind größer als normale Kernlöcher.

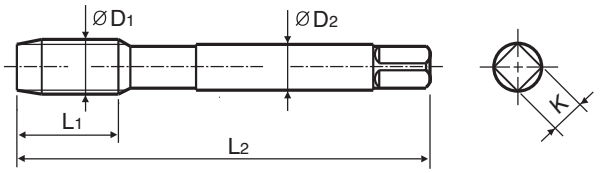
Hole type

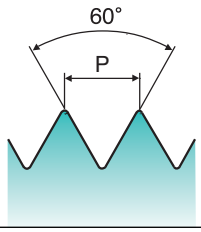


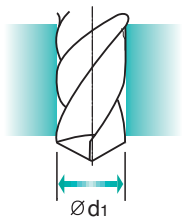


Material groups **GV** | HSS-E | DIN 371/376 | 6HX | 60° | C | NI

Cold forming taps
Gewindeformer







Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	0.4	TE723136	8	45	2.8	2.1	1.83
M2.2	0.45	TE723156	8	45	2.8	2.1	2
✳ M2.3	0.4	TE723196	8	45	2.8	2.1	2.1
M2.5	0.45	TE723176	9	50	2.8	2.1	2.3
✳ M2.6	0.45	TE723496	9	50	2.8	2.1	2.4
M3	0.5	TE723206	11	56	3.5	2.7	2.8
M3.5	0.6	TE723226	12	56	4	3	3.25
M4	0.7	TE723246	13	63	4.5	3.4	3.7
M4.5	0.75	TE723266	14	70	6	4.9	4.15
M5	0.8	TE723286	15	70	6	4.9	4.65
M6	1	TE723316	17	80	6	4.9	5.55
M7	1	TE723346	17	80	7	5.5	6.55
M8	1.25	TE723366	20	90	8	6.2	7.4
M9	1.25	TE723396	20	90	9	7	8.4
M10	1.5	TE723426	22	100	10	8	9.3
M11	1.5	TE723466	22	100	8	6.2	10.3
M12	1.75	TE723506	24	110	9	7	11.2
M14	2	TE723546	26	110	11	9	13
M16	2	TE723606	27	110	12	9	15
M18	2.5	TE723656	30	125	14	11	16.8
M20	2.5	TE723706	32	140	16	12	18.8

- DIN 371(M2~M10) and DIN 376(M11~M20)
- ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎										○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	◎			○		○		◎	◎	○				

COLD FORMING TAPS

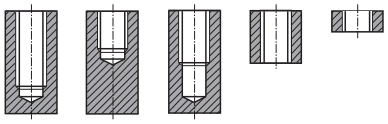
TD713 SERIES

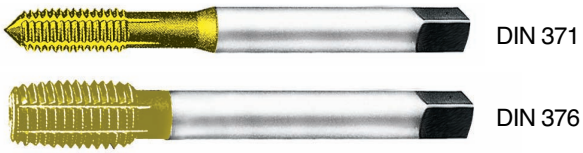
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

- Suitable for threading soft materials with at least 8-10% elongation.
- The pre-drilling holes are bigger than normal sized holes.

- Geeignet zum Gewindeformen weicher Werkstoffe mit mindestens 8-10% Dehnung.
- Die Kernlochbohrungen sind größer als normale Kernlöcher.

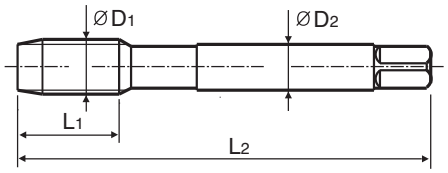
Hole type

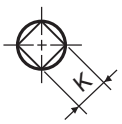


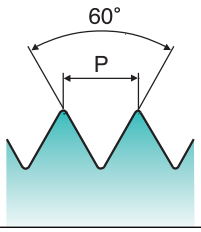


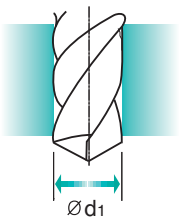
Material groups **GV** | HSS-E | DIN 371/376 | 6GX | 60° | C | TiN

Cold forming taps with oil grooves
Gewindeformer mit Schmiernuten









Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	0.4	TD713136	8	45	2.8	2.1	1.83
M2.2	0.45	TD713156	8	45	2.8	2.1	2
✳ M2.3	0.4	TD713196	8	45	2.8	2.1	2.1
M2.5	0.45	TD713176	9	50	2.8	2.1	2.3
✳ M2.6	0.45	TD713496	9	50	2.8	2.1	2.4
M3	0.5	TD713206	11	56	3.5	2.7	2.8
M3.5	0.6	TD713226	12	56	4	3	3.25
M4	0.7	TD713246	13	63	4.5	3.4	3.7
M4.5	0.75	TD713266	14	70	6	4.9	4.15
M5	0.8	TD713286	15	70	6	4.9	4.65
M6	1	TD713316	17	80	6	4.9	5.55
M7	1	TD713346	17	80	7	5.5	6.55
M8	1.25	TD713366	20	90	8	6.2	7.4
M9	1.25	TD713396	20	90	9	7	8.4
M10	1.5	TD713426	22	100	10	8	9.3
M11	1.5	TD713466	22	100	8	6.2	10.3
M12	1.75	TD713506	24	110	9	7	11.2
M14	2	TD713546	26	110	11	9	13
M16	2	TD713606	27	110	12	9	15
M18	2.5	TD713656	30	125	14	11	16.8
M20	2.5	TD713706	32	140	16	12	18.8

- DIN 371(M2~M10) and DIN 376(M11~M20)
- ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎			◎	◎						◎	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	◎			◎		○		◎		○				

COLD FORMING TAPS

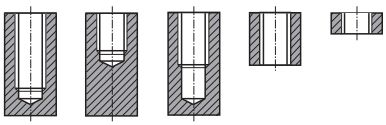
TD723 SERIES

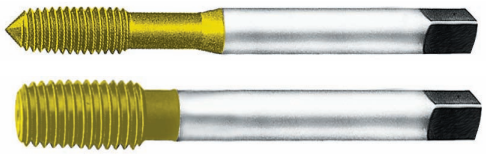
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

- Suitable for threading soft materials with at least 8-10% elongation.
- The pre-drilling holes are bigger than normal sized holes.

- Geeignet zum Gewindeformen weicher Werkstoffe mit mindestens 8-10% Dehnung.
- Die Kernlochbohrungen sind größer als normale Kernlöcher.

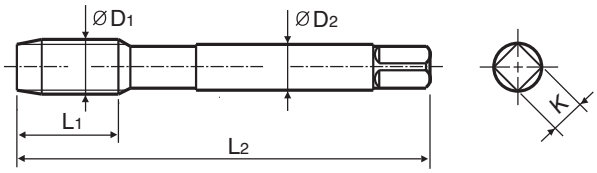
Hole type

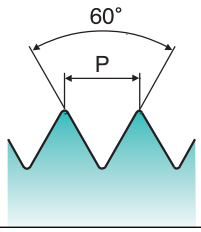


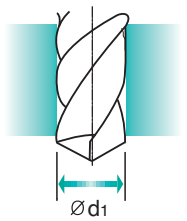


Material groups **GV** | HSS-E | DIN 371/376 | 6HX | 60° | C | TiN

Cold forming taps
Gewindeformer







Unit : mm

SIZE ØD1	×	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	×	0.4	TD723136	8	45	2.8	2.1	1.83
M2.2	×	0.45	TD723156	8	45	2.8	2.1	2
✳ M2.3	×	0.4	TD723196	8	45	2.8	2.1	2.1
M2.5	×	0.45	TD723176	9	50	2.8	2.1	2.3
✳ M2.6	×	0.45	TD723496	9	50	2.8	2.1	2.4
M3	×	0.5	TD723206	11	56	3.5	2.7	2.8
M3.5	×	0.6	TD723226	12	56	4	3	3.25
M4	×	0.7	TD723246	13	63	4.5	3.4	3.7
M4.5	×	0.75	TD723266	14	70	6	4.9	4.15
M5	×	0.8	TD723286	15	70	6	4.9	4.65
M6	×	1	TD723316	17	80	6	4.9	5.55
M7	×	1	TD723346	17	80	7	5.5	6.55
M8	×	1.25	TD723366	20	90	8	6.2	7.4
M9	×	1.25	TD723396	20	90	9	7	8.4
M10	×	1.5	TD723426	22	100	10	8	9.3
M11	×	1.5	TD723466	22	100	8	6.2	10.3
M12	×	1.75	TD723506	24	110	9	7	11.2
M14	×	2	TD723546	26	110	11	9	13
M16	×	2	TD723606	27	110	12	9	15
M18	×	2.5	TD723656	30	125	14	11	16.8
M20	×	2.5	TD723706	32	140	16	12	18.8

- DIN 371(M2~M10) and DIN 376(M11~M20)
- ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎			○	○						◎	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	◎			◎		○		◎	◎	○				

COLD FORMING TAPS

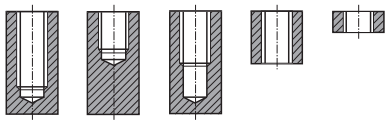
TD703 SERIES

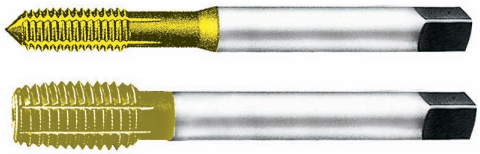
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

- Suitable for threading soft materials with at least 8-10% elongation.
- The pre-drilling holes are bigger than normal sized holes.

- Geeignet zum Gewindeformen weicher Werkstoffe mit mindestens 8-10% Dehnung.
- Die Kernlochbohrungen sind größer als normale Kernlöcher.

Hole type



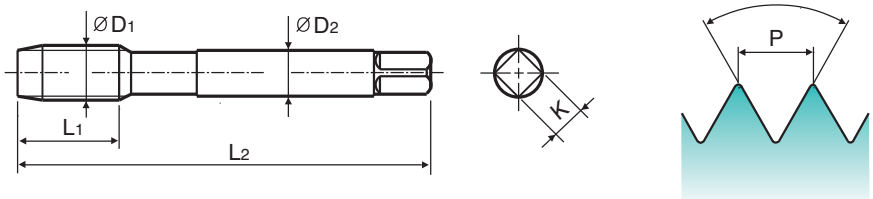


DIN 371

DIN 376

Material groups **GV** | HSS-E | DIN 371/376 | 6HX | 60° | C | TiN

Cold forming taps with oil grooves
Gewindeformer mit Schmiernuten



Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P		L1	L2	ØD2	K	Ød1
M2	0.4	TD703136	8	45	2.8	2.1	1.83
M2.2	0.45	TD703156	8	45	2.8	2.1	2
✳ M2.3	0.4	TD703196	8	45	2.8	2.1	2.1
M2.5	0.45	TD703176	9	50	2.8	2.1	2.3
✳ M2.6	0.45	TD703496	9	50	2.8	2.1	2.4
M3	0.5	TD703206	11	56	3.5	2.7	2.8
M3.5	0.6	TD703226	12	56	4	3	3.25
M4	0.7	TD703246	13	63	4.5	3.4	3.7
M4.5	0.75	TD703266	14	70	6	4.9	4.15
M5	0.8	TD703286	15	70	6	4.9	4.65
M6	1	TD703316	17	80	6	4.9	5.55
M7	1	TD703346	17	80	7	5.5	6.55
M8	1.25	TD703366	20	90	8	6.2	7.4
M9	1.25	TD703396	20	90	9	7	8.4
M10	1.5	TD703426	22	100	10	8	9.3
M11	1.5	TD703466	22	100	8	6.2	10.3
M12	1.75	TD703506	24	110	9	7	11.2
M14	2	TD703546	26	110	11	9	13
M16	2	TD703606	27	110	12	9	15
M18	2.5	TD703656	30	125	14	11	16.8
M20	2.5	TD703706	32	140	16	12	18.8

- DIN 371(M2~M10) and DIN 376(M11~M20)
- ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎			◎	◎						◎	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	◎			◎		○		◎		○				

COLD FORMING TAPS

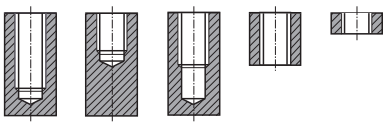
TY703 SERIES

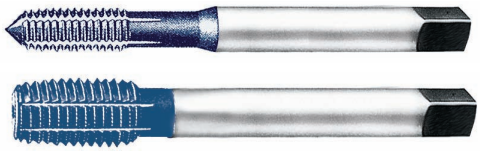
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

- Suitable for threading soft materials with at least 8-10% elongation.
- The pre-drilling holes are bigger than normal sized holes.

- Geeignet zum Gewindeformen weicher Werkstoffe mit mindestens 8-10% Dehnung.
- Die Kernlochbohrungen sind größer als normale Kernlöcher.

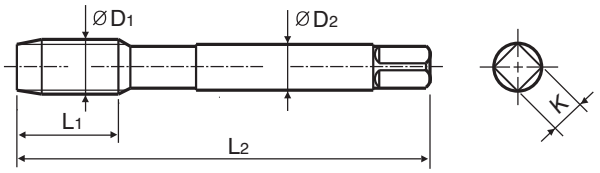
Hole type

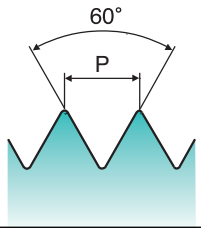


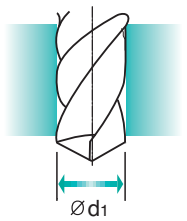


Material groups **GV** | HSS-E | DIN 371/376 | 6HX | 60° | C | TiAlN

Cold forming taps with oil grooves
Gewindeformer mit Schmiernuten







Unit : mm

SIZE ØD1	×	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2	×	0.4	TY703136	8	45	2.8	2.1	1.83
M2.2	×	0.45	TY703156	8	45	2.8	2.1	2
✳ M2.3	×	0.4	TY703196	8	45	2.8	2.1	2.1
M2.5	×	0.45	TY703176	9	50	2.8	2.1	2.3
✳ M2.6	×	0.45	TY703496	9	50	2.8	2.1	2.4
M3	×	0.5	TY703206	11	56	3.5	2.7	2.8
M3.5	×	0.6	TY703226	12	56	4	3	3.25
M4	×	0.7	TY703246	13	63	4.5	3.4	3.7
M4.5	×	0.75	TY703266	14	70	6	4.9	4.15
M5	×	0.8	TY703286	15	70	6	4.9	4.65
M6	×	1	TY703316	17	80	6	4.9	5.55
M7	×	1	TY703346	17	80	7	5.5	6.55
M8	×	1.25	TY703366	20	90	8	6.2	7.4
M9	×	1.25	TY703396	20	90	9	7	8.4
M10	×	1.5	TY703426	22	100	10	8	9.3
M11	×	1.5	TY703466	22	100	8	6.2	10.3
M12	×	1.75	TY703506	24	110	9	7	11.2
M14	×	2	TY703546	26	110	11	9	13
M16	×	2	TY703606	27	110	12	9	15
M18	×	2.5	TY703656	30	125	14	11	16.8
M20	×	2.5	TY703706	32	140	16	12	18.8

- DIN 371(M2~M10) and DIN 376(M11~M20)
- ✳ DIN profile not ISO

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎										◎	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	◎			◎		○		◎		○				

COLD FORMING TAPS

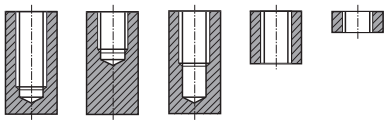
TE733 SERIES

MF ISO metric fine threads DIN 13
Metrisches ISO-Feingewinde DIN 13

- Suitable for threading soft materials with at least 8-10% elongation.
- The pre-drilling holes are bigger than normal sized holes.

- Geeignet zum Gewindeformen weicher Werkstoffe mit mindestens 8-10% Dehnung.
- Die Kernlochbohrungen sind größer als normale Kernlöcher.

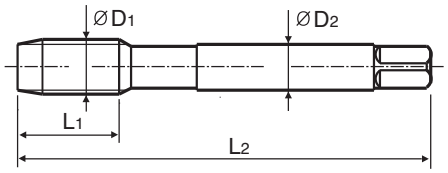
Hole type

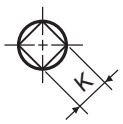


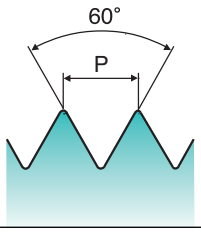
DIN 374

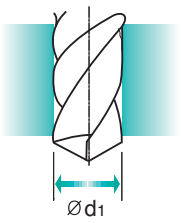
Material groups **GV** | HSS-E | DIN 374 | 6HX | 60° | C | NI

Cold forming taps with oil grooves
Gewindeformer mit Schmiernuten









Unit : mm

SIZE ØD1		Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M4	×	0.5	TE733256	10	63	2.8	2.1	3.75
M5	×	0.5	TE733296	11	70	3.5	2.7	4.75
M6	×	0.75	TE733326	13	80	4.5	3.4	5.65
M6	×	0.5	TE733336	13	80	4.5	3.4	5.75
M7	×	0.75	TE733356	14	80	5.5	4.3	6.65
M8	×	1	TE733376	17	90	6	4.9	7.50
M8	×	0.75	TE733386	14	80	6	4.9	7.65
M10	×	1.25	TE733436	22	100	7	5.5	9.4
M10	×	1	TE733446	18	90	7	5.5	9.5
M10	×	0.75	TE733456	18	90	7	5.5	9.65
M12	×	1.5	TE733516	22	100	9	7	11.25
M12	×	1.25	TE733526	22	100	9	7	11.4
M12	×	1	TE733536	18	100	9	7	11.5
M14	×	1.5	TE733556	22	100	11	9	13.25
M14	×	1.25	TE733566	22	100	11	9	13.4
M16	×	1.5	TE733616	22	100	12	9	15.25
M18	×	1.5	TE733676	25	110	14	11	17.25
M20	×	1.5	TE733726	25	125	16	12	19.25

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎			○	○						○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	◎			○		○		◎		○				

COLD FORMING TAPS

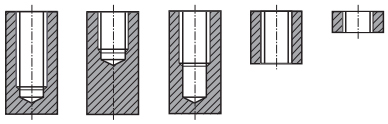
TD733 SERIES

MF ISO metric fine threads DIN 13
Metrisches ISO-Feingewinde DIN 13

- Suitable for threading soft materials with at least 8-10% elongation.
- The pre-drilling holes are bigger than normal sized holes.

- Geeignet zum Gewindeformen weicher Werkstoffe mit mindestens 8-10% Dehnung.
- Die Kernlochbohrungen sind größer als normale Kernlöcher.

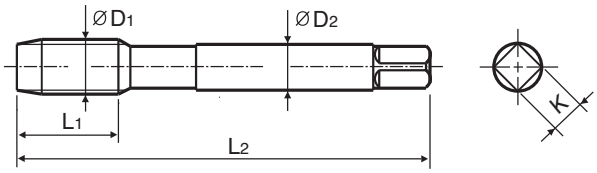
Hole type

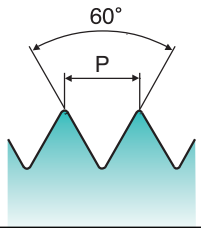


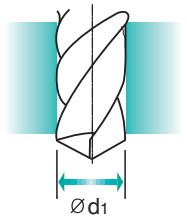
DIN 374

Material groups **GV** | HSS-E | DIN 374 | 6HX | 60° | C | TiN

Cold forming taps with oil grooves
Gewindeformer mit Schmiernuten







Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P		L1	L2	ØD2	K	Ød1
M4	× 0.5	TD733256	10	63	2.8	2.1	3.75
M5	× 0.5	TD733296	11	70	3.5	2.7	4.75
M6	× 0.75	TD733326	13	80	4.5	3.4	5.65
M6	× 0.5	TD733336	13	80	4.5	3.4	5.75
M7	× 0.75	TD733356	14	80	5.5	4.3	6.65
M8	× 1	TD733376	17	90	6	4.9	7.50
M8	× 0.75	TD733386	14	80	6	4.9	7.65
M10	× 1.25	TD733436	22	100	7	5.5	9.4
M10	× 1	TD733446	18	90	7	5.5	9.5
M10	× 0.75	TD733456	18	90	7	5.5	9.65
M12	× 1.5	TD733516	22	100	9	7	11.25
M12	× 1.25	TD733526	22	100	9	7	11.4
M12	× 1	TD733536	18	100	9	7	11.5
M14	× 1.5	TD733556	22	100	11	9	13.25
M14	× 1.25	TD733566	22	100	11	9	13.4
M16	× 1.5	TD733616	22	100	12	9	15.25
M18	× 1.5	TD733676	25	110	14	11	17.25
M20	× 1.5	TD733726	25	125	16	12	19.25

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎			◎	◎						◎	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	◎			◎		○		◎		○				

COLD FORMING TAPS

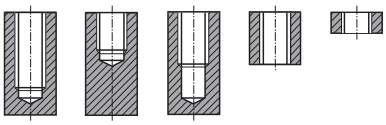
TE704 SERIES

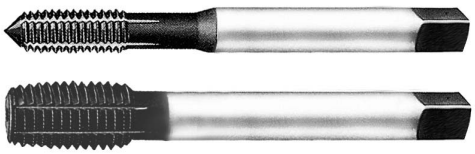
UNC Unified coarse threads
Unified Grobgewinde

- Suitable for threading soft materials with at least 8-10% elongation.
- The pre-drilling holes are bigger than normal sized holes.

- Geeignet zum Gewindeformen weicher Werkstoffe mit mindestens 8-10% Dehnung.
- Die Kernlochbohrungen sind größer als normale Kernlöcher.

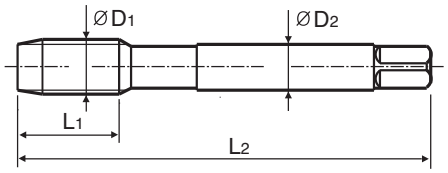
Hole type

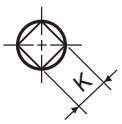


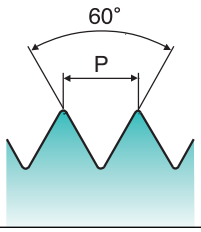


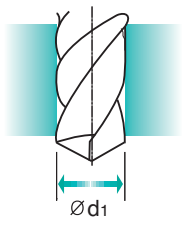
Material groups **GV** | HSS-E | DIN 371/376 | 2BX | 60° | C | NI

Cold forming taps with oil grooves
Gewindeformer mit Schmiernuten









Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1			L1	L2	ØD2	K	Ød1
#5	– 40 UNC	TE704202	11	56	3.5	2.7	2.87
#6	– 32 UNC	TE704242	12	56	4	3	3.1
#8	– 32 UNC	TE704282	13	63	4.5	3.4	3.8
#10	– 24 UNC	TE704322	15	70	6	4.9	4.3
#12	– 24 UNC	TE704362	16	80	6	4.9	4.95
1/4"	– 20 UNC	TE704402	17	80	7	5.5	5.75
5/16"	– 18 UNC	TE704442	20	90	8	6.2	7.25
3/8"	– 16 UNC	TE704482	22	100	9	7	8.75
7/16"	– 14 UNC	TE704522	22	100	8	6.2	10.2
1/2"	– 13 UNC	TE704562	25	110	9	7	11.7
9/16"	– 12 UNC	TE704602	26	110	11	9	13.2
5/8"	– 11 UNC	TE704642	27	110	12	9	14.7
3/4"	– 10 UNC	TE704702	30	125	14	11	17.8

▶ DIN 371(#4~3/8") and DIN 376(7/16"~3/4")

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎			○	○						○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	◎			○		○		◎		○				

COLD FORMING TAPS

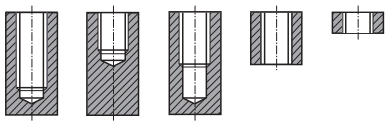
TD704 SERIES

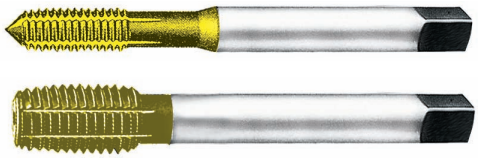
UNC Unified coarse threads
Unified Grobgewinde

- Suitable for threading soft materials with at least 8-10% elongation.
- The pre-drilling holes are bigger than normal sized holes.

- Geeignet zum Gewindeformen weicher Werkstoffe mit mindestens 8-10% Dehnung.
- Die Kernlochbohrungen sind größer als normale Kernlöcher.

Hole type



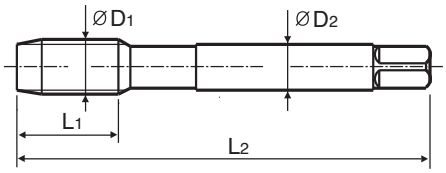


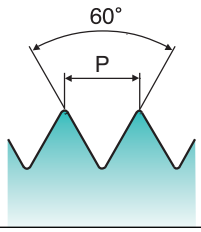
DIN 371

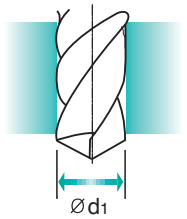
DIN 376

Material groups **GV** | HSS-E | DIN 371/376 | 2BX | 60° | C | TiN

Cold forming taps with oil grooves
Gewindeformer mit Schmiernuten







Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1			L1	L2	ØD2	K	Ød1
#5	– 40 UNC	TD704202	11	56	3.5	2.7	2.87
#6	– 32 UNC	TD704242	12	56	4	3	3.1
#8	– 32 UNC	TD704282	13	63	4.5	3.4	3.8
#10	– 24 UNC	TD704322	15	70	6	4.9	4.3
#12	– 24 UNC	TD704362	16	80	6	4.9	4.95
1/4"	– 20 UNC	TD704402	17	80	7	5.5	5.75
5/16"	– 18 UNC	TD704442	20	90	8	6.2	7.25
3/8"	– 16 UNC	TD704482	22	100	9	7	8.75
7/16"	– 14 UNC	TD704522	22	100	8	6.2	10.2
1/2"	– 13 UNC	TD704562	25	110	9	7	11.7
9/16"	– 12 UNC	TD704602	26	110	11	9	13.2
5/8"	– 11 UNC	TD704642	27	110	12	9	14.7
3/4"	– 10 UNC	TD704702	30	125	14	11	17.8

▶ DIN 371(#4~3/8") and DIN 376(7/16"~3/4")

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎	◎	◎			◎	◎						◎	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	◎			◎		○		◎		○				

HSS

Being the best through innovation

NUT TAPS
MUTTERGEWINDEBOHRER

- Nut Tapping Machines
- Zum Gewindeschneiden von Muttern

NUT TAPS

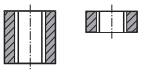
TC803 SERIES

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

- For making nuts on machines.
- The work pieces can be taken out from shank side only.

- Zur Herstellung von Muttern auf Sondermaschinen.
- Die fertigen Muttern können nur über das Schaftende entnommen werden.

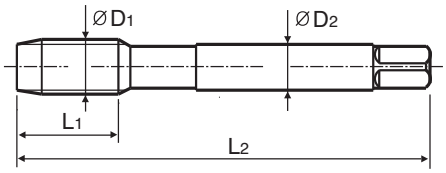
Hole type

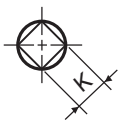


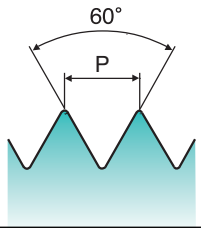
DIN 357

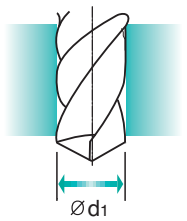
Material groups **GS** | HSS-E | DIN 357 | 6H | 60° | LONG | Bright

Nut taps
Muttergewindebohrer









Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M4	0.7	TC803246	25	90	2.8	2.1	3.3
M5	0.8	TC803286	28	100	3.5	2.7	4.2
M6	1	TC803316	32	110	4.5	3.4	5
M7	1	TC803346	36	110	5.5	4.3	6
M8	1.25	TC803366	40	125	6	4.9	6.8
M10	1.5	TC803426	45	140	7	5.5	8.5
M12	1.75	TC803506	50	180	9	7	10.2
M14	2	TC803546	56	200	11	9	12
M16	2	TC803606	63	200	12	9	14
M18	2.5	TC803656	63	220	14	11	15.5
M20	2.5	TC803706	70	250	16	12	17.5

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
○	○	○	○								○	○		

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
					○	○					○			

HSS

Being the best through innovation

STI TAPS

GEWINDEBOHRER FÜR GEWINDEDRAHTEINSÄTZE

- **Tapping STI Threads of Soft Materials**
- **Zum Gewindeschneiden für Drahteinsätze in weichen Werkstoffen**

SCREW THREAD INSERT TAPS

Tapping STI Threads of Soft Materials

SCREW THREAD INSERT TAPS

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Surface Treatment	PAGE
TC973		HSS-E	EG-M	**Al**	DIN 371/376	6H Mod.	B	Bright	**527**
TC909		HSS-E	EG-M	**Al**	DIN 371/376	6H Mod.	C	Bright	**528**
TC934		HSS-E	EG-UNC	**Al**	DIN 371/376	2B	B	Bright	**529**
TC944		HSS-E	EG-UNC	**Al**	DIN 371/376	2B	C	Bright	**530**
TC954		HSS-E	EG-UNF	**Al**	DIN 371/374	2B	B	Bright	**531**

STI TAPS

TC973 SERIES

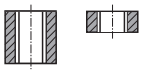
EG-M ISO metric coarse threads for Screw Thread insert

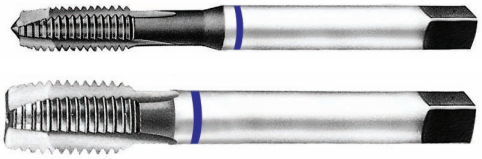
Metrisches ISO Regelgew.f.Gew. Drahteins

▶ Wire insert threads are used for increasing fastening strength in soft materials.

▶ Gewinde mit Drahteinsätzen werden verwendet um größere Drehmomente in weichen Werkstoffen zu erreichen.

Hole type



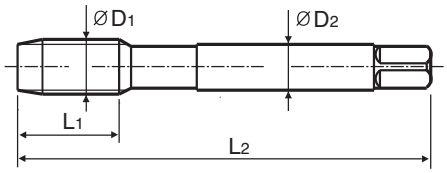


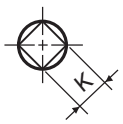
DIN 371

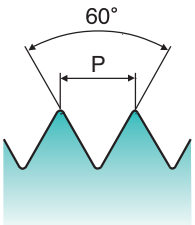
DIN 376

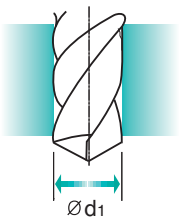
Material groups **Al** | HSS-E | DIN ≒371/376 | 6H Mod. | 60° | B | Bright

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE ØD1	×	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2.5	×	0.45	TC973176	11	56	3.5	2.7	2.65
M3	×	0.5	TC973206	10	63	4.5	3.4	3.15
M3.5	×	0.6	TC973226	14	70	6	4.9	3.7
M4	×	0.7	TC973246	13	70	6	4.9	4.2
M5	×	0.8	TC973286	13	80	6	4.9	5.25
M6	×	1	TC973316	17	90	8	6.2	6.3
M8	×	1.25	TC973366	18	100	10	8	8.4
M10	×	1.5	TC973426	22	110	9	7	10.4
M12	×	1.75	TC973506	26	110	11	9	12.5
M14	×	2	TC973546	27	110	12	9	14.5
M16	×	2	TC973606	30	125	14	11	16.5
M18	×	2.5	TC973656	32	140	18	14.5	18.75
M20	×	2.5	TC973706	34	160	18	14.5	20.75

▶ DIN 371(M2.5~M8) and DIN 376(M10~M20)

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
○	○	○											○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
				◎				◎	◎	◎				

STI TAPS

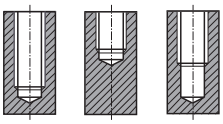
TC909 SERIES

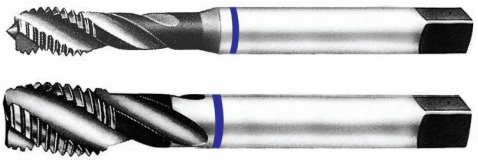
EG-M ISO metric coarse threads for Screw Thread insert
Metrisches ISO Regelgew.f.Gew. Drahteins

▶ Wire insert threads are used for increasing fastening strength in soft materials.

▶ Gewinde mit Drahteinsätzen werden verwendet um größere Drehmomente in weichen Werkstoffen zu erreichen.

Hole type



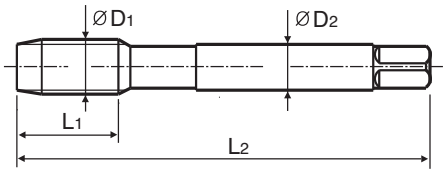


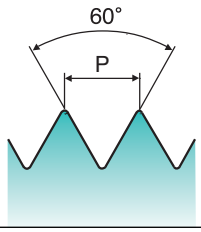
DIN 371

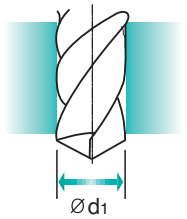
DIN 376

Material groups **Al** | HSS-E | DIN ≒371/376 | 6H Mod. | 60° | C | Bright | R40

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M2.5	0.45	TC909176	6	56	3.5	2.7	2.65
M3	0.5	TC909206	5	63	4.5	3.4	3.15
M3.5	0.6	TC909226	8	70	6	4.9	3.7
M4	0.7	TC909246	8	70	6	4.9	4.2
M5	0.8	TC909286	8	80	6	4.9	5.25
M6	1	TC909316	10	90	8	6.2	6.3
M8	1.25	TC909366	16	100	10	8	8.4
M10	1.5	TC909426	15	110	9	7	10.4
M12	1.75	TC909506	20	110	11	9	12.5
M14	2	TC909546	22	110	12	9	14.5
M16	2	TC909606	25	125	14	11	16.5
M18	2.5	TC909656	27	140	18	14.5	18.75
M20	2.5	TC909706	30	160	18	14.5	20.75

▶ DIN 371(M2.5~M8) and DIN 376(M10~M20)

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
○	○	○											○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
				◎				◎	◎	◎				

STI TAPS

TC934 SERIES

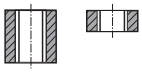
EG-UNC

Unified coarse threads for Screw Thread insert
Unified Regelgew.f.Gew.Drahteins

▶ Wire insert threads are used for increasing fastening strength in soft materials.

▶ Gewinde mit Drahteinsätzen werden verwendet um größere Drehmomente in weichen Werkstoffen zu erreichen.

Hole type

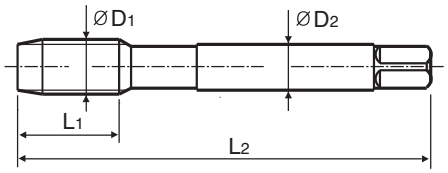


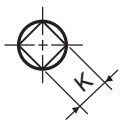
DIN 371

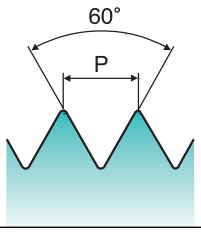
DIN 376

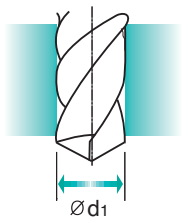
Material groups **Al** | HSS-E | DIN ≒371/376 | 2B | 60° | B | Bright

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1			L1	L2	ØD2	K	Ød1
#4	– 40 UNC	TC934162	13	63	4.5	3.4	3.1
#5	– 40 UNC	TC934202	13	63	4.5	3.4	3.4
#6	– 32 UNC	TC934242	14	70	6	4.9	3.8
#8	– 32 UNC	TC934282	13	80	6	4.9	4.4
#10	– 24 UNC	TC934322	17	80	7	5.5	5.2
#12	– 24 UNC	TC934362	17	80	7	5.5	5.8
1/4"	– 20 UNC	TC934402	20	90	8	6.2	6.7
5/16"	– 18 UNC	TC934442	22	100	10	8	8.4
3/8"	– 16 UNC	TC934482	21	110	12	9	10.0
7/16"	– 14 UNC	TC934522	26	110	11	9	11.6
1/2"	– 13 UNC	TC934562	27	110	12	9	13.3
9/16"	– 12 UNC	TC934602	26	125	14	11	15
5/8"	– 11 UNC	TC934642	30	125	14	11	16.5
3/4"	– 10 UNC	TC934702	32	140	18	14.5	19.75

▶ DIN 371(#4~3/8") and DIN 376(7/16"~3/4")

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
○	○	○											○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
				◎				◎	◎	◎				

STI TAPS

TC944 SERIES

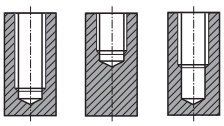
EG-UNC

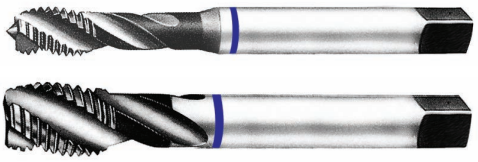
Unified coarse threads for Screw Thread insert
Unified Regelgew.f.Gew.Drahteins

▶ Wire insert threads are used for increasing fastening strength in soft materials.

▶ Gewinde mit Drahteinsätzen werden verwendet um größere Drehmomente in weichen Werkstoffen zu erreichen.

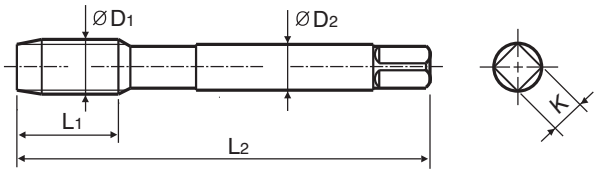
Hole type

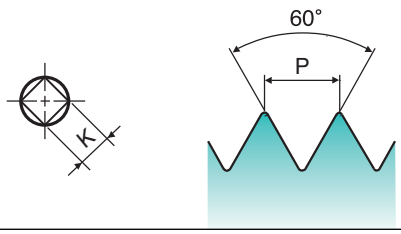


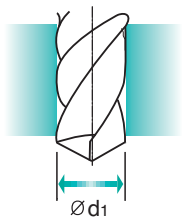


Material groups: Al | HSS-E | DIN ≒371/376 | 2B | 60° | C | Bright | R40

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1			L1	L2	ØD2	K	Ød1
#4	– 40 UNC	TC944162	7	63	4.5	3.4	3.1
#5	– 40 UNC	TC944202	7	63	4.5	3.4	3.4
#6	– 32 UNC	TC944242	8	70	6	4.9	3.8
#8	– 32 UNC	TC944282	8	80	6	4.9	4.4
#10	– 24 UNC	TC944322	10	80	7	5.5	5.2
#12	– 24 UNC	TC944362	10	80	7	5.5	5.8
1/4"	– 20 UNC	TC944402	14	90	8	6.2	6.7
5/16"	– 18 UNC	TC944442	16	100	10	8	8.4
3/8"	– 16 UNC	TC944482	16	110	12	9	10.0
7/16"	– 14 UNC	TC944522	20	110	11	9	11.6
1/2"	– 13 UNC	TC944562	22	110	12	9	13.3
9/16"	– 12 UNC	TC944602	22	125	14	11	15
5/8"	– 11 UNC	TC944642	25	125	14	11	16.5
3/4"	– 10 UNC	TC944702	27	140	18	14.5	19.75

▶ DIN 371(#4~3/8") and DIN 376(7/16"~3/4")

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
○	○	○											○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
				◎				◎	◎	◎				

STI TAPS

TC954 SERIES

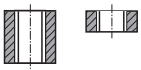
EG-UNF

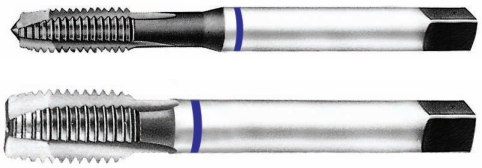
Unified fine threads for Screw Thread insert
Unified Feingew.f.Gew.Drahteins

▶ Wire insert threads are used for increasing fastening strength in soft materials.

▶ Gewinde mit Drahteinsätzen werden verwendet um größere Drehmomente in weichen Werkstoffen zu erreichen.

Hole type



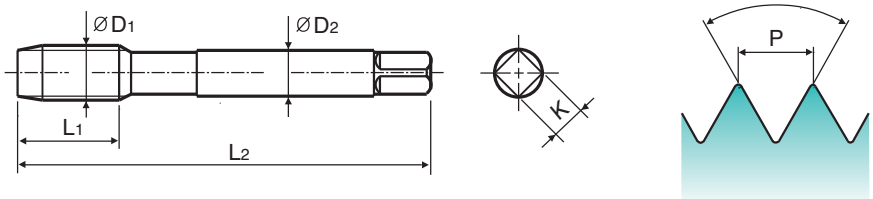


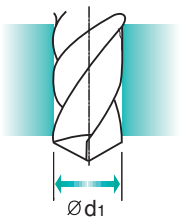
DIN 371

DIN 374

Material groups **Al** | HSS-E | DIN ≒371/374 | 2B | 60° | B | Bright

Machine taps
Maschinengewindebohrer





Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1			L1	L2	ØD2	K	Ød1
#4	– 48 UNF	TC954182	12	56	4	3	3.1
#6	– 40 UNF	TC954262	14	70	6	4.9	3.7
#8	– 36 UNF	TC954302	13	70	6	4.9	4.4
#10	– 32 UNF	TC954342	13	80	6	4.9	5.1
1/4"	– 28 UNF	TC954422	17	90	8	6.2	6.6
5/16"	– 24 UNF	TC954462	18	100	10	8	8.25
3/8"	– 24 UNF	TC954502	18	110	12	9	9.8
7/16"	– 20 UNF	TC954542	22	100	9	7	11.5
1/2"	– 20 UNF	TC954582	22	100	11	9	13.1
9/16"	– 18 UNF	TC954622	22	100	12	9	14.75
5/8"	– 18 UNF	TC954662	25	110	14	11	16.25
3/4"	– 16 UNF	TC954722	25	125	16	12	19.5

▶ DIN 371(#4~3/8") and DIN 374(7/16"~3/4")

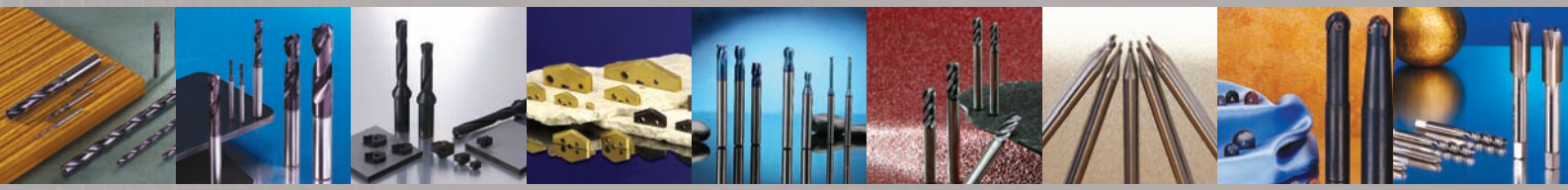
Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
○	○	○											○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
				◎				◎	◎	◎				

Global Cutting Tool Leader **YG-1**



HSS

Being the best through innovation

HAND TAPS
HANDGEWINDEBOHRER

- General Tapping, HSS & HSS-E
- Für normales Gewindeschneiden. HSS und HSS-E

HAND TAPS

General Tapping, HSS & HSS-E

HSS HAND TAPS

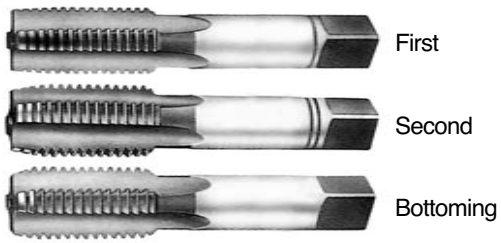
EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Surface Treatment	PAGE
T7109		HSS	M	**GS**	DIN 352	ISO 2/6H	I / II / III	Bright	**535**
T7343		HSS	M-LH	**GS**	DIN 352	ISO 2/6H	I / II / III	Bright	**536**
TC353		HSS-E	M	**VG**	DIN 352	ISO 2/6H	I / II / III	Bright	**537**
TB373		HSS-E	M	**VA**	DIN 352	ISO 2X/6HX	I / II / III	Vap	**538**
T7309		HSS	MF	**GS**	DIN 2181	ISO 2/6H	I / III	Bright	**539**
T7363		HSS	UNC	**GS**	DIN 351	2B	I / II / III	Bright	**541**
T7509		HSS	UNF	**GS**	DIN 2181	2B	I / III	Bright	**542**
T7609		HSS	BSW	**GS**	DIN 351	-	I / II / III	Bright	**543**

HAND TAPS

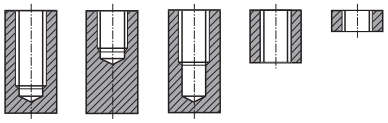
T7109 SERIES

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

- This tap is a serial hand tap in set, First, Second and Bottoming.
- Bottoming tap of set has final internal thread dimensions only.
- Dies ist ein Handgewindebohrer im Satz mit Vor-, Mittel- und Fertigschneider.
- Nur der Fertigschneider kann das gewünschte Gewinde schneiden.

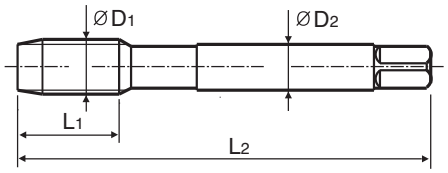


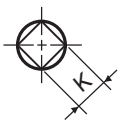
Hole type

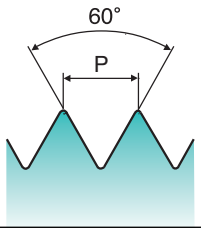


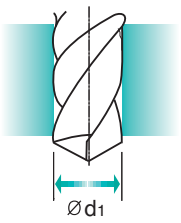
Material groups **GS** | HSS | DIN 352 | 6H | 60° | I / II / III | Bright

Sets of taps
Gewindebohrer - Satz









Unit : mm

SIZE	Pitch	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P		L1	L2	ØD2	K	Ød1
M2	0.4	T7109139	8	36	2.8	2.1	1.6
M2.2	0.45	T7109159	9	36	2.8	2.1	1.75
* M2.3	0.4	T7109199	9	36	2.8	2.1	1.9
M2.5	0.45	T7109179	9	40	2.8	2.1	2.05
* M2.6	0.45	T7109499	9	40	2.8	2.1	2.1
M3	0.5	T7109209	11	40	3.5	2.7	2.5
M3.5	0.6	T7109229	13	45	4	3	2.9
M4	0.7	T7109249	13	45	4.5	3.4	3.3
M4.5	0.75	T7109269	16	50	6	4.9	3.7
M5	0.8	T7109289	16	52	6	4.9	4.2
* M5.5	0.9	T7109N69	18	56	6	4.9	4.6
M6	1	T7109319	18	56	6	4.9	5
M7	1	T7109349	18	56	6	4.9	6
M8	1.25	T7109369	20	63	6	4.9	6.8
M9	1.25	T7109399	20	63	7	5.5	7.8
M10	1.5	T7109429	22	70	7	5.5	8.5
M11	1.5	T7109469	22	70	8	6.2	9.5
M12	1.75	T7109509	24	80	9	7	10.2
M14	2	T7109549	26	80	11	9	12
M16	2	T7109609	27	80	12	9	14
M18	2.5	T7109659	30	95	14	11	15.5
M20	2.5	T7109709	32	95	16	12	17.5
M22	2.5	T7109749	32	100	18	14.5	19.5
M24	3	T7109789	34	110	18	14.5	21
M27	3	T7109869	36	110	20	16	24
M30	3.5	T7109949	40	125	22	18	26.5
M33	3.5	T7109A49	40	125	25	20	29.5
M36	4	T7109B39	50	150	28	22	32
M39	4	T7109C09	50	150	32	24	35
M42	4.5	T7109C89	56	150	32	24	37.5
M45	4.5	T7109D59	58	160	36	29	40.5
M48	5	T7109E29	65	180	36	29	43
M52	5	T7109F39	65	180	40	32	47

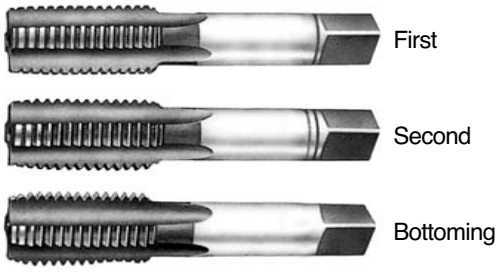
▶ * DIN profile not ISO

HAND TAPS

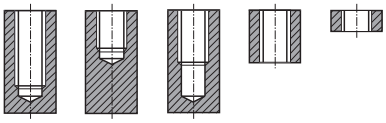
T7343 SERIES

M-LH ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

- This tap is a serial hand tap in set, First, Second and Bottoming.
- Bottoming tap of set has final internal thread dimensions only.
- Dies ist ein Handgewindebohrer im Satz mit Vor-, Mittel- und Fertigschneider.
- Nur der Fertigschneider kann das gewünschte Gewinde schneiden.

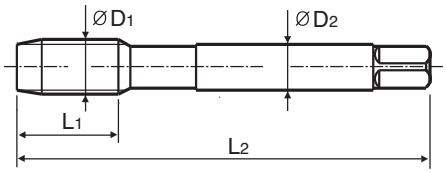


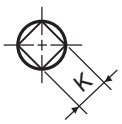
Hole type

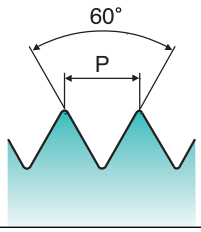


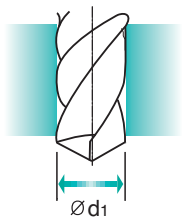
Material groups **GS** | HSS | DIN 352 | 6H | 60° | I / II / III | Bright

Sets of taps
Gewindebohrer - Satz









Unit : mm

SIZE ØD1		Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M3	×	0.5	T7343209	11	40	3.5	2.7	2.5
M3.5	×	0.6	T7343229	13	45	4	3	2.9
M4	×	0.7	T7343249	13	45	4.5	3.4	3.3
M4.5	×	0.75	T7343269	16	50	6	4.9	3.7
M5	×	0.8	T7343289	16	52	6	4.9	4.2
M6	×	1	T7343319	18	56	6	4.9	5
M8	×	1.25	T7343369	20	63	6	4.9	6.8
M10	×	1.5	T7343429	22	70	7	5.5	8.5
M12	×	1.75	T7343509	24	80	9	7	10.2
M14	×	2	T7343549	26	80	11	9	12
M16	×	2	T7343609	27	80	12	9	14
M18	×	2.5	T7343659	30	95	14	11	15.5
M20	×	2.5	T7343709	32	95	16	12	17.5
M22	×	2.5	T7343749	32	100	18	14.5	19.5
M24	×	3	T7343789	34	110	18	14.5	21
M27	×	3	T7343869	36	110	20	16	24
M30	×	3.5	T7343949	40	125	22	18	26.5

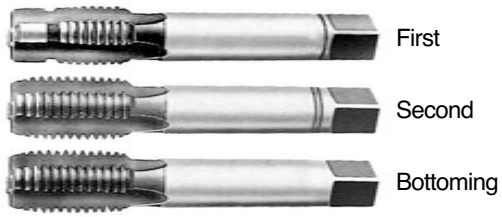
- LH=Left hand thread

HAND TAPS

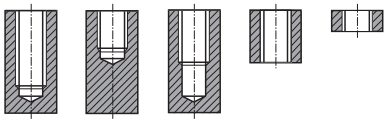
TC353 SERIES

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

- This tap is a serial hand tap in set, First, Second and Bottoming.
- Bottoming tap of set has final internal thread dimensions only.
- Dies ist ein Handgewindebohrer im Satz mit Vor-, Mittel- und Fertigschneider.
- Nur der Fertigschneider kann das gewünschte Gewinde schneiden.

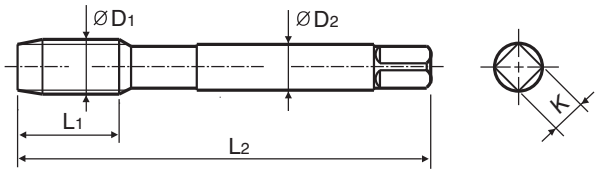


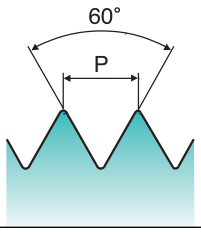
Hole type

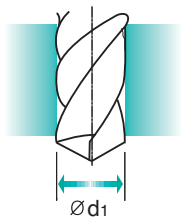


Material groups **VG** | HSS-E | DIN 352 | 6H | 60° | I / II / III | Bright

Sets of taps
Gewindebohrer - Satz







Unit : mm

SIZE ØD1	×	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M3	×	0.5	TC353209	11	40	3.5	2.7	2.5
M3.5	×	0.6	TC353229	13	45	4	3	2.9
M4	×	0.7	TC353249	13	45	4.5	3.4	3.3
M4.5	×	0.75	TC353269	16	50	6	4.9	3.7
M5	×	0.8	TC353289	16	52	6	4.9	4.2
M6	×	1	TC353319	18	56	6	4.9	5
M8	×	1.25	TC353369	20	63	6	4.9	6.8
M10	×	1.5	TC353429	22	70	7	5.5	8.5
M12	×	1.75	TC353509	24	80	9	7	10.2
M14	×	2	TC353549	26	80	11	9	12
M16	×	2	TC353609	27	80	12	9	14
M18	×	2.5	TC353659	30	95	14	11	15.5
M20	×	2.5	TC353709	32	95	16	12	17.5

▶ First with pilot guide

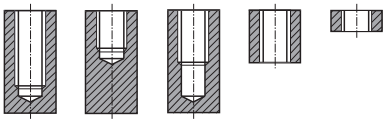
HAND TAPS

TB373 SERIES

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

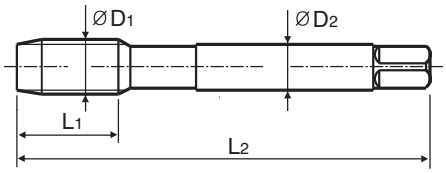
- This tap is a serial hand tap in set, First, Second and Bottoming.
- Bottoming tap of set has final internal thread dimensions only.
- Dies ist ein Handgewindebohrer im Satz mit Vor-, Mittel- und Fertigschneider.
- Nur der Fertigschneider kann das gewünschte Gewinde schneiden.

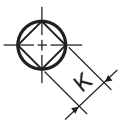
Hole type

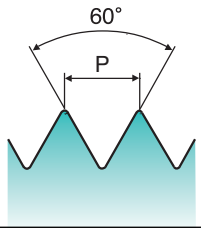


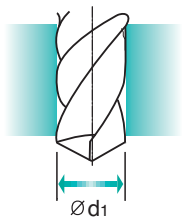
Material groups **VA** | HSS-E | DIN 352 | 6HX | 60° | I / II / III | Vap

Sets of taps
Gewindebohrer - Satz









Unit : mm

SIZE ØD1		Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M3	×	0.5	TB373209	11	40	3.5	2.7	2.5
M3.5	×	0.6	TB373229	13	45	4	3	2.9
M4	×	0.7	TB373249	13	45	4.5	3.4	3.3
M4.5	×	0.75	TB373269	16	50	6	4.9	3.7
M5	×	0.8	TB373289	16	52	6	4.9	4.2
M6	×	1	TB373319	18	56	6	4.9	5
M8	×	1.25	TB373369	20	63	6	4.9	6.8
M10	×	1.5	TB373429	22	70	7	5.5	8.5
M12	×	1.75	TB373509	24	80	9	7	10.2
M14	×	2	TB373549	26	80	11	9	12
M16	×	2	TB373609	27	80	12	9	14
M18	×	2.5	TB373659	30	95	14	11	15.5
M20	×	2.5	TB373709	32	95	16	12	17.5

- First with pilot guide

HAND TAPS

T7309 SERIES

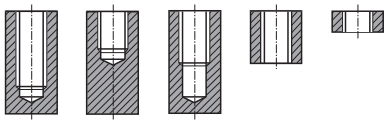
MF ISO metric fine threads DIN 13
Metrisches ISO-Feingewinde DIN 13

- Serial hand tap set in First and Bottoming.
- Bottoming tap of set has final internal thread dimensions only.
- Handgewindebohrersatz mit Vor- und Fertigschneider.
- Nur der Fertigschneider kann das gewünschte Gewinde schneiden.

First

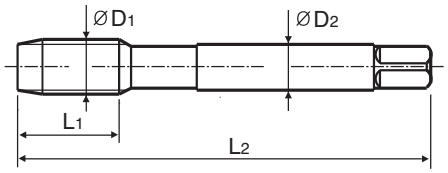
Bottoming

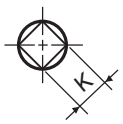
Hole type

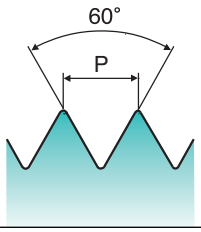


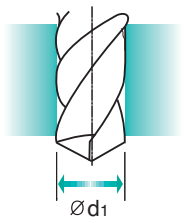
Material groups **GS** | HSS | DIN 2181 | 6H | 60° | I / III | Bright

Sets of taps
Gewindebohrer-Satz









Unit : mm

SIZE ØD1		Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M3	×	0.35	T7309219	8	42	3.5	2.7	2.65
M4	×	0.5	T7309259	9	48	4.5	3.4	3.5
M5	×	0.5	T7309299	11	52	6	4.9	4.5
M6	×	0.75	T7309329	12	56	6	4.9	5.2
M6	×	0.5	T7309339	12	56	6	4.9	5.5
M7	×	0.75	T7309359	14	56	6	4.9	6.2
M8	×	1	T7309379	17	63	6	4.9	7
M8	×	0.75	T7309389	14	63	6	4.9	7.2
M8	×	0.5	T7309939	14	63	6	4.9	7.5
M9	×	1	T7309409	17	63	7	5.5	8
M10	×	1.25	T7309439	22	70	7	5.5	8.8
M10	×	1	T7309449	18	63	7	5.5	9
M10	×	0.75	T7309459	18	63	7	5.5	9.2
M11	×	1	T7309479	18	63	8	6.2	10
M12	×	1.5	T7309519	20	70	9	7	10.5
M12	×	1.25	T7309529	20	70	9	7	10.8
M12	×	1	T7309539	18	70	9	7	11
M13	×	1.5	T7309N19	20	70	11	9	11.5
M13	×	1	T7309N29	18	70	11	9	12
M14	×	1.5	T7309559	20	70	11	9	12.5
M14	×	1.25	T7309569	20	70	11	9	12.8
M14	×	1	T7309579	18	70	11	9	13
M15	×	1.5	T7309589	20	70	12	9	13.5
M15	×	1	T7309599	18	70	12	9	14
M16	×	1.5	T7309619	20	70	12	9	14.5
M16	×	1	T7309629	18	70	12	9	15

HAND TAPS

T7309 SERIES

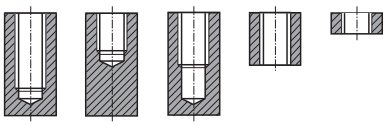
MF ISO metric fine threads DIN 13
Metrisches ISO-Feingewinde DIN 13

- Serial hand tap set in First and Bottoming.
- Bottoming tap of set has final internal thread dimensions only.
- Handgewindebohrersatz mit Vor- und Fertigschneider.
- Nur der Fertigschneider kann das gewünschte Gewinde schneiden.

First

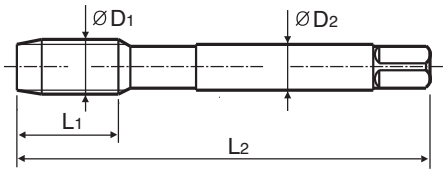
Bottoming

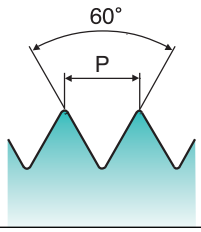
Hole type

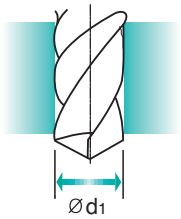


Material groups **GS** | HSS | DIN 2181 | 6H | 60° | I / III | Bright

Sets of taps
Gewindebohrer-Satz







Unit : mm

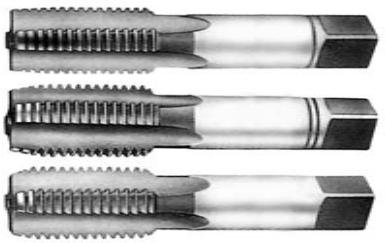
SIZE ØD1	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M18	2	T7309669	22	80	14	11	16
M18	1.5	T7309679	22	80	14	11	16.5
M18	1	T7309689	18	80	14	11	17
M20	2	T7309719	22	80	16	12	18
M20	1.5	T7309729	22	80	16	12	18.5
M20	1	T7309739	18	80	16	12	19
M22	2	T7309759	22	80	18	14.5	20
M22	1.5	T7309769	22	80	18	14.5	20.5
M22	1	T7309779	18	80	18	14.5	21
M24	2	T7309799	22	90	18	14.5	22
M24	1.5	T7309809	22	90	18	14.5	22.5
M24	1	T7309819	18	90	18	14.5	23
M25	1.5	T7309839	22	90	18	14.5	23.5
M25	1	T7309849	18	90	18	14.5	24
M26	1.5	T7309859	22	90	18	14.5	24.5
M26	1	T7309N59	18	90	18	14.5	25
M27	2	T7309879	22	90	20	16	25
M27	1.5	T7309889	22	90	20	16	25.5
M27	1	T7309899	18	90	20	16	26
M28	2	T7309909	22	90	20	16	26
M28	1.5	T7309919	22	90	20	16	26.5
M30	2	T7309969	22	90	22	18	28
M30	1.5	T7309979	22	90	22	18	28.5
M30	1	T7309989	18	90	22	18	29

HAND TAPS

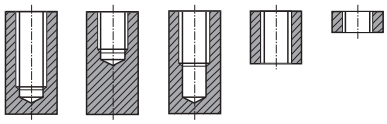
T7363 SERIES

UNC Unified coarse threads
Unified Grobgewinde

- This tap is a serial hand tap in set, First, Second and Bottoming.
- Bottoming tap of set has final internal thread dimensions only.
- Dies ist ein Handgewindebohrer im Satz mit Vor-, Mittel- und Fertigschneider.
- Nur der Fertigschneider kann das gewünschte Gewinde schneiden.

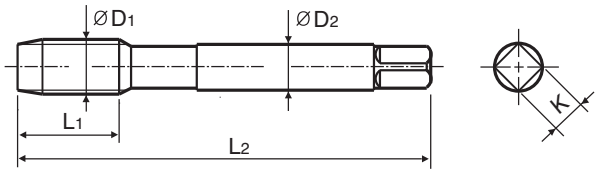


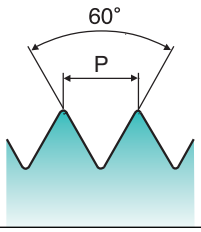
Hole type

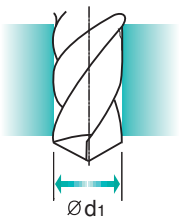


Material groups **GS** | HSS | DIN 351 | 2B | 60° | I / II / III | Bright

Sets of taps
Gewindebohrer-Satz







Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1			L1	L2	ØD2	K	Ød1
#2	– 56 UNC	T7363089	9	36	2.8	2.1	1.8
#3	– 48 UNC	T7363129	10	40	2.8	2.1	2.1
#4	– 40 UNC	T7363169	10	42	3.5	2.7	2.3
#5	– 40 UNC	T7363209	10	42	3.5	2.7	2.6
#6	– 32 UNC	T7363249	11	45	4	3	2.85
#8	– 32 UNC	T7363289	12	48	4.5	3.4	3.5
#10	– 24 UNC	T7363329	14	52	6	4.9	3.9
#12	– 24 UNC	T7363369	16	56	6	4.9	4.5
1/4"	– 20 UNC	T7363409	16	56	6	4.9	5.2
5/16"	– 18 UNC	T7363449	20	63	6	4.9	6.6
3/8"	– 16 UNC	T7363489	22	70	7	5.5	8
7/16"	– 14 UNC	T7363529	22	70	8	6.2	9.4
1/2"	– 13 UNC	T7363569	25	80	9	7	10.75
9/16"	– 12 UNC	T7363609	26	80	11	9	12.25
5/8"	– 11 UNC	T7363649	27	90	12	9	13.5
3/4"	– 10 UNC	T7363709	32	105	14	11	16.5
7/8"	– 9 UNC	T7363749	32	110	18	14.5	19.5
1"	– 8 UNC	T7363789	36	110	20	16	22.25
1*1/8"	– 7 UNC	T7363829	40	125	22	18	25
1*1/4"	– 7 UNC	T7363869	40	125	25	20	28.25
1*3/8"	– 6 UNC	T7363909	50	150	28	22	30.75
1*1/2"	– 6 UNC	T7363949	50	150	32	24	34
1*3/4"	– 5 UNC	T7363B89	58	160	36	29	39.5
2"	– 4 1/2 UNC	T7363D29	65	180	40	32	45.25

HAND TAPS

T7509 SERIES

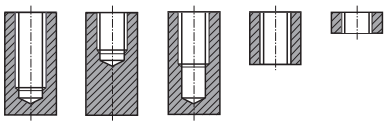
UNF Unified fine threads
Unified Feingewinde

- Serial hand tap set in First and Bottoming.
- Bottoming tap of set has final internal thread dimensions only.
- Handgewindebohrersatz mit Vor- und Fertigschneider.
- Nur der Fertigschneider kann das gewünschte Gewinde schneiden.

First

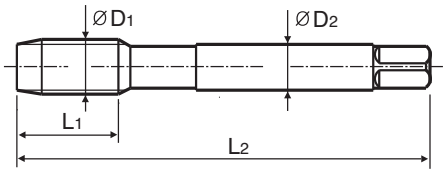
Bottoming

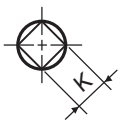
Hole type

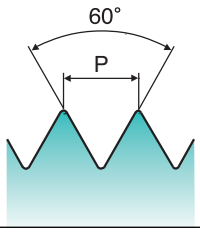


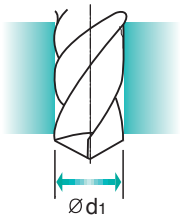
Material groups **GS** | HSS | DIN 2181 | 2B | 60° | I / III | Bright

Sets of taps
Gewindebohrer-Satz









Unit : mm

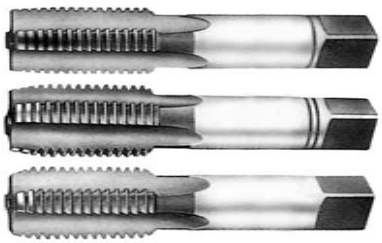
SIZE TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1		L1	L2	ØD2	K	Ød1
#4 – 48 UNF	T7509189	10	42	3.5	2.7	2.4
#5 – 44 UNF	T7509229	10	42	3.5	2.7	2.7
#6 – 40 UNF	T7509269	11	45	4	3	3
#8 – 36 UNF	T7509309	12	48	4.5	3.4	3.5
#10 – 32 UNF	T7509349	14	52	6	4.9	4.1
#12 – 28 UNF	T7509389	16	56	6	4.9	4.7
1/4" – 28 UNF	T7509429	16	56	6	4.9	5.5
5/16" – 24 UNF	T7509469	17	63	6	4.9	6.9
3/8" – 24 UNF	T7509509	18	63	7	5.5	8.5
7/16" – 20 UNF	T7509549	20	70	8	6.2	9.9
1/2" – 20 UNF	T7509589	20	70	9	7	11.5
9/16" – 18 UNF	T7509629	20	70	11	9	12.9
5/8" – 18 UNF	T7509669	20	70	12	9	14.5
3/4" – 16 UNF	T7509729	22	80	14	11	17.5
7/8" – 14 UNF	T7509769	22	80	18	14.5	20.5
1" – 12 UNF	T7509809	22	90	18	14.5	23.25
1*1/8" – 12 UNF	T7509849	22	90	22	18	26.5

HAND TAPS

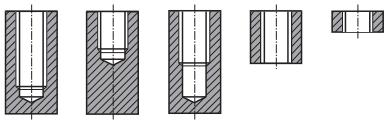
T7609 SERIES

BSW Whitworth threads
Whitworth Gewinde

- This tap is a serial hand tap in set, First, Second and Bottoming.
- Bottoming tap of set has final internal thread dimensions only.
- Dies ist ein Handgewindebohrer im Satz mit Vor-, Mittel- und Fertigschneider.
- Nur der Fertigschneider kann das gewünschte Gewinde schneiden.

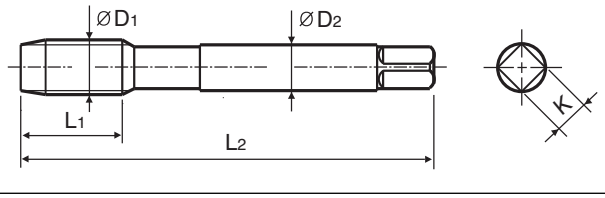


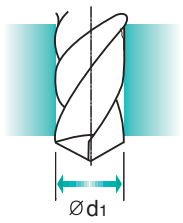
Hole type



Material groups **GS** | HSS | DIN 351 | 55° | I / II / III | Bright

Sets of taps
Gewindebohrer-Satz

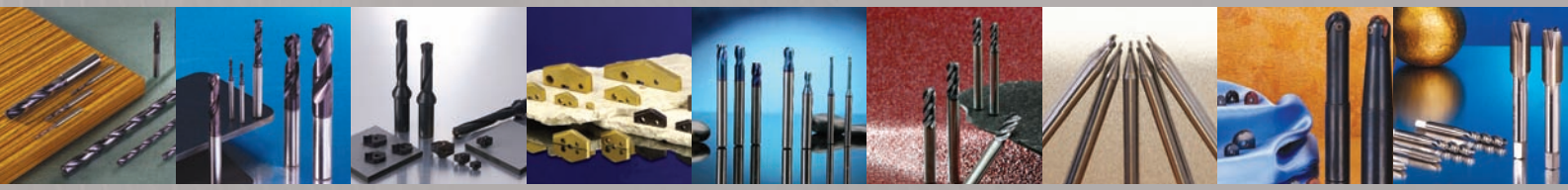




Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1			L1	L2	ØD2	K	Ød1
W3/32"	– 48	T7609129	10	40	2.8	2.1	1.8
W1/8"	– 40	T7609209	10	42	3.5	2.7	2.5
W5/32"	– 32	T7609289	12	48	4.5	3.4	3.1
W3/16"	– 24	T7609329	14	52	6	4.9	3.6
W7/32"	– 24	T7609369	16	56	6	4.9	4.4
W1/4"	– 20	T7609409	16	56	6	4.9	5.1
W5/16"	– 18	T7609449	20	63	6	4.9	6.5
W3/8"	– 16	T7609489	22	70	7	5.5	7.9
W7/16"	– 14	T7609529	22	70	8	6.2	9.3
W1/2"	– 12	T7609569	25	80	9	7	10.5
W9/16"	– 12	T7609609	26	80	11	9	12
W5/8"	– 11	T7609649	27	90	12	9	13.5
W3/4"	– 10	T7609709	32	105	14	11	16.5
W7/8"	– 9	T7609749	32	110	18	14.5	19.25
W1"	– 8	T7609789	36	110	20	16	22
W1*1/8"	– 7	T7609829	40	125	22	18	24.75
W1*1/4"	– 7	T7609869	40	125	25	20	27.75
W1*3/8"	– 6	T7609909	50	150	28	22	30.5
W1*1/2"	– 6	T7609949	50	150	32	24	33.5
W1*5/8"	– 5	T7609B29	56	150	32	24	35.5
W1*3/4"	– 5	T7609B89	58	160	36	29	39
W1*7/8"	– 4 1/2	T7609C69	65	180	36	29	41.5
W2"	– 4 1/2	T7609D29	65	180	40	32	44.5

Global Cutting Tool Leader **YG-1**



HSS

Being the best through innovation

PIPE TAPS
GASGEWINDEBOHRER

- Tapping Whitworth Pipe threads
- Zum Gewindeschneiden von Whitworth - Rohrgewinde

PIPE TAPS

Tapping Whitworth Pipe threads

PIPE TAPS

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Surface Treatment	PAGE
T7709		HSS	G(BSP)	**GS**	DIN 5157	-	I / III	Bright	**547**
TC727		HSS-E	G(BSP)	**GS**	DIN 5156	-	B	Bright	**548**
TC728		HSS-E	G(BSP)	**GS**	DIN 5156	-	C	Bright	**549**
TC729		HSS-E	G(BSP)	**VG**	DIN 5156	-	C	Bright	**550**
TB514		HSS-E	G(BSP)	**VA NW**	DIN 5156	-	C	Vap	**551**

PIPE TAPS

T7709 SERIES

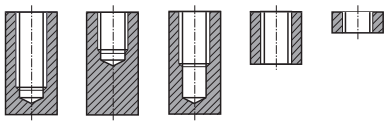
G(BSP) Whitworth Pipe threads DIN ISO 228/1
Whitworth Rohrgewinde DIN ISO 228/1

- Serial hand tap set in First and Bottoming.
- Bottoming tap of set has final internal thread dimensions only.
- Handgewindebohrersatz mit Vor- und Fertigschneider.
- Nur der Fertigschneider kann das gewünschte Gewinde schneiden.

First

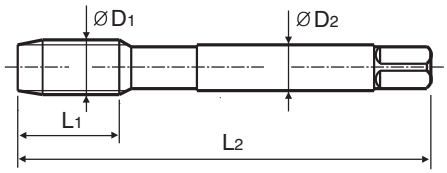
Bottoming

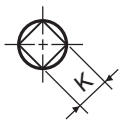
Hole type

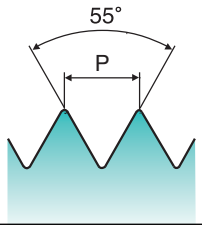


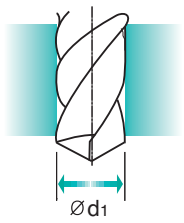
Material groups **GS** | HSS | DIN 5157 | 55° | I / III | Bright

Sets of taps
Gewindebohrer-Satz









Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1			L1	L2	ØD2	K	Ød1
G1/16"	– 28	T7709029	17	63	6	4.9	6.8
G1/8"	– 28	T7709209	18	63	7	5.5	8.8
G1/4"	– 19	T7709409	20	70	11	9	11.8
G3/8"	– 19	T7709489	20	70	12	9	15.25
G1/2"	– 14	T7709569	22	80	16	12	19
G3/4"	– 14	T7709709	22	90	20	16	24.5
G1"	– 11	T7709789	25	100	25	20	30.75
G1*1/4"	– 11	T7709869	30	125	32	24	39.5
G1*1/2"	– 11	T7709949	30	140	36	29	45.20

PIPE TAPS

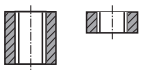
TC727 SERIES

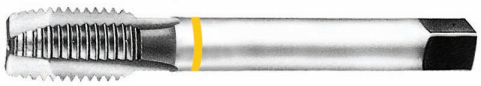
G(BSP) Whitworth Pipe threads DIN ISO 228/1
Whitworth Rohrgewinde DIN ISO 228/1

▶ Suitable for through hole in more cutting speed than other taps due to strong geometry.

▶ Geeignet für Sacklöcher in höherer Schnittgeschwindigkeit als andere Gewindebohrer dank einer stabilen Bohrergeometrie.

Hole type

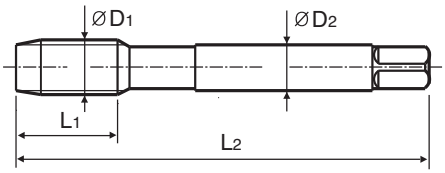


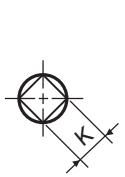


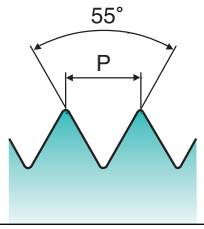
DIN 5156

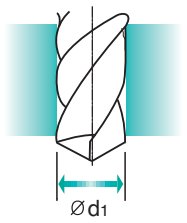
Material groups **GS** | HSS-E | DIN 5156 | 55° | B | Bright

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1		L1	L2	ØD2	K	Ød1
G1/8" – 28	TC727200	20	90	7	5.5	8.8
G1/4" – 19	TC727400	22	100	11	9	11.8
G3/8" – 19	TC727480	22	100	12	9	15.25
G1/2" – 14	TC727560	25	125	16	12	19
G3/4" – 14	TC727700	28	140	20	16	24.5
G1" – 11	TC727780	30	160	25	20	30.75

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	◎	◎	◎								◎	◎	○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	○			○		◎		○	○	○	◎	○		

PIPE TAPS

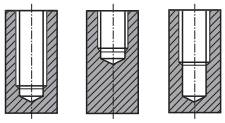
TC728 SERIES

G(BSP) Whitworth pipe threads DIN ISO 228/1
Whitworth Rohrgewinde DIN ISO 228/1

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

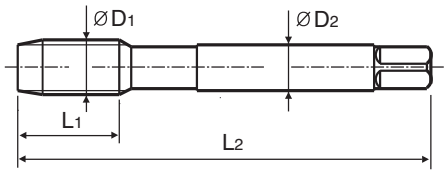
Hole type

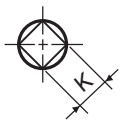


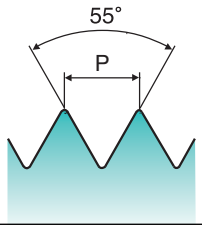
DIN 5156

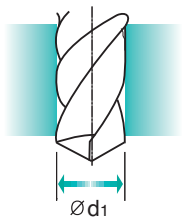
Material groups **GS** | HSS-E | DIN 5156 | 55° | C | Bright | R40

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1			L1	L2	ØD2	K	Ød1
G1/8"	– 28	TC728200	20	90	7	5.5	8.8
G1/4"	– 19	TC728400	22	100	11	9	11.8
G3/8"	– 19	TC728480	22	100	12	9	15.25
G1/2"	– 14	TC728560	25	125	16	12	19
G3/4"	– 14	TC728700	28	140	20	16	24.5
G1"	– 11	TC728780	30	160	25	20	30.75

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
	◎	◎	◎								◎	◎	○	

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
	○			○		◎		○	○	○	◎	○		

PIPE TAPS

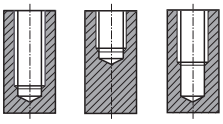
TC729 SERIES

G(BSP) Whitworth pipe threads DIN ISO 228/1
Whitworth Rohrgewinde DIN ISO 228/1

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

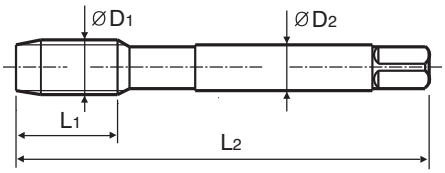
Hole type

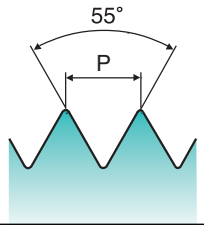


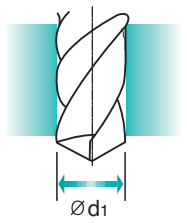
DIN 5156

Material groups VG | HSS-E | DIN 5156 | 55° | C | Bright | R40

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1			L1	L2	ØD2	K	Ød1
G1/8"	– 28	TC729200	20	90	7	5.5	8.8
G1/4"	– 19	TC729400	22	100	11	9	11.8
G3/8"	– 19	TC729480	22	100	12	9	15.25
G1/2"	– 14	TC729560	25	125	16	12	19
G3/4"	– 14	TC729700	28	140	20	16	24.5
G1"	– 11	TC729780	30	160	25	20	30.75

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
			○	◎				○						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

PIPE TAPS

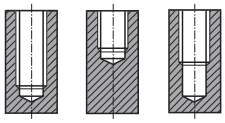
TB514 SERIES

G(BSP) Whitworth pipe threads DIN ISO 228/1
Whitworth Rohrgewinde DIN ISO 228/1

▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

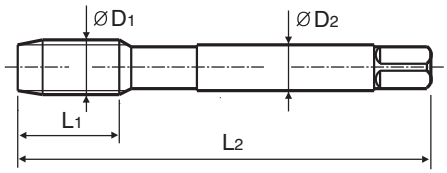
Hole type

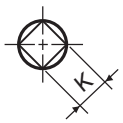


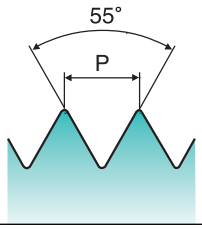
DIN 5156

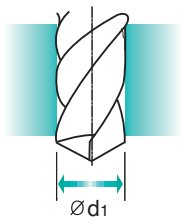
Material groups VA NW | HSS-E | DIN 5156 | 55° | C | Vap | R40

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE	TPI	EDP No.	Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1			L1	L2	ØD2	K	Ød1
G1/8"	– 28	TB514200	20	90	7	5.5	8.8
G1/4"	– 19	TB514400	22	100	11	9	11.8
G3/8"	– 19	TB514480	22	100	12	9	15.25
G1/2"	– 14	TB514560	25	125	16	12	19
G3/4"	– 14	TB514700	28	140	20	16	24.5
G1"	– 11	TB514780	30	160	25	20	30.75

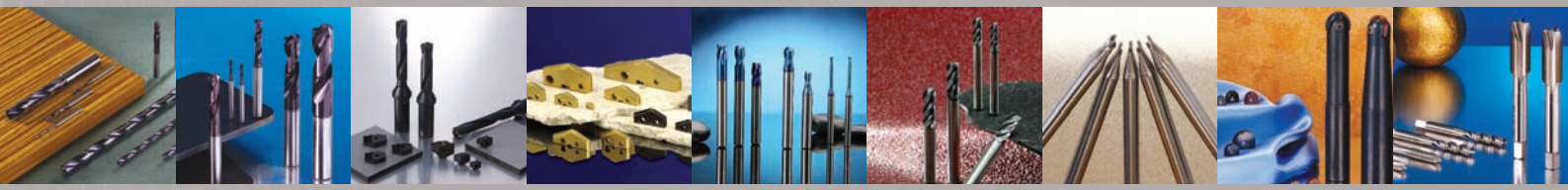
Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
◎	◎					◎	◎	◎						○

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
		○												

Global Cutting Tool Leader **YG-1**



CARBIDE

Being the best through innovation

CARBIDE TAPS
GEWINDEBOHRER

- **Tapping Cast Iron and High Silicon Aluminium, Mass Production, High Productivity**
- **Zum Gewinden von Guss und Aluminium mit hohem Siliziumanteil; für Großserien, hohe Produktivität**

CARBIDE TAPS

Tapping Cast Iron and High Silicon Aluminium, Mass Production, High Productivity

SOLID CARBIDE TAPS

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Surface Treatment	PAGE
T0993		CARBIDE	M	**GG**	DIN 371/376	ISO 2X/6HX	C	Bright	**555**
T0997 **T0999**		CARBIDE	M	**HR**	DIN 371/376	ISO 2X/6HX	C / D	TiCN	**556**

CARBIDE TAPS

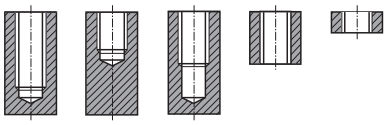
T0993 SERIES

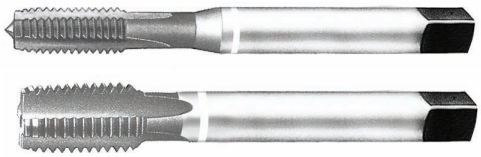
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Carbide tap can increase tool life longer than HSS taps due to higher hardness. Suitable for cast iron and high silicon aluminiums.

▶ Der VHM-Gewindebohrer kann die Lebensdaüer gegenuber HSS-Gewindebohrern erhöhen dank der größeren Härte. Geeignet für Guss und Aluminium mit hohem Siliziumanteil

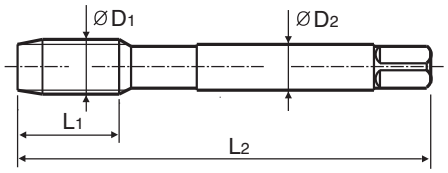
Hole type

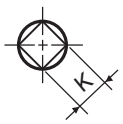


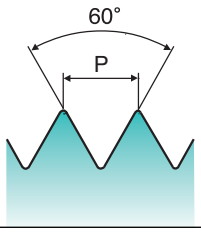


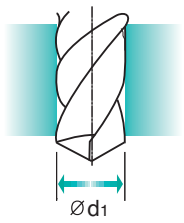
Material groups **GG** | HM | DIN 371/376 | 6HX | 60° | C | Bright

Machine taps
Maschinengewindebohrer









Unit : mm

SIZE ØD1	×	Pitch P	EDP No.	Thread Length L1	Overall Length L2	Shank Diameter ØD2	Square Size K	Tapping Drill Diameter Ød1
M3	×	0.5	T0993206	11	56	3.5	2.7	2.5
M3.5	×	0.6	T0993226	12	56	4	3	2.9
M4	×	0.7	T0993246	13	63	4.5	3.4	3.3
M5	×	0.8	T0993286	15	70	6	4.9	4.2
M6	×	1	T0993316	17	80	6	4.9	5
M8	×	1.25	T0993366	20	90	8	6.2	6.8
M10	×	1.5	T0993426	22	100	10	8	8.5
M12	×	1.75	T0993506	24	110	9	7	10.2
M14	×	2	T0993546	26	110	11	9	12
M16	×	2	T0993606	27	110	12	9	14
M18	×	2.5	T0993656	30	125	14	11	15.5
M20	×	2.5	T0993706	32	140	16	12	17.5

▶ DIN 371(M2~M10) and DIN 376(M11~M20)

Unit : N/mm²

◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
									◎	◎				

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
					◎						◎			◎

CARBIDE TAPS

T0997 SERIES
T0999 SERIES

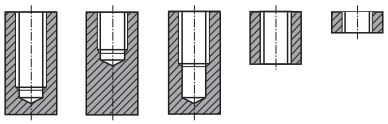
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

▶ Carbide tap can increase tool life longer than HSS taps due to higher hardness. Suitable for hardened steels (HRc50~60)

▶ VHM-Gewindebohrer ermöglichen aufgrund ihrer höheren Härte bessere Standzeiten als HSS-Gewindebohrer. Geeignet für gehärtete Stähle (HRc50~60)

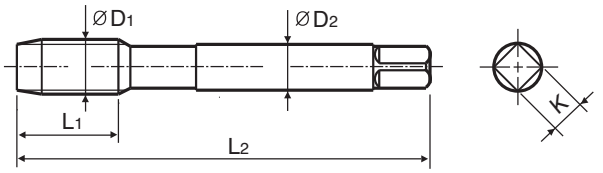
DIN 371/376

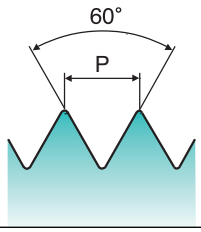
Hole type

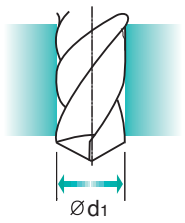


Material groups **HR** | HM | DIN 371/376 | 6HX | 60° | C / D | TiCN

Machine taps
Maschinengewindebohrer







Unit : mm

SIZE	Pitch	EDP No.		Thread Length	Overall Length	Shank Diameter	Square Size	Tapping Drill Diameter
ØD1	P	Form C	Form D	L1	L2	ØD2	K	Ød1
M3	× 0.5	T0997206TIC	T0999206TIC	11	56	3.5	2.7	2.5
M4	× 0.7	T0997246TIC	T0999246TIC	13	63	4.5	3.4	3.3
M5	× 0.8	T0997286TIC	T0999286TIC	15	70	6	4.9	4.2
M6	× 1	T0997316TIC	T0999316TIC	17	80	6	4.9	5
M8	× 1.25	T0997366TIC	T0999366TIC	20	90	8	6.2	6.8
M10	× 1.5	T0997426TIC	T0999426TIC	22	100	10	8	8.5
M12	× 1.75	T0997506TIC	T0999506TIC	24	110	9	7	10.2
M14	× 2	T0997546TIC	T0999546TIC	26	110	11	9	12
M16	× 2	T0997606TIC	T0999606TIC	27	110	12	9	14
M18	× 2.5	T0997656TIC	T0999656TIC	30	125	14	11	15.5
M20	× 2.5	T0997706TIC	T0999706TIC	32	140	16	12	17.5

▶ DIN371 (M3~M10) and DIN376 (M12~M20)

Unit : N/mm²

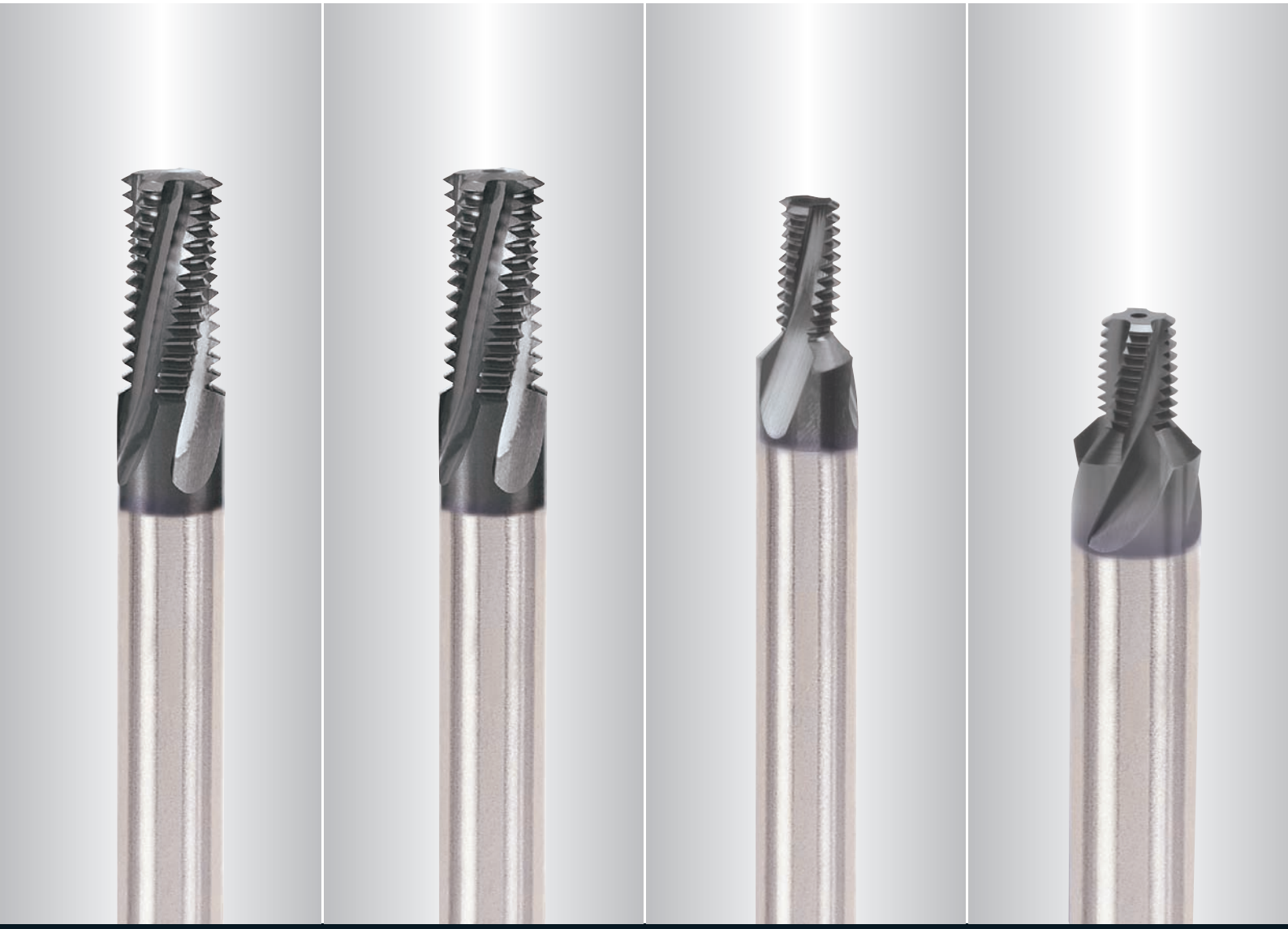
◎ : Excellent ○ : Good

Steel < 400	Steel < 700	Steel < 850	St. Alloy < 850	St. Alloy ≤ 1200	St. Alloy > 1200	INOX Free < 850	INOX Aust. < 850	INOX < 1000	GG Cast < 500	GG Cast < 1000	GGG Cast < 700	GGG Cast < 1000	Ti < 700	Ti Alloy < 900
				○	◎			○						

Ti Alloy ≤ 1300	Ni < 500	Ni Alloy < 900	Ni Alloy ≤ 1400	Cu < 350	Cu Alloy Short	Cu Alloy Long	Cu-Al-Fe < 1500	Al / Mg < 350	Al Wrought	Al Si≤10%	Al Si>10%	Plastic Thermosoft	Plastic Thermoset	Plastic FRP
					○		◎						○	○

CARBIDE

Being the best through innovation



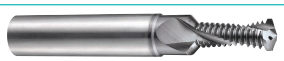
THREAD MILLS
GEWINDEFRÄSER

- **With & without coolant holes**
  Threading Large Diameter in High Quality. Available with Chamfer
- **Mit und ohne Kühlkanäle**
  Für die meisten Werkstoffe und große Durchmesser in bester Qualität. Mit Senkstufe lieferbar

SOLID CARBIDE THREAD MILLS

Threading Most of Materials and Big Sizes in High Quality, Available with Chamfer

SOLID CARBIDE THREAD MILL

EDP No.	MODEL		Description	PAGE
Solid Carbide Thread Mill without Coolant Hole				
L1211		M	Solid Carbide Thread Mill for ISO Metric Internal Thread - DIN 13 VOLLHARTMETALL GEWINDEFRÄSER für ISO METRISCHES INNENGEWINDE - DIN 13	560
L1212		MF	Solid Carbide Thread Mill for ISO Metric Internal Thread - DIN 13 VOLLHARTMETALL GEWINDEFRÄSER für ISO METRISCH - FEIN INNENGEWINDE - DIN 13	561
L1213		UNC	Solid Carbide Thread Mill for UNC Internal Thread - ANSI B 1.1 VOLLHARTMETALL GEWINDEFRÄSER für UNC INNENGEWINDE, ANSI B 1.1	562
L1214		UNF	Solid Carbide Thread Mill for UNF Internal Thread - ANSI B 1.1 VOLLHARTMETALL GEWINDEFRÄSER für UNF INNENGEWINDE, ANSI B 1.1	563
Solid Carbide Thread Mill with Coolant Hole				
L4211		M	Solid Carbide Thread Mill with Coolant Hole for ISO Metric Internal Thread - DIN 13 VOLLHARTMETALL GEWINDEFRÄSER mit KÜHLKANAL für ISO METRISCHES INNENGEWINDE - DIN 13	564
L4212		MF	Solid Carbide Thread Mill with Coolant Hole for ISO Metric Internal Thread - DIN 13 VOLLHARTMETALL GEWINDEFRÄSER mit KÜHLKANAL für ISO METRISCH - FEIN INNENGEWINDE - DIN 13	565
L6215		BSP(G)	Solid Carbide Thread Mill with Coolant Hole for BSP(G) Internal/External Thread VOLLHARTMETALL GEWINDEFRÄSER MIT KÜHLKANAL für BSP (G) INNEN- / AUßENGEWINDE	566
Solid Carbide Thread Mill with Coolant Hole & Chamfer				
L4271		M	Solid Carbide Thread Mill with Coolant Hole & Chamfer for ISO Metric Internal Thread - DIN 13 VOLLHARTMETALL GEWINDEFRÄSER mit KÜHLKANAL & FASE für METRISCHES INNENGEWINDE - DIN 13	567
L4272		MF	Solid Carbide Thread Mill with Coolant Hole & Chamfer for ISO Metric Internal Thread - DIN 13 VOLLHARTMETALL GEWINDEFRÄSER mit KÜHLKANAL & FASE für METRISCH - FEIN INNENGEWINDE - DIN 13	568
L4273		UNC	Solid Carbide Thread Mill with Coolant Hole & Chamfer for UNC Internal Thread - ANSI B 1.1 VOLLHARTMETALL GEWINDEFRÄSER mit KÜHLKANAL & FASE für UNC INNENGEWINDE - ANSI B 1.1	569
L4274		UNF	Solid Carbide Thread Mill with Coolant Hole & Chamfer for UNF Internal Thread - ANSI B 1.1 VOLLHARTMETALL GEWINDEFRÄSER mit KÜHLKANAL & FASE für UNF INNENGEWINDE - ANSI B 1.1	570
L4276		NPT	Solid Carbide Thread Mill with Coolant Hole & Chamfer for NPT Thread - ANSI B 1.20.1 VOLLHARTMETALL GEWINDEFRÄSER mit KÜHLKANAL & FASE für NPT INNENGEWINDE - ANSI B 1.20.1	571
Solid Carbide Miniature Thread Mill				
L12D1		M	Solid Carbide Miniature Thread Mill for ISO Metric Internal Thread - DIN13 VOLLHARTMETALL MINI-GEWINDEFRÄSER für ISO METRISCHE INNENGEWINDE - DIN13	572
L12D3		UNC	Solid Carbide Miniature Thread Mill for UNC Internal Thread - ANSI B 1.1 VOLLHARTMETALL MINI-GEWINDEFRÄSER für UNC INNENGEWINDE - ANSI B 1.1	573
L19E1		M	Solid Carbide Miniature Thread Mill for Hard Materials, ISO Metric Internal Thread - DIN13 VOLLHARTMETALL MINI-GEWINDEFRÄSER für GEHÄRTETE MATERIALIEN, ISO METRISCHE INNENGEWINDE - DIN13	574
L19E3		UNC	Solid Carbide Miniature Thread Mill for Hard Materials,UNC Internal Thread - ANSI B 1.1 VOLLHARTMETALL MINI-GEWINDEFRÄSER für GEHÄRTETE MATERIALIEN, UNC INNENGEWINDE - ANSI B 1.1	575
Solid Carbide Drill and Thread Mill				
L41A1 L42A1		M	Solid Carbide Drill and Thread Mill with Chamfer for ISO Metric Internal Thread - DIN 13 VOLLHARTMETALL BOHRGEWINDEFRÄSER MIT SENKFASE für ISO METRISCHE INNENGEWINDE - DIN 13	576
			PROGRAMMING OF THREAD MILLING PROGRAMMIERUNG BEIM GEWINDEFRÄSEN	577
			RECOMMENED CUTTING SPEED EMPFOHLENE SCHNEIDKONDITIONEN	578

◎ : Excellent
○ : Good

Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
◎	◎	◎		◎	○	○	○	◎
◎	◎	◎		◎	○	○	○	◎
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				◎				◎

THREAD MILLS

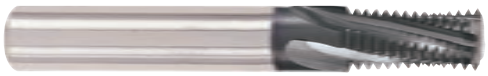
L1211 SERIES

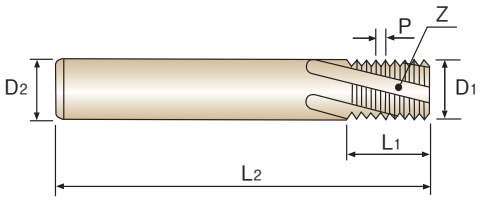
M Solid Carbide Thread Mill for ISO Metric Internal Thread - DIN 13

VOLLHARTMETALL GEWINDEFRÄSER für ISO METRISCHES INNENGEWINDE - DIN 13

▶ Easy to cut threads even if exotic materials like Nickel, Titanium or their alloys.

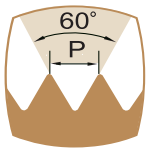
▶ Problemloses Gewindeschneiden sogar in exotischen Werkstoffen, wie Nickel, Titan und ihre Legierungen.





▶ Material : Solid Carbide
▶ Shank : DIN6535 HA
▶ Spiral Angle : 15°
▶ Thread Length : 2×D

▶ Material : Vollhartmetall
▶ Schaft : DIN 6535 HA
▶ Drallwinkel : 15°
▶ Gewindeläge : 2×D



Unit : mm

EDP No.	Nominal Diameter [D]	Pitch	Cutter Diameter	Shank Diameter	Thread Length	Over All Length	No. of Flute
TiAlN		P	D1	D2	L1	L2	Z
L1211200	M3	0.5	**2.2**	6	5	57	3
L1211240	M4	0.7	**2.9**	6	7	57	3
L1211280	M5	0.8	**3.8**	6	8	57	3
L1211310	M6	1.0	**4.5**	6	13	57	3
L1211360	M8	1.25	**6.0**	6	17.5	65	3
L1211420	M10	1.5	**7.5**	8	21	72	4
L1211500	M12	1.75	**9.5**	10	26.25	80	4
L1211540	M14	2.0	**10.0**	10	30	83	4
L1211600	M16	2.0	**12.0**	12	34	92	4
L1211650	M18	2.5	**14.0**	14	37.5	92	5
L1211700	M20	2.5	**16.0**	16	42.5	105	5

∗ Other coatings are available on your request

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
◎	◎	◎		◎	○	○	○	◎

THREAD MILLS

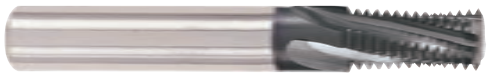
L1212 SERIES

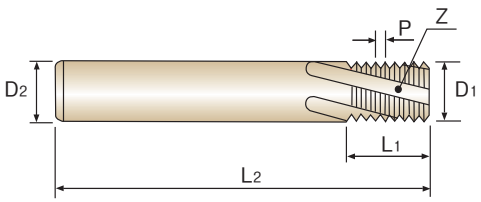
MF Solid Carbide Thread Mill for ISO Metric Internal Thread - DIN 13

VOLLHARTMETALL GEWINDEFRÄSER für ISO METRISCH - FEIN INNENGEWINDE - DIN 13

▶ Easy to cut threads even if exotic materials like Nickel, Titanium or their alloys.

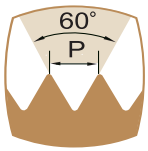
▶ Problemloses Gewindeschneiden sogar in exotischen Werkstoffen, wie Nickel, Titan und ihre Legierungen.





▶ Material : Solid Carbide
▶ Shank : DIN6535 HA
▶ Spiral Angle : 15°
▶ Thread Length : 1.5×D

▶ Material : Vollhartmetall
▶ Schaft : DIN 6535 HA
▶ Drallwinkel : 15°
▶ Gewindeläge : 1.5×D



Unit : mm

EDP No.	Nominal Diameter [D]	Pitch	Cutter Diameter	Shank Diameter	Thread Length	Over All Length	No. of Flute
TiAlN		P	D1	D2	L1	L2	Z
L1212370	M8	1.0	**6.0**	6	13	57	3
L1212380	M8	0.75	**6.0**	6	12.75	57	3
L1212440	M10	1.0	**8.0**	8	16	63	4
L1212510	M12	1.5	**9.5**	10	19.5	72	4
L1212520	M12	1.25	**9.5**	10	18.75	72	4
L1212530	M12	1.0	**9.5**	10	19	72	4
L1212550	M14	1.5	**10.0**	10	22.5	83	4
L1212570	M14	1.0	**10.0**	10	22	83	4
L1212610	M16	1.5	**12.0**	12	25.5	83	4
L1212620	M16	1.0	**12.0**	12	25	83	4
L1212670	M18	1.5	**14.0**	14	28.5	92	5
L1212680	M18	1.0	**14.0**	14	28	92	5
L1212720	M20	1.5	**16.0**	16	31.5	92	5
L1212730	M20	1.0	**16.0**	16	31	92	5

* Other coatings are available on your request

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
◎	◎	◎		◎	○	○	○	◎

THREAD MILLS

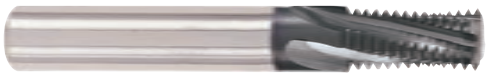
L1213 SERIES

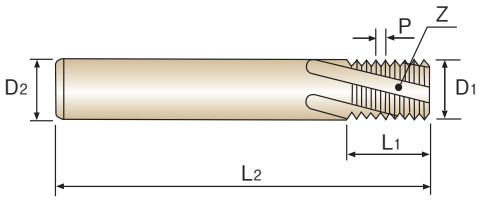
UNC Solid Carbide Thread Mill for UNC Internal Thread - ANSI B 1.1

VOLLHARTMETALL GEWINDEFRÄSER für UNC INNENGEWINDE, ANSI B 1.1

▶ Easy to cut threads even if exotic materials like Nickel, Titanium or their alloys.

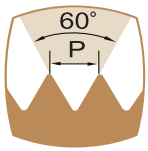
▶ Problemloses Gewindeschneiden sogar in exotischen Werkstoffen, wie Nickel, Titan und ihre Legierungen.





▶ Material : Solid Carbide
▶ Shank : DIN6535 HA
▶ Spiral Angle : 15°
▶ Thread Length : 2×D

▶ Material : Vollhartmetall
▶ Schaft : DIN 6535 HA
▶ Drallwinkel : 15°
▶ Gewindeläge : 2×D



Unit : mm

EDP No.	Nominal Diameter [D]	T.P.I	Cutter Diameter	Shank Diameter	Thread Length	Over All Length	No. of Flute
TiAlN			D1	D2	L1	L2	Z
L1213400	1/4”	20	**4.5**	6	14	57	3
L1213440	5/16”	18	**5.8**	6	16.9	65	3
L1213480	3/8”	16	**7.0**	8	20.6	72	4
L1213520	7/16”	14	**8.0**	8	23.6	72	4
L1213560	1/2”	13	**9.5**	10	27.4	80	4
L1213600	9/16”	12	**10.0**	10	31.8	83	4
L1213640	5/8”	11	**12.0**	12	34.6	92	4
L1213700	3/4”	10	**14.0**	14	40.6	104	5

∗ Other coatings are available on your request

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
◎	◎	◎		◎	○	○	○	◎

THREAD MILLS

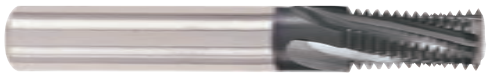
L1214 SERIES

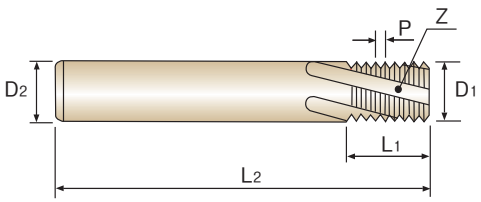
UNF Solid Carbide Thread Mill for UNF Internal Thread - ANSI B 1.1

VOLLHARTMETALL GEWINDEFRÄSER für UNF INNENGEWINDE, ANSI B 1.1

▶ Easy to cut threads even if exotic materials like Nickel, Titanium or their alloys.

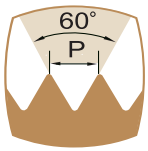
▶ Problemloses Gewindeschneiden sogar in exotischen Werkstoffen, wie Nickel, Titan und ihre Legierungen.





▶ Material : Solid Carbide
▶ Shank : DIN6535 HA
▶ Spiral Angle : 15°
▶ Thread Length : 2×D

▶ Material : Vollhartmetall
▶ Schaft : DIN 6535 HA
▶ Drallwinkel : 15°
▶ Gewindeläge : 2×D



Unit : mm

EDP No.	Nominal Diameter [D]	T.P.I	Cutter Diameter	Shank Diameter	Thread Length	Over All Length	No. of Flute
TiAlN			D1	D2	L1	L2	Z
L1214420	1/4”	28	**5.0**	6	13.6	57	3
L1214460	5/16”	24	**6.0**	6	16.9	65	3
L1214500	3/8”	24	**8.0**	8	20.1	72	4
L1214540	7/16”	20	**8.0**	8	24.1	72	4
L1214580	1/2”	20	**10.0**	10	26.7	80	4
L1214620	9/16”	18	**12.0**	12	29.6	83	4
L1214660	5/8”	18	**12.0**	12	33.9	92	4
L1214720	3/4”	16	**14.0**	14	39.7	104	5

* Other coatings are available on your request

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
◎	◎	◎		◎	○	○	○	◎

THREAD MILLS

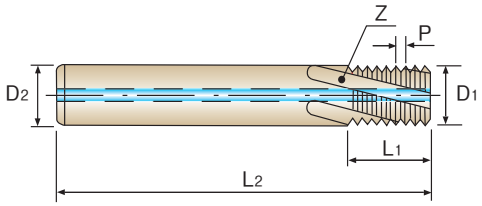
L4211 SERIES

M Solid Carbide Thread Mill with Coolant Hole for ISO Metric Internal Thread - DIN 13

VOLLHARTMETALL GEWINDEFRÄSER mit KÜHLKANAL für ISO METRISCHES INNENGEWINDE - DIN 13

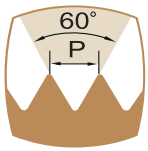
▶ Easy to cut threads even if exotic materials like Nickel, Titanium or their alloys.

▶ Problemloses Gewindeschneiden sogar in exotischen Werkstoffen, wie Nickel, Titan und ihre Legierungen.



▶ Material : Solid Carbide
▶ Shank : DIN6535 HA
▶ Spiral Angle : 15°
▶ Thread Length : 2×D

▶ Material : Vollhartmetall
▶ Schaft : DIN 6535 HA
▶ Drallwinkel : 15°
▶ Gewindeläge : 2×D



Unit : mm

EDP No.	Nominal Diameter [D]	Pitch	Cutter Diameter	Shank Diameter	Thread Length	Over All Length	No. of Flute
TiAlN		P	D_1	D_2	L_1	L_2	Z
L4211310	M6	1.0	**4.5**	6	13.0	57	3
L4211360	M8	1.25	**6.0**	6	17.5	65	3
L4211420	M10	1.5	**7.5**	8	21.0	72	4
L4211500	M12	1.75	**9.5**	10	26.25	80	4
L4211540	M14	2.0	**10.0**	10	30.0	83	4
L4211600	M16	2.0	**12.0**	12	34.0	92	4
L4211700	M20	2.5	**16.0**	16	42.5	105	5

∗ Other coatings are available on your request

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
◎	◎	◎		◎	○	○	○	◎

THREAD MILLS

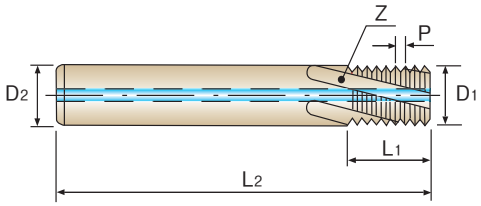
L4212 SERIES

MF Solid Carbide Thread Mill with Coolant Hole for ISO Metric Internal Thread - DIN 13

VOLLHARTMETALL GEWINDEFRÄSER mit KÜHLKANAL für ISO METRISCH - FEIN INNENGEWINDE - DIN 13

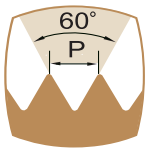
▶ Easy to cut threads even if exotic materials like Nickel, Titanium or their alloys.

▶ Problemloses Gewindeschneiden sogar in exotischen Werkstoffen, wie Nickel, Titan und ihre Legierungen.



▶ Material : Solid Carbide
▶ Shank : DIN6535 HA
▶ Spiral Angle : 15°
▶ Thread Length : 1.5×D

▶ Material : Vollhartmetall
▶ Schaft : DIN 6535 HA
▶ Drallwinkel : 15°
▶ Gewindeläge : 1.5×D



Unit : mm

EDP No.	Nominal Diameter [D]	Pitch	Cutter Diameter	Shank Diameter	Thread Length	Over All Length	No. of Flute
TiAlN		P	D1	D2	L1	L2	Z
L4212370	M8	1.0	**6.0**	6	13.0	57	3
L4212380	M8	0.75	**6.0**	6	12.75	57	3
L4212440	M10	1.0	**8.0**	8	16.0	63	4
L4212510	M12	1.5	**9.5**	10	19.5	72	4
L4212520	M12	1.25	**9.5**	10	18.75	72	4
L4212530	M12	1.0	**9.5**	10	19.0	72	4
L4212550	M14	1.5	**10.0**	10	22.5	83	4
L4212570	M14	1.0	**10.0**	10	22.0	83	4
L4212610	M16	1.5	**12.0**	12	25.5	83	4
L4212620	M16	1.0	**12.0**	12	25.0	83	4
L4212670	M18	1.5	**14.0**	14	28.5	92	5
L4212680	M18	1.0	**14.0**	14	28.0	92	5
L4212720	M20	1.5	**16.0**	16	31.5	92	5
L4212730	M20	1.0	**16.0**	16	31.0	92	5

* Other coatings are available on your request

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
◎	◎	◎		◎	○	○	○	◎

THREAD MILLS

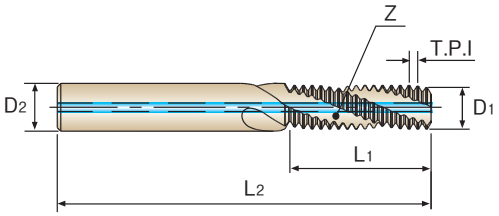
L6215 SERIES

BSP(G) Solid Carbide Thread Mill with Coolant Hole for BSP(G) Internal/External Thread

VOLLHARTMETALL GEWINDEFRÄSER mit KÜHLKANAL für BSP (G) INNEN- / AUßENGEWINDE

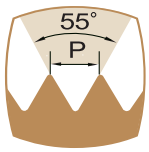
▶ Easy to cut threads even if exotic materials like Nickel, Titanium or their alloys.

▶ Problemloses Gewindeschneiden sogar in exotischen Werkstoffen, wie Nickel, Titan und ihre Legierungen.



▶ Material : Solid Carbide
▶ Shank : DIN6535 HA
▶ Spiral Angle : 15°
▶ Internal Coolant Hole

▶ Material : Vollhartmetall
▶ Schaft : DIN 6535 HA
▶ Drallwinkel : 15°
▶ Innere Kühlmittelzufuhr (IKZ)



Unit : mm

EDP No.	Nominal Diameter [D]	T.P.I	Cutter Diameter	Shank Diameter	Thread Length	Over All Length	No. of Flute
TiAlN			D1	D2	L1	L2	Z
L6215020	1/16"	28	**5.9**	6	16.3	65	3
L6215200	1/8"	28	**7.9**	8	20.0	70	4
L6215400	1/4"	19	**9.9**	10	26.7	80	4
L6215480	3/8"	19	**13.9**	14	33.4	92	4
L6215560	1/2"	14	**15.9**	16	43.5	104	5
L6215700	3/4"	14	**17.9**	18	34.5	100	5
L6215780	1"	11	**19.9**	20	34.6	100	5

∗ Other coatings are available on your request

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
◎	◎	◎		◎	○	○	○	◎

THREAD MILLS

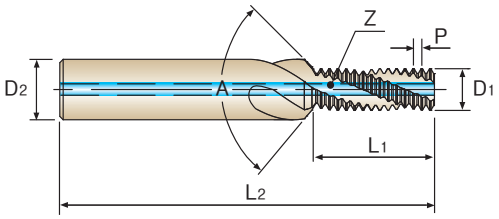
L4271 SERIES

M Solid Carbide Thread Mill with Coolant Hole & Chamfer for ISO Metric Internal Thread - DIN 13

VOLLHARTMETALL GEWINDEFRÄSER mit KÜHLKANAL & FASE für METRISCHES INNENGEWINDE - DIN 13

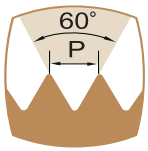
▶ Easy to cut threads even if exotic materials like Nickel, Titanium or their alloys.

▶ Problemloses Gewindeschneiden sogar in exotischen Werkstoffen, wie Nickel, Titan und ihre Legierungen.



▶ Material : Solid Carbide
▶ Shank : DIN6535 HA
▶ Spiral Angle : 15°
▶ Thread Length : 2×D

▶ Material : Vollhartmetall
▶ Schaft : DIN 6535 HA
▶ Drallwinkel : 15°
▶ Gewindeläge : 2×D



Unit : mm

EDP No.	Nominal Diameter [D]	Pitch	Cutter Diameter	Shank Diameter	Thread Length	Over All Length	Angle	No. of Flute
TiAlN		P	D_1	D_2	L_1	L_2	A	Z
L4271310	M6	1.0	**4.8**	8	12.4	62	90°	3
L4271360	M8	1.25	**6.5**	10	16.8	74	90°	3
L4271420	M10	1.5	**8.2**	12	20.15	80	90°	4
L4271500	M12	1.75	**9.9**	14	25.25	90	90°	4
L4271540	M14	2.0	**11.6**	16	28.85	100	90°	4
L4271600	M16	2.0	**13.6**	18	32.85	102	90°	4

∗ Other coatings are available on your request

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
◎	◎	◎		◎	○	○	○	◎

THREAD MILLS

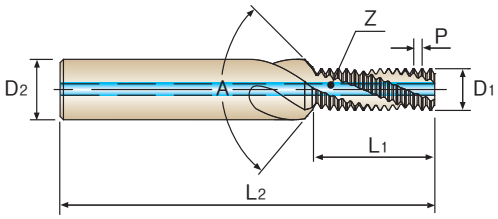
L4272 SERIES

MF Solid Carbide Thread Mill with Coolant Hole & Chamfer for ISO Metric Internal Thread - DIN 13

VOLLHARTMETALL GEWINDEFRÄSER mit KÜHLKANAL & FASE für METRISCH - FEIN INNENGEWINDE - DIN 13

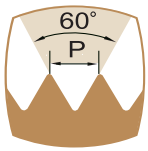
▶ Easy to cut threads even if exotic materials like Nickel, Titanium or their alloys.

▶ Problemloses Gewindeschneiden sogar in exotischen Werkstoffen, wie Nickel, Titan und ihre Legierungen.



▶ Material : Solid Carbide
▶ Shank : DIN6535 HA
▶ Spiral Angle : 15°
▶ Thread Length : 1.5×D

▶ Material : Vollhartmetall
▶ Schaft : DIN 6535 HA
▶ Drallwinkel : 15°
▶ Gewindeläge : 1.5×D



Unit : mm

EDP No.	Nominal Diameter [D]	Pitch	Cutter Diameter	Shank Diameter	Thread Length	Over All Length	Angle	No. of Flute
TiAlN		P	D_1	D_2	L_1	L_2	A	Z
L4272370	M8	1.0	**6.7**	10	12.4	74	90°	3
L4272430	M10	1.25	**8.3**	12	15.9	80	90°	4
L4272440	M10	1.0	**8.7**	12	15.4	80	90°	4
L4272510	M12	1.5	**10.0**	14	18.65	90	90°	4
L4272520	M12	1.25	**10.3**	14	18.3	80	90°	4
L4272530	M12	1.0	**10.7**	14	18.4	90	90°	4
L4272550	M14	1.5	**12.0**	16	21.65	100	90°	4
L4272610	M16	1.5	**14.0**	18	24.65	102	90°	5

∗ Other coatings are available on your request

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
◎	◎	◎		◎	○	○	○	◎

THREAD MILLS

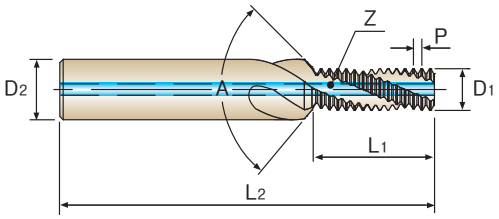
L4273 SERIES

UNC Solid Carbide Thread Mill with Coolant Hole & Chamfer for UNC Internal Thread - ANSI B 1.1

VOLLHARTMETALL GEWINDEFRÄSER mit KÜHLKANAL & FASE für UNC INNENGEWINDE - ANSI B 1.1

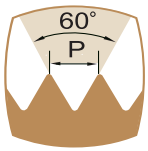
▶ Easy to cut threads even if exotic materials like Nickel, Titanium or their alloys.

▶ Problemloses Gewindeschneiden sogar in exotischen Werkstoffen, wie Nickel, Titan und ihre Legierungen.



▶ Material : Solid Carbide
▶ Shank : DIN6535 HA
▶ Spiral Angle : 15°
▶ Thread Length : 2×D

▶ Material : Vollhartmetall
▶ Schaft : DIN 6535 HA
▶ Drallwinkel : 15°
▶ Gewindeläge : 2×D



Unit : mm

EDP No.	Nominal Diameter [D]	T.P.I	Cutter Diameter	Shank Diameter	Thread Length	Over All Length	Angle	No. of Flute
TiAlN			D_1	D_2	L_1	L_2	A	Z
L4273400	1/4"	20	**4.8**	8	13.3	62	90°	3
L4273440	5/16"	18	**6.2**	10	16.18	74	90°	3
L4273480	3/8"	16	**7.6**	12	19.8	80	90°	4
L4273520	7/16"	14	**8.9**	12	22.62	80	90°	4
L4273560	1/2"	13	**10.3**	14	26.32	90	90°	4
L4273600	9/16"	12	**11.7**	16	30.63	100	90°	4
L4273640	5/8"	11	**13.1**	18	33.41	102	90°	4
L4273700	3/4"	10	**16.0**	20	39.29	110	90°	5

* Other coatings are available on your request

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
◎	◎	◎		◎	○	○	○	◎

THREAD MILLS

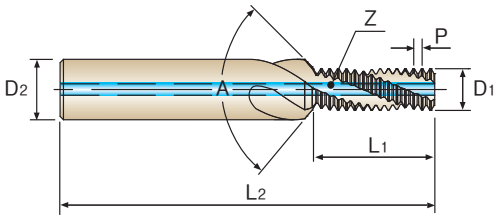
L4274 SERIES

UNF Solid Carbide Thread Mill with Coolant Hole & Chamfer for UNF Internal Thread - ANSI B 1.1

VOLLHARTMETALL GEWINDEFRÄSER mit KÜHLKANAL & FASE für UNF INNENGEWINDE - ANSI B 1.1

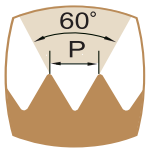
▶ Easy to cut threads even if exotic materials like Nickel, Titanium or their alloys.

▶ Problemloses Gewindeschneiden sogar in exotischen Werkstoffen, wie Nickel, Titan und ihre Legierungen.



▶ Material : Solid Carbide
▶ Shank : DIN6535 HA
▶ Spiral Angle : 15°
▶ Thread Length : 2×D

▶ Material : Vollhartmetall
▶ Schaft : DIN 6535 HA
▶ Drallwinkel : 15°
▶ Gewindeläge : 2×D



Unit : mm

EDP No.	Nominal Diameter [D]	T.P.I	Cutter Diameter	Shank Diameter	Thread Length	Over All Length	Angle	No. of Flute
TiAlN			D_1	D_2	L_1	L_2	A	Z
L4274420	1/4"	28	**5.1**	8	13.21	62	90°	3
L4274460	5/16"	24	**6.5**	10	16.37	74	90°	3
L4274500	3/8"	24	**8.1**	12	19.54	80	90°	4
L4274540	7/16"	20	**9.4**	12	22.19	80	90°	4
L4274580	1/2"	20	**11.0**	14	26	90	90°	4
L4274620	9/16"	18	**12.4**	16	28.88	100	90°	4
L4274660	5/8"	18	**14.0**	18	33.12	102	90°	5
L4274720	3/4"	16	**17.0**	20	38.86	110	90°	5

* Other coatings are available on your request

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
◎	◎	◎		◎	○	○	○	◎

THREAD MILLS

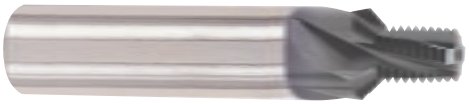
L4276 SERIES

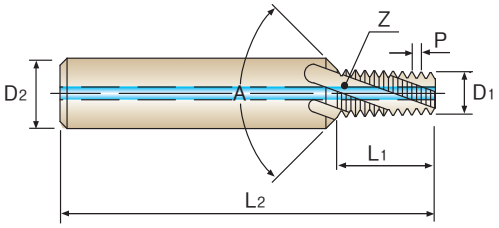
NPT Solid Carbide Thread Mill with Coolant Hole & Chamfer for NPT Thread - ANSI B 1.20.1

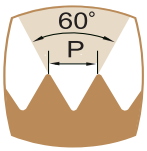
VOLLHARTMETALL GEWINDEFRÄSER mit KÜHLKANAL & FASE für NPT INNENGEWINDE - ANSI B 1.20.1

▶ Easy to cut threads even if exotic materials like Nickel, Titanium or their alloys.

▶ Problemloses Gewindeschneiden sogar in exotischen Werkstoffen, wie Nickel, Titan und ihre Legierungen.







▶ Material : Solid Carbide
▶ Shank : DIN6535 HA
▶ Spiral Angle : 15°
▶ Thread Length : 9×P

▶ Material : Vollhartmetall
▶ Schaft : DIN 6535 HA
▶ Drallwinkel : 15°
▶ Gewindeläge : 9×P

Unit : mm

EDP No.	Nominal Diameter [D]	T.P.I	Cutter Diameter	Shank Diameter	Thread Length	Over All Length	Angle	No. of Flute
TiAlN			D_1	D_2	L_1	L_2	A	Z
L4276020	NPT1/16"	27	**5.9**	10	8.9	64	90°	3
L4276200	NPT1/8"	27	**7.8**	12	8.9	70	90°	4
L4276400	NPT1/4"	18	**10.05**	16	13.4	81	90°	4
L4276480	NPT3/8"	18	**13.45**	18	13.4	81	90°	4

* Other coatings are available on your request

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
◎	◎	◎		◎	○	○	○	◎

THREAD MILLS

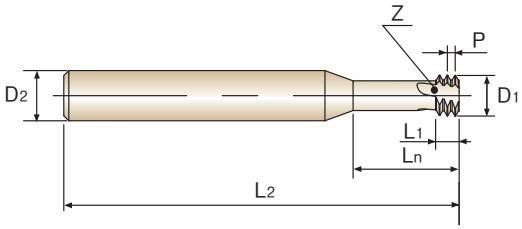
L12D1 SERIES

M Solid Carbide Miniature Thread Mill for ISO Metric Internal Thread - DIN13

VOLLHARTMETALL MINI-GEWINDEFRÄSER für ISO METRISCHE INNENGEWINDE - DIN13

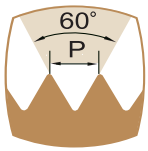
▶ Short thread length

▶ Kurze Gewindelänge



▶ Material : Solid Carbide
▶ Shank : DIN6535 HA
▶ Spiral Angle : 15°
▶ Thread Length : 3×P

▶ Material : Vollhartmetall
▶ Schaft : DIN 6535 HA
▶ Drallwinkel : 15°
▶ Gewindeläge : 3×P



Unit : mm

EDP No.	Nominal Diameter [D]	Pitch	Cutter Diameter	Shank Diameter	Thread Length	Neck Length	Over All Length	No. of Flute
TiAlN		P	D1	D2	L1	Ln	L2	Z
L12D1010	M1	0.25	**0.70**	3	0.75	2.1	30	3
L12D1050	M1.2	0.25	**0.90**	3	0.75	2.5	30	3
L12D1070	M1.4	0.3	**1.04**	3	0.90	2.9	30	3
L12D1090	M1.6	0.35	**1.18**	3	1.05	3.4	30	3
L12D1130	M2	0.4	**1.52**	6	1.2	4.2	57	3
L12D1150	M2.2	0.45	**1.66**	6	1.35	4.6	57	3
L12D1170	M2.5	0.45	**1.96**	6	1.35	5.3	57	3
L12D1200	M3	0.5	**2.4**	6	1.5	6.3	57	3
L12D1240	M4	0.7	**3.16**	6	2.1	8.4	57	3
L12D1280	M5	0.8	**4.04**	6	2.4	10.5	57	3
L12D1310	M6	1.0	**4.8**	6	3.0	12.6	57	3
L12D1360	M8	1.25	**6.5**	8	3.75	16.8	63	3
L12D1420	M10	1.5	**8.2**	10	4.5	21.0	73	3
L12D1500	M12	1.75	**9.9**	10	5.25	25.2	73	3

* Other coatings are available on your request

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
◎	◎	◎		◎	○	○	○	◎

THREAD MILLS

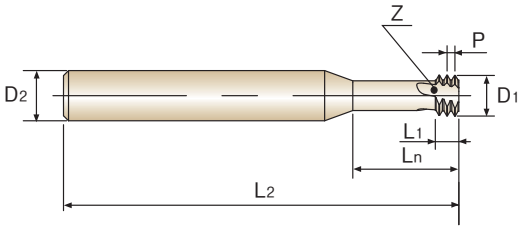
L12D3 SERIES

UNC Solid Carbide Miniature Thread Mill for UNC Internal Thread - ANSI B 1.1

VOLLHARTMETALL MINI-GEWINDEFRÄSER für UNC INNENGEWINDE - ANSI B 1.1

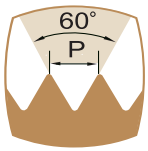
▶ Short thread length

▶ Kurze Gewindelänge



▶ Material : Solid Carbide
▶ Shank : DIN6535 HA
▶ Spiral Angle : 15°
▶ Thread Length : 3×P

▶ Material : Vollhartmetall
▶ Schaft : DIN 6535 HA
▶ Drallwinkel : 15°
▶ Gewindeläge : 3×P



Unit : mm

EDP No.	Nominal Diameter [D]	T.P.I	Cutter Diameter	Shank Diameter	Thread Length	Neck Length	Over All Length	No. of Flute
TiAlN			D1	D2	L1	Ln	L2	Z
L12D3040	#1	64	1.38	6	1.19	3.9	57	3
L12D3080	#2	56	1.64	6	1.36	4.6	57	3
L12D3160	#4	40	2.08	6	1.91	6.0	57	3
L12D3240	#6	32	2.55	6	2.38	7.4	57	3
L12D3280	#8	32	3.21	6	2.38	8.7	57	3
L12D3320	#10	24	3.56	6	3.18	10.1	57	3
L12D3360	#12	24	4.22	6	3.18	11.5	57	3
L12D3400	1/4	20	4.83	6	3.81	13.3	57	3
L12D3440	5/16	18	6.24	8	4.23	16.7	63	3
L12D3480	3/8	16	7.62	8	4.76	20.0	63	3
L12D3520	7/16	14	8.94	10	5.44	23.3	73	3

* Other coatings are available on your request

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
◎	◎	◎		◎	○	○	○	◎

THREAD MILLS

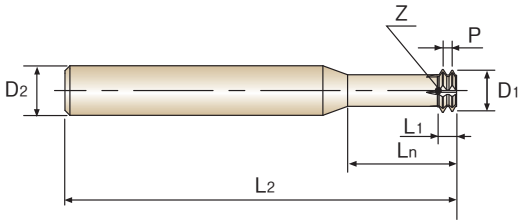
L19E1 SERIES

M Solid Carbide Miniature Thread Mill for Hard Materials, ISO Metric Internal Thread - DIN13

VOLLHARTMETALL MINI-GEWINDEFRÄSER für GEHÄRTETE MATERIALIEN, ISO METRISCHE INNENGEWINDE - DIN13

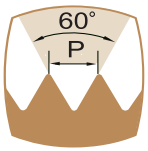
▶ Short thread length

▶ Kurze Gewindelänge



▶ Material : Solid Carbide
▶ Shank : DIN6535 HA
▶ Left Hand Cut, Straight Flute
▶ Thread Length : 2×P
▶ Left hand Cut (CNC code : M04)
▶ The work direction is from top to bottom (Climb Milling)
▶ **For hard materials up to HRc62**

▶ Material : Vollhartmetall
▶ Schaft : DIN 6535 HA
▶ Linksschneidend, geradegenutet
▶ Gewindeläge : 2×P
▶ Linksschneidend (CNC Befehl : M04)
▶ Die Fräsrichtung ist von oben nach unten (Gleichlauf)
▶ Für gehärtete Materialien bis zu HRc62



Unit : mm

EDP No.	Nominal Diameter [D]	Pitch	Cutter Diameter	Shank Diameter	Thread Length	Neck Length	Over All Length	No. of Flute
AlTiN		P	D1	D2	L1	Ln	L2	Z
L19E1130	M2	0.4	**1.52**	6	0.8	4.2	57	4
L19E1150	M2.2	0.45	**1.66**	6	0.9	4.6	57	4
L19E1170	M2.5	0.45	**1.96**	6	0.9	5.3	57	4
L19E1200	M3	0.5	**2.4**	6	1.0	6.3	57	4
L19E1240	M4	0.7	**3.16**	6	1.4	8.4	57	4
L19E1280	M5	0.8	**4.04**	6	1.6	10.5	57	4
L19E1310	M6	1.0	**4.8**	6	2.0	12.6	57	5
L19E1360	M8	1.25	**6.5**	8	2.5	16.8	63	5
L19E1420	M10	1.5	**8.2**	10	3.0	21.0	73	6
L19E1500	M12	1.75	**9.9**	10	3.5	25.2	73	6

∗ Other coatings are available on your request

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
	○	◎	◎	◎	○	○	◎	

THREAD MILLS

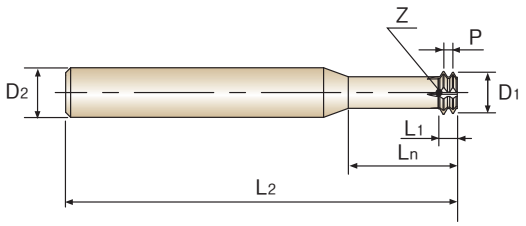
L19E3 SERIES

UNC Solid Carbide Miniature Thread Mill for Hard Materials, UNC Internal Thread - ANSI B 1.1

VOLLHARTMETALL MINI-GEWINDEFRÄSER für GEHÄRTETE MATERIALIEN, UNC INNENGEWINDE - ANSI B 1.1

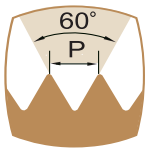
▶ Short thread length

▶ Kurze Gewindelänge



▶ Material : Solid Carbide
▶ Shank : DIN6535 HA
▶ Left Hand Cut, Straight Flute
▶ Thread Length : 2×P
▶ Left hand Cut (CNC code : M04)
▶ The work direction is from top to bottom (Climb Milling)
▶ **For hard materials up to HRc62**

▶ Material : Vollhartmetall
▶ Schaft : DIN 6535 HA
▶ Linksschneidend, geradegenutet
▶ Gewindeläge : 2×P
▶ Linksschneidend (CNC Befehl : M04)
▶ Die Fräsrichtung ist von oben nach unten (Gleichlauf)
▶ Für gehärtete Materialien bis zu HRc62



Unit : mm

EDP No.	Nominal Diameter [D]	T.P.I	Cutter Diameter	Shank Diameter	Thread Length	Neck Length	Over All Length	No. of Flute
AlTiN			D1	D2	L1	Ln	L2	Z
L19E3080	#2	56	**1.64**	6	0.91	4.6	57	4
L19E3160	#4	40	**2.08**	6	1.27	6.0	57	4
L19E3240	#6	32	**2.55**	6	1.59	7.4	57	4
L19E3280	#8	32	**3.21**	6	1.59	8.7	57	4
L19E3320	#10	24	**3.56**	6	2.12	10.1	57	4
L19E3360	#12	24	**4.22**	6	2.12	11.5	57	4
L19E3400	1/4	20	**4.83**	6	2.54	13.3	57	5
L19E3440	5/16	18	**6.24**	8	2.82	16.7	63	5
L19E3480	3/8	16	**7.62**	8	3.18	20.0	63	6
L19E3520	7/16	14	**8.94**	10	3.63	23.3	73	6

∗ Other coatings are available on your request

◎ : Excellent ○ : Good

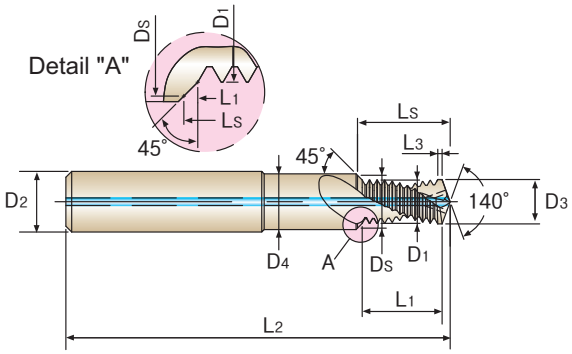
Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
	○	◎	◎	◎	○	○	◎	

THREAD MILLS

L41A1 SERIES UNCOATED
L42A1 SERIES TiAlN

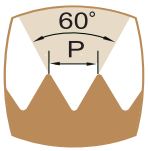
M Solid Carbide Drill and Thread Mill with Chamfer for ISO Metric Internal Thread - DIN 13

VOLLHARTMETALL BOHRGEWINDEFRÄSER MIT SENKFASE für ISO METRISCHE INNENGEWINDE - DIN 13



- ▶ Material : Solid Carbide
- ▶ Shank : DIN6535 HA
- ▶ Thread Length : 2×D
- ▶ No. of Flute : 2
- ▶ 140° Drill Point, 90° Countersink
- ▶ Drilling, Chamfering and Thread milling

- ▶ Material : Vollhartmetall
- ▶ Schaft : DIN 6535 HA
- ▶ Gewindeläge : 2×D
- ▶ Anz. der Nuten : 2
- ▶ 140° Spitzenwinkel, 90° Senkwinkel
- ▶ Bohren, Senken und Gewindefräsen



Unit : mm

EDP No.		Nominal Diameter	Pitch	Cutter Diameter	Shank Diameter	Effect. Diameter	Drill Diameter	Max. C'sink	Thread Length	Effect. Length	Drill Length	Over All Length
UNCOATED	TiAlN	[D]	P	D1	D2	Ds	D3	D4	L1	Ls	L3	L2
L41A1310	L42A1310	M6	1.0	4.75	8	6.3	5.00	6.6	13.00	14.68	1.00	62
L41A1360	L42A1360	M8	1.25	6.35	10	8.3	6.75	9.0	16.27	18.48	1.25	74
L41A1420	L42A1420	M10	1.5	7.95	12	10.3	8.50	11.0	21.05	23.77	1.50	79
L41A1500	L42A1500	M12	1.75	9.95	14	12.3	10.25	13.5	24.21	27.25	1.50	89
L41A1540	L42A1540	M14	2.0	11.20	16	14.3	12.00	15.5	29.58	33.32	1.50	102

* Other coatings are available on your request

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
				◎				◎

PROGRAMMING OF THREAD MILLING
PROGRAMMIERUNG BEIM GEWINDEFRÄSEN

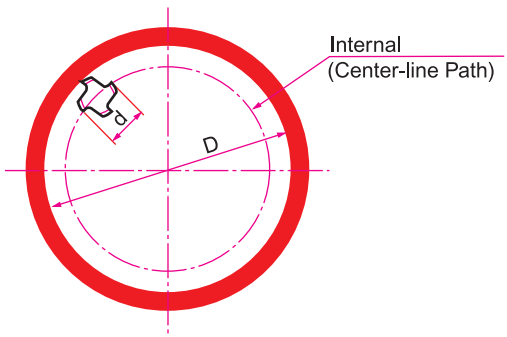
Program Data

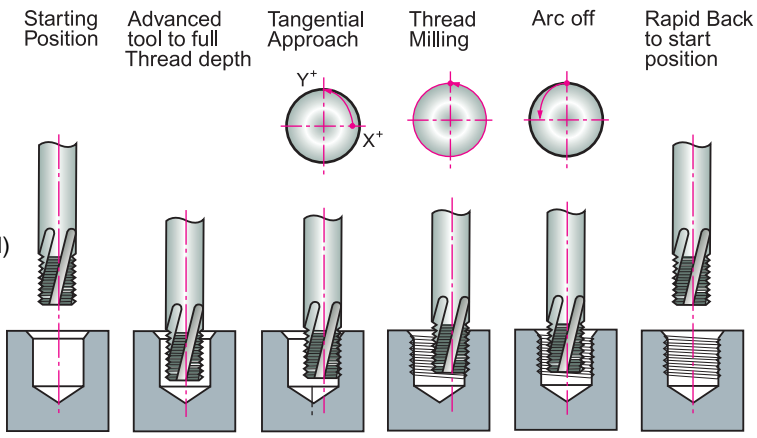
G Codes for Thread Milling

G00	Fast Feed Linear	**G90**	Absolute Command
G01	Linear Movement	**G91**	Incremental Command
G02	Circular/Helical Interpolation C.W.	**M03**	Clockwise Rotation of Spindle
G03	Circular/Helical Interpolation A.C.W.	**M05**	Spindle Stop
G17	X, Y Plane (Vertical Machining)	**M08**	Coolant On
G18	Z, X Plane (Horizontal Machining)	**X**	Horizontal Co-ordinate
G19	Y, Z Plane (Using 90° Head)	**Y**	Horizontal Co-ordinate
G40	Cutter Radius Compensation Cancel	**Z**	Vertical Co-ordinate
G41	Cutter Radius Compensation Left	**I**	X Co-ordinate to Center of Arc Travel
G42	Cutter Radius Compensation Right	**J**	Y Co-ordinate to Center of Arc Travel
G43	Tool Length Compensation Plus	**S**	Spindle Speed R.P.M.
G49	Tool Length Compensation Cancel	**F**	Feed mm/min

CNC Internal Thread Milling

G54	G90	G00	X···	Y···	Z2	T1	S···	M03
G91	G00	Z-···(A3+2)						
G41	G01	D26	X···(A6)	Y···(A5)	F···			
G03	X-···(A6)	Y···(A6)	Z···(A4)	I-···(A6)	J0			
G03	X0	Y0	Z···(A2)	I0	J-···(A1)			
G03	X-···(A6)	Y-···(A6)	Z···(A4)	I0	J-···(A6)			
G00	G40	X···(A6)	Y-···(A5)					
G00	Z···(A7)							
G90	G49	G00	Z200	M5				
M30								





<Explanation of Parameters>

A1 : 1/2 Nominal Thread Diameter 1/2D

A2 : Thread Pitch

A3 : Thread Depth

A4 : 1/4P(for climb milling and right-hand thread)

A5 : Beginning of Contour in Y 0.5xP

A6 : Arc Off (A1 - A5)

A7 : A3+2-0.5P

T1 : Cutter radius to be programmed is nomally included in the tool memory

THREAD MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

RECOMMENED CUTTING SPEED
EMPFOHLENE SCHNEIDKONDITIONEN

RECOMMENDED CUTTING CONDITION for Thread Mills

unit : mm

Materials	Cutting Speed (m/min)	Feed per Tooth (fz)	
		Cutter Diameter ≤Ø8.0	Cutter Diameter >Ø8.0
Low Carbon Steels Medium Carbon Steels	80 - 120	0.02 - 0.04	0.04 - 0.10
High Carbon Steels	80 - 120	0.02 - 0.04	0.04 - 0.10
Alloy Steels	80 - 120	0.02 - 0.04	0.04 - 0.10
Heat Treated Steels	60 - 100	0.02 - 0.04	0.04 - 0.10
Stainless Steels	40 - 80	0.01 - 0.02	0.02 - 0.06
Cast Iron	50 - 100	0.02 - 0.04	0.04 - 0.10
Chrome-Nickel Alloys Titanium Alloys	20 - 60	0.01 - 0.02	0.02 - 0.06
Non Ferrous Materials	100 - 300	0.03 - 0.07	0.05 - 0.10

RECOMMENDED CUTTING CONDITION for Drill and Thread Mills

unit : mm

Material	Cutting Speed (m/min)	Fz(Thread Milling) - Feed per tooth		Fdr(Drilling) - Feed per revolution	
		Cutter Diameter ≤Ø8.0	Cutter Diameter >Ø8.0	Cutter Diameter ≤Ø8.0	Cutter Diameter >Ø8.0
Cast Iron	80-150	0.03-0.08	0.08-0.12	0.10-0.20	0.20-0.25
Aluminium Aluminium-alloy Magnesium	100-300	0.05-0.10	0.10-0.15	0.10-0.20	0.20-0.30
Plastics	80-150	0.05-0.10	0.10-0.15	0.10-0.20	0.20-0.30

RECOMMENDED CUTTING CONDITION for Hard Material Miniature Thread Mills

unit : mm

Materials		Cutting Speed (m/min)	Feed(mm/tooth)	
			Cutter Diameter ≤Ø6.0	Cutter Diameter >Ø6.0
Alloy Steel	≥ HB325	80-120	0.02-0.04	0.04-0.06
Stainless Steel	≥ HB330	40-80	0.02-0.04	0.04-0.06
Cast Iron		50-100	0.03-0.05	0.05-0.07
Chrome-Nickel Alloys Titanium Alloys		20-60	0.02-0.03	0.03-0.05
Hardened Material	45~50HRc	25-70	0.03-0.05	0.05-0.07
	51~55HRc	25-60	0.02-0.04	0.04-0.06
	56~62HRc	25-50	0.01-0.03	0.03-0.05

THREAD MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

TO CALCULATE SPEED & FEED RATES
SCHNITTGESCHWINDIGKEIT & VORSCHUB KALKULIEREN

Calculate R.P.M of cutter

$$n = \frac{1000 \times V}{d \times \pi}$$

Calculate Feed per Revolution

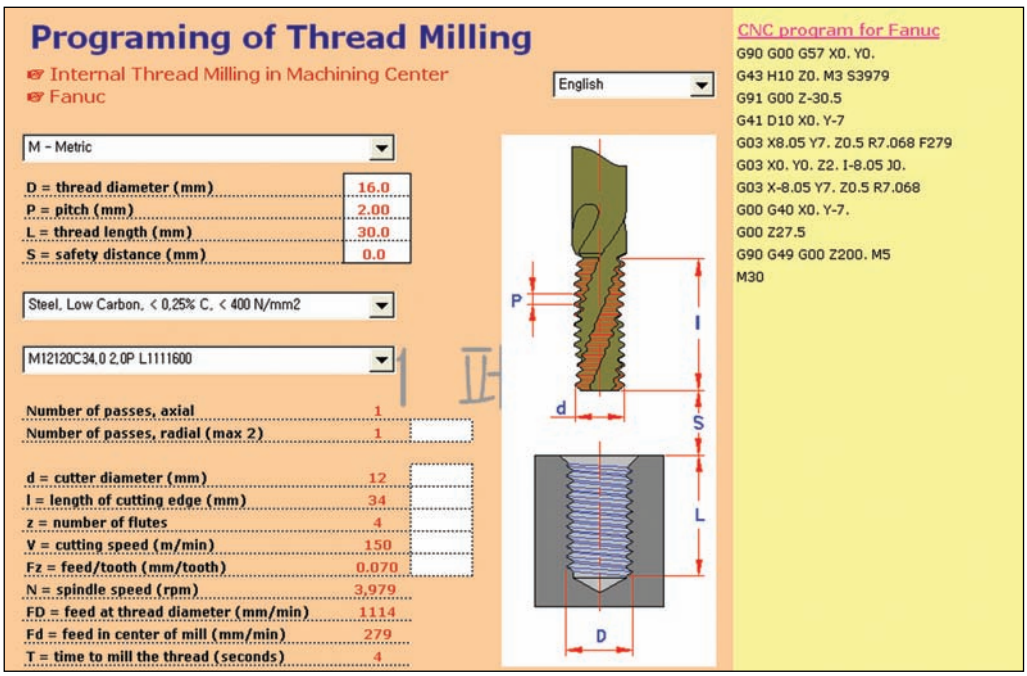
$$F_1 = fz \times Z \times N$$

Finally Calculate Feed at Tool Center Line

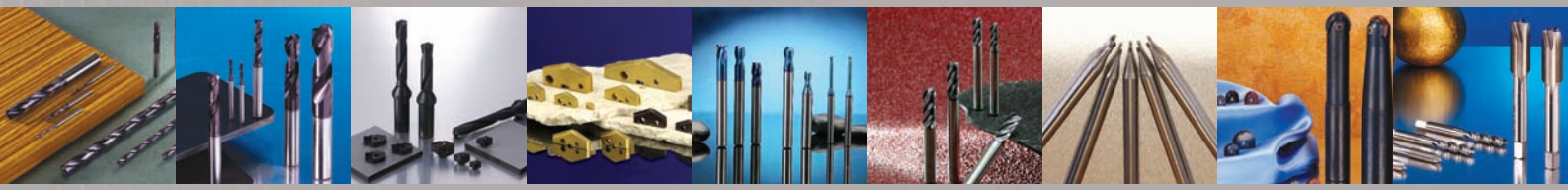
$$F_2 = \frac{F_1 \times (D - d)}{D}$$

N : R.P.M
V : Recommended Cutting Speed
d : Diameter of Cutter
fz : Recommended Feed per Tooth
Z : Number of Teeth
F_2 : Feed at Center Line of Cutting
F_1 : Feed at Cutting Edge
D : Major Diameter of Component

Application Program Available



Global Cutting Tool Leader **YG-1**



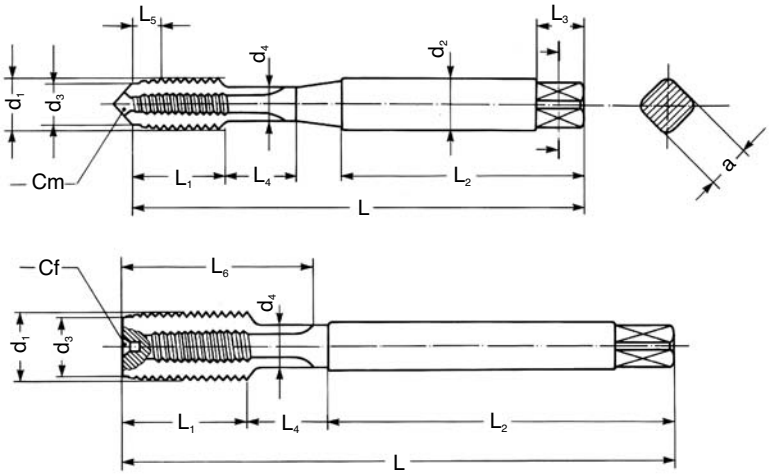
TAPS

Being the best through innovation

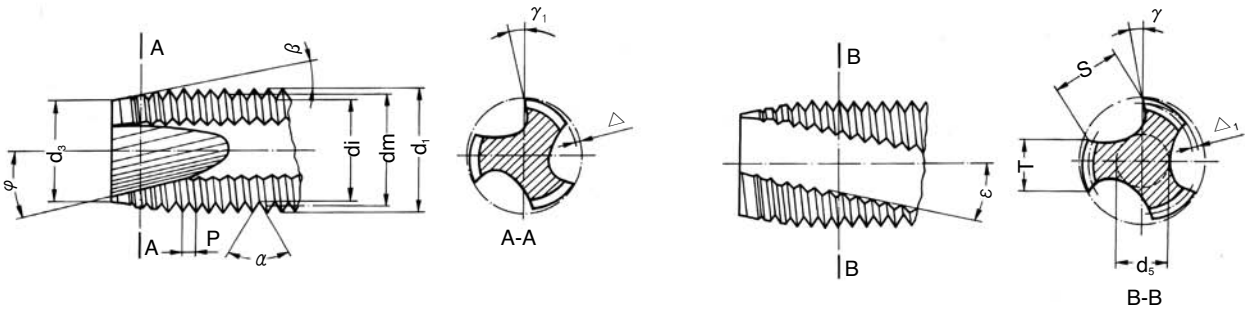
TECHNICAL DATA
TECHNISCHE DATEN

TECHNICAL DATA
SUPER CUTTING TAPS
HOCHLEISTUNGS GEWINDEBOHRER

TAPS TERMINOLOGY
FACHAUSDRÜCKE BEI GEWINDEBOHRERN (Terminologie)



d_1	Major diameter	d_1	Nenn Aussendurchmesser	d_1	Diamètre externe nominal
d_2	Shank diameter	d_2	Schaftdurchmesser	d_2	Diamètre de la queue
d_3	Chamfer diameter	d_3	Anschnittdurchmesser	d_3	Diamètre de l'entrée
d_4	Neck diameter	d_4	Bunddurchmesser	d_4	Diamètre de la collerette de dégagement
L	Total length	L	Gesamtlänge	L	Longueur totale
L_1	Thread length	L_1	Gewindelänge	L_1	Longueur de la patie filetée
L_2	Shank length	L_2	Schaftlänge	L_2	Longueur de la queue
L_3	Square length	L_3	Vierkantlänge	L_3	Longueur du carré
L_4	Neck length	L_4	Bundlänge	L_4	Longueur de la collerette de dégagement
L_5	Chamfer length	L_5	Anschnittlänge	L_5	Longueur de l'entrée
L_6	Flutes length	L_6	Nutenlänge	L_6	Longueur des goujures
a	Square	a	Vierkantmaß	a	Carré
Cm	Center male	Cm	Mittelpunkt des Aussengewindes	Cm	Centre mâle
Cf	Center female	Cf	Mittelpunkt des Innengewindes	Cf	Centre femelle



d_1	Major diameter	d_1	Nenn Aussendurchmesser	d_1	Diamètre externe nominal
dm	Flank diameter	dm	Flankendurchmesser	dm	Diamètre moyen
di	Minor diameter	di	Kerndurchmesser	di	Diamètre interne
d_3	Chamfer diameter	d_3	Anschnittdurchmesser	d_3	Diamètre de l'entrée
P	Pitch	P	Steigung	P	Pas
a	Flank angle	a	Flankenwinkel	α	Angle du filet
β	Chamfer angle	β	Anschnittwinkel	β	Demi-angle du cône d'entrée
φ	Gun nose angle	φ	Schälschnittwinkel	φ	Angle de l'entrée GUN
γ	Gun nose rake angle in front	γ_1	Schälschnitt-Spanwinkel	γ_1	Angle de coupe sur l'entrée GUN
△	Chamfer relief	△	Hinterschliff am Anschnitt	△	Détalonnage sur l'entrée
$△_1$	Pitch diameter relief on the land	$△_1$	Flankenhinterschliff auf Zahnbreite	$△_1$	Détalonnage sur le filet
γ	Rake angle	γ	Spanwinkel	γ	Angle de coupe frontale
T	Width of land	T	Zahnstollenbreite	T	Largeur des dents
S	Flute width	S	Nutenbreite	S	Largeur des goujoures
d_5	Web tickness	d_5	Seelendicke	d_5	Diamètre de l'âme
ε	Angle of spiral flute	ε	Spiralwinkel	ε	Angle d'hélice des goujures

RECOMMENDED TAP DRILL SIZE
EMPFOHLENE KERNLOCHMASSE

Unit : mm

Metric-ISO threads coarse pitch			
M	Pitch	Maximum core dia.	Drill size
1	0.25	0.785	0.75
1.1	0.25	0.885	0.85
1.2	0.25	0.985	0.95
1.4	0.30	1.160	1.10
1.6	0.35	1.321	1.25
1.7	0.35	1.346	1.30
1.8	0.35	1.521	1.45
2	0.40	1.679	1.60
2.2	0.45	1.838	1.75
2.3	0.40	1.920	1.90
2.5	0.45	2.138	2.05
2.6	0.45	2.176	2.10
3	0.50	2.599	2.50
3.5	0.60	3.010	2.90
4	0.70	3.422	3.30
4.5	0.75	3.878	3.70
5	0.80	4.334	4.20
6	1.00	5.153	5.00
7	1.00	6.153	6.00
8	1.25	6.912	6.80
9	1.25	7.912	7.80
10	1.50	8.676	8.50
11	1.50	9.676	9.50
12	1.75	10.441	10.20
14	2.00	12.210	12.00
16	2.00	14.210	14.00
18	2.50	15.744	15.50
20	2.50	17.744	17.50
22	2.50	19.744	19.50
24	3.00	21.252	21.00
27	3.00	24.252	24.00
30	3.50	26.771	26.50
33	3.50	29.771	29.50
36	4.00	32.270	32.00
39	4.00	35.270	35.00
42	4.50	37.799	37.50
45	4.50	40.799	40.50
48	5.00	43.297	43.00
52	5.00	47.297	47.00
56	5.50	50.796	50.50
60	5.50	54.796	54.50
64	6.00	58.305	58.00
68	6.00	62.305	62.00

Metric-ISO threads fine pitch			
MF	Pitch	Maximum core dia.	Drill size
2.5	0.35	2.221	2.15
3	0.35	2.271	2.65
3.5	0.35	3.221	3.15
4	0.50	3.599	3.50
4.5	0.50	4.099	4.00
5	0.50	4.599	4.50
5.5	0.50	5.099	5.00
6	0.75	5.378	5.20
7	0.75	6.378	6.20
8	0.75	7.378	7.20
8	1.00	7.153	7.00
9	0.75	8.378	8.20
9	1.00	8.153	8.00
10	0.75	9.378	9.20
10	1.00	9.153	9.00
10	1.25	8.912	8.80
11	0.75	10.378	10.20
11	1.00	10.153	10.00
12	1.00	11.153	11.00
12	1.25	10.912	10.80
12	1.50	10.676	10.50
14	1.00	13.153	13.00
14	1.25	12.912	12.80
14	1.50	12.676	12.50
15	1.00	14.153	14.00
15	1.50	13.676	13.50
16	1.00	15.153	15.00
16	1.50	14.676	14.50
17	1.00	16.153	16.00
17	1.50	15.676	15.50
18	1.00	17.153	17.00
18	1.50	16.676	16.50
18	2.00	16.210	16.00
20	1.00	19.153	19.00
20	1.50	18.676	18.50
20	2.00	18.210	18.00
22	1.00	21.153	21.00
22	1.50	20.676	20.50
22	2.00	20.210	20.00
24	1.00	23.153	23.00
24	1.50	22.676	22.50
24	2.00	22.210	22.00
25	1.00	24.153	24.00
25	1.50	23.676	23.50

Metric-ISO threads fine pitch			
MF	Pitch	Maximum core dia.	Drill size
25	2.00	23.210	23.00
26	1.50	24.676	24.50
27	1.00	26.153	26.00
27	1.50	25.676	25.50
27	2.00	25.210	25.00
28	1.00	27.153	27.00
28	1.50	26.676	26.50
28	2.00	26.210	26.00
30	1.00	29.153	29.00
30	1.50	28.676	28.50
30	2.00	28.210	28.00
30	3.00	27.252	27.00
32	1.50	30.675	30.50
32	2.00	30.210	30.00
33	1.50	31.676	31.50
33	2.00	31.210	31.00
33	3.00	30.252	30.00
35	1.50	33.676	33.50
36	1.50	34.676	34.50
36	2.00	34.210	34.00
36	3.00	33.252	33.00
38	1.50	36.676	36.50
39	1.50	37.676	37.50
39	2.00	37.210	37.00
39	3.00	36.252	36.00
40	1.50	38.676	38.50
40	2.00	38.210	38.00
40	3.00	37.252	37.00
42	1.50	40.676	40.50
42	2.00	40.210	40.00
42	3.00	39.252	39.00
45	1.50	43.676	43.50
45	2.00	43.210	43.00
45	3.00	42.252	42.00
48	1.50	46.676	46.50
48	2.00	46.210	46.00
48	3.00	45.252	45.00
50	1.50	48.676	48.50
50	2.00	48.210	48.00
50	3.00	47.252	47.00
52	1.50	50.676	50.50
52	2.00	50.210	50.00
52	3.00	49.252	49.00

TECHNICAL DATA

SUPER CUTTING TAPS
HOCHLEISTUNGS GEWINDEBOHRER

Unit : mm

American Unified coarse threads

UNC	T.P.I	Maximum core dia.	Drill size
#1	64	1.585	1.50
#2	56	1.872	1.80
#3	48	2.146	2.10
#4	40	2.385	2.30
#5	40	2.697	2.60
#6	32	2.896	2.85
#8	32	3.528	3.50
#10	24	3.950	3.90
#12	24	4.590	4.50
1/4"	20	5.250	5.20
5/16"	18	6.680	6.60
3/8"	16	8.082	8.00
7/16"	14	9.441	9.40
1/2"	13	10.881	10.75
9/16"	12	12.301	12.25
5/8"	11	13.693	13.50
3/4"	10	16.624	16.50
7/8"	9	19.520	19.50
1"	8	22.344	22.25
1*1/8"	7	25.082	25.00
1*1/4"	7	28.258	28.25
1*3/8"	6	30.851	30.75
1*1/2"	6	34.026	34.00
1*3/4"	5	39.560	39.50
2"	4.5	45.367	45.25

American Unified fine threads

UNF	T.P.I	Maximum core dia.	Drill size
#0	80	1.306	1.30
#1	72	1.613	1.60
#2	64	1.913	1.90
#3	56	2.197	2.10
#4	48	2.459	2.40
#5	44	2.741	2.70
#6	40	3.012	3.00
#8	36	3.597	3.50
#10	32	4.168	4.10
#12	28	4.717	4.70
1/4"	28	5.563	5.50
5/16"	24	6.995	6.90
3/8"	24	8.565	8.50
7/16"	20	9.947	9.90
1/2"	20	11.524	11.50
9/16"	18	12.969	12.90
5/8"	18	14.554	14.50
3/4"	16	17.546	17.50
7/8"	14	20.493	20.50
1"	12	23.363	23.25
1*1/8"	12	26.538	26.50
1*1/4"	12	29.713	29.50
1*3/8"	12	32.888	32.70
1*1/2"	12	36.063	36.00

Whitworth threads B.S.W.

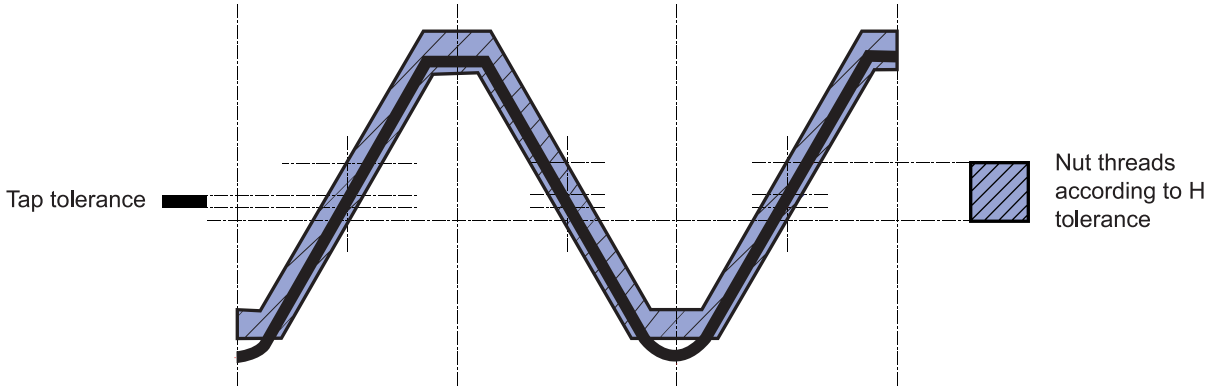
BSW	T.P.I	Maximum core dia.	Drill size
3/32"	48	1.910	1.80
1/8"	40	2.590	2.50
5/32"	32	3.211	3.10
3/16"	24	3.743	3.60
7/32"	24	4.538	4.40
1/4"	20	5.224	5.10
5/16"	18	6.661	6.50
3/8"	16	8.052	7.90
7/16"	14	9.379	9.30
1/2"	12	10.610	10.50
9/16"	12	12.176	12.00
5/8"	11	13.598	13.50
3/4"	10	16.538	16.50
7/8"	9	19.411	19.25
1"	8	22.185	22.00
1*1/8"	7	24.879	24.75
1*1/4"	7	28.054	27.75
1*3/8"	6	30.555	30.50
1*1/2"	6	33.730	33.50
1*5/8"	5	35.921	35.50
1*3/4"	5	39.096	39.00
1*7/8"	4.5	41.648	41.50
2"	4.5	44.823	44.50
2*1/4"	4	50.420	50.00
2*1/2"	4	56.770	56.50
2*3/4"	3.5	62.108	62.00
3"	3.5	68.459	68.50

Whitworth pipe thread BSP.PI

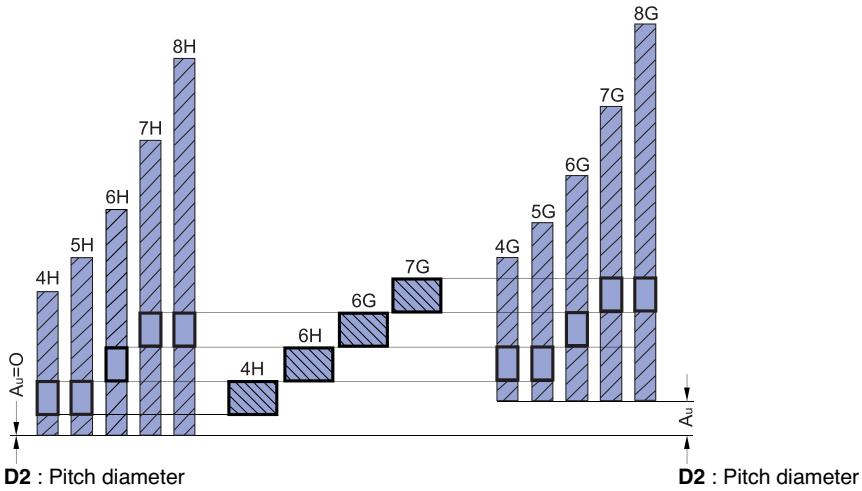
G(BSP)	T.P.I	Maximum core dia.	Drill size
1/8"	28	8.848	8.80
1/4"	19	11.890	11.80
3/8"	19	15.395	15.25
1/2"	14	19.172	19.00
5/8"	14	21.128	21.00
3/4"	14	24.658	24.50
7/8"	14	28.418	28.25
1"	11	30.931	30.75
1*1/8"	11	35.579	35.50
1*1/4"	11	39.592	39.50
1*3/8"	11	42.005	42.00
1*1/2"	11	45.485	45.20
1*5/8"	11	49.670	49.60
1*3/4"	11	51.428	51.40
2"	11	57.296	57.20
2*1/4"	11	63.392	63.30
2*3/8"	11	67.080	67.00
2*1/2"	11	72.866	72.80
2*3/4"	11	79.216	79.10
3"	11	85.566	85.50
3*1/4"	11	91.662	91.50
3*1/2"	11	98.012	98.00
3*3/4"	11	104.362	104.00
4"	11	110.712	110.50

TAP TOLERANCES
GEWINDEBOHRER TOLERANZEN

Tolerance classes of taps and tolerance positions for screw threads as per Metric ISO Standard.
Toleranzklassen und Toleranzfelder für Schraubengewinde entsprechen dem metrischen ISO-Standard



Nut thread Positioning of H tolerance	Tolerance Classes for Taps	Nut thread Positioning of G tolerance



Taps tolerances and recomanded classes

Tap tolerance ISO	Tap tolerance DIN	Correct class to obtain Nut thread with tolerance				
ISO 1	4H	4H	5H			
ISO 2	6H	4G	5G	6H		
ISO 3	6G			6G	7H	8H
	7G				7G	8G

TECHNICAL DATA

SUPER CUTTING TAPS
HOCHLEISTUNGS GEWINDEBOHRER

METRIC ISO COARSE THREADS
METRISCHES ISO-GEWINDE

Nominal dimensions UNI 4535-64
Production tolerances on tap pitch diameter for ISO 6H Nut threads
Limit dimensions-Nut threads ISO 6H

Dimensions in mm

$H = 0.86603P$

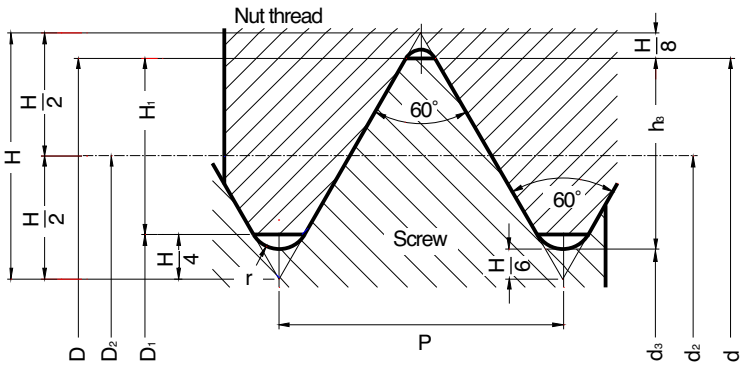
$H_1 = \frac{5}{8}H = 0.54127P$

$h_3 = \frac{17}{24}H = 0.61343P$

$d_2 = D_2 = d - H = \frac{3}{4}d - 0.64952P$

$d_3 = d - 2h_3 = d - 1.22687P$

$r = \frac{H}{6} = 0.14434P$



Nominal diameter	Pitch	Pitch diameter	Minor diameter		Thread depth		Radius	Pitch diameter Tap tolerance 6H		Pitch diameter Nut tolerance 6H	
			Screw	Nut	Screw	Nut		min.	max.	min.	max.
d = D	P	d2 = D2	d3	D1	h3	H1	r	d2			
M 1.6	0.35	1.373	1.171	1.221	0.215	0.189	0.051	1.393	1.407	1.373	1.458
M 1.8	0.35	1.573	1.371	1.421	0.215	0.189	0.051	1.593	1.607	1.573	1.658
M 2	0.4	1.740	1.509	1.567	0.245	0.217	0.058	1.761	1.776	1.740	1.830
M 2.2	0.45	1.908	1.648	1.713	0.276	0.244	0.065	1.931	1.946	1.908	2.003
M 2.5	0.45	2.208	1.948	2.013	0.276	0.244	0.065	2.231	2.246	2.208	2.303
M 3	0.5	2.675	2.387	2.459	0.307	0.271	0.072	2.699	2.715	2.675	2.775
M 3.5	0.6	3.110	2.764	2.850	0.368	0.325	0.087	3.137	3.155	3.110	3.222
M 4	0.7	3.545	3.141	3.242	0.429	0.379	0.101	3.574	3.593	3.545	3.663
M 4.5	0.75	4.013	3.580	3.688	0.460	0.406	0.108	4.042	4.061	4.013	4.131
M 5	0.8	4.480	4.019	4.134	0.491	0.433	0.115	4.510	4.530	4.480	4.605
M 6	1	5.350	4.773	4.917	0.613	0.541	0.144	5.385	5.409	5.350	5.500
M 7	1	6.350	5.773	5.917	0.613	0.541	0.144	6.385	6.409	6.350	6.500
M 8	1.25	7.188	6.466	6.647	0.767	0.677	0.180	7.226	7.251	7.188	7.348
M 9	1.25	8.188	7.466	7.647	0.767	0.677	0.180	8.226	8.251	8.188	8.348
M 10	1.5	9.026	8.160	8.376	0.920	0.812	0.217	9.068	9.096	9.026	9.206
M 11	1.5	10.026	9.160	9.376	0.920	0.812	0.217	10.068	10.096	10.026	10.206
M 12	1.75	10.863	9.853	10.106	1.074	0.947	0.253	10.911	10.943	10.863	11.063
M 14	2	12.701	11.546	11.835	1.227	1.083	0.289	12.752	12.786	12.701	12.913
M 16	2	14.701	13.546	13.835	1.227	1.083	0.289	14.752	14.786	14.701	14.913
M 18	2.5	16.376	14.933	15.294	1.534	1.353	0.361	16.430	16.466	16.376	16.600
M 20	2.5	18.376	16.933	17.294	1.534	1.353	0.361	18.430	18.466	18.376	18.600
M 22	2.5	20.376	18.933	19.294	1.534	1.353	0.361	20.430	20.466	20.376	20.600
M 24	3	22.051	20.319	20.752	1.840	1.624	0.433	22.115	22.157	22.051	22.316
M 27	3	25.051	23.319	23.752	1.840	1.624	0.433	25.115	25.157	25.051	25.316
M 30	3.5	27.727	25.706	26.211	2.147	1.894	0.505	27.794	27.839	27.727	28.007
M 33	3.5	30.727	28.706	29.211	2.147	1.894	0.505	30.794	30.839	30.727	31.007
M 36	4	33.402	31.093	31.670	2.454	2.165	0.577	33.473	33.520	33.402	33.702
M 39	4	36.402	34.093	34.670	2.454	2.165	0.577	36.473	36.520	36.402	36.702
M 42	4.5	39.077	36.479	37.129	2.760	2.436	0.650	39.152	39.202	39.077	39.392
M 45	4.5	42.077	39.479	40.129	2.760	2.436	0.650	42.152	42.202	42.077	42.392
M 48	5	44.752	41.866	42.587	3.067	2.706	0.722	44.832	44.885	44.752	45.087
M 52	5	48.752	45.866	46.587	3.067	2.706	0.722	48.832	48.885	48.752	49.087
M 56	5.5	52.428	49.252	50.046	3.374	2.977	0.794	52.512	52.568	52.428	52.783
M 60	5.5	56.428	53.252	54.046	3.374	2.977	0.794	56.512	56.568	56.428	56.783
M 64	6	60.103	56.639	57.505	3.681	3.248	0.866	60.193	60.253	60.103	60.478
M 68	6	64.103	60.639	61.505	3.681	3.248	0.866	64.193	64.253	64.103	64.478
Metric thread MA(old UNI 159 Profile)										**Nut tolerance SH8**	
M 1.7	0.35	1.473	1.246	1.246	0.227	0.227	0.040	1.493	1.507	1.473	1.529
M 2.3	0.4	2.040	1.780	1.780	0.260	0.260	0.040	2.061	2.076	2.040	2.120
M 2.6	0.45	2.308	2.016	2.016	0.292	0.292	0.050	2.331	2.346	2.308	2.388

METRIC ISO FINE THREADS
METRISCHES ISO-FEINGEWINDE

Nominal dimensions UNI 4535-64
Production tolerances on tap flank diameter for ISO 6H Nut threads
Limit dimensions-Nut threads ISO 6H

Dimensions in mm

$H = 0.86603P$

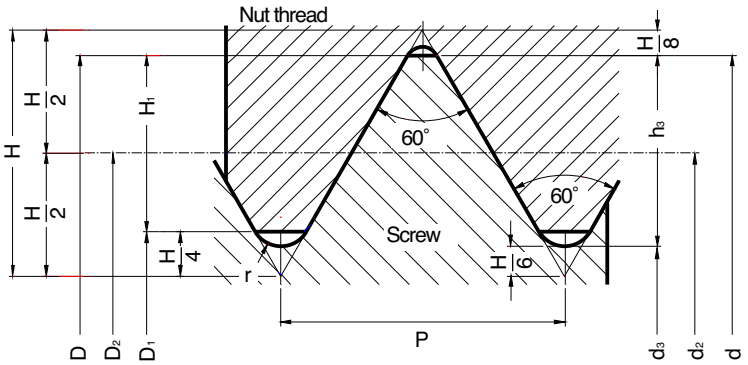
$H_1 = \frac{5}{8} H = 0.54127P$

$h_3 = \frac{17}{24} H = 0.61343P$

$d_2 = D_2 = d - \frac{3}{4} H = d - 0.64952P$

$d_3 = d - 2h_3 = d - 1.22687P$

$r = \frac{H}{6} = 0.14434P$



Nominal diameter	Pitch	Flank diameter	Minor diameter		Thread depth		Radius	Flank diameter Tap tolerance 6H		Flank diameter Nut tolerance 6H	
			Screw	Nut	Screw	Nut		min.	max.	min.	max.
d = D	P	$d_2 = D_2$	d_3	D_1	h_3	H_1	r	d_2			
M 2	0.25	1.838	1.693	1.729	0.153	0.135	0.036	1.844	1.856	1.838	1.886
M 2.5	0.35	2.273	2.701	2.121	0.215	0.189	0.051	2.293	2.307	2.273	2.358
M 3	0.35	2.773	2.571	2.621	0.215	0.189	0.051	2.794	2.809	2.773	2.863
M 3.5	0.35	3.273	3.071	3.121	0.215	0.189	0.051	3.294	3.309	3.273	3.363
M 4	0.5	3.675	3.387	3.459	0.307	0.271	0.072	3.699	3.715	3.675	3.775
M 4.5	0.5	4.175	3.887	3.959	0.307	0.271	0.072	4.199	4.215	4.175	4.275
M 5	0.5	4.675	4.387	4.459	0.307	0.271	0.072	4.699	4.715	4.675	4.775
M 5.5	0.5	5.175	4.887	4.959	0.307	0.271	0.072	5.199	5.215	5.175	5.275
M 6	0.5	5.675	5.387	5.459	0.307	0.271	0.072	5.702	5.720	5.675	5.787
M 6	0.75	5.513	5.080	5.188	0.460	0.406	0.108	5.545	5.566	5.513	5.645
M 7	0.75	6.513	6.080	6.188	0.460	0.406	0.108	6.545	6.566	6.513	6.645
M 8	0.5	7.675	7.387	7.459	0.307	0.271	0.072	7.702	7.720	7.675	7.787
M 8	0.75	7.513	7.080	7.188	0.460	0.406	0.108	7.545	7.566	7.513	7.645
M 8	1	7.350	6.773	6.917	0.613	0.541	0.144	7.835	7.409	7.350	7.500
M 9	0.75	8.513	8.080	8.188	0.460	0.406	0.108	8.545	8.566	8.513	8.645
M 9	1	8.350	7.773	7.917	0.613	0.541	0.144	8.385	8.409	8.350	8.500
M 10	0.5	9.675	9.387	9.459	0.307	0.271	0.072	9.702	9.720	9.675	9.787
M 10	0.75	9.513	9.080	9.188	0.460	0.406	0.108	9.545	9.566	9.513	9.645
M 10	1	9.350	8.773	8.917	0.613	0.541	0.144	9.385	9.409	9.350	9.500
M 10	1.25	9.188	8.466	8.647	0.767	0.677	0.180	9.226	9.251	9.188	9.348
M 11	0.75	10.513	10.080	10.188	0.460	0.406	0.108	10.545	10.566	10.513	10.645
M 11	1	10.350	9.773	9.917	0.613	0.541	0.144	10.385	10.409	10.350	10.500
M 12	0.75	11.513	11.080	11.188	0.460	0.406	0.108	11.547	11.569	11.513	11.653
M 12	1	11.350	10.773	10.917	0.613	0.541	0.144	11.388	11.413	11.350	11.510
M 12	1.25	11.188	10.466	10.647	0.767	0.677	0.180	11.230	11.258	11.188	11.368
M 12	1.5	11.026	10.160	10.376	0.920	0.812	0.217	11.071	11.101	11.026	11.216
M 13	1	12.350	11.773	11.917	0.613	0.541	0.144	12.388	12.413	12.350	12.510
M 14	1	13.350	12.773	12.917	0.613	0.541	0.144	13.388	13.413	13.350	13.510
M 14	1.25	13.188	12.466	12.647	0.767	0.677	0.180	13.230	13.258	13.188	13.368
M 14	1.5	13.026	12.160	12.376	0.920	0.812	0.217	13.071	13.101	13.026	13.216
M 15	1	14.350	13.773	13.917	0.613	0.541	0.144	14.388	14.413	14.350	14.510
M 15	1.5	14.026	13.160	13.376	0.920	0.812	0.217	14.071	14.101	14.026	14.216
M 16	1	15.350	14.773	14.917	0.613	0.541	0.144	15.388	15.413	15.350	15.510
M 16	1.25	15.188	14.466	14.647	0.767	0.677	0.180	15.230	15.258	15.188	15.368
M 16	1.5	15.026	14.160	14.376	0.920	0.812	0.217	15.071	15.101	15.026	15.216
M 17	1	16.350	15.773	15.917	0.613	0.541	0.144	16.388	16.413	16.350	16.510
M 17	1.5	16.026	15.160	15.376	0.920	0.812	0.217	16.071	16.101	16.026	16.216
M 18	1	17.350	16.773	16.917	0.613	0.541	0.144	17.388	17.413	17.350	17.510
M 18	1.5	17.026	16.160	16.376	0.920	0.812	0.217	17.071	17.101	17.026	17.216
M 18	2	16.701	15.546	15.835	1.227	1.083	0.289	16.752	16.786	16.701	16.913
M 20	1	19.350	18.773	18.917	0.613	0.541	0.144	19.388	19.413	19.350	19.510
M 20	1.5	19.026	18.160	18.376	0.920	0.812	0.217	19.071	19.101	19.026	19.216
M 20	2	18.701	17.546	17.835	1.227	1.083	0.289	18.752	18.786	18.701	18.913
M 22	1	21.350	20.773	20.917	0.613	0.541	0.144	21.388	21.413	21.350	21.510
M 22	1.5	21.026	20.160	20.376	0.920	0.812	0.217	21.071	21.101	21.026	21.216

TECHNICAL DATA

SUPER CUTTING TAPS
HOCHLEISTUNGS GEWINDEBOHRER

Nominal diameter	Pitch	Flank diameter	Minor diameter		Thread depth		Radius	Flank diameter Tap tolerance 6H		Flank diameter Nut tolerance 6H	
			Screw	Nut	Screw	Nut		min.	max.	min.	max.
d = D	P	$d_2 = D_2$	d_3	D_1	h_3	H_1	r	d_2			
M 22	2	20.701	19.546	19.835	1.227	1.083	0.289	20.752	20.786	20.701	20.913
M 24	1	23.350	22.773	22.917	0.613	0.541	0.144	23.390	23.416	23.350	23.520
M 24	1.5	23.026	22.160	22.376	0.920	0.812	0.217	23.074	23.106	23.026	23.226
M 24	2	22.701	21.546	21.835	1.227	1.083	0.289	22.754	22.791	22.701	22.925
M 25	1	24.350	23.773	23.917	0.613	0.541	0.144	24.390	24.416	24.350	24.520
M 25	1.5	24.026	23.160	23.376	0.920	0.812	0.217	24.074	24.106	24.026	24.226
M 25	2	23.701	22.546	22.835	1.227	1.083	0.289	23.754	23.791	23.701	23.925
M 26	1	25.350	24.773	24.917	0.613	0.541	0.144	25.390	25.416	25.350	25.520
M 26	1.5	25.026	24.160	24.376	0.920	0.812	0.217	25.074	25.106	25.026	25.226
M 26	2	24.701	23.546	23.835	1.227	1.083	0.289	24.754	24.791	24.701	24.925
M 27	1	26.350	25.773	25.917	0.613	0.541	0.144	26.390	26.416	26.350	26.520
M 27	1.5	26.026	25.160	25.376	0.920	0.812	0.217	26.074	26.106	26.026	26.226
M 27	2	25.701	24.546	24.835	1.227	1.083	0.289	25.754	25.791	25.701	25.925
M 28	1	27.350	26.773	26.917	0.613	0.541	0.144	27.390	27.416	27.350	27.520
M 28	1.5	27.026	26.160	26.376	0.920	0.812	0.217	27.074	27.106	27.026	27.226
M 28	2	26.701	25.546	25.835	1.227	1.083	0.289	26.754	26.791	26.701	26.925
M 30	1	29.350	28.773	28.917	0.613	0.541	0.144	29.390	29.416	29.350	29.520
M 30	1.5	29.026	28.160	28.376	0.920	0.812	0.217	29.074	29.106	29.026	29.226
M 30	2	28.701	27.546	27.835	1.227	1.083	0.289	28.754	28.791	28.701	28.925
M 30	3	28.051	26.319	26.752	1.840	1.624	0.433	28.115	28.157	28.051	28.316
M 32	1.5	31.026	30.160	30.376	0.920	0.812	0.217	31.074	31.106	31.026	31.226
M 32	2	30.701	29.546	29.835	1.227	1.083	0.289	30.754	30.791	30.701	30.925
M 33	1.5	32.026	31.160	31.376	0.920	0.812	0.217	32.074	32.106	32.026	32.226
M 33	2	31.701	30.546	30.835	1.227	1.083	0.289	31.754	31.791	31.701	31.925
M 33	3	31.051	29.319	29.752	1.840	1.624	0.433	31.115	31.157	31.051	31.316
M 35	1.5	34.026	33.160	33.376	0.920	0.812	0.217	34.074	34.106	34.026	34.226
M 35	2	33.701	32.546	32.835	1.227	1.083	0.289	33.754	33.791	33.701	33.925
M 36	1.5	35.026	34.160	34.376	0.920	0.812	0.217	35.074	35.106	35.026	35.226
M 36	2	34.701	33.546	33.835	1.227	1.083	0.289	34.754	34.791	34.701	34.925
M 36	3	34.051	32.319	32.752	1.840	1.624	0.433	34.115	34.157	34.051	34.316
M 38	1.5	37.026	36.160	36.376	0.920	0.812	0.217	37.074	37.106	37.026	37.226
M 39	1.5	38.026	37.160	37.376	0.920	0.812	0.217	38.074	38.106	38.026	38.226
M 39	2	37.701	36.546	36.835	1.227	1.083	0.289	37.754	37.791	37.701	37.925
M 39	3	37.051	35.319	35.752	1.840	1.624	0.433	37.115	37.157	37.051	37.316
M 40	1.5	39.026	38.160	38.376	0.920	0.812	0.217	39.074	39.106	39.026	39.226
M 40	2	38.701	37.546	37.835	1.227	1.083	0.289	38.754	38.791	38.701	38.925
M 40	3	38.051	36.319	36.752	1.840	1.624	0.433	38.115	38.157	38.051	38.316
M 42	1.5	41.026	40.160	40.376	0.920	0.812	0.217	41.074	41.106	41.026	41.226
M 42	2	40.701	39.546	39.835	1.227	1.083	0.289	40.754	40.791	40.701	40.925
M 42	3	40.051	38.319	38.752	1.840	1.624	0.433	40.115	40.157	40.051	40.316
M 45	1.5	44.026	43.160	43.376	0.920	0.812	0.217	44.074	44.106	44.026	44.226
M 45	2	43.701	42.546	42.835	1.227	1.083	0.289	43.754	43.791	43.701	43.925
M 45	3	43.051	41.319	41.752	1.840	1.624	0.433	43.115	43.157	43.051	43.316
M 48	1.5	47.026	46.160	46.376	0.920	0.812	0.217	47.077	47.111	47.026	47.238
M 48	2	46.701	45.546	45.835	1.227	1.083	0.289	46.758	46.796	46.701	46.937
M 48	3	46.051	44.319	44.752	1.840	1.624	0.433	46.118	46.163	46.051	46.331
M 50	1.5	49.026	48.160	48.376	0.920	0.812	0.217	49.077	49.111	49.026	49.238
M 50	2	48.701	47.546	47.835	1.227	1.083	0.289	48.758	48.796	48.701	48.937
M 50	3	48.051	46.319	46.752	1.840	1.624	0.433	48.118	48.163	48.051	48.331
M 52	1.5	51.026	50.160	50.376	0.920	0.812	0.217	51.077	51.111	51.026	51.238
M 52	2	50.701	49.546	49.835	1.227	1.083	0.289	50.758	50.796	50.701	50.937
M 52	3	50.051	48.319	48.752	1.840	1.624	0.433	50.118	50.163	50.051	50.331
M 55	1.5	54.026	53.160	53.376	0.920	0.812	0.217	54.077	54.111	54.026	54.238
M 55	2	53.701	52.546	52.835	1.227	1.083	0.289	53.758	53.796	53.701	53.937
M 55	3	53.051	51.319	51.752	1.840	1.624	0.433	53.118	53.163	53.051	53.331
M 56	1.5	55.026	54.160	54.376	0.920	0.812	0.217	55.077	55.111	55.026	55.238
M 56	2	54.701	53.546	53.835	1.227	1.083	0.289	54.758	54.796	54.701	54.937
M 56	3	54.051	52.319	52.752	1.840	1.624	0.433	54.118	54.163	54.051	54.331
M 58	1.5	57.026	56.160	56.376	0.920	0.812	0.217	57.077	57.111	57.026	57.238
M 58	2	56.701	55.546	55.835	1.227	1.083	0.289	56.758	56.796	56.701	56.937
M 58	3	56.051	54.319	54.752	1.840	1.624	0.433	56.118	56.163	56.051	56.331
M 60	1.5	59.026	58.160	58.376	0.920	0.812	0.217	59.077	59.111	59.026	59.238
M 60	2	58.701	57.546	57.835	1.227	1.083	0.289	58.758	58.796	58.701	58.937
M 60	3	58.051	56.319	56.752	1.840	1.624	0.433	58.118	58.163	58.051	58.331
Metric thread MB(old UNI 160 Profile)										**Nut tolerance SH8**	
M 2,3	0.25	2.138	1.976	1.976	0.162	0.162	0.030	2.144	2.156	2.138	2.194
M 2,6	0.35	2.373	2.146	2.146	0.227	0.227	0.040	2.393	2.407	2.373	2.429

UNIFIED COARSE THREADS
UNIFIED GROBGEWINDE

Nominal dimensions as per ANSI B1.1
Production tolerances on tap flank diameter for 2B class nut threads
Limit dimensions-Nut threads as per ANSI B1.1, 2B-3B tolerance classes

Dimensions in mm

$H = 0.86603P$

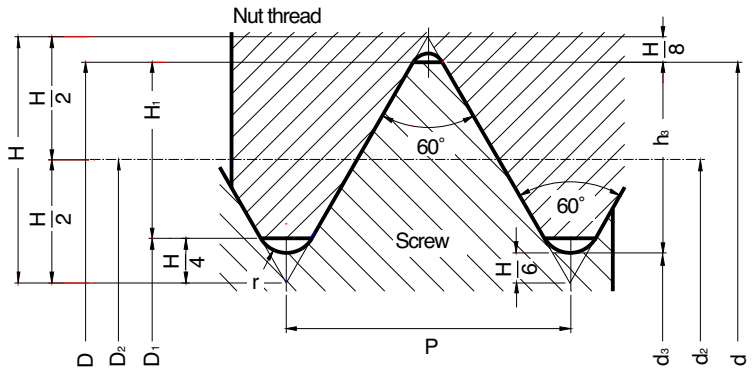
$H_1 = \frac{5}{8}H = 0.54127P$

$h_3 = \frac{17}{24}H = 0.61343P$

$d_2 = D_2 = d - \frac{3}{4}H = d - 0.64952P$

$d_3 = d - 2h_3 = d - 1.22687P$

$r = \frac{H}{6} = 0.14434P$



Nominal diameter	T.P.I	Pitch	External diameter	Flank diameter	Minor diameter		Flank diameter Tap tolerance 2B		Flank diameter Nut tolerance		
					Nut	Screw	min.	max.	min. 2B/3B	max. 2B	max. 3B
		P	d = D	$d_2 = D_2$	D_1	d_3					
UNC#1	- 64	0.397	1.854	1.598	1.425	1.367	1.610	1.623	1.598	1.664	1.646
UNC# 2	- 64	0.454	2.184	1.890	1.694	1.628	1.902	1.915	1.890	1.961	1.943
UNC#3	- 48	0.529	2.515	2.172	1.941	1.864	2.184	2.197	2.172	2.248	2.228
UNC# 4	- 40	0.635	2.845	2.433	2.156	2.065	2.446	2.459	2.433	2.517	2.494
UNC# 5	- 40	0.635	3.175	2.764	2.487	2.395	2.776	2.789	2.764	2.847	2.827
UNC# 6	- 32	0.794	3.505	2.990	2.647	2.532	3.105	3.028	2.990	3.084	3.058
UNC# 8	- 32	0.794	4.166	3.650	3.307	3.193	3.675	3.688	3.650	3.746	3.721
UNC# 10	- 24	1.058	4.826	4.138	3.680	3.528	4.163	4.176	4.138	4.247	4.219
UNC# 12	- 24	1.058	5.486	4.798	4.341	4.188	4.823	4.836	4.798	4.910	4.882
UNC 1/4"	- 20	1.270	6.350	5.524	4.976	4.793	5.575	5.588	5.524	5.646	5.616
UNC 5/16"	- 18	1.411	7.938	7.021	6.411	6.205	7.071	7.084	7.021	7.155	7.120
UNC 3/8"	- 16	1.588	9.525	8.494	7.805	7.577	8.545	8.557	8.494	8.639	8.603
UNC 7/16"	- 14	1.814	11.112	9.934	9.149	8.887	9.985	9.997	9.934	10.089	10.051
UNC 1/2"	- 13	1.954	12.700	11.430	10.584	10.302	11.481	11.494	11.430	11.595	11.552
UNC 9/16"	- 12	2.117	14.288	12.913	11.996	11.692	12.964	12.977	12.913	13.086	13.043
UNC 5/8"	- 11	2.309	15.875	14.376	13.376	13.043	14.427	14.440	14.376	14.559	14.514
UNC 3/4"	- 10	2.540	19.050	17.399	16.229	15.933	17.450	17.463	17.399	17.595	17.544
UNC 7/8"	- 9	2.822	22.225	20.391	19.169	18.763	20.455	20.467	20.391	20.599	20.546
UNC 1"	- 8	3.175	25.400	23.338	21.963	21.504	23.401	23.414	23.338	23.561	23.505
UNC 1*1/8"	- 7	3.629	28.575	26.218	24.648	24.122	26.294	26.319	26.218	26.457	26.398
UNC 1*1/4"	- 7	3.629	31.750	29.393	27.823	27.297	29.469	29.494	29.393	29.637	29.576
UNC 1*3/8"	- 6	4.233	34.925	32.174	30.343	29.731	32.250	32.276	32.174	32.438	32.372
UNC 1*1/2"	- 6	4.233	38.100	35.349	33.518	32.906	35.425	35.451	35.349	35.616	35.550
UNC 1*3/4"	- 5	5.080	44.450	41.151	38.951	38.217	41.241	41.266	41.151	41.445	41.372
UNC 2"	- 4 1/2	5.644	50.800	47.135	44.689	43.876	47.235	47.260	47.135	47.450	47.371
UNC 2*1/4"	- 4 1/2	5.644	57.150	53.485	51.039	50.226			53.485	53.805	53.726
UNC 2*1/2"	- 4	6.350	63.500	59.375	56.627	55.710			59.375	59.718	59.632
UNC 2*3/4"	- 4	6.350	69.850	65.725	62.977	62.060			65.725	66.073	65.987
UNC 3"	- 4	6.350	76.200	72.075	69.327	68.410			72.075	72.428	72.339
UNC 3*1/4"	- 4	6.350	82.550	78.425	75.677	74.760			78.425	78.783	78.694
UNC 3*1/2"	- 4	6.350	88.900	84.775	82.027	81.110			84.775	85.183	85.049
UNC 3*3/4"	- 4	6.350	95.250	91.125	88.377	87.460			91.125	91.493	91.402
UNC 4"	- 4	6.350	101.600	97.475	94.727	93.810			97.475	97.848	97.757

TECHNICAL DATA

SUPER CUTTING TAPS
HOCHLEISTUNGS GEWINDEBOHRER

UNIFIED FINE THREADS
UNIFIED FEINGEWINDE

Nominal dimensions as per ANSI B1.1
Production tolerances on tap flank diameter for 2B class nut threads
Limit dimensions-Nut threads as per ANSI B1.1, 2B-3B tolerance classes

Dimensions in mm

$H = 0.86603P$

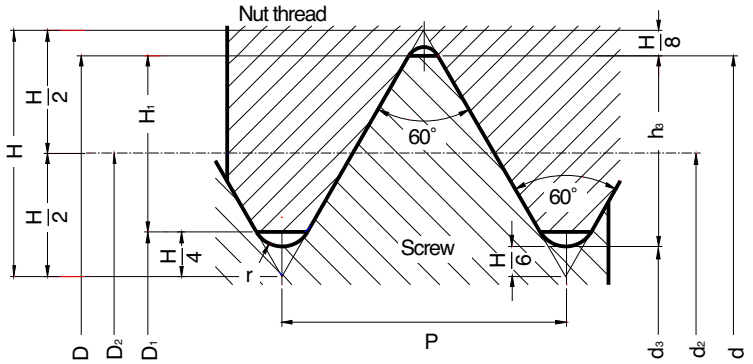
$H_1 = \frac{5}{8}H = 0.54127P$

$h_3 = \frac{17}{24}H = 0.61343P$

$d_2 = D_2 = d - \frac{3}{4}H = d - 0.64952P$

$d_3 = d - 2h_3 = d - 1.22687P$

$r = \frac{H}{6} = 0.14434P$



Nominal diameter	T.P.I	Pitch	External diameter	Flank diameter	Minor diameter		Flank diameter Tap tolerance 2B		Flank diameter Nut tolerance		
					Nut	Screw	min.	max.	min. 2B/3B	max. 2B	max. 3B
		P	d = D	$d_2 = D_2$	D_1	d_3					
UNF#0	- 80	0.318	1.524	1.318	1.181	1.135	1.331	1.344	1.318	1.377	1.361
UNF#1	- 72	0.353	1.854	1.626	1.473	1.422	1.638	1.651	1.626	1.689	1.674
UNF#2	- 64	0.397	2.184	1.928	1.755	1.697	1.941	1.953	1.928	1.996	1.979
UNF#3	- 56	0.454	2.515	2.220	2.024	1.958	2.233	2.245	2.220	2.291	2.273
UNF#4	- 48	0.529	2.845	2.502	2.271	2.195	2.515	2.527	2.502	2.581	2.560
UNF#5	- 44	0.577	3.175	2.799	2.550	2.466	2.812	2.824	2.799	2.880	2.860
UNF#6	- 40	0.635	3.505	3.094	2.817	2.725	3.108	3.119	3.094	3.180	3.157
UNF#8	- 36	0.706	4.166	3.708	3.401	3.299	3.721	3.734	3.708	3.800	3.777
UNF#10	- 32	0.794	4.826	4.310	3.967	3.853	4.336	4.348	4.310	4.409	4.384
UNF#12	- 28	0.907	5.486	4.897	4.503	4.374	4.923	4.935	4.897	5.004	4.976
UNF 1/4"	- 28	0.907	6.350	5.761	5.367	5.237	5.799	5.812	5.761	5.870	5.842
UNF 5/16"	- 24	1.058	7.938	7.249	6.792	6.640	7.287	7.300	7.249	7.371	7.341
UNF 3/8"	- 24	1.058	9.525	8.837	8.379	8.227	8.875	8.887	8.837	8.961	8.931
UNF 7/16"	- 20	1.270	11.112	10.287	9.738	9.555	10.338	10.351	10.287	10.424	10.391
UNF 1/2"	- 20	1.270	12.700	11.874	11.326	11.143	11.925	11.938	11.874	12.017	11.981
UNF 9/16"	- 18	1.411	14.288	13.371	12.761	12.555	13.421	13.434	13.371	13.520	13.482
UNF 5/8"	- 18	1.411	15.875	14.958	14.348	14.143	15.009	15.022	14.958	15.110	15.072
UNF 3/4"	- 16	1.588	19.050	18.019	17.330	17.102	18.070	18.082	18.019	18.184	18.143
UNF 7/8"	- 14	1.814	22.225	21.046	20.262	20.000	21.110	21.123	21.046	21.224	21.181
UNF 1"	- 12	2.117	25.400	24.026	23.109	22.804	24.089	24.102	24.026	24.219	24.171
UNF 1*1/8"	- 12	2.117	28.575	27.201	26.284	25.979	27.252	27.277	27.201	27.339	27.351
UNF 1*1/4"	- 12	2.117	31.750	30.376	29.459	29.154	30.427	30.452	30.376	30.579	30.528
UNF 1*3/8"	- 12	2.117	34.925	33.551	32.634	32.329	33.602	33.627	33.551	33.759	33.706
UNF 1*1/2"	- 12	2.117	38.100	36.726	35.809	35.504	36.777	36.802	36.726	36.937	36.886

WHITWORTH PIPE THREADS
WHITWORTH ROHRGEWINDE

Nominal dimensions ISO 228/1-UNI 338-66
Production tolerances on tap flank diameter
Limit dimensions for internal threads

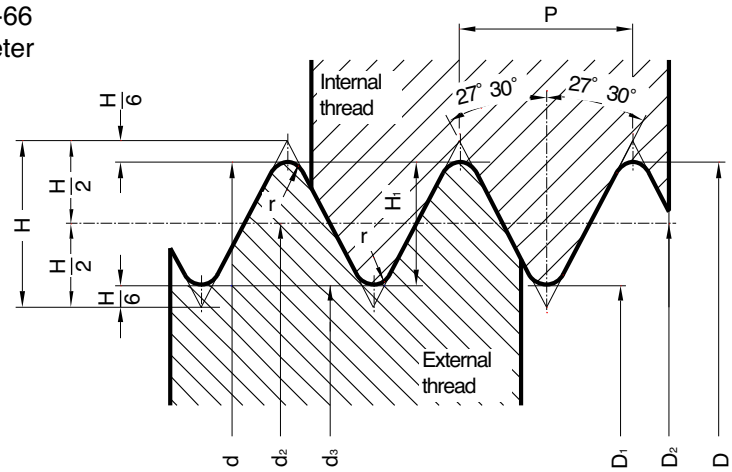
Dimensions in mm

$P = \frac{25.4}{z}$

$H = 0.960491\ P$

$H_1 = 0.640327\ P$

$r = 0.137329\ P$



Type	Thread diameter	Pitch	T.P.I	Flank diameter	Minor diameter	H1	r	Tap Flank diameter		Internal Thread Flank diameter	
								min.	max.	min.	max.
(1)	d = D	P	z	d2 = D2	d3 = d1		≈	d2			
G 1/8"	9.728	0.907	28	9.147	8.566	0.581	0.125	9.177	9.194	9.147	9.254
G 1/4"	13.147	1.337	19	12.301	11.445	0.856	0.184	12.336	12.356	12.301	12.426
G 3/8"	16.662	1.337	19	15.806	14.950	0.856	0.184	15.841	15.861	15.806	15.933
G 1/2"	20.955	1.814	14	19.793	18.631	1.162	0.249	19.828	19.848	19.793	19.935
G 5/8"	22.911	1.814	14	21.749	20.587	1.162	0.249	21.784	21.804	21.749	21.891
G 3/4"	26.441	1.814	14	25.279	24.117	1.162	0.249	25.314	25.334	25.279	25.421
G 7/8"	32.201	1.814	14	29.039	27.877	1.162	0.249	29.074	29.094	29.039	29.181
G 1"	33.249	2.309	11	31.770	30.291	1.479	0.317	31.815	31.839	31.770	31.950
G 1*1/8"	37.897	2.309	11	36.418	34.939	1.479	0.317	36.463	36.487	36.418	36.598
G 1*1/4"	41.910	2.309	11	40.431	38.952	1.479	0.317	40.476	40.500	40.431	40.611
G 1*3/8"	44.323	2.309	11	42.844	41.365	1.479	0.317	42.889	42.913	42.844	43.024
G 1*1/2"	47.803	2.309	11	46.324	44.845	1.479	0.317	46.374	46.398	46.324	46.504
G 1*3/4"	53.746	2.309	11	52.267	50.788	1.479	0.317	52.327	52.354	52.267	52.447
G 2"	59.614	2.309	11	58.135	56.656	1.479	0.317	58.195	58.222	58.135	58.315
G 2*1/4"	65.710	2.309	11	64.231	62.752	1.479	0.317	64.291	64.318	64.231	64.448
G 2*3/8"	69.398	2.309	11	67.919	66.440	1.479	0.317	67.979	68.006	67.919	68.136
G 2*1/2"	75.184	2.309	11	73.705	72.226	1.479	0.317	73.765	73.792	73.705	73.922
G 2*3/4"	81.534	2.309	11	80.055	78.576	1.479	0.317	80.127	80.157	80.055	80.272
G 3"	87.884	2.309	11	86.405	84.926	1.479	0.317	86.477	86.507	86.405	86.622
G 3*1/4"	93.980	2.309	11	92.501	91.022	1.479	0.317	92.573	92.603	92.501	92.718
G 3*1/2"	100.330	2.309	11	98.851	97.372	1.479	0.317	98.923	98.953	98.851	99.068
G 3*3/4"	106.680	2.309	11	105.201	103.722	1.479	0.317	105.273	105.303	105.201	105.418
G 4"	113.030	2.309	11	111.551	110.072	1.479	0.317	111.623	111.653	111.551	111.768
G 4*1/2"	125.730	2.309	11	124.251	122.772	1.479	0.317				
G 5"	138.430	2.309	11	136.951	135.472	1.479	0.317				
G 5*1/2"	151.130	2.309	11	149.651	148.172	1.479	0.317				
G 6"	163.830	2.309	11	162.351	160.872	1.479	0.317				

(1) - This type is conventional:originally the value in inches was the internal pipe diameter.

TECHNICAL DATA

SUPER CUTTING TAPS
HOCHLEISTUNGS GEWINDEBOHRER

INTERESTING HINTS FOR TAPPING
HINWEISE ZUM GEWINDESCHNEIDEN

Optimum tapping conditions reduce effective machining times and increase tap life.
Optimale Bedingungen beim Gewindeschneiden reduzieren die Maschinenhauptzeiten und erhöhen die Standzeit.

Selection of the most suitable tap
Auswahl des geeigneten Gewindebohrers

Which types of tap or whether or not a thread former can be used, depends on the type of material to be machined.
As a general guide, materials with an extension of at least 10% can be cold-formed.
To determine the most suitable tap, refer to the tap recommendation table on pages 356 to 363.
Welcher Typ Gewindebohrer oder ob ein Gewindeformer eingesetzt werden kann, hängt von dem zu bearbeitenden Werkstoff ab.
Als allgemeiner Leitwert gilt, daß Werkstoffe mit mindestens 10% Dehnung kaltgeformt werden können.
Zur Bestimmung des optimalen Gewindebohrers nutzen Sie die Empfehlungstabelle auf den Seiten 356 bis 363.

Core holes
Kernlöcher

- Core holes should be clean and swarf-free.
- Core holes should be of the prescribed size, see chart extract on page 583-584 of this catalogue, and dependent on the actual application, selected towards the upper diameter limit.
- Kernlöcher sollten sauber und spanfrei sein.
- Kernlöcher sollten die angegebenen Durchmesser haben, siehe Seiten 583 und 584, und abhängig vom aktuellen Einsatzfall, zur größtmöglichen Durchmesserangabe tendieren.

Lubricant in relation to machining centers
Schmiermitteleinsatz auf Bearbeitungszentren

Frequently the coolants used on machining centers are unsatisfactory for tapping because their percentage lubricant content is too low. If it is not possible to increase the percentage of lubricant in the emulsion, the lubrification problem can be solved in other ways, i.e.:
Meistens sind die gebräuchlichen Kühlmittel in Bearbeitungszentren zum Gewindeschneiden nicht geeignet, weil ihr Anteil an Schmierstoffen zu gering ist. Wenn es nicht möglich ist, den Anteil an Schmierstoffen in der Emulsion zu erhöhen, kann das Schmierproblem in anderer Weise gelöst werden, z. B.:

Lubricating with concentrated emulsion **Schmierung mit konzentrierter Emulsion**

A. A lubricating unit, connected to the machine control, delivers at the required instant a specific quantity of concentrated emulsion into the core hole or onto the tap.
B. A pump in a separate tank, controlled by the machine, delivers a specific amount of concentrate into the core hole.
A. Eine Schmiervorrichtung, die mit der Maschinensteuerung verbunden ist, gibt zum gewünschten Zeitpunkt eine bestimmte Menge konzentrierter Emulsion in das Kernloch oder auf den Gewindebohrer ab.
B. Eine Pumpe mit separatem Tank, mit der Maschinensteuerung verbunden, gibt eine bestimmte Menge des Konzentrats in das Kernloch

Tapping in separate operations **Gewindeschneiden als separater Bearbeitungsgang**
This procedure allows the use of the ideal tapping lubricant.
Dies erlaubt den Einsatz des idealen Gewindeschneid Schmiermittels.

Cutting speeds for taps
Schnittgeschwindigkeiten für Gewindebohrer

The cutting speed has a great influence on chip flow and the life of the tap.
It is worthwhile to establish the ideal cutting speed by tapping trials.
Guide values see on the recommendation table page 364. The cutting speed should be in relation to the characteristics of the material, the machine and its equipment.
Die Schnittgeschwindigkeit hat großen Einfluss auf den Spanabgang und die Lebensdauer des Gewindebohrers.
Bei Großserien ist es lohnend, die ideale Schnittgeschwindigkeit durch Versuche zu ermitteln.
Leitwerte finden Sie in der Empfehlungstabelle Seite 364. Die Schnittgeschwindigkeit sollte auf den Werkstoff, die Maschine und das Umfeld abgestimmt sein.

Effects of unsuitable cutting speed **Die Folgen falscher Schnittgeschwindigkeiten**
- forced tapping Zu hoher Kraftaufwand
- tap lead chipping caused by overloaded cutting tooth Beschädigte Steigung durch überlastete Schneide
- torn threads Verschnittenes Gewinde
- unsatisfactory tap-life Ungenügende Standzeit
- rejected threads Ausschuss

Cold welding
Kaltaufschweißung

What are the causes of cold welding? Was sind die Gründe für eine Kaltaufschweißung?
- unsuitable tap selection Ungeeignete Gewindebohrer Auswahl
- tap with incorrect cutting geometry Gewindebohrer mit falscher Schneidengeometrie
- coolant unsuitable for material Kühlmittel ungeeignet für den Werkstoff
- insufficient coolant Unzureichende Kühlung
- axial pressure (pull or push) on the tap Axialer Druck (Zug oder Druck) auf den Gewindebohrer
- core hole too small Kernloch zu klein
- breaks in walls of core hole Risse in der Wand des Kernlochs
- speed too high or too low Schnittgeschwindigkeit zu hoch oder zu klein
- swarf trapped in the hole Verklemmter Span im Kernloch
- incorrect alignment of tap and core hole Achsversatz zwischen Gewindebohrer und Kernloch
- tap eccentricity Gewindebohrer läuft unrun

Effects of cold welding: Die Folgen von Kaltaufschweißungen
- torn threads verschnittene Gewinde
- short tap life kurze Standzeit
- rejected threads Ausschuss
- tap breakage Werkzeugbruch
- scrap workpieces schrottreife Werkstücke

Tap mounting
Gewindebohrer einspannen

- The tap must be mounted on the axis of the core hole.
- On non-synchronized machines (feed / speed) we recommend the use of a tapping spindle.
- Die Achsen von Gewindebohrer und Kernloch müssen genau fluchten.
- Auf nicht synchronisierten Maschinen (Vorschub / Schnittgeschwindigkeit) empfehlen wir den Einsatz einer Gewindeschneidspindel.

Tapping heads
Gewindeschneidköpfe

With non-synchronized machine spindles (feed / speed) the feed rate should as a rule be programmed approx. 5-10% lower than the thread pitch. In these cases a tapping chuck must be used which will compensate the difference between the feed rate and the thread pitch.
It is important that the tension spring in the axial compensation is set to a light rate to avoid axially loading the tap.
The compression spring should be tensioned so that the tap starts to cut by compressing the spring at the most up to one half pitch.
Bei nicht synchronisierten Maschinenspindeln (Vorschub / Schnittgeschwindigkeit) sollte der Vorschub in der Regel 5 – 10% kleiner sein als die Gewindesteigung. In diesen Fällen muss ein
Gewindeschneidfutter verwendet werden, das die Differenz zwischen dem Vorschub und der Gewindesteigung ausgleicht.
Es ist wichtig, daß die Spannfeder im axialen Ausgleich locker eingestellt wird, um eine zu große axiale Belastung des Gewindebohrers zu vermeiden.
Die Druckfeder sollte so gespannt sein, daß der Gewindebohrer zu schneiden beginnt, wenn die Feder bei höchstens einer halben Steigung gespannt ist.

Important hints: **Wichtige Hinweise :**
Ensure that the correct speed is selected.
Ensure that ample lubricating coolant is used when tapping.
Good machine and equipment stability is essential for optimum quality and performance.
Sorgen Sie für die richtige Schnittgeschwindigkeit.
Sorgen Sie dafür, daß reichlich Kühlschmiermittel beim Gewindeschneiden verwendet wird.
Gute Stabilität von Maschine und Vorrichtungen ist die Grundlage für optimale Qualität und Leistung.

TECHNICAL DATA

SUPER CUTTING TAPS
HOCHLEISTUNGS GEWINDEBOHRER

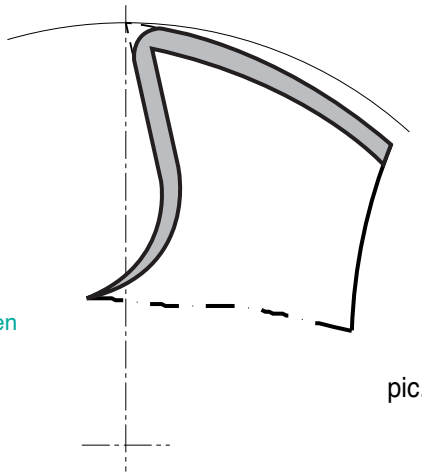
APPLICATION AND USE OF THREADING TAPS
FEHLER UND ABHILFEN BEIM GEWINDESCHNEIDEN

Problem / FEHLER	Causes / URSACHEN	Solutions / LOSUNGEN
Tapped hole oversize **Gewinde zu groß**	Incorrect tap in use (cutting geometry unsuitable for application) Falscher Gewindebohrer im Einsatz (Schneidengeometrie ungeeignet)	Use tap selected from the relevant material group Einen fur den Werkstoff geeigneten Gewindebohrer auswahlen
	Faulty alignment Fehlerhafte Fluchtung	Ensure that the tap is correctly aligned with the core hole axis Dafur sorgen, daß Gewindebohrer und Kernloch axial genau fluchten
	Cold welding Kaltaufschweißung	Improve lubrication and direction of coolant Adjust cutting speed Schmierung und Ausrichtung des Kuhlstrahls verbessern Schnittgeschwindigkeit korrigieren
	Re-ground tap (lead-in is not concentric) Nachgescharfter Gewindebohrer (Anschnitt nicht konzentrisch)	Regrind tap lead correctly on a suitable tap grinding machine Anschnitt fehlerfrei auf geeigneter Schleifmaschine nachschleifen
Stripped threads **Gewinde verschnitten**	Incorrect tap in use (cutting geometry incorrect for application) Falscher Gewindebohrer im Einsatz (Schneidengeometrie ungeeignet)	Use a tap from the relevant material group. Einen fur den Werkstoff geeigneten Gewindebohrer auswahlen
	Spindle speed and feed rate not synchronized Spindelgeschwindigkeit und Vorschub sind nicht aufeinander abgestimmt	Check feed rate programming and / or pitch of leading spindle Use a tapping spindle with axial float Vorschub und / oder Steigung der Spindel uberprufen Gewindeschneidspindel mit axialem Ausgleich verwenden
	Insufficient start pressure exerted on tap with peel-cut Unzureichender Startdruck auf einen Gewindebohrer mit Schalanschnitt	Increase start pressure Startdruck erhohen
Bell mouthed tapped hole **Gewinde trichterformig**	Incorrect start pressure applied to tap Falscher Gewindebohrer im Einsatz	Use a tapping spindle with axial float Gewindeschneidspindel mit axialem Ausgleich verwenden
Unsatisfactory thread surface finish **Gewinde zu rau**	Incorrect tap in use (Cutting geometry unsuitable for application) Falscher Gewindebohrer im Einsatz (Schneidengeometrie ungeeignet)	Select tap from the relevant material group Einen fur den Werkstoff geeigneten Gewindebohrer auswahlen
	The tap is blunt Die Schneiden sind stumpf	Replace or re-grind tap Neuen oder nachgescharften Gewindebohrer einsetzen
	Tap badly re-ground Der Gewindebohrer ist schlecht nachgescharft	Re-grind tap again. Check that cutting geometry is suitable for material Gewindebohrer korrekt nachschleifen Prufen, ob die Schneidengeometrie fur den Werkstoff geeignet ist
	Coolant lacking in lubricating qualities and / or quantity Kuhlmittel mit unzureichendem Schmiermittelanteil	Ensure the use of a suitable coolant and an ample supply Fur qualitativ und quantitativ gute Kuhlung und Schmierung sorgen

Problem / FEHLER	Causes / URSACHEN	Solutions / LOSUNGEN
Partial chipping of tap **Gewinde ist unfertig**	Swarf jamming Spanestau	Check cutting speed Use alternative tap type Schnittgeschwindigkeit prufen Andere Gewindebohrertype wahlen
	Tap has jammed against bottom of core hole Gewindebohrer ist auf den Grund des Kernlochs gefahren	Check hole and thread depths Drill core hole deeper Kernlochtiefe und Gewindelange prufen Kernloch tiefer bohren
	Tap incorrectly re-ground (lead-in diameter too small therefore too few cutting teeth) Gewindebohrer ist schlecht nachgescharft (Anschnittdurchmesser zu klein, deshalb zu wenige schneidende Zahne)	Ensure that original values ore maintained when regrinding Beim Nachscharfen auf originale Geometrie achten
	Irregular workpiece material structure Materialfehler im Werkstuck	Adjust cutting speed Improve lubricating quality of coolant Schnittgeschwindigkeit anpassen Die Schmierfahigkeit des Kuhlmittels verbessern
Excessive tap wear **Ubermaßiger Verschleiß des Gewindebohrers**	Incorrect cutting speed Falsche Schnittgeschwindigkeit	Adjust cutting speed to suit workpiece material Schnittgeschwindigkeit dem Werkstoff anpassen
	Coolant lacking in lubricating qualities and / or quantity Kuhlmittel mit unzureichender Schmierqualitat oder ?menge	Ensure the use of a suitable coolant and an ample supply Fur qualitative und quantitative gute Kuhlung und Schmierung sorgen Check that coolant is reaching the cutting zone Prufen, ob das Kuhlmittel den Schnittbereich erreicht
	Surface of the core hole is compacted Verfestigte Bohrungswand des Kernlochs	Check core hole drilling conditions (drill carefully to reduce risk of surface compacting) Einsatzwerte beim Kernlochbohren prufen (vorsichtig bohren um eine Aufhartung der Bohrungswand zu vermeiden) Check drill cutting edges Bohrerschneiden uberprufen
Tap breakage **Bruch des Gewindebohrers**	Incorrect tap in use (cutting geometry unsuitable for application) Falscher Gewindebohrer im Einsatz (Schneidengeometrie ungeeignet)	Use tap from the relevant material group Einen fur den Werkstoff geeigneten Gewindebohrer auswahlen
	Centering error Fehlerhafte Fluchtung	Ensure that axes of tap and core hole are aligned Dafur sorgen, daß Gewindebohrer und Kernloch axial genau fluchten
	Blunt tap Schneiden sind stumpf	Re-grind tap Neuen oder nachgescharften Gewindebohrer einsetzen Ensure that taps are stored carefully Auf sorgfaltige Lagerung der Gewindebohrer achten
	Tap has reached bottom of core hole Gewindebohrer ist auf den Grund des Kernlochs gefahren	Use tapping spindle with axial float and slipping clutch Gewindeschneidspindel mit axialem Ausgleich und Rutschkupplung verwenden
	Core hole too small Kernloch ist zu klein	Select core hole as per chart, pages 583～584 of this catalogue Kernloch Durchmesser auf der Tabelle Seite 583 u. 584 auswahlen

6 RESHARPENING
NACHSCHARFEN

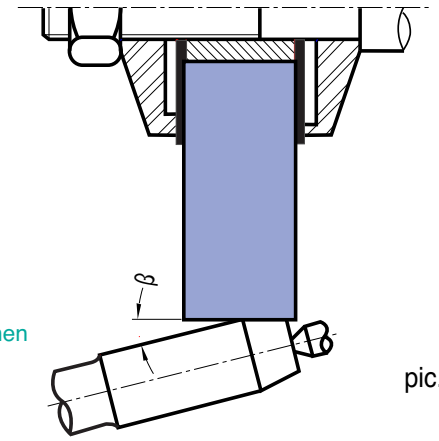
The resharpening on taps is done for regenerating the active hedges weared by the destructive action of cutting and of friction, it has high importance for an economical exploitation of the tool and so far has to be made rationally, keeping away from wrong operations which can heavily compromise the accuracy and the life.
In order to execute the tap resharpening quickly and accurately we recommend the use of proper resharpening machines having all necessary equipments for this operation.
The tap resharpening take place in two steps:
a) resharpening of (relieved) chamfer;
b) resharpening of flutes. (See picture 1)
Das Nachscharfen der Gewindebohrer dient der Erneuerung der verschlissenen Schneidkanten.
Es ist wichtig, um das Leistungsvermogen des Werkzeugs voll auszuschopfen und muss daher prazise durchgefuhrt werden, um Fehler zu vermeiden, die die Prazision des Gewindes und die Standzeit beeintrachtigen.
Um das Nachscharfen schnell und prazise durchzufuhren, empfehlen wir den Einsatz von geeigneten Schleifmaschinen mit dem notwendigen Zubehor.
Das Nachscharfen der Gewindebohrer erfolgt in zwei Stufen :
a) scharfen der Freiflachen im Anschnitt;
b) scharfen der Nuten (Spanflache) (siehe Abb. 1)



pic. 1

RESHARPENING OF (RELIEVED) CHAMFER
RESHARPENING OF (RELIEVED) CHAMFER

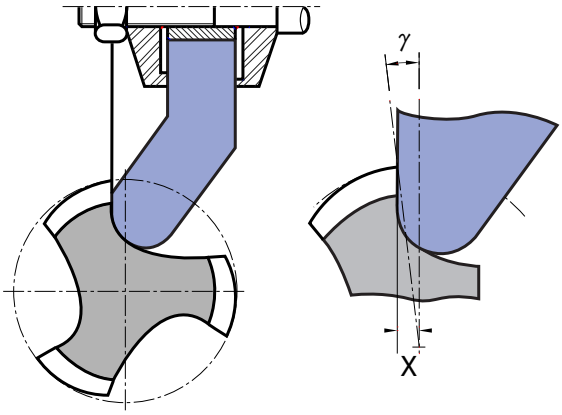
The chamfer resharpening must be executed both on specific for taps machines or on conventional resharpening machines equipped with an auxiliary system proper to generate the circular relief on back.
The picture 2 shows the resharpening made with the cylindrical surface of a grinding wheel.
Before resharpening, verify that the tap, fixed between points or on pincer, runs concentrical; verify also the angle β which has to be correct in order to keep the same number of threads on chamfer.
Das Scharfen des Anschnitts muss entweder auf besonderen Gewindeschleifmaschinen erfolgen, oder auf konventionellen Schleifmaschinen mit entsprechenden Vorrichtungen fur einen genauen Hinterschliff.
Abb. 2 zeigt das Nachscharfen mit einer zylindrischen Schleifscheibe.
Vor dem Schleifen uberprufen, ob der Gewindebohrer, zwischen Spitzen oder in einer Spannzange gehalten, rund lauft; prufen Sie auch den Winkel b, der korrekt sein muss, um die gleiche Anzahl Gange im Anschnitt zu haben



pic. 2

RESHARPENING OF FLUTES
NACHSCHARFEN DER NUTEN

This operation must be done on a specific resharpening machine for taps, equipped with:
deviding head, lead screw of "barrasinus" for executing the helix and cooling equipment.
The rake angle γ is obtained moving the tap axis, in relation to the resharpening surface, of an amount X to be calculated with the formula: $X = \frac{1}{2} d_1 \sin \gamma$ (see picture 3).
(d_1=tap major diameter)
Dieser Arbeitsgang muss auf einer speziellen Gewindebohrer ? Schleifmaschine erfolgen, die ausgerustet ist mit :
Teilkopf, Leitspindel zum Schleifen entlang gedrallter Nuten und Kuhlmittelversorgung. Den Spanwinkel g bei Gewindebohrern mit geraden Nuten erhalt man durch Verstellen der Bohrerachse im Verhaltnis zu der zu schleifenden Oberflache um den Einstellwert X, der nach folgender Formel errechnet wird :
X = ? d1 sin g (siehe Abb. 3).
(d1 = Gewindebohrerdurchmesser)

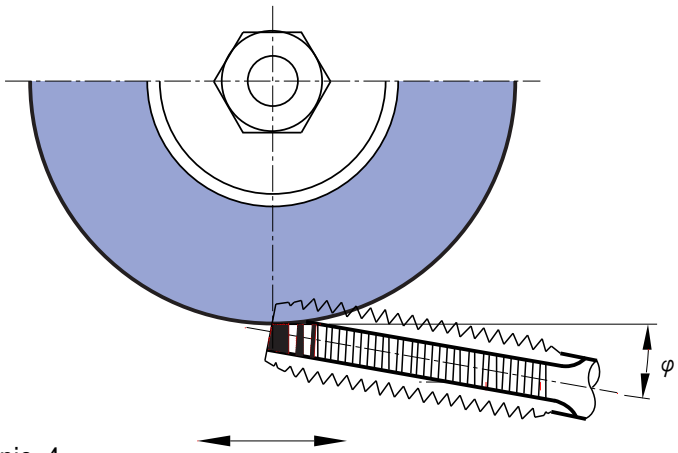


pic. 3

Example:
Tap 10 × 1,5 to cut on steel strength = 600 N/mm²
d_1 = 10mm ; γ = 15° ; sin γ = 0,25882;

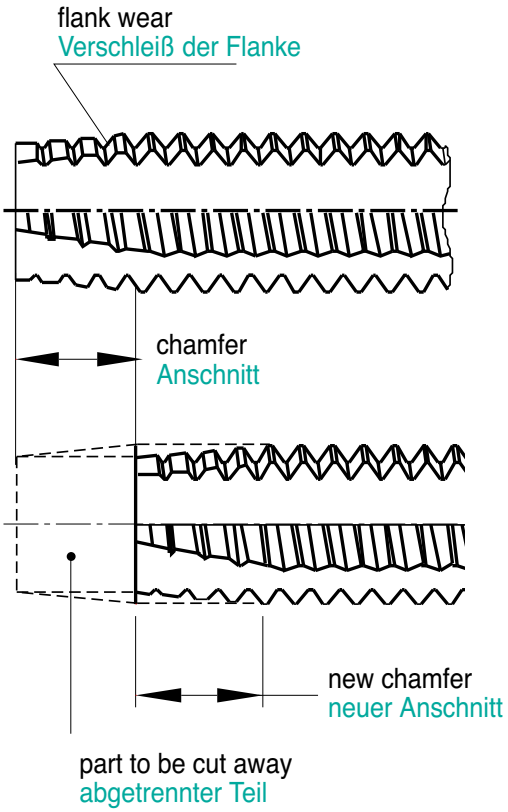
$$X = \frac{0{,}25882 \times 10}{2} \; ; X = 1{,}29\text{mm}$$

On all taps having spiral-flutes, in addition to the trade mark and identification of the dimension and type, it is possible to find also the pitch of the spiral refered to the lead screw necessary for the resharpening.
In case of employment of taps equipped with deburring tool **Burr-Bit** it is necessary to extend the flutes following what suggested by the supplier.
Because the wear on a tap is mainly on the chamfer area, on taps having "gun nose" the resharpening of the flutes can be made on the front area only (see picture 4).
Bei allen Gewindebohrern mit gedrallten Nuten werden allgemein spezielle Schleifmaschinen eingesetzt, die die Drallsteigung messen und selbstandig einstellen konnen.
Beim Einsatz von Gewindebohrern mit dem Entgratwerkzeug Burr-Bit ist es notwenig, die Nuten entsprechend den Vorgaben des Herstellers zu verlangern.
Da der Verschleiß eines Gewindebohrers hauptsachlich im Anschnitt und dem erstenvollen Gewindezahn liegt, konnen Gewindebohrer mit Schalanschnitt und gerader Nute auch nur im vorderen Gewindeteil nachgeschliffen werden (siehe Abb. 4).



pic. 4

It is very important to pay attention that, when also the thread flanks are worn(in addition to the active heges) the resharpening as above described is practically useless.
In this case the "regeneration" is made, by means of cutting completely the chamfer away(this means a shorter tap) and reproducing then the chamfer with same angle and relief. (see picture 5)
The regeneration is also advisable on taps with spiral flutes, because that way the flutes grinding is not necessary, in absence of special resharpening machines with lead screw with proper angle.
Es ist wichtig zu wissen, daß beim Verschleiß der Gewindezahnflanken (zusatzlich zur Hauptschneidenkante) das oben beschriebene Nachschleifen praktisch nutzlos ist !
In diesem Fall wird die ?Erneuerung" dadurch erreicht, daß der Anschnitt komplett abgetrennt wird (das bedeutet eine Kurzung des Gewindebohrers und Verlust der entrierung) und neu angeschliffen wird, mit gleichen Winkeln und Hinterschliff (siehe Abb. 5).
Diese ?Erneuerung" ist auch fur drallgenutete Gewindebohrer zu empfehlen, weil dann das Nutenschleifen entfallt, wenn keine geeignete Schleifmaschine mit Leitspindel vorhanden ist



pic. 5

TECHNICAL DATA

SUPER CUTTING TAPS
HOCHLEISTUNGS GEWINDEBOHRER

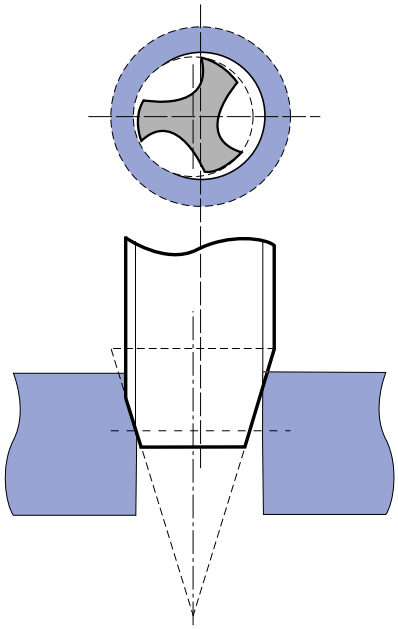
IMPORTANT RECOMMENDATIONS
WICHTIGE EMPFEHLUNGEN

RESHARPEN TIMELY
RECHTZEITIGES NACHSCHARFEN

It is important to resharpen timely the weared tap. In these conditions in fact defective threads can be produced, risking to brake the tool;in addition the wear is increasing quickly, damaging a wide area of the cutter and rapidly.
Es ist wichtig, den Gewindebohrer rechtzeitig nachzuscharfen.
Stumpfe Gewindebohrer konnen defekte Gewinde schneiden,
die Bruchgefahr ist erhoht; zudem nimmt der Verschleiß
schnell zu und zerstort weite Bereiche der Schneiden

PROPER GRINDING WHEELS
RICHTIGE SCHLEIFSCHEIBEN

The structure and grain of grinding wheels must be the right one for the tap to be resharpened. Our technicians are at complete disposal to give the proper recommendations.
Bindung und Korn der Schleifscheiben mussen auf die
Gewindebohrer abgestimmt sein.
Unsere Techniker sind bereit, Ihnen die geeignete Empfehlung zu geben



pic. 6

chamfer out of center
unrund geschliffener Anschnitt

TAPS FOR CAST IRONS
GEWINDEBOHRER FUR GUSS

On these taps the resharpening is rarely possible because, due to cast iron is abrasive, the tap is wearing on flank of the thread and so far out of tolerance.
Bei diesen Gewindebohrern ist Nachscharfen kaum moglich. Der verschleißfordernde Guss greift die Schneidenflanken an, wodurch die Toleranz verloren geht.

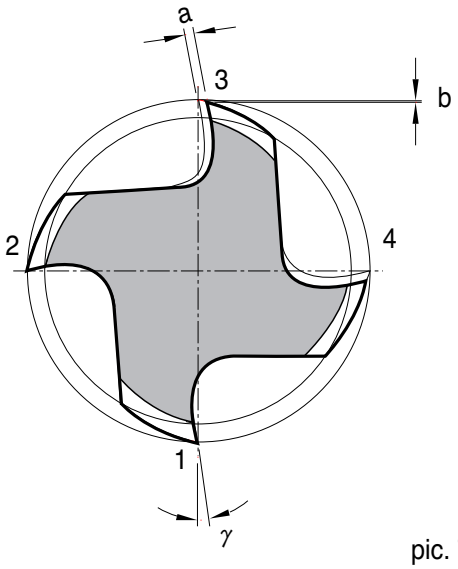
TAPS FOR ALUMINIUM
GEWINDEBOHRER FUR ALUMINIUM

It is advisable, after resharpening as above described, to remove steel burrs from the grinding wheel action.
This operation, easy with iron brushes, avoid the danger of boring or over tolerance tapping instead of accurate tapping.
Es ist empfehlenswert nach dem oben beschriebenen Nachscharfen
Schleifgrate vom Gewindebohrer mit Stahlbursten zu entfernen.
Dadurch wird die Gefahr vermieden, Gewinde zu groß zu schneiden.

CONTROLS (TESTS)
KONTROLLEN (TESTS)

Once resharpened the tap, it is always better to make some tests to obtain correct threads same as when the tap was new.
- The chamfer must be perfectly on axis to avoid the effects of picture 6.
- The cutters must have correct divisions. The results of a resharpening with a wrong division is shown on picture 7.
- The length and number of threads on chamfer must be rigorously identical to those of the new tap.

Nach dem Nachscharfen sollte der Gewindebohrer genau kontrolliert werden um sicher zu stellen, daß er genauso gut schneidet, wie ein neuer Bohrer.
- Der Anschnitt muss genau axial sein, um den Effekt wie in Abb. 7 zu vermeiden.
- Die Schneiden mussen eine genaue Teilung haben. Das Ergebnis des Nachschleifens mit falscher Teilung ist in Abb. 7 zu sehen.
- Die Lange und Anzahl der Gewindegange im Anschnitt muss absolut genau so sein, wie bei einem neuen Gewindebohrer.



pic. 7

incorrect division
Teilungsfehler
cutters not concentric
Schneiden nicht konzentrisch

ORDERS / INQUIRIES SPECIAL TAPS
Bestellungen / Anfragen ; SONDERGEWINDEBOHRER

For photocopying

Orders / Inquiries

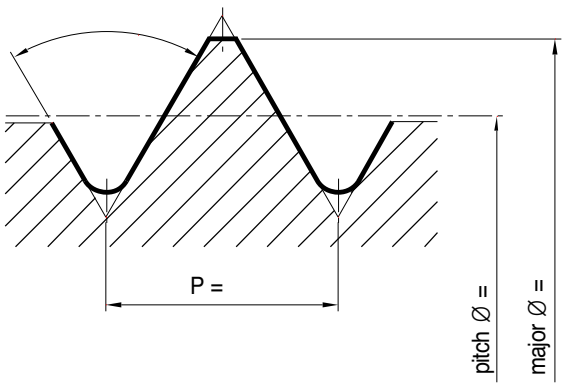
This form may be returned to your local YG-1 distributor or to YG-1.

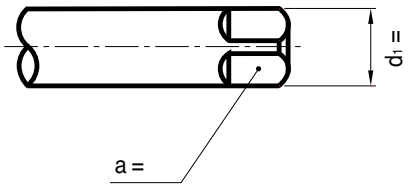
Company _____
Address _____
_____
Department _____
Phone _____

Tool

Thread Ø and pitch _____

_____ Degrees ○ R.H. ○ L.H.

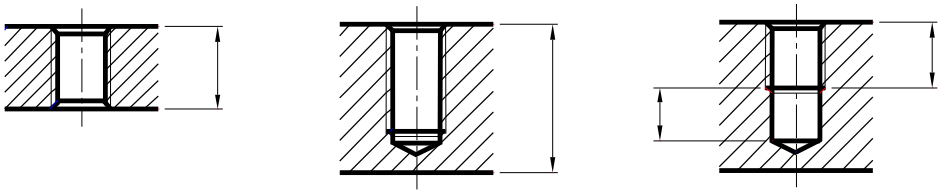




Tolerance class

Overall length _____ mm

Hole



Unusual characteristics of the threaded product or of the tapping method, e.g. counterbore, tapping on an angle, etc. _____

Material to be tapped

Material No. or designation _____
Tensile strength _____ N/mm² _____ HB _____ HRc
Chip form ○ short ○ long
○ Annealed steel ○ Hardened steel ○ Heat treated steel

Special requirements : _____

Person to be contacted within the company _____
Date _____ Signature _____

TECHNICAL DATA

SUPER CUTTING TAPS
HOCHLEISTUNGS GEWINDEBOHRER

SEND US YOUR TAPPING PROBLEMS
SENDEN SIE UNS IHR GEWINDESCHNEIDPROBLEM

For photocopying

This form may be returned to your local YG-1 distributor or to YG-1.

Company _____
Address _____
_____
Department _____
Phone _____

Tool

Description of the tap being used at present Make Type _____ _____
Thread Ø and pitch _____ Class of tolerance _____
○ right-hand cutting ○ left-hand cutting
○ fluteless ○ right hand spiral flutes _____ degrees
○ straight flutes ○ left hand spiral flutes _____ degrees
○ spiral point ○ length of chamfer _____ thread chamfer
Additional information for special pitches or thread forms
pitch Ø _____ major Ø _____
minor Ø _____ flank angle _____ degrees

Hole

Tap drill Ø _____ length of hole _____
depth of full thread _____
○ through hole ○ bottoming hole
Special requirements or unusual characteristics of the threaded product _____
_____

Tapping speed

_____ meters per minute
_____ revolutions per minute

Lubricant

○ without ○ emulsion _____ % ○ cutting oil ○ other _____
Application ○ under pressure ○ vaporization ○ other _____

Machine

Type _____ ○ horizontal tapping ○ vertical tapping

Driving

○ tap revolves
○ work revolves
Number of spindles _____

Feed

○ without ○ power ○ CNC _____ %

Tool holder

○ rigid ○ floating ○ with safety clutch
Make _____ Type _____

Material to be tapped

Material No. or designation _____
Composition, if possible _____
Tensile strength or hardness _____ N/mm² _____ HB _____ HRc
Chip form ○ short ○ long

Short description of problem : _____
_____
_____
_____
_____

Person to be contacted within the company _____
Date _____ Signature _____

MAIN THREAD SYMBOLS
HAUFIGE GEWINDEARTE

AMERICAN STANDARD

Cylindrical threads

UNC	Unified Coarse-Thread Series
UNF	Unified Fine-Thread Series
UNEF	Unified Extra-Fine-Thread Series
UN	Constant Pitch Series-Threads with constant pitch of T.P.I. 4,6,8,12,16, 20,28,32
UNS	Selected combinations-Threads with special dia-pitch combinations
UNJ	Unified threads with constant pitch with radius on minor diameter from 0,15011 Pitch to 0,18042 Pitch
UNJC	Unified coarse thread with radius on minor diameter from 0,15011 Pitch to 0,18042 Pitch
UNJEF	Unified extra fine thread with radius on minor diameter from 0,15011 Pitch to 0,18042 Pitch
UNJF	Unified fine threads with radius on minor diameter from 0,15011 Pitch to 0,18042 Pitch

Pipe cylindrical threads

NPS	Cylindrical threads for pipe
NPSC	American Standard for pipe coupling
NPSF	American Standard for internal thread on pipe, dryseal
NPSH	American Standard for cylindrical threads for pipe, joints and nipples
NPSI	American Standard for internal cylindrical threads on pipe(dryseal)
NPSL	American Standard for cylindrical threads on pipe for nuts
NPSM	American Standard for cylindrical threads on pipe for mechanical joints
NGO	American National pipe threads for gas exhaust
NGS	American National pipe threads for gas

Taper pipe threads

ANPT	Taper pipe threads for Army, Navy and Airforce
F-PTE	Taper pipe fine threads(dryseal)
NPT	Taper pipe thread
NPTF	Taper pipe thread (dryseal)
NPTR	Taper pipe thread for railways equipments
PTF-SAE SHORT	Taper pipe short thread(dryseal)-SAE
PTF-SPL SHORT	Taper pipe special thread(dryseal)-SAE
PTF-SPL EXTRA SHORT	Extra short special thread(dryseal)-SAE
SPL-PTF	Special taper pipe dryseal thread
NGT	National American taper pipe thread
SGT	Special taper pipe thread
API	American petroleum Institute taper pipe thread

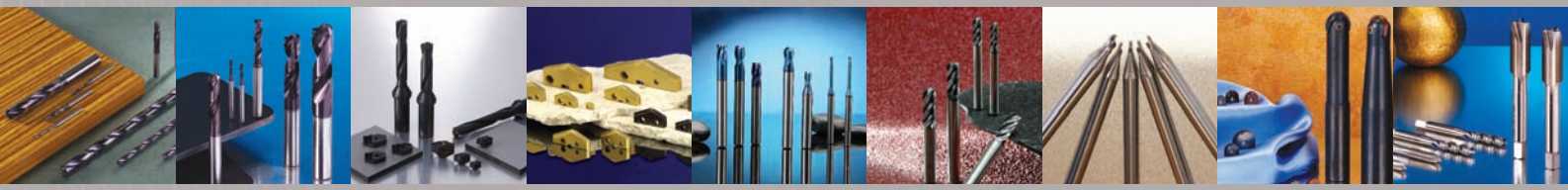
Trapezoidal and saw tooth threads

ACME-C	ACME selfcentering thread
ACME-G	ACME generical application
STUB-ACME	ACME flat thread with reduced thread depth
60° STUB-ACME	ACME flat thread with 60° flank angle
N BUTT	American National Saw tooth thread

BRITISH STANDARD

BSW	Whitworth British Standard coarse pitch
BSF	Whitworth British Standard fine pitch
WHIT	Whitworth Standard special pitch
R	British Standard external threading for taper pipe(dryseal)(already BSP-Tr)
Rc	British Standard internal threading taper thread for pipe(BSP-Tr)
Rp	British Standard cylindrical thread for pipe(already BSP.PI)
BA	British Standard Association thread
BSC	British Standard thread for bicycle
CEI	British Standard for bicycle

Global Cutting Tool Leader **YG-1**



MILLING TOOLS

CBN END MILLS
i-Xmills, CARBIDE INSERT END MILLS
i-HS mills, CARBIDE INSERT END MILLS
X5070 NANO SOLID CARBIDE END MILLS
4G Mill SOLID CARBIDE END MILLS
X-SPEED ROUGHER SOLID CARBIDE & HSS-PM END MILLS
X-POWER SOLID CARBIDE END MILLS
JET-POWER SOLID CARBIDE & HSS-PM END MILLS
TN Mill SOLID CARBIDE END MILLS
V7 Mill SOLID CARBIDE END MILLS
ALU-POWER SOLID CARBIDE & HSS-PM END MILLS
CRX S SOLID CARBIDE END MILLS
D-POWER GRAPHITE SOLID CARBIDE END MILLS (DIAMOND COATED)
D-POWER CFRP SOLID CARBIDE END MILLS (DIAMOND COATED)
SOLID CARBIDE ROUTERS (DIAMOND COATED)
K-2 SOLID CARBIDE END MILLS
GENERAL SOLID CARBIDE END MILLS
TANK-POWER HSS-PM END MILLS
GENERAL HSS (8% Cobalt) END MILLS
HSS-E MILLING CUTTERS
TECHNICAL DATA

YG-1 CO., LTD.

Contents

MILLING TOOLS

CBN END MILLS

CARBIDE INSERT END MILLS

SOLID CARBIDE END MILLS

HSS END MILLS

HSS MILLING CUTTERS

TECHNICAL DATA

YG-1 CO., LTD.

Contents / MILLING TOOLS

CBN END MILLS
CBN(Cubic Boron Nitride) Machining High Hardened Steels up to HRc70, Mirror Finish — CBN END MILLS

i-Xmills, CARBIDE INSERT END MILLS
For General Steels and Hardened Steels up to HRc65 — i-Xmill END MILLS

i-HS mills, CARBIDE INSERT END MILLS
For General Steels and Cast Iron, Ductile Cast Iron — i-HS mill END MILLS

X5070 NANO SOLID CARBIDE END MILLS
For High Hardened Steels HRc45 to HRc70 High Speed Machining,Dry Cutting — X5070 END MILLS

4G Mill SOLID CARBIDE END MILLS
High Speed Cutting for Pre-Hardened Steels up to HRc55 — 4G MILL END MILLS

X-SPEED ROUGHER SOLID CARBIDE & HSS-PM END MILLS
Roughing End Mills for High-Feed Machining with reduced vibrations — X-SPEED ROUGHER END MILLS

X-POWER SOLID CARBIDE END MILLS
For Medium Steels to High Hardened Steels up to HRc65 — X-POWER END MILLS

JET-POWER SOLID CARBIDE & HSS-PM END MILLS
For Exotic materials like Stainless Steels, Nickel alloys and Titanium — JET-POWER END MILLS

TN Mill SOLID CARBIDE END MILLS
For Titanium, Titanium Alloys, Inconel and Stainless Steels — TN MILL END MILLS

V7 Mill SOLID CARBIDE END MILLS
The unique design for High speed and Heavy duty cutting — V7 Mill END MILLS

ALU-POWER SOLID CARBIDE & HSS-PM END MILLS
For Aluminium Alloys and Silent Cutting — ALU-POWER END MILLS

CRX S SOLID CARBIDE END MILLS
DLC Coated End Mills for Copper — CRX S END MILLS

D-POWER GRAPHITE SOLID CARBIDE END MILLS (DIAMOND COATED)
For Graphites — D-POWER GRAPHITE END MILLS

D-POWER CFRP SOLID CARBIDE END MILLS (DIAMOND COATED)
For Composite Materials including CFRP and GFRP — D-POWER CFRP END MILLS

SOLID CARBIDE ROUTERS (DIAMOND COATED)
For Composite Materials including CFRP and GFRP — ROUTERS

K-2 SOLID CARBIDE END MILLS
General Purpose with Coating Conventional or High Speed Milling Wet or Dry Cutting — K-2 CARBIDE END MILLS

GENERAL SOLID CARBIDE END MILLS
General Purpose, Non-coated, Any Coating Available — GENERAL CARBIDE END MILLS

TANK-POWER HSS-PM END MILLS
High Toughness, for Stainless Steels, Carbon steels, Alloy Steels.
For General Application, Rough & Finish — TANK-POWER END MILLS

GENERAL HSS END MILLS
General Purpose, Non-coated, Any Coating Available — GENERAL HSS END MILLS

HSS MILLING CUTTERS
General Works. Available Dovetail, Woodruff Keyseat, T-slot, Side Milling Cutters and HSS (8% Cobalt) Corner Rounding, Shell End Mills — MILLING CUTTERS

TECHNICAL DATA — TECHNICAL DATA

MILLING TOOLS **APPLICATION TABLE**

	ITEM	MODEL	FLUTES	HELIX	TYPE	SIZE RANGE MIN	SIZE RANGE MAX	PAGE
CBN	ESB94		2Flute	30°	Ball	R0.2	R1.5	**630**
	ESD02		2Flute	0°	Radius	D0.5	D2.0	**631**
X5070	G8B59		4Flute	0°	Stub Radius High Feed	D2.0	D12.0	**656**
	G8B54		4Flute	0°	Stub Radius High Feed	D2.0	D16.0	**657**
	G8A46		2Flute	30°	Ball for Rib	R0.05	R2.0	**658**
	G8A54		2Flute	30°	Ball for Rib	R0.25	R1.0	**661**
	G8A28		2Flute	30°	Ball	R0.05	R6.0	**662**
	G8A38		2Flute	30°	Stub Ball with Extended Neck	R0.5	R12.5	**663**
	G8A53		2Flute	30°	Miniature Ball	R0.2	R1.0	**664**
	G8A59		3Flute	30°	Ball	R1.5	R10.0	**665**
	G8D62		4Flute	30°	Ball Center Match	R1.5	R10.0	**666**
	G8A60		2Flute	30°	Radius for Rib	D0.5	D12.0	**667**
	G8A36		2Flute	30°	Stub Radius with Extended Neck	D0.3	D20.0	**670**
	G8A52		2Flute	30°	Radius for Rib	D0.5	D2.0	**672**
	G8A50		2Flute	30°	Miniature Radius	D0.3	D2.0	**673**
	G8A47		4Flute	30°	Radius	D3.0	D12.0	**674**
	G8A37		4Flute	30°	Stub Radius with Extended Neck	D1.0	D20.0	**675**
	G8B08		4Flute	30°	Radius with Extended Neck	D6.0	D12.0	**676**
	G8A39		6Flute	45°	Radius	D6.0	D20.0	**677**
	G8A45		2Flute	30°	Square for Rib	D0.1	D4.0	**678**
	G8A01		2Flute	30°	Square	D0.1	D20.0	**681**
	G8A02		4Flute	30°	Square	D1.0	D20.0	**682**
	G8D63		6&8Flute	45°	Long Square	D6.0	D25.0	**683**
	G8D64		6&8Flute	45°	Extra Long Square	D6.0	D25.0	**684**
4G MILLS	SEMD98		2Flute	30°	Ball	R0.05	R12.5	**706**
	SEM846		2Flute	30°	Long Neck Ball	R0.05	R6.0	**711**
	SEM846		2Flute	30°	Long Neck Ball (6mm Shank)	R0.25	R1.0	**719**
	SEMD99		2Flute	30°	Radius	D0.2	D20.0	**722**
	SEME61		2Flute	30°	Long Neck Radius	D0.2	D20.0	**728**

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
				◎	◎									
				◎	◎									
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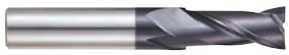
◎	◎	◎	◎	○				○						

☞ NEXT

MILLING TOOLS **APPLICATION TABLE**

	ITEM	MODEL	FLUTES	HELIX	TYPE	SIZE RANGE MIN	SIZE RANGE MAX	PAGE
4G MILLS	SEME01		4Flute	Multiple	Radius	D1.0	D20.0	**743**
	SEME64		4Flute	Multiple	Long Neck Radius	D1.0	D20.0	**748**
	SEME35		2Flute	30°	Square	D0.03	D25.0	**760**
	SEME70		2Flute	30°	Long Square	D1.0	D25.0	**765**
	SEM845		2Flute	30°	Long Neck Square	D0.1	D12.0	**770**
	SEME36		4Flute	Multiple	Square	D0.8	D25.0	**777**
	SEME71		4Flute	Multiple	Square	D1.0	D20.0	**779**
	SEME72		4Flute	30°	Long Square	D1.0	D25.0	**782**
	SEME73		4Flute	30°	Long Neck Square	D1.0	D12.0	**787**
	SEME75		6Flute	45°	Square	D6.0	D20.0	**791**
X-SPEED ROUGHER	G9D75 G9D67		4&5Flute	Multiple	Short Radius	D6.0	D20.0	**822**
	G9D76 G9D68		4&5Flute	Multiple	Long Radius	D6.0	D20.0	**823**
	G9D77 G9D69		4&5Flute	Multiple	Long Reach Radius	D6.0	D20.0	**824**
	GAE53		4&5Flute	Multiple	Short Radius	D6.0	D20.0	**825**
X-POWER	EM810		2Flute	30°	Miniature Square	D0.4	D1.5	**834**
	EM810 EM820		2Flute	30°	Short Square	D1.0	D25.0	**835**
	EM816 EM826		2Flute	30°	Long Square	D2.0	D25.0	**837**
	EM836 EM846		3Flute	30°	Miniature Square	D1.0	D20.0	**838**
	EM895 EM896		3Flute	38°	Short Square	D1.0	D20.0	**839**
	EM811 EM821		4Flute	30°	Short Square	D2.0	D25.0	**840**
	EM817 EM827		4Flute	30°	Long Square	D2.0	D25.0	**842**
	EM812 EM822		6&8Flute	45°	Long Square	D6.0	D25.0	**843**
	EM834 EM844		6Flute	45°	Extra Long Square	D6.0	D25.0	**844**
	EM876 EM877		2Flute	30°	Short Ball	R0.5	R12.5	**845**
	EM813 EM823		2Flute	30°	Long Ball	R0.5	R12.5	**846**
	EM899 EM900		2Flute	30°	Medium Ball with Neck	R1.5	R12.5	**847**
	EM838 EM848		2Flute	30°	Long Reach Ball	R1.0	R10.0	**848**
	EM902 EM904		2Flute	30°	Ball with Taper Neck	R0.5	R6.0	**849**
	EM878 EM879		2Flute	30°	Stub Ball	R0.5	R12.5	**850**

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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MILLING TOOLS **APPLICATION TABLE**

	ITEM	MODEL	FLUTES	HELIX	TYPE	SIZE RANGE		PAGE
						MIN	MAX	
X-POWER	G4953 G4954		2Flute	30°	Stub Ball	R0.5	R12.5	**851**
	EM865		2Flute	30°	Miniature Ball	R0.3	R1.5	**852**
	EM669		2Flute	30°	Long Ball	R1.5	R8.0	**854**
	EM673		4Flute	30°	Long Ball	R2.5	R8.0	**855**
	EM863		2Flute	30°	Long Ball	R1.5	R8.0	**856**
	EM864		4Flute	30°	Long Ball	R2.5	R8.0	**857**
	EM815 EM825		4Flute	30°	Long Ball	R0.5	R12.5	**858**
	EM832 EM842		3~5Flute	20°	Short Roughing	D6.0	D25.0	**859**
	EM814 EM824		3~5Flute	20°	Long Roughing	D6.0	D25.0	**860**
	EM833 EM843		3&4Flute	20°	Long Roughing Ball	R3.0	R10.0	**861**
	EM818 EM828		2Flute	30°	Long Radius	D3.0	D20.0	**862**
	EM905		4Flute	45°	Short Radius	D10.0	D22.0	**863**
	EM819 EM829		4Flute	30°	Long Radius	D3.0	D20.0	**864**
	EM897 EM898		6Flute	45°	Stub Radius	D6.0	D12.0	**865**
	EM835 EM845		6Flute	45°	Long Radius	D6.0	D20.0	**866**
	EM839 EM849		4Flute	30°	Stub Radius	D2.0	D16.0	**867**
	EM837 EM847		2Flute	30°	Taper	D2.0	D8.0	**868**
	EM883		2Flute	30°	Square for Rib	D0.4	D6.0	**869**
	EM886		2Flute	30°	Ball for Rib	R0.2	R3.0	**873**
	EM8A1		2Flute	30°	Radius for Rib	D0.5	D6.0	**876**
	EM889		4Flute	25°	Taper for Rib	D1.0	D2.0	**880**
	EM890		4Flute	25°	Taper Ball for Rib	R0.5	R1.0	**882**
JET-POWER	EH911 EH912		2Flute	35°	Short Square	D1.0	D25.0	**914**
	EH913 EH914		4Flute	35°	Short Square	D2.0	D25.0	**915**
	EH830 EH840		3&4Flute	50°	Long Square	D6.0	D25.0	**916**
	EH915 EH916		6&8Flute	45°	Long Square	D6.0	D25.0	**917**
	EE515		4&6Flute	30°	Short Square	D3.0	D25.0	**918**
	EH852 EH862		3~5Flute	30°	Short Roughing	D6.0	D25.0	**919**
	EH831 EH841		3~5Flute	30°	Long Roughing	D6.0	D25.0	**920**

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
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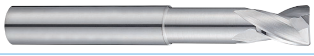
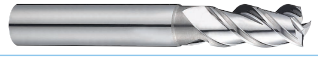
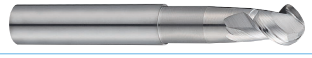
MILLING TOOLS **APPLICATION TABLE**

	ITEM	MODEL	FLUTES	HELIX	TYPE	SIZE RANGE MIN	SIZE RANGE MAX	PAGE
JET-POWER	EH917 EH918		4~6Flute	45°	Short Roughing	D6.0	D20.0	**921**
	EH919 EH920		3~6Flute	45°	Long Roughing	D4.0	D25.0	**922**
	EH921 EH942		4~6Flute	45°	Long Reach Roughing	D6.0	D20.0	**923**
TN MILL	EHE54 EHE55		5Flute	40°	Radius Roughing	D6.0	D25.0	**934**
V7 Mill STEEL	EMD42 EMD43		4Flute	Multiple	Short Square	D3.0	D20.0	**940**
	EMD44 EMD45		4Flute	Multiple	Short Radius	D3.0	D20.0	**941**
	EMD38 EMD39		4Flute	Multiple	Long Square	D3.0	D25.0	**942**
	EMD40 EMD41		4Flute	Multiple	Long Radius	D3.0	D25.0	**943**
	EME05 EME06		4Flute	Multiple	with Extended Neck	D3.0	D20.0	**944**
	EME33 EME34		4Flute	Multiple	Radius with Extended Neck	D3.0	D20.0	**945**
V7 Mill INOX	EMB41 EMB42		4Flute	Sinusoidal	Short Square	D3.0	D20.0	**946**
	EMB43 EMB44		4Flute	Sinusoidal	Short Radius	D3.0	D20.0	**947**
	EMB14 EMB39		4Flute	Sinusoidal	Long Square	D3.0	D25.0	**948**
	EMB15 EMB40		4Flute	Sinusoidal	Long Radius	D3.0	D25.0	**949**
	EMC84 EMC85		4Flute	Sinusoidal	with Extended Neck	D3.0	D20.0	**950**
	EME31 EME32		4Flute	Sinusoidal	Radius with Extended Neck	D3.0	D20.0	**951**
	EMB74 EMB75		4Flute	Sinusoidal	Long Ball	R1.5	R12.5	**952**
	EMB72 EMB73		5Flute	Sinusoidal	Long Square	D6.0	D25.0	**953**
ALU-POWER	E5E47		1Flute	30°	Square	D2.0	D12.0	**962**
	E5930		2Flute	25°	Radius	D2.0	D20.0	**963**
	E5E48		2Flute	45°	Short Square	D3.0	D20.0	**964**
	E5522 E5521		2Flute	45°	Long Square	D3.0	D20.0	**965**
	E5909		2Flute	30°	Radius With Neck	D4.0	D20.0	**966**
	E5E50		3Flute	45°	Square With Neck	D3.0	D20.0	**967**
	E5E49		3Flute	45°	Long Square	D3.0	D20.0	**968**
	E5E51		3Flute	45°	Long Radius	D3.0	D20.0	**969**
	E5910		2Flute	50°	Ball With Neck	R3.0	R10.0	**970**
	E5908		3Flute	40°	Ball With Neck	R1.0	R8.0	**971**
	E5742 E5711		3Flute	30°	Long Roughing	D6.0	D25.0	**972**

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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MILLING TOOLS **APPLICATION TABLE**

	ITEM	MODEL	FLUTES	HELIX	TYPE	SIZE RANGE		PAGE
						MIN	MAX	
ALU-POWER	E5E39 E5E40		3Flute	30°	Roughing With Neck	D6.0	D20.0	**973**
	EP922 EP923		3Flute	42°	Short Roughing	D12.0	D32.0	**974**
	EP924 EP925		3Flute	42°	Long Roughing	D12.0	D32.0	**975**
CRX S	SGED27		2Flute	30°	Long Ball	R0.25	R6.6	**986**
	SGED28		2Flute	30°	Ball	R0.5	R6.0	**988**
	SGED29		2Flute	30°	Long Radius	D1.0	D12.0	**989**
	SGED30		2Flute	30°	Long	D0.5	D12.0	**991**
	SGED31		2Flute	30°	Square	D1.0	D12.0	**993**
D-POWER GRAPHITE	EI997		2Flute	30°	Miniature Ball	R0.1	R3.0	**1000**
	EIB93		2Flute	30°	Miniature Ball	R0.2	R2.0	**1002**
	EI880		2Flute	30°	Short Ball	R1.0	R6.0	**1003**
	EI451		2Flute	30°	Long Ball	R1.0	R6.0	**1004**
	EI450		2Flute	30°	Long Reach Ball	R1.0	R6.0	**1005**
	EI881		3Flute	30°	Short Ball	R1.0	R6.0	**1006**
	EIB04		2Flute	30°	Long Square	D0.5	D12.0	**1007**
	EIB87		2Flute	30°	Ball with Taper Neck	R0.5	R1.0	**1008**
	EI996		2Flute	30°	Miniature Radius	D0.2	D6.0	**1009**
	EIB86		2Flute	30°	Radius with Taper Neck	D1.0	D2.0	**1011**
	EIB88		4Flute	30°	Radius	D6.0	D12.0	**1012**
	EIA13		3Flute	40°	Short Radius	D2.0	D12.0	**1013**
	EIA14		3Flute	40°	Long Radius	D2.0	D12.0	**1014**
D-POWER CFRP	GUF40		4~8Flute	20°/20°		D6.0	D12.0	**1020**
	GUF39		4Flute	15°		D6.0	D12.0	**1021**
ROUTERS	RTI104					D3.0	D12.0	**1026**
K-2 CARBIDE	G9424		2Flute	30°	Short Square	D1.0	D20.0	**1034**
	G9A68		2Flute	30°	Short Square	D1.0	D20.0	**1035**
	G9444		2Flute	≒30°	Short Square	D2.0	D20.0	**1036**
	G9527		2Flute	≒30°	Long Square	D3.5	D20.0	**1037**
	G9445		2Flute	≒30°	Long Square	D2.0	D20.0	**1038**

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
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	ITEM	MODEL	FLUTES	HELIX	TYPE	SIZE RANGE MIN	SIZE RANGE MAX	PAGE
K-2 CARBIDE	G9452		2Flute	30°	Extra Long Square	D3.0	D20.0	**1039**
	G9553 G9410		3Flute	30°	Short Throw Away	D0.5	D20.0	**1040**
	G9425		3Flute	30°	Short Square	D1.0	D20.0	**1041**
	G9439		3Flute	≒30°	Short Square	D2.0	D20.0	**1042**
	G9528		3Flute	≒30°	Long Square	D3.5	D20.0	**1043**
	G9433		3Flute	≒30°	Long Square	D3.0	D20.0	**1044**
	G9447		3Flute	45°	Long Square	D3.0	D20.0	**1045**
	G9432		4Flute	30°	Short Square	D1.0	D20.0	**1046**
	G9A69		4Flute	30°	Short Square	D1.0	D20.0	**1047**
	G9448		4Flute	≒30°	Short Square	D2.0	D20.0	**1048**
	G9540		4Flute	≒30°	Long Square	D3.5	D20.0	**1049**
	G9449		4Flute	≒30°	Long Square	D2.0	D20.0	**1050**
	G9453		4Flute	30°	Extra Long Square	D3.0	D20.0	**1051**
	G9624		2Flute	30°	Short Ball	R1.0	R10.0	**1052**
	G9A70		2Flute	30°	Short Ball	R0.5	R10.0	**1053**
	G9437		2Flute	≒30°	Short Ball	R1.0	R10.0	**1054**
	G9438		2Flute	≒30°	Long Ball	R1.0	R10.0	**1055**
	G9454		2Flute	30°	Long Reach Ball	R1.5	R10.0	**1056**
	G9455		2Flute	30°	Extra Long Ball	R1.5	R10.0	**1057**
	G9634		4Flute	30°	Short Ball	R1.0	R10.0	**1058**
	G9A42		3~5Flute	30°	Long Roughing	D6.0	D25.0	**1059**
	G9B80		2Flute	30°	Square for Rib	D0.4	D4.0	**1060**
	G9B81		2Flute	30°	Ball for Rib	R0.2	R2.0	**1062**
	G9B82		2Flute	30°	Short Radius	D2.0	D12.0	**1064**
	G9B83		2Flute	30°	Long Reach Radius	D3.0	D12.0	**1066**
	G9B84		4Flute	30°	Short Radius	D2.0	D12.0	**1067**
	G9B85		4Flute	30°	Long Reach Radius	D3.0	D12.0	**1069**
GENERAL CARBIDE	E5424 E5416		2Flute	30°	Short Square	D1.0 D6.0	D20.0	**1086**
	E5444		2Flute	≒30°	Short Square	D2.0	D20.0	**1087**

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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MILLING TOOLS **APPLICATION TABLE**

	ITEM	MODEL	FLUTES	HELIX	TYPE	SIZE RANGE MIN	SIZE RANGE MAX	PAGE
GENERAL CARBIDE	E5445		2Flute	≒30°	Long Square	D2.0	D20.0	**1088**
	E5527		2Flute	≒30°	Long Square	D3.5	D20.0	**1089**
	E5452		2Flute	30°	Extra Long Square	D3.0	D20.0	**1090**
	E5553 E5410		3Flute	30°	Short Throw Away	D0.5	D20.0	**1091**
	E5425 E5417		3Flute	30°	Short Square	D2.0 D6.0	D20.0	**1093**
	E5439		3Flute	≒30°	Short Square	D2.0	D20.0	**1094**
	E5433		3Flute	≒30°	Long Square	D3.0	D20.0	**1095**
	E5528		3Flute	≒30°	Long Square	D3.5	D20.0	**1096**
	E5882		3Flute	35°	Short Radius	D3.0	D20.0	**1097**
	E5423 E5415		3Flute	45°	Short Square	D3.0	D20.0	**1098**
	E5446		3Flute	45°	Short Square	D1.5	D20.0	**1099**
	E5447		3Flute	45°	Long Square	D3.0	D20.0	**1100**
	E5432 E5595		4Flute	30°	Short Square	D2.0 D6.0	D20.0	**1101**
	E5448		4Flute	≒30°	Short Square	D2.0	D20.0	**1102**
	E5449		4Flute	≒30°	Long Square	D2.0	D20.0	**1103**
	E5540		4Flute	≒30°	Long Square	D3.5	D20.0	**1104**
	E5453		4Flute	30°	Extra Long Square	D3.0	D20.0	**1105**
	E5624 E5650		2Flute	30°	Short Ball	R1.0	R10.0	**1106**
	E5437		2Flute	≒30°	Short Ball	R1.0	R10.0	**1107**
	E5438		2Flute	≒30°	Long Ball	R1.0	R10.0	**1108**
	E5454		2Flute	30°	Long Reach Ball	R1.5	R10.0	**1109**
	E5455		2Flute	30°	Extra Long Ball	R1.5	R10.0	**1110**
	E5634 E5524		4Flute	30°	Short Ball	R1.0	R10.0	**1111**
	E5400		2Flute	30°	Drill Mill	D3.0	D20.0	**1112**
TANK-POWER	E9936 GA936		2Flute	30°	Short Square	D1.0	D25.0	**1136**
	E9A29 GAA29		2Flute	30°	Long Square	D1.0	D25.0	**1137**
	E9942 GA942		3Flute	30°	Stub Square	D1.0	D25.0	**1138**
	E9A30 GAA30		3Flute	30°	Short Square	D1.0	D25.0	**1139**
	E9938 GA938		4Flute	30°	Short Square	D1.0	D25.0	**1140**

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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MILLING TOOLS **APPLICATION TABLE**

	ITEM	MODEL	FLUTES	HELIX	TYPE	SIZE RANGE MIN	SIZE RANGE MAX	PAGE
TANK-POWER	E9A31 GAA31		4Flute	30°	Long Square	D2.0	D25.0	**1141**
	E9940 GA940		2Flute	30°	Short Ball	R0.5	R12.5	**1142**
	E9A32 GAA32		2Flute	30°	Long Ball	R1.0	R12.5	**1143**
	E9941 GA941		3~5Flute	30°	Short Roughing	D6.0	D25.0	**1144**
	E9A35 GAA35		3~5Flute	30°	Long Roughing	D6.0	D25.0	**1145**
	E9A26 GAA26		3~6Flute	45°	Short Roughing	D4.0	D25.0	**1146**
	E9A33 GAA33		3~5Flute	30°	Short Roughing	D6.0	D25.0	**1147**
	E9A34 GAA34		3~5Flute	30°	Long Roughing	D6.0	D25.0	**1148**
	E9E43 GAE43		4~5Flute	30°	Roughing With Neck	D10.0	D25.0	**1149**
GENERAL HSS ENDMILL	E2570		2Flute	≒30°	Short Square	D1.0	D40.0	**1174**
	E2571		2Flute	≒30°	Long Square	D1.5	D40.0	**1177**
	E2510		2Flute	30°	Extra Long Square	D2.5	D40.0	**1179**
	E2464		2Flute	42°	Short Square	D1.0	D32.0	**1180**
	E2509		2Flute	42°	Long Square	D2.0	D20.0	**1182**
	EL612		1Flute	≒30°	Square	D3.0	D10.0	**1183**
	EL623		1Flute	≒30°	Square	D3.0	D10.0	**1184**
	E2572		3Flute	≒30°	Stub Square	D1.5	D32.0	**1185**
	E2573		3Flute	≒30°	Short Square	D1.0	D40.0	**1186**
	E2516		3Flute	30°	Long Square	D2.0	D40.0	**1188**
	E2553		3Flute	30°	Short Throw Away	D1.0	D20.0	**1190**
	E2554		3Flute	30°	Long Throw Away	D1.5	D10.0	**1192**
	E2551		3Flute	30°	Short Throw Away	D1.0	D10.0	**1193**
	E2552		3Flute	30°	Long Throw Away	D1.5	D10.0	**1194**
	E2574 E2575		4&6Flute	≒30°	Short Square	D2.0 D21.0	D20.0 D40.0	**1195**
	E2576 E2577		4&6Flute	≒30°	Long Square	D2.0 D22.0	D20.0 D40.0	**1196**
	E2595 E2596		4&6Flute	≒30°	Short Square	D2.0 D22.0	D25.0 D40.0	**1197**
	E2597 E2598		4&6Flute	≒30°	Long Square	D2.0 D22.0	D20.0 D40.0	**1198**
	E2461 E2462 E2463		2~4Flute	50°	Short Square	D2.0 D6.0 D22.0	D5.0 D23.0 D30.0	**1199**
	E2535		2Flute	≒30°	Short Ball	R1.0	R16.0	**1200**

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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MILLING TOOLS **APPLICATION TABLE**

	ITEM	MODEL	FLUTES	HELIX	TYPE	SIZE RANGE MIN	SIZE RANGE MAX	PAGE
GENERAL HSS ENDMILL	E2492		2Flute	≒30°	Long Ball	R1.0	R15.0	**1201**
	E2410		4&6Flute	30°	Short Ball	R3.0	R12.5	**1202**
	E2429		4&6Flute	30°	Long Ball	R5.0	R12.5	**1203**
	E2512		3Flute	30°	Short Ball Throw Away	R1.0	R3.0	**1204**
	E2751		3~6Flute	30°	Short Roughing	D6.0	D50.0	**1205**
	E2752		3~6Flute	30°	Long Roughing	D6.0	D40.0	**1207**
	E2751 E2764		3Flute	30°	Short Roughing	D6.0 D10.0	D8.0 D40.0	**1208**
	E2752 E2765		3Flute	30°	Long Roughing	D6.0 D10.0	D8.0 D40.0	**1209**
	E2755		3Flute	37°	Short Roughing	D6.0	D30.0	**1210**
	E2756		3Flute	37°	Long Roughing	D10.0	D30.0	**1211**
	E2757		3&4Flute	30°	Short Roughing Ball	R3.0	R20.0	**1212**
	E2761		3~5Flute	30°	Short Roughing	D6.0	D25.0	**1213**
	E2524		3&4Flute	30°	Stub Roughing	D6.0	D20.0	**1214**
	E2606		3&4Flute	30°	Short Roughing Ball	R3.0	R20.0	**1215**
	E2753		3~6Flute	30°	Short Roughing	D6.0	D40.0	**1216**
	E2762		3~6Flute	30°	Long Roughing	D6.0	D40.0	**1217**
	E2754		3~6Flute	30°	Short Roughing & Finishing	D6.0	D40.0	**1218**
	E2768		3~6Flute	30°	Long Roughing & Finishing	D6.0	D45.0	**1219**
	E2766		3Flute	30°	Short Roughing & Finishing	D6.0	D40.0	**1220**
	E2767		3Flute	30°	Long Roughing & Finishing	D6.0	D40.0	**1221**
	E2776		4~8Flute	30°	Short Square	D14.0	D50.0	**1222**
	E2777		4~6Flute	30°	Short Roughing	D14.0	D50.0	**1223**
	E2778		4~6Flute	30°	Short Roughing	D16.0	D50.0	**1224**
	E2779		4~6Flute	30°	Short Roughing & Finishing	D16.0	D50.0	**1225**
	E3570		2Flute	≒30°	Short Square	D2.0	D30.0	**1226**
	E3574 E3575		4&6Flute	≒30°	Short Square	D2.0 D22.0	D20.0 D30.0	**1227**
	E3462 E3463		3&4Flute	60°	Short Square	D6.0 D25.0	D20.0 D30.0	**1228**
	E9410		2Flute	≒30°	Short Square	D2.0	D25.0	**1229**
	E9720		4&6Flute	30°	Short Roughing	D6.0	D30.0	**1230**

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
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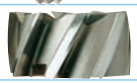
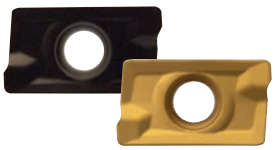
MILLING TOOLS **APPLICATION TABLE**

	ITEM	MODEL	FLUTES	HELIX	TYPE	SIZE RANGE MIN	SIZE RANGE MAX	PAGE
MILLING CUTTER	ML012,ML022 ML112,ML122 ML212,ML222		6~16 Teeth	0°	Dovetail Cutters	D16.0	D50.0	**1272**
	ML032,ML042 ML132,ML142 ML232,ML242		6~12 Teeth	0°	Dovetail Cutters	D16.0	D38.0	**1273**
	ML062 ML162 ML262		8~14 Teeth	10°~12°	Woodruff Keyseat Cutters	D10.5	D45.5	**1274**
	ML072 ML172 ML272		6~8 Teeth	10°	T-Slot Cutters	D12.5	D40.0	**1276**
	ML092		18~24 Teeth	0°	Side and Face with Straight Teeth	D50.0	D125.0	**1277**
	ML102		14~30 Teeth	10°	Side and Face with Staggered Teeth	D50.0	D200.0	**1278**
	E2675		6~14 Teeth	30°	Shell	D30.0	D160.0	**1282**
	E2676		4~6 Teeth	42°	Shell for Aluminum	D30.0	D100.0	**1283**
	E2677		6~12 Teeth	30°	Roughing Shell	D40.0	D160.0	**1284**
	E2678		6~12 Teeth	30°	Roughing Shell	D40.0	D160.0	**1285**
	E2679		6~12 Teeth	30°	Roughing & Finishing Shell	D40.0	D160.0	**1286**
	E2498		4 Teeth	0°	Corner Rounding Cutters	D8.0	D56.0	**1287**

	ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
i-Xmill	XMB110A		i-Xmill Ball Insert for General Purpose	Ø8	Ø32	**636**
	XMB120C		i-Xmill Ball Insert for Hardened Steels			
	XMB110D		i-Xmill Ball Insert for Graphite			
	XMR110A		i-Xmill Corner Radius Insert for General Purpose	Ø8	Ø32	**639**
	XMR120C		i-Xmill Corner Radius Insert for Hardened Steels			
	XMR110D		i-Xmill Corner Radius Insert for Graphite			
i-HS mill	YA702		i-HS mill insert for General Purpose/Steel	Shank type Ø16	Shank type Ø32	**648**
	YA703		i-HS mill insert for Stainless Steels	Cutter type		
	YA102 YA503		i-HS mill insert for Cast Iron	Ø40	Ø80	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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Carbon Steels		Alloy Steels		Tool Steels		Cast Iron	Hardened Steels	Stainless Steels	Aluminum	Graphite
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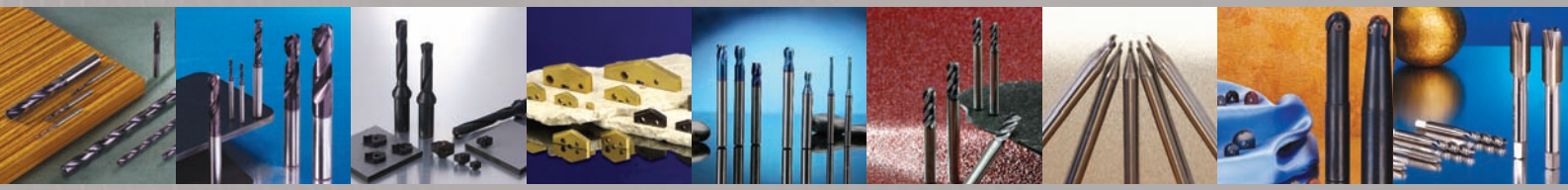
Global Cutting Tool Leader **YG-1**



CBN

Being the best through innovation

CBN (Cubic Boron Nitride)

CBN FRÄSER

- **Cubic Boron Nitride, Machining High Hardened Steels up to HRc70, Mirror Finish**
- **Kubisches Bornitrid, Zum Fräsen hoch gehärteter Stähle bis HRc70. Spiegelglanz**

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
ESB94		CBN, 2 FLUTE BALL NOSE CBN, 2 SCHNEIDEN STIRNRADIUS	R0.2	R1.5	**630**
ESD02		CBN, 2 FLUTE CORNER RADIUS CBN, 2 SCHNEIDEN ECKENRADIUS	D0.5	D2.0	**631**
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			**632**

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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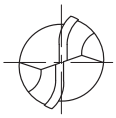
CBN END MILLS

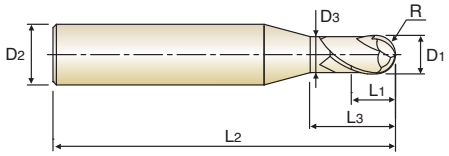
ESB94 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CBN, 2 FLUTE BALL NOSE
CBN, 2 SCHNEIDEN STIRNRADIUS

- Achieve stable machining and higher accuracy for the duration.
- Save the setting time and cost due to reduction of frequent tool change.
- Improve repeatability in performance.
- Special designed geometry improves tool rigidity at High Speed Cutting.
- Tighter Radius Tolerance ±0.005mm higher accuracy and longer tool life.

- Sichert dauerhaft stabile Bearbeitung und höhere Genauigkeit.
- Spart Rüstzeit und -kosten durch weniger Werkzeugwechsel.
- Verbessert die Wiederholgenauigkeit.
- Eine besondere Werkzeuggeometrie verbessert die Steifigkeit bei HSC-Bearbeitung.
- Engere Radiustoleranz ±0.005, höhere Genauigkeit und längere Werkzeuglebenszeit.





CBN | 2 | 30° | R ±0.005 | PLAIN

P.632

Unit : mm

EDP No.	Radius of Ball Nose R (±0.005)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
ESB94004012	R0.2	0.4	4	0.3	1.2	50	0.37
ESB94005015	R0.25	0.5	4	0.4	1.5	50	0.46
ESB94006015	R0.3	0.6	4	0.5	1.5	50	0.56
ESB94008020	R0.4	0.8	4	0.6	2	50	0.76
ESB94010025	R0.5	1.0	4	0.6	2.5	50	0.95
ESB94010040	R0.5	1.0	4	0.6	4	50	0.95
ESB94010060	R0.5	1.0	4	0.6	6	50	0.95
ESB94012030	R0.6	1.2	4	0.8	3	50	1.15
ESB94015030	R0.75	1.5	4	0.95	3	50	1.45
ESB94015040	R0.75	1.5	4	0.95	4	50	1.45
ESB94015060	R0.75	1.5	4	0.95	6	50	1.45
ESB94020050	R1.0	2.0	4	1.2	5	50	1.95
ESB94020060	R1.0	2.0	4	1.2	6	50	1.95
ESB94030060	R1.5	3.0	4	1.8	6	50	2.85

Radius Tolerance(mm)	Shank Dia. Tolerance
±0.005	h5

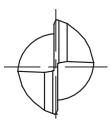
◎ : Excellent ○ : Good

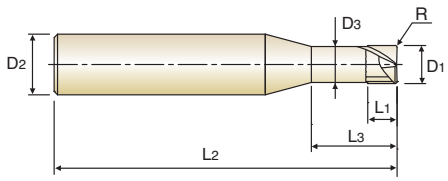
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
				◎	◎									

CBN, 2 FLUTE CORNER RADIUS
CBN, 2 SCHNEIDEN ECKENRADIUS

- ▶ Achieve stable machining and higher accuracy for the duration.
- ▶ Save the setting time and cost due to reducing of frequent tool change.
- ▶ Improve repeatability in performance.
- ▶ Special designed geometry improves tool rigidity at High Speed Cutting.
- ▶ Tighter Radius Tolerance ±0.005mm higher accuracy and longer tool life.

- ▶ Sichert dauerhaft stabile Bearbeitung und höhere Genauigkeit.
- ▶ Spart Rüstzeit und -kosten durch weniger Werkzeugwechsel.
- ▶ Verbessert die Wiederholgenauigkeit.
- ▶ Eine besondere Werkzeuggeometrie verbessert die Steifigkeit bei HSC-Bearbeitung.
- ▶ Engere Radiustoleranz ±0.005, höhere Genauigkeit und längere Werkzeuglebenszeit.





CBN | 2 | 0° | R ±0.005 | PLAIN

P.632

Unit : mm

EDP No.	Corner Radius R (±0.005)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
ESD02005052	R0.05	0.5	4	0.3	2	50	0.46
ESD02005053	R0.05	0.5	4	0.3	3	50	0.46
ESD02010053	R0.05	1.0	4	0.7	3	50	0.95
ESD02010055	R0.05	1.0	4	0.7	5	50	0.95
ESD02010103	R0.1	1.0	4	0.7	3	50	0.95
ESD02010105	R0.1	1.0	4	0.7	5	50	0.95
ESD02015105	R0.1	1.5	4	1.0	5	50	1.45
ESD02015108	R0.1	1.5	4	1.0	8	50	1.45
ESD02015205	R0.2	1.5	4	1.0	5	50	1.45
ESD02015208	R0.2	1.5	4	1.0	8	50	1.45
ESD02020106	R0.1	2.0	4	1.2	6	50	1.95
ESD02020100	R0.1	2.0	4	1.2	10	50	1.95
ESD02020206	R0.2	2.0	4	1.2	6	50	1.95
ESD02020200	R0.2	2.0	4	1.2	10	50	1.95

Corner Radius Tolerance(mm)	Shank Dia. Tolerance
±0.005	h5

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
				◎	◎									

CBN END MILLS

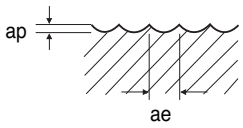
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CBN, 2 FLUTE BALL NOSE
CBN, 2 SCHNEIDEN STIRNRADIUS

ESB94 SERIES

MATERIAL	HARDENED STEELS				HIGH HARDENED STEELS			
HARDNESS	HRc50 ~ HRc60				HRc60 ~ HRc70			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R0.2 × 0.4	50,000	1,200	65	0.012	50,000	1,200	65	0.012
R0.25 × 0.5	50,000	1,500	80	0.015	50,000	1,500	80	0.015
R0.3 × 0.6	50,000	2,000	95	0.020	50,000	2,000	95	0.020
R0.4 × 0.8	50,000	2,000	125	0.020	50,000	2,000	125	0.020
R0.5 × 1.0	50,000	3,000	155	0.030	50,000	3,000	155	0.030
R0.6 × 1.2	50,000	3,000	190	0.030	50,000	3,000	190	0.030
R0.75 × 1.5	50,000	3,000	235	0.030	50,000	3,000	235	0.030
R1.0 × 2.0	40,000	3,200	250	0.040	32,000	2,500	200	0.039
R1.5 × 3.0	26,500	2,100	250	0.040	21,500	1,700	205	0.040

ap : R0.2 ~ R0.4 =0.005mm
R0.5 ~ R1.5 =0.01mm
ae : R0.2 ~ R0.4 =0.005mm
R0.5 ~ R1.5 =0.01mm

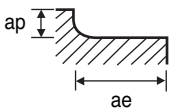


RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CBN, 2 FLUTE CORNER RADIUS
CBN, 2 SCHNEIDEN ECKENRADIUS

ESD02 SERIES

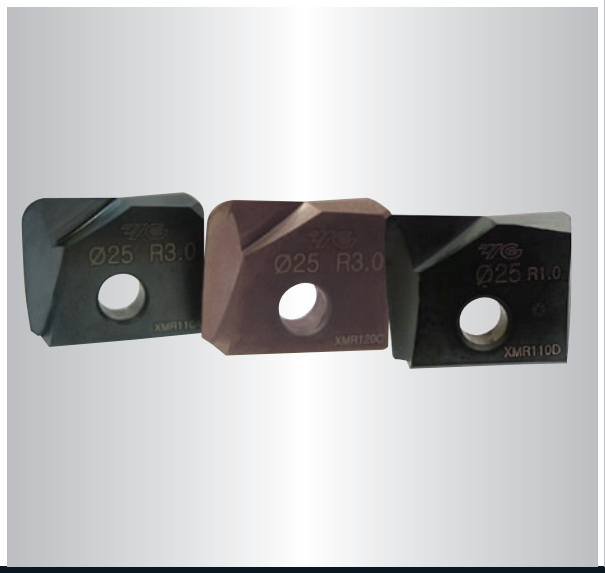
MATERIAL	HARDENED STEELS						HIGH HARDENED STEELS					
HARDNESS	HRc50 ~ HRc60						HRc60 ~ HRc70					
DIAMETER	RPM	FEED	Vc	fz	DEPTH OF CUT ae[mm]	DEPTH OF CUT ap[mm]	RPM	FEED	Vc	fz	DEPTH OF CUT ae[mm]	DEPTH OF CUT ap[mm]
0.5	50,000	700	80	0.007	0.10	0.01	50,000	550	80	0.006	0.06	0.005
1.0	43,000	1,000	135	0.012	0.20	0.01	30,000	700	95	0.012	0.10	0.10
1.5	30,000	1,000	140	0.017	0.40	0.02	19,000	700	90	0.018	0.20	0.20
2.0	22,000	900	140	0.020	0.60	0.03	14,000	800	90	0.029	0.30	0.30



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE INSERT & HOLDER

Being the best through innovation



i-Xmill

i-Xmill FRÄSER

- Available for General Steels(~HRc50), Hardened Steels(up to HRc65) and Graphite
- Lieferbar für normale, gehärtete Stähle bis HRc65 und graphit

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
XMB110A		i-Xmill BALL INSERT for GENERAL PURPOSE i-Xmill WECHSELPLATTE mit RUNDER allgemeinen Einsatz	Ø8	Ø32	636
XMB120C		i-Xmill BALL INSERT for HARDENED STEEL i-Xmill WECHSELPLATTE mit RUNDER STIRN für gehärtete Materialien	Ø8	Ø32	636
XMB110D		i-Xmill BALL INSERT for GRAPHITE i-Xmill WECHSELPLATTE mit RUNDER STIRN für Graphit	Ø8	Ø32	636
ZBT / ZBS		i-Xmill BALL HOLDERS - STEEL i-Xmill HALTER für WECHSELPLATTE mit RUNDER STIRN - STÄHLE	Ø8	Ø32	637
ZBC		i-Xmill BALL HOLDERS - CARBIDE i-Xmill HALTER für WECHSELPLATTE mit RUNDER STIRN - VOLLHARTMETAL	Ø8	Ø32	638
XMR110A		i-Xmill CORNER RADIUS INSERTS for GENERAL PURPOSE i-Xmill WECHSELPLATTE mit GERADER STIRN UND ECKRADIUS für allgemeinen Einsatz	Ø8	Ø32	639
XMR120C		i-Xmill CORNER RADIUS INSERTS for HARDENED STEEL i-Xmill WECHSELPLATTE mit GERADER STIRN UND ECKRADIUS für gehärtete Materialien	Ø8	Ø32	639
XMR110D		i-Xmill CORNER RADIUS INSERTS for GRAPHITE i-Xmill WECHSELPLATTE mit GERADER STIRN UND ECKRADIUS für Graphit	Ø8	Ø32	639
ZRT / ZRS		i-Xmill CORNER RADIUS HOLDERS - STEEL i-Xmill HALTER für WECHSELPLATTE mit GERADER STIRN UND ECKRADIU - STÄHLE	Ø8	Ø32	641
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			642

◎ : Excellent ○ : Good

Carbon Steels		Alloy Steels		Tool Steels		Cast Iron	Hardened Steels	Stainless Steels	Aluminum	Graphite
~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc50~	~HRc28	~HRc8	
◎	○	◎	○	◎	○	○		○	○	
○	◎	○	◎	○	◎	◎	◎			
○		○		○					○	◎
◎	○	◎	○	◎	○	○		○	○	
○	◎	○	◎	○	◎	◎	◎			
○		○		○					○	◎

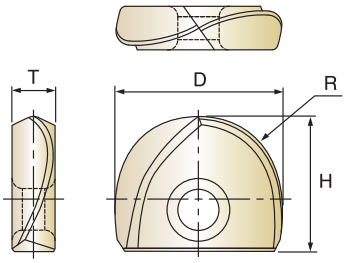
i-Xmill END MILLS

XMB110A
XMB120C
XMB110D

i-Xmill BALL INSERTS
i-Xmill WECHSELPLATTE mit RUNDER STIRN

- ▶ Indexable Ball End Mill for economic use
- ▶ Three Types of Inserts are available
  - For General Purpose (~HRc50)
  - For Hardened Material (HRc40~HRc65)
  - For Graphite
- ▶ Special Geometry and Coating for Excellent Performance

- ▶ Kopierfräser mit Wechselplatte für wirtschaftlichen Einsatz.
- ▶ Drei Typen von Schneideinsätzen lieferbar
  - Für allgemeinen Einsatz (HRc50)
  - Für gehärtete Materialien (HRc40~HRc65)
  - Für graphit
- ▶ Spezielle Geometrie und Beschichtung für höchste Leistu



cutting conditions : p.643

Unit : mm

EDP No.			Radius of Ball Nose	Mill Diameter	Height	Thickness
PVD Coated		Diamond Coated				
For General Material	For Hardened Material	For Graphite	R	D	H	T
XMB110A080	XMB120C080	XMB110D080	R4.0	**8.0**	8	2.4
XMB110A100	XMB120C100	XMB110D100	R5.0	**10.0**	9.5	2.7
XMB110A120	XMB120C120	XMB110D120	R6.0	**12.0**	11	3.2
XMB110A160	XMB120C160	XMB110D160	R8.0	**16.0**	13	4.2
XMB110A200	XMB120C200	XMB110D200	R10.0	**20.0**	16	5.2
XMB110A250	XMB120C250	XMB110D250	R12.5	**25.0**	19.5	6.2
XMB110A300	XMB120C300	XMB110D300	R15.0	**30.0**	23.5	7.2
XMB110A320	XMB120C320	XMB110D320	R16.0	**32.0**	24.5	7.2

• The ball radius tolerance is ±0.01mm and the set-up accuracy is ±0.02mm

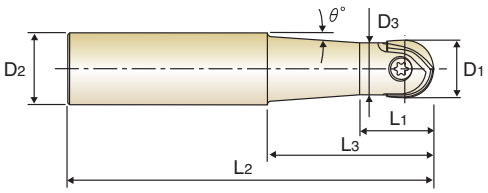
◎ : Excellent ○ : Good

	Carbon Steels		Alloy Steels		Tool Steels		Cast Iron	Hardened Steels	Stainless Steels	Aluminum	Graphite
	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc50~	~HRc28	~HRc8	
XMB110A	◎	○	◎	○	◎	○	○		○	○	
XMB120C	○	◎	○	◎	○	◎	◎	◎			
XMB110D	○		○		○					○	◎

i-Xmill BALL HOLDERS - STEEL
i-Xmill HALTER für WECHSELPLATTE mit RUNDER STIRN - STÄHLE

- Premium alloy steel with excellent strength.
- Precise shank, Tolerance (h6).
- Nickel plated, to prevent corrosion and improve lubricity.

- Premium legierter Stähle mit großer Festigkeit.
- Hochgenauer Schaft, Tol h6.
- Vernickelt, verhindert Korrosion und verbessert die Schmierfähigkeit.

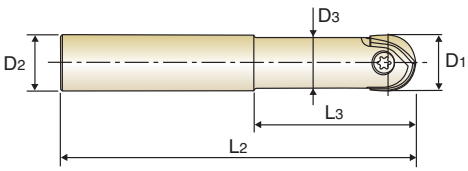


TAPER NECK TYPE

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Taper Angle θ°	Length Type	Wrench No.	Screw No.
ZBT0801120	8.0	12	12	35	90	7.2	4°43′	Short	TWFT07	TX2508T07
ZBT0802120			25	55	110		3°37′	Regular		
ZBT1001120	10.0	12	15	35	90	9	2°51′	Short	TWFT08	TX3010T08
ZBT1002120			30	55	110		2°17′	Regular		
ZBT1201160	12.0	16	17	55	110	10.5	3°23′	Short	TWFT10	TX3512T10
ZBT1601200	16.0	20	20	65	125	14.5	2°51′	Short	TWFT15	TX4016T15
ZBT2001250	20.0	25	25	75	145	18	3°26′	Short	● TWBT20	TX5020T20
ZBT2501320	25.0	32	30	90	170	22.5	4°03′	Short	● TWBT25	TX6025T25
ZBT3001320	30.0 32.0	32	40	110	195	27	1°38′	Short	● TWBT30	TX8030T30

● Required to use T-HANDLE (TWH600)



STRAIGHT NECK TYPE

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Length Type	Wrench No.	Screw No.
ZBS1201120	12.0	12	35	90	10.5	Short	TWFT10	TX3512T10
ZBS1202120			55	110		Regular		
ZBS1601160	16.0	16	35	95	14.5	Short	TWFT15	TX4016T15
ZBS1602160			65	125		Regular		
ZBS2001200	20.0	20	40	110	18	Short	● TWBT20	TX5020T20
ZBS2002200			75	145		Regular		
ZBS2501250	25.0	25	45	125	22.5	Short	● TWBT25	TX6025T25
ZBS2502250			90	170		Regular		
ZBS3001320	30.0, 32.0	32	55	140	27	Short	● TWBT30	TX8030T30
ZBS3002320			110	195		Regular		

● Required to use T-HANDLE (TWH600)

i-Xmill END MILLS

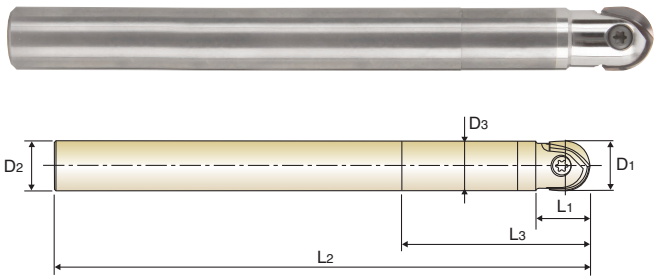
ZBC

i-Xmill BALL HOLDERS - CARBIDE

I-Xmill HALTER für WECHSELPLATTE mit RUNDER STIRN - VOLLHARTMETAL

- Equal tool rigidity with solid carbide end mill makes the stable and high finishing machining with the less vibration.
- The high finishing machining for the deeper part of mold.
- The tool's life of carbide ball holders is longer than steel holder.
- Shrink Fit Holding system can be applied.
- Upon request, the worn holder is able to be fixed.

- Die Festigkeit des Halters ermöglicht zusammen mit der VHM-Wechselplatte eine stabile Hochgenauigkeitsbearbeitung mit geringster Vibration.
- Feinbearbeitung auch in tieferen Teilen der Form.
- Die Lebensdauer von VHM-Haltern für runde Wechselplatten ist länger als die von Stahlhaltern.
- Schrumpffutter können verwendet werden.
- Auf Anfrage kann ein gebrochener Halter repariert werden.



Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Length Type	Wrench No.	Screw No.
	D1	D2	L1	L3	L2	D3			
ZBC0801080	8.0	8	12	25	130	7.7	Long	TWFT07	TX2508T07
ZBC1001100	10.0	10	15	30	140	9.7	Long	TWFT08	TX3010T08
ZBC1201120	12.0	12	17	35	150	11.7	Long	TWFT10	TX3512T10
ZBC1601160	16.0	16	20	50	200	15.7	Long	TWFT15	TX4016T15
ZBC2001200	20.0	20	25	60	200	19.7	Long	● TWBT20	TX5020T20
ZBC2501250	25.0	25	30	75	200	24.7	Long	● TWBT25	TX6025T25
ZBC3001320	30.0 32.0	32	40	90	250	29.7	Long	● TWBT30	TX8030T30

● Required to use T-HANDLE (TWH600)

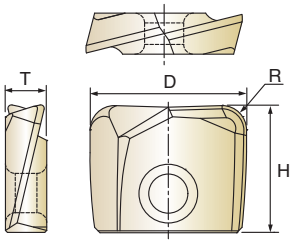
YG i-Xmill END MILLS

XMR110A
XMR120C
XMR110D

i-Xmill CORNER RADIUS INSERTS
i-Xmill WECHSELPLATTE mit GERADER STIRN UND ECKRADIUS

- ▶ The optimum geometry of the tool to achieve the better reliability and less vibration and cutting load.
- ▶ Interchangeability with i-Xmill ball holder, but the precise cutting is possible with i-Xmill corner radius holder due to higher stability and strength of tool.
- ▶ The various and wide cutting range makes it possible to machine over the roughing and finishing.
- ▶ Special coating makes high hardness with high thermal stability against oxidation.
- ▶ Three Types of Inserts are available
  - For General Purpose (~HRc50)
  - For Hardened Material (HRc40~HRc65)
  - For Graphite

- ▶ Die optimale Werkzeuggeometrie für große Betriebssicherheit und geringe Vibration und Schneidendruck.
- ▶ Einsetzbar wie i-Xmill Rundplattenhalter, aber eine größere Schnittgenauigkeit ist mit dem Vierkantplattenhalter möglich, wegen der größeren Steifigkeit und Stärke des Werkzeugs.
- ▶ Die große Einsatzbreite des Werkzeugs macht den Einsatz sowohl zum Schruppen als auch zum Schlichten möglich.
- ▶ Eine spezielle Beschichtung verleiht der Schneide große Härte und Hitzebeständigkeit.
- ▶ Drei Typen von Schneideinsätzen lieferbar
  - Für allgemeinen Einsatz (HRc50)
  - Für gehärtete Materialien (HRc40~HRc65)
  - Für graphit



cutting conditions : p.644

Unit : mm

EDP No.			Corner Radius	Mill Diameter	Height	Thickness
PVD Coated		Diamond Coated				
For General Material	For Hardened Material	For Graphite	R	D	H	T
XMR110A080 03	XMR120C080 03	XMR110D080 03	R0.3	8.0	8	2.4
XMR110A080 05	XMR120C080 05	XMR110D080 05	R0.5			
XMR110A080 10	XMR120C080 10	XMR110D080 10	R1.0			
XMR110A100 05	XMR120C100 05	XMR110D100 05	R0.5	10.0	9.5	2.7
XMR110A100 10	XMR120C100 10	XMR110D100 10	R1.0			
XMR110A100 20	XMR120C100 20	XMR110D100 20	R2.0			
XMR110A120 05	XMR120C120 05	XMR110D120 05	R0.5	12.0	11	3.2
XMR110A120 10	XMR120C120 10	XMR110D120 10	R1.0			
XMR110A120 20	XMR120C120 20	XMR110D120 20	R2.0			
XMR110A130 05	XMR120C130 05	XMR110D130 05	R0.5	13.0	11.2	3.2
XMR110A130 10	XMR120C130 10	XMR110D130 10	R1.0			
XMR110A130 20	XMR120C130 20	XMR110D130 20	R2.0			
XMR110A160 05	XMR120C160 05	XMR110D160 05	R0.5	16.0	13	4.2
XMR110A160 10	XMR120C160 10	XMR110D160 10	R1.0			
XMR110A160 20	XMR120C160 20	XMR110D160 20	R2.0			
XMR110A170 05	XMR120C170 05	XMR110D170 05	R0.5	17.0	13	4.2
XMR110A170 10	XMR120C170 10	XMR110D170 10	R1.0			
XMR110A170 20	XMR120C170 20	XMR110D170 20	R2.0			

- The other corner radius values are available on request.
- The corner radius tolerance is ±0.015mm and the set-up accuracy is ±0.02mm

◎ : Excellent ○ : Good

	Carbon Steels		Alloy Steels		Tool Steels		Cast Iron	Hardened Steels	Stainless Steels	Aluminum	Graphite
	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc50~	~HRc28	~HRc8	
XMR110A	◎	○	◎	○	◎	○	○		○	○	
XMR120C	○	◎	○	◎	○	◎	◎	◎			
XMR110D	○		○		○					○	◎

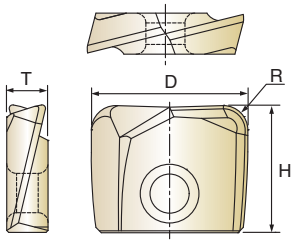
i-Xmill END MILLS

XMR110A
XMR120C
XMR110D

i-Xmill CORNER RADIUS INSERTS
i-Xmill WECHSELPLATTE mit GERADER STIRN UND ECKRADIUS

- The optimum geometry of the tool to achieve the better reliability and less vibration and cutting load.
- Interchangeability with i-Xmill ball holder, but the precise cutting is possible with i-Xmill corner radius holder due to higher stability and strength of tool.
- The various and wide cutting range makes it possible to machine over the roughing and finishing.
- Special coating makes high hardness with high thermal stability against oxidation.
- Three Types of Inserts are available
  - For General Purpose (~HRc50)
  - For Hardened Material (HRc40~HRc65)
  - For Graphite

- Die optimale Werkzeuggeometrie für große Betriebssicherheit und geringe Vibration und Schneidendruck.
- Einsetzbar wie i-Xmill Rundplattenhalter, aber eine größere Schnittgenauigkeit ist mit dem Vierkantplattenhalter möglich, wegen der größeren Steifigkeit und Stärke des Werkzeugs.
- Die große Einsatzbreite des Werkzeugs macht den Einsatz sowohl zum Schruppen als auch zum Schlichten möglich.
- Eine spezielle Beschichtung verleiht der Schneide große Härte und Hitzebeständigkeit.
- Drei Typen von Schneideinsätzen lieferbar
  - Für allgemeinen Einsatz (HRc50)
  - Für gehärtete Materialien (HRc40~HRc65)
  - Für graphit



cutting conditions : p.644

Unit : mm

EDP No.			Corner Radius	Mill Diameter	Height	Thickness
PVD Coated		Diamond Coated				
For General Material	For Hardened Material	For Graphite	R	D	H	T
XMR110A200 05	XMR120C200 05	XMR110D200 05	R0.5	20.0	16	5.2
XMR110A200 10	XMR120C200 10	XMR110D200 10	R1.0			
XMR110A200 20	XMR120C200 20	XMR110D200 20	R2.0			
XMR110A210 05	XMR120C210 05	XMR110D210 05	R0.5	21.0	16	5.2
XMR110A210 10	XMR120C210 10	XMR110D210 10	R1.0			
XMR110A210 20	XMR120C210 20	XMR110D210 20	R2.0			
XMR110A250 05	XMR120C250 05	XMR110D250 05	R0.5	25.0	19.5	6.2
XMR110A250 10	XMR120C250 10	XMR110D250 10	R1.0			
XMR110A250 20	XMR120C250 20	XMR110D250 20	R2.0			
XMR110A260 05	XMR120C260 05	XMR110D260 05	R0.5	26.0	19.5	6.2
XMR110A260 10	XMR120C260 10	XMR110D260 10	R1.0			
XMR110A260 20	XMR120C260 20	XMR110D260 20	R2.0			
XMR110A300 05	XMR120C300 05	XMR110D300 05	R0.5	30.0	23.5	7.2
XMR110A300 10	XMR120C300 10	XMR110D300 10	R1.0			
XMR110A300 20	XMR120C300 20	XMR110D300 20	R2.0			
XMR110A320 05	XMR120C320 05	XMR110D320 05	R0.5	32.0	23.5	7.2
XMR110A320 10	XMR120C320 10	XMR110D320 10	R1.0			
XMR110A320 20	XMR120C320 20	XMR110D320 20	R2.0			

- The other corner radius values are available on request.
- The corner radius tolerance is ±0.015mm and the set-up accuracy is ±0.02mm

◎ : Excellent ○ : Good

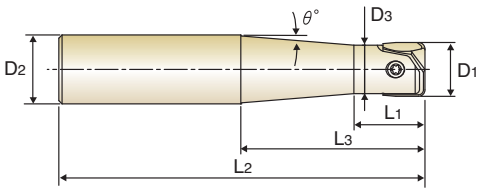
	Carbon Steels		Alloy Steels		Tool Steels		Cast Iron	Hardened Steels	Stainless Steels	Aluminum	Graphite
	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc50~	~HRc28	~HRc8	
XMR110A	◎	○	◎	○	◎	○	○		○	○	
XMR120C	○	◎	○	◎	○	◎	◎	◎			
XMR110D	○		○		○					○	◎

i-Xmill CORNER RADIUS HOLDERS - STEEL

i-Xmill HALTER für WECHSELPLATTE mit GERADER STIRN UND ECKRADIU

- Premium alloy steel with excellent strength.
- Precise shank, Tolerance (h6).
- Nickel plated, to prevent corrosion and improve lubricity.

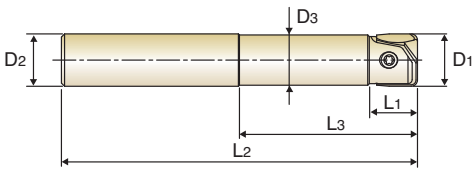
- Premium legierter Stähle mit großer Festigkeit.
- Hochgenauer Schaft, Tol h6.
- Vernickelt, verhindert Korrosion und verbessert die Schmierfähigkeit.



TAPER NECK TYPE

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Taper Angle θ°	Length Type	Wrench No.	Screw No.
ZRT0801120	8.0	12	10	22	100	6.7	9°	Regular	TWFT07	TX2508T07
ZRT0802120				50	130		2° 43'	Long		
ZRT1001120	10.0	12	13	25	100	8.6	4° 45'	Regular	TWFT08	TX3010T08
ZRT1002120				50	150		1° 32'	Long		
ZRT1202160	12.0 13.0	16	15	60	160	10.2	2° 32'	Long	TWFT10	TX3512T10



STRAIGHT NECK TYPE

Unit : mm

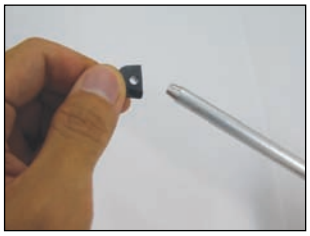
EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Length Type	Wrench No.	Screw No.
ZRS1201120	12.0, 13.0	12	13	30	110	11	Regular	TWFT10	TX3512T10
ZRS1601160	16.0, 17.0	16	15	50	130	15	Regular	TWFT15	TX4016T15
ZRS1602160				65	165		Intermediate		
ZRS2001200	20.0, 21.0	20	18	60	140	19	Regular	● TWBT20	TX5020T20
ZRS2002200				80	180		Intermediate		
ZRS2501250	25.0, 26.0	25	23	70	150	24	Regular	● TWBT25	TX6025T25
ZRS2502250				90	200		Intermediate		
ZRS3001320	30.0	32	27	80	160	29	Regular	● TWBT30	TX8030T30
ZRS3002320				100	220		Intermediate		
ZRS3201320	32.0	32	28	80	160	31	Regular	● TWBT30	TX8030T30
ZRS3202320				100	220		Intermediate		

● Required to use T-HANDLE (TWH600)

i-Xmill END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

ASSEMBLY OF *i-Xmill*
MONTAGE DES i-Xmill

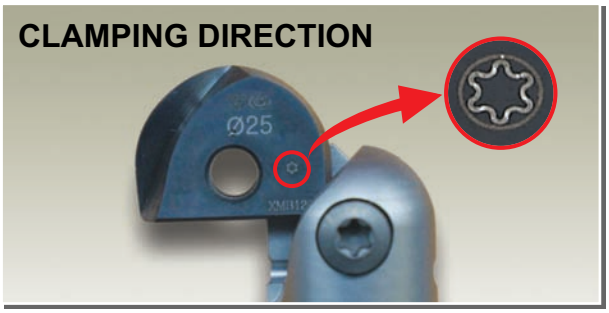


◀ Make sure to clean the insert and insert seat.
Wechselplatte und Plattensitz sorgfältig reinigen.

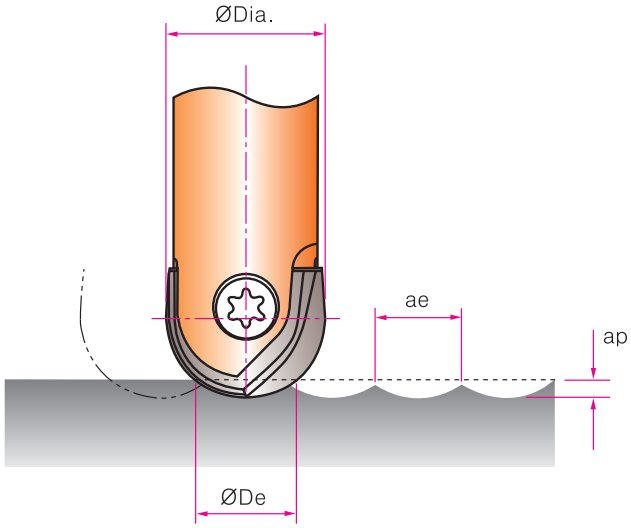
◀ Slide the insert into the slot of the holder.
Tighten the screw using anti-seize compound.
Wechselplatte in den Sitz des Halters einf¸hren.
Die Schraube fest anziehen und dabei Spezialfett verwenden

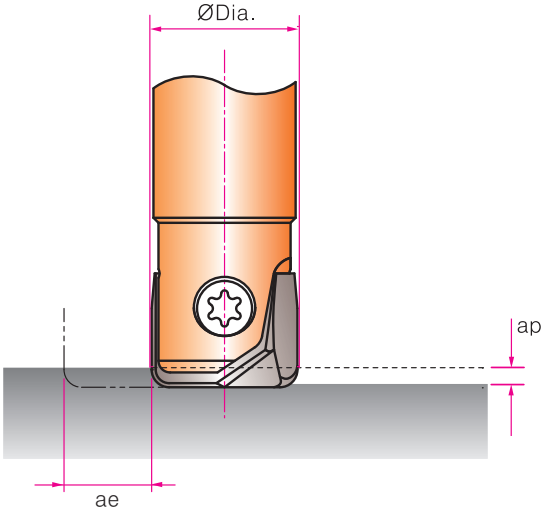
SIZE (ØD)	CLAMPING TORQUE [N · m]
Ø8	1.0
Ø10	1.5
Ø12, Ø13	2.5
Ø16, Ø17	3.5
Ø20, Ø21	5.0
Ø25, Ø26	6.0
Ø30, Ø32	6.5

* When the screw is worn out, please change the new screw.
* Wenn das Schraubengewinde verschlissen ist, bitte neue Schraube verwenden.
* Please tighten up the screw with recommended torque. (Please refer to the table)
* Die Feststellschraube mit dem empfohlenen Anzugsmoment anziehen (siehe Tabelle).
* Don't press down the insert, when the screw is tightened.
* Die Wechselplatte nicht nach unten dr¸cken, wenn die Schraube angezogen ist.



CUTTING CONDITION





RPM = revolution per minute (rev/min)
Vc = surface meter per minute (M/min)
Dia. = diameter of insert (mm)
Vf = feed speed (mm/min)
f = feed per revolution (mm/rev)
De = effective tool diameter (mm)
ap = axial depth of cut (mm)
ae = radial depth of cut (mm)

$$Vc\ [M/min] = \frac{(RPM) \cdot (\pi) \cdot (Dia.)}{1000}$$

$$Vf\ [mm/min] = (RPM) \cdot (f)$$

$$RPM\ [rev/min] = \frac{(Vc) \cdot (1000)}{(\pi) \cdot (Dia.)}$$

$$De\ [mm] = 2\sqrt{(ap) \cdot (Dia. - ap)}$$

i-Xmill END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

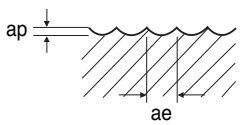
i-Xmill BALL INSERTS
i-Xmill WECHSELPLATTE MIT RUNDER STIRN

XMB110A, XMB120C, XMB110D SERIES

WORK MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS			
HARDNESS	HB	~280				280~380			
	HRc	~30				30~40			
STRENGTH	N/mm²	~1000				1000~1250			
i-Xmill TYPE		XMB110A				XMB110A			
CUTTING CONDITION Roughing~Finishing		RPM [rev/min]	Feed(Vf) [mm/min]	Vc [m/min]	fz [mm/t]	RPM [rev/min]	Feed(Vf) [mm/min]	Vc [m/min]	fz [mm/t]
8.0		6370~12730	2550~5090	160~320	0.20~0.20	4770~11140	1910~4460	120~280	0.20~0.20
10.0		5090~11460	2040~4580	160~360	0.20~0.20	3820~9550	1530~3820	120~300	0.20~0.20
12.0, 13.0		4240~10080	1700~4030	160~380	0.20~0.20	3180~9280	1270~3710	120~350	0.20~0.20
16.0, 17.0		3180~9550	1590~5730	160~480	0.25~0.30	2390~7560	1190~4540	120~380	0.25~0.30
20.0, 21.0		2550~9230	1270~7380	160~580	0.25~0.40	1910~6680	950~5350	120~420	0.25~0.40
25.0, 26.0		2040~7640	1020~7640	160~600	0.25~0.50	1530~6110	760~6110	120~480	0.25~0.50
30.0, 32.0		1700~7430	850~8910	160~700	0.25~0.60	1270~5840	640~7000	120~550	0.25~0.60

WORK MATERIAL		DIE TOOL STEELS PRE-HARDENED				HARDENED STEELS			
HARDNESS	HB	380~480				480~740			
	HRc	40~50				50~65			
STRENGTH	N/mm²	1250~1500				1500~			
i-Xmill TYPE		XMB110A, XMB120C				XMB120C			
CUTTING CONDITION Roughing~Finishing		RPM [rev/min]	Feed(Vf) [mm/min]	Vc [m/min]	fz [mm/t]	RPM [rev/min]	Feed(Vf) [mm/min]	Vc [m/min]	fz [mm/t]
8.0		3980~8750	1190~3500	100~220	0.15~0.20	3180~7160	640~2860	80~180	0.10~0.20
10.0		3180~8280	950~3310	100~260	0.15~0.20	2550~6370	510~2550	80~200	0.10~0.20
12.0, 13.0		2650~7430	800~2970	100~280	0.15~0.20	2120~5840	420~2330	80~220	0.10~0.20
16.0, 17.0		1990~6960	800~4180	100~350	0.20~0.30	1590~5170	480~3100	80~260	0.15~0.30
20.0, 21.0		1590~6370	640~5090	100~400	0.20~0.40	1270~5090	380~4070	80~320	0.15~0.40
25.0, 26.0		1270~5730	510~5730	100~450	0.20~0.50	1020~4580	310~4580	80~360	0.15~0.50
30.0, 32.0		1060~5310	420~6370	100~500	0.20~0.60	850~4240	250~5090	80~400	0.15~0.60

WORK MATERIAL		GRAPHITE			
HARDNESS	HB				
	HRc				
STRENGTH	N/mm²				
i-Xmill TYPE		XMB110D			
CUTTING CONDITION Roughing~Finishing		RPM [rev/min]	Feed(Vf) [mm/min]	Vc [m/min]	fz [mm/t]
8.0		11940~15920	4770~6370	300~400	0.20~0.20
10.0		9550~12730	3820~5090	300~400	0.20~0.20
12.0, 13.0		7960~10610	3180~4240	300~400	0.20~0.20
16.0, 17.0		5970~7960	2980~4770	300~400	0.25~0.30
20.0, 21.0		4770~7640	2860~5350	300~480	0.30~0.35
25.0, 26.0		3820~7130	2670~5700	300~560	0.35~0.40
30.0, 32.0		3180~6900	2550~6900	300~650	0.40~0.50



ae : Roughing - 0.1 x D
Finishing - Under Ø12 : 0.25mm
Ø12~Ø17 : 0.30mm
From Ø20 : 0.40mm
ap : Roughing - Under Ø16 : 0.025 x D
From Ø16 : 0.05 x D
Finishing - 0.1mm

▶ Recommend to reduce the feed rate to 70 ~ 85% when you use long tools.

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

i-Xmill END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

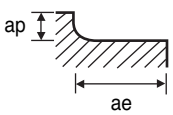
i-Xmill CORNER RADIUS INSERTS
i-Xmill WECHSELPLATTE MIT GERADER STIRN UND ECKRADIUS

XMR110A, XMR120C, XMR110D SERIES

WORK MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS			
HARDNESS	HB	~280				280~380			
	HRc	~30				30~40			
STRENGTH	N/mm²	~1000				1000~1250			
i-Xmill TYPE		XMR110A				XMR110A			
CUTTING CONDITION Roughing~Finishing		RPM [rev/min]	Feed(Vf) [mm/min]	Vc [m/min]	fz [mm/t]	RPM [rev/min]	Feed(Vf) [mm/min]	Vc [m/min]	fz [mm/t]
8.0		6370~11940	2550~3580	160~300	0.20~0.15	4770~11140	1910~3340	120~280	0.20~0.15
10.0		5090~9550	2040~2860	160~300	0.20~0.15	3820~8910	1530~2670	120~280	0.20~0.15
12.0, 13.0		4240~7960	1700~2390	160~300	0.20~0.15	3180~7430	1270~2230	120~280	0.20~0.15
16.0, 17.0		3180~5970	1590~2390	160~300	0.25~0.20	2390~5570	1190~2230	120~280	0.25~0.20
20.0, 21.0		2550~4770	1270~1910	160~300	0.25~0.20	1910~4460	950~1780	120~280	0.25~0.20
25.0, 26.0		2040~3820	1020~1530	160~300	0.25~0.20	1530~3570	760~1430	120~280	0.25~0.20
30.0, 32.0		1700~3180	850~1270	160~300	0.25~0.20	1270~2970	640~1190	120~280	0.25~0.20

WORK MATERIAL		DIE TOOL STEELS PRE-HARDENED				HARDENED STEELS			
HARDNESS	HB	380~480				480~740			
	HRc	40~50				50~65			
STRENGTH	N/mm²	1250~1500				1500~			
i-Xmill TYPE		XMR110A, XMR120C				XMR120C			
CUTTING CONDITION Roughing~Finishing		RPM [rev/min]	Feed(Vf) [mm/min]	Vc [m/min]	fz [mm/t]	RPM [rev/min]	Feed(Vf) [mm/min]	Vc [m/min]	fz [mm/t]
8.0		3980~11140	990~1340	100~280	0.12~0.06	3180~8750	640~880	80~220	0.10~0.05
10.0		3180~8910	800~1070	100~280	0.13~0.06	2550~7000	510~700	80~220	0.10~0.05
12.0, 13.0		2650~7430	660~890	100~280	0.12~0.06	2120~5840	420~580	80~220	0.10~0.05
16.0, 17.0		1990~5570	600~840	100~280	0.15~0.08	1590~4380	420~530	80~220	0.15~0.06
20.0, 21.0		1590~4460	480~670	100~280	0.15~0.08	1270~3500	380~420	80~220	0.15~0.06
25.0, 26.0		1270~3570	380~530	100~280	0.15~0.07	1020~2800	310~340	80~220	0.15~0.06
30.0, 32.0		1060~2970	320~450	100~280	0.15~0.08	850~2330	250~280	80~220	0.15~0.06

WORK MATERIAL		GRAPHITE			
HARDNESS	HB				
	HRc				
STRENGTH	N/mm²				
i-Xmill TYPE		XMR110D			
CUTTING CONDITION Roughing~Finishing		RPM [rev/min]	Feed(Vf) [mm/min]	Vc [m/min]	fz [mm/t]
8.0		11940~15920	4770~6370	300~400	0.20~0.20
10.0		9550~12730	3820~5090	300~400	0.20~0.20
12.0, 13.0		7960~10610	3180~4240	300~400	0.20~0.20
16.0, 17.0		5970~7960	2390~3180	300~400	0.20~0.20
20.0, 21.0		4770~6370	2390~3180	300~400	0.25~0.25
25.0, 26.0		3820~5090	1910~2550	300~400	0.25~0.25
30.0, 32.0		3180~4240	1590~2120	300~400	0.25~0.25



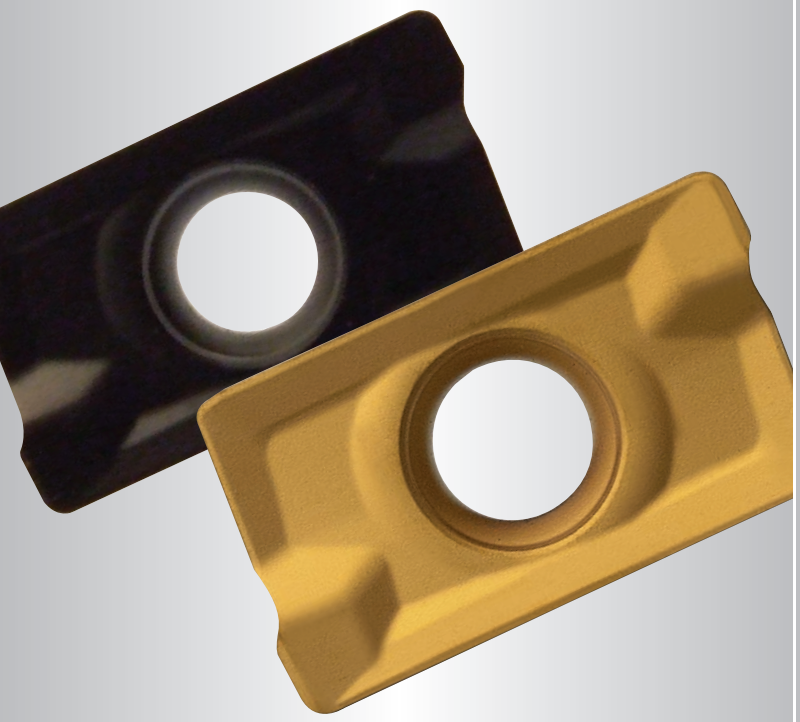
ae : Roughing - 0.1 x D
Finishing - 0.2mm
ap : Roughing - Under Ø16 : 0.025 x D
From Ø16 : 0.05 x D
Finishing - Under Ø16 : 0.1mm
From Ø16 : 0.2mm

▶ Recommend to reduce the feed rate to 70 ~ 85% when you use long tools.

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE INSERT & HOLDER

Being the best through innovation

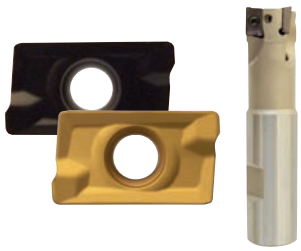


i-HS mill

i-HS mill FRÄSER

- For machining General Steels and Cast Iron, Ductile Cast Iron
- Zur Bearbeitung von Stahl und Gusseisen, Sphäroguss

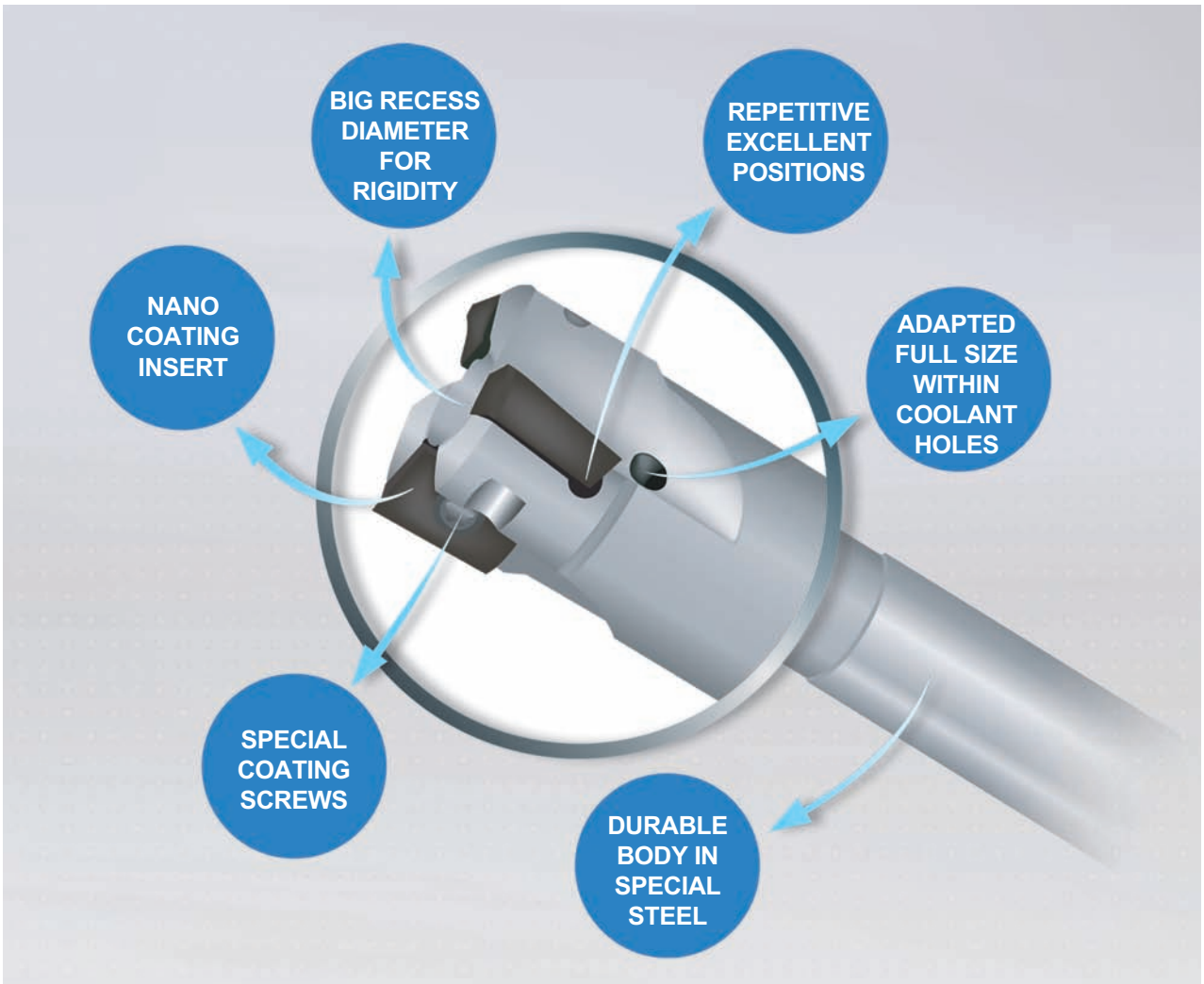
SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
YA702 YA703 YA102 YA503		i-HS mill INSERT FOR GENERAL PURPOSE/STEEL i-HS FRÄSWENDEPLATTEN FÜR DIE ALLGEMEINE STAHLBEARBEITUNG i-HS mill INSERT FOR STAINLESS STEELS i-HS FRÄSEREINSÄTZE FÜR DIE ROSTFREIER STAHL i-HS mill INSERT FOR CAST IRON i-HS FRÄSWENDEPLATTEN FÜR DIE GUSSBEARBEITUNG	Shank type Ø16 Cutter type Ø40	 Ø32 Ø80	648
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			651

Grade Range Map For Milling

	High Speed	Finishing to Light		Medium	Rough to Heavy	
	-	01	10	20	30	40
P Steel				YA702		
					YA703	
M Stainless Steel			YA702			
					YA703	
K Cast Iron			YA102			
K Ductile Cast Iron				YA503		

Features of *i-HS mill*



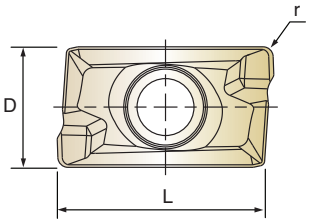
i-HS mill END MILLS

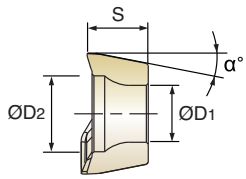
YA702 YA102 YA703 YA503

i-HS mill INSERT
i-HS mill WECHSELPLATTE

- YG-1 PVD coating series achieve the optimal performance on the indexable holder due to high quality, nano technology and multilayer.
- YG-1 coating series enable to use in high speed and high efficient cutting due to excellent wear resistance and heat resistance.
- The layer residual stress is controlled to minimum by low temperature coating, and so the coating provides high edge reliability at any condition.
- YG-1 coating increases hardness and high temperature corrosion resistance compared to conventional coating.

- Die YG-1 PVD-Beschichtungsserie erzielt ihre optimale Leistung auf der Wendeschneidplatte aufgrund der hohen Qualität der Nanotechnologie und Multilayerbeschichtung.
- DieYG-1 Beschichtung ermöglicht, die Nutzung im HSC Bereich mit hoher effizientes an den Schneiden durch eine ausgezeichnete Verschleißfestigkeit und Hitzebeständigkeit.
- Die Restspannung der Beschichtung ist durch ein spezielles Niedrigtemperaturverfahren auf ein Minimum reduziert. Daraus resultiert eine hohe Schneidkantenstabilität auch unter erschwerten Bearbeitungsbedingungen.
- Das YG-1Beschichtungverfahren erhöht Härte und Korrosionsbeständigkeit bei hohen Temperaturen im Vergleich herkömmlichen Beschichtungsverfahren.





Unit : mm

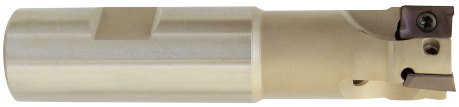
Cat. No.	Grade	ISO Classification					D	L	S	r	ØD1	ØD2	α°
		P	M	K	S	N							
APKT103504PDER-HAM	YA702	◎	○				6.7	10.5	3.5	0.4	2.8	3.9	11
APKT113504PDER-HAM		◎	○				6.2	10.8	3.5	0.4	2.8	3.8	
APKT113508PDER-HAM		◎	○				6.2	10.8	3.5	0.8	2.8	3.8	
APKT160408PDER-HAM		◎	○				9.5	16.3	5.3	0.8	4.5	6.0	
APKT103504PDER-HAM	YA102			◎			6.7	10.5	3.5	0.4	2.8	3.9	
APKT103504PDER-HAM	YA503			◎			6.7	10.5	3.5	0.4	2.8	3.9	
APKT160408PDER-HAM	YA102			◎			9.5	16.3	5.3	0.8	4.5	6.0	
APKT160408PDER-HAM	YA503			◎			9.5	16.3	5.3	0.8	4.5	6.0	
APKT103504PDER-HAM	YA703	○	◎				6.7	10.5	3.5	0.4	2.8	3.9	
APKT160408PDER-HAM	YA703	○	◎				9.5	16.3	5.3	0.8	4.5	6.0	

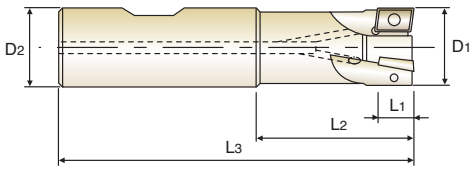
Recommended Cutting Conditions by Work Material

		P				M		K			
		Low Alloy		High Alloy		Stainless Steel		Cast Iron		Ductile Cast Iron	
		Vc(m/min)	fz(mm/t)	Vc(m/min)	fz(mm/t)	Vc(m/min)	fz(mm/t)	Vc(m/min)	fz(mm/t)	Vc(m/min)	fz(mm/t)
Coated	YA702	80~300	0.1~0.4	80~230	0.07~0.3	70~200	0.1~0.25				
		◎		◎		○					
	YA703	80~240	0.1~0.3			70~250	0.1~0.3				
		○				◎					
	YA102							80~250	0.1~0.3	80~180	0.1~0.25
								◎		○	
	YA503							80~200	0.1~0.25	80~230	0.1~0.3
								○		◎	

i-HS mill END MILLS

i-HS mill HOLDER (Shank Type)
i-HS mill HALTER





PLAIN FLAT P.651

Unit : mm

Holder								Insert Type	Torx Screw No.	Torx Wrench No.
Cat. No.	D1	D2	L1	L2	L3	Z	Shank			
ZHS16085AP10F2E	16	16	10	37	85	2	Flat	APKT103504PDER	TXME30T08	TWWT08
ZHS20090AP10F3E	20	20	10	40	90	3				
ZHS16085AP10P2E	16	16	10	37	85	2	Plain			
ZHS16100AP10P2E	16	16	10	37	100	2				
ZHS16150AP10P2E	16	16	10	37	150	2				
ZHS16170AP10P2E	16	16	10	37	170	2				
ZHS20090AP10P3E	20	20	10	40	90	3				
ZHS20150AP10P3E	20	20	10	40	150	3				
ZHS20170AP10P3E	20	20	10	40	170	3				
ZHS25100AP16F2B	25	20	16	40	100	2	Flat	APKT160408PDER	TXME40T15	TWWT15
ZHS25100AP16F2E	25	25	16	40	100	2				
ZHS25200AP16F2E	25	25	16	50	200	2				
ZHS32110AP16F3B	32	25	16	50	110	3				
ZHS32110AP16F3E	32	32	16	50	110	3				
ZHS25100AP16P2B	25	20	16	40	100	2	Plain			
ZHS25150AP16P2B	25	20	16	40	150	2				
ZHS25100AP16P2E	25	25	16	40	100	2				
ZHS25170AP16P2E	25	25	16	50	170	2				
ZHS25200AP16P2E	25	25	16	50	200	2				
ZHS26210AP16P2B	26	25	16	40	210	2				
ZHS32110AP16P3B	32	25	16	50	110	3				
ZHS32150AP16P3B	32	25	16	40	150	3				
ZHS32110AP16P3E	32	32	16	50	110	3				
ZHS32160AP16P3E	32	32	16	50	160	3				
ZHS32180AP16P3E	32	32	16	50	180	3				

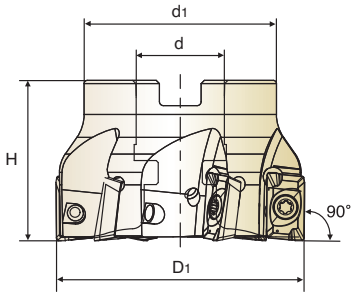
SET PROMOTION

SET No.	Holder		Insert
	Cat. No.	Shank	Cat. No.
ISET0009	ZHS16085AP10F2E	Flat	APKT103504PDER-HAM YA702
ISET0010	ZHS20090AP10F3E		
ISET0011	ZHS25100AP16F2B		APKT160408PDER-HAM YA702
ISET0012	ZHS32110AP16F3B		
ISET0013	ZHS16085AP10P2E	Plain	APKT103504PDER-HAM YA702
ISET0014	ZHS20090AP10P3E		
ISET0015	ZHS25100AP16P2B		APKT160408PDER-HAM YA702
ISET0016	ZHS32110AP16P3B		

▶Contents : Milling Insert 20pcs + Holder(including Screws) 1pc + Wrench 1pc

i-HS mill END MILLS

i-HS mill HOLDER (Cutter Type)
i-HS mill HALTER



Unit : mm

Holder						Insert Type	Torx Screw No.	Torx Wrench No.
Cat. No.	D1	d	H	d1	Z			
CHS040AP10	40	16	40	34	4	APKT103504PDER	TXME30T08	TWWT08
CHS050AP10	50	22	40	42	7			
CHS063AP16	63	22	40	48	6	APKT160408PDER	TXME40T15	TWWT15
CHS080AP16	80	27	50	57	7			

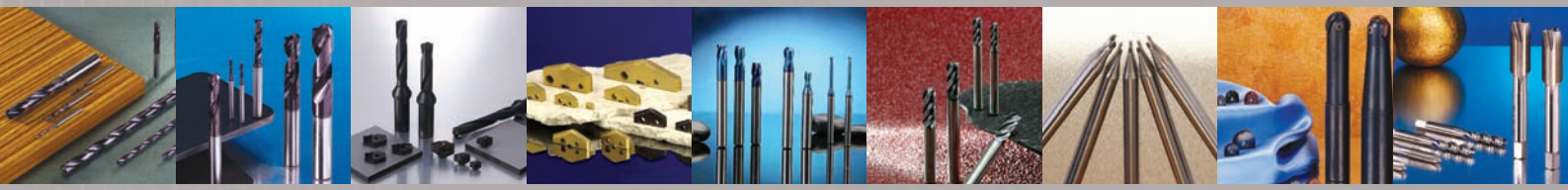
i-HS mill INSERTS
i-HS mill WECHSELPLATTE

YA702, YA703, YA102, YA503 SERIES

WORK MATERIAL		Vc(m/min.)		fz(mm/tooth)	
		min.	max.	min.	max.
P	Non Alloyed Steel	80	300	0.1	0.4
	Low Alloyed Steel	80	300	0.1	0.4
	High Alloyed Steel	80	230	0.07	0.3
M	Stainless Steel	70	250	0.1	0.3
K	Cast Iron	80	250	0.1	0.3
	Ductile Cast Iron	80	230	0.1	0.3

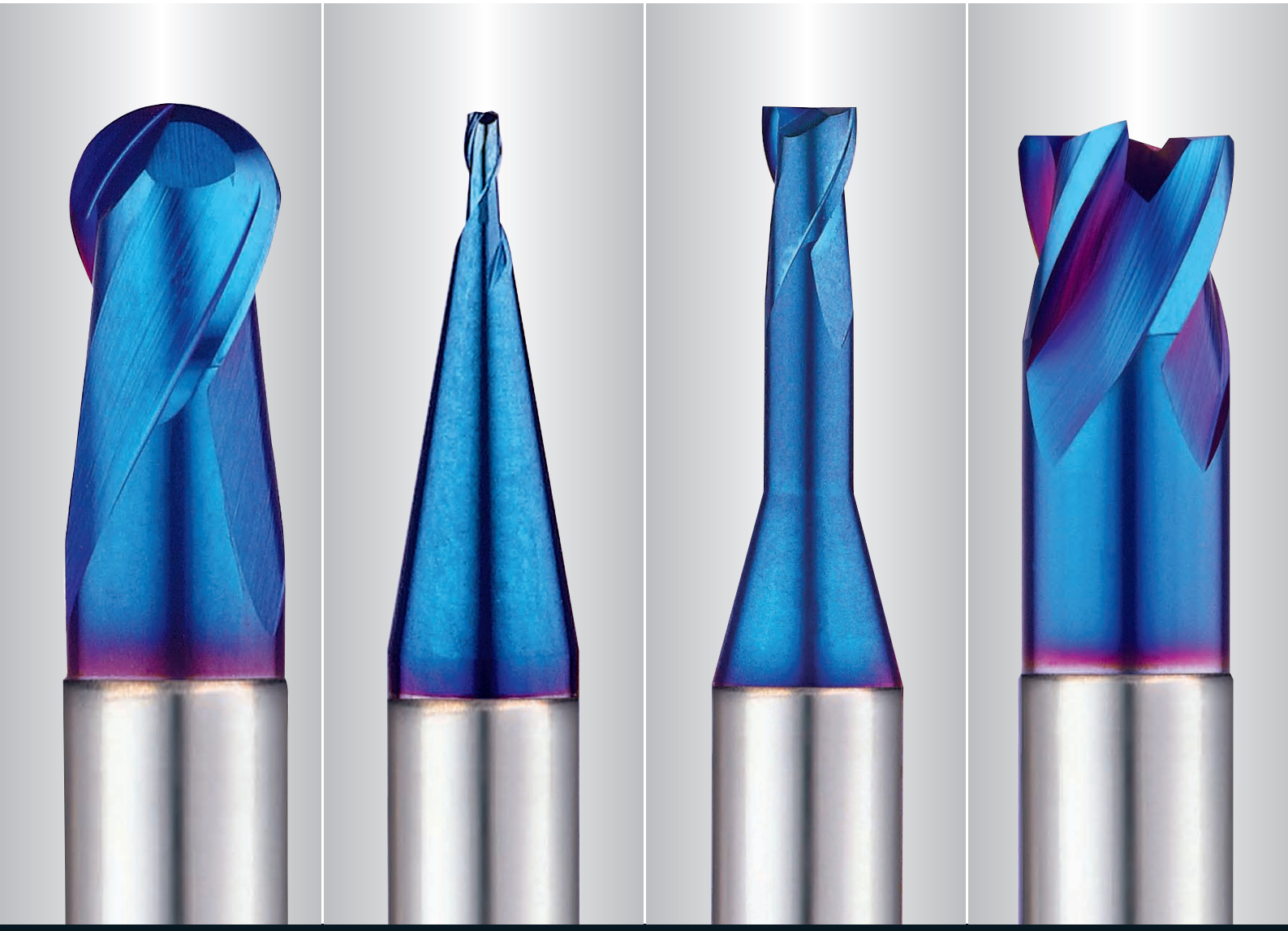
▶ Main Application fot Steel(**P**) and Stainless Steel(**M**) and Cast Iron(**K**)

Global Cutting Tool Leader **YG-1**



CARBIDE

Being the best through innovation



X5070

X5070 FRÄSER

- High Hardened Steels HRc45 to HRc70, High Speed Machining, Dry Cutting
- Für hoch gehärtete Stähle von Hrc45 bis HRc70. HSC-Technik. Trockenfräsen

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
G8B59		CARBIDE, 4FLUTE STUB LENGTH CORNER RADIUS HIGH FEED VOLLHARTMETALL, 4 SCHNEIDEN EXTER KURZ ECKENRADIUS HOCHVORSCHUB	D2.0	D12.0	656
G8B54		CARBIDE, 4FLUTE STUB LENGTH CORNER RADIUS HIGH FEED VOLLHARTMETALL, 4 SCHNEIDEN EXTER KURZ ECKENRADIUS HOCHVORSCHUB	D2.0	D16.0	657
G8A46		CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS für SCHMALE RIPPEN	R0.05	R2.0	658
G8A54		CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS für SCHMALE RIPPEN	R0.25	R1.0	661
G8A28		CARBIDE, 2 FLUTE BALL NOSE VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS	R0.05	R6.0	662
G8A38		CARBIDE, 2 FLUTE STUB LENGTH BALL NOSE with EXTENDED NECK VOLLHARTMETALL, 2 SCHNEIDEN EXTER KURZ STIRNRADIUS mit ABGESETZTEM SCHAFTTETL	R0.5	R12.5	663
G8A53		CARBIDE, 2 FLUTE MINIATURE BALL NOSE VOLLHARTMETALL, 2 SCHNEIDEN MINI STIRNRADIUS	R0.2	R1.0	664
G8A59		CARBIDE, 3 FLUTE BALL NOSE - Center Match VOLLHARTMETALL, 3 SCHNEIDEN STIRNRADIUS - Schneiden Mittelpunkt	R1.5	R10.0	665
G8D62		CARBIDE, 4 FLUTE BALL NOSE - Center Match VOLLHARTMETALL, 3 SCHNEIDEN STIRNRADIUS - Schneiden Mittelpunkt	R1.5	R10.0	666
G8A60		CARBIDE, 2 FLUTE CORNER RADIUS for RIB PROCESSING VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS für SCHMALE RIPPEN	D0.5	D12.0	667
G8A36		CARBIDE, 2 FLUTE STUB LENGTH CORNER RADIUS with EXTENDED NECK VOLLHARTMETALL, 2 SCHNEIDEN EXTER KURZ EXKENRADIUS mit ABGESETZTEM SCHAFTTETL	D0.3	D20.0	670
G8A52		CARBIDE, 2 FLUTE CORNER RADIUS for RIB PROCESSING VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS für SCHMALE RIPPEN	D0.5	D2.0	672
G8A50		CARBIDE, 2 FLUTE MINIATURE CORNER RADIUS VOLLHARTMETALL, 2 SCHNEIDEN MINI ECKENRADIUS	D0.3	D2.0	673
G8A47		CARBIDE, 4 FLUTE CORNER RADIUS with EXTENDED NECK VOLLHARTMETALL, 4 SCHNEIDEN ECKENRADIUS mit ABGESETZTEM SCHAFTTETL	D3.0	D12.0	674
G8A37		CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS with EXTENDED NECK VOLLHARTMETALL, 4 SCHNEIDEN EXTER KURZ ECKENRADIUS mit ABGESETZTEM SCHAFTTETL	D1.0	D20.0	675
G8B08		CARBIDE, 4 FLUTE CORNER RADIUS with EXTENDED NECK VOLLHARTMETALL, 4 SCHNEIDEN ECKENRADIUS mit ABGESETZTEM SCHAFTTETL	D6.0	D12.0	676
G8A39		CARBIDE, 6 FLUTE 45° HELIX CORNER RADIUS with EXTENDED NECK VOLLHARTMETALL, 6 SCHNEIDEN 45° RECHTSSPIRALE ECKENRADIUS mit ABGESETZTEM SCHAFTTETL	D6.0	D20.0	677
G8A45		CARBIDE, 2 FLUTE for RIB PROCESSING VOLLHARTMETALL, 2 SCHNEIDEN für SCHMALE RIPPEN	D0.1	D4.0	678
G8A01		CARBIDE, 2 FLUTE with EXTENDED NECK VOLLHARTMETALL, 2 SCHNEIDEN mit ABGESETZTEM SCHAFTTETL	D0.1	D20.0	681
G8A02		CARBIDE, 4 FLUTE with EXTENDED NECK VOLLHARTMETALL, 4 SCHNEIDEN mit ABGESETZTEM SCHAFTTETL	D1.0	D20.0	682
G8D63		CARBIDE, 6&8 FLUTE 45° HELIX LONG LENGTH VOLLHARTMETALL, 6&8 SCHNEIDEN 45° RECHTSSPIRALE LANG	D6.0	D25.0	683
G8D64		CARBIDE, 6&8 FLUTE 45° HELIX EXTRA LONG LENGTH VOLLHARTMETALL, 6&8 SCHNEIDEN 45° RECHTSSPIRALE EXTRA LANG	D6.0	D25.0	684
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			685

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									
		○	○	◎	◎									
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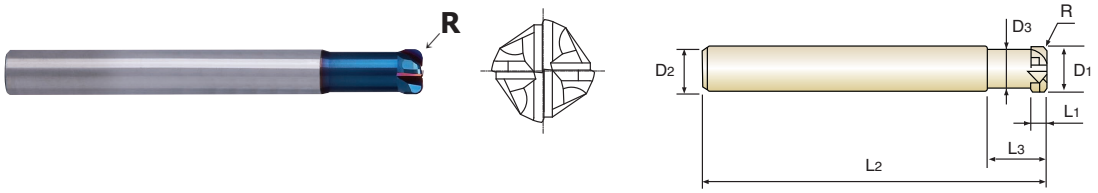
X5070 END MILLS

G8B59 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS HIGH FEED
VOLLHARTMETALL, 4 SCHNEIDEN EXTER KURZ ECKENRADIUS HOCHVORSCHUB

- Excellent wear resistance at heavy feed rates on high hardened material.
- Designed with reduced clearance angles and short flutes for strength.
- High hardness & heat resistance coating for long life in dry applications.

- Hervorragende Verschleißeigenschaften bei hohen Schnittwerten in gehärteten Materialien
- Mit reduzierten Freiwinkeln und kurzen Spannuten für hohe Festigkeiten konstruiert.
- Große Härte u. hitzebeständige Beschichtung für lange Lebensdauer bei Trockenbearbeitung



NG HM | 4 | BLUE | 0° | R ±0.005 | PLAIN

P.685, 686

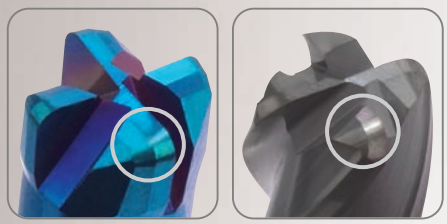
Unit : mm

EDP No.	Corner Radius R (±0.005)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
G8B5902005	R0.5	2.0	6	1	6	50	1.8
G8B5903005	R0.5	3.0	6	1.2	8	50	2.8
G8B5904005	R0.5	4.0	6	1.5	10	50	3.8
G8B5906005	R0.5	6.0	6	2.5	12	60	5.4
G8B5906010	R1.0	6.0	6	2.5	12	60	5.4
G8B5908010	R1.0	8.0	8	3.5	16	60	7.2
G8B5908020	R2.0	8.0	8	3.5	16	60	7.2
G8B5910010	R1.0	10.0	10	4	20	70	9
G8B5910020	R2.0	10.0	10	4	20	70	9
G8B5912020	R2.0	12.0	12	5	25	80	11
G8B5912030	R3.0	12.0	12	5	25	80	11

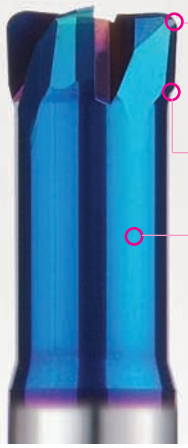
Mill Dia. Tolerance (mm)	Corner Radius Tolerance (mm)	Shank Dia. Tolerance
0~−0.02	±0.005	h6

Due to the characteristics of blue decoration layer which might be erased during short term using, the color layer might not be uniform moreover.
However, it doesn' t effect on performance of tool.

Comparison of the endteeth shape



Hign Feed End Mill | Normal End Mill



- Reduced clearance angles and short flutes strengthens corner radius and reduces chattering
- Extra-short flute length for high rigidity
- Heavy core with reduced diameter allows greater depths and maximum rigidity

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

G8B54 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

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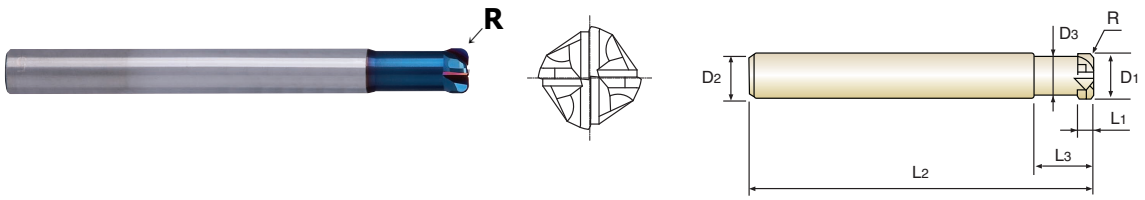


NG HM | 4 | BLUE | 0° | R ±0.005 | PLAIN

P.685, 686

Unit : mm

EDP No.	Corner Radius R (±0.005)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
G8B5402005	R0.5	**2.0**	6	1	6	70	1.8
G8B5403005	R0.5	**3.0**	6	1.2	8	70	2.8
G8B5404005	R0.5	**4.0**	6	1.5	10	70	3.8
G8B5405005	R0.5	**5.0**	6	2	10	70	4.6
G8B5406005	R0.5	**6.0**	6	2.5	12	90	5.4
G8B5406010	R1.0	**6.0**	6	2.5	12	90	5.4
G8B5408010	R1.0	**8.0**	8	3.5	16	100	5.4
G8B5408020	R2.0	**8.0**	8	3.5	16	100	7.2
G8B5410010	R1.0	**10.0**	10	4	20	100	7.2
G8B5410020	R2.0	**10.0**	10	4	20	100	9
G8B5412020	R2.0	**12.0**	12	5	25	110	9
G8B5412030	R3.0	**12.0**	12	5	25	110	11
G8B5416030	R3.0	**16.0**	16	6.5	30	130	11

Due to the characteristics of blue decoration layer which might be erased during short term using, the color layer might not be uniform moreover.
However, it doesn' t effect on performance of tool.

Mill Dia. Tolerance (mm)	Corner Radius Tolerance (mm)	Shank Dia. Tolerance
0~−0.02	±0.005	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

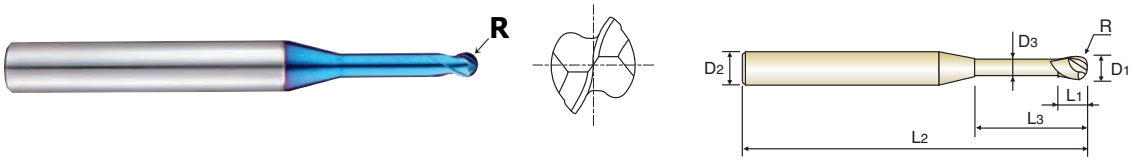
X5070 END MILLS

G8A46 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS für SCHMALE RIPPEN

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Designed for high precision milling operation.
- Higher wear-resistance.

- Geeignet zum Fräsen hochgehärteter Stähle.
- Geeignet zum Trockenfr sen und HSC-Fr sen dank neuentwickeltem Material und Beschichtung.
- Excellente Werkstückoberflächen.
- Geeignet für hochpräzises Fräsen.
- Höhere Verschleißfestigkeit.



NG HM | 2 | BLUE | 30° | R ±0.005 | PLAIN

P.687

Unit : mm

EDP No.	Radius of Ball Nose R (±0.005)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
G8A46805	R0.05	0.1	4	0.1	0.3	45	0.085
G8A46806	R0.05	0.1	4	0.1	0.5	45	0.085
G8A46002	R0.1	0.2	4	0.2	0.5	45	0.17
G8A46977	R0.1	0.2	4	0.2	1	45	0.17
G8A46958	R0.1	0.2	4	0.2	1.5	45	0.17
G8A46003	R0.15	0.3	4	0.3	1	45	0.27
G8A46959	R0.15	0.3	4	0.3	2	45	0.27
G8A46986	R0.15	0.3	4	0.3	3	45	0.27
G8A46004	R0.2	0.4	4	0.4	1	45	0.37
G8A46960	R0.2	0.4	4	0.4	2	45	0.37
G8A46961	R0.2	0.4	4	0.4	3	45	0.37
G8A46981	R0.2	0.4	4	0.4	4	45	0.37
G8A46987	R0.2	0.4	4	0.4	5	45	0.37
G8A46005	R0.25	0.5	4	0.4	2	45	0.45
G8A46804	R0.25	0.5	4	0.4	2.5	45	0.45
G8A46962	R0.25	0.5	4	0.4	4	45	0.45
G8A46963	R0.25	0.5	4	0.4	6	45	0.45
G8A46964	R0.25	0.5	4	0.4	8	45	0.45
G8A46957	R0.3	0.6	4	0.5	2	45	0.55
G8A46988	R0.3	0.6	4	0.5	3	45	0.55
G8A46915	R0.3	0.6	4	0.5	4	45	0.55
G8A46989	R0.3	0.6	4	0.5	5	45	0.55
G8A46916	R0.3	0.6	4	0.5	6	45	0.55
G8A46917	R0.3	0.6	4	0.5	8	45	0.55
G8A46990	R0.3	0.6	4	0.5	10	45	0.55
G8A46918	R0.4	0.8	4	0.6	2	45	0.75
G8A46919	R0.4	0.8	4	0.6	4	45	0.75
G8A46008	R0.4	0.8	4	0.6	6	45	0.75
G8A46901	R0.4	0.8	4	0.6	8	45	0.75

Due to the characteristics of blue decoration layer which might be erased during short term using, the color layer might not be uniform moreover.
However, it doesn't effect on performance of tool.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

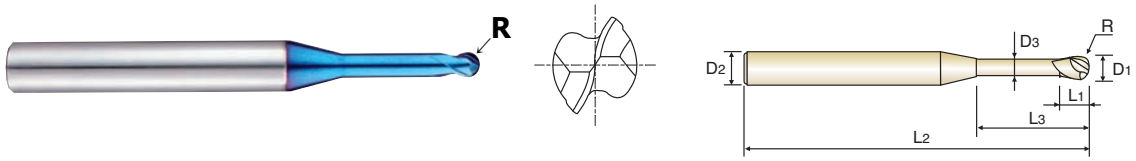
YG X5070 END MILLS

G8A46 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS für SCHMALE RIPPEN

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finishes.
- Designed for high precision milling operation.
- Higher wear-resistance.

- Geeignet zum Fräsen hochgehärteter Stähle.
- Geeignet zum Trockenfr sen und HSC-Fr sen dank neuentwickeltem Material und Beschichtung.
- Exzellente Werkstückoberflächen.
- Geeignet für hochpräzises Fräsen.
- Höhere Verschleißfestigkeit.



NG HM | 2 | BLUE | 30° | R ±0.005 | PLAIN

P.687

Unit : mm

EDP No.	Radius of Ball Nose R (±0.005)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
G8A46965	R0.4	0.8	4	0.6	10	45	0.75
G8A46920	R0.5	1.0	4	0.8	3	45	0.95
G8A46921	R0.5	1.0	4	0.8	4	45	0.95
G8A46923	R0.5	1.0	4	0.8	5	45	0.95
G8A46010	R0.5	1.0	4	0.8	6	45	0.95
G8A46924	R0.5	1.0	4	0.8	7	45	0.95
G8A46902	R0.5	1.0	4	0.8	8	45	0.95
G8A46925	R0.5	1.0	4	0.8	9	45	0.95
G8A46903	R0.5	1.0	4	0.8	10	45	0.95
G8A46904	R0.5	1.0	4	0.8	12	45	0.95
G8A46926	R0.5	1.0	4	0.8	14	50	0.95
G8A46927	R0.5	1.0	4	0.8	16	50	0.95
G8A46966	R0.5	1.0	4	0.8	20	55	0.95
G8A46982	R0.6	1.2	4	1.0	6	45	1.15
G8A46012	R0.6	1.2	4	1.0	8	45	1.15
G8A46983	R0.6	1.2	4	1.0	10	45	1.15
G8A46905	R0.6	1.2	4	1.0	12	45	1.15
G8A46930	R0.75	1.5	4	1.2	6	45	1.45
G8A46015	R0.75	1.5	4	1.2	8	45	1.45
G8A46931	R0.75	1.5	4	1.2	10	45	1.45
G8A46906	R0.75	1.5	4	1.2	12	45	1.45
G8A46992	R0.75	1.5	4	1.2	14	50	1.45
G8A46907	R0.75	1.5	4	1.2	16	50	1.45
G8A46932	R0.75	1.5	4	1.2	20	55	1.45
G8A46939	R1.0	2.0	4	1.6	4	45	1.95
G8A46940	R1.0	2.0	4	1.6	6	45	1.95
G8A46020	R1.0	2.0	4	1.6	8	45	1.95
G8A46941	R1.0	2.0	4	1.6	10	45	1.95
G8A46942	R1.0	2.0	4	1.6	12	50	1.95

Due to the characteristics of blue decoration layer which might be erased during short term using, the color layer might not be uniform moreover.
However, it doesn't effect on performance of tool.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

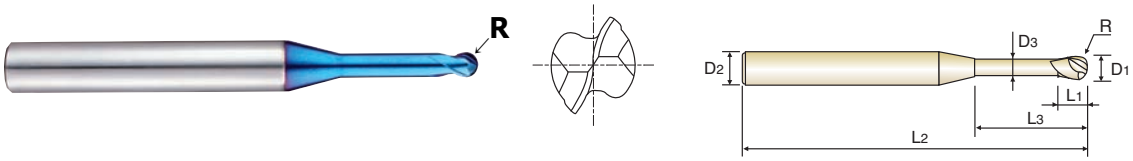
X5070 END MILLS

G8A46 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS für SCHMALE RIPPEN

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Designed for high precision milling operation.
- Higher wear-resistance.

- Geeignet zum Fräsen hochgehärteter Stähle.
- Geeignet zum Trockenfr sen und HSC-Fr sen dank neuentwickeltem Material und Beschichtung.
- Excellente Werkstückoberflächen.
- Geeignet für hochpräzises Fräsen.
- Höhere Verschleißfestigkeit.



NG HM | 2 | BLUE | 30° | R ±0.005 | PLAIN

P.687

Unit : mm

EDP No.	Radius of Ball Nose R (±0.005)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
G8A46943	R1.0	2.0	4	1.6	14	50	1.95
G8A46909	R1.0	2.0	4	1.6	16	50	1.95
G8A46993	R1.0	2.0	4	1.6	18	55	1.95
G8A46910	R1.0	2.0	4	1.6	20	55	1.95
G8A46944	R1.0	2.0	4	1.6	22	60	1.95
G8A46945	R1.0	2.0	4	1.6	25	60	1.95
G8A46967	R1.0	2.0	4	1.6	30	70	1.95
G8A46948	R1.5	3.0	6	2.4	12	50	2.85
G8A46984	R1.5	3.0	6	2.4	14	55	2.85
G8A46030	R1.5	3.0	6	2.4	16	55	2.85
G8A46985	R1.5	3.0	6	2.4	18	60	2.85
G8A46911	R1.5	3.0	6	2.4	20	60	2.85
G8A46968	R1.5	3.0	6	2.4	25	65	2.85
G8A46969	R1.5	3.0	6	2.4	30	70	2.85
G8A46970	R1.5	3.0	6	2.4	35	80	2.85
G8A46950	R2.0	4.0	6	3.2	12	60	3.85
G8A46040	R2.0	4.0	6	3.2	16	60	3.85
G8A46912	R2.0	4.0	6	3.2	20	65	3.85
G8A46913	R2.0	4.0	6	3.2	25	70	3.85
G8A46971	R2.0	4.0	6	3.2	30	70	3.85
G8A46972	R2.0	4.0	6	3.2	35	80	3.85
G8A46973	R2.0	4.0	6	3.2	40	90	3.85
G8A46974	R2.0	4.0	6	3.2	45	90	3.85
G8A46975	R2.0	4.0	6	3.2	50	100	3.85

Due to the characteristics of blue decoration layer which might be erased during short term using, the color layer might not be uniform moreover.
However, it doesn't effect on performance of tool.

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.012	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

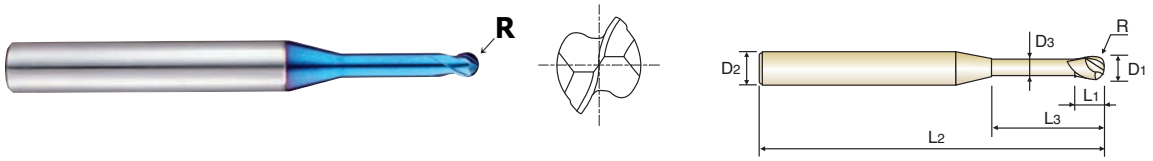
X5070 END MILLS

G8A54 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS für SCHMALE RIPPEN

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Designed for high precision milling operation.
- Higher wear-resistance.

- Geeignet zum Fräsen hochgehärteter Stähle.
- Geeignet zum Trockenfr sen und HSC-Fr sen dank neuentwickeltem Material und Beschichtung.
- Excellente Werkstückoberflächen.
- Geeignet für hochpräzises Fräsen.
- Höhere Verschleißfestigkeit.



NG HM | 2 | BLUE | 30° | R ±0.005 | PLAIN

P.687

Unit : mm

EDP No.	Radius of Ball Nose R (±0.005)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
G8A54005	R0.25	0.5	6	0.5	1.5	50	0.45
G8A54901	R0.25	0.5	6	0.5	3.3	50	0.45
G8A54006	R0.3	0.6	6	0.6	2	50	0.55
G8A54902	R0.3	0.6	6	0.6	4	50	0.55
G8A54008	R0.4	0.8	6	0.8	2.5	50	0.75
G8A54903	R0.4	0.8	6	0.8	5.5	50	0.75
G8A54010	R0.5	1.0	6	1	3.3	50	0.95
G8A54904	R0.5	1.0	6	1	6.7	50	0.95
G8A54905	R0.5	1.0	6	1	12	50	0.95
G8A54012	R0.6	1.2	6	1.2	4.4	50	1.15
G8A54906	R0.6	1.2	6	1.2	8	50	1.15
G8A54015	R0.75	1.5	6	1.5	5	50	1.45
G8A54907	R0.75	1.5	6	1.5	9.7	50	1.45
G8A54908	R0.75	1.5	6	1.5	15	50	1.45
G8A54020	R1.0	2.0	6	2	6	50	1.95
G8A54909	R1.0	2.0	6	2	13	50	1.95
G8A54910	R1.0	2.0	6	2	20	60	1.95

Due to the characteristics of blue decoration layer which might be erased during short term using, the color layer might not be uniform moreover.
However, it doesn' t effect on performance of tool.

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.012	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

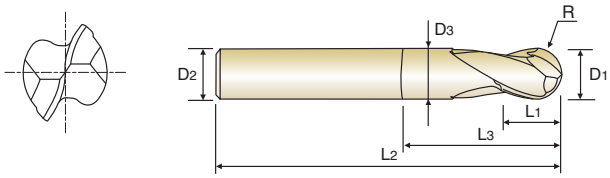
X5070 END MILLS

G8A28 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Designed for high precision milling operation.
- Higher wear-resistance.

- Geeignet zum Fräsen hochgehärteter Stähle.
- Geeignet zum Trockenfr sen und HSC-Fr sen dank neuentwickeltem Material und Beschichtung.
- Excellente Werkstückoberflächen.
- Geeignet für hochpräzises Fräsen.
- Höhere Verschleißfestigkeit.



NG HM | 2 | BLUE | 30° | R ±0.005 (R0.05~R3) | R ±0.010 (R4~R6) | PLAIN

P.689

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
G8A28001	R0.05	0.1	4	0.2	-	40	-
G8A28002	R0.1	0.2	4	0.3	-	40	-
G8A28003	R0.15	0.3	4	0.5	-	40	-
G8A28004	R0.2	0.4	4	0.6	-	40	-
G8A28005	R0.25	0.5	4	0.7	-	40	-
G8A28006	R0.3	0.6	4	0.9	-	40	-
G8A28007	R0.35	0.7	4	1.1	-	40	-
G8A28008	R0.4	0.8	4	1.2	-	40	-
G8A28009	R0.45	0.9	4	1.4	-	40	-
G8A28010	R0.5	1.0	6	1.5	3	50	0.95
G8A28015	R0.75	1.5	6	2	4	50	1.45
G8A28020	R1.0	2.0	6	2.5	5	50	1.95
G8A28025	R1.25	2.5	6	3	7	50	2.4
G8A28030	R1.5	3.0	6	4	10	60	2.85
G8A28035	R1.75	3.5	6	4.5	10	60	3.35
G8A28040	R2.0	4.0	6	5	10	60	3.85
G8A28045	R2.25	4.5	6	5.5	10	60	4.35
G8A28050	R2.5	5.0	6	6	12	60	4.85
G8A28055	R2.75	5.5	6	6.5	12	60	5.35
G8A28060	R3.0	6.0	6	7	15	60	5.85
G8A28903	R3.0	6.0	6	9	30	90	5.85
G8A28901	R4.0	8.0	8	9	15	60	7.7
G8A28080	R4.0	8.0	8	9	15	80	7.7
G8A28904	R4.0	8.0	8	12	30	100	7.7
G8A28902	R5.0	10.0	10	11	25	60	9.7
G8A28100	R5.0	10.0	10	11	25	80	9.7
G8A28905	R5.0	10.0	10	15	30	100	9.7
G8A28120	R6.0	12.0	12	14	25	80	11.7

Due to the characteristics of blue decoration layer which might be erased during short term using, the color layer might not be uniform moreover.
However, it doesn' t effect on performance of tool.

Size	Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to R3	±0.005	0~−0.012	h6
over R3	±0.010	0~−0.015	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

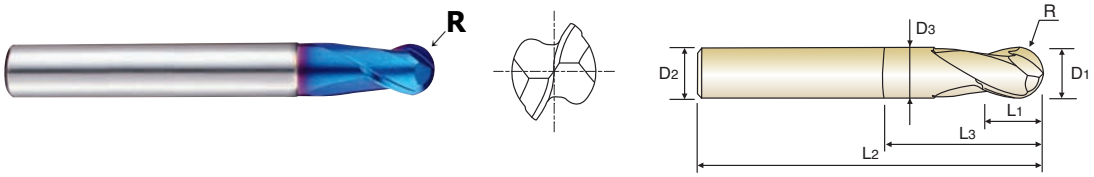
G8A38 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE STUB LENGTH BALL NOSE with EXTENDED NECK

VOLLHARTMETALL, 2 SCHNEIDEN EXTRA KURZ STIRNRADIUS mit ABGESETZTEM SCHAFTTEIL

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Designed for high precision milling operation.
- Higher wear-resistance.

- Geeignet zum Fräsen hochgehärteter Stähle.
- Geeignet zum Trockenfr sen und HSC-Fr sen dank neuentwickeltem Material und Beschichtung.
- Excellente Werkstückoberflächen.
- Geeignet für hochpräzises Fräsen.
- Höhere Verschleißfestigkeit.



NG HM | 2 | BLUE | 30° | R ±0.005 (R0.5~R3) | R ±0.010 (R3.5~R12.5) | PLAIN

P.689

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
G8A38010	R0.5	1.0	4	1	2.2	50	0.95
G8A38012	R0.6	1.2	4	1.2	2.6	50	1.15
G8A38015	R0.75	1.5	4	1.5	3	50	1.45
G8A38020	R1.0	2.0	6	2	4	50	1.95
G8A38030	R1.5	3.0	6	3	6	60	2.85
G8A38040	R2.0	4.0	6	4	8	70	3.85
G8A38050	R2.5	5.0	6	5	10	80	4.85
G8A38060	R3.0	6.0	6	6	12	90	5.85
G8A38070	R3.5	7.0	8	7	14	90	6.7
G8A38080	R4.0	8.0	8	8	16	100	7.7
G8A38090	R4.5	9.0	10	9	18	100	8.7
G8A38100	R5.0	10.0	10	10	20	100	9.7
G8A38120	R6.0	12.0	12	12	24	110	11.7
G8A38140	R7.0	14.0	14	14	28	110	13.7
G8A38160	R8.0	16.0	16	16	32	140	15.7
G8A38180	R9.0	18.0	18	18	36	140	17.7
G8A38200	R10.0	20.0	20	20	40	160	19.7
G8A38250	R12.5	25.0	25	25	50	180	24.7

Due to the characteristics of blue decoration layer which might be erased during short term using, the color layer might not be uniform moreover.
However, it doesn' t effect on performance of tool.

Size	Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to R3	±0.005	0~−0.012	h6
over R3	±0.010	0~−0.015	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

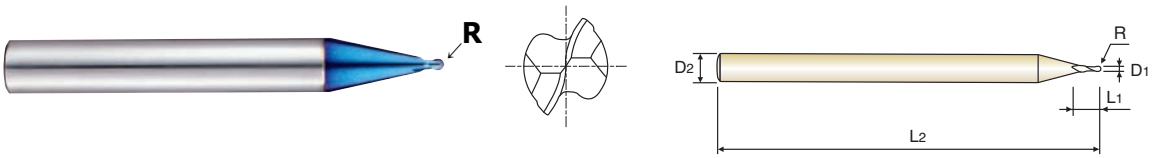
X5070 END MILLS

G8A53 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE MINIATURE BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN MINI STIRNRADIUS

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Designed for high precision milling operation.
- Higher wear-resistance.

- Geeignet zum Fräsen hochgehärteter Stähle.
- Geeignet zum Trockenfr sen und HSC-Fr sen dank neuentwickeltem Material und Beschichtung.
- Excellente Werkstückoberflächen.
- Geeignet für hochpräzises Fräsen.
- Höhere Verschleißfestigkeit.



NG HM | 2 | BLUE | 30° | R ±0.005 | PLAIN

P.689

Unit : mm

EDP No.	Radius of Ball Nose R (±0.005)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
G8A53004	R0.2	0.4	6	0.4	50
G8A53005	R0.25	0.5	6	0.5	50
G8A53006	R0.3	0.6	6	0.6	50
G8A53008	R0.4	0.8	6	0.8	50
G8A53010	R0.5	1.0	6	1.0	50
G8A53012	R0.6	1.2	6	1.2	50
G8A53015	R0.75	1.5	6	1.5	50
G8A53020	R1.0	2.0	6	2.0	50

Due to the characteristics of blue decoration layer which might be erased during short term using, the color layer might not be uniform moreover.
However, it doesn' t effect on performance of tool.

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.012	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

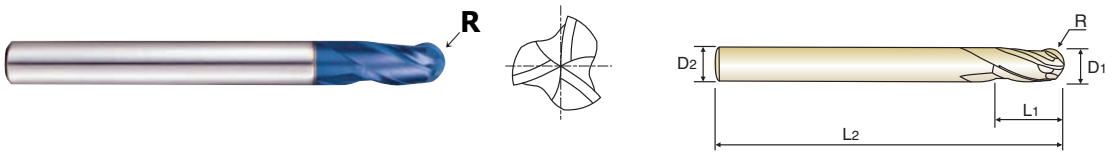
X5070 END MILLS

G8A59 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 3 FLUTE BALL NOSE - Center Match
VOLLHARTMETALL, 3 SCHNEIDEN STIRNRADIUS - Schneiden Mittelpunkt

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Designed for high precision milling operation.
- Higher wear-resistance.

- Geeignet zum Fräsen hochgehärteter Stähle.
- Geeignet zum Trockenfr sen und HSC-Fr sen dank neuentwickeltem Material und Beschichtung.
- Excellente Werkstückoberflächen.
- Geeignet für hochpräzises Fräsen.
- Höhere Verschleißfestigkeit.



NG HM | 3 | BLUE | 30° | R ±0.005 (R1.5~R3) | R ±0.010 (R4~R10) | PLAIN

P.688

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
G8A59030	R1.5	3.0	6	8	60
G8A59040	R2.0	4.0	6	8	70
G8A59050	R2.5	5.0	6	10	80
G8A59060	R3.0	6.0	6	12	90
G8A59080	R4.0	8.0	8	14	100
G8A59100	R5.0	10.0	10	18	100
G8A59120	R6.0	12.0	12	22	110
G8A59160	R8.0	16.0	16	30	140
G8A59200	R10.0	20.0	20	38	160

Due to the characteristics of blue decoration layer which might be erased during short term using, the color layer might not be uniform moreover.
However, it doesn' t effect on performance of tool.

Size	Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to R3	±0.005	0~−0.012	h6
over R3	±0.010	0~−0.015	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

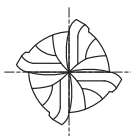
X5070 END MILLS

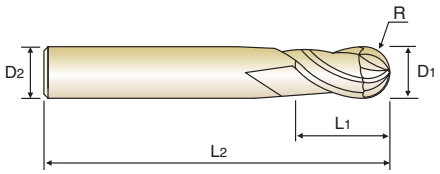
G8D62 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE BALL NOSE - Center Match
VOLLHARTMETALL, 3 SCHNEIDEN STIRNRADIUS - Schneiden Mittelpunkt

- Applied center match type & special new design on ball center shape.
- Excellent high wear resistance and high performance.
- Applied for high speed and feed.
- Increased the surface roughness.

- Neues Design der Kugelschneidengeometrie
- Hohe Verschleißfestigkeit, hohe Leistung.
- Geeignet für hohe Schnittgeschwindigkeiten und hohe Vorschübe
- verbessert deutlich die Oberflächenrauhigkeit





NG HM | 4 | BLUE | 30° | R ±0.005 (R1.5~R3) | R ±0.010 (R4~R10) | PLAIN | P.690

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
G8D62030	R1.5	3.0	6	8	60
G8D62040	R2.0	4.0	6	8	70
G8D62050	R2.5	5.0	6	10	80
G8D62060	R3.0	6.0	6	12	90
G8D62080	R4.0	8.0	8	14	100
G8D62100	R5.0	10.0	10	18	100
G8D62120	R6.0	12.0	12	22	110
G8D62160	R8.0	16.0	16	30	140
G8D62200	R10.0	20.0	20	38	160

Due to the characteristics of blue decoration layer which might be erased during short term using, the color layer might not be uniform moreover.
However, it doesn't effect on performance of tool.

Size	Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to R3	±0.005	0~−0.012	h6
over R3	±0.010	0~−0.015	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

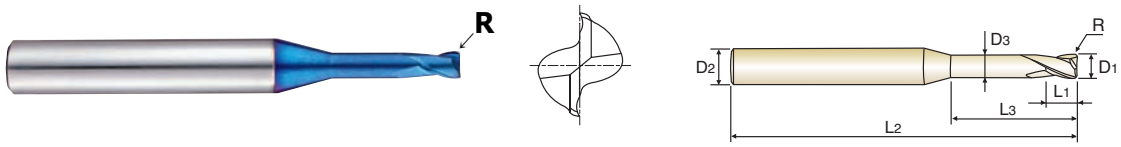
X5070 END MILLS

G8A60 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE CORNER RADIUS for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS für SCHMALE RIPPEN

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Deep slotting is possible by reduced neck.
- Corner radius for preventing the chipping in high speed machining.
- Higher wear-resistance.

- Geeignet zum Fräsen hochgehärteter Stähle.
- Geeignet zum Trockenfr sen und HSC-Fr sen dank neuentwickeltem Material und Beschichtung.
- Excellente Werkstückoberflächen.
- Abgesetzter Schaft für größere Reichweite.
- Schneidkantenschutz durch definierten Radius.
- Höhere Verschleißfestigkeit.



NG HM | 2 | BLUE | 30° | R ±0.010 (Ø0.5~Ø6) | R ±0.015 (Ø8~Ø12) | PLAIN

P.692

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
G8A60936	R0.05	0.5	4	0.7	1.5	45	0.45
G8A60932	R0.05	0.5	4	0.7	2.5	45	0.45
G8A60935	R0.05	0.5	4	0.7	4	45	0.45
G8A60931	R0.05	0.6	4	0.9	2	45	0.55
G8A60933	R0.05	0.6	4	0.9	3	45	0.55
G8A60934	R0.05	0.6	4	0.9	4	45	0.55
G8A600060102	R0.1	0.6	4	0.9	2	45	0.55
G8A600070104	R0.1	0.7	4	1	4	45	0.65
G8A600080102	R0.1	0.8	4	1.2	2	45	0.75
G8A60008	R0.1	0.8	4	1.2	4	45	0.75
G8A60924	R0.1	0.8	4	1.2	6	45	0.75
G8A60925	R0.1	1.0	6	1.5	4	50	0.95
G8A60926	R0.1	1.0	6	1.5	6	50	0.95
G8A60010	R0.2	1.0	6	1.5	4	50	0.95
G8A60910	R0.2	1.0	6	1.5	6	50	0.95
G8A60911	R0.2	1.0	6	1.5	8	50	0.95
G8A60912	R0.3	1.0	6	1.5	4	50	0.95
G8A60930	R0.3	1.0	6	1.5	6	50	0.95
G8A600100308	R0.3	1.0	6	1.5	8	50	0.95
G8A60015	R0.2	1.5	6	2.5	4	50	1.45
G8A600150206	R0.2	1.5	6	2.5	6	50	1.45
G8A600150208	R0.2	1.5	6	2.5	8	50	1.45
G8A60913	R0.2	1.5	6	2.5	10	50	1.45
G8A60914	R0.2	1.5	6	2.5	12	50	1.45
G8A60915	R0.3	1.5	6	2.5	4	50	1.45
G8A600150306	R0.3	1.5	6	2.5	6	50	1.45
G8A600150308	R0.3	1.5	6	2.5	8	50	1.45
G8A60927	R0.2	2.0	6	3	6	50	1.95
G8A600200208	R0.2	2.0	6	3	8	50	1.95

Due to the characteristics of blue decoration layer which might be erased during short term using, the color layer might not be uniform moreover.
However, it doesn' t effect on performance of tool.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

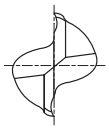
X5070 END MILLS

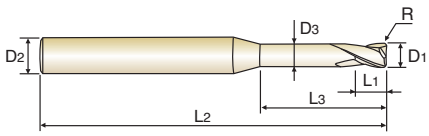
G8A60 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE CORNER RADIUS for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS für SCHMALE RIPPEN

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Deep slotting is possible by reduced neck.
- Corner radius for preventing the chipping in high speed machining.
- Higher wear-resistance.

- Geeignet zum Fräsen hochgehärteter Stähle.
- Geeignet zum Trockenfr sen und HSC-Fr sen dank neuentwickeltem Material und Beschichtung.
- Excellente Werkstückoberflächen.
- Abgesetzter Schaft für größere Reichweite.
- Schneidkantenschutz durch definierten Radius.
- Höhere Verschleißfestigkeit.





NG HM | 2 | BLUE | 30° | R ±0.010 (Ø0.5~Ø6) | R ±0.015 (Ø8~Ø12) | PLAIN

P.692

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
G8A600200210	R0.2	2.0	6	3	10	55	1.95
G8A600200212	R0.2	2.0	6	3	12	55	1.95
G8A60916	R0.3	2.0	6	3	6	50	1.95
G8A600200308	R0.3	2.0	6	3	8	50	1.95
G8A600200310	R0.3	2.0	6	3	10	55	1.95
G8A600200312	R0.3	2.0	6	3	12	55	1.95
G8A600200316	R0.3	2.0	6	3	16	55	1.95
G8A60917	R0.5	2.0	6	3	6	50	1.95
G8A60020	R0.5	2.0	6	3	10	55	1.95
G8A60918	R0.5	2.0	6	3	12	55	1.95
G8A600300208	R0.2	3.0	6	4	8	55	2.85
G8A600300210	R0.2	3.0	6	4	10	55	2.85
G8A600300212	R0.2	3.0	6	4	12	55	2.85
G8A600300216	R0.2	3.0	6	4	16	55	2.85
G8A600300308	R0.3	3.0	6	4	8	55	2.85
G8A60919	R0.3	3.0	6	4	10	55	2.85
G8A600300312	R0.3	3.0	6	4	12	55	2.85
G8A600300316	R0.3	3.0	6	4	16	55	2.85
G8A60030	R0.5	3.0	6	4	10	55	2.85
G8A600300512	R0.5	3.0	6	4	12	55	2.85
G8A60901	R0.5	3.0	6	4	16	55	2.85
G8A60902	R0.5	3.0	6	4	20	55	2.85
G8A600400212	R0.2	4.0	6	5	12	55	3.85
G8A600400216	R0.2	4.0	6	5	16	55	3.85
G8A600400220	R0.2	4.0	6	5	20	55	3.85
G8A600400310	R0.3	4.0	6	5	10	55	3.85
G8A60920	R0.3	4.0	6	5	12	55	3.85
G8A600400316	R0.3	4.0	6	5	16	55	3.85
G8A600400320	R0.3	4.0	6	5	20	55	3.85

Due to the characteristics of blue decoration layer which might be erased during short term using, the color layer might not be uniform moreover.
However, it doesn't effect on performance of tool.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

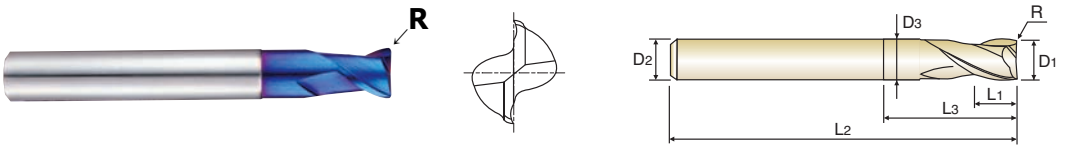
X5070 END MILLS

G8A60 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE CORNER RADIUS for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS für SCHMALE RIPPEN

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Deep slotting is possible by reduced neck.
- Corner radius for preventing the chipping in high speed machining.
- Higher wear-resistance.

- Geeignet zum Fräsen hochgehärteter Stähle.
- Geeignet zum Trockenfr sen und HSC-Fr sen dank neuentwickeltem Material und Beschichtung.
- Excellente Werkstückoberflächen.
- Abgesetzter Schaft für größere Reichweite.
- Schneidkantenschutz durch definierten Radius.
- Höhere Verschleißfestigkeit.



NG HM | 2 | BLUE | 30° | R ±0.010 (Ø0.5~Ø6) | R ±0.015 (Ø8~Ø12) | PLAIN

P.692

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
G8A60040	R0.5	4.0	6	5	12	55	3.85
G8A60903	R0.5	4.0	6	5	16	55	3.85
G8A60904	R0.5	4.0	6	5	20	55	3.85
G8A600401012	R1.0	4.0	6	5	12	55	3.85
G8A600401016	R1.0	4.0	6	5	16	55	3.85
G8A60921	R0.3	6.0	6	7	20	60	5.85
G8A60060	R0.5	6.0	6	7	20	60	5.85
G8A60905	R1.0	6.0	6	7	20	60	5.85
G8A60906	R1.5	6.0	6	7	20	60	5.85
G8A600602020	R2.0	6.0	6	7	20	60	5.85
G8A60922	R0.3	8.0	8	9	25	60	7.7
G8A60929	R0.5	8.0	8	9	25	60	7.7
G8A60080	R1.0	8.0	8	9	25	60	7.7
G8A60907	R1.5	8.0	8	9	25	60	7.7
G8A600802025	R2.0	8.0	8	9	25	60	7.7
G8A60923	R0.3	10.0	10	11	32	70	9.7
G8A601000532	R0.5	10.0	10	11	32	70	9.7
G8A60100	R1.0	10.0	10	11	32	70	9.7
G8A60908	R1.5	10.0	10	11	32	70	9.7
G8A601002032	R2.0	10.0	10	11	32	70	9.7
G8A601200538	R0.5	12.0	12	12	38	80	11.7
G8A60120	R1.0	12.0	12	12	38	80	11.7
G8A60909	R1.5	12.0	12	12	38	80	11.7
G8A601202038	R2.0	12.0	12	12	38	80	11.7

Due to the characteristics of blue decoration layer which might be erased during short term using, the color layer might not be uniform moreover.
However, it doesn' t effect on performance of tool.

Size	Corner Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	±0.010	0~−0.012	h6
over Ø6	±0.015	0~−0.015	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

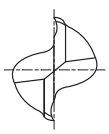
X5070 END MILLS

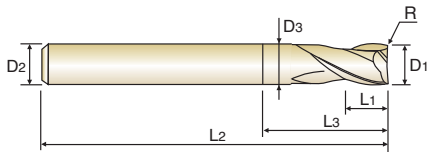
G8A36 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE STUB LENGTH CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN EXTRA KURZ EXKENRADIUS mit ABGESETZTEM SCHAFTTEIL

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Deep slotting is possible by reduced neck.
- Corner radius for preventing the chipping in high speed machining.
- Higher wear-resistance.

- Geeignet zum Fräsen hochgehärteter Stähle.
- Geeignet zum Trockenfr sen und HSC-Fr sen dank neuentwickeltem Material und Beschichtung.
- Excellente Werkstückoberflächen.
- Abgesetzter Schaft für größere Reichweite.
- Schneidkantenschutz durch definierten Radius.
- Höhere Verschleißfestigkeit.





NG HM | 2 | BLUE | 30° | R ±0.010 (Ø0.3~Ø6) | R ±0.015 (Ø8~Ø20) | PLAIN

P.697, 698

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
G8A36003	-	0.3	3	0.45	-	40	-
G8A36004	-	0.4	3	0.6	-	40	-
G8A36005	R0.05	0.5	3	0.7	-	40	-
G8A36907	R0.05	0.5	4	1	-	40	-
G8A36006	R0.05	0.6	3	0.9	-	40	-
G8A36908	R0.05	0.6	4	1.2	-	40	-
G8A36909	R0.05	0.7	4	1.4	-	40	-
G8A36008	R0.05	0.8	3	1.2	-	40	-
G8A36910	R0.05	0.8	4	1.6	-	40	-
G8A36911	R0.05	0.9	4	2	-	40	-
G8A36010	R0.1	1.0	3	1.5	-	40	-
G8A36901	R0.1	1.0	4	1.5	-	40	-
G8A36903	R0.1	1.0	6	1.5	-	40	-
G8A36015	R0.1	1.5	3	2.2	-	40	-
G8A36904	R0.1	1.5	6	2.2	-	40	-
G8A36020	R0.1	2.0	3	3	6	40	1.95
G8A36902	R0.1	2.0	4	3	6	40	1.95
G8A36905	R0.1	2.0	6	3	6	40	1.95
G8A36025	R0.1	2.5	3	4	6	40	2.4
G8A36906	R0.1	2.5	6	4	6	40	2.4
G8A36030	R0.1	3.0	6	4	7	45	2.85
G8A36035	R0.1	3.5	6	5	9	45	3.35
G8A36040	R0.1	4.0	6	5	9	45	3.85
G8A36045	R0.1	4.5	6	6	10	45	4.35

Due to the characteristics of blue decoration layer which might be erased during short term using, the color layer might not be uniform moreover.
However, it doesn't effect on performance of tool.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

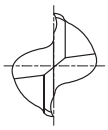
X5070 END MILLS

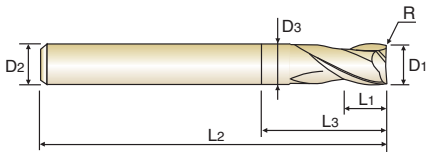
G8A36 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE STUB LENGTH CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN EXTRA KURZ EXKENRADIUS mit ABGESETZTEM SCHAFTTEIL

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Deep slotting is possible by reduced neck.
- Corner radius for preventing the chipping in high speed machining.
- Higher wear-resistance.

- Geeignet zum Fräsen hochgehärteter Stähle.
- Geeignet zum Trockenfr sen und HSC-Fr sen dank neuentwickeltem Material und Beschichtung.
- Excellente Werkstückoberflächen.
- Abgesetzter Schaft für größere Reichweite.
- Schneidkantenschutz durch definierten Radius.
- Höhere Verschleißfestigkeit.





NG HM | 2 | BLUE | 30° | R ±0.010 (Ø0.3~Ø6) | R ±0.015 (Ø8~Ø20) | PLAIN

P.697, 698

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
G8A36050	R0.2	5.0	6	6	11	50	4.85
G8A36060	R0.2	6.0	6	7	14	50	5.85
G8A36080	R0.2	8.0	8	9	18	60	7.7
G8A36100	R0.2	10.0	10	12	25	75	9.7
G8A36120	R0.3	12.0	12	15	30	75	11.7
G8A36160	R0.3	16.0	16	18	38	90	15.7
G8A36200	R0.3	20.0	20	24	45	100	19.7

Due to the characteristics of blue decoration layer which might be erased during short term using, the color layer might not be uniform moreover.
However, it doesn' t effect on performance of tool.

Size	Corner Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	±0.010	0~−0.012	h6
over Ø6	±0.015	0~−0.015	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

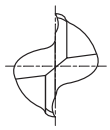
X5070 END MILLS

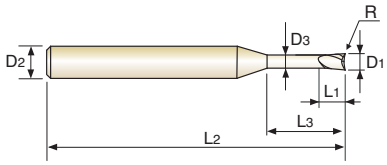
G8A52 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE CORNER RADIUS for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS für SCHMALE RIPPEN

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Deep slotting is possible by reduced neck.
- Corner radius for preventing the chipping in high speed machining.
- Higher wear-resistance.

- Geeignet zum Fräsen hochgehärteter Stähle.
- Geeignet zum Trockenfr sen und HSC-Fr sen dank neuentwickeltem Material und Beschichtung.
- Excellente Werkstückoberflächen.
- Abgesetzter Schaft für größere Reichweite.
- Schneidkantenschutz durch definierten Radius.
- Höhere Verschleißfestigkeit.





NG HM | 2 | BLUE | 30° | R ±0.010 | PLAIN

P.693

Unit : mm

EDP No.	Corner Radius R (±0.010)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
G8A52005	R0.05	0.5	6	0.7	1.5	50	0.45
G8A52901	R0.05	0.5	6	0.7	3.3	50	0.45
G8A52006	R0.05	0.6	6	0.9	2	50	0.55
G8A52902	R0.05	0.6	6	0.9	4	50	0.55
G8A52008	R0.05	0.8	6	1.2	2.5	50	0.75
G8A52903	R0.05	0.8	6	1.2	5.5	50	0.75
G8A52010	R0.10	1.0	6	1.5	3.3	50	0.95
G8A52904	R0.10	1.0	6	1.5	6.7	50	0.95
G8A52012	R0.10	1.2	6	1.8	4.4	50	1.15
G8A52905	R0.10	1.2	6	1.8	8	50	1.15
G8A52015	R0.15	1.5	6	2.2	5	50	1.45
G8A52906	R0.15	1.5	6	2.2	9.7	50	1.45
G8A52020	R0.15	2.0	6	2.2	6	50	1.95
G8A52907	R0.15	2.0	6	2.2	13	50	1.95

Due to the characteristics of blue decoration layer which might be erased during short term using, the color layer might not be uniform moreover.
However, it doesn't effect on performance of tool.

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.012	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

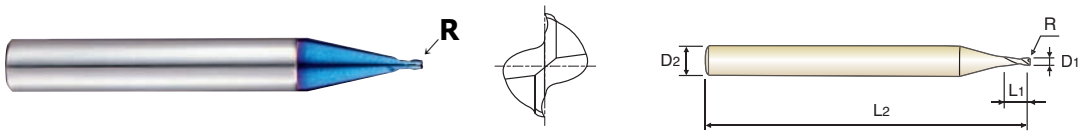
X5070 END MILLS

G8A50 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE MINIATURE CORNER RADIUS
VOLLHARTMETALL, 2 SCHNEIDEN MINI ECKENRADIUS

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Deep slotting is possible by reduced neck.
- Corner radius for preventing the chipping in high speed machining.
- Higher wear-resistance.

- Geeignet zum Fräsen hochgehärteter Stähle.
- Geeignet zum Trockenfr sen und HSC-Fr sen dank neuentwickeltem Material und Beschichtung.
- Excellente Werkstückoberflächen.
- Abgesetzter Schaft für größere Reichweite.
- Schneidkantenschutz durch definierten Radius.
- Höhere Verschleißfestigkeit.



NG HM | 2 | BLUE | 30° | R ±0.010 | PLAIN

P.694

Unit : mm

EDP No.	Corner Radius R (±0.010)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
G8A50003	-	0.3	6	0.45	50
G8A50004	-	0.4	6	0.6	50
G8A50005	R0.05	0.5	6	0.7	50
G8A50006	R0.05	0.6	6	0.9	50
G8A50008	R0.05	0.8	6	1.2	50
G8A50010	R0.10	1.0	6	1.5	50
G8A50012	R0.10	1.2	6	1.8	50
G8A50015	R0.15	1.5	6	2.2	50
G8A50020	R0.15	2.0	6	2.2	50

Due to the characteristics of blue decoration layer which might be erased during short term using, the color layer might not be uniform moreover.
However, it doesn' t effect on performance of tool.

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.012	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

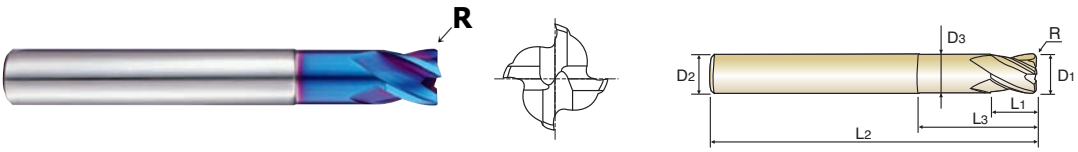
X5070 END MILLS

G8A47 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 4 SCHNEIDEN ECKENRADIUS mit ABGESETZTEM SCHAFTTEIL

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Deep slotting is possible by reduced neck.
- Corner radius for preventing the chipping in high speed machining.
- Higher wear-resistance.

- Geeignet zum Fräsen hochgehärteter Stähle.
- Geeignet zum Trockenfr sen und HSC-Fr sen dank neuentwickeltem Material und Beschichtung.
- Excellente Werkstückoberflächen.
- Abgesetzter Schaft für größere Reichweite.
- Schneidkantenschutz durch definierten Radius.
- Höhere Verschleißfestigkeit.



NG HM | 4 | BLUE | 30° | R ±0.010 Ø3~Ø6 | R ±0.015 Ø8~Ø12 | PLAIN

P.695

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
G8A47916	R0.3	3.0	6	4	12	55	2.85
G8A47917	R0.3	3.0	6	4	16	55	2.85
G8A47918	R0.3	3.0	6	4	20	55	2.85
G8A47030	R0.5	3.0	6	4	10	55	2.85
G8A47901	R0.5	3.0	6	4	16	55	2.85
G8A47902	R0.5	3.0	6	4	20	55	2.85
G8A47919	R0.3	4.0	6	5	12	55	3.85
G8A47920	R0.3	4.0	6	5	16	55	3.85
G8A47921	R0.3	4.0	6	5	20	55	3.85
G8A47040	R0.5	4.0	6	5	12	55	3.85
G8A47903	R0.5	4.0	6	5	16	55	3.85
G8A47904	R0.5	4.0	6	5	20	55	3.85
G8A47922	R1.0	4.0	6	5	12	55	3.85
G8A47060	R0.5	6.0	6	7	20	60	5.85
G8A47905	R1.0	6.0	6	7	20	60	5.85
G8A47906	R1.5	6.0	6	7	20	60	5.85
G8A47910	R0.5	8.0	8	9	25	60	7.7
G8A47080	R1.0	8.0	8	9	25	60	7.7
G8A47907	R1.5	8.0	8	9	25	60	7.7
G8A47913	R2.0	8.0	8	9	25	60	7.7
G8A47911	R0.5	10.0	10	11	32	70	9.7
G8A47100	R1.0	10.0	10	11	32	70	9.7
G8A47908	R1.5	10.0	10	11	32	70	9.7
G8A47914	R2.0	10.0	10	11	32	70	9.7
G8A47912	R0.5	12.0	12	12	38	80	11.7
G8A47120	R1.0	12.0	12	12	38	80	11.7
G8A47909	R1.5	12.0	12	12	38	80	11.7
G8A47915	R2.0	12.0	12	12	38	80	11.7

Due to the characteristics of blue decoration layer which might be erased during short term using, the color layer might not be uniform moreover.
However, it doesn' t effect on performance of tool.

Size	Corner Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	±0.010	0~−0.012	h6
over Ø6	±0.015	0~−0.015	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

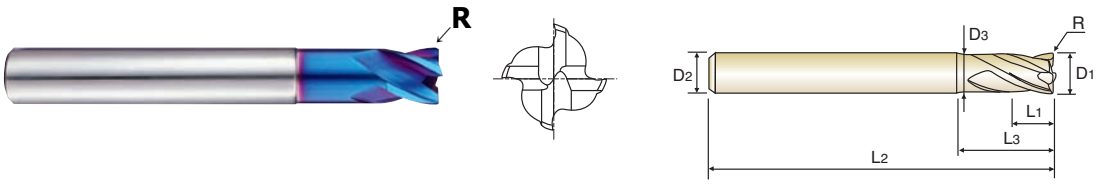
X5070 END MILLS

G8A37 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 4 SCHNEIDEN EXTRA KURZ ECKENRADIUS mit ABGESETZTEM SCHAFTTEIL

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Deep slotting is possible by reduced neck.
- Corner radius for preventing the chipping in high speed machining.
- Higher wear-resistance.

- Geeignet zum Fräsen hochgehärteter Stähle.
- Geeignet zum Trockenfr sen und HSC-Fr sen dank neuentwickeltem Material und Beschichtung.
- Excellente Werkstückoberflächen.
- Abgesetzter Schaft für größere Reichweite.
- Schneidkantenschutz durch definierten Radius.
- Höhere Verschleißfestigkeit.



NG HM | 4 | BLUE | 30° | R ±0.010 Ø1~Ø6 | R ±0.015 Ø8~Ø20 | PLAIN P.699

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
G8A37010	RO.1	1.0	3	1.5	-	40	-
G8A37901	RO.1	1.0	6	1.5	-	40	-
G8A37015	RO.1	1.5	3	2.2	-	40	-
G8A37902	RO.1	1.5	6	2.2	-	40	-
G8A37020	RO.1	2.0	3	3	6	40	1.95
G8A37903	RO.1	2.0	6	3	6	40	1.95
G8A37025	RO.1	2.5	3	4	6	40	2.4
G8A37904	RO.1	2.5	6	4	6	40	2.4
G8A37030	RO.1	3.0	6	4	7	45	2.85
G8A37035	RO.1	3.5	6	5	9	45	3.35
G8A37040	RO.1	4.0	6	5	9	45	3.85
G8A37045	RO.1	4.5	6	6	10	45	4.35
G8A37050	RO.2	5.0	6	6	11	50	4.85
G8A37060	RO.2	6.0	6	7	14	50	5.85
G8A37080	RO.2	8.0	8	9	18	60	7.7
G8A37100	RO.2	10.0	10	12	25	75	9.7
G8A37120	RO.3	12.0	12	15	30	75	11.7
G8A37160	RO.3	16.0	16	18	38	90	15.7
G8A37200	RO.3	20.0	20	24	45	100	19.7

Due to the characteristics of blue decoration layer which might be erased during short term using, the color layer might not be uniform moreover.
However, it doesn' t effect on performance of tool.

Size	Corner Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	±0.010	0~−0.012	h6
over Ø6	±0.015	0~−0.015	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

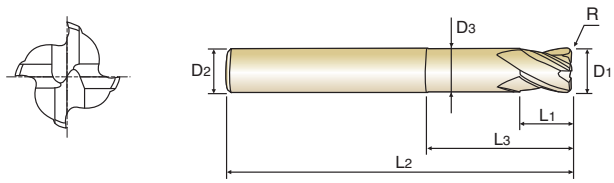
X5070 END MILLS

G8B08 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 4 SCHNEIDEN ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Deep slotting is possible by reduced neck.
- Corner radius for preventing the chipping in high speed machining.
- Higher wear-resistance.

- Geeignet zum Fräsen hochgehärteter Stähle.
- Geeignet zum Trockenfr sen und HSC-Fr sen dank neuentwickeltem Material und Beschichtung.
- Excellente Werkstückoberflächen.
- Abgesetzter Schaft für größere Reichweite.
- Schneidkantenschutz durch definierten Radius.
- Höhere Verschleißfestigkeit.



NG HM | 4 | BLUE | 30° | R ±0.010 (Ø6) | R ±0.015 (Ø8~Ø12) | PLAIN

P.695

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
G8B0806005090	R0.5	6.0	6	9	20	90	5.85
G8B0806010090	R1.0	6.0	6	9	20	90	5.85
G8B0808005100	R0.5	8.0	8	12	25	100	7.7
G8B0808010100	R1.0	8.0	8	12	25	100	7.7
G8B0810005100	R0.5	10.0	10	15	32	100	9.7
G8B0810010100	R1.0	10.0	10	15	32	100	9.7
G8B0810020100	R2.0	10.0	10	15	32	100	9.7
G8B0812005110	R0.5	12.0	12	18	38	110	11.7
G8B0812010110	R1.0	12.0	12	18	38	110	11.7
G8B0812020110	R2.0	12.0	12	18	38	110	11.7

Due to the characteristics of blue decoration layer which might be erased during short term using, the color layer might not be uniform moreover.
However, it doesn' t effect on performance of tool.

Size	Corner Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	±0.010	0~−0.012	h6
over Ø6	±0.015	0~−0.015	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

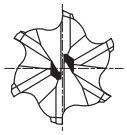
G8A39 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

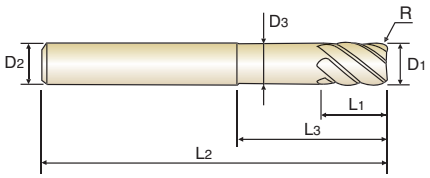
CARBIDE, 6 FLUTE 45° HELIX CORNER RADIUS with EXTENDED NECK

VOLLHARTMETALL, 6 SCHNEIDEN 45° RECHTSSPIRALE ECKENRADIUS mit ABGESETZTEM SCHAFTTEIL

- Designed to machine high hardened materials
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Deep slotting is possible by reduced neck.
- Corner radius for preventing the chipping in high speed machining
- Higher wear-resistance.

- Geeignet zum Fräsen hochgehärteter Stähle.
- Geeignet zum Trockenfr sen und HSC-Fr sen dank neuentwickeltem Material und Beschichtung.
- Excellente Werkstückoberflächen.
- Abgesetzter Schaft für größere Reichweite.
- Schneidkantenschutz durch definierten Radius.
- Höhere Verschleißfestigkeit.





NG HM | 6 | BLUE | 45° | R ±0.010 Ø6 | R ±0.015 Ø8~Ø20 | PLAIN

P.700

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
G8A39916	R0.25	6.0	6	6	14	50	5.85
G8A39060	R0.5	6.0	6	6	14	50	5.85
G8A39901	R0.5	6.0	6	13	-	70	-
G8A39910	R0.5	6.0	* 6	26	-	70	-
G8A39080	R0.5	8.0	8	8	24	60	7.7
G8A39902	R0.5	8.0	8	19	-	90	-
G8A39911	R0.5	8.0	* 8	36	-	90	-
G8A39903	R0.5	10.0	10	22	-	100	-
G8A39100	R1.0	10.0	10	10	30	70	9.7
G8A39904	R1.0	10.0	10	22	-	100	-
G8A39912	R1.0	10.0	* 10	46	-	100	-
G8A39905	R0.5	12.0	12	26	-	110	-
G8A39120	R1.0	12.0	12	12	30	75	11.7
G8A39906	R1.0	12.0	12	26	-	110	-
G8A39913	R1.0	12.0	* 12	56	-	110	-
G8A39160	R1.0	16.0	16	32	-	130	-
G8A39907	R1.5	16.0	16	32	-	130	-
G8A39914	R1.5	16.0	* 16	66	-	130	-
G8A39200	R1.0	20.0	20	38	-	140	-
G8A39908	R1.5	20.0	20	38	-	140	-
G8A39909	R2.0	20.0	20	38	-	140	-
G8A39915	R2.0	20.0	* 20	76	-	140	-

Due to the characteristics of blue decoration layer which might be erased during short term using, the color layer might not be uniform moreover.
However, it doesn' t effect on performance of tool.

Size	Corner Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	±0.010	0~−0.02 (*Extra Long Type : 0~-0.03)	h6
over Ø6	±0.015		

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

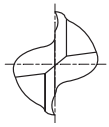
X5070 END MILLS

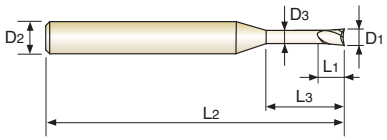
G8A45 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN für SCHMALE RIPPEN

- Designed to machine high hardened materials
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Designed for high precision milling operation.
- Higher wear-resistance.

- Geeignet zum Fräsen hochgehärteter Stähle.
- Geeignet zum Trockenfr sen und HSC-Fr sen dank neuentwickeltem Material und Beschichtung.
- Excellente Werkstückoberflächen.
- Geeignet für hochpräzises Fräsen.
- Höhere Verschleißfestigkeit.





NG HM | 2 | BLUE | 30° | PLAIN

P.696

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
G8A45863	0.1	4	0.15	0.3	45	0.085
G8A45864	0.1	4	0.15	0.5	45	0.085
G8A45002	0.2	4	0.3	0.5	45	0.17
G8A45815	0.2	4	0.3	1	45	0.17
G8A45816	0.2	4	0.3	1.5	45	0.17
G8A45003	0.3	4	0.45	1	45	0.27
G8A45844	0.3	4	0.45	1.5	45	0.27
G8A45817	0.3	4	0.45	2	45	0.27
G8A45818	0.3	4	0.45	3	45	0.27
G8A45842	0.3	4	0.45	4	45	0.27
G8A45843	0.4	4	0.6	1	45	0.37
G8A45004	0.4	4	0.6	2	45	0.37
G8A45984	0.4	4	0.6	3	45	0.37
G8A45985	0.4	4	0.6	4	45	0.37
G8A45986	0.4	4	0.6	5	45	0.37
G8A45005	0.5	4	0.7	2	45	0.45
G8A45861	0.5	4	0.7	2.5	45	0.45
G8A45988	0.5	4	0.7	4	45	0.45
G8A45989	0.5	4	0.7	6	45	0.45
G8A45990	0.5	4	0.7	8	45	0.45
G8A45006	0.6	4	0.9	2	45	0.55
G8A45860	0.6	4	0.9	3	45	0.55
G8A45991	0.6	4	0.9	4	45	0.55
G8A45992	0.6	4	0.9	6	45	0.55
G8A45993	0.6	4	0.9	8	45	0.55
G8A45819	0.6	4	0.9	10	45	0.55
G8A45862	0.8	4	1.2	2	45	0.75
G8A45008	0.8	4	1.2	4	45	0.75
G8A45908	0.8	4	1.2	6	45	0.75

Due to the characteristics of blue decoration layer which might be erased during short term using, the color layer might not be uniform moreover.
However, it doesn't effect on performance of tool.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

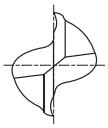
X5070 END MILLS

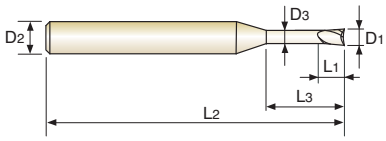
G8A45 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN für SCHMALE RIPPEN

- Designed to machine high hardened materials
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Designed for high precision milling operation.
- Higher wear-resistance.

- Geeignet zum Fräsen hochgehärteter Stähle.
- Geeignet zum Trockenfr sen und HSC-Fr sen dank neuentwickeltem Material und Beschichtung.
- Excellente Werkstückoberflächen.
- Geeignet für hochpräzises Fräsen.
- Höhere Verschleißfestigkeit.





NG HM | 2 | BLUE | 30° | PLAIN

P.696

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
G8A45909	0.8	4	1.2	8	45	0.75
G8A45994	0.8	4	1.2	10	45	0.75
G8A45995	0.8	4	1.2	12	45	0.75
G8A45996	1.0	4	1.5	4	45	0.95
G8A45010	1.0	4	1.5	6	45	0.95
G8A45912	1.0	4	1.5	8	45	0.95
G8A45913	1.0	4	1.5	10	45	0.95
G8A45914	1.0	4	1.5	12	45	0.95
G8A45997	1.0	4	1.5	16	50	0.95
G8A45998	1.0	4	1.5	20	55	0.95
G8A45012	1.2	4	1.8	6	45	1.15
G8A45915	1.2	4	1.8	8	45	1.15
G8A45916	1.2	4	1.8	10	45	1.15
G8A45917	1.2	4	1.8	12	45	1.15
G8A45999	1.2	4	1.8	16	50	1.15
G8A45015	1.5	4	2.3	6	45	1.45
G8A45923	1.5	4	2.3	8	45	1.45
G8A45924	1.5	4	2.3	10	45	1.45
G8A45925	1.5	4	2.3	12	45	1.45
G8A45926	1.5	4	2.3	14	50	1.45
G8A45927	1.5	4	2.3	16	50	1.45
G8A45928	1.5	4	2.3	18	55	1.45
G8A45810	1.5	4	2.3	20	55	1.45
G8A45958	2.0	4	3.0	6	45	1.95
G8A45020	2.0	4	3.0	8	45	1.95
G8A45959	2.0	4	3.0	10	45	1.95
G8A45960	2.0	4	3.0	12	45	1.95
G8A45961	2.0	4	3.0	14	50	1.95
G8A45962	2.0	4	3.0	16	50	1.95

Due to the characteristics of blue decoration layer which might be erased during short term using, the color layer might not be uniform moreover.
However, it doesn' t effect on performance of tool.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

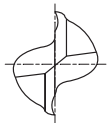
X5070 END MILLS

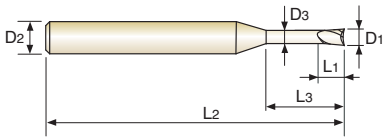
G8A45 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN für SCHMALE RIPPEN

- Designed to machine high hardened materials
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Designed for high precision milling operation.
- Higher wear-resistance.

- Geeignet zum Fräsen hochgehärteter Stähle.
- Geeignet zum Trockenfr sen und HSC-Fr sen dank neuentwickeltem Material und Beschichtung.
- Excellente Werkstückoberflächen.
- Geeignet für hochpräzises Fräsen.
- Höhere Verschleißfestigkeit.





NG HM | 2 | BLUE | 30° | PLAIN

P.696

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
G8A45963	2.0	4	3.0	18	55	1.95
G8A45964	2.0	4	3.0	20	55	1.95
G8A45966	2.0	4	3.0	25	60	1.95
G8A45814	2.0	4	3.0	30	70	1.95
G8A45975	3.0	6	4.5	10	45	2.85
G8A45976	3.0	6	4.5	12	45	2.85
G8A45977	3.0	6	4.5	14	50	2.85
G8A45978	3.0	6	4.5	16	55	2.85
G8A45979	3.0	6	4.5	18	55	2.85
G8A45980	3.0	6	4.5	20	60	2.85
G8A45981	3.0	6	4.5	25	65	2.85
G8A45832	3.0	6	4.5	30	70	2.85
G8A45833	3.0	6	4.5	35	80	2.85
G8A45983	3.0	6	4.5	40	90	2.85
G8A45040	4.0	6	6	12	50	3.85
G8A45801	4.0	6	6	16	60	3.85
G8A45802	4.0	6	6	20	60	3.85
G8A45803	4.0	6	6	25	70	3.85
G8A45834	4.0	6	6	30	70	3.85
G8A45835	4.0	6	6	35	80	3.85
G8A45836	4.0	6	6	40	90	3.85
G8A45837	4.0	6	6	45	90	3.85
G8A45838	4.0	6	6	50	100	3.85

Due to the characteristics of blue decoration layer which might be erased during short term using, the color layer might not be uniform moreover.
However, it doesn' t effect on performance of tool.

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.012	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

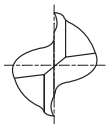
X5070 END MILLS

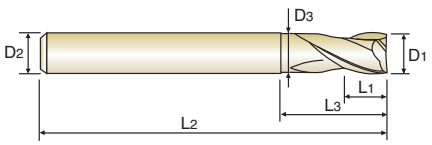
G8A01 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN mit ABGESETZTEM SCHAFTTEIL

- Designed to machine high hardened materials
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Designed for high precision milling operation.
- Higher wear-resistance.

- Geeignet zum Fräsen hochgehärteter Stähle.
- Geeignet zum Trockenfr sen und HSC-Fr sen dank neuentwickeltem Material und Beschichtung.
- Excellente Werkstückoberflächen.
- Geeignet für hochpräzises Fräsen.
- Höhere Verschleißfestigkeit.





NG HM | 2 | BLUE | 30° | PLAIN

P.697, 698

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
G8A01001	0.1	4	0.2	-	40	-
G8A01002	0.2	4	0.4	-	40	-
G8A01003	0.3	4	0.6	-	40	-
G8A01004	0.4	4	0.8	-	40	-
G8A01005	0.5	4	1	-	40	-
G8A01006	0.6	4	1.2	-	40	-
G8A01007	0.7	4	1.4	-	40	-
G8A01008	0.8	4	1.6	-	40	-
G8A01009	0.9	4	2	-	40	-
G8A01010	1.0	6	1.5	3	50	0.95
G8A01015	1.5	6	1.7	4	50	1.45
G8A01020	2.0	6	2	5	50	1.95
G8A01025	2.5	6	2.5	6	55	2.4
G8A01030	3.0	6	3	8	55	2.85
G8A01035	3.5	6	3.5	9	55	3.35
G8A01040	4.0	6	4	10	55	3.85
G8A01050	5.0	6	5	13	55	4.85
G8A01060	6.0	6	6	15	55	5.85
G8A01080	8.0	8	8	20	65	7.7
G8A01100	10.0	10	10	25	75	9.7
G8A01120	12.0	12	12	28	85	11.7
G8A01160	16.0	16	16	32	90	15.7
G8A01200	20.0	20	20	40	105	19.7

Due to the characteristics of blue decoration layer which might be erased during short term using, the color layer might not be uniform moreover.
However, it doesn' t effect on performance of tool.

Size	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	0~-0.012	h6
over Ø6	0~-0.015	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

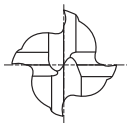
X5070 END MILLS

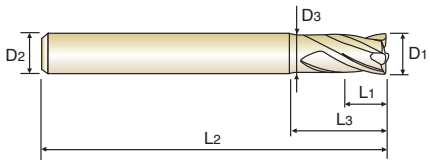
G8A02 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE with EXTENDED NECK
VOLLHARTMETALL, 4 SCHNEIDEN mit ABGESETZTEM SCHAFTTEIL

- Designed to machine high hardened materials
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Designed for high precision milling operation.
- Higher wear-resistance.

- Geeignet zum Fräsen hochgehärteter Stähle.
- Geeignet zum Trockenfr sen und HSC-Fr sen dank neuentwickeltem Material und Beschichtung.
- Excellente Werkstückoberflächen.
- Geeignet für hochpräzises Fräsen.
- Höhere Verschleißfestigkeit.





NG HM | 4 | BLUE | 30° | PLAIN

P.699

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
G8A02010	1.0	6	1.5	3	50	0.95
G8A02020	2.0	6	2	5	50	1.95
G8A02030	3.0	6	3	8	55	2.85
G8A02040	4.0	6	4	10	55	3.85
G8A02050	5.0	6	5	13	55	4.85
G8A02060	6.0	6	6	15	55	5.85
G8A02080	8.0	8	8	20	65	7.7
G8A02100	10.0	10	10	25	75	9.7
G8A02120	12.0	12	12	28	85	11.7
G8A02160	16.0	16	16	32	90	15.7
G8A02200	20.0	20	20	40	105	19.7

Due to the characteristics of blue decoration layer which might be erased during short term using, the color layer might not be uniform moreover.
However, it doesn' t effect on performance of tool.

Size	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	0~−0.012	h6
over Ø6	0~−0.015	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

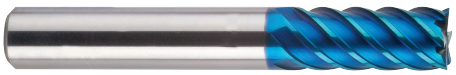
X5070 END MILLS

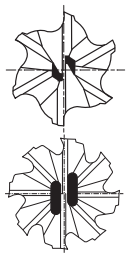
G8D63 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

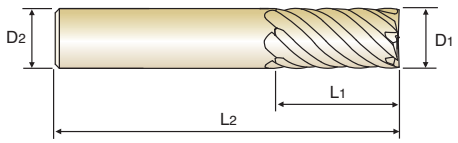
CARBIDE, 6&8 FLUTE 45° HELIX LONG LENGTH
VOLLHARTMETALL, 6&8 SCHNEIDEN 45° RECHTSSPIRALE LANG

- Designed to machine high hardened materials.
- Designed for high abrasion resistance thanks to negative rake angle.
- Excellent side-cutting of press mold field.

- Speziell ausgelegt für die Hartbearbeitung
- Ausgelegt für hohe Abriebfestigkeit dank der negativen Spanwinkel.
- hervorragend geeignet für die Seitenbearbeitung im Formenbau







NG HM | 6&8 | BLUE | 45° | PLAIN

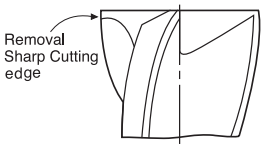
P.701

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	No. of Flute
G8D63060	6.0	6	13	57	6
G8D63080	8.0	8	19	63	6
G8D63100	10.0	10	22	72	6
G8D63120	12.0	12	26	83	6
G8D63140	14.0	14	26	83	6
G8D63160	16.0	16	32	92	6
G8D63180	18.0	18	32	92	8
G8D63200	20.0	20	38	104	8
G8D63250	25.0	25	44	104	8

Due to the characteristics of blue decoration layer which might be erased during short term using, the color layer might not be uniform moreover.
However, it doesn't effect on performance of tool.

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.02	h6



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

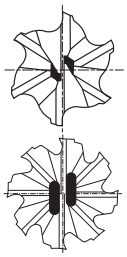
X5070 END MILLS

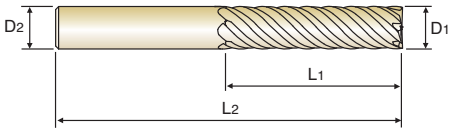
G8D64 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 6&8 FLUTE 45° HELIX EXTRA LONG LENGTH
VOLLHARTMETALL, 6&8 SCHNEIDEN 45° RECHTSSPIRALE EXTRA LANG

- Designed to machine high hardened materials.
- Designed for high abrasion resistance thanks to negative rake angle.
- Excellent side-cutting of press mold field.

- Speziell ausgelegt für die Hartbearbeitung
- Ausgelegt für hohe Abriebfestigkeit dank der negativen Spanwinkel.
- Hervorragend geeignet für die Seitenbearbeitung im Formenbau





NG HM | 6&8 | BLUE | 45° | PLAIN

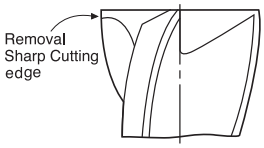
P.702

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	No. of Flute
G8D64060	6.0	6	26	70	6
G8D64080	8.0	8	36	90	6
G8D64100	10.0	10	46	100	6
G8D64120	12.0	12	56	110	6
G8D64160	16.0	16	66	130	6
G8D64200	20.0	20	76	140	8
G8D64250	25.0	25	92	180	8

Due to the characteristics of blue decoration layer which might be erased during short term using, the color layer might not be uniform moreover.
However, it doesn' t effect on performance of tool.

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

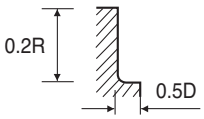
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 4FLUTE CORNER RADIUS HIGH FEED
VOLLHARTMETALL, 4 SCHNEIDEN ECKENRADIUS

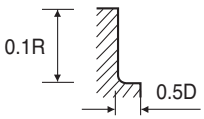
G8B59, G8B54 SERIES

■ NORMAL SPEED

MATERIAL	HARDENED STEELS											
HARDNESS	~ HRc 40				HRc 40 ~ HRc 50				HRc 50 ~ HRc 55			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0 × R0.5	13500	6500	85	0.120	9550	3800	60	0.099	5500	2200	35	0.100
3.0 × R0.5	9550	6500	90	0.170	6900	4150	65	0.150	4550	2750	45	0.151
4.0 × R0.5	7950	7000	100	0.220	5750	4600	70	0.200	4000	3200	50	0.200
5.0 × R0.5	6500	7300	100	0.281	4800	4800	75	0.250	3400	3200	55	0.235
6.0 × R0.5	5800	7650	110	0.330	4100	4900	75	0.299	2900	3500	55	0.302
6.0 × R1.0	5800	7650	110	0.330	4100	4900	75	0.299	2900	3500	55	0.302
8.0 × R1.0	4350	7650	110	0.440	3050	4900	75	0.402	2200	3500	55	0.398
8.0 × R2.0	4350	7650	110	0.440	3050	4900	75	0.402	2200	3500	55	0.398
10.0 × R1.0	3500	7650	110	0.546	2450	4900	75	0.500	1750	3500	55	0.500
10.0 × R2.0	3500	7650	110	0.546	2450	4900	75	0.500	1750	3500	55	0.500
12.0 × R2.0	2900	7650	110	0.659	2050	4900	75	0.598	1450	3500	55	0.603
12.0 × R3.0	2900	7650	110	0.659	2050	4900	75	0.598	1450	3500	55	0.603
16.0 × R3.0	2200	7650	110	0.869	1550	4900	80	0.790	1100	3500	55	0.795



MATERIAL	HARDENED STEELS							
HARDNESS	HRc 55 ~ HRc 60				HRc 60 ~ HRc 65			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0 × R0.5	3200	1000	20	0.078	2200	550	15	0.063
3.0 × R0.5	2850	1150	25	0.101	1900	610	20	0.080
4.0 × R0.5	2550	1350	30	0.132	1750	700	20	0.100
5.0 × R0.5	2200	1600	35	0.182	1500	700	25	0.117
6.0 × R0.5	1850	1850	35	0.250	1350	795	25	0.147
6.0 × R1.0	1850	1850	35	0.250	1350	795	25	0.147
8.0 × R1.0	1400	1850	35	0.330	995	795	25	0.200
8.0 × R2.0	1400	1850	35	0.330	995	795	25	0.200
10.0 × R1.0	1100	1850	35	0.420	795	795	25	0.250
10.0 × R2.0	1100	1850	35	0.420	795	795	25	0.250
12.0 × R2.0	925	1850	35	0.500	665	795	25	0.299
12.0 × R3.0	925	1850	35	0.500	665	795	25	0.299
16.0 × R3.0	700	1850	35	0.661	500	795	25	0.398



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

X5070 END MILLS

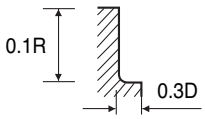
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 4FLUTE CORNER RADIUS HIGH FEED
VOLLHARTMETALL, 4 SCHNEIDEN ECKENRADIUS

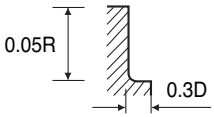
G8B59, G8B54 SERIES

■ HIGH SPEED

MATERIAL	HARDENED STEELS											
HARDNESS	~ HRc 40				HRc 40 ~ HRc 50				HRc 50 ~ HRc 55			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0 × R0.5	29000	15000	180	0.129	22000	9800	140	0.111	15000	7850	95	0.131
3.0 × R0.5	22000	16000	205	0.182	17000	10000	160	0.147	12500	8000	200	0.160
4.0 × R0.5	17000	17500	215	0.257	13000	12000	165	0.231	11000	9200	140	0.209
5.0 × R0.5	15000	18000	235	0.300	11000	12500	175	0.284	10000	10000	155	0.250
6.0 × R0.5	13500	18500	255	0.343	10500	13800	200	0.329	9000	11000	170	0.306
6.0 × R1.0	13500	18500	255	0.343	10500	13800	200	0.329	9000	11000	170	0.306
8.0 × R1.0	10000	18500	250	0.463	8000	14000	200	0.438	6800	11000	170	0.404
8.0 × R2.0	10000	18500	250	0.463	8000	14000	200	0.438	6800	11000	170	0.404
10.0 × R1.0	8000	18500	250	0.578	6400	14000	200	0.547	5400	11000	170	0.509
10.0 × R2.0	8000	18500	250	0.578	6400	14000	200	0.547	5400	11000	170	0.509
12.0 × R2.0	6600	18500	250	0.701	5300	14000	200	0.660	4500	11000	170	0.611
12.0 × R3.0	6600	18500	250	0.701	5300	14000	200	0.660	4500	11000	170	0.611
16.0 × R3.0	5000	18500	250	0.925	3900	14000	195	0.897	3300	11000	165	0.833



MATERIAL	HARDENED STEELS							
HARDNESS	HRc 55 ~ HRc 60				HRc 60 ~ HRc 65			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0 × R0.5	11000	4450	70	0.101	8700	2450	55	0.070
3.0 × R0.5	9500	4600	90	0.121	6900	2500	65	0.091
4.0 × R0.5	8000	5500	100	0.172	5600	2900	70	0.129
5.0 × R0.5	7000	6000	110	0.214	4900	3100	75	0.158
6.0 × R0.5	6400	6400	120	0.250	4500	3600	85	0.200
6.0 × R1.0	6400	6400	120	0.250	4500	3600	85	0.200
8.0 × R1.0	4800	6700	120	0.349	3400	4100	85	0.301
8.0 × R2.0	4800	6700	120	0.349	3400	4100	85	0.301
10.0 × R1.0	3800	6800	120	0.447	2700	3800	85	0.352
10.0 × R2.0	3800	6800	120	0.447	2700	3800	85	0.352
12.0 × R2.0	3200	7000	120	0.547	2250	3600	85	0.400
12.0 × R3.0	3200	7000	120	0.547	2250	3600	85	0.400
16.0 × R3.0	2400	7000	120	0.729	1650	3300	85	0.500



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

X5070 END MILLS

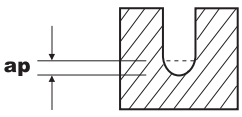
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS für SCHMALE RIPPEN

G8A46, G8A54 SERIES

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS	HRc 30 ~ HRc 45					HRc 45 ~ HRc 55				
DIAMETER	RPM	FEED	ap(mm)	Vc	fz	RPM	FEED	ap(mm)	Vc	fz
R0.1 x 0.2	50000	300~350	0.006~0.016	31	0.012~0.014	50000	265~310	0.005~0.013	31	0.011~0.012
R0.15 x 0.3	48000~50000	480~520	0.010~0.017	45~47	0.020~0.021	48000~50000	440~460	0.008~0.014	45~47	0.018~0.018
R0.2 x 0.4	48000~50000	720~790	0.013~0.032	60~63	0.030~0.032	48000~50000	450~550	0.011~0.026	60~63	0.019~0.022
R0.25 x 0.5	34100~49500	600~870	0.007~0.028	54~78	0.035~0.035	31900~35200	490~540	0.005~0.023	50~55	0.031~0.031
R0.3 x 0.6	28600~40700	590~850	0.007~0.034	54~77	0.041~0.042	26400~29700	480~540	0.006~0.028	50~56	0.036~0.036
R0.4 x 0.8	22000~30800	640~890	0.016~0.064	55~77	0.058~0.058	19800~22000	490~550	0.013~0.052	50~55	0.049~0.05
R0.5 x 1.0	17600~24200	600~850	0.008~0.080	55~76	0.068~0.070	15400~17600	470~540	0.007~0.065	48~55	0.061~0.061
R0.6 x 1.2	14300~18700	590~780	0.024~0.032	54~70	0.083~0.083	12000~14000	480~540	0.020~0.026	45~53	0.080~0.077
R0.75 x 1.5	11000~14300	580~760	0.031~0.048	52~67	0.105~0.106	10000~11500	480~540	0.025~0.039	47~54	0.096~0.094
R1.0 x 2.0	8500~11000	590~800	0.024~0.160	53~69	0.139~0.145	7900~8800	470~530	0.020~0.130	50~55	0.119~0.12
R1.5 x 3.0	5700~8200	730~1000	0.064~0.240	54~77	0.256~0.244	5300~5800	590~650	0.052~0.195	50~55	0.223~0.224
R2.0 x 4.0	4300~6200	680~990	0.080~0.320	54~78	0.316~0.319	3950~4400	550~620	0.065~0.260	50~55	0.299~0.282

MATERIAL	HARDENED STEELS					COPPER				
HARDNESS	HRc 55 ~ HRc 65									
DIAMETER	RPM	FEED	ap(mm)	Vc	fz	RPM	FEED	ap(mm)	Vc	fz
R0.1 x 0.2	50000	225~265	0.005~0.012	31~31	0.009~0.011	50000	455~530	0.010~0.022	31~31	0.018~0.021
R0.15 x 0.3	46000~50000	390~420	0.007~0.013	43~47	0.017~0.017	48000~50000	690~790	0.002~0.023	45~47	0.029~0.032
R0.2 x 0.4	46000~50000	400~460	0.010~0.024	58~63	0.017~0.018	48000~50000	1000~1150	0.019~0.048	60~63	0.042~0.046
R0.25 x 0.5	31900~35200	440~480	0.005~0.021	50~55	0.028~0.027	49000~50000	1100~1400	0.010~0.042	77~79	0.045~0.056
R0.3 x 0.6	26400~29700	400~480	0.006~0.025	50~56	0.030~0.032	42000~50000	1100~1700	0.011~0.050	79~94	0.052~0.068
R0.4 x 0.8	19800~22000	440~500	0.012~0.048	50~55	0.044~0.045	31000~50000	1100~2250	0.024~0.096	78~126	0.071~0.090
R0.5 x 1.0	15400~17600	440~500	0.006~0.060	48~55	0.057~0.057	24000~49500	1100~2200	0.012~0.120	75~156	0.092~0.089
R0.6 x 1.2	12000~14000	420~480	0.018~0.024	45~53	0.070~0.069	28500~38500	1480~1950	0.036~0.048	107~145	0.104~0.101
R0.75 x 1.5	10000~11500	420~480	0.023~0.036	47~54	0.084~0.083	17000~28500	1100~1950	0.046~0.072	80~134	0.129~0.137
R1.0 x 2.0	7900~8800	440~480	0.018~0.120	50~55	0.111~0.109	12600~24000	1100~2150	0.036~0.240	79~151	0.175~0.179
R1.5 x 3.0	5300~5800	550~620	0.048~0.120	50~55	0.208~0.214	11900~17000	1850~2700	0.096~0.360	112~160	0.311~0.318
R2.0 x 4.0	3850~4400	530~570	0.060~0.240	48~55	0.275~0.259	6600~12500	1260~2500	0.120~0.480	83~157	0.382~0.400



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

X5070 END MILLS

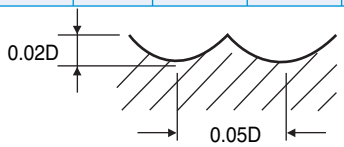
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 3 FLUTE BALL NOSE - Center Match
VOLLHARTMETALL, 3 SCHNEIDEN STIRNRADIUS - Schneiden Mittelpunkt

G8A59 SERIES

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS							
HARDNESS	HRc 30 ~ HRc 45				HRc 45 ~ HRc 55				HRc 55 ~ HRc 60			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R1.5 × 3.0	32000	8600	300	0.090	26840	5800	255	0.072	19840	4280	185	0.072
R2.0 × 4.0	24080	7700	305	0.107	20130	5430	255	0.090	14880	3880	185	0.087
R2.5 × 5.0	20000	7250	315	0.121	16780	5430	265	0.108	12400	3690	195	0.099
R3.0 × 6.0	18000	8570	340	0.159	15200	6220	285	0.136	12200	4500	230	0.123
R4.0 × 8.0	13500	7350	340	0.181	11300	5250	285	0.155	9200	3980	230	0.144
R5.0 × 10.0	10800	6530	340	0.202	9100	4590	285	0.168	7350	3450	230	0.156
R6.0 × 12.0	9050	6100	340	0.225	7590	4260	285	0.187	6130	3190	230	0.173
R8.0 × 16.0	6700	4600	335	0.229	5690	3250	285	0.190	4600	2480	230	0.180
R10.0 × 20.0	5400	3600	340	0.222	4550	2620	285	0.192	3670	1980	230	0.180

MATERIAL	HARDENED STEELS							
HARDNESS	HRc 60 ~ HRc 65				HRc 65 ~ HRc 70			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R1.5 × 3.0	18680	4040	175	0.072	12780	2760	120	0.072
R2.0 × 4.0	14220	3650	180	0.086	9580	2500	120	0.087
R2.5 × 5.0	11670	3470	185	0.099	8000	2370	125	0.099
R3.0 × 6.0	11100	3830	210	0.115	7590	2460	145	0.108
R4.0 × 8.0	8320	3350	210	0.134	5690	2130	145	0.125
R5.0 × 10.0	6660	2870	210	0.144	4550	1960	145	0.144
R6.0 × 12.0	5530	2400	210	0.145	3800	1640	145	0.144
R8.0 × 16.0	4160	1800	210	0.144	2850	1230	145	0.144
R10.0 × 20.0	3300	1440	205	0.145	2280	980	145	0.143



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

X5070 END MILLS

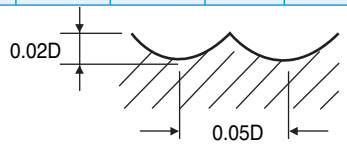
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS

G8A28, G8A38, G8A53 SERIES

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS							
HARDNESS	HRc 30 ~ HRc 40				HRc 40 ~ HRc 50				HRc 50 ~ HRc 55			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R0.1 × 0.2	50000	1200	30	0.012	50000	1050	30	0.011	45000	960	30	0.011
R0.15 × 0.3	50000	1500	45	0.015	50000	1350	45	0.014	45000	1200	40	0.013
R0.2 × 0.4	50000	1900	65	0.019	50000	1700	65	0.017	45000	1500	55	0.017
R0.25 × 0.5	50000	2400	80	0.024	50000	2100	80	0.021	45000	1900	70	0.021
R0.3 × 0.6	50000	2900	95	0.029	50000	2500	95	0.025	45000	2200	85	0.024
R0.4 × 0.8	50000	3900	125	0.039	50000	3300	125	0.033	45000	3000	115	0.033
R0.5 × 1.0	50000	4800	155	0.048	50000	4200	155	0.042	45000	3800	140	0.042
R0.6 × 1.2	50000	5100	190	0.051	48000	4300	180	0.045	43000	3850	160	0.045
R0.75 × 1.5	50000	5400	235	0.054	48000	4500	225	0.047	43000	4000	205	0.047
R1.0 × 2.0	49700	5700	310	0.057	47800	4800	300	0.050	40000	4000	250	0.050
R1.5 × 3.0	33100	6000	310	0.091	31800	5300	300	0.083	26500	4000	250	0.075
R2.0 × 4.0	24900	6000	315	0.120	23900	5300	300	0.111	20000	4000	250	0.100
R2.5 × 5.0	18600	5800	290	0.156	17800	4900	280	0.138	15000	3750	235	0.125
R3.0 × 6.0	13900	4850	260	0.174	13400	4100	255	0.153	11000	3100	205	0.141
R4.0 × 8.0	11100	4200	280	0.189	10700	3500	270	0.164	9000	2700	225	0.150
R5.0 × 10.0	9300	3700	290	0.199	8900	3100	280	0.174	7500	2400	235	0.160
R6.0 × 12.0	6950	2950	260	0.212	6680	2500	250	0.187	5600	1900	210	0.170
R8.0 × 16.0	5570	2650	280	0.238	5350	2200	270	0.206	4500	1700	225	0.189
R10.0 × 20.0	4450	2350	280	0.264	4300	1950	270	0.227	3600	1500	225	0.208

MATERIAL	HARDENED STEELS											
HARDNESS	HRc 55 ~ HRc 60				HRc 60 ~ HRc 65				HRc 65 ~ HRc 70			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R0.1 × 0.2	40000	770	25	0.010	35000	674	20	0.010	31500	570	20	0.009
R0.15 × 0.3	40000	965	40	0.012	35000	840	35	0.012	31500	700	30	0.011
R0.2 × 0.4	40000	1200	50	0.015	35000	1050	45	0.015	31500	890	40	0.014
R0.25 × 0.5	40000	1500	65	0.019	35000	1300	55	0.019	31500	1100	50	0.017
R0.3 × 0.6	40000	1800	75	0.023	35000	1600	65	0.023	31500	1400	60	0.022
R0.4 × 0.8	40000	2400	100	0.030	35000	2100	90	0.030	31500	1800	80	0.029
R0.5 × 1.0	40000	3000	125	0.038	35000	2600	110	0.037	35000	2300	110	0.033
R0.6 × 1.2	38000	3000	145	0.039	34000	2700	130	0.040	30600	2300	115	0.038
R0.75 × 1.5	37000	3100	175	0.042	33000	2700	155	0.041	29700	2300	140	0.039
R1.0 × 2.0	35000	3150	220	0.045	32000	2800	200	0.044	28500	2300	180	0.040
R1.5 × 3.0	23500	3150	220	0.067	21000	2800	200	0.067	19000	2300	180	0.061
R2.0 × 4.0	17500	3150	220	0.090	16000	2800	200	0.088	14500	2300	180	0.079
R2.5 × 5.0	13500	3050	210	0.113	11500	2550	180	0.111	10500	2100	165	0.100
R3.0 × 6.0	10000	2500	190	0.125	8800	2150	165	0.122	8000	1750	150	0.109
R4.0 × 8.0	8000	2150	200	0.134	7000	1850	175	0.132	6500	1550	165	0.119
R5.0 × 10.0	6600	1900	205	0.144	5800	1650	180	0.142	5300	1380	165	0.130
R6.0 × 12.0	5000	1550	190	0.155	4400	1250	165	0.142	4000	1050	150	0.131
R8.0 × 16.0	4000	1350	200	0.169	3500	1000	175	0.143	3200	850	160	0.133
R10.0 × 20.0	3200	1200	200	0.188	2800	800	175	0.143	2550	660	160	0.129



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

X5070 END MILLS

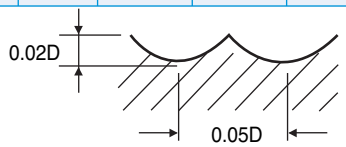
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 4 FLUTE BALL NOSE - Center Match
VOLLHARTMETALL, 4 SCHNEIDEN STIRNRADIUS - Schneiden Mittelpunkt

G8D62 SERIES

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS							
HARDNESS	HRc 30 ~ HRc 45				HRc 45 ~ HRc 55				HRc 55 ~ HRc 60			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R1.5 × 3.0	36100	10200	340	0.071	30250	7300	285	0.060	24440	4880	230	0.050
R2.0 × 4.0	27050	8700	340	0.080	22650	6350	285	0.070	18300	4400	230	0.060
R2.5 × 5.0	21600	7800	340	0.090	17820	5750	280	0.081	14650	4150	230	0.071
R3.0 × 6.0	18040	7320	340	0.101	15180	5560	285	0.092	12210	4020	230	0.082
R4.0 × 8.0	13530	6270	340	0.116	11330	4680	285	0.103	9190	3520	230	0.096
R5.0 × 10.0	10840	5560	340	0.128	9130	4070	285	0.111	7370	3080	230	0.104
R6.0 × 12.0	9020	5230	340	0.145	7590	3800	285	0.125	6110	2810	230	0.115
R8.0 × 16.0	6770	3910	340	0.144	5670	2920	285	0.129	4620	2200	230	0.119
R10.0 × 20.0	5450	3140	340	0.144	4570	2310	285	0.126	3690	1760	230	0.119

MATERIAL	HARDENED STEELS							
HARDNESS	HRc 60 ~ HRc 65				HRc 65 ~ HRc 70			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R1.5 × 3.0	22280	4010	210	0.045	15170	2430	145	0.040
R2.0 × 4.0	16710	3680	210	0.055	11380	2280	145	0.050
R2.5 × 5.0	13370	3590	210	0.067	9100	2260	145	0.062
R3.0 × 6.0	11110	3410	210	0.077	7590	2200	145	0.072
R4.0 × 8.0	8310	2970	210	0.089	5670	1870	145	0.082
R5.0 × 10.0	6660	2530	210	0.095	4570	1760	145	0.096
R6.0 × 12.0	5560	2150	210	0.097	3800	1430	145	0.094
R8.0 × 16.0	4180	1600	210	0.096	2860	1100	145	0.096
R10.0 × 20.0	3300	1270	205	0.096	2260	880	140	0.097



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

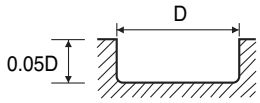
X5070 END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

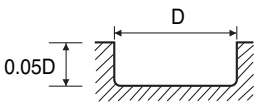
CARBIDE, 2 FLUTE CORNER RADIUS for RIB PROCESSING - SLOTTING
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS für SCHMALE RIPPEN - NUTENFRÄSEN

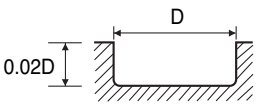
G8A60 SERIES

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS							
HARDNESS	HRc 30 ~ HRc 40				HRc 40 ~ HRc 50				HRc 50 ~ HRc 55			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
0.5	50000	144	80	0.001	45000	110	70	0.001	40000	85	65	0.001
0.6	50000	185	95	0.002	45000	140	85	0.002	40000	110	75	0.001
0.8	50000	235	125	0.002	40000	170	100	0.002	30000	115	75	0.002
1.0	48000	590	150	0.006	38000	460	120	0.006	25500	285	80	0.006
2.0	33300	670	210	0.010	26000	540	165	0.010	17500	335	110	0.010
3.0	21800	670	205	0.015	17300	540	165	0.016	11500	335	110	0.015
4.0	16700	700	210	0.021	13200	560	165	0.021	8800	350	110	0.020
5.0	15700	810	245	0.026	12500	645	195	0.026	8300	395	130	0.024
6.0	13100	755	245	0.029	10350	615	195	0.030	6900	385	130	0.028
8.0	9880	740	250	0.037	7800	575	195	0.037	5200	355	130	0.034
10.0	7800	670	245	0.043	6150	540	195	0.044	4100	330	130	0.040
12.0	6650	672	250	0.051	5250	540	200	0.051	3500	330	130	0.047



MATERIAL	HARDENED STEELS											
HARDNESS	HRc 55 ~ HRc 60				HRc 60 ~ HRc 65				HRc 65 ~ HRc 70			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
0.5	33000	55	50	0.001	25000	30	40	0.001	20000	20	30	0.250
0.6	30000	65	55	0.001	25000	40	45	0.001	20000	25	40	0.278
0.8	25000	70	65	0.001	19000	45	50	0.001	16000	28	40	0.280
1.0	20500	170	65	0.004	16000	105	50	0.003	12500	70	40	0.700
2.0	14500	205	90	0.007	11000	130	70	0.006	9500	90	60	0.643
3.0	9500	205	90	0.011	7500	130	70	0.009	6400	90	60	0.643
4.0	7200	215	90	0.015	5600	135	70	0.012	4750	95	60	0.679
5.0	6400	230	100	0.018	5100	145	80	0.014	4450	105	70	0.656
6.0	5300	225	100	0.021	4200	140	80	0.017	3700	100	70	0.625
8.0	4000	205	100	0.026	3200	130	80	0.020	2800	95	70	0.594
10.0	3200	190	100	0.030	2550	120	80	0.024	2200	90	70	0.563
12.0	2650	190	100	0.036	2100	120	80	0.029	1860	90	70	0.563





RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

X5070 END MILLS

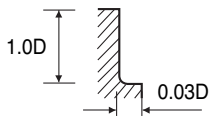
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE CORNER RADIUS for RIB PROCESSING - SIDE CUTTING
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS für SCHMALE RIPPEN - SEITENFRÄSEN

G8A60 SERIES

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS							
HARDNESS	HRc 30 ~ HRc 40				HRc 40 ~ HRc 50				HRc 50 ~ HRc 55			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
0.5	50000	205	80	0.002	45000	160	70	0.002	40000	125	65	0.002
0.6	50000	265	95	0.003	45000	200	85	0.002	40000	160	75	0.002
0.8	50000	335	125	0.003	40000	245	100	0.003	30000	165	75	0.003
1.0	48000	840	150	0.009	38000	656	120	0.009	25500	408	80	0.008
2.0	33300	960	210	0.014	26000	776	165	0.015	17500	480	110	0.014
3.0	21800	960	205	0.022	17300	776	165	0.022	11500	480	110	0.021
4.0	16700	1000	210	0.030	13200	800	165	0.030	8800	500	110	0.028
5.0	15700	1160	245	0.037	12500	920	195	0.037	8300	568	130	0.034
6.0	13100	1080	245	0.041	10350	880	195	0.043	6900	552	130	0.040
8.0	9880	1056	250	0.053	7800	824	195	0.053	5200	508	130	0.049
10.0	7800	960	245	0.062	6150	776	195	0.063	4100	472	130	0.058
12.0	6650	960	250	0.072	5250	776	200	0.074	3500	472	130	0.067

MATERIAL	HARDENED STEELS											
HARDNESS	HRc 55 ~ HRc 60				HRc 60 ~ HRc 65				HRc 65 ~ HRc 70			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
0.5	33000	80	50	0.001	25000	45	40	0.001	20000	30	30	0.001
0.6	30000	90	55	0.002	25000	60	45	0.001	20000	35	40	0.001
0.8	25000	100	65	0.002	19000	65	50	0.002	16000	40	40	0.001
1.0	20500	248	65	0.006	16000	152	50	0.005	12500	100	40	0.004
2.0	14500	296	90	0.010	11000	184	70	0.008	9500	132	60	0.007
3.0	9500	296	90	0.016	7500	184	70	0.012	6400	132	60	0.010
4.0	7200	308	90	0.021	5600	192	70	0.017	4750	136	60	0.014
5.0	6400	328	100	0.026	5100	208	80	0.020	4450	152	70	0.017
6.0	5300	320	100	0.030	4200	204	80	0.024	3700	148	70	0.020
8.0	4000	292	100	0.037	3200	188	80	0.029	2800	136	70	0.024
10.0	3200	272	100	0.043	2550	176	80	0.035	2200	128	70	0.029
12.0	2650	272	100	0.051	2100	176	80	0.042	1860	128	70	0.034



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

X5070 END MILLS

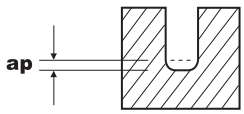
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE CORNER RADIUS for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS für SCHMALE RIPPEN

G8A52 SERIES

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS	HRc 30 ~ HRc 45					HRc 45 ~ HRc 55				
DIAMETER	RPM	FEED	ap(mm)	Vc	fz	RPM	FEED	ap(mm)	Vc	fz
0.5	25650~33000	370~470	0.0056~0.0350	40~52	0.029~0.028	23750~26000	285~315	0.0040~0.0250	37~41	0.024~0.024
0.6	20900~35200	330~560	0.0063~0.0294	39~66	0.032~0.032	19900~22000	260~290	0.0450~0.0210	38~41	0.026~0.026
0.8	16150~26400	360~590	0.0084~0.0392	41~66	0.045~0.045	15200~16700	280~310	0.0060~0.0280	38~42	0.037~0.037
1.0	12300~18700	350~540	0.0105~0.0280	39~59	0.057~0.058	10500~11500	250~280	0.0075~0.0200	33~36	0.048~0.049
1.2	10450~17600	350~590	0.0245~0.0700	39~66	0.067~0.067	9100~10000	250~280	0.0150~0.0420	34~38	0.055~0.056
1.5	9100~17600	430~830	0.0161~0.0770	43~83	0.095~0.094	7000~8000	250~280	0.0115~0.0550	33~38	0.071~0.070
2.0	6350~10550	340~570	0.0210~0.1400	40~66	0.107~0.108	6100~6700	270~300	0.0150~0.1000	38~42	0.089~0.090

MATERIAL	HARDENED STEELS				
HARDNESS	HRc 55 ~ HRc 60				
DIAMETER	RPM	FEED	ap(mm)	Vc	fz
0.5	14200~18000	115~130	0.0024~0.0150	22~28	0.016~0.014
0.6	11900~15500	100~120	0.0027~0.0126	22~29	0.017~0.015
0.8	9000~11700	110~125	0.0036~0.0168	23~29	0.024~0.021
1.0	6300~8050	100~115	0.0045~0.0120	20~25	0.032~0.029
1.2	5400~7000	100~115	0.0090~0.0252	20~26	0.037~0.033
1.5	4300~5500	100~115	0.0069~0.0330	20~26	0.047~0.042
2.0	3600~4700	100~120	0.0090~0.0600	23~30	0.056~0.051



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

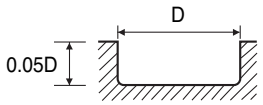
X5070 END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

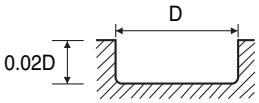
CARBIDE, 2 FLUTE MINIATURE CORNER RADIUS - SLOTTING
VOLLHARTMETALL, 2 SCHNEIDEN MINI ECKENRADIUS - NUTENFRÄSEN

G8A50 SERIES

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS							
HARDNESS	HRc 30 ~ HRc 40				HRc 40 ~ HRc 50				HRc 50 ~ HRc 55			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
0.3	50000	190	45	0.002	45000	140	40	0.002	40000	115	40	0.001
0.4	50000	235	65	0.002	45000	180	55	0.002	40000	140	50	0.002
0.5	50000	370	80	0.004	45000	280	70	0.003	40000	220	65	0.003
0.6	50000	470	95	0.005	45000	360	85	0.004	40000	285	75	0.004
0.8	50000	600	125	0.006	40000	440	100	0.006	30000	295	75	0.005
1.0	48000	750	150	0.008	38000	570	120	0.008	25500	360	80	0.007
1.2	42000	790	160	0.009	34000	640	130	0.009	22500	380	85	0.008
1.5	37000	800	175	0.011	30500	670	145	0.011	21000	410	100	0.010
2.0	33300	850	210	0.013	26000	680	165	0.013	17500	420	110	0.012



MATERIAL	HARDENED STEELS							
HARDNESS	HRc 55 ~ HRc 60				HRc 60 ~ HRc 65			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
0.3	33000	70	30	0.001	25000	40	25	0.001
0.4	33000	90	40	0.001	25000	55	30	0.001
0.5	33000	140	50	0.002	25000	85	40	0.002
0.6	30000	160	55	0.003	25000	105	45	0.002
0.8	25000	185	65	0.004	19000	110	50	0.003
1.0	20500	215	65	0.005	16000	135	50	0.004
1.2	20000	250	75	0.006	14500	145	55	0.005
1.5	17000	250	80	0.007	13000	155	60	0.006
2.0	14500	260	90	0.009	11000	160	70	0.007



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

X5070 END MILLS

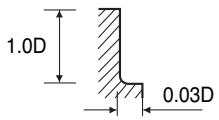
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 4 FLUTE CORNER RADIUS
VOLLHARTMETALL, 4 SCHNEIDEN ECKENRADIUS

G8A47, G8B08 SERIES

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS							
HARDNESS	HRc 30 ~ HRc 40				HRc 40 ~ HRc 50				HRc 50 ~ HRc 55			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
1.0	48000	1184	150	0.006	38000	840	120	0.006	25500	568	80	0.006
2.0	33300	1400	210	0.011	26000	1000	165	0.010	17500	672	110	0.010
3.0	21800	1400	205	0.016	17300	1000	165	0.014	11500	672	110	0.015
4.0	16700	1440	210	0.022	13200	1040	165	0.020	8800	704	110	0.020
5.0	15700	1600	245	0.025	12500	1200	195	0.024	8300	800	130	0.024
6.0	13100	1560	245	0.030	10350	1120	195	0.027	6900	760	130	0.028
8.0	9880	1504	250	0.038	7800	1080	195	0.035	5200	720	130	0.035
10.0	7800	1400	245	0.045	6150	1008	195	0.041	4100	672	130	0.041
12.0	6650	1400	250	0.053	5250	1008	200	0.048	3500	672	130	0.048
16.0	4900	1200	245	0.061	3900	880	195	0.056	2600	584	130	0.056
20.0	3900	1040	245	0.067	3100	776	195	0.063	2050	520	130	0.063

MATERIAL	HARDENED STEELS											
HARDNESS	HRc 55 ~ HRc 60				HRc 60 ~ HRc 65				HRc 65 ~ HRc 70			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
1.0	20500	344	65	0.004	16000	216	50	0.003	12500	140	40	0.700
2.0	14500	416	90	0.007	11000	256	70	0.006	9500	184	60	0.657
3.0	9500	416	90	0.011	7500	256	70	0.009	6400	184	60	0.657
4.0	7200	432	90	0.015	5600	268	70	0.012	4750	192	60	0.686
5.0	6400	464	100	0.018	5100	296	80	0.015	4450	216	70	0.675
6.0	5300	448	100	0.021	4200	280	80	0.017	3700	208	70	0.650
8.0	4000	416	100	0.026	3200	264	80	0.021	2800	192	70	0.600
10.0	3200	384	100	0.030	2550	248	80	0.024	2200	176	70	0.550
12.0	2650	384	100	0.036	2100	240	80	0.029	1860	176	70	0.550
16.0	2000	336	100	0.042	1600	216	80	0.034	1400	160	70	0.500
20.0	1600	304	100	0.048	1300	200	80	0.038	1100	144	70	0.450



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

X5070 END MILLS

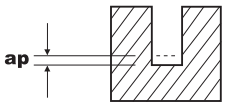
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN für SCHMALE RIPPEN

G8A45 SERIES

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS	HRc 30 ~ HRc 45					HRc 45 ~ HRc 55				
DIAMETER	RPM	FEED	ap(mm)	Vc	fz	RPM	FEED	ap(mm)	Vc	fz
0.2	50000	300~350	0.006~0.016	31	0.003~0.004	50000	265~310	0.005~0.013	31	0.003~0.003
0.3	43000~50000	330~420	0.006~0.015	41~47	0.004~0.004	39900~46200	265~310	0.004~0.011	38~44	0.003~0.003
0.4	31400~50000	350~590	0.005~0.028	39~63	0.006~0.006	30500~35200	295~340	0.003~0.020	38~44	0.005~0.005
0.5	25650~33000	370~470	0.006~0.035	40~52	0.007~0.007	23750~26000	285~315	0.004~0.025	37~41	0.006~0.006
0.6	20900~35200	330~560	0.007~0.030	39~66	0.008~0.008	19900~22000	260~290	0.005~0.021	38~41	0.007~0.007
0.8	16150~26400	360~590	0.009~0.040	41~66	0.011~0.011	15200~16700	280~310	0.006~0.028	38~42	0.009~0.009
1.0	12300~18700	350~540	0.011~0.028	39~59	0.014~0.014	10500~11500	250~280	0.008~0.020	33~36	0.012~0.012
1.2	10450~17600	350~590	0.025~0.070	39~66	0.017~0.017	9100~10000	250~280	0.015~0.042	34~38	0.014~0.014
1.5	9100~17600	430~830	0.017~0.077	43~83	0.024~0.024	7000~8000	250~280	0.012~0.055	33~38	0.018~0.018
2.0	6350~10550	340~570	0.021~0.140	40~66	0.027~0.027	6100~6700	270~300	0.015~0100	38~42	0.022~0.022
3.0	4300~7050	550~900	0.056~0.210	41~66	0.064~0.064	3990~4600	445~515	0.040~0.150	38~43	0.056~0.056
4.0	3200~5300	400~675	0.074~0.280	40~67	0.063~0.064	3000~3400	335~380	0.053~0.200	38~43	0.056~0.056

MATERIAL	HARDENED STEELS					COPPER				
HARDNESS	HRc 55 ~ HRc 65									
DIAMETER	RPM	FEED	ap(mm)	Vc	fz	RPM	FEED	ap(mm)	Vc	fz
0.2	50000	225~265	0.005~0.012	31	0.002~0.003	50000	455~530	0.010~0.022	31	0.005~0.005
0.3	23900~32300	105~185	0.003~0.007	23~30	0.002~0.003	48000~50000	550~640	0.010~0.025	45~47	0.006~0.006
0.4	18300~24600	120~200	0.002~0.012	23~31	0.003~0.004	48000~50000	790~920	0.008~0.048	60~63	0.008~0.009
0.5	14200~18000	115~130	0.003~0.015	22~28	0.004~0.004	44000~50000	800~1150	0.010~0.060	69~79	0.009~0.012
0.6	11900~15500	100~120	0.003~0.013	22~29	0.004~0.004	37500~50000	770~1250	0.011~0.051	71~94	0.01~0.013
0.8	9000~11700	110~125	0.004~0.017	23~29	0.006~0.005	28500~47000	770~1300	0.015~0.068	72~118	0.014~0.014
1.0	6300~8050	100~115	0.005~0.012	20~25	0.008~0.007	22500~34000	810~1300	0.018~0.048	71~107	0.018~0.019
1.2	5400~7000	100~115	0.009~0.026	20~26	0.009~0.008	22500~31500	950~1350	0.036~0.101	85~119	0.021~0.021
1.5	4300~5500	100~115	0.007~0.033	20~26	0.012~0.01	14500~25000	770~1320	0.028~0.132	68~118	0.027~0.026
2.0	3600~4700	100~120	0.009~0.060	23~30	0.014~0.013	11500~18500	770~1250	0.036~0.240	72~116	0.033~0.034
3.0	2400~3200	105~310	0.024~0.090	23~30	0.022~0.048	9000~13000	1400~2110	0.096~0.360	85~123	0.078~0.081
4.0	1800~2400	75~230	0.032~0.120	23~30	0.021~0.048	6750~9750	1050~1575	0.128~0.480	85~123	0.078~0.081



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

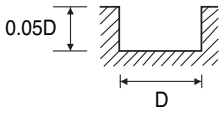
X5070 END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE - SLOTTING
VOLLHARTMETALL, 2 SCHNEIDEN - NUTENFRÄSEN

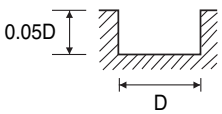
G8A01, G8A36 SERIES

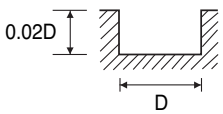
MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS							
HARDNESS	HRc 30 ~ HRc 40				HRc 40 ~ HRc 50				HRc 50 ~ HRc 55			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
0.2	50000	130	30	0.001	45000	115	30	0.001	40000	95	25	0.001
0.3	50000	190	45	0.002	45000	140	40	0.002	40000	115	40	0.001
0.4	50000	235	65	0.002	45000	180	55	0.002	40000	140	50	0.002
0.5	50000	370	80	0.004	45000	280	70	0.003	40000	220	65	0.003
0.6	50000	470	95	0.005	45000	360	85	0.004	40000	285	75	0.004
0.8	50000	600	125	0.006	40000	440	100	0.006	30000	295	75	0.005
0.9	49000	655	140	0.007	39000	520	110	0.007	27800	330	80	0.006
1.0	48000	750	150	0.008	38000	570	120	0.008	25500	360	80	0.007
2.0	33300	850	210	0.013	26000	680	165	0.013	17500	420	110	0.012
3.0	21800	850	205	0.019	17300	680	165	0.020	11500	420	110	0.018
4.0	16700	880	210	0.026	13200	700	165	0.027	8800	440	110	0.025
5.0	15700	1000	245	0.032	12500	805	195	0.032	8300	500	130	0.030
6.0	13100	950	245	0.036	10350	770	195	0.037	6900	480	130	0.035
8.0	9880	930	250	0.047	7800	720	195	0.046	5200	445	130	0.043
10.0	7800	850	245	0.054	6150	680	195	0.055	4100	415	130	0.051
12.0	6650	850	250	0.064	5250	680	200	0.065	3500	415	130	0.059
16.0	4900	730	245	0.074	3900	580	195	0.074	2600	365	130	0.070
20.0	3900	660	245	0.085	3100	525	195	0.085	2050	335	130	0.082



MATERIAL	HARDENED STEELS											
HARDNESS	HRc 55 ~ HRc 60				HRc 60 ~ HRc 65				HRc 65 ~ HRc 70			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
0.2	33000	60	20	0.001	33000	45	20	0.001	26400	30	15	0.750
0.3	33000	70	30	0.001	25000	50	25	0.001	20000	35	20	0.700
0.4	33000	90	40	0.001	25000	55	30	0.001	20000	40	25	0.667
0.5	33000	140	50	0.002	25000	85	40	0.002	20000	60	30	0.750
0.6	30000	160	55	0.003	25000	105	45	0.002	20000	75	40	0.833
0.8	25000	185	65	0.004	19000	110	50	0.003	15200	80	40	0.800
0.9	22700	205	65	0.005	17500	125	50	0.004	14000	90	40	0.900
1.0	20500	215	65	0.005	16000	135	50	0.004	12500	85	40	0.850
2.0	14500	260	90	0.009	11000	160	70	0.007	9500	115	60	0.821
3.0	9500	260	90	0.014	7500	160	70	0.011	6400	115	60	0.821
4.0	7200	270	90	0.019	5600	170	70	0.015	4750	118	60	0.843
5.0	6400	285	100	0.022	5100	180	80	0.018	4450	132	70	0.825
6.0	5300	280	100	0.026	4200	180	80	0.021	3700	130	70	0.813
8.0	4000	255	100	0.032	3200	165	80	0.026	2800	120	70	0.750
10.0	3200	240	100	0.038	2550	155	80	0.030	2200	112	70	0.700
12.0	2650	240	100	0.045	2100	155	80	0.037	1860	112	70	0.700
16.0	2000	210	100	0.053	1600	135	80	0.042	1400	95	70	0.594
20.0	1600	195	100	0.061	1300	125	80	0.048	1100	85	70	0.531

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t





X5070 END MILLS

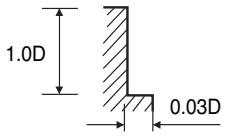
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE - SIDE CUTTING
VOLLHARTMETALL, 2 SCHNEIDEN - SEITENFRÄSEN

G8A01, G8A36 SERIES

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS							
HARDNESS	HRc 30 ~ HRc 40				HRc 40 ~ HRc 50				HRc 50 ~ HRc 55			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
1.0	48000	1050	150	0.011	38000	820	120	0.011	25500	510	80	0.010
2.0	33300	1200	210	0.018	26000	970	165	0.019	17500	600	110	0.017
3.0	21800	1200	205	0.028	17300	970	165	0.028	11500	600	110	0.026
4.0	16700	1250	210	0.037	13200	1000	165	0.038	8800	625	110	0.036
5.0	15700	1450	245	0.046	12500	1150	195	0.046	8300	710	130	0.043
6.0	13100	1350	245	0.052	10350	1100	195	0.053	6900	690	130	0.050
8.0	9880	1320	250	0.067	7800	1030	195	0.066	5200	635	130	0.061
10.0	7800	1200	245	0.077	6150	970	195	0.079	4100	590	130	0.072
12.0	6650	1200	250	0.090	5250	970	200	0.092	3500	590	130	0.084
16.0	4900	1050	245	0.107	3900	840	195	0.108	2600	520	130	0.100
20.0	3900	950	245	0.122	3100	750	195	0.121	2050	475	130	0.116

MATERIAL	HARDENED STEELS											
HARDNESS	HRc 55 ~ HRc 60				HRc 60 ~ HRc 65				HRc 65 ~ HRc 70			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
1.0	20500	310	65	0.008	16000	190	50	0.006	12500	125	40	1.250
2.0	14500	370	90	0.013	11000	230	70	0.010	9500	165	60	1.179
3.0	9500	370	90	0.019	7500	230	70	0.015	6400	165	60	1.179
4.0	7200	385	90	0.027	5600	240	70	0.021	4750	170	60	1.214
5.0	6400	410	100	0.032	5100	260	80	0.025	4450	190	70	1.188
6.0	5300	400	100	0.038	4200	255	80	0.030	3700	185	70	1.156
8.0	4000	365	100	0.046	3200	235	80	0.037	2800	170	70	1.063
10.0	3200	340	100	0.053	2550	220	80	0.043	2200	160	70	1.000
12.0	2650	340	100	0.064	2100	220	80	0.052	1860	160	70	1.000
16.0	2000	300	100	0.075	1600	190	80	0.059	1400	140	70	0.875
20.0	1600	275	100	0.086	1300	175	80	0.067	1100	125	70	0.781



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

X5070 END MILLS

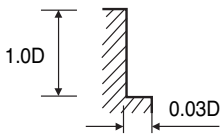
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 4 FLUTE - SIDE CUTTING
VOLLHARTMETALL, 4 SCHNEIDEN - SEITENFRÄSEN

G8A02, G8A37 SERIES

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS							
HARDNESS	HRc 30 ~ HRc 40				HRc 40 ~ HRc 50				HRc 50 ~ HRc 55			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
1.0	48000	1480	150	0.008	38000	1050	120	0.007	25500	710	80	0.007
2.0	33300	1750	210	0.013	26000	1250	165	0.012	17500	840	110	0.012
3.0	21800	1750	205	0.020	17300	1250	165	0.018	11500	840	110	0.018
4.0	16700	1800	210	0.027	13200	1300	165	0.025	8800	880	110	0.025
5.0	15700	2000	245	0.032	12500	1500	195	0.030	8300	1000	130	0.030
6.0	13100	1950	245	0.037	10350	1400	195	0.034	6900	950	130	0.034
8.0	9880	1880	250	0.048	7800	1350	195	0.043	5200	900	130	0.043
10.0	7800	1750	245	0.056	6150	1260	195	0.051	4100	840	130	0.051
12.0	6650	1750	250	0.066	5250	1260	200	0.060	3500	840	130	0.060
16.0	4900	1500	245	0.077	3900	1100	195	0.071	2600	730	130	0.070
20.0	3900	1300	245	0.083	3100	970	195	0.078	2050	650	130	0.079

MATERIAL	HARDENED STEELS											
HARDNESS	HRc 55 ~ HRc 60				HRc 60 ~ HRc 65				HRc 65 ~ HRc 70			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
1.0	20500	430	65	0.005	16000	270	50	0.004	12500	175	40	0.875
2.0	14500	520	90	0.009	11000	320	70	0.007	9500	230	60	0.821
3.0	9500	520	90	0.014	7500	320	70	0.011	6400	230	60	0.821
4.0	7200	540	90	0.019	5600	335	70	0.015	4750	240	60	0.857
5.0	6400	580	100	0.023	5100	370	80	0.018	4450	270	70	0.844
6.0	5300	560	100	0.026	4200	350	80	0.021	3700	260	70	0.813
8.0	4000	520	100	0.033	3200	330	80	0.026	2800	240	70	0.750
10.0	3200	480	100	0.038	2550	310	80	0.030	2200	220	70	0.688
12.0	2650	480	100	0.045	2100	300	80	0.036	1860	220	70	0.688
16.0	2000	420	100	0.053	1600	270	80	0.042	1400	200	70	0.625
20.0	1600	380	100	0.059	1300	250	80	0.048	1100	180	70	0.563



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

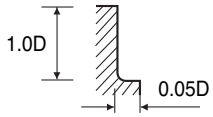
X5070 END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

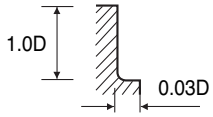
CARBIDE, 6 FLUTE 45° HELIX CORNER RADIUS
VOLLHARTMETALL, 6 SCHNEIDEN 45° RECHTSSPIRALE, ECKENRADIUS

G8A39 SERIES

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS							
HARDNESS	HRc 30 ~ HRc 40				HRc 40 ~ HRc 50				HRc 50 ~ HRc 55			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	24800	5350	465	0.036	23500	4900	445	0.035	16000	4900	300	0.051
8.0	20000	5500	505	0.046	19000	5000	480	0.044	12000	4600	300	0.064
10.0	16000	4900	505	0.051	15500	4500	485	0.048	9500	4100	300	0.072
12.0	13000	4500	490	0.058	12500	4100	470	0.055	8000	3800	300	0.079
16.0	10000	4000	505	0.067	9700	3700	490	0.064	6000	3400	300	0.094
20.0	8000	3350	505	0.070	7800	3400	490	0.073	4800	3200	300	0.111



MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS							
HARDNESS	HRc 55 ~ HRc 60				HRc 60 ~ HRc 65				HRc 65 ~ HRc 70			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	13500	3300	255	0.041	10500	2100	200	0.033	8000	1450	150	1.208
8.0	10000	3100	250	0.052	8000	2000	200	0.042	6000	1400	150	1.167
10.0	8000	2900	250	0.060	6400	1800	200	0.047	4800	1300	150	1.083
12.0	6600	2500	250	0.063	5300	1600	200	0.050	4000	1150	150	0.958
16.0	5000	2300	250	0.077	4000	1250	200	0.052	3000	870	150	0.725
20.0	4000	2100	250	0.088	3200	1020	200	0.053	2400	690	150	0.575



※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

X5070 END MILLS

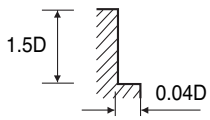
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 6&8 FLUTE 45° HELIX LONG - SIDE CUTTING
VOLLHARTMETALL, 6&8 SCHNEIDEN 45° RECHTSSPIRALE LANG - SEITENFRÄSEN

G8D63 SERIES

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS	HRc 30 ~ HRc 40				HRc 40 ~ HRc 55			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	6360	1500	120	0.039	5040	1045	95	0.035
8.0	4800	1510	120	0.052	3840	1070	95	0.046
10.0	3840	1450	120	0.063	3000	995	95	0.055
12.0	3240	1355	120	0.070	2520	935	95	0.062
14.0	2730	1320	120	0.081	2180	920	95	0.070
16.0	2400	1300	120	0.090	1920	910	95	0.079
18.0	2120	1610	120	0.095	1700	1090	95	0.080
20.0	1920	1210	120	0.079	1560	1130	100	0.091
25.0	1560	1370	125	0.110	1200	925	95	0.096

MATERIAL	HARDENED STEELS							
HARDNESS	HRc 55 ~ HRc 65				HRc 65 ~ HRc 70			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	3840	720	70	0.031	2520	430	50	0.028
8.0	2880	720	70	0.042	1920	430	50	0.037
10.0	2280	685	70	0.050	1560	420	50	0.045
12.0	1920	650	70	0.056	1320	395	50	0.050
14.0	1600	630	70	0.066	1070	325	45	0.051
16.0	1440	625	70	0.072	960	370	50	0.064
18.0	1280	750	70	0.073	850	450	50	0.066
20.0	1200	660	75	0.069	720	410	45	0.071
25.0	960	670	75	0.087	610	385	50	0.079



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

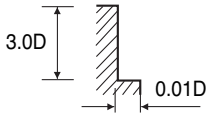
X5070 END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 6&8 FLUTE 45° HELIX EXTRA LONG - SIDE CUTTING
VOLLHARTMETALL, 6&8 SCHNEIDEN 45° RECHTSSPIRALE EXTRA LANG - SEITENFRÄSEN

G8D64 SERIES

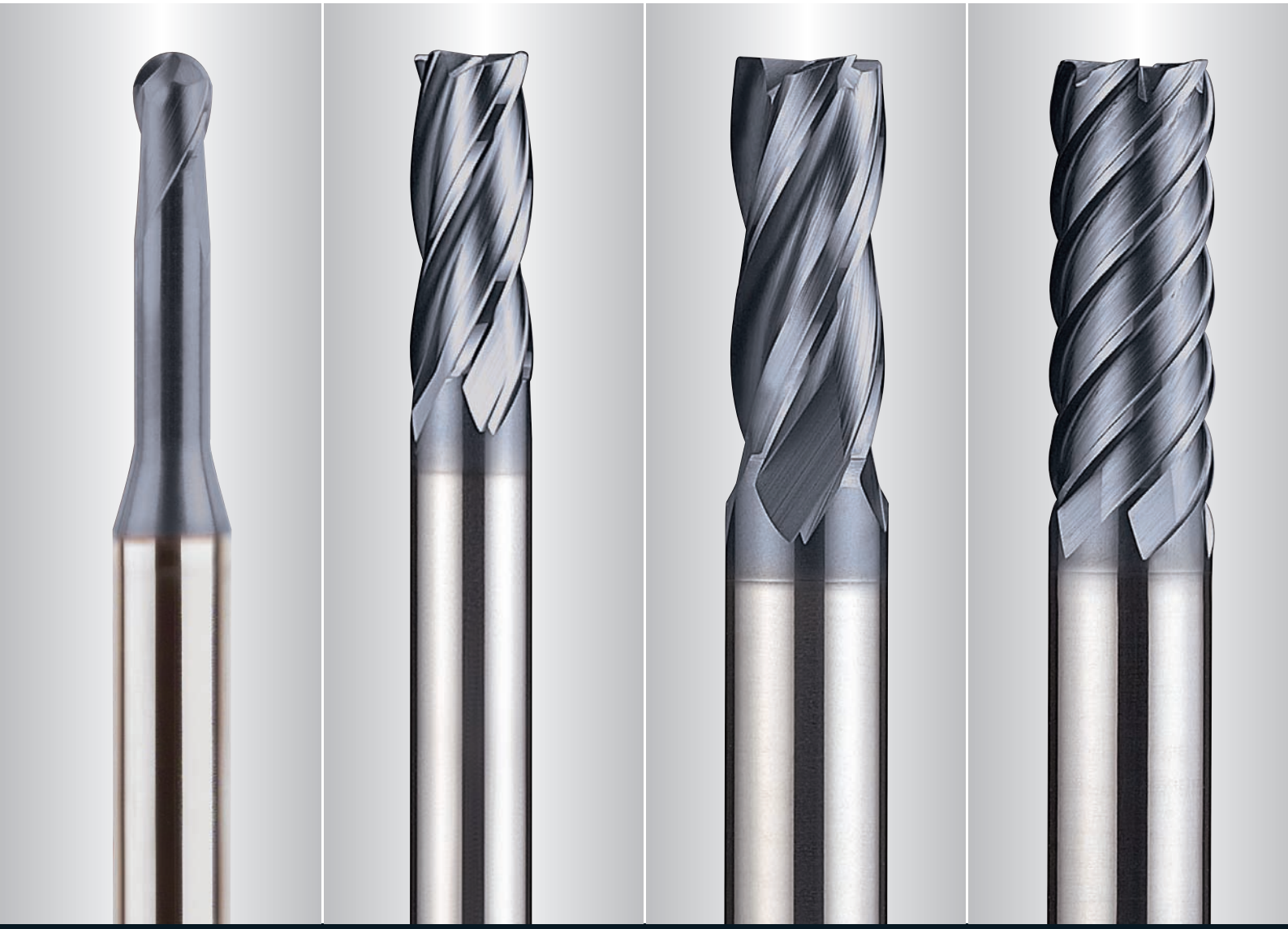
MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS							
HARDNESS	HRc 30 ~ HRc 40				HRc 40 ~ HRc 55				HRc 55 ~ HRc 65			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	3180	770	60	0.040	3180	575	60	0.030	2540	455	50	0.030
8.0	2390	720	60	0.050	2390	575	60	0.040	1910	455	50	0.040
10.0	1910	685	60	0.060	1910	575	60	0.050	1520	455	50	0.050
12.0	1580	660	60	0.070	1580	575	60	0.061	1270	455	50	0.060
14.0	1370	620	60	0.075	1370	540	60	0.066	1090	430	50	0.066
16.0	1190	575	60	0.081	1190	505	60	0.071	960	410	50	0.071
18.0	1070	730	60	0.085	1070	685	60	0.080	850	550	50	0.081
20.0	960	660	60	0.086	960	695	60	0.090	770	560	50	0.091
25.0	770	550	60	0.089	770	490	60	0.080	610	395	50	0.081



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE

Being the best through innovation



4G Mill

4G Mill FRÄSER

- High Speed Cutting for Pre-Hardened Steels up to HRc55
- High-Speed-Bearbeitung (HSC) von vorvergüteten Stählen bis HRc55

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
SEMD98		CARBIDE, 2 FLUTE BALL NOSE VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS	R0.05	R12.5	706
SEM846		CARBIDE, 2 FLUTE BALL NOSE with EXTENDED NECK VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS mit ABGESETZTEM SCHAFTTETL	R0.05	R6.0	711
SEM846		CARBIDE, 2 FLUTE BALL NOSE with EXTENDED NECK (6mm Shank) VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS mit ABGESETZTEM SCHAFTTETL (6mm ZYLINDERSCHAFT)	R0.25	R1.0	719
SEMD99		CARBIDE, 2 FLUTE CORNER RADIUS VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS	D0.2	D20.0	722
SEME61		CARBIDE, 2 FLUTE CORNER RADIUS with EXTENDED NECK VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS mit ABGESETZTEM SCHAFTTETL	D0.2	D20.0	728
SEME01		CARBIDE, 4 FLUTE MULTIPLE HELIX CORNER RADIUS VOLLHARTMETALL, 4 SCHNEIDEN MEHRSPIRAL ECKENRADIUS	D1.0	D20.0	743
SEME64		CARBIDE, 4 FLUTE MULTIPLE HELIX CORNER RADIUS with EXTENDED NECK VOLLHARTMETALL, 4 SCHNEIDEN MEHRSPIRAL ECKENRADIUS mit ABGESETZTEM SCHAFTTETL	D1.0	D20.0	748
SEME35		CARBIDE, 2 FLUTE VOLLHARTMETALL, 2 SCHNEIDEN	D0.03	D25.0	760
SEME70		CARBIDE, 2 FLUTE LONG LENGTH VOLLHARTMETALL, 2 SCHNEIDEN LANG	D1.0	D25.0	765
SEM845		CARBIDE, 2 FLUTE with EXTENDED NECK VOLLHARTMETALL, 2 SCHNEIDEN mit ABGESETZTEM SCHAFTTETL	D0.1	D12.0	770
SEME36		CARBIDE, 4 FLUTE MULTIPLE HELIX VOLLHARTMETALL, 4 SCHNEIDEN MEHRSPIRAL	D0.8	D25.0	777
SEME71		CARBIDE, 4 FLUTE MULTIPLE HELIX (Sharp corner removal) VOLLHARTMETALL, 4 SCHNEIDEN MEHRSPIRAL (Scharfe Schneidenecken entfernt)	D1.0	D20.0	779
SEME72		CARBIDE, 4 FLUTE LONG LENGTH VOLLHARTMETALL, 4 SCHNEIDEN LANG	D1.0	D25.0	782
SEME73		CARBIDE, 4 FLUTE with EXTENDED NECK VOLLHARTMETALL, 4 SCHNEIDEN mit ABGESETZTEM SCHAFTTETL	D1.0	D12.0	787
SEME75		CARBIDE, 6 FLUTE 45˚ HELIX VOLLHARTMETALL, 6 SCHNEIDEN 45˚ RECHTSSPIRALE	D6.0	D20.0	791
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			792

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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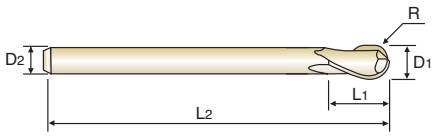
4G MILL END MILLS

SEMD98 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE BALL NOSE (Short, Regular, Long Shank)
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Due to unique ball nose geometry and cutting edges, cutting force decreased, and so wear resistance increased.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Aufgrund der einzigartigen Kugelgeometrie und Schneidkantenpräparation wird die Schniitkraft reduziert und die Verschleißfestigkeit erhöht.
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.



NG HM | 2 | 30° | R ±0.005 (R0.05~R3) | R ±0.010 (R3.25~R12.5) | PLAIN | P.792

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEMD98001SE	R0.05	0.1	4	0.1	40	Short
★ SEMD98001E	R0.05	0.1	4	0.2	40	Regular
SEMD980013SE	R0.05	0.1	3	0.2	40	3mm Shank
SEMD980015SE	R0.075	0.15	4	0.15	40	Short
SEMD980015E	R0.075	0.15	4	0.3	40	Regular
SEMD9800153SE	R0.075	0.15	3	0.3	40	3mm Shank
SEMD98002SE	R0.1	0.2	4	0.2	40	Short
★ SEMD98002E	R0.1	0.2	4	0.4	40	Regular
SEMD980023SE	R0.1	0.2	3	0.4	40	3mm Shank
SEMD98003SE	R0.15	0.3	4	0.3	40	Short
★ SEMD98003E	R0.15	0.3	4	0.6	40	Regular
SEMD980033SE	R0.15	0.3	3	0.6	40	3mm Shank
SEMD98004SE	R0.2	0.4	4	0.4	40	Short
★ SEMD98004E	R0.2	0.4	4	0.8	40	Regular
SEMD980043SE	R0.2	0.4	3	0.8	40	3mm Shank
SEMD98005SE	R0.25	0.5	4	0.5	40	Short
★ SEMD98005E	R0.25	0.5	4	1.0	40	Regular
SEMD980053SE	R0.25	0.5	3	1.0	40	3mm Shank
SEMD98006SE	R0.3	0.6	4	0.6	40	Short
★ SEMD98006E	R0.3	0.6	4	1.2	40	Regular
SEMD980063SE	R0.3	0.6	3	1.2	40	3mm Shank
SEMD98007SE	R0.35	0.7	4	0.7	40	Short
★ SEMD98007E	R0.35	0.7	4	1.4	40	Regular
SEMD980073SE	R0.35	0.7	3	1.4	40	3mm Shank
SEMD98008SE	R0.4	0.8	4	0.8	40	Short
★ SEMD98008E	R0.4	0.8	4	1.6	40	Regular
SEMD980083SE	R0.4	0.8	3	1.6	40	3mm Shank
SEMD98009SE	R0.45	0.9	4	0.9	40	Short
★ SEMD98009E	R0.45	0.9	4	1.8	40	Regular
SEMD980093SE	R0.45	0.9	3	1.8	40	3mm Shank

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

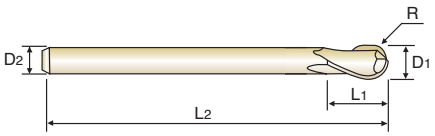
4G MILL END MILLS

SEMD98 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE BALL NOSE (Short, Regular, Long Shank)
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Due to unique ball nose geometry and cutting edges, cutting force decreased, and so wear resistance increased.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Aufgrund der einzigartigen Kugelgeometrie und Schneidkantenpräparation wird die Schniitkraft reduziert und die Verschleißfestigkeit erhöht.
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.



NG HM | 2 | 30° | R ±0.005 | R ±0.010 | PLAIN

P.792

R0.05~R3 R3.25~R12.5

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEMD98010040E	R0.5	1.0	6	1.5	40	Short
SEMD980103SE	R0.5	1.0	3	2.5	50	3mm Shank
★ SEMD980104SE	R0.5	1.0	4	2.5	50	Regular
★ SEMD98010E	R0.5	1.0	6	2.5	50	Regular
★ SEMD98010070E	R0.5	1.0	6	2.5	70	Long Shank
SEMD98010100E	R0.5	1.0	6	2.5	100	Long Shank
SEMD98012040E	R0.6	1.2	6	2	40	Short
SEMD980123SE	R0.6	1.2	3	3	50	3mm Shank
SEMD980124SE	R0.6	1.2	4	3	50	Regular
★ SEMD98012E	R0.6	1.2	6	3	50	Regular
SEMD98012070E	R0.6	1.2	6	3	70	Long Shank
SEMD98012100E	R0.6	1.2	6	3	100	Long Shank
SEMD98015040E	R0.75	1.5	6	2.5	40	Short
SEMD980153SE	R0.75	1.5	3	4	50	3mm Shank
★ SEMD980154SE	R0.75	1.5	4	4	50	Regular
★ SEMD98015E	R0.75	1.5	6	4	50	Regular
★ SEMD98015070E	R0.75	1.5	6	4	70	Long Shank
SEMD98015100E	R0.75	1.5	6	4	100	Long Shank
★ SEMD98020040E	R1.0	2.0	6	3	40	Short
SEMD980203SE	R1.0	2.0	3	5	50	3mm Shank
★ SEMD980204SE	R1.0	2.0	4	5	50	Regular
★ SEMD98020E	R1.0	2.0	6	5	50	Regular
★ SEMD98020080E	R1.0	2.0	6	5	80	Long Shank
SEMD98020100E	R1.0	2.0	6	5	100	Long Shank
SEMD98025040E	R1.25	2.5	6	4	40	Short
SEMD980253SE	R1.25	2.5	3	6	60	3mm Shank
SEMD980254SE	R1.25	2.5	4	6	60	Regular
★ SEMD98025E	R1.25	2.5	6	6	60	Regular
★ SEMD98025080E	R1.25	2.5	6	6	80	Long Shank
SEMD98025100E	R1.25	2.5	6	6	100	Long Shank

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

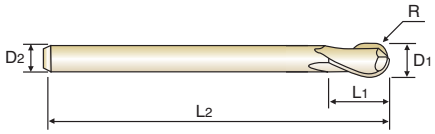
4G MILL END MILLS

SEMD98 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE BALL NOSE (Short, Regular, Long Shank)
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Due to unique ball nose geometry and cutting edges, cutting force decreased, and so wear resistance increased.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Aufgrund der einzigartigen Kugelgeometrie und Schneidkantenpräparation wird die Schniitkraft reduziert und die Verschleißfestigkeit erhöht.
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.



NG HM | 2 | 30° | R ±0.005 (R0.05~R3) | R ±0.010 (R3.25~R12.5) | PLAIN | P.792

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
★ SEMD98030040E	R1.5	**3.0**	6	4.5	40	Short
SEMD980303SE	R1.5	**3.0**	3	6	60	3mm Shank
★ SEMD980304SE	R1.5	**3.0**	4	6	60	Regular
★ SEMD98030E	R1.5	**3.0**	6	6	60	Regular
★ SEMD98030080E	R1.5	**3.0**	6	6	80	Long Shank
★ SEMD98030100E	R1.5	**3.0**	6	6	100	Long Shank
SEMD98035E	R1.75	**3.5**	6	8	70	-
★ SEMD98040050E	R2.0	**4.0**	6	6	50	Short
★ SEMD980404SE	R2.0	**4.0**	4	8	70	Regular
★ SEMD98040E	R2.0	**4.0**	6	8	70	Regular
★ SEMD980401004SE	R2.0	**4.0**	4	8	100	Long Shank
SEMD980401204SE	R2.0	**4.0**	4	8	120	Long Shank
★ SEMD98040100E	R2.0	**4.0**	6	8	100	Long Shank
★ SEMD98040120E	R2.0	**4.0**	6	8	120	Long Shank
★ SEMD98045E	R2.25	**4.5**	6	9	80	-
★ SEMD98050060E	R2.5	**5.0**	6	7.5	60	Short
★ SEMD98050E	R2.5	**5.0**	6	10	80	Regular
SEMD980505SE	R2.5	**5.0**	5	10	80	5mmShank
SEMD98055E	R2.75	**5.5**	6	11	90	-
★ SEMD98060050E	R3.0	**6.0**	6	9	50	Short
SEMD98060060E	R3.0	**6.0**	6	9	60	Short
★ SEMD98060080E	R3.0	**6.0**	6	9	80	Short
★ SEMD98060E	R3.0	**6.0**	6	12	90	Regular
SEMD98060110E	R3.0	**6.0**	6	12	110	Long Shank
★ SEMD98060130E	R3.0	**6.0**	6	12	130	Long Shank
SEMD98060150E	R3.0	**6.0**	6	12	150	Long Shank
SEMD98065E	R3.25	**6.5**	8	13	90	-
★ SEMD98070E	R3.5	**7.0**	8	14	90	-
★ SEMD98080050E	R4.0	**8.0**	8	12	50	Short
SEMD98080060E	R4.0	**8.0**	8	12	60	Short

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

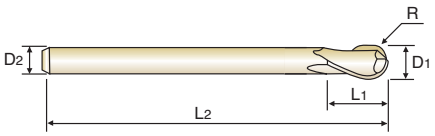
4G MILL END MILLS

SEMD98 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE BALL NOSE (Short, Regular, Long Shank)
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Due to unique ball nose geometry and cutting edges, cutting force decreased, and so wear resistance increased.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Aufgrund der einzigartigen Kugelgeometrie und Schneidkantenpräparation wird die Schniitkraft reduziert und die Verschleißfestigkeit erhöht.
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.



NG HM | 2 | 30° | R ±0.005 | R ±0.010 | PLAIN

P.792

R0.05~R3 R3.25~R12.5

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEMD98080080E	R4.0	8.0	8	12	80	Short
★ SEMD98080090E	R4.0	8.0	8	12	90	Short
★ SEMD98080E	R4.0	8.0	8	14	100	Regular
SEMD98080130E	R4.0	8.0	8	14	130	Long Shank
★ SEMD98080150E	R4.0	8.0	8	14	150	Long Shank
SEMD98085E	R4.25	8.5	10	16	100	-
SEMD98090E	R4.5	9.0	10	18	100	-
SEMD98100050E	R5.0	10.0	10	15	50	Short
★ SEMD98100060E	R5.0	10.0	10	15	60	Short
SEMD98100080E	R5.0	10.0	10	15	80	Short
★ SEMD98100090E	R5.0	10.0	10	15	90	Short
★ SEMD98100E	R5.0	10.0	10	18	100	Regular
★ SEMD98100130E	R5.0	10.0	10	18	130	Long Shank
★ SEMD98100150E	R5.0	10.0	10	18	150	Long Shank
★ SEMD98100180E	R5.0	10.0	10	18	180	Long Shank
SEMD98100200E	R5.0	10.0	10	18	200	Long Shank
SEMD98110E	R5.5	11.0	12	20	100	-
SEMD98120060E	R6.0	12.0	12	18	60	Short
★ SEMD98120080E	R6.0	12.0	12	18	80	Short
SEMD98120090E	R6.0	12.0	12	18	90	Short
★ SEMD98120100E	R6.0	12.0	12	18	100	Short
★ SEMD98120E	R6.0	12.0	12	22	110	Regular
SEMD98120130E	R6.0	12.0	12	22	130	Long Shank
★ SEMD98120150E	R6.0	12.0	12	22	150	Long Shank
SEMD98120180E	R6.0	12.0	12	22	180	Long Shank
★ SEMD98120200E	R6.0	12.0	12	22	200	Long Shank
★ SEMD98130E	R6.5	13.0	12	24	100	-
SEMD98140E	R7.0	14.0	12	26	100	Regular
★ SEMD9814014SE	R7.0	14.0	14	26	100	-
SEMD9814016SE	R7.0	14.0	16	26	100	-

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

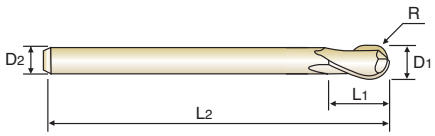
4G MILL END MILLS

SEMD98 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE BALL NOSE (Short, Regular, Long Shank)
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Due to unique ball nose geometry and cutting edges, cutting force decreased, and so wear resistance increased.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Aufgrund der einzigartigen Kugelgeometrie und Schneidkantenpräparation wird die Schniitkraft reduziert und die Verschleißfestigkeit erhöht.
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.



NG HM | 2 | 30° | R ±0.005 (R0.05~R3) | R ±0.010 (R3.25~R12.5) | PLAIN | P.792

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEMD98150E	R7.5	**15.0**	16	28	140	-
★ SEMD98160100E	R8.0	**16.0**	16	24	100	Short
SEMD98160130E	R8.0	**16.0**	16	24	130	Short
★ SEMD98160E	R8.0	**16.0**	16	30	150	Regular
SEMD98160180E	R8.0	**16.0**	16	30	180	Long Shank
SEMD98160200E	R8.0	**16.0**	16	30	200	Long Shank
SEMD98180E	R9.0	**18.0**	16	34	150	Regular
SEMD98180180SE	R9.0	**18.0**	18	34	150	-
★ SEMD98200100E	R10.0	**20.0**	20	30	100	Short
SEMD98200130E	R10.0	**20.0**	20	30	130	Short
★ SEMD98200E	R10.0	**20.0**	20	38	150	Regular
SEMD98200200E	R10.0	**20.0**	20	38	200	Long Shank
SEMD98250120E	R12.5	**25.0**	25	50	120	Short
SEMD98250E	R12.5	**25.0**	25	50	180	Regular

▶ ★ Stock Item

Size	Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to R3	±0.005	0~−0.012	h6
over R3	±0.010	0~−0.015	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

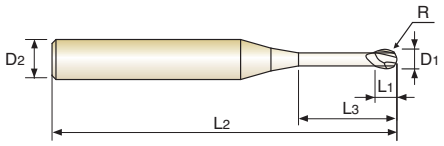
4G MILL END MILLS

SEM846 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE BALL NOSE with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Due to unique ball nose geometry and cutting edges, cutting force decreased, and so wear resistance increased.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Aufgrund der einzigartigen Kugelgeometrie und Schneidkantenpräparation wird die Schniitkraft reduziert und die Verschleißfestigkeit erhöht.
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.



NG HM | 2 | 30° | R ±0.005 (R0.05~R3) | R ±0.010 (R4~R6) | PLAIN | P.793, 794, 795, 796

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SEM846001002E	R0.05	0.1	4	0.1	0.2	40
SEM846001003E	R0.05	0.1	4	0.1	0.3	40
SEM846001005E	R0.05	0.1	4	0.1	0.5	40
SEM84600101E	R0.05	0.1	4	0.1	1	40
★ SEM846002005E	R0.1	0.2	4	0.2	0.5	40
★ SEM84600201E	R0.1	0.2	4	0.2	1	40
SEM846002015E	R0.1	0.2	4	0.2	1.5	40
SEM84600202E	R0.1	0.2	4	0.2	2	40
SEM84600203E	R0.1	0.2	4	0.2	3	40
★ SEM84600301E	R0.15	0.3	4	0.3	1	40
SEM846003015E	R0.15	0.3	4	0.3	1.5	40
★ SEM84600302E	R0.15	0.3	4	0.3	2	40
SEM846003025E	R0.15	0.3	4	0.3	2.5	40
★ SEM84600303E	R0.15	0.3	4	0.3	3	40
SEM84600304E	R0.15	0.3	4	0.3	4	40
SEM84600305E	R0.15	0.3	4	0.3	5	40
★ SEM84600401E	R0.2	0.4	4	0.4	1	40
SEM846004015E	R0.2	0.4	4	0.4	1.5	40
★ SEM84600402E	R0.2	0.4	4	0.4	2	40
SEM846004025E	R0.2	0.4	4	0.4	2.5	40
★ SEM84600403E	R0.2	0.4	4	0.4	3	40
★ SEM84600404E	R0.2	0.4	4	0.4	4	40
SEM84600405E	R0.2	0.4	4	0.4	5	40
SEM84600406E	R0.2	0.4	4	0.4	6	40
SEM84600408E	R0.2	0.4	4	0.4	8	40
SEM8460041OE	R0.2	0.4	4	0.4	10	40
★ SEM84600501E	R0.25	0.5	4	0.5	1	45
SEM846005015E	R0.25	0.5	4	0.5	1.5	45
★ SEM84600502E	R0.25	0.5	4	0.5	2	45

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

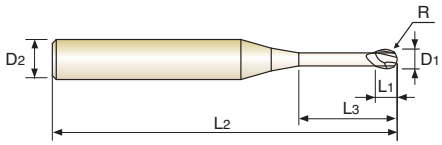
4G MILL END MILLS

SEM846 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE BALL NOSE with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Due to unique ball nose geometry and cutting edges, cutting force decreased, and so wear resistance increased.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Aufgrund der einzigartigen Kugelgeometrie und Schneidkantenpräparation wird die Schniitkraft reduziert und die Verschleißfestigkeit erhöht.
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.



NG HM | 2 | 30° | R ±0.005 (R0.05~R3) | R ±0.010 (R4~R6) | PLAIN

P.793, 794, 795, 796

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SEM846005025E	R0.25	**0.5**	4	0.5	2.5	45
★ SEM84600503E	R0.25	**0.5**	4	0.5	3	45
★ SEM84600504E	R0.25	**0.5**	4	0.5	4	45
★ SEM84600505E	R0.25	**0.5**	4	0.5	5	45
★ SEM84600506E	R0.25	**0.5**	4	0.5	6	45
★ SEM84600508E	R0.25	**0.5**	4	0.5	8	45
★ SEM84600510E	R0.25	**0.5**	4	0.5	10	45
SEM84600512E	R0.25	**0.5**	4	0.5	12	45
SEM84600514E	R0.25	**0.5**	4	0.5	14	45
SEM84600516E	R0.25	**0.5**	4	0.5	16	45
SEM84600601E	R0.3	**0.6**	4	0.6	1	45
★ SEM84600602E	R0.3	**0.6**	4	0.6	2	45
★ SEM84600603E	R0.3	**0.6**	4	0.6	3	45
★ SEM84600604E	R0.3	**0.6**	4	0.6	4	45
★ SEM84600605E	R0.3	**0.6**	4	0.6	5	45
★ SEM84600606E	R0.3	**0.6**	4	0.6	6	45
★ SEM84600608E	R0.3	**0.6**	4	0.6	8	45
★ SEM84600610E	R0.3	**0.6**	4	0.6	10	45
★ SEM84600612E	R0.3	**0.6**	4	0.6	12	45
SEM84600614E	R0.3	**0.6**	4	0.6	14	45
SEM84600616E	R0.3	**0.6**	4	0.6	16	45
SEM84600702E	R0.35	**0.7**	4	0.7	2	45
SEM84600704E	R0.35	**0.7**	4	0.7	4	45
SEM84600706E	R0.35	**0.7**	4	0.7	6	45
SEM84600708E	R0.35	**0.7**	4	0.7	8	45
SEM84600710E	R0.35	**0.7**	4	0.7	10	45
SEM84600712E	R0.35	**0.7**	4	0.7	12	45
SEM84600801E	R0.4	**0.8**	4	0.8	1	45
★ SEM84600802E	R0.4	**0.8**	4	0.8	2	45

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

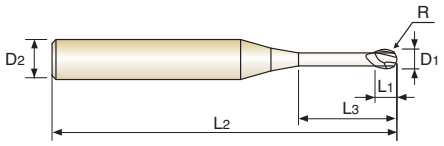
4G MILL END MILLS

SEM846 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE BALL NOSE with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Due to unique ball nose geometry and cutting edges, cutting force decreased, and so wear resistance increased.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Aufgrund der einzigartigen Kugelgeometrie und Schneidkantenpräparation wird die Schniitkraft reduziert und die Verschleißfestigkeit erhöht.
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.



NG HM | 2 | 30° | R ±0.005 (R0.05~R3) | R ±0.010 (R4~R6) | PLAIN | P.793, 794, 795, 796

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
★ SEM84600803E	R0.4	0.8	4	0.8	3	45
★ SEM84600804E	R0.4	0.8	4	0.8	4	45
★ SEM84600805E	R0.4	0.8	4	0.8	5	45
★ SEM84600806E	R0.4	0.8	4	0.8	6	45
★ SEM84600808E	R0.4	0.8	4	0.8	8	45
★ SEM84600810E	R0.4	0.8	4	0.8	10	45
SEM84600812E	R0.4	0.8	4	0.8	12	45
SEM84600814E	R0.4	0.8	4	0.8	14	45
SEM84600816E	R0.4	0.8	4	0.8	16	45
SEM84600820E	R0.4	0.8	4	0.8	20	45
SEM84600904E	R0.45	0.9	4	0.9	4	45
SEM84600906E	R0.45	0.9	4	0.9	6	45
SEM84600908E	R0.45	0.9	4	0.9	8	45
SEM84600910E	R0.45	0.9	4	0.9	10	45
SEM84601002E	R0.5	1.0	4	1	2	50
★ SEM84601003E	R0.5	1.0	4	1	3	50
★ SEM84601004E	R0.5	1.0	4	1	4	50
★ SEM84601005E	R0.5	1.0	4	1	5	50
★ SEM84601006E	R0.5	1.0	4	1	6	50
SEM84601007E	R0.5	1.0	4	1	7	50
★ SEM84601008E	R0.5	1.0	4	1	8	50
SEM84601009E	R0.5	1.0	4	1	9	50
★ SEM84601010E	R0.5	1.0	4	1	10	50
★ SEM84601012E	R0.5	1.0	4	1	12	50
★ SEM84601014E	R0.5	1.0	4	1	14	50
★ SEM84601016E	R0.5	1.0	4	1	16	50
SEM84601018E	R0.5	1.0	4	1	18	50
★ SEM84601020E	R0.5	1.0	4	1	20	50
SEM84601022E	R0.5	1.0	4	1	22	60

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

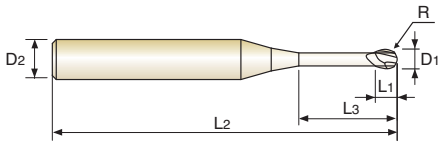
4G MILL END MILLS

SEM846 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE BALL NOSE with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Due to unique ball nose geometry and cutting edges, cutting force decreased, and so wear resistance increased.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Aufgrund der einzigartigen Kugelgeometrie und Schneidkantenpräparation wird die Schniitkraft reduziert und die Verschleißfestigkeit erhöht.
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.



NG HM | 2 | 30° | R ±0.005 (R0.05~R3) | R ±0.010 (R4~R6) | PLAIN

P.793, 794, 795, 796

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SEM84601026E	R0.5	1.0	4	1	26	60
SEM84601030E	R0.5	1.0	4	1	30	70
SEM84601040E	R0.5	1.0	4	1	40	80
SEM84601050E	R0.5	1.0	4	1	50	100
SEM84601204E	R0.6	1.2	4	1.2	4	50
★ SEM84601206E	R0.6	1.2	4	1.2	6	50
★ SEM84601208E	R0.6	1.2	4	1.2	8	50
★ SEM84601210E	R0.6	1.2	4	1.2	10	50
★ SEM84601212E	R0.6	1.2	4	1.2	12	50
★ SEM84601216E	R0.6	1.2	4	1.2	16	50
SEM84601220E	R0.6	1.2	4	1.2	20	50
SEM84601226E	R0.6	1.2	4	1.2	26	60
SEM84601406E	R0.7	1.4	4	1.4	6	50
SEM84601408E	R0.7	1.4	4	1.4	8	50
SEM84601410E	R0.7	1.4	4	1.4	10	50
SEM84601412E	R0.7	1.4	4	1.4	12	50
SEM84601416E	R0.7	1.4	4	1.4	16	50
SEM84601503E	R0.75	1.5	4	1.5	3	50
★ SEM84601504E	R0.75	1.5	4	1.5	4	50
SEM84601505E	R0.75	1.5	4	1.5	5	50
★ SEM84601506E	R0.75	1.5	4	1.5	6	50
SEM84601507E	R0.75	1.5	4	1.5	7	50
★ SEM84601508E	R0.75	1.5	4	1.5	8	50
★ SEM84601510E	R0.75	1.5	4	1.5	10	50
★ SEM84601512E	R0.75	1.5	4	1.5	12	50
★ SEM84601514E	R0.75	1.5	4	1.5	14	50
★ SEM84601516E	R0.75	1.5	4	1.5	16	50
SEM84601518E	R0.75	1.5	4	1.5	18	50
★ SEM84601520E	R0.75	1.5	4	1.5	20	50

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

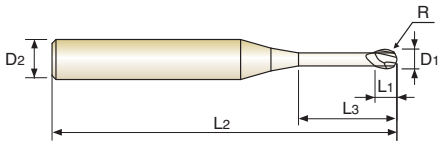
4G MILL END MILLS

SEM846 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE BALL NOSE with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Due to unique ball nose geometry and cutting edges, cutting force decreased, and so wear resistance increased.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Aufgrund der einzigartigen Kugelgeometrie und Schneidkantenpräparation wird die Schniitkraft reduziert und die Verschleißfestigkeit erhöht.
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.



NG HM | 2 | 30° | R ±0.005 (R0.05~R3) | R ±0.010 (R4~R6) | PLAIN | P.793, 794, 795, 796

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SEM84601522E	R0.75	1.5	4	1.5	22	60
SEM84601526E	R0.75	1.5	4	1.5	26	60
SEM84601530E	R0.75	1.5	4	1.5	30	70
SEM84601535E	R0.75	1.5	4	1.5	35	70
SEM84601540E	R0.75	1.5	4	1.5	40	80
SEM84601604E	R0.8	1.6	4	1.6	4	50
SEM84601606E	R0.8	1.6	4	1.6	6	50
★ SEM84601608E	R0.8	1.6	4	1.6	8	50
SEM84601610E	R0.8	1.6	4	1.6	10	50
★ SEM84601612E	R0.8	1.6	4	1.6	12	50
★ SEM84601616E	R0.8	1.6	4	1.6	16	50
SEM84601620E	R0.8	1.6	4	1.6	20	50
SEM84601804E	R0.9	1.8	4	1.8	4	50
SEM84601806E	R0.9	1.8	4	1.8	6	50
★ SEM84601808E	R0.9	1.8	4	1.8	8	50
SEM84601810E	R0.9	1.8	4	1.8	10	50
★ SEM84601812E	R0.9	1.8	4	1.8	12	50
★ SEM84601816E	R0.9	1.8	4	1.8	16	50
SEM84601820E	R0.9	1.8	4	1.8	20	50
SEM84602004E	R1.0	2.0	4	2	4	50
★ SEM84602006E	R1.0	2.0	4	2	6	50
★ SEM84602008E	R1.0	2.0	4	2	8	50
★ SEM84602010E	R1.0	2.0	4	2	10	50
★ SEM84602012E	R1.0	2.0	4	2	12	50
★ SEM84602014E	R1.0	2.0	4	2	14	50
★ SEM84602016E	R1.0	2.0	4	2	16	50
★ SEM84602018E	R1.0	2.0	4	2	18	50
★ SEM84602020E	R1.0	2.0	4	2	20	50
SEM84602022E	R1.0	2.0	4	2	22	60

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

4G MILL END MILLS

SEM846 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE BALL NOSE with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
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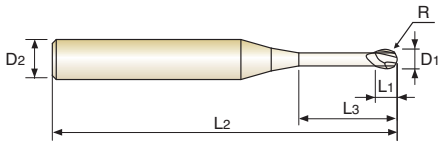
- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Aufgrund der einzigartigen Kugelgeometrie und Schneidkantenpräparation wird die Schniitkraft reduziert und die Verschleißfestigkeit erhöht.
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.



NG HM | 2 | 30° | R ±0.005 (R0.05~R3) | R ±0.010 (R4~R6) | PLAIN

P.793, 794, 795, 796

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
★ SEM84602026E	R1.0	**2.0**	4	2	26	60
★ SEM84602030E	R1.0	**2.0**	4	2	30	70
SEM84602035E	R1.0	**2.0**	4	2	35	70
SEM84602040E	R1.0	**2.0**	4	2	40	80
SEM84602045E	R1.0	**2.0**	4	2	45	90
SEM84602050E	R1.0	**2.0**	4	2	50	100
SEM84602060E	R1.0	**2.0**	4	2	60	110
SEM84602508E	R1.25	**2.5**	4	2.5	8	50
★ SEM84602510E	R1.25	**2.5**	4	2.5	10	50
SEM84602512E	R1.25	**2.5**	4	2.5	12	50
SEM84602516E	R1.25	**2.5**	4	2.5	16	50
★ SEM84602520E	R1.25	**2.5**	4	2.5	20	50
SEM84602522E	R1.25	**2.5**	4	2.5	22	60
SEM84602526E	R1.25	**2.5**	4	2.5	26	60
SEM84602530E	R1.25	**2.5**	4	2.5	30	70
SEM84602535E	R1.25	**2.5**	4	2.5	35	70
SEM84602540E	R1.25	**2.5**	4	2.5	40	80
SEM84602545E	R1.25	**2.5**	4	2.5	45	90
SEM84602550E	R1.25	**2.5**	4	2.5	50	100
SEM84603006E	R1.5	**3.0**	6	3	6	50
★ SEM84603008E	R1.5	**3.0**	6	3	8	50
★ SEM84603010E	R1.5	**3.0**	6	3	10	50
★ SEM84603012E	R1.5	**3.0**	6	3	12	50
★ SEM84603014E	R1.5	**3.0**	6	3	14	60
★ SEM84603016E	R1.5	**3.0**	6	3	16	60
★ SEM84603018E	R1.5	**3.0**	6	3	18	60
★ SEM84603020E	R1.5	**3.0**	6	3	20	60
SEM84603022E	R1.5	**3.0**	6	3	22	65
★ SEM84603026E	R1.5	**3.0**	6	3	26	65

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

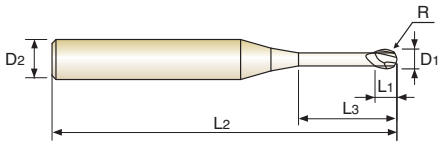
4G MILL END MILLS

SEM846 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE BALL NOSE with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Due to unique ball nose geometry and cutting edges, cutting force decreased, and so wear resistance increased.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Aufgrund der einzigartigen Kugelgeometrie und Schneidkantenpräparation wird die Schniitkraft reduziert und die Verschleißfestigkeit erhöht.
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.



NG HM | 2 | 30° | R ±0.005 (R0.05~R3) | R ±0.010 (R4~R6) | PLAIN | P.793, 794, 795, 796

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
★ SEM84603030E	R1.5	3.0	6	3	30	70
★ SEM84603035E	R1.5	3.0	6	3	35	70
SEM84603040E	R1.5	3.0	6	3	40	80
SEM84603045E	R1.5	3.0	6	3	45	90
SEM84603050E	R1.5	3.0	6	3	50	100
SEM84603060E	R1.5	3.0	6	3	60	100
SEM84604008E	R2.0	4.0	6	4	8	50
★ SEM84604010E	R2.0	4.0	6	4	10	50
★ SEM84604012E	R2.0	4.0	6	4	12	50
★ SEM84604014E	R2.0	4.0	6	4	14	60
★ SEM84604016E	R2.0	4.0	6	4	16	60
★ SEM84604018E	R2.0	4.0	6	4	18	60
★ SEM84604020E	R2.0	4.0	6	4	20	60
SEM84604022E	R2.0	4.0	6	4	22	65
★ SEM84604026E	R2.0	4.0	6	4	26	65
★ SEM84604030E	R2.0	4.0	6	4	30	70
★ SEM84604035E	R2.0	4.0	6	4	35	70
★ SEM84604040E	R2.0	4.0	6	4	40	80
SEM84604045E	R2.0	4.0	6	4	45	90
SEM84604050E	R2.0	4.0	6	4	50	100
SEM84604055E	R2.0	4.0	6	4	55	100
SEM84604060E	R2.0	4.0	6	4	60	100
SEM84605015E	R2.5	5.0	6	6	15	60
SEM84605020E	R2.5	5.0	6	6	20	60
SEM84605026E	R2.5	5.0	6	6	26	65
★ SEM84605030E	R2.5	5.0	6	6	30	70
SEM84605035E	R2.5	5.0	6	6	35	70
SEM84605040E	R2.5	5.0	6	6	40	80
SEM84605045E	R2.5	5.0	6	6	45	90

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

4G MILL END MILLS

SEM846 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE BALL NOSE with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS mit ABGESETZTEM SCHAFTTETL

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- Due to unique ball nose geometry and cutting edges, cutting force decreased, and so wear resistance increased.
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- Aufgrund der einzigartigen Kugelgeometrie und Schneidkantenpräparation wird die Schniitkraft reduziert und die Verschleißfestigkeit erhöht.
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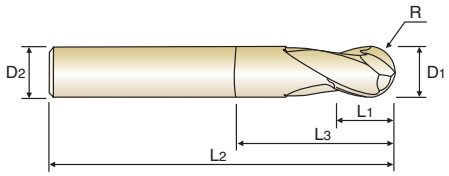


NG HM | 2 | 30° | R ±0.005 (R0.05~R3) | R ±0.010 (R4~R6) | PLAIN | P.793, 794, 795, 796

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SEM84605050E	R2.5	**5.0**	6	6	50	100
SEM84605055E	R2.5	**5.0**	6	6	55	100
SEM84605060E	R2.5	**5.0**	6	6	60	100
★ SEM84606020E	R3.0	**6.0**	6	8	20	60
★ SEM84606030E	R3.0	**6.0**	6	8	30	60
SEM84606020090E	R3.0	**6.0**	6	12	20	90
SEM84606030090E	R3.0	**6.0**	6	12	30	90
★ SEM84608025E	R4.0	**8.0**	8	10	25	70
SEM84608035E	R4.0	**8.0**	8	10	35	70
SEM84608025100E	R4.0	**8.0**	8	14	25	100
★ SEM84608035100E	R4.0	**8.0**	8	14	35	100
★ SEM84610030E	R5.0	**10.0**	10	12	30	75
SEM84610040E	R5.0	**10.0**	10	12	40	75
★ SEM84610030100E	R5.0	**10.0**	10	18	30	100
★ SEM84610040100E	R5.0	**10.0**	10	18	40	100
★ SEM84612032E	R6.0	**12.0**	12	14	32	80
SEM84612045E	R6.0	**12.0**	12	14	45	80
★ SEM84612032110E	R6.0	**12.0**	12	22	32	110
SEM84612045110E	R6.0	**12.0**	12	22	45	110

▶ ★ Stock Item

Size	Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to R3	±0.005	0~−0.012	h6
over R3	±0.010	0~−0.015	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

4G MILL END MILLS

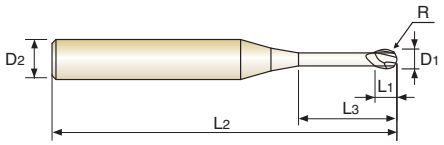
SEM846 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE BALL NOSE with EXTENDED NECK (6mm shank)

VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS mit ABGESETZTEM SCHAFTTETL (6mm ZYLINDERSCHAFT)

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Due to unique ball nose geometry and cutting edges, cutting force decreased, and so wear resistance increased.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Aufgrund der einzigartigen Kugelgeometrie und Schneidkantenpräparation wird die Schniitkraft reduziert und die Verschleißfestigkeit erhöht.
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.



NG HM | 2 | 30° | R ±0.005 | PLAIN

P.793, 794, 795, 796

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SEM846005016SE	R0.25	0.5	6	0.5	1	45
SEM846005026SE	R0.25	0.5	6	0.5	2	45
SEM846005046SE	R0.25	0.5	6	0.5	4	45
SEM846006016SE	R0.3	0.6	6	0.6	1	45
SEM846006026SE	R0.3	0.6	6	0.6	2	45
SEM846006036SE	R0.3	0.6	6	0.6	3	45
SEM846006046SE	R0.3	0.6	6	0.6	4	45
SEM846006056SE	R0.3	0.6	6	0.6	5	45
SEM846006066SE	R0.3	0.6	6	0.6	6	45
SEM846006086SE	R0.3	0.6	6	0.6	8	45
SEM846006106SE	R0.3	0.6	6	0.6	10	45
SEM846006126SE	R0.3	0.6	6	0.6	12	45
SEM846006146SE	R0.3	0.6	6	0.6	14	45
SEM846006166SE	R0.3	0.6	6	0.6	16	45
SEM846008016SE	R0.4	0.8	6	0.8	1	45
SEM846008026SE	R0.4	0.8	6	0.8	2	45
SEM846008036SE	R0.4	0.8	6	0.8	3	45
SEM846008046SE	R0.4	0.8	6	0.8	4	45
SEM846008056SE	R0.4	0.8	6	0.8	5	45
SEM846008066SE	R0.4	0.8	6	0.8	6	45
SEM846008086SE	R0.4	0.8	6	0.8	8	45
SEM846008106SE	R0.4	0.8	6	0.8	10	45
SEM846008126SE	R0.4	0.8	6	0.8	12	45
SEM846008146SE	R0.4	0.8	6	0.8	14	45
SEM846008166SE	R0.4	0.8	6	0.8	16	45
SEM846008206SE	R0.4	0.8	6	0.8	20	45
SEM846010026SE	R0.5	1.0	6	1	2	50
SEM846010036SE	R0.5	1.0	6	1	3	50
SEM846010046SE	R0.5	1.0	6	1	4	50

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

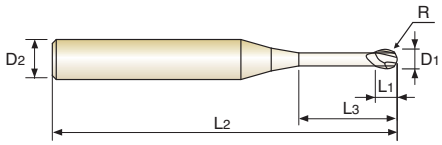
4G MILL END MILLS

SEM846 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE BALL NOSE with EXTENDED NECK (6mm shank)
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS mit ABGESETZTEM SCHAFTTETL (6mm ZYLINDERSCHAFT)

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Due to unique ball nose geometry and cutting edges, cutting force decreased, and so wear resistance increased.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Aufgrund der einzigartigen Kugelgeometrie und Schneidkantenpräparation wird die Schniitkraft reduziert und die Verschleißfestigkeit erhöht.
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.



NG HM | 2 | 30° | R ±0.005 | PLAIN

P.793, 794, 795, 796

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SEM846010056SE	R0.5	1.0	6	1	5	50
SEM846010066SE	R0.5	1.0	6	1	6	50
SEM846010076SE	R0.5	1.0	6	1	7	50
SEM846010086SE	R0.5	1.0	6	1	8	50
SEM846010096SE	R0.5	1.0	6	1	9	50
SEM846010106SE	R0.5	1.0	6	1	10	50
SEM846010126SE	R0.5	1.0	6	1	12	50
SEM846010146SE	R0.5	1.0	6	1	14	50
SEM846010166SE	R0.5	1.0	6	1	16	50
SEM846010186SE	R0.5	1.0	6	1	18	50
SEM846010206SE	R0.5	1.0	6	1	20	50
SEM846010226SE	R0.5	1.0	6	1	22	60
SEM846010266SE	R0.5	1.0	6	1	26	60
SEM846010306SE	R0.5	1.0	6	1	30	70
SEM846015036SE	R0.75	1.5	6	1.5	3	50
SEM846015046SE	R0.75	1.5	6	1.5	4	50
SEM846015066SE	R0.75	1.5	6	1.5	6	50
SEM846015086SE	R0.75	1.5	6	1.5	8	50
SEM846015106SE	R0.75	1.5	6	1.5	10	50
SEM846015126SE	R0.75	1.5	6	1.5	12	50
SEM846015146SE	R0.75	1.5	6	1.5	14	50
SEM846015166SE	R0.75	1.5	6	1.5	16	50
SEM846015186SE	R0.75	1.5	6	1.5	18	50
SEM846015206SE	R0.75	1.5	6	1.5	20	50
SEM846015226SE	R0.75	1.5	6	1.5	22	60
SEM846015266SE	R0.75	1.5	6	1.5	26	60
SEM846015306SE	R0.75	1.5	6	1.5	30	70
SEM846015356SE	R0.75	1.5	6	1.5	35	70
SEM846015406SE	R0.75	1.5	6	1.5	40	80

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

4G MILL END MILLS

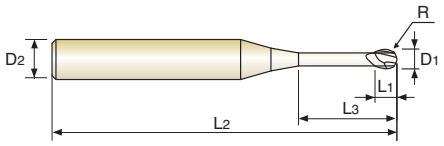
SEM846 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE BALL NOSE with EXTENDED NECK (6mm shank)

VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS mit ABGESETZTEM SCHAFTTETL (6mm ZYLINDERSCHAFT)

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Due to unique ball nose geometry and cutting edges, cutting force decreased, and so wear resistance increased.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Aufgrund der einzigartigen Kugelgeometrie und Schneidkantenpräparation wird die Schniitkraft reduziert und die Verschleißfestigkeit erhöht.
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.



NG HM | 2 | 30° | R ±0.005 | PLAIN

P.793, 794, 795, 796

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SEM846020046SE	R1.0	2.0	6	2	4	50
SEM846020066SE	R1.0	2.0	6	2	6	50
SEM846020086SE	R1.0	2.0	6	2	8	50
SEM846020106SE	R1.0	2.0	6	2	10	50
SEM846020126SE	R1.0	2.0	6	2	12	50
SEM846020146SE	R1.0	2.0	6	2	14	50
SEM846020166SE	R1.0	2.0	6	2	16	50
SEM846020186SE	R1.0	2.0	6	2	18	50
SEM846020206SE	R1.0	2.0	6	2	20	50
SEM846020226SE	R1.0	2.0	6	2	22	60
SEM846020266SE	R1.0	2.0	6	2	26	60
SEM846020306SE	R1.0	2.0	6	2	30	70
SEM846020356SE	R1.0	2.0	6	2	35	70
SEM846020406SE	R1.0	2.0	6	2	40	80
SEM846020456SE	R1.0	2.0	6	2	45	90
SEM846020506SE	R1.0	2.0	6	2	50	100

Mill Dia. Tolerance (mm)	Radius Tolerance (mm)	Shank Dia. Tolerance
0~−0.012	±0.005	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

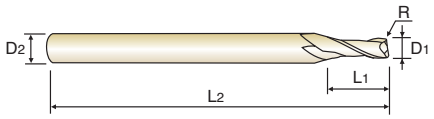
4G MILL END MILLS

SEMD99 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE CORNER RADIUS (Short, Regular, Long Shank)
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- Available short, regular and long shank end mills.
- Available various corner radius end mills, from 0.02mm to 5.0mm corner radius.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Ausgezeichnet geeignet für das Fräsen von vorvergütetem Stahl, kohlenstoff Stahl, legiertem Stahl für Formen, bis HRc55 und Maschinenbauteile.
- Erhältlich in den Schaft-Ausführungen: kurz, standard und lang
- Erhältlich in verschiedenen Eckradien-Ausführungen: von 0,02mm bis zu 5,0mm Eckradius.



MG HM | 2 | 30° | R ±0.010 (Ø0.2~Ø6) | R ±0.015 (Ø7~Ø20) | PLAIN P.797

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEMD99002002E	R0.02	0.2	4	0.4	40	-
SEMD99002005E	R0.05	0.2	4	0.4	40	-
SEMD99003002E	R0.02	0.3	4	0.6	40	-
SEMD99003005E	R0.05	0.3	4	0.6	40	-
SEMD99004005E	R0.05	0.4	4	0.8	40	-
SEMD9900401E	R0.1	0.4	4	0.8	40	-
SEMD99005005E	R0.05	0.5	4	1.0	40	-
SEMD9900501E	R0.1	0.5	4	1.0	40	-
SEMD99006005E	R0.05	0.6	4	1.2	40	-
SEMD9900601E	R0.1	0.6	4	1.2	40	-
SEMD9900602E	R0.2	0.6	4	1.2	40	-
SEMD99007005E	R0.05	0.7	4	1.4	40	-
SEMD9900701E	R0.1	0.7	4	1.4	40	-
SEMD9900702E	R0.2	0.7	4	1.4	40	-
SEMD99008005E	R0.05	0.8	4	1.6	40	-
SEMD9900801E	R0.1	0.8	4	1.6	40	-
SEMD9900802E	R0.2	0.8	4	1.6	40	-
SEMD99009005E	R0.05	0.9	4	1.8	40	-
SEMD9900901E	R0.1	0.9	4	1.8	40	-
SEMD99010005E	R0.05	1.0	6	2.5	50	-
SEMD9901001E	R0.1	1.0	6	2.5	50	-
★ SEMD9901002E	R0.2	1.0	6	2.5	50	-
★ SEMD9901003E	R0.3	1.0	6	2.5	50	-
SEMD99012005E	R0.05	1.2	6	3	50	-
SEMD9901201E	R0.1	1.2	6	3	50	-
SEMD9901202E	R0.2	1.2	6	3	50	-
SEMD9901203E	R0.3	1.2	6	3	50	-
SEMD99015005E	R0.05	1.5	6	4	50	-
SEMD9901501E	R0.1	1.5	6	4	50	-
★ SEMD9901502E	R0.2	1.5	6	4	50	-

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

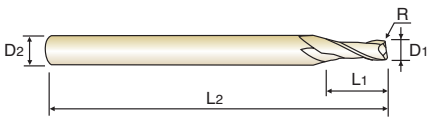
4G MILL END MILLS

SEMD99 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE CORNER RADIUS (Short, Regular, Long Shank)
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- Available short, regular and long shank end mills.
- Available various corner radius end mills, from 0.02mm to 5.0mm corner radius.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Ausgezeichnet geeignet für das Fräsen von vorvergütetem Stahl, kohlenstoff Stahl, legiertem Stahl für Formen, bis HRc55 und Maschinenbauteile.
- Erhältlich in den Schaft-Ausführungen: kurz, standard und lang
- Erhältlich in verschiedenen Eckradien-Ausführungen: von 0,02mm bis zu 5,0mm Eckradius.



MG HM | 2 | 30° | R ±0.010 (Ø0.2~Ø6) | R ±0.015 (Ø7~Ø20) | PLAIN | P.797

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
★ SEMD9901503E	R0.3	1.5	6	4	50	-
★ SEMD9901505E	R0.5	1.5	6	4	50	-
SEMD9902001E	R0.1	2.0	6	6	50	-
★ SEMD9902002E	R0.2	2.0	6	6	50	-
★ SEMD9902003E	R0.3	2.0	6	6	50	-
★ SEMD9902005E	R0.5	2.0	6	6	50	-
SEMD9902501E	R0.1	2.5	6	7	60	-
SEMD9902502E	R0.2	2.5	6	7	60	-
SEMD9902503E	R0.3	2.5	6	7	60	-
SEMD9902505E	R0.5	2.5	6	7	60	-
SEMD9903001E	R0.1	3.0	6	8	60	-
★ SEMD9903002E	R0.2	3.0	6	8	60	-
★ SEMD9903003E	R0.3	3.0	6	8	60	-
★ SEMD9903005E	R0.5	3.0	6	8	60	-
SEMD9903010E	R1.0	3.0	6	8	60	-
SEMD9903501E	R0.1	3.5	6	10	70	-
SEMD9903502E	R0.2	3.5	6	10	70	-
SEMD9903503E	R0.3	3.5	6	10	70	-
SEMD9903505E	R0.5	3.5	6	10	70	-
SEMD99040014SE	R0.1	4.0	4	10	70	4mm Shank
SEMD99040024SE	R0.2	4.0	4	10	70	4mm Shank
SEMD99040034SE	R0.3	4.0	4	10	70	4mm Shank
SEMD99040054SE	R0.5	4.0	4	10	70	4mm Shank
SEMD99040104SE	R1.0	4.0	4	10	70	4mm Shank
SEMD990400011004SE	R0.1	4.0	4	10	100	4mm Shank
SEMD990400021004SE	R0.2	4.0	4	10	100	4mm Shank
SEMD990400031004SE	R0.3	4.0	4	10	100	4mm Shank
SEMD990400051004SE	R0.5	4.0	4	10	100	4mm Shank
SEMD990401011004SE	R1.0	4.0	4	10	100	4mm Shank
SEMD9904001E	R0.1	4.0	6	10	70	Regular

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

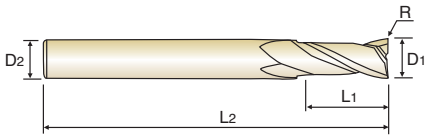
4G MILL END MILLS

SEMD99 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE CORNER RADIUS (Short, Regular, Long Shank)
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- Available short, regular and long shank end mills.
- Available various corner radius end mills, from 0.02mm to 5.0mm corner radius.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Ausgezeichnet geeignet für das Fräsen von vorvergütetem Stahl, kohlenstoff Stahl, legiertem Stahl für Formen, bis HRc55 und Maschinenbauteile.
- Erhältlich in den Schaft-Ausführungen: kurz, standard und lang
- Erhältlich in verschiedenen Eckradien-Ausführungen: von 0,02mm bis zu 5,0mm Eckradius.



MG HM | 2 | 30° | R ±0.010 (Ø0.2~Ø6) | R ±0.015 (Ø7~Ø20) | PLAIN | P.797

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
★ SEMD9904002E	R0.2	4.0	6	10	70	Regular
★ SEMD9904003E	R0.3	4.0	6	10	70	Regular
★ SEMD9904005E	R0.5	4.0	6	10	70	Regular
★ SEMD9904010E	R1.0	4.0	6	10	70	Regular
SEMD9904501E	R0.1	4.5	6	11	80	-
SEMD9904502E	R0.2	4.5	6	11	80	-
SEMD9904503E	R0.3	4.5	6	11	80	-
SEMD9904505E	R0.5	4.5	6	11	80	-
SEMD9905001E	R0.1	5.0	6	13	90	-
★ SEMD9905002E	R0.2	5.0	6	13	90	-
★ SEMD9905003E	R0.3	5.0	6	13	90	-
★ SEMD9905005E	R0.5	5.0	6	13	90	-
★ SEMD9905010E	R1.0	5.0	6	13	90	-
SEMD9905501E	R0.1	5.5	6	13	90	-
SEMD9905502E	R0.2	5.5	6	13	90	-
SEMD9905503E	R0.3	5.5	6	13	90	-
SEMD9905505E	R0.5	5.5	6	13	90	-
SEMD9905510E	R1.0	5.5	6	13	90	-
★ SEMD9906002060E	R0.2	6.0	6	15	60	Short
★ SEMD9906003060E	R0.3	6.0	6	15	60	Short
★ SEMD9906005060E	R0.5	6.0	6	15	60	Short
★ SEMD9906010060E	R1.0	6.0	6	15	60	Short
SEMD9906001E	R0.1	6.0	6	15	90	Regular
★ SEMD9906002E	R0.2	6.0	6	15	90	Regular
★ SEMD9906003E	R0.3	6.0	6	15	90	Regular
★ SEMD9906005E	R0.5	6.0	6	15	90	Regular
★ SEMD9906010E	R1.0	6.0	6	15	90	Regular
SEMD9906015E	R1.5	6.0	6	15	90	Regular
SEMD9906020E	R2.0	6.0	6	15	90	Regular
SEMD9906005110E	R0.5	6.0	6	15	110	Long Shank

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

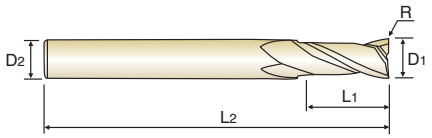
4G MILL END MILLS

SEMD99 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE CORNER RADIUS (Short, Regular, Long Shank)
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- Available short, regular and long shank end mills.
- Available various corner radius end mills, from 0.02mm to 5.0mm corner radius.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Ausgezeichnet geeignet für das Fräsen von vorvergütetem Stahl, kohlenstoff Stahl, legiertem Stahl für Formen, bis HRc55 und Maschinenbauteile.
- Erhältlich in den Schaft-Ausführungen: kurz, standard und lang
- Erhältlich in verschiedenen Eckradien-Ausführungen: von 0,02mm bis zu 5,0mm Eckradius.



MG HM | 2 | 30° | R ±0.010 | R ±0.015 | PLAIN | P.797

Ø0.2~Ø6 Ø7~Ø20

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEMD9906010110E	R1.0	6.0	6	15	110	Long Shank
SEMD9906005130E	R0.5	6.0	6	15	130	Long Shank
SEMD9906010130E	R1.0	6.0	6	15	130	Long Shank
SEMD9907001E	R0.1	7.0	8	16	90	-
SEMD9907002E	R0.2	7.0	8	16	90	-
SEMD9907003E	R0.3	7.0	8	16	90	-
SEMD9907005E	R0.5	7.0	8	16	90	-
SEMD9907010E	R1.0	7.0	8	16	90	-
SEMD9907020E	R2.0	7.0	8	16	90	-
SEMD9908003070E	R0.3	8.0	8	20	70	Short
★ SEMD9908005070E	R0.5	8.0	8	20	70	Short
★ SEMD9908010070E	R1.0	8.0	8	20	70	Short
SEMD9908001E	R0.1	8.0	8	20	100	Regular
SEMD9908002E	R0.2	8.0	8	20	100	Regular
SEMD9908003E	R0.3	8.0	8	20	100	Regular
★ SEMD9908005E	R0.5	8.0	8	20	100	Regular
★ SEMD9908010E	R1.0	8.0	8	20	100	Regular
★ SEMD9908015E	R1.5	8.0	8	20	100	Regular
★ SEMD9908020E	R2.0	8.0	8	20	100	Regular
SEMD9908025E	R2.5	8.0	8	20	100	Regular
SEMD9908030E	R3.0	8.0	8	20	100	Regular
SEMD9908005120E	R0.5	8.0	8	20	120	Long Shank
SEMD9908010120E	R1.0	8.0	8	20	120	Long Shank
SEMD9908005150E	R0.5	8.0	8	20	150	Long Shank
SEMD9908010150E	R1.0	8.0	8	20	150	Long Shank
SEMD9910003075E	R0.3	10.0	10	25	75	Short
★ SEMD9910005075E	R0.5	10.0	10	25	75	Short
★ SEMD9910010075E	R1.0	10.0	10	25	75	Short
SEMD9910001E	R0.1	10.0	10	25	100	Regular
SEMD9910002E	R0.2	10.0	10	25	100	Regular

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

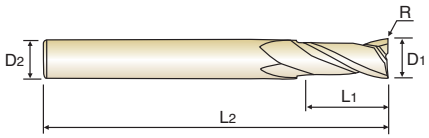
4G MILL END MILLS

SEMD99 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE CORNER RADIUS (Short, Regular, Long Shank)
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- Available short, regular and long shank end mills.
- Available various corner radius end mills, from 0.02mm to 5.0mm corner radius.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Ausgezeichnet geeignet für das Fräsen von vorvergütetem Stahl, kohlenstoff Stahl, legiertem Stahl für Formen, bis HRc55 und Maschinenbauteile.
- Erhältlich in den Schaft-Ausführungen: kurz, standard und lang
- Erhältlich in verschiedenen Eckradien-Ausführungen: von 0,02mm bis zu 5,0mm Eckradius.



MG HM | 2 | 30° | R ±0.010 Ø0.2~Ø6 | R ±0.015 Ø7~Ø20 | PLAIN | P.797

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEMD9910003E	R0.3	10.0	10	25	100	Regular
★ SEMD9910005E	R0.5	10.0	10	25	100	Regular
★ SEMD9910010E	R1.0	10.0	10	25	100	Regular
★ SEMD9910015E	R1.5	10.0	10	25	100	Regular
★ SEMD9910020E	R2.0	10.0	10	25	100	Regular
SEMD9910025E	R2.5	10.0	10	25	100	Regular
SEMD9910030E	R3.0	10.0	10	25	100	Regular
SEMD9910040E	R4.0	10.0	10	25	100	Regular
SEMD9910005130E	R0.5	10.0	10	25	130	Long Shank
SEMD9910010130E	R1.0	10.0	10	25	130	Long Shank
SEMD9910005150E	R0.5	10.0	10	25	150	Long Shank
SEMD9910010150E	R1.0	10.0	10	25	150	Long Shank
SEMD9911002E	R0.2	11.0	12	25	110	-
SEMD9911003E	R0.3	11.0	12	25	110	-
SEMD9911005E	R0.5	11.0	12	25	110	-
SEMD9911010E	R1.0	11.0	12	25	110	-
SEMD9911020E	R2.0	11.0	12	25	110	-
SEMD9912003080E	R0.3	12.0	12	30	80	Short
★ SEMD9912005080E	R0.5	12.0	12	30	80	Short
★ SEMD9912010080E	R1.0	12.0	12	30	80	Short
SEMD9912001E	R0.1	12.0	12	30	110	Regular
SEMD9912002E	R0.2	12.0	12	30	110	Regular
SEMD9912003E	R0.3	12.0	12	30	110	Regular
★ SEMD9912005E	R0.5	12.0	12	30	110	Regular
★ SEMD9912010E	R1.0	12.0	12	30	110	Regular
★ SEMD9912015E	R1.5	12.0	12	30	110	Regular
★ SEMD9912020E	R2.0	12.0	12	30	110	Regular
★ SEMD9912025E	R2.5	12.0	12	30	110	Regular
★ SEMD9912030E	R3.0	12.0	12	30	110	Regular
SEMD9912040E	R4.0	12.0	12	30	110	Regular

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

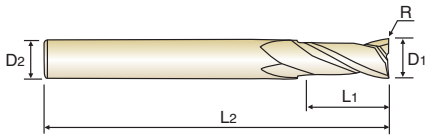
4G MILL END MILLS

SEMD99 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE CORNER RADIUS (Short, Regular, Long Shank)
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- Available short, regular and long shank end mills.
- Available various corner radius end mills, from 0.02mm to 5.0mm corner radius.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Ausgezeichnet geeignet für das Fräsen von vorvergütetem Stahl, kohlenstoff Stahl, legiertem Stahl für Formen, bis HRc55 und Maschinenbauteile.
- Erhältlich in den Schaft-Ausführungen: kurz, standard und lang
- Erhältlich in verschiedenen Eckradien-Ausführungen: von 0,02mm bis zu 5,0mm Eckradius.



MG HM | 2 | 30° | R ±0.010 (Ø0.2~Ø6) | R ±0.015 (Ø7~Ø20) | PLAIN | P.797

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SEMD9912050E	R5.0	**12.0**	12	30	110	Regular
SEMD9912005130E	R0.5	**12.0**	12	30	130	Long Shank
SEMD9912010130E	R1.0	**12.0**	12	30	130	Long Shank
SEMD9912005150E	R0.5	**12.0**	12	30	150	Long Shank
SEMD9912010150E	R1.0	**12.0**	12	30	150	Long Shank
SEMD9914005E	R0.5	**14.0**	16	35	150	-
★ SEMD9914010E	R1.0	**14.0**	16	35	150	-
SEMD9914020E	R2.0	**14.0**	16	35	150	-
SEMD9916005E	R0.5	**16.0**	16	32	150	-
★ SEMD9916010E	R1.0	**16.0**	16	32	150	-
SEMD9916015E	R1.5	**16.0**	16	32	150	-
★ SEMD9916020E	R2.0	**16.0**	16	32	150	-
SEMD9920005E	R0.5	**20.0**	20	38	150	-
★ SEMD9920010E	R1.0	**20.0**	20	38	150	-
SEMD9920015E	R1.5	**20.0**	20	38	150	-
★ SEMD9920020E	R2.0	**20.0**	20	38	150	-

▶ ★ Stock Item

Size	Corner Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	±0.010	0~−0.012	h6
over Ø6	±0.015	0~−0.015	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

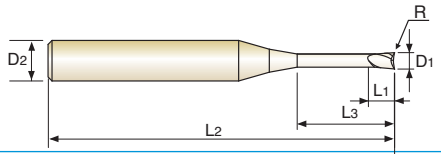
4G MILL END MILLS

SEME61 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- Available various products like regular length and long shank end mills etc.
- Available various corner radius end mills, from min. 0.02mm corner radius to max. 2.0mm corner radius.
- Available more various effective length and overall length end mills than previous standard products.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Ausgezeichnet geeignet für das Fräsen von vorvergütetem Stahl, kohlenstoff Stahl, legiertem Stahl für Formen, bis HRc55 und Maschinenbauteile.
- Erhältlich in den Schaft-Ausführungen: standard und lang.
- Erhältlich in verschiedenen Eckradien-Ausführungen: von 0,02mm bis zu 2,0mm Eckradius.
- Erhältlich in verschiedenen gesamt Längen und effektiv Längen. Mehr Auswahlmöglichkeiten als bei den bisherigen standard Produkten.



MG HM | 2 | 30° | R ±0.010 (Ø0.2~Ø6) | R ±0.015 (Ø8~Ø20) | PLAIN

P.798, 799, 800

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Remark
SEME61002002005E	R0.02	0.2	4	0.3	0.5	40	-
★ SEME6100200201E	R0.02	0.2	4	0.3	1	40	-
SEME61002002015E	R0.02	0.2	4	0.3	1.5	40	-
SEME6100200202E	R0.02	0.2	4	0.3	2	40	-
SEME61002005005E	R0.05	0.2	4	0.3	0.5	40	-
★ SEME6100200501E	R0.05	0.2	4	0.3	1	40	-
SEME61002005015E	R0.05	0.2	4	0.3	1.5	40	-
SEME6100200502E	R0.05	0.2	4	0.3	2	40	-
★ SEME6100300201E	R0.02	0.3	4	0.5	1	40	-
★ SEME6100300202E	R0.02	0.3	4	0.5	2	40	-
SEME6100300203E	R0.02	0.3	4	0.5	3	40	-
★ SEME6100300501E	R0.05	0.3	4	0.5	1	40	-
★ SEME6100300502E	R0.05	0.3	4	0.5	2	40	-
SEME6100300503E	R0.05	0.3	4	0.5	3	40	-
★ SEME6100400501E	R0.05	0.4	4	0.6	1	40	-
★ SEME61004005015E	R0.05	0.4	4	0.6	1.5	40	-
★ SEME6100400502E	R0.05	0.4	4	0.6	2	40	-
★ SEME61004005025E	R0.05	0.4	4	0.6	2.5	40	-
SEME6100400503E	R0.05	0.4	4	0.6	3	40	-
SEME6100400504E	R0.05	0.4	4	0.6	4	40	-
★ SEME610040101E	R0.1	0.4	4	0.6	1	40	-
SEME6100401015E	R0.1	0.4	4	0.6	1.5	40	-
★ SEME610040102E	R0.1	0.4	4	0.6	2	40	-
SEME6100401025E	R0.1	0.4	4	0.6	2.5	40	-
SEME610040103E	R0.1	0.4	4	0.6	3	40	-
SEME610040104E	R0.1	0.4	4	0.6	4	40	-
★ SEME6100500501E	R0.05	0.5	4	0.7	1	45	-
★ SEME61005005015E	R0.05	0.5	4	0.7	1.5	45	-
★ SEME6100500502E	R0.05	0.5	4	0.7	2	45	-
SEME61005005025E	R0.05	0.5	4	0.7	2.5	45	-

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

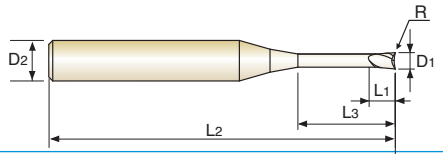
4G MILL END MILLS

SEME61 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- Available various products like regular length and long shank end mills etc.
- Available various corner radius end mills, from min. 0.02mm corner radius to max. 2.0mm corner radius.
- Available more various effective length and overall length end mills than previous standard products.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Ausgezeichnet geeignet für das Fräsen von vorvergütetem Stahl, kohlenstoff Stahl, legiertem Stahl für Formen, bis HRc55 und Maschinenbauteile.
- Erhältlich in den Schaft-Ausführungen: standard und lang.
- Erhältlich in verschiedenen Eckradien-Ausführungen: von 0,02mm bis zu 2,0mm Eckradius.
- Erhältlich in verschiedenen gesamt Längen und effektiv Längen. Mehr Auswahlmöglichkeiten als bei den bisherigen standard Produkten.



MG HM | 2 | 30° | R ±0.010 (Ø0.2~Ø6) | R ±0.015 (Ø8~Ø20) | PLAIN

P.798, 799, 800

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Remark
SEME6100500503E	R0.05	0.5	4	0.7	3	45	-
★ SEME6100500504E	R0.05	0.5	4	0.7	4	45	-
SEME6100500505E	R0.05	0.5	4	0.7	5	45	-
SEME6100500506E	R0.05	0.5	4	0.7	6	45	-
SEME610050101E	R0.1	0.5	4	0.7	1	45	-
SEME6100501015E	R0.1	0.5	4	0.7	1.5	45	-
★ SEME610050102E	R0.1	0.5	4	0.7	2	45	-
SEME6100501025E	R0.1	0.5	4	0.7	2.5	45	-
★ SEME610050103E	R0.1	0.5	4	0.7	3	45	-
SEME610050104E	R0.1	0.5	4	0.7	4	45	-
SEME610050105E	R0.1	0.5	4	0.7	5	45	-
SEME610050106E	R0.1	0.5	4	0.7	6	45	-
SEME6100600502E	R0.05	0.6	4	0.9	2	45	-
★ SEME6100600503E	R0.05	0.6	4	0.9	3	45	-
SEME6100600504E	R0.05	0.6	4	0.9	4	45	-
★ SEME6100600506E	R0.05	0.6	4	0.9	6	45	-
SEME6100600508E	R0.05	0.6	4	0.9	8	45	-
SEME6100600510E	R0.05	0.6	4	0.9	10	45	-
★ SEME610060102E	R0.1	0.6	4	0.9	2	45	-
SEME610060103E	R0.1	0.6	4	0.9	3	45	-
★ SEME610060104E	R0.1	0.6	4	0.9	4	45	-
★ SEME610060106E	R0.1	0.6	4	0.9	6	45	-
SEME610060108E	R0.1	0.6	4	0.9	8	45	-
SEME610060110E	R0.1	0.6	4	0.9	10	45	-
★ SEME610060202E	R0.2	0.6	4	0.9	2	45	-
SEME610060203E	R0.2	0.6	4	0.9	3	45	-
★ SEME610060204E	R0.2	0.6	4	0.9	4	45	-
★ SEME610060206E	R0.2	0.6	4	0.9	6	45	-
SEME610060208E	R0.2	0.6	4	0.9	8	45	-
SEME610060210E	R0.2	0.6	4	0.9	10	45	-

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

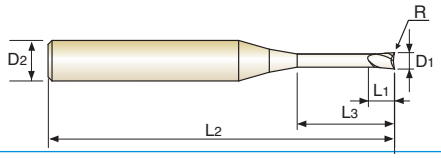
4G MILL END MILLS

SEME61 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- Available various products like regular length and long shank end mills etc.
- Available various corner radius end mills, from min. 0.02mm corner radius to max. 2.0mm corner radius.
- Available more various effective length and overall length end mills than previous standard products.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Ausgezeichnet geeignet für das Fräsen von vorvergütetem Stahl, kohlenstoff Stahl, legiertem Stahl für Formen, bis HRc55 und Maschinenbauteile.
- Erhältlich in den Schaft-Ausführungen: standard und lang.
- Erhältlich in verschiedenen Eckradien-Ausführungen: von 0,02mm bis zu 2,0mm Eckradius.
- Erhältlich in verschiedenen gesamt Längen und effektiv Längen. Mehr Auswahlmöglichkeiten als bei den bisherigen standard Produkten.



MG HM | 2 | 30° | R ±0.010 Ø0.2~Ø6 | R ±0.015 Ø8~Ø20 | PLAIN

P.798, 799, 800

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Remark
SEME6100700502E	R0.05	0.7	4	1.2	2	45	-
SEME6100700504E	R0.05	0.7	4	1.2	4	45	-
SEME6100700506E	R0.05	0.7	4	1.2	6	45	-
SEME6100700508E	R0.05	0.7	4	1.2	8	45	-
SEME6100700510E	R0.05	0.7	4	1.2	10	45	-
SEME610070102E	R0.1	0.7	4	1.2	2	45	-
SEME610070104E	R0.1	0.7	4	1.2	4	45	-
SEME610070106E	R0.1	0.7	4	1.2	6	45	-
SEME610070108E	R0.1	0.7	4	1.2	8	45	-
SEME610070110E	R0.1	0.7	4	1.2	10	45	-
SEME610070202E	R0.2	0.7	4	1.2	2	45	-
SEME610070204E	R0.2	0.7	4	1.2	4	45	-
SEME610070206E	R0.2	0.7	4	1.2	6	45	-
SEME610070208E	R0.2	0.7	4	1.2	8	45	-
SEME610070210E	R0.2	0.7	4	1.2	10	45	-
★ SEME6100800502E	R0.05	0.8	4	1.2	2	45	-
SEME6100800503E	R0.05	0.8	4	1.2	3	45	-
★ SEME6100800504E	R0.05	0.8	4	1.2	4	45	-
★ SEME6100800506E	R0.05	0.8	4	1.2	6	45	-
SEME6100800508E	R0.05	0.8	4	1.2	8	45	-
SEME6100800510E	R0.05	0.8	4	1.2	10	45	-
★ SEME610080102E	R0.1	0.8	4	1.2	2	45	-
SEME610080103E	R0.1	0.8	4	1.2	3	45	-
★ SEME610080104E	R0.1	0.8	4	1.2	4	45	-
★ SEME610080106E	R0.1	0.8	4	1.2	6	45	-
★ SEME610080108E	R0.1	0.8	4	1.2	8	45	-
SEME610080110E	R0.1	0.8	4	1.2	10	45	-
SEME610080202E	R0.2	0.8	4	1.2	2	45	-
SEME610080203E	R0.2	0.8	4	1.2	3	45	-
★ SEME610080204E	R0.2	0.8	4	1.2	4	45	-

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

4G MILL END MILLS

SEME61 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- Available various products like regular length and long shank end mills etc.
- Available various corner radius end mills, from min. 0.02mm corner radius to max. 2.0mm corner radius.
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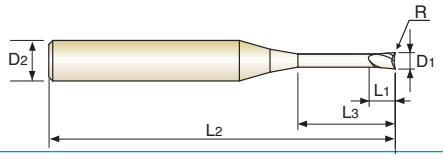
- Ausgezeichnet geeignet für das Fräsen von vorvergütetem Stahl, kohlenstoff Stahl, legiertem Stahl für Formen, bis HRc55 und Maschinenbauteile.
- Erhältlich in den Schaft-Ausführungen: standard und lang.
- Erhältlich in verschiedenen Eckradien-Ausführungen: von 0,02mm bis zu 2,0mm Eckradius.
- Erhältlich in verschiedenen gesamt Längen und effektiv Längen. Mehr Auswahlmöglichkeiten als bei den bisherigen standard Produkten.



MG HM | 2 | 30° | R ±0.010 (Ø0.2~Ø6) | R ±0.015 (Ø8~Ø20) | PLAIN

P.798, 799, 800

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Remark
★ SEME610080206E	R0.2	0.8	4	1.2	6	45	-
★ SEME610080208E	R0.2	0.8	4	1.2	8	45	-
SEME610080210E	R0.2	0.8	4	1.2	10	45	-
★ SEME6101000503E	R0.05	1.0	4	1.5	3	50	-
★ SEME6101000504E	R0.05	1.0	4	1.5	4	50	-
★ SEME6101000506E	R0.05	1.0	4	1.5	6	50	-
SEME6101000508E	R0.05	1.0	4	1.5	8	50	-
SEME6101000510E	R0.05	1.0	4	1.5	10	50	-
SEME6101000512E	R0.05	1.0	4	1.5	12	50	-
SEME6101000514E	R0.05	1.0	4	1.5	14	50	-
SEME6101000516E	R0.05	1.0	4	1.5	16	50	-
SEME6101000520E	R0.05	1.0	4	1.5	20	50	-
★ SEME610100103E	R0.1	1.0	4	1.5	3	50	-
★ SEME610100104E	R0.1	1.0	4	1.5	4	50	-
★ SEME610100106E	R0.1	1.0	4	1.5	6	50	-
★ SEME610100108E	R0.1	1.0	4	1.5	8	50	-
★ SEME610100110E	R0.1	1.0	4	1.5	10	50	-
SEME610100112E	R0.1	1.0	4	1.5	12	50	-
SEME610100114E	R0.1	1.0	4	1.5	14	50	-
SEME610100116E	R0.1	1.0	4	1.5	16	50	-
SEME610100120E	R0.1	1.0	4	1.5	20	50	-
★ SEME610100203E	R0.2	1.0	4	1.5	3	50	-
★ SEME610100204E	R0.2	1.0	4	1.5	4	50	-
★ SEME610100206E	R0.2	1.0	4	1.5	6	50	-
★ SEME610100208E	R0.2	1.0	4	1.5	8	50	-
★ SEME610100210E	R0.2	1.0	4	1.5	10	50	-
SEME610100212E	R0.2	1.0	4	1.5	12	50	-
SEME610100214E	R0.2	1.0	4	1.5	14	50	-
SEME610100216E	R0.2	1.0	4	1.5	16	50	-
SEME610100220E	R0.2	1.0	4	1.5	20	50	-

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

4G MILL END MILLS

SEME61 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
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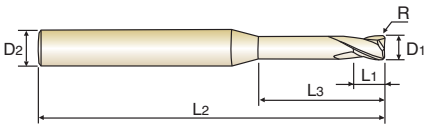
- Ausgezeichnet geeignet für das Fräsen von vorvergütetem Stahl, kohlenstoff Stahl, legiertem Stahl für Formen, bis HRc55 und Maschinenbauteile.
- Erhältlich in den Schaft-Ausführungen: standard und lang.
- Erhältlich in verschiedenen Eckradien-Ausführungen: von 0,02mm bis zu 2,0mm Eckradius.
- Erhältlich in verschiedenen gesamt Längen und effektiv Längen. Mehr Auswahlmöglichkeiten als bei den bisherigen standard Produkten.



MG HM | 2 | 30° | R ±0.010 (Ø0.2~Ø6) | R ±0.015 (Ø8~Ø20) | PLAIN

P.798, 799, 800

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Remark
SEME610100303E	R0.3	1.0	4	1.5	3	50	-
★ SEME610100304E	R0.3	1.0	4	1.5	4	50	-
★ SEME610100306E	R0.3	1.0	4	1.5	6	50	-
★ SEME610100308E	R0.3	1.0	4	1.5	8	50	-
★ SEME610100310E	R0.3	1.0	4	1.5	10	50	-
SEME610100312E	R0.3	1.0	4	1.5	12	50	-
SEME610100314E	R0.3	1.0	4	1.5	14	50	-
SEME610100316E	R0.3	1.0	4	1.5	16	50	-
SEME610100320E	R0.3	1.0	4	1.5	20	50	-
SEME6101200503E	R0.05	1.2	4	1.8	3	50	-
SEME6101200504E	R0.05	1.2	4	1.8	4	50	-
★ SEME6101200506E	R0.05	1.2	4	1.8	6	50	-
★ SEME6101200508E	R0.05	1.2	4	1.8	8	50	-
★ SEME6101200510E	R0.05	1.2	4	1.8	10	50	-
SEME6101200512E	R0.05	1.2	4	1.8	12	50	-
SEME6101200516E	R0.05	1.2	4	1.8	16	50	-
SEME6101200520E	R0.05	1.2	4	1.8	20	50	-
SEME610120103E	R0.1	1.2	4	1.8	3	50	-
★ SEME610120104E	R0.1	1.2	4	1.8	4	50	-
★ SEME610120106E	R0.1	1.2	4	1.8	6	50	-
★ SEME610120108E	R0.1	1.2	4	1.8	8	50	-
SEME610120110E	R0.1	1.2	4	1.8	10	50	-
SEME610120112E	R0.1	1.2	4	1.8	12	50	-
SEME610120116E	R0.1	1.2	4	1.8	16	50	-
SEME610120120E	R0.1	1.2	4	1.8	20	50	-
SEME610120203E	R0.2	1.2	4	1.8	3	50	-
★ SEME610120204E	R0.2	1.2	4	1.8	4	50	-
★ SEME610120206E	R0.2	1.2	4	1.8	6	50	-
★ SEME610120208E	R0.2	1.2	4	1.8	8	50	-
SEME610120210E	R0.2	1.2	4	1.8	10	50	-

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

4G MILL END MILLS

SEME61 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
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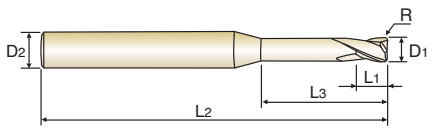
- Erhältlich in den Schaft-Ausführungen: standard und lang.
- Erhältlich in verschiedenen Eckradien-Ausführungen: von 0,02mm bis zu 2,0mm Eckradius.
- Erhältlich in verschiedenen gesamt Längen und effektiv Längen. Mehr Auswahlmöglichkeiten als bei den bisherigen standard Produkten.



MG HM | 2 | 30° | R ±0.010 (Ø0.2~Ø6) | R ±0.015 (Ø8~Ø20) | PLAIN

P.798, 799, 800

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Remark
SEME610120212E	R0.2	1.2	4	1.8	12	50	-
SEME610120216E	R0.2	1.2	4	1.8	16	50	-
SEME610120220E	R0.2	1.2	4	1.8	20	50	-
SEME610120303E	R0.3	1.2	4	1.8	3	50	-
★ SEME610120304E	R0.3	1.2	4	1.8	4	50	-
★ SEME610120306E	R0.3	1.2	4	1.8	6	50	-
★ SEME610120308E	R0.3	1.2	4	1.8	8	50	-
SEME610120310E	R0.3	1.2	4	1.8	10	50	-
SEME610120312E	R0.3	1.2	4	1.8	12	50	-
SEME610120316E	R0.3	1.2	4	1.8	16	50	-
SEME610120320E	R0.3	1.2	4	1.8	20	50	-
★ SEME6101500504E	R0.05	1.5	4	2.3	4	50	-
★ SEME6101500506E	R0.05	1.5	4	2.3	6	50	-
★ SEME6101500508E	R0.05	1.5	4	2.3	8	50	-
SEME6101500510E	R0.05	1.5	4	2.3	10	50	-
SEME6101500512E	R0.05	1.5	4	2.3	12	50	-
SEME6101500514E	R0.05	1.5	4	2.3	14	50	-
SEME6101500516E	R0.05	1.5	4	2.3	16	50	-
SEME6101500520E	R0.05	1.5	4	2.3	20	50	-
SEME6101500522E	R0.05	1.5	4	2.3	22	60	-
SEME6101500526E	R0.05	1.5	4	2.3	26	60	-
★ SEME610150104E	R0.1	1.5	4	2.3	4	50	-
★ SEME610150106E	R0.1	1.5	4	2.3	6	50	-
★ SEME610150108E	R0.1	1.5	4	2.3	8	50	-
SEME610150110E	R0.1	1.5	4	2.3	10	50	-
SEME610150112E	R0.1	1.5	4	2.3	12	50	-
SEME610150114E	R0.1	1.5	4	2.3	14	50	-
SEME610150116E	R0.1	1.5	4	2.3	16	50	-
SEME610150120E	R0.1	1.5	4	2.3	20	50	-
SEME610150122E	R0.1	1.5	4	2.3	22	60	-

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

4G MILL END MILLS

SEME61 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

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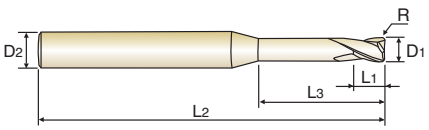
- Erhältlich in verschiedenen gesamt Längen und effektiv Längen. Mehr Auswahlmöglichkeiten als bei den bisherigen standard Produkten.



MG HM | 2 | 30° | R ±0.010 Ø0.2~Ø6 | R ±0.015 Ø8~Ø20 | PLAIN

P.798, 799, 800

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Remark
SEME610150126E	R0.1	1.5	4	2.3	26	60	-
★ SEME610150204E	R0.2	1.5	4	2.3	4	50	-
★ SEME610150206E	R0.2	1.5	4	2.3	6	50	-
★ SEME610150208E	R0.2	1.5	4	2.3	8	50	-
★ SEME610150210E	R0.2	1.5	4	2.3	10	50	-
★ SEME610150212E	R0.2	1.5	4	2.3	12	50	-
SEME610150214E	R0.2	1.5	4	2.3	14	50	-
SEME610150216E	R0.2	1.5	4	2.3	16	50	-
SEME610150220E	R0.2	1.5	4	2.3	20	50	-
SEME610150222E	R0.2	1.5	4	2.3	22	60	-
SEME610150226E	R0.2	1.5	4	2.3	26	60	-
★ SEME610150304E	R0.3	1.5	4	2.3	4	50	-
★ SEME610150306E	R0.3	1.5	4	2.3	6	50	-
★ SEME610150308E	R0.3	1.5	4	2.3	8	50	-
★ SEME610150310E	R0.3	1.5	4	2.3	10	50	-
★ SEME610150312E	R0.3	1.5	4	2.3	12	50	-
SEME610150314E	R0.3	1.5	4	2.3	14	50	-
SEME610150316E	R0.3	1.5	4	2.3	16	50	-
SEME610150320E	R0.3	1.5	4	2.3	20	50	-
SEME610150322E	R0.3	1.5	4	2.3	22	60	-
SEME610150326E	R0.3	1.5	4	2.3	26	60	-
SEME610150504E	R0.5	1.5	4	2.3	4	50	-
SEME610150506E	R0.5	1.5	4	2.3	6	50	-
SEME610150508E	R0.5	1.5	4	2.3	8	50	-
SEME610150510E	R0.5	1.5	4	2.3	10	50	-
SEME610150512E	R0.5	1.5	4	2.3	12	50	-
SEME610150514E	R0.5	1.5	4	2.3	14	50	-
SEME610150516E	R0.5	1.5	4	2.3	16	50	-
SEME610150520E	R0.5	1.5	4	2.3	20	50	-
SEME610150522E	R0.5	1.5	4	2.3	22	60	-

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

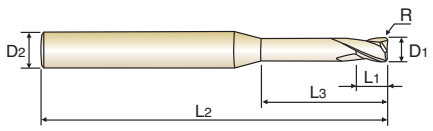
4G MILL END MILLS

SEME61 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- Available various products like regular length and long shank end mills etc.
- Available various corner radius end mills, from min. 0.02mm corner radius to max. 2.0mm corner radius.
- Available more various effective length and overall length end mills than previous standard products.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Ausgezeichnet geeignet für das Fräsen von vorvergütetem Stahl, kohlenstoff Stahl, legiertem Stahl für Formen, bis HRc55 und Maschinenbauteile.
- Erhältlich in den Schaft-Ausführungen: standard und lang.
- Erhältlich in verschiedenen Eckradien-Ausführungen: von 0,02mm bis zu 2,0mm Eckradius.
- Erhältlich in verschiedenen gesamt Längen und effektiv Längen. Mehr Auswahlmöglichkeiten als bei den bisherigen standard Produkten.



MG HM | 2 | 30° | R ±0.010 (Ø0.2~Ø6) | R ±0.015 (Ø8~Ø20) | PLAIN

P.798, 799, 800

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Remark
SEME610150526E	R0.5	1.5	4	2.3	26	60	-
★ SEME610200106E	R0.1	2.0	4	3	6	50	-
★ SEME610200108E	R0.1	2.0	4	3	8	50	-
★ SEME610200110E	R0.1	2.0	4	3	10	50	-
★ SEME610200112E	R0.1	2.0	4	3	12	50	-
SEME610200114E	R0.1	2.0	4	3	14	50	-
SEME610200116E	R0.1	2.0	4	3	16	50	-
SEME610200120E	R0.1	2.0	4	3	20	50	-
SEME610200122E	R0.1	2.0	4	3	22	60	-
SEME610200126E	R0.1	2.0	4	3	26	60	-
SEME610200130E	R0.1	2.0	4	3	30	70	-
★ SEME610200206E	R0.2	2.0	4	3	6	50	-
★ SEME610200208E	R0.2	2.0	4	3	8	50	-
★ SEME610200210E	R0.2	2.0	4	3	10	50	-
★ SEME610200212E	R0.2	2.0	4	3	12	50	-
SEME610200214E	R0.2	2.0	4	3	14	50	-
★ SEME610200216E	R0.2	2.0	4	3	16	50	-
SEME610200220E	R0.2	2.0	4	3	20	50	-
SEME610200222E	R0.2	2.0	4	3	22	60	-
SEME610200226E	R0.2	2.0	4	3	26	60	-
SEME610200230E	R0.2	2.0	4	3	30	70	-
★ SEME610200306E	R0.3	2.0	4	3	6	50	-
★ SEME610200308E	R0.3	2.0	4	3	8	50	-
★ SEME610200310E	R0.3	2.0	4	3	10	50	-
★ SEME610200312E	R0.3	2.0	4	3	12	50	-
SEME610200314E	R0.3	2.0	4	3	14	50	-
★ SEME610200316E	R0.3	2.0	4	3	16	50	-
SEME610200320E	R0.3	2.0	4	3	20	50	-
SEME610200322E	R0.3	2.0	4	3	22	60	-
SEME610200326E	R0.3	2.0	4	3	26	60	-

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

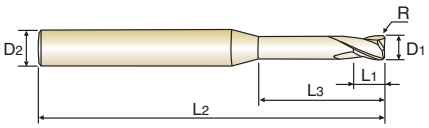
4G MILL END MILLS

SEME61 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- Available various products like regular length and long shank end mills etc.
- Available various corner radius end mills, from min. 0.02mm corner radius to max. 2.0mm corner radius.
- Available more various effective length and overall length end mills than previous standard products.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Ausgezeichnet geeignet für das Fräsen von vorvergütetem Stahl, kohlenstoff Stahl, legiertem Stahl für Formen, bis HRc55 und Maschinenbauteile.
- Erhältlich in den Schaft-Ausführungen: standard und lang.
- Erhältlich in verschiedenen Eckradien-Ausführungen: von 0,02mm bis zu 2,0mm Eckradius.
- Erhältlich in verschiedenen gesamt Längen und effektiv Längen. Mehr Auswahlmöglichkeiten als bei den bisherigen standard Produkten.



MG HM | 2 | 30° | R ±0.010 Ø0.2~Ø6 | R ±0.015 Ø8~Ø20 | PLAIN

P.798, 799, 800

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Remark
SEME610200330E	R0.3	2.0	4	3	30	70	-
★ SEME610200506E	R0.5	2.0	4	3	6	50	-
★ SEME610200508E	R0.5	2.0	4	3	8	50	-
★ SEME610200510E	R0.5	2.0	4	3	10	50	-
★ SEME610200512E	R0.5	2.0	4	3	12	50	-
★ SEME610200514E	R0.5	2.0	4	3	14	50	-
SEME610200516E	R0.5	2.0	4	3	16	50	-
SEME610200520E	R0.5	2.0	4	3	20	50	-
SEME610200522E	R0.5	2.0	4	3	22	60	-
SEME610200526E	R0.5	2.0	4	3	26	60	-
SEME610200530E	R0.5	2.0	4	3	30	70	-
SEME610250108E	R0.1	2.5	4	4	8	50	-
SEME610250110E	R0.1	2.5	4	4	10	50	-
SEME610250112E	R0.1	2.5	4	4	12	50	-
SEME610250114E	R0.1	2.5	4	4	14	50	-
SEME610250116E	R0.1	2.5	4	4	16	50	-
SEME610250120E	R0.1	2.5	4	4	20	50	-
SEME610250126E	R0.1	2.5	4	4	26	60	-
SEME610250130E	R0.1	2.5	4	4	30	70	-
SEME610250208E	R0.2	2.5	4	4	8	50	-
SEME610250210E	R0.2	2.5	4	4	10	50	-
SEME610250212E	R0.2	2.5	4	4	12	50	-
SEME610250214E	R0.2	2.5	4	4	14	50	-
SEME610250216E	R0.2	2.5	4	4	16	50	-
SEME610250220E	R0.2	2.5	4	4	20	50	-
SEME610250226E	R0.2	2.5	4	4	26	60	-
SEME610250230E	R0.2	2.5	4	4	30	70	-
SEME610250308E	R0.3	2.5	4	4	8	50	-
SEME610250310E	R0.3	2.5	4	4	10	50	-
SEME610250312E	R0.3	2.5	4	4	12	50	-

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

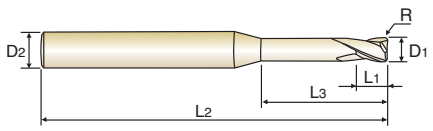
4G MILL END MILLS

SEME61 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- Available various products like regular length and long shank end mills etc.
- Available various corner radius end mills, from min. 0.02mm corner radius to max. 2.0mm corner radius.
- Available more various effective length and overall length end mills than previous standard products.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Ausgezeichnet geeignet für das Fräsen von vorvergütetem Stahl, kohlenstoff Stahl, legiertem Stahl für Formen, bis HRc55 und Maschinenbauteile.
- Erhältlich in den Schaft-Ausführungen: standard und lang.
- Erhältlich in verschiedenen Eckradien-Ausführungen: von 0,02mm bis zu 2,0mm Eckradius.
- Erhältlich in verschiedenen gesamt Längen und effektiv Längen. Mehr Auswahlmöglichkeiten als bei den bisherigen standard Produkten.



MG HM | 2 | 30° | R ±0.010 (Ø0.2~Ø6) | R ±0.015 (Ø8~Ø20) | PLAIN

P.798, 799, 800

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Remark
SEME610250314E	R0.3	2.5	4	4	14	50	-
SEME610250316E	R0.3	2.5	4	4	16	50	-
SEME610250320E	R0.3	2.5	4	4	20	50	-
SEME610250326E	R0.3	2.5	4	4	26	60	-
SEME610250330E	R0.3	2.5	4	4	30	70	-
SEME610250508E	R0.5	2.5	6	4	8	50	-
SEME610250510E	R0.5	2.5	6	4	10	50	-
SEME610250512E	R0.5	2.5	6	4	12	50	-
SEME610250514E	R0.5	2.5	6	4	14	50	-
SEME610250516E	R0.5	2.5	6	4	16	50	-
SEME610250520E	R0.5	2.5	6	4	20	50	-
SEME610250526E	R0.5	2.5	6	4	26	60	-
SEME610250530E	R0.5	2.5	6	4	30	70	-
SEME610300108E	R0.1	3.0	6	4.5	8	50	-
★ SEME610300110E	R0.1	3.0	6	4.5	10	50	-
★ SEME610300112E	R0.1	3.0	6	4.5	12	50	-
SEME610300114E	R0.1	3.0	6	4.5	14	60	-
★ SEME610300116E	R0.1	3.0	6	4.5	16	60	-
SEME610300120E	R0.1	3.0	6	4.5	20	60	-
SEME610300126E	R0.1	3.0	6	4.5	26	65	-
SEME610300130E	R0.1	3.0	6	4.5	30	70	-
SEME610300135E	R0.1	3.0	6	4.5	35	70	-
SEME610300140E	R0.1	3.0	6	4.5	40	80	-
★ SEME610300208E	R0.2	3.0	6	4.5	8	50	-
★ SEME610300210E	R0.2	3.0	6	4.5	10	50	-
★ SEME610300212E	R0.2	3.0	6	4.5	12	50	-
SEME610300214E	R0.2	3.0	6	4.5	14	60	-
★ SEME610300216E	R0.2	3.0	6	4.5	16	60	-
★ SEME610300220E	R0.2	3.0	6	4.5	20	60	-
★ SEME610300226E	R0.2	3.0	6	4.5	26	65	-

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

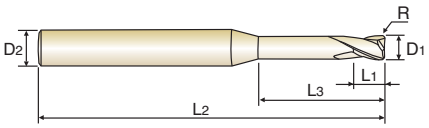
4G MILL END MILLS

SEME61 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- Available various products like regular length and long shank end mills etc.
- Available various corner radius end mills, from min. 0.02mm corner radius to max. 2.0mm corner radius.
- Available more various effective length and overall length end mills than previous standard products.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Ausgezeichnet geeignet für das Fräsen von vorvergütetem Stahl, kohlenstoff Stahl, legiertem Stahl für Formen, bis HRc55 und Maschinenbauteile.
- Erhältlich in den Schaft-Ausführungen: standard und lang.
- Erhältlich in verschiedenen Eckradien-Ausführungen: von 0,02mm bis zu 2,0mm Eckradius.
- Erhältlich in verschiedenen gesamt Längen und effektiv Längen. Mehr Auswahlmöglichkeiten als bei den bisherigen standard Produkten.



MG HM | 2 | 30° | R ±0.010 Ø0.2~Ø6 | R ±0.015 Ø8~Ø20 | PLAIN

P.798, 799, 800

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Remark
SEME610300230E	R0.2	3.0	6	4.5	30	70	-
SEME610300235E	R0.2	3.0	6	4.5	35	70	-
SEME610300240E	R0.2	3.0	6	4.5	40	80	-
★ SEME610300308E	R0.3	3.0	6	4.5	8	50	-
★ SEME610300310E	R0.3	3.0	6	4.5	10	50	-
★ SEME610300312E	R0.3	3.0	6	4.5	12	50	-
SEME610300314E	R0.3	3.0	6	4.5	14	60	-
★ SEME610300316E	R0.3	3.0	6	4.5	16	60	-
★ SEME610300320E	R0.3	3.0	6	4.5	20	60	-
SEME610300326E	R0.3	3.0	6	4.5	26	65	-
SEME610300330E	R0.3	3.0	6	4.5	30	70	-
SEME610300335E	R0.3	3.0	6	4.5	35	70	-
SEME610300340E	R0.3	3.0	6	4.5	40	80	-
★ SEME610300508E	R0.5	3.0	6	4.5	8	50	-
★ SEME610300510E	R0.5	3.0	6	4.5	10	50	-
★ SEME610300512E	R0.5	3.0	6	4.5	12	50	-
SEME610300514E	R0.5	3.0	6	4.5	14	60	-
★ SEME610300516E	R0.5	3.0	6	4.5	16	60	-
★ SEME610300520E	R0.5	3.0	6	4.5	20	60	-
★ SEME610300526E	R0.5	3.0	6	4.5	26	65	-
SEME610300530E	R0.5	3.0	6	4.5	30	70	-
SEME610300535E	R0.5	3.0	6	4.5	35	70	-
SEME610300540E	R0.5	3.0	6	4.5	40	80	-
★ SEME610301008E	R1.0	3.0	6	4.5	8	50	-
★ SEME610301010E	R1.0	3.0	6	4.5	10	50	-
★ SEME610301012E	R1.0	3.0	6	4.5	12	50	-
SEME610301014E	R1.0	3.0	6	4.5	14	60	-
★ SEME610301016E	R1.0	3.0	6	4.5	16	60	-
★ SEME610301020E	R1.0	3.0	6	4.5	20	60	-
SEME610301026E	R1.0	3.0	6	4.5	26	65	-

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

4G MILL END MILLS

SEME61 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- Available various products like regular length and long shank end mills etc.
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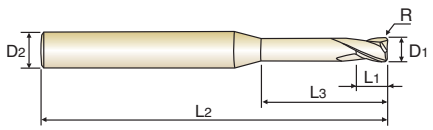
- Available more various effective length and overall length end mills than previous standard products.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Ausgezeichnet geeignet für das Fräsen von vorvergütetem Stahl, kohlenstoff Stahl, legiertem Stahl für Formen, bis HRc55 und Maschinenbauteile.
- Erhältlich in den Schaft-Ausführungen: standard und lang.
- Erhältlich in verschiedenen Eckradien-Ausführungen: von 0,02mm bis zu 2,0mm Eckradius.
- Erhältlich in verschiedenen gesamt Längen und effektiv Längen. Mehr Auswahlmöglichkeiten als bei den bisherigen standard Produkten.



MG HM | 2 | 30° | R ±0.010 (Ø0.2~Ø6) | R ±0.015 (Ø8~Ø20) | PLAIN

P.798, 799, 800

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Remark
SEME610301030E	R1.0	3.0	6	4.5	30	70	-
SEME610301035E	R1.0	3.0	6	4.5	35	70	-
SEME610301040E	R1.0	3.0	6	4.5	40	80	-
★ SEME610400110E	R0.1	4.0	6	6	10	50	-
★ SEME610400112E	R0.1	4.0	6	6	12	50	-
SEME610400114E	R0.1	4.0	6	6	14	60	-
★ SEME610400116E	R0.1	4.0	6	6	16	60	-
SEME610400120E	R0.1	4.0	6	6	20	60	-
SEME610400126E	R0.1	4.0	6	6	26	65	-
SEME610400130E	R0.1	4.0	6	6	30	70	-
SEME610400135E	R0.1	4.0	6	6	35	70	-
SEME610400140E	R0.1	4.0	6	6	40	80	-
SEME610400145E	R0.1	4.0	6	6	45	90	-
SEME610400150E	R0.1	4.0	6	6	50	100	-
★ SEME610400210E	R0.2	4.0	6	6	10	50	-
★ SEME610400212E	R0.2	4.0	6	6	12	50	-
SEME610400214E	R0.2	4.0	6	6	14	60	-
★ SEME610400216E	R0.2	4.0	6	6	16	60	-
★ SEME610400220E	R0.2	4.0	6	6	20	60	-
★ SEME610400226E	R0.2	4.0	6	6	26	65	-
SEME610400230E	R0.2	4.0	6	6	30	70	-
SEME610400235E	R0.2	4.0	6	6	35	70	-
SEME610400240E	R0.2	4.0	6	6	40	80	-
SEME610400245E	R0.2	4.0	6	6	45	90	-
SEME610400250E	R0.2	4.0	6	6	50	100	-
SEME610400310E	R0.3	4.0	6	6	10	50	-
★ SEME610400312E	R0.3	4.0	6	6	12	50	-
SEME610400314E	R0.3	4.0	6	6	14	50	-
★ SEME610400316E	R0.3	4.0	6	6	16	50	-
★ SEME610400320E	R0.3	4.0	6	6	20	50	-

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

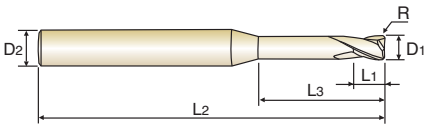
4G MILL END MILLS

SEME61 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- Available various products like regular length and long shank end mills etc.
- Available various corner radius end mills, from min. 0.02mm corner radius to max. 2.0mm corner radius.
- Available more various effective length and overall length end mills than previous standard products.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Ausgezeichnet geeignet für das Fräsen von vorvergütetem Stahl, kohlenstoff Stahl, legiertem Stahl für Formen, bis HRc55 und Maschinenbauteile.
- Erhältlich in den Schaft-Ausführungen: standard und lang.
- Erhältlich in verschiedenen Eckradien-Ausführungen: von 0,02mm bis zu 2,0mm Eckradius.
- Erhältlich in verschiedenen gesamt Längen und effektiv Längen. Mehr Auswahlmöglichkeiten als bei den bisherigen standard Produkten.



MG HM | 2 | 30° | R ±0.010 (Ø0.2~Ø6) | R ±0.015 (Ø8~Ø20) | PLAIN

P.798, 799, 800

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Remark
★ SEME610400326E	R0.3	4.0	6	6	26	65	-
SEME610400330E	R0.3	4.0	6	6	30	70	-
SEME610400335E	R0.3	4.0	6	6	35	70	-
SEME610400340E	R0.3	4.0	6	6	40	80	-
SEME610400345E	R0.3	4.0	6	6	45	90	-
SEME610400350E	R0.3	4.0	6	6	50	100	-
★ SEME610400510E	R0.5	4.0	6	6	10	50	-
★ SEME610400512E	R0.5	4.0	6	6	12	50	-
SEME610400514E	R0.5	4.0	6	6	14	60	-
★ SEME610400516E	R0.5	4.0	6	6	16	60	-
★ SEME610400520E	R0.5	4.0	6	6	20	60	-
★ SEME610400526E	R0.5	4.0	6	6	26	65	-
★ SEME610400530E	R0.5	4.0	6	6	30	70	-
SEME610400535E	R0.5	4.0	6	6	35	70	-
SEME610400540E	R0.5	4.0	6	6	40	80	-
SEME610400545E	R0.5	4.0	6	6	45	90	-
SEME610400550E	R0.5	4.0	6	6	50	100	-
★ SEME610401010E	R1.0	4.0	6	6	10	50	-
★ SEME610401012E	R1.0	4.0	6	6	12	50	-
SEME610401014E	R1.0	4.0	6	6	14	60	-
★ SEME610401016E	R1.0	4.0	6	6	16	60	-
★ SEME610401020E	R1.0	4.0	6	6	20	60	-
SEME610401026E	R1.0	4.0	6	6	26	65	-
SEME610401030E	R1.0	4.0	6	6	30	70	-
SEME610401035E	R1.0	4.0	6	6	35	70	-
SEME610401040E	R1.0	4.0	6	6	40	80	-
SEME610401045E	R1.0	4.0	6	6	45	90	-
SEME610401050E	R1.0	4.0	6	6	50	100	-
SEME6105001E	R0.1	5.0	6	8	15	60	-
SEME6105002E	R0.2	5.0	6	8	15	60	-

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

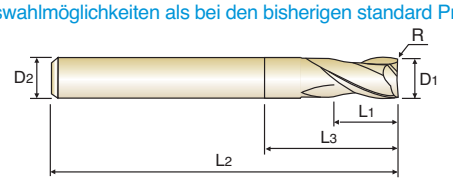
4G MILL END MILLS

SEME61 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- Available various products like regular length and long shank end mills etc.
- Available various corner radius end mills, from min. 0.02mm corner radius to max. 2.0mm corner radius.
- Available more various effective length and overall length end mills than previous standard products.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Ausgezeichnet geeignet für das Fräsen von vorvergütetem Stahl, kohlenstoff Stahl, legiertem Stahl für Formen, bis HRc55 und Maschinenbauteile.
- Erhältlich in den Schaft-Ausführungen: standard und lang.
- Erhältlich in verschiedenen Eckradien-Ausführungen: von 0,02mm bis zu 2,0mm Eckradius.
- Erhältlich in verschiedenen gesamt Längen und effektiv Längen. Mehr Auswahlmöglichkeiten als bei den bisherigen standard Produkten.



MG HM | 2 | 30° | R ±0.010 (Ø0.2~Ø6) | R ±0.015 (Ø8~Ø20) | PLAIN

P.798, 799, 800

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Remark
SEME6105003E	R0.3	5.0	6	8	15	60	-
SEME6105005E	R0.5	5.0	6	8	15	60	-
SEME6105010E	R1.0	5.0	6	8	15	60	-
SEME6105015E	R1.5	5.0	6	8	15	60	-
SEME6105020E	R2.0	5.0	6	8	15	60	-
SEME6106001E	R0.1	6.0	6	9	20	60	Regular
★ SEME6106002E	R0.2	6.0	6	9	20	60	Regular
★ SEME6106003E	R0.3	6.0	6	9	20	60	Regular
★ SEME6106005E	R0.5	6.0	6	9	20	60	Regular
★ SEME6106010E	R1.0	6.0	6	9	20	60	Regular
SEME6106015E	R1.5	6.0	6	9	20	60	Regular
SEME6106020E	R2.0	6.0	6	9	20	60	Regular
SEME6106003090E	R0.3	6.0	6	15	30	90	Long Shank
★ SEME6106005090E	R0.5	6.0	6	15	30	90	Long Shank
SEME6106010090E	R1.0	6.0	6	15	30	90	Long Shank
SEME6108001E	R0.1	8.0	8	12	25	70	Regular
★ SEME6108002E	R0.2	8.0	8	12	25	70	Regular
★ SEME6108003E	R0.3	8.0	8	12	25	70	Regular
★ SEME6108005E	R0.5	8.0	8	12	25	70	Regular
★ SEME6108010E	R1.0	8.0	8	12	25	70	Regular
SEME6108015E	R1.5	8.0	8	12	25	70	Regular
SEME6108020E	R2.0	8.0	8	12	25	70	Regular
SEME6108003100E	R0.3	8.0	8	20	35	100	Long Shank
SEME6108005100E	R0.5	8.0	8	20	35	100	Long Shank
SEME6108010100E	R1.0	8.0	8	20	35	100	Long Shank
SEME6110001E	R0.1	10.0	10	15	30	75	Regular
SEME6110002E	R0.2	10.0	10	15	30	75	Regular
★ SEME6110003E	R0.3	10.0	10	15	30	75	Regular
★ SEME6110005E	R0.5	10.0	10	15	30	75	Regular
★ SEME6110010E	R1.0	10.0	10	15	30	75	Regular

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

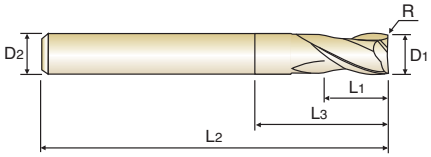
4G MILL END MILLS

SEME61 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- Available various products like regular length and long shank end mills etc.
- Available various corner radius end mills, from min. 0.02mm corner radius to max. 2.0mm corner radius.
- Available more various effective length and overall length end mills than previous standard products.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Ausgezeichnet geeignet für das Fräsen von vorvergütetem Stahl, kohlenstoff Stahl, legiertem Stahl für Formen, bis HRc55 und Maschinenbauteile.
- Erhältlich in den Schaft-Ausführungen: standard und lang.
- Erhältlich in verschiedenen Eckradien-Ausführungen: von 0,02mm bis zu 2,0mm Eckradius.
- Erhältlich in verschiedenen gesamt Längen und effektiv Längen. Mehr Auswahlmöglichkeiten als bei den bisherigen standard Produkten.



MG HM | 2 | 30° | R ±0.010 (Ø0.2~Ø6) | R ±0.015 (Ø8~Ø20) | PLAIN

P.798, 799, 800

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Remark
SEME6110015E	R1.5	**10.0**	10	15	30	75	Regular
SEME6110020E	R2.0	**10.0**	10	15	30	75	Regular
SEME6110003100E	R0.3	**10.0**	10	25	40	100	Long Shank
SEME6110005100E	R0.5	**10.0**	10	25	40	100	Long Shank
SEME6110010100E	R1.0	**10.0**	10	25	40	100	Long Shank
SEME6112002E	R0.2	**12.0**	12	18	32	80	Regular
SEME6112003E	R0.3	**12.0**	12	18	32	80	Regular
★ SEME6112005E	R0.5	**12.0**	12	18	32	80	Regular
★ SEME6112010E	R1.0	**12.0**	12	18	32	80	Regular
★ SEME6112015E	R1.5	**12.0**	12	18	32	80	Regular
SEME6112020E	R2.0	**12.0**	12	18	32	80	Regular
SEME6112003110E	R0.3	**12.0**	12	30	45	110	Long Shank
SEME6112005110E	R0.5	**12.0**	12	30	45	110	Long Shank
SEME6112010110E	R1.0	**12.0**	12	30	45	110	Long Shank
★ SEME6116005E	R0.5	**16.0**	16	20	35	100	Regular
★ SEME6116010E	R1.0	**16.0**	16	20	35	100	Regular
SEME6116005150E	R0.5	**16.0**	16	35	50	150	Long Shank
SEME6116010150E	R1.0	**16.0**	16	35	50	150	Long Shank
★ SEME6120005E	R0.5	**20.0**	20	25	40	100	Regular
★ SEME6120010E	R1.0	**20.0**	20	25	40	100	Regular
SEME6120005150E	R0.5	**20.0**	20	40	55	150	Long Shank
SEME6120010150E	R1.0	**20.0**	20	40	55	150	Long Shank

▶ ★ Stock Item

Size	Corner Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	±0.010	0~−0.012	h6
over Ø6	±0.015	0~−0.015	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

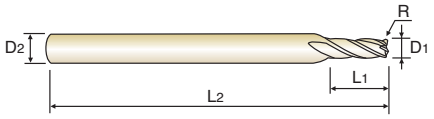
4G MILL END MILLS

SEME01 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE MULTIPLE HELIX CORNER RADIUS (Short, Regular, Long Shank)
VOLLHARTMETALL, 4 SCHNEIDEN MEHRSPIRAL ECKENRADIUS

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.
- Available various products like short, regular and long shank end millls etc.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Aufgrund der Multi-Helix (M-Helix) bei Schaftfräsern ≥ 3,0mm ø werden Vibrationen zuverlässig verhindert und gleichzeitig der Schneidkantenverschleiß verringert.
- Erhältlich in den Schaft-Ausführungen: standard und lang.



MG HM | 4 | M-Helix | R ±0.02 | PLAIN | P.801

D≥3

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEME01010005E	R0.05	1.0	6	2.5	50	-
★ SEME0101001E	R0.1	1.0	6	2.5	50	-
SEME0101002E	R0.2	1.0	6	2.5	50	-
SEME0101003E	R0.3	1.0	6	2.5	50	-
SEME01012005E	R0.05	1.2	6	3	50	-
SEME0101201E	R0.1	1.2	6	3	50	-
SEME0101202E	R0.2	1.2	6	3	50	-
SEME0101203E	R0.3	1.2	6	3	50	-
SEME01015005E	R0.05	1.5	6	4	50	-
SEME0101501E	R0.1	1.5	6	4	50	-
SEME0101502E	R0.2	1.5	6	4	50	-
SEME0101503E	R0.3	1.5	6	4	50	-
SEME0101505E	R0.5	1.5	6	4	50	-
★ SEME0102001E	R0.1	2.0	6	6	50	-
★ SEME0102002E	R0.2	2.0	6	6	50	-
SEME0102003E	R0.3	2.0	6	6	50	-
SEME0102005E	R0.5	2.0	6	6	50	-
SEME0102501E	R0.1	2.5	6	7	60	-
SEME0102502E	R0.2	2.5	6	7	60	-
SEME0102503E	R0.3	2.5	6	7	60	-
SEME0102505E	R0.5	2.5	6	7	60	-
SEME0103001E	R0.1	3.0	6	8	60	-
★ SEME0103002E	R0.2	3.0	6	8	60	-
★ SEME0103003E	R0.3	3.0	6	8	60	-
★ SEME0103005E	R0.5	3.0	6	8	60	-
SEME01030I0E	R1.0	3.0	6	8	60	-
SEME0103501E	R0.1	3.5	6	10	70	-
SEME0103502E	R0.2	3.5	6	10	70	-
SEME0103503E	R0.3	3.5	6	10	70	-
SEME0103505E	R0.5	3.5	6	10	70	-

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

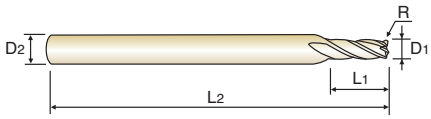
4G MILL END MILLS

SEME01 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE MULTIPLE HELIX CORNER RADIUS (Short, Regular, Long Shank)
VOLLHARTMETALL, 4 SCHNEIDEN MEHRSPIRAL ECKENRADIUS

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.
- Available various products like short, regular and long shank end millls etc.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Aufgrund der Multi-Helix (M-Helix) bei Schaftfräsern ≥ 3,0mm ø werden Vibrationen zuverlässig verhindert und gleichzeitig der Schneidkantenverschleiß verringert.
- Erhältlich in den Schaft-Ausführungen: standard und lang.



MG HM | 4 | M-Helix (D≥3) | R ±0.02 | PLAIN | P.801

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEME01040014SE	R0.1	4.0	4	10	70	4mm Shank
SEME01040024SE	R0.2	4.0	4	10	70	4mm Shank
SEME01040034SE	R0.3	4.0	4	10	70	4mm Shank
SEME01040054SE	R0.5	4.0	4	10	70	4mm Shank
SEME01040104SE	R1.0	4.0	4	10	70	4mm Shank
SEME01040011004SE	R0.1	4.0	4	10	100	4mm Shank
SEME01040021004SE	R0.2	4.0	4	10	100	4mm Shank
SEME01040031004SE	R0.3	4.0	4	10	100	4mm Shank
SEME01040051004SE	R0.5	4.0	4	10	100	4mm Shank
SEME01040101004SE	R1.0	4.0	4	10	100	4mm Shank
SEME0104001E	R0.1	4.0	6	10	70	Regular
★ SEME0104002E	R0.2	4.0	6	10	70	Regular
★ SEME0104003E	R0.3	4.0	6	10	70	Regular
★ SEME0104005E	R0.5	4.0	6	10	70	Regular
★ SEME0104010E	R1.0	4.0	6	10	70	Regular
SEME0104501E	R0.1	4.5	6	11	80	-
SEME0104502E	R0.2	4.5	6	11	80	-
SEME0104503E	R0.3	4.5	6	11	80	-
SEME0104505E	R0.5	4.5	6	11	80	-
SEME0105001E	R0.1	5.0	6	13	90	-
SEME0105002E	R0.2	5.0	6	13	90	-
★ SEME0105003E	R0.3	5.0	6	13	90	-
★ SEME0105005E	R0.5	5.0	6	13	90	-
SEME0105010E	R1.0	5.0	6	13	90	-
SEME0105501E	R0.1	5.5	6	13	90	-
SEME0105502E	R0.2	5.5	6	13	90	-
SEME0105503E	R0.3	5.5	6	13	90	-
SEME0105505E	R0.5	5.5	6	13	90	-
SEME0105510E	R1.0	5.5	6	13	90	-
SEME0106001060E	R0.1	6.0	6	15	60	Short

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

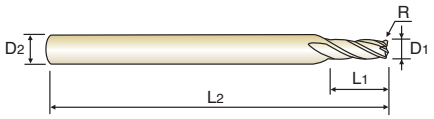
4G MILL END MILLS

SEME01 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE MULTIPLE HELIX CORNER RADIUS (Short, Regular, Long Shank)
VOLLHARTMETALL, 4 SCHNEIDEN MEHRSPIRAL ECKENRADIUS

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.
- Available various products like short, regular and long shank end millls etc.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Aufgrund der Multi-Helix (M-Helix) bei Schaftfräsern ≥ 3,0mm ø werden Vibrationen zuverlässig verhindert und gleichzeitig der Schneidkantenverschleiß verringert.
- Erhältlich in den Schaft-Ausführungen: standard und lang.



MG HM | 4 | M-Helix | R ±0.02 | PLAIN | P.801

D≥3

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEME0106002060E	R0.2	6.0	6	15	60	Short
SEME0106001E	R0.1	6.0	6	15	90	Regular
★ SEME0106002E	R0.2	6.0	6	15	90	Regular
★ SEME0106003E	R0.3	6.0	6	15	90	Regular
★ SEME0106005E	R0.5	6.0	6	15	90	Regular
★ SEME0106010E	R1.0	6.0	6	15	90	Regular
SEME0106015E	R1.5	6.0	6	15	90	Regular
SEME0106020E	R2.0	6.0	6	15	90	Regular
SEME0106005110E	R0.5	6.0	6	15	110	Long Shank
SEME0106010110E	R1.0	6.0	6	15	110	Long Shank
SEME0106005130E	R0.5	6.0	6	15	130	Long Shank
SEME0106010130E	R1.0	6.0	6	15	130	Long Shank
SEME0107001E	R0.1	7.0	8	16	90	-
SEME0107002E	R0.2	7.0	8	16	90	-
SEME0107003E	R0.3	7.0	8	16	90	-
SEME0107005E	R0.5	7.0	8	16	90	-
SEME0107010E	R1.0	7.0	8	16	90	-
SEME0107020E	R2.0	7.0	8	16	90	-
★ SEME0108003070E	R0.3	8.0	8	20	70	Short
★ SEME0108005070E	R0.5	8.0	8	20	70	Short
★ SEME0108010070E	R1.0	8.0	8	20	70	Short
SEME0108001E	R0.1	8.0	8	20	100	Regular
★ SEME0108002E	R0.2	8.0	8	20	100	Regular
★ SEME0108003E	R0.3	8.0	8	20	100	Regular
★ SEME0108005E	R0.5	8.0	8	20	100	Regular
★ SEME0108010E	R1.0	8.0	8	20	100	Regular
★ SEME0108015E	R1.5	8.0	8	20	100	Regular
★ SEME0108020E	R2.0	8.0	8	20	100	Regular
SEME0108025E	R2.5	8.0	8	20	100	Regular
SEME0108030E	R3.0	8.0	8	20	100	Regular

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

4G MILL END MILLS

SEME01 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE MULTIPLE HELIX CORNER RADIUS (Short, Regular, Long Shank)
VOLLHARTMETALL, 4 SCHNEIDEN MEHRSPIRAL ECKENRADIUS

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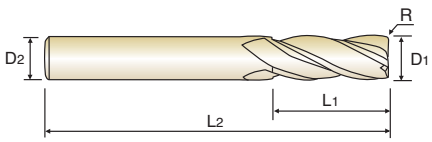
- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Aufgrund der Multi-Helix (M-Helix) bei Schaftfräsern ≥ 3,0mm ø werden Vibrationen zuverlässig verhindert und gleichzeitig der Schneidkantenverschleiß verringert.
- Erhältlich in den Schaft-Ausführungen: standard und lang.



MG HM | 4 | M-Helix | R ±0.02 | PLAIN

D≥3

P.801

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEME0108005120E	R0.5	**8.0**	8	20	120	Long Shank
SEME0108010120E	R1.0	**8.0**	8	20	120	Long Shank
SEME0108005150E	R0.5	**8.0**	8	20	150	Long Shank
SEME0108010150E	R1.0	**8.0**	8	20	150	Long Shank
SEME0110003075E	R0.3	**10.0**	10	25	75	Short
★ SEME0110005075E	R0.5	**10.0**	10	25	75	Short
SEME0110010075E	R1.0	**10.0**	10	25	75	Short
SEME0110001E	R0.1	**10.0**	10	25	100	Regular
SEME0110002E	R0.2	**10.0**	10	25	100	Regular
★ SEME0110003E	R0.3	**10.0**	10	25	100	Regular
★ SEME0110005E	R0.5	**10.0**	10	25	100	Regular
★ SEME0110010E	R1.0	**10.0**	10	25	100	Regular
★ SEME0110015E	R1.5	**10.0**	10	25	100	Regular
★ SEME0110020E	R2.0	**10.0**	10	25	100	Regular
SEME0110025E	R2.5	**10.0**	10	25	100	Regular
SEME0110030E	R3.0	**10.0**	10	25	100	Regular
SEME0110040E	R4.0	**10.0**	10	25	100	Regular
SEME0110005130E	R0.5	**10.0**	10	22	130	Long Shank
SEME0110010130E	R1.0	**10.0**	10	22	130	Long Shank
SEME0110005150E	R0.5	**10.0**	10	22	150	Long Shank
SEME0110010150E	R1.0	**10.0**	10	22	150	Long Shank
SEME0111002E	R0.2	**11.0**	12	25	110	-
SEME0111003E	R0.3	**11.0**	12	25	110	-
SEME0111005E	R0.5	**11.0**	12	25	110	-
SEME0111010E	R1.0	**11.0**	12	25	110	-
SEME0111020E	R2.0	**11.0**	12	25	110	-
SEME0112003080E	R0.3	**12.0**	12	30	80	Short
★ SEME0112005080E	R0.5	**12.0**	12	30	80	Short
★ SEME0112010080E	R1.0	**12.0**	12	30	80	Short
SEME0112001E	R0.1	**12.0**	12	30	110	Regular

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

4G MILL END MILLS

SEME01 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE MULTIPLE HELIX CORNER RADIUS (Short, Regular, Long Shank)
VOLLHARTMETALL, 4 SCHNEIDEN MEHRSPIRAL ECKENRADIUS

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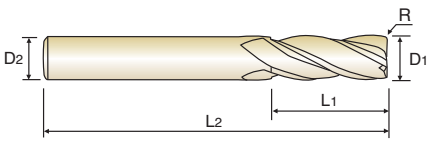
- Erhältlich in den Schaft-Ausführungen: standard und lang.



MG HM | 4 | M-Helix | R ±0.02 | PLAIN | P.801

D≥3

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEME0112002E	R0.2	12.0	12	30	110	Regular
SEME0112003E	R0.3	12.0	12	30	110	Regular
★ SEME0112005E	R0.5	12.0	12	30	110	Regular
★ SEME0112010E	R1.0	12.0	12	30	110	Regular
★ SEME0112015E	R1.5	12.0	12	30	110	Regular
★ SEME0112020E	R2.0	12.0	12	30	110	Regular
SEME0112025E	R2.5	12.0	12	30	110	Regular
SEME0112030E	R3.0	12.0	12	30	110	Regular
SEME0112040E	R4.0	12.0	12	30	110	Regular
SEME0112050E	R5.0	12.0	12	30	110	Regular
SEME0112005130E	R0.5	12.0	12	30	130	Long Shank
SEME0112010130E	R1.0	12.0	12	30	130	Long Shank
SEME0112005150E	R0.5	12.0	12	30	150	Long Shank
SEME0112010150E	R1.0	12.0	12	30	150	Long Shank
SEME0114005E	R0.5	14.0	16	35	150	-
SEME0114010E	R1.0	14.0	16	35	150	-
SEME0114020E	R2.0	14.0	16	35	150	-
★ SEME0116005E	R0.5	16.0	16	32	150	-
★ SEME0116010E	R1.0	16.0	16	32	150	-
★ SEME0116015E	R1.5	16.0	16	32	150	-
★ SEME0116020E	R2.0	16.0	16	32	150	-
SEME0120005E	R0.5	20.0	20	38	150	-
★ SEME0120010E	R1.0	20.0	20	38	150	-
SEME0120015E	R1.5	20.0	20	38	150	-
★ SEME0120020E	R2.0	20.0	20	38	150	-

▶ ★ Stock Item

Mill Dia. Tolerance (mm)	Corner Radius Tolerance (mm)	Shank Dia. Tolerance
0~−0.03	±0.02	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

4G MILL END MILLS

SEME64 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE MULTIPLE HELIX CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 4 SCHNEIDEN MEHRSPIRAL ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

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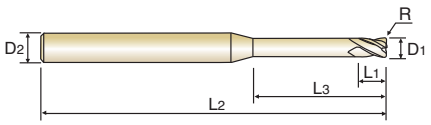

MG HM | 4 | M-Helix | R ±0.02 | PLAIN | P.802, 803

D≥3

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Remark
SEME6401000503E	R0.05	1.0	4	1.5	3	50	-
SEME6401000504E	R0.05	1.0	4	1.5	4	50	-
SEME6401000506E	R0.05	1.0	4	1.5	6	50	-
SEME6401000508E	R0.05	1.0	4	1.5	8	50	-
SEME6401000510E	R0.05	1.0	4	1.5	10	50	-
SEME6401000512E	R0.05	1.0	4	1.5	12	50	-
SEME6401000514E	R0.05	1.0	4	1.5	14	50	-
SEME6401000516E	R0.05	1.0	4	1.5	16	50	-
SEME6401000520E	R0.05	1.0	4	1.5	20	50	-
SEME640100103E	R0.1	1.0	4	1.5	3	50	-
★ SEME640100104E	R0.1	1.0	4	1.5	4	50	-
★ SEME640100106E	R0.1	1.0	4	1.5	6	50	-
★ SEME640100108E	R0.1	1.0	4	1.5	8	50	-
SEME640100110E	R0.1	1.0	4	1.5	10	50	-
SEME640100112E	R0.1	1.0	4	1.5	12	50	-
SEME640100114E	R0.1	1.0	4	1.5	14	50	-
SEME640100116E	R0.1	1.0	4	1.5	16	50	-
SEME640100120E	R0.1	1.0	4	1.5	20	50	-
SEME640100203E	R0.2	1.0	4	1.5	3	50	-
★ SEME640100204E	R0.2	1.0	4	1.5	4	50	-
★ SEME640100206E	R0.2	1.0	4	1.5	6	50	-
★ SEME640100208E	R0.2	1.0	4	1.5	8	50	-
SEME640100210E	R0.2	1.0	4	1.5	10	50	-
SEME640100212E	R0.2	1.0	4	1.5	12	50	-
SEME640100214E	R0.2	1.0	4	1.5	14	50	-
SEME640100216E	R0.2	1.0	4	1.5	16	50	-
SEME640100220E	R0.2	1.0	4	1.5	20	50	-
SEME640100303E	R0.3	1.0	4	1.5	3	50	-
★ SEME640100304E	R0.3	1.0	4	1.5	4	50	-
★ SEME640100306E	R0.3	1.0	4	1.5	6	50	-

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

4G MILL END MILLS

SEME64 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE MULTIPLE HELIX CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 4 SCHNEIDEN MEHRSPIRAL ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

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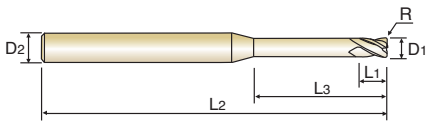

MG HM | 4 | M-Helix | R ±0.02 | PLAIN

D≥3

P.802, 803

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Remark
★ SEME640100308E	R0.3	1.0	4	1.5	8	50	-
SEME640100310E	R0.3	1.0	4	1.5	10	50	-
SEME640100312E	R0.3	1.0	4	1.5	12	50	-
SEME640100314E	R0.3	1.0	4	1.5	14	50	-
SEME640100316E	R0.3	1.0	4	1.5	16	50	-
SEME640100320E	R0.3	1.0	4	1.5	20	50	-
SEME6401200503E	R0.05	1.2	4	1.8	3	50	-
SEME6401200504E	R0.05	1.2	4	1.8	4	50	-
SEME6401200506E	R0.05	1.2	4	1.8	6	50	-
SEME6401200508E	R0.05	1.2	4	1.8	8	50	-
SEME6401200510E	R0.05	1.2	4	1.8	10	50	-
SEME6401200512E	R0.05	1.2	4	1.8	12	50	-
SEME6401200516E	R0.05	1.2	4	1.8	16	50	-
SEME6401200520E	R0.05	1.2	4	1.8	20	50	-
SEME640120103E	R0.1	1.2	4	1.8	3	50	-
★ SEME640120104E	R0.1	1.2	4	1.8	4	50	-
★ SEME640120106E	R0.1	1.2	4	1.8	6	50	-
★ SEME640120108E	R0.1	1.2	4	1.8	8	50	-
SEME640120110E	R0.1	1.2	4	1.8	10	50	-
SEME640120112E	R0.1	1.2	4	1.8	12	50	-
SEME640120116E	R0.1	1.2	4	1.8	16	50	-
SEME640120120E	R0.1	1.2	4	1.8	20	50	-
SEME640120203E	R0.2	1.2	4	1.8	3	50	-
★ SEME640120204E	R0.2	1.2	4	1.8	4	50	-
★ SEME640120206E	R0.2	1.2	4	1.8	6	50	-
★ SEME640120208E	R0.2	1.2	4	1.8	8	50	-
SEME640120210E	R0.2	1.2	4	1.8	10	50	-
SEME640120212E	R0.2	1.2	4	1.8	12	50	-
SEME640120216E	R0.2	1.2	4	1.8	16	50	-
SEME640120220E	R0.2	1.2	4	1.8	20	50	-

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

4G MILL END MILLS

SEME64 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

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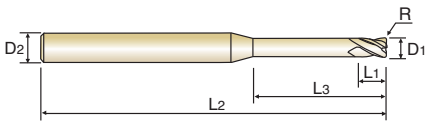


MG HM | 4 | M-Helix | R ±0.02 | PLAIN | P.802, 803

D≥3

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Remark
SEME640120303E	R0.3	1.2	4	1.8	3	50	-
★ SEME640120304E	R0.3	1.2	4	1.8	4	50	-
★ SEME640120306E	R0.3	1.2	4	1.8	6	50	-
★ SEME640120308E	R0.3	1.2	4	1.8	8	50	-
SEME640120310E	R0.3	1.2	4	1.8	10	50	-
SEME640120312E	R0.3	1.2	4	1.8	12	50	-
SEME640120316E	R0.3	1.2	4	1.8	16	50	-
SEME640120320E	R0.3	1.2	4	1.8	20	50	-
SEME6401500504E	R0.05	1.5	4	2.3	4	50	-
SEME6401500506E	R0.05	1.5	4	2.3	6	50	-
SEME6401500508E	R0.05	1.5	4	2.3	8	50	-
SEME6401500510E	R0.05	1.5	4	2.3	10	50	-
SEME6401500512E	R0.05	1.5	4	2.3	12	50	-
SEME6401500514E	R0.05	1.5	4	2.3	14	50	-
SEME6401500516E	R0.05	1.5	4	2.3	16	50	-
SEME6401500520E	R0.05	1.5	4	2.3	20	50	-
SEME6401500522E	R0.05	1.5	4	2.3	22	60	-
SEME6401500526E	R0.05	1.5	4	2.3	26	60	-
SEME640150104E	R0.1	1.5	4	2.3	4	50	-
★ SEME640150106E	R0.1	1.5	4	2.3	6	50	-
★ SEME640150108E	R0.1	1.5	4	2.3	8	50	-
★ SEME640150110E	R0.1	1.5	4	2.3	10	50	-
★ SEME640150112E	R0.1	1.5	4	2.3	12	50	-
SEME640150114E	R0.1	1.5	4	2.3	14	50	-
SEME640150116E	R0.1	1.5	4	2.3	16	50	-
SEME640150120E	R0.1	1.5	4	2.3	20	50	-
SEME640150122E	R0.1	1.5	4	2.3	22	60	-
SEME640150126E	R0.1	1.5	4	2.3	26	60	-
SEME640150204E	R0.2	1.5	4	2.3	4	50	-
★ SEME640150206E	R0.2	1.5	4	2.3	6	50	-

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

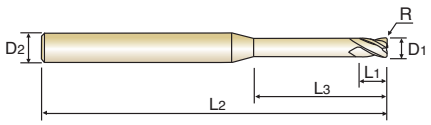
4G MILL END MILLS

SEME64 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE MULTIPLE HELIX CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 4 SCHNEIDEN MEHRSPIRAL ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Aufgrund der Multi-Helix (M-Helix) bei Schaftfräsern ≥ 3,0mm ø werden Vibrationen zuverlässig verhindert und gleichzeitig der Schneidkantenverschleiß verringert.



MG HM | 4 | M-Helix | R ±0.02 | PLAIN | P.802, 803

D≥3

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Remark
★ SEME640150208E	R0.2	1.5	4	2.3	8	50	-
★ SEME640150210E	R0.2	1.5	4	2.3	10	50	-
★ SEME640150212E	R0.2	1.5	4	2.3	12	50	-
SEME640150214E	R0.2	1.5	4	2.3	14	50	-
SEME640150216E	R0.2	1.5	4	2.3	16	50	-
SEME640150220E	R0.2	1.5	4	2.3	20	50	-
SEME640150222E	R0.2	1.5	4	2.3	22	60	-
SEME640150226E	R0.2	1.5	4	2.3	26	60	-
SEME640150304E	R0.3	1.5	4	2.3	4	50	-
★ SEME640150306E	R0.3	1.5	4	2.3	6	50	-
★ SEME640150308E	R0.3	1.5	4	2.3	8	50	-
★ SEME640150310E	R0.3	1.5	4	2.3	10	50	-
★ SEME640150312E	R0.3	1.5	4	2.3	12	50	-
SEME640150314E	R0.3	1.5	4	2.3	14	50	-
SEME640150316E	R0.3	1.5	4	2.3	16	50	-
SEME640150320E	R0.3	1.5	4	2.3	20	50	-
SEME640150322E	R0.3	1.5	4	2.3	22	60	-
SEME640150326E	R0.3	1.5	4	2.3	26	60	-
SEME640150504E	R0.5	1.5	4	2.3	4	50	-
★ SEME640150506E	R0.5	1.5	4	2.3	6	50	-
★ SEME640150508E	R0.5	1.5	4	2.3	8	50	-
★ SEME640150510E	R0.5	1.5	4	2.3	10	50	-
★ SEME640150512E	R0.5	1.5	4	2.3	12	50	-
SEME640150514E	R0.5	1.5	4	2.3	14	50	-
SEME640150516E	R0.5	1.5	4	2.3	16	50	-
SEME640150520E	R0.5	1.5	4	2.3	20	50	-
SEME640150522E	R0.5	1.5	4	2.3	22	60	-
SEME640150526E	R0.5	1.5	4	2.3	26	60	-
★ SEME640200106E	R0.1	2.0	4	3	6	50	-
★ SEME640200108E	R0.1	2.0	4	3	8	50	-

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

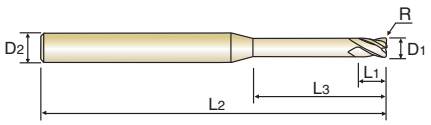
4G MILL END MILLS

SEME64 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE MULTIPLE HELIX CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 4 SCHNEIDEN MEHRSPIRAL ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Aufgrund der Multi-Helix (M-Helix) bei Schaftfräsern ≥ 3,0mm ø werden Vibrationen zuverlässig verhindert und gleichzeitig der Schneidkantenverschleiß verringert.



MG HM | 4 | M-Helix | R ±0.02 | PLAIN | P.802, 803

D≥3

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Remark
★ SEME640200110E	R0.1	2.0	4	3	10	50	-
★ SEME640200112E	R0.1	2.0	4	3	12	50	-
SEME640200114E	R0.1	2.0	4	3	14	50	-
SEME640200116E	R0.1	2.0	4	3	16	50	-
SEME640200120E	R0.1	2.0	4	3	20	50	-
SEME640200122E	R0.1	2.0	4	3	22	60	-
SEME640200126E	R0.1	2.0	4	3	26	60	-
SEME640200130E	R0.1	2.0	4	3	30	70	-
★ SEME640200206E	R0.2	2.0	4	3	6	50	-
★ SEME640200208E	R0.2	2.0	4	3	8	50	-
★ SEME640200210E	R0.2	2.0	4	3	10	50	-
★ SEME640200212E	R0.2	2.0	4	3	12	50	-
SEME640200214E	R0.2	2.0	4	3	14	50	-
SEME640200216E	R0.2	2.0	4	3	16	50	-
SEME640200220E	R0.2	2.0	4	3	20	50	-
SEME640200222E	R0.2	2.0	4	3	22	60	-
SEME640200226E	R0.2	2.0	4	3	26	60	-
SEME640200230E	R0.2	2.0	4	3	30	70	-
★ SEME640200306E	R0.3	2.0	4	3	6	50	-
★ SEME640200308E	R0.3	2.0	4	3	8	50	-
★ SEME640200310E	R0.3	2.0	4	3	10	50	-
★ SEME640200312E	R0.3	2.0	4	3	12	50	-
SEME640200314E	R0.3	2.0	4	3	14	50	-
SEME640200316E	R0.3	2.0	4	3	16	50	-
SEME640200320E	R0.3	2.0	4	3	20	50	-
SEME640200322E	R0.3	2.0	4	3	22	60	-
SEME640200326E	R0.3	2.0	4	3	26	60	-
SEME640200330E	R0.3	2.0	4	3	30	70	-
★ SEME640200506E	R0.5	2.0	4	3	6	50	-
★ SEME640200508E	R0.5	2.0	4	3	8	50	-

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

4G MILL END MILLS

SEME64 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE MULTIPLE HELIX CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 4 SCHNEIDEN MEHRSPIRAL ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

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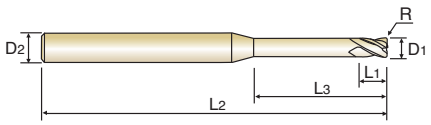
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Aufgrund der Multi-Helix (M-Helix) bei Schaftfräsern ≥ 3,0mm ø werden Vibrationen zuverlässig verhindert und gleichzeitig der Schneidkantenverschleiß verringert.



MG HM | 4 | M-Helix | R ±0.02 | PLAIN | P.802, 803

D≥3

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Remark
★ SEME640200510E	R0.5	2.0	4	3	10	50	-
★ SEME640200512E	R0.5	2.0	4	3	12	50	-
SEME640200514E	R0.5	2.0	4	3	14	50	-
SEME640200516E	R0.5	2.0	4	3	16	50	-
SEME640200520E	R0.5	2.0	4	3	20	50	-
SEME640200522E	R0.5	2.0	4	3	22	60	-
SEME640200526E	R0.5	2.0	4	3	26	60	-
SEME640200530E	R0.5	2.0	4	3	30	70	-
SEME640250108E	R0.1	2.5	4	4	8	50	-
SEME640250110E	R0.1	2.5	4	4	10	50	-
SEME640250112E	R0.1	2.5	4	4	12	50	-
SEME640250114E	R0.1	2.5	4	4	14	50	-
SEME640250116E	R0.1	2.5	4	4	16	50	-
SEME640250120E	R0.1	2.5	4	4	20	50	-
SEME640250126E	R0.1	2.5	4	4	26	60	-
SEME640250130E	R0.1	2.5	4	4	30	70	-
SEME640250208E	R0.2	2.5	4	4	8	50	-
SEME640250210E	R0.2	2.5	4	4	10	50	-
SEME640250212E	R0.2	2.5	4	4	12	50	-
SEME640250214E	R0.2	2.5	4	4	14	50	-
SEME640250216E	R0.2	2.5	4	4	16	50	-
SEME640250220E	R0.2	2.5	4	4	20	50	-
SEME640250226E	R0.2	2.5	4	4	26	60	-
SEME640250230E	R0.2	2.5	4	4	30	70	-
SEME640250308E	R0.3	2.5	4	4	8	50	-
SEME640250310E	R0.3	2.5	4	4	10	50	-
SEME640250312E	R0.3	2.5	4	4	12	50	-
SEME640250314E	R0.3	2.5	4	4	14	50	-
SEME640250316E	R0.3	2.5	4	4	16	50	-
SEME640250320E	R0.3	2.5	4	4	20	50	-

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

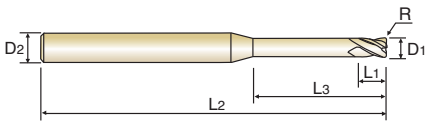
4G MILL END MILLS

SEME64 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE MULTIPLE HELIX CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 4 SCHNEIDEN MEHRSPIRAL ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Aufgrund der Multi-Helix (M-Helix) bei Schaftfräsern ≥ 3,0mm ø werden Vibrationen zuverlässig verhindert und gleichzeitig der Schneidkantenverschleiß verringert.



MG HM | 4 | M-Helix | R ±0.02 | PLAIN | P.802, 803

D≥3

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Remark
SEME640250326E	R0.3	2.5	4	4	26	60	-
SEME640250330E	R0.3	2.5	4	4	30	70	-
SEME640250508E	R0.5	2.5	4	4	8	50	-
SEME640250510E	R0.5	2.5	4	4	10	50	-
SEME640250512E	R0.5	2.5	4	4	12	50	-
SEME640250514E	R0.5	2.5	4	4	14	50	-
SEME640250516E	R0.5	2.5	4	4	16	50	-
SEME640250520E	R0.5	2.5	4	4	20	50	-
SEME640250526E	R0.5	2.5	4	4	26	60	-
SEME640250530E	R0.5	2.5	4	4	30	70	-
★ SEME640300108E	R0.1	3.0	6	4.5	8	50	-
★ SEME640300110E	R0.1	3.0	6	4.5	10	50	-
★ SEME640300112E	R0.1	3.0	6	4.5	12	50	-
SEME640300114E	R0.1	3.0	6	4.5	14	60	-
★ SEME640300116E	R0.1	3.0	6	4.5	16	60	-
SEME640300120E	R0.1	3.0	6	4.5	20	60	-
SEME640300126E	R0.1	3.0	6	4.5	26	65	-
SEME640300130E	R0.1	3.0	6	4.5	30	70	-
SEME640300135E	R0.1	3.0	6	4.5	35	70	-
SEME640300140E	R0.1	3.0	6	4.5	40	80	-
SEME640300208E	R0.2	3.0	6	4.5	8	50	-
★ SEME640300210E	R0.2	3.0	6	4.5	10	50	-
★ SEME640300212E	R0.2	3.0	6	4.5	12	50	-
SEME640300214E	R0.2	3.0	6	4.5	14	60	-
★ SEME640300216E	R0.2	3.0	6	4.5	16	60	-
★ SEME640300220E	R0.2	3.0	6	4.5	20	60	-
SEME640300226E	R0.2	3.0	6	4.5	26	65	-
SEME640300230E	R0.2	3.0	6	4.5	30	70	-
SEME640300235E	R0.2	3.0	6	4.5	35	70	-
SEME640300240E	R0.2	3.0	6	4.5	40	80	-

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

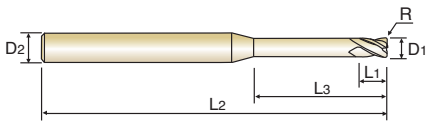
4G MILL END MILLS

SEME64 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE MULTIPLE HELIX CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 4 SCHNEIDEN MEHRSPIRAL ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Aufgrund der Multi-Helix (M-Helix) bei Schaftfräsern ≥ 3,0mm ø werden Vibrationen zuverlässig verhindert und gleichzeitig der Schneidkantenverschleiß verringert.



MG HM | 4 | M-Helix | R ±0.02 | PLAIN | P.802, 803

D≥3

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Remark
★ SEME640300308E	R0.3	3.0	6	4.5	8	50	-
★ SEME640300310E	R0.3	3.0	6	4.5	10	50	-
★ SEME640300312E	R0.3	3.0	6	4.5	12	50	-
SEME640300314E	R0.3	3.0	6	4.5	14	60	-
★ SEME640300316E	R0.3	3.0	6	4.5	16	60	-
★ SEME640300320E	R0.3	3.0	6	4.5	20	60	-
SEME640300326E	R0.3	3.0	6	4.5	26	65	-
SEME640300330E	R0.3	3.0	6	4.5	30	70	-
SEME640300335E	R0.3	3.0	6	4.5	35	70	-
SEME640300340E	R0.3	3.0	6	4.5	40	80	-
★ SEME640300508E	R0.5	3.0	6	4.5	8	50	-
★ SEME640300510E	R0.5	3.0	6	4.5	10	50	-
★ SEME640300512E	R0.5	3.0	6	4.5	12	50	-
SEME640300514E	R0.5	3.0	6	4.5	14	60	-
★ SEME640300516E	R0.5	3.0	6	4.5	16	60	-
★ SEME640300520E	R0.5	3.0	6	4.5	20	60	-
★ SEME640300526E	R0.5	3.0	6	4.5	26	65	-
SEME640300530E	R0.5	3.0	6	4.5	30	70	-
SEME640300535E	R0.5	3.0	6	4.5	35	70	-
SEME640300540E	R0.5	3.0	6	4.5	40	80	-
★ SEME640301008E	R1.0	3.0	6	4.5	8	50	-
★ SEME640301010E	R1.0	3.0	6	4.5	10	50	-
★ SEME640301012E	R1.0	3.0	6	4.5	12	50	-
SEME640301014E	R1.0	3.0	6	4.5	14	60	-
★ SEME640301016E	R1.0	3.0	6	4.5	16	60	-
SEME640301020E	R1.0	3.0	6	4.5	20	60	-
SEME640301026E	R1.0	3.0	6	4.5	26	65	-
SEME640301030E	R1.0	3.0	6	4.5	30	70	-
SEME640301035E	R1.0	3.0	6	4.5	35	70	-
SEME640301040E	R1.0	3.0	6	4.5	40	80	-

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

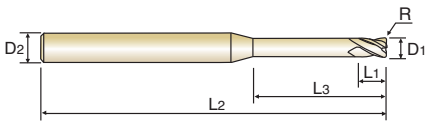
4G MILL END MILLS

SEME64 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE MULTIPLE HELIX CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 4 SCHNEIDEN MEHRSPIRAL ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Aufgrund der Multi-Helix (M-Helix) bei Schaftfräsern ≥ 3,0mm ø werden Vibrationen zuverlässig verhindert und gleichzeitig der Schneidkantenverschleiß verringert.



MG HM | 4 | M-Helix | R ±0.02 | PLAIN | P.802, 803

D≥3

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Remark
★ SEME640400110E	R0.1	4.0	6	6	10	50	-
★ SEME640400112E	R0.1	4.0	6	6	12	50	-
SEME640400114E	R0.1	4.0	6	6	14	60	-
★ SEME640400116E	R0.1	4.0	6	6	16	60	-
★ SEME640400120E	R0.1	4.0	6	6	20	60	-
SEME640400126E	R0.1	4.0	6	6	26	65	-
SEME640400130E	R0.1	4.0	6	6	30	70	-
SEME640400135E	R0.1	4.0	6	6	35	70	-
SEME640400140E	R0.1	4.0	6	6	40	80	-
SEME640400145E	R0.1	4.0	6	6	45	90	-
SEME640400150E	R0.1	4.0	6	6	50	100	-
★ SEME640400210E	R0.2	4.0	6	6	10	50	-
★ SEME640400212E	R0.2	4.0	6	6	12	50	-
SEME640400214E	R0.2	4.0	6	6	14	60	-
★ SEME640400216E	R0.2	4.0	6	6	16	60	-
★ SEME640400220E	R0.2	4.0	6	6	20	60	-
★ SEME640400226E	R0.2	4.0	6	6	26	65	-
SEME640400230E	R0.2	4.0	6	6	30	70	-
SEME640400235E	R0.2	4.0	6	6	35	70	-
SEME640400240E	R0.2	4.0	6	6	40	80	-
SEME640400245E	R0.2	4.0	6	6	45	90	-
SEME640400250E	R0.2	4.0	6	6	50	100	-
★ SEME640400310E	R0.3	4.0	6	6	10	50	-
★ SEME640400312E	R0.3	4.0	6	6	12	50	-
SEME640400314E	R0.3	4.0	6	6	14	60	-
★ SEME640400316E	R0.3	4.0	6	6	16	60	-
★ SEME640400320E	R0.3	4.0	6	6	20	60	-
★ SEME640400326E	R0.3	4.0	6	6	26	65	-
SEME640400330E	R0.3	4.0	6	6	30	70	-
SEME640400335E	R0.3	4.0	6	6	35	70	-

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

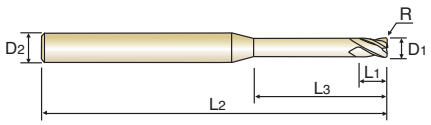
4G MILL END MILLS

SEME64 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE MULTIPLE HELIX CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 4 SCHNEIDEN MEHRSPIRAL ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Aufgrund der Multi-Helix (M-Helix) bei Schaftfräsern ≥ 3,0mm ø werden Vibrationen zuverlässig verhindert und gleichzeitig der Schneidkantenverschleiß verringert.



MG HM | 4 | M-Helix | R ±0.02 | PLAIN | P.802, 803

D≥3

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Remark
SEME640400340E	R0.3	4.0	6	6	40	80	-
SEME640400345E	R0.3	4.0	6	6	45	90	-
SEME640400350E	R0.3	4.0	6	6	50	100	-
★ SEME640400510E	R0.5	4.0	6	6	10	50	-
★ SEME640400512E	R0.5	4.0	6	6	12	50	-
SEME640400514E	R0.5	4.0	6	6	14	60	-
★ SEME640400516E	R0.5	4.0	6	6	16	60	-
★ SEME640400520E	R0.5	4.0	6	6	20	60	-
★ SEME640400526E	R0.5	4.0	6	6	26	65	-
SEME640400530E	R0.5	4.0	6	6	30	70	-
SEME640400535E	R0.5	4.0	6	6	35	70	-
SEME640400540E	R0.5	4.0	6	6	40	80	-
SEME640400545E	R0.5	4.0	6	6	45	90	-
SEME640400550E	R0.5	4.0	6	6	50	100	-
★ SEME640401010E	R1.0	4.0	6	6	10	50	-
★ SEME640401012E	R1.0	4.0	6	6	12	50	-
SEME640401014E	R1.0	4.0	6	6	14	60	-
★ SEME640401016E	R1.0	4.0	6	6	16	60	-
★ SEME640401020E	R1.0	4.0	6	6	20	60	-
★ SEME640401026E	R1.0	4.0	6	6	26	65	-
SEME640401030E	R1.0	4.0	6	6	30	70	-
SEME640401035E	R1.0	4.0	6	6	35	70	-
SEME640401040E	R1.0	4.0	6	6	40	80	-
SEME640401045E	R1.0	4.0	6	6	45	90	-
SEME640401050E	R1.0	4.0	6	6	50	100	-
SEME6405001E	R0.1	5.0	6	8	15	60	-
SEME6405002E	R0.2	5.0	6	8	15	60	-
SEME6405003E	R0.3	5.0	6	8	15	60	-
SEME6405005E	R0.5	5.0	6	8	15	60	-
SEME6405010E	R1.0	5.0	6	8	15	60	-

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

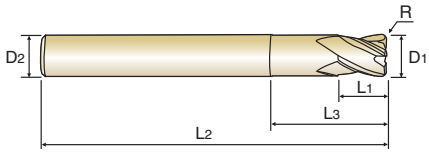
4G MILL END MILLS

SEME64 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE MULTIPLE HELIX CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 4 SCHNEIDEN MEHRSPIRAL ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Aufgrund der Multi-Helix (M-Helix) bei Schaftfräsern ≥ 3,0mm ø werden Vibrationen zuverlässig verhindert und gleichzeitig der Schneidkantenverschleiß verringert.



MG HM | 4 | M-Helix | R ±0.02 | PLAIN

D≥3

P.802, 803

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Remark
SEME6405015E	R1.5	5.0	6	8	15	60	-
SEME6405020E	R2.0	5.0	6	8	15	60	-
SEME6406001E	R0.1	6.0	6	9	20	60	Regular
SEME6406002E	R0.2	6.0	6	9	20	60	Regular
★ SEME6406003E	R0.3	6.0	6	9	20	60	Regular
★ SEME6406005E	R0.5	6.0	6	9	20	60	Regular
★ SEME6406010E	R1.0	6.0	6	9	20	60	Regular
SEME6406015E	R1.5	6.0	6	9	20	60	Regular
SEME6406020E	R2.0	6.0	6	9	20	60	Regular
SEME6406003090E	R0.3	6.0	6	15	30	90	Long Shank
SEME6406005090E	R0.5	6.0	6	15	30	90	Long Shank
SEME6406010090E	R1.0	6.0	6	15	30	90	Long Shank
SEME6408001E	R0.1	8.0	8	12	25	70	Regular
★ SEME6408002E	R0.2	8.0	8	12	25	70	Regular
★ SEME6408003E	R0.3	8.0	8	12	25	70	Regular
★ SEME6408005E	R0.5	8.0	8	12	25	70	Regular
★ SEME6408010E	R1.0	8.0	8	12	25	70	Regular
SEME6408015E	R1.5	8.0	8	12	25	70	Regular
SEME6408020E	R2.0	8.0	8	12	25	70	Regular
SEME6408003100E	R0.3	8.0	8	20	35	100	Long Shank
★ SEME6408005100E	R0.5	8.0	8	20	35	100	Long Shank
SEME6408010100E	R1.0	8.0	8	20	35	100	Long Shank
SEME6410001E	R0.1	10.0	10	15	30	75	Regular
SEME6410002E	R0.2	10.0	10	15	30	75	Regular
SEME6410003E	R0.3	10.0	10	15	30	75	Regular
★ SEME6410005E	R0.5	10.0	10	15	30	75	Regular
★ SEME6410010E	R1.0	10.0	10	15	30	75	Regular
★ SEME6410015E	R1.5	10.0	10	15	30	75	Regular
SEME6410020E	R2.0	10.0	10	15	30	75	Regular
SEME6410003100E	R0.3	10.0	10	25	40	100	Long Shank

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

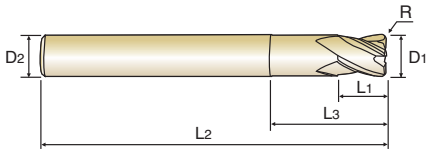
4G MILL END MILLS

SEME64 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE MULTIPLE HELIX CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 4 SCHNEIDEN MEHRSPIRAL ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Aufgrund der Multi-Helix (M-Helix) bei Schaftfräsern ≥ 3,0mm ø werden Vibrationen zuverlässig verhindert und gleichzeitig der Schneidkantenverschleiß verringert.



MG HM | 4 | M-Helix | R ±0.02 | PLAIN | P.802, 803

D≥3

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Remark
★ SEME6410005100E	R0.5	**10.0**	10	25	40	100	Long Shank
SEME6410010100E	R1.0	**10.0**	10	25	40	100	Long Shank
SEME6412002E	R0.2	**12.0**	12	18	32	80	Regular
SEME6412003E	R0.3	**12.0**	12	18	32	80	Regular
★ SEME6412005E	R0.5	**12.0**	12	18	32	80	Regular
★ SEME6412010E	R1.0	**12.0**	12	18	32	80	Regular
★ SEME6412015E	R1.5	**12.0**	12	18	32	80	Regular
★ SEME6412020E	R2.0	**12.0**	12	18	32	80	Regular
SEME6412003110E	R0.3	**12.0**	12	30	45	110	Long Shank
★ SEME6412005110E	R0.5	**12.0**	12	30	45	110	Long Shank
SEME6412010110E	R1.0	**12.0**	12	30	45	110	Long Shank
★ SEME6416005E	R0.5	**16.0**	16	20	35	100	Regular
★ SEME6416010E	R1.0	**16.0**	16	20	35	100	Regular
SEME6416005150E	R0.5	**16.0**	20	35	50	150	Long Shank
SEME6416010150E	R1.0	**16.0**	20	35	50	150	Long Shank
★ SEME6420005E	R0.5	**20.0**	20	25	40	100	Regular
★ SEME6420010E	R1.0	**20.0**	20	25	40	100	Regular
SEME6420005150E	R0.5	**20.0**	20	40	55	150	Long Shank
SEME6420010150E	R1.0	**20.0**	20	40	55	150	Long Shank

▶ ★ Stock Item

Mill Dia. Tolerance (mm)	Corner Radius Tolerance (mm)	Shank Dia. Tolerance
0~−0.03	±0.02	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

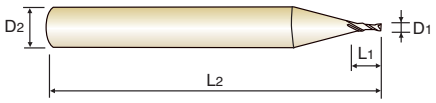
4G MILL END MILLS

SEME35 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE
VOLLHARTMETALL, 2 SCHNEIDEN

- Due to new coating and new tool geometry, outstanding cutting ability and wear resitance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Due to sharp edge geometry at end tooth, cutting ability at working is increased.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Aufgrund der scharfen Schneidengeometrie wird eine bessere Schnittfreudigkeit während der Bearbeitung gewährleistet.



MG HM | 2 | 30° | PLAIN

P.804

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME350003E	0.03	4	0.04	40
SEME350004E	0.04	4	0.06	40
SEME350005E	0.05	4	0.07	40
SEME350006E	0.06	4	0.09	40
SEME350007E	0.07	4	0.1	40
SEME35 0008E	0.08	4	0.12	40
SEME350009E	0.09	4	0.13	40
★ SEME35001E	0.1	4	0.2	40
SEME350015E	0.15	4	0.3	40
★ SEME35002E	0.2	4	0.4	40
SEME350025E	0.25	4	0.5	40
★ SEME35003E	0.3	4	0.6	40
SEME350035E	0.35	4	0.7	40
★ SEME35004E	0.4	4	0.8	40
SEME350045E	0.45	4	0.9	40
★ SEME35005E	0.5	4	1.0	40
SEME350055E	0.55	4	1.1	40
★ SEME35006E	0.6	4	1.2	40
SEME350065E	0.65	4	1.3	40
★ SEME35007E	0.7	4	1.4	40
SEME350075E	0.75	4	1.5	40
★ SEME35008E	0.8	4	1.6	40
SEME350085E	0.85	4	1.7	40
★ SEME35009E	0.9	4	1.8	40
SEME350095E	0.95	4	2	40
★ SEME35010E	1.0	6	2.5	50
★ SEME35012E	1.2	6	3	50

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○		○				

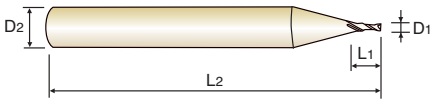
4G MILL END MILLS

SEME35 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE
VOLLHARTMETALL, 2 SCHNEIDEN

- Due to new coating and new tool geometry, outstanding cutting ability and wear resitance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Due to sharp edge geometry at end tooth, cutting ability at working is increased.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Aufgrund der scharfen Schneidengeometrie wird eine bessere Schnittfreudigkeit während der Bearbeitung gewährleistet.



MG HM | 2 | 30° | PLAIN

P.804

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
★ SEME35015E	1.5	6	4	50
★ SEME35020E	2.0	6	6	50
★ SEME35025E	2.5	6	7	50
★ SEME35030E	3.0	6	8	50
★ SEME35035E	3.5	6	10	50
★ SEME35040E	4.0	6	10	50
★ SEME35045E	4.5	6	14	50
★ SEME35050E	5.0	6	15	60
SEME35055E	5.5	6	15	60
★ SEME35060E	6.0	6	15	60
★ SEME35065E	6.5	8	18	60
★ SEME35070E	7.0	8	20	60
SEME35075E	7.5	8	20	60
★ SEME35080E	8.0	8	20	70
★ SEME35085E	8.5	10	22	70
★ SEME35090E	9.0	10	22	70
★ SEME35095E	9.5	10	24	70
★ SEME35100E	10.0	10	25	75
★ SEME35105E	10.5	12	26	75
★ SEME35110E	11.0	12	30	75
SEME35115E	11.5	12	30	80
★ SEME35120E	12.0	12	30	80
★ SEME35130E	13.0	12	35	100
SEME3514012SE	14.0	12	35	100
★ SEME3514014SE	14.0	14	35	100
★ SEME35140E	14.0	16	35	100
★ SEME35150E	15.0	16	38	100

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○		○				

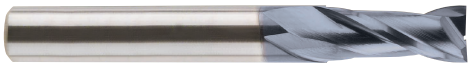
4G MILL END MILLS

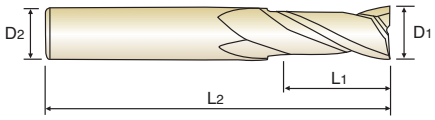
SEME35 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE
VOLLHARTMETALL, 2 SCHNEIDEN

- Due to new coating and new tool geometry, outstanding cutting ability and wear resitance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Due to sharp edge geometry at end tooth, cutting ability at working is increased.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Aufgrund der scharfen Schneidengeometrie wird eine bessere Schnittfreudigkeit während der Bearbeitung gewährleistet.





MG HM | 2 | 30° | PLAIN P.804

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
★ SEME35160E	16.0	16	40	100
SEME35170E	17.0	16	42	100
★ SEME35180E	18.0	16	45	100
SEME3518018SE	18.0	18	45	100
SEME35190E	19.0	20	45	100
★ SEME35200E	20.0	20	45	100
SEME35210E	21.0	20	45	100
SEME35220E	22.0	20	45	100
SEME35230E	23.0	25	50	120
SEME35240E	24.0	25	50	120
SEME35250E	25.0	25	50	120

▶ ★ Stock Item

Size	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	0~−0.012	h6
over Ø6	0~−0.015	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○		○				

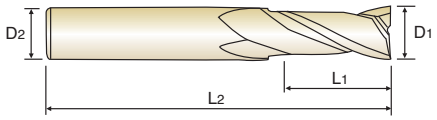
4G MILL END MILLS

SEME35 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE (0.1mm a Unit / 4mm Shank)
VOLLHARTMETALL, 2 SCHNEIDEN

- Due to new coating and new tool geometry, outstanding cutting ability and wear resitance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Due to sharp edge geometry at end tooth, cutting ability at working is increased.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Aufgrund der scharfen Schneidengeometrie wird eine bessere Schnittfreudigkeit während der Bearbeitung gewährleistet.



MG HM | 2 | 30° | PLAIN P.804

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
★ SEME350104SE	1.0	4	2.5	50
SEME350114SE	1.1	4	3	50
★ SEME350124SE	1.2	4	3	50
★ SEME350134SE	1.3	4	3	50
★ SEME350144SE	1.4	4	4	50
★ SEME350154SE	1.5	4	4	50
★ SEME350164SE	1.6	4	4	50
SEME350174SE	1.7	4	4	50
★ SEME350184SE	1.8	4	5	50
SEME350194SE	1.9	4	5	50
★ SEME350204SE	2.0	4	6	50
SEME350214SE	2.1	4	6	50
★ SEME350224SE	2.2	4	6	50
SEME350234SE	2.3	4	6	50
★ SEME350244SE	2.4	4	6	50
★ SEME350254SE	2.5	4	8	50
★ SEME350264SE	2.6	4	8	50
★ SEME350274SE	2.7	4	8	50
★ SEME350284SE	2.8	4	8	50
SEME350294SE	2.9	4	8	50
★ SEME350304SE	3.0	4	8	50
SEME350354SE	3.5	4	10	50
SEME350404SE	4.0	4	10	50
SEME350404S080E	4.0	4	10	80

▶ ★ Stock Item

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.012	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○		○				

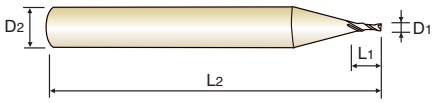
4G MILL END MILLS

SEME35 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE (3mm Shank)
VOLLHARTMETALL, 2 SCHNEIDEN

- Due to new coating and new tool geometry, outstanding cutting ability and wear resitance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Due to sharp edge geometry at end tooth, cutting ability at working is increased.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Aufgrund der scharfen Schneidengeometrie wird eine bessere Schnittfreudigkeit während der Bearbeitung gewährleistet.



MG HM | 2 | 30° | PLAIN

P.804

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
★ SEME350013SE	0.1	3	0.2	40
★ SEME350023SE	0.2	3	0.4	40
★ SEME350033SE	0.3	3	0.6	40
★ SEME350043SE	0.4	3	0.8	40
★ SEME350053SE	0.5	3	1.0	40
★ SEME350063SE	0.6	3	1.2	40
★ SEME350073SE	0.7	3	1.4	40
★ SEME350083SE	0.8	3	1.6	40
★ SEME350093SE	0.9	3	1.8	40
★ SEME350103SE	1.0	3	2.5	50
★ SEME350123SE	1.2	3	3	50
★ SEME350153SE	1.5	3	4	50
★ SEME350203SE	2.0	3	6	50
★ SEME350253SE	2.5	3	7	50
★ SEME350303SE	3.0	3	8	50

▶ ★ Stock Item

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.012	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○		○				

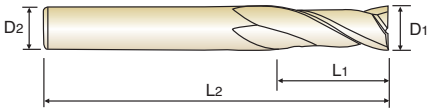
4G MILL END MILLS

SEME70 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE LONG LENGTH
VOLLHARTMETALL, 2 SCHNEIDEN LANG

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Available various length of cut and overall length end mills.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Erhältlich in verschiebenen Schneiden- und Gesamtlängen.



MG HM | 2 | 30° | PLAIN

P.805, 806

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
★ SEME7001003E	1.0	6	3	60
★ SEME7001004E	1.0	6	4	60
SEME7001005E	1.0	6	5	60
★ SEME7001006E	1.0	6	6	60
SEME7001007E	1.0	6	7	60
★ SEME7001008E	1.0	6	8	60
★ SEME7001010E	1.0	6	10	60
SEME7001012E	1.0	6	12	60
SEME7001204E	1.2	6	4	60
SEME7001206E	1.2	6	6	60
SEME7001208E	1.2	6	8	60
SEME7001210E	1.2	6	10	60
SEME7001212E	1.2	6	12	60
★ SEME7001506E	1.5	6	6	60
★ SEME7001508E	1.5	6	8	60
★ SEME7001510E	1.5	6	10	60
★ SEME7001512E	1.5	6	12	60
SEME7001514E	1.5	6	14	60
★ SEME7001516E	1.5	6	16	60
★ SEME7002008E	2.0	6	8	60
★ SEME7002010E	2.0	6	10	60
★ SEME7002012E	2.0	6	12	60
SEME7002014E	2.0	6	14	60
★ SEME7002016E	2.0	6	16	60
SEME7002510E	2.5	6	10	60
SEME7002512E	2.5	6	12	60
★ SEME7002516E	2.5	6	16	60
SEME7002520E	2.5	6	20	60

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

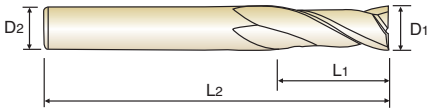
4G MILL END MILLS

SEME70 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE LONG LENGTH
VOLLHARTMETALL, 2 SCHNEIDEN LANG

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Available various length of cut and overall length end mills.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Erhältlich in verschiebenen Schneiden- und Gesamtlängen.



MG HM | 2 | 30° | PLAIN

P.805, 806

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME7002526E	2.5	6	26	60
SEME70030163SE	3.0	3	16	100
★ SEME7003010E	3.0	6	10	70
★ SEME7003012E	3.0	6	12	70
SEME7003014E	3.0	6	14	70
★ SEME7003016E	3.0	6	16	70
★ SEME7003020E	3.0	6	20	70
★ SEME7003026E	3.0	6	26	70
SEME7003030E	3.0	6	30	70
SEME70040204SE	4.0	4	20	100
★ SEME7004012E	4.0	6	12	70
★ SEME7004016E	4.0	6	16	70
★ SEME7004020E	4.0	6	20	70
★ SEME7004026E	4.0	6	26	70
★ SEME7004030E	4.0	6	30	70
★ SEME7005020E	5.0	6	20	70
★ SEME7005025E	5.0	6	25	70
SEME7005025100E	5.0	6	25	100
★ SEME7005030E	5.0	6	30	80
SEME7005035E	5.0	6	35	90
★ SEME7005040E	5.0	6	40	100
★ SEME7006015E	6.0	6	15	60
★ SEME7006015080E	6.0	6	15	80
★ SEME7006020E	6.0	6	20	70
★ SEME7006020090E	6.0	6	20	90
★ SEME7006025E	6.0	6	25	75
★ SEME7006030E	6.0	6	30	80
★ SEME7006030100E	6.0	6	30	100

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

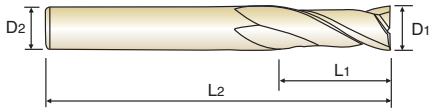
4G MILL END MILLS

SEME70 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE LONG LENGTH
VOLLHARTMETALL, 2 SCHNEIDEN LANG

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Available various length of cut and overall length end mills.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Erhältlich in verschiebenen Schneiden- und Gesamtlängen.



MG HM | 2 | 30° | PLAIN

P.805, 806

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
★ SEME7006030150E	6.0	6	30	150
★ SEME7006035E	6.0	6	35	90
★ SEME7006040E	6.0	6	40	90
SEME7006040120E	6.0	6	40	120
★ SEME7006045E	6.0	6	45	150
★ SEME7008025E	8.0	8	25	80
★ SEME7008030E	8.0	8	30	80
SEME7008030100E	8.0	8	30	100
★ SEME7008035E	8.0	8	35	90
★ SEME7008040E	8.0	8	40	90
★ SEME7008040120E	8.0	8	40	120
SEME7008040150E	8.0	8	40	150
★ SEME7008045E	8.0	8	45	100
★ SEME7008050E	8.0	8	50	100
SEME7008050150E	8.0	8	50	150
★ SEME7010030E	10.0	10	30	80
★ SEME7010030100E	10.0	10	30	100
★ SEME7010035E	10.0	10	35	90
★ SEME7010040E	10.0	10	40	90
★ SEME7010040120E	10.0	10	40	120
★ SEME7010045E	10.0	10	45	100
★ SEME7010050E	10.0	10	50	100
SEME7010050150E	10.0	10	50	150
SEME7010050200E	10.0	10	50	200
SEME7010055E	10.0	10	55	150
★ SEME7010060E	10.0	10	60	110
SEME7010060200E	10.0	10	60	200
★ SEME7012035E	12.0	12	35	90

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

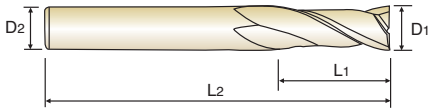
4G MILL END MILLS

SEME70 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE LONG LENGTH
VOLLHARTMETALL, 2 SCHNEIDEN LANG

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Available various length of cut and overall length end mills.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Erhältlich in verschiebenen Schneiden- und Gesamtlängen.



MG HM | 2 | 30° | PLAIN

P.805, 806

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
★ SEME7012040E	12.0	12	40	100
★ SEME7012040120E	12.0	12	40	120
★ SEME7012045E	12.0	12	45	130
★ SEME7012050E	12.0	12	50	100
SEME7012050150E	12.0	12	50	150
★ SEME7012055E	12.0	12	55	110
★ SEME7012060E	12.0	12	60	110
★ SEME7012060150E	12.0	12	60	150
SEME7012060200E	12.0	12	60	200
SEME7012065E	12.0	12	65	150
SEME7012070E	12.0	12	70	120
SEME7012070200E	12.0	12	70	200
SEME7014050E	14.0	16	50	110
SEME7014060E	14.0	16	60	150
★ SEME7016040E	16.0	16	40	150
SEME7016050E	16.0	16	50	110
SEME7016050150E	16.0	16	50	150
SEME7016060E	16.0	16	60	120
SEME7016070E	16.0	16	70	130
SEME7016070150E	16.0	16	70	150
SEME7016070200E	16.0	16	70	200
SEME7016080E	16.0	16	80	150
SEME7016090E	16.0	16	90	150
SEME70160110E	16.0	16	110	200
SEME70160120E	16.0	16	120	250
SEME7018050E	18.0	20	50	120
SEME7018070E	18.0	20	70	130
SEME70180100E	18.0	20	100	200

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

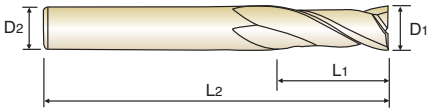
4G MILL END MILLS

SEME70 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE LONG LENGTH
VOLLHARTMETALL, 2 SCHNEIDEN LANG

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Available various length of cut and overall length end mills.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Erhältlich in verschiebenen Schneiden- und Gesamtlängen.



MG HM | 2 | 30° | PLAIN

P.805, 806

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME7020050E	20.0	20	50	110
SEME7020050150E	20.0	20	50	150
SEME7020060E	20.0	20	60	130
SEME7020070E	20.0	20	70	130
SEME7020080E	20.0	20	80	150
SEME7020090E	20.0	20	90	150
★ SEME7020090200E	20.0	20	90	200
★ SEME70200110E	20.0	20	110	200
SEME70200120E	20.0	20	120	250
SEME7022075E	22.0	20	75	150
SEME70220110E	22.0	20	110	200
SEME7025070E	25.0	25	70	150
SEME7025090E	25.0	25	90	150
SEME70250110E	25.0	25	110	200
SEME70250120E	25.0	25	120	250

▶ ★ Stock Item

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

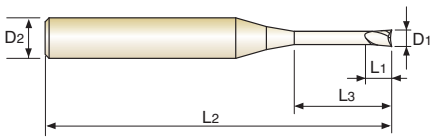
4G MILL END MILLS

SEM845 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- For 1.0mm and under 1.0mm diameter sizes, designed double neck for increasing tool rigidity and minimizing vibration at working.
- Available various rib processing due to supplying various effective length and overall length products.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Ausgezeichnet geeignet für das Fräsen von vorvergütetem Stahl, kohlenstoff Stahl, legiertem Stahl für Formen, bis HRc55 und Maschinenbauteile.
- Bei Fräsern mit einem ø ≤ 1,0mm gewährleistet die "Doppel-Hals-Geometrie" eine erhöhte Werkzeugsteifigkeit und minimiert Vibrationen während der Bearbeitung.
- Die Auswahl an verschiedenen Effektiv- und Gesamt-Längen der Werkzeuge ermöglicht die Herstellung der verschiedensten Steg- und Rippen-Variationen.



MG HM | 2 | 30° | PLAIN

P.807, 808, 809, 810

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SEM845001003E	0.1	4	0.15	0.3	40
SEM845001005E	0.1	4	0.15	0.5	40
SEM84500101E	0.1	4	0.15	1	40
SEM845002005E	0.2	4	0.3	0.5	40
★ SEM84500201E	0.2	4	0.3	1	40
SEM845002015E	0.2	4	0.3	1.5	40
SEM84500202E	0.2	4	0.3	2	40
SEM84500301E	0.3	4	0.5	1	40
SEM845003015E	0.3	4	0.5	1.5	40
SEM84500302E	0.3	4	0.5	2	40
SEM845003025E	0.3	4	0.5	2.5	40
SEM84500303E	0.3	4	0.5	3	40
SEM84500304E	0.3	4	0.5	4	40
SEM84500305E	0.3	4	0.5	5	40
★ SEM84500401E	0.4	4	0.6	1	40
SEM845004015E	0.4	4	0.6	1.5	40
★ SEM84500402E	0.4	4	0.6	2	40
SEM845004025E	0.4	4	0.6	2.5	40
★ SEM84500403E	0.4	4	0.6	3	40
★ SEM84500404E	0.4	4	0.6	4	40
★ SEM84500405E	0.4	4	0.6	5	40
SEM84500406E	0.4	4	0.6	6	40
SEM84500408E	0.4	4	0.6	8	40
SEM84500410E	0.4	4	0.6	10	40
SEM84500501E	0.5	4	0.7	1	45
SEM845005015E	0.5	4	0.7	1.5	45
★ SEM84500502E	0.5	4	0.7	2	45
SEM845005025E	0.5	4	0.7	2.5	45
★ SEM84500503E	0.5	4	0.7	3	45
★ SEM84500504E	0.5	4	0.7	4	45
★ SEM84500505E	0.5	4	0.7	5	45

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○		○				

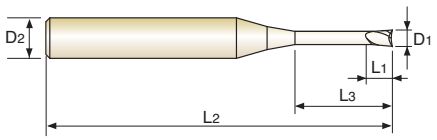
4G MILL END MILLS

SEM845 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- For 1.0mm and under 1.0mm diameter sizes, designed double neck for increasing tool rigidity and minimizing vibration at working.
- Available various rib processing due to supplying various effective length and overall length products.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Ausgezeichnet geeignet für das Fräsen von vorvergütetem Stahl, kohlenstoff Stahl, legiertem Stahl für Formen, bis HRc55 und Maschinenbauteile.
- Bei Fräsern mit einem ø ≤ 1,0mm gewährleistet die "Doppel-Hals-Geometrie" eine erhöhte Werkzeugsteifigkeit und minimiert Vibrationen während der Bearbeitung.
- Die Auswahl an verschiedenen Effektiv- und Gesamt-Längen der Werkzeuge ermöglicht die Herstellung der verschiedensten Steg- und Rippen-Variationen.



MG HM | 2 | 30° | PLAIN

P.807, 808, 809, 810

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
★ SEM84500506E	0.5	4	0.7	6	45
SEM84500508E	0.5	4	0.7	8	45
SEM84500510E	0.5	4	0.7	10	45
SEM84500512E	0.5	4	0.7	12	45
SEM84500514E	0.5	4	0.7	14	45
SEM84500516E	0.5	4	0.7	16	45
★ SEM84500602E	0.6	4	0.9	2	45
★ SEM84500603E	0.6	4	0.9	3	45
★ SEM84500604E	0.6	4	0.9	4	45
★ SEM84500605E	0.6	4	0.9	5	45
★ SEM84500606E	0.6	4	0.9	6	45
★ SEM84500608E	0.6	4	0.9	8	45
★ SEM84500610E	0.6	4	0.9	10	45
SEM84500612E	0.6	4	0.9	12	45
SEM84500614E	0.6	4	0.9	14	45
SEM84500616E	0.6	4	0.9	16	45
SEM84500702E	0.7	4	1.2	2	45
SEM84500704E	0.7	4	1.2	4	45
SEM84500706E	0.7	4	1.2	6	45
SEM84500708E	0.7	4	1.2	8	45
SEM84500710E	0.7	4	1.2	10	45
SEM84500712E	0.7	4	1.2	12	45
★ SEM84500802E	0.8	4	1.2	2	45
★ SEM84500803E	0.8	4	1.2	3	45
★ SEM84500804E	0.8	4	1.2	4	45
★ SEM84500805E	0.8	4	1.2	5	45
★ SEM84500806E	0.8	4	1.2	6	45
★ SEM84500808E	0.8	4	1.2	8	45
★ SEM84500810E	0.8	4	1.2	10	45
SEM84500812E	0.8	4	1.2	12	45
SEM84500814E	0.8	4	1.2	14	45

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○		○				

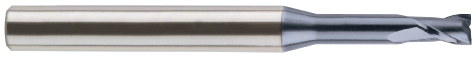
4G MILL END MILLS

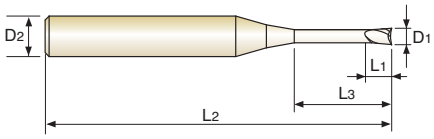
SEM845 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- For 1.0mm and under 1.0mm diameter sizes, designed double neck for increasing tool rigidity and minimizing vibration at working.
- Available various rib processing due to supplying various effective length and overall length products.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Ausgezeichnet geeignet für das Fräsen von vorvergütetem Stahl, kohlenstoff Stahl, legiertem Stahl für Formen, bis HRc55 und Maschinenbauteile.
- Bei Fräsern mit einem ø ≤ 1,0mm gewährleistet die "Doppel-Hals-Geometrie" eine erhöhte Werkzeugsteifigkeit und minimiert Vibrationen während der Bearbeitung.
- Die Auswahl an verschiedenen Effektiv- und Gesamt-Längen der Werkzeuge ermöglicht die Herstellung der verschiedensten Steg- und Rippen-Variationen.





MG HM | 2 | 30° | PLAIN

P.807, 808, 809, 810

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SEM84500816E	0.8	4	1.2	16	45
SEM84500820E	0.8	4	1.2	20	45
SEM84500906E	0.9	4	1.3	6	45
SEM84500908E	0.9	4	1.3	8	45
SEM84500910E	0.9	4	1.3	10	45
SEM84501002E	1.0	4	1.5	2	50
★ SEM84501003E	1.0	4	1.5	3	50
★ SEM84501004E	1.0	4	1.5	4	50
★ SEM84501005E	1.0	4	1.5	5	50
★ SEM84501006E	1.0	4	1.5	6	50
SEM84501007E	1.0	4	1.5	7	50
★ SEM84501008E	1.0	4	1.5	8	50
★ SEM84501010E	1.0	4	1.5	10	50
★ SEM84501012E	1.0	4	1.5	12	50
★ SEM84501014E	1.0	4	1.5	14	50
★ SEM84501016E	1.0	4	1.5	16	50
SEM84501018E	1.0	4	1.5	18	50
★ SEM84501020E	1.0	4	1.5	20	50
SEM84501022E	1.0	4	1.5	22	60
SEM84501026E	1.0	4	1.5	26	60
SEM84501030E	1.0	4	1.5	30	70
SEM84501040E	1.0	4	1.5	40	80
SEM84501050E	1.0	4	1.5	50	100
SEM84501204E	1.2	4	1.8	4	50
★ SEM84501206E	1.2	4	1.8	6	50
★ SEM84501208E	1.2	4	1.8	8	50
★ SEM84501210E	1.2	4	1.8	10	50
SEM84501212E	1.2	4	1.8	12	50
SEM84501214E	1.2	4	1.8	14	50
SEM84501216E	1.2	4	1.8	16	50
SEM84501220E	1.2	4	1.8	20	50

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○		○				

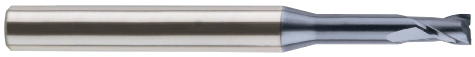
4G MILL END MILLS

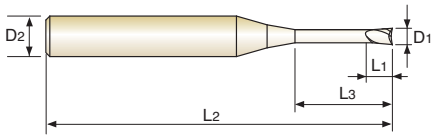
SEM845 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- For 1.0mm and under 1.0mm diameter sizes, designed double neck for increasing tool rigidity and minimizing vibration at working.
- Available various rib processing due to supplying various effective length and overall length products.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Ausgezeichnet geeignet für das Fräsen von vorvergütetem Stahl, kohlenstoff Stahl, legiertem Stahl für Formen, bis HRc55 und Maschinenbauteile.
- Bei Fräsern mit einem ø ≤ 1,0mm gewährleistet die "Doppel-Hals-Geometrie" eine erhöhte Werkzeugsteifigkeit und minimiert Vibrationen während der Bearbeitung.
- Die Auswahl an verschiedenen Effektiv- und Gesamt-Längen der Werkzeuge ermöglicht die Herstellung der verschiedensten Steg- und Rippen-Variationen.





MG HM | 2 | 30° | PLAIN

P.807, 808, 809, 810

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SEM84501226E	1.2	4	1.8	26	60
SEM84501230E	1.2	4	1.8	30	70
★ SEM84501406E	1.4	4	2.1	6	50
★ SEM84501408E	1.4	4	2.1	8	50
SEM84501410E	1.4	4	2.1	10	50
SEM84501414E	1.4	4	2.1	14	50
SEM84501416E	1.4	4	2.1	16	50
SEM84501420E	1.4	4	2.1	20	50
★ SEM84501504E	1.5	4	2.3	4	50
SEM84501505E	1.5	4	2.3	5	50
★ SEM84501506E	1.5	4	2.3	6	50
SEM84501507E	1.5	4	2.3	7	50
★ SEM84501508E	1.5	4	2.3	8	50
★ SEM84501510E	1.5	4	2.3	10	50
★ SEM84501512E	1.5	4	2.3	12	50
★ SEM84501514E	1.5	4	2.3	14	50
★ SEM84501516E	1.5	4	2.3	16	50
SEM84501518E	1.5	4	2.3	18	50
★ SEM84501520E	1.5	4	2.3	20	50
SEM84501522E	1.5	4	2.3	22	60
SEM84501526E	1.5	4	2.3	26	60
SEM84501530E	1.5	4	2.3	30	70
SEM84501608E	1.6	4	2.3	8	50
SEM84501610E	1.6	4	2.3	10	50
SEM84501612E	1.6	4	2.3	12	50
SEM84501616E	1.6	4	2.3	16	50
SEM84501620E	1.6	4	2.3	20	50
★ SEM84501808E	1.8	4	2.7	8	50
★ SEM84501810E	1.8	4	2.7	10	50
★ SEM84501812E	1.8	4	2.7	12	50
SEM84501816E	1.8	4	2.7	16	50

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○		○				

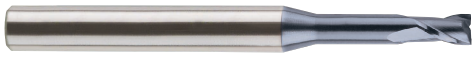
4G MILL END MILLS

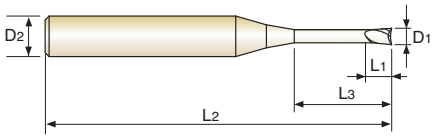
SEM845 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- For 1.0mm and under 1.0mm diameter sizes, designed double neck for increasing tool rigidity and minimizing vibration at working.
- Available various rib processing due to supplying various effective length and overall length products.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Ausgezeichnet geeignet für das Fräsen von vorvergütetem Stahl, kohlenstoff Stahl, legiertem Stahl für Formen, bis HRc55 und Maschinenbauteile.
- Bei Fräsern mit einem ø ≤ 1,0mm gewährleistet die "Doppel-Hals-Geometrie" eine erhöhte Werkzeugsteifigkeit und minimiert Vibrationen während der Bearbeitung.
- Die Auswahl an verschiedenen Effektiv- und Gesamt-Längen der Werkzeuge ermöglicht die Herstellung der verschiedensten Steg- und Rippen-Variationen.





MG HM | 2 | 30° | PLAIN

P.807, 808, 809, 810

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SEM84501820E	1.8	4	2.7	20	50
★ SEM84502006E	2.0	4	3	6	50
★ SEM84502008E	2.0	4	3	8	50
★ SEM84502010E	2.0	4	3	10	50
★ SEM84502012E	2.0	4	3	12	50
★ SEM84502014E	2.0	4	3	14	50
★ SEM84502016E	2.0	4	3	16	50
SEM84502018E	2.0	4	3	18	50
★ SEM84502020E	2.0	4	3	20	50
SEM84502022E	2.0	4	3	22	60
SEM84502026E	2.0	4	3	26	60
SEM84502030E	2.0	4	3	30	70
SEM84502035E	2.0	4	3	35	70
SEM84502040E	2.0	4	3	40	80
SEM84502045E	2.0	4	3	45	90
SEM84502050E	2.0	4	3	50	100
SEM84502060E	2.0	4	3	60	110
★ SEM84502508E	2.5	4	4	8	50
SEM84502510E	2.5	4	4	10	50
★ SEM84502512E	2.5	4	4	12	50
SEM84502514E	2.5	4	4	14	50
★ SEM84502516E	2.5	4	4	16	50
SEM84502518E	2.5	4	4	18	50
★ SEM84502520E	2.5	4	4	20	50
SEM84502522E	2.5	4	4	22	60
SEM84502526E	2.5	4	4	26	60
SEM84502530E	2.5	4	4	30	70
SEM84502535E	2.5	4	4	35	70
SEM84502540E	2.5	4	4	40	80
SEM84502545E	2.5	4	4	45	90
SEM84502550E	2.5	4	4	50	100

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○		○				

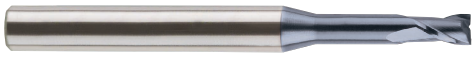
4G MILL END MILLS

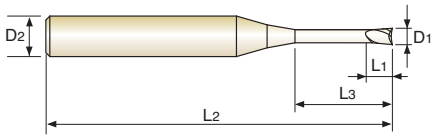
SEM845 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- For 1.0mm and under 1.0mm diameter sizes, designed double neck for increasing tool rigidity and minimizing vibration at working.
- Available various rib processing due to supplying various effective length and overall length products.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Ausgezeichnet geeignet für das Fräsen von vorvergütetem Stahl, kohlenstoff Stahl, legiertem Stahl für Formen, bis HRc55 und Maschinenbauteile.
- Bei Fräsern mit einem ø ≤ 1,0mm gewährleistet die "Doppel-Hals-Geometrie" eine erhöhte Werkzeugsteifigkeit und minimiert Vibrationen während der Bearbeitung.
- Die Auswahl an verschiedenen Effektiv- und Gesamt-Längen der Werkzeuge ermöglicht die Herstellung der verschiedensten Steg- und Rippen-Variationen.





MG HM | 2 | 30° | PLAIN

P.807, 808, 809, 810

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SEM84503006E	3.0	6	4.5	6	50
★ SEM84503008E	3.0	6	4.5	8	50
★ SEM84503010E	3.0	6	4.5	10	50
★ SEM84503012E	3.0	6	4.5	12	50
★ SEM84503014E	3.0	6	4.5	14	60
★ SEM84503016E	3.0	6	4.5	16	60
★ SEM84503018E	3.0	6	4.5	18	60
★ SEM84503020E	3.0	6	4.5	20	60
SEM84503022E	3.0	6	4.5	22	65
★ SEM84503026E	3.0	6	4.5	26	65
SEM84503030E	3.0	6	4.5	30	70
SEM84503035E	3.0	6	4.5	35	70
SEM84503040E	3.0	6	4.5	40	80
SEM84503045E	3.0	6	4.5	45	90
SEM84503050E	3.0	6	4.5	50	100
SEM84503060E	3.0	6	4.5	60	100
SEM84504008E	4.0	6	6	8	50
★ SEM84504010E	4.0	6	6	10	50
★ SEM84504012E	4.0	6	6	12	50
SEM84504014E	4.0	6	6	14	60
★ SEM84504016E	4.0	6	6	16	60
★ SEM84504018E	4.0	6	6	18	60
★ SEM84504020E	4.0	6	6	20	60
SEM84504022E	4.0	6	6	22	65
★ SEM84504026E	4.0	6	6	26	65
★ SEM84504030E	4.0	6	6	30	70
SEM84504035E	4.0	6	6	35	70
SEM84504040E	4.0	6	6	40	80
SEM84504045E	4.0	6	6	45	90
SEM84504050E	4.0	6	6	50	100
SEM84504060E	4.0	6	6	60	100

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○		○				

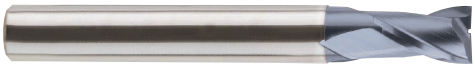
4G MILL END MILLS

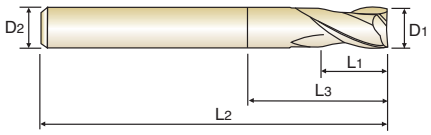
SEM845 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- For 1.0mm and under 1.0mm diameter sizes, designed double neck for increasing tool rigidity and minimizing vibration at working.
- Available various rib processing due to supplying various effective length and overall length products.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Ausgezeichnet geeignet für das Fräsen von vorvergütetem Stahl, kohlenstoff Stahl, legiertem Stahl für Formen, bis HRc55 und Maschinenbauteile.
- Bei Fräsern mit einem ø ≤ 1,0mm gewährleistet die "Doppel-Hals-Geometrie" eine erhöhte Werkzeugsteifigkeit und minimiert Vibrationen während der Bearbeitung.
- Die Auswahl an verschiedenen Effektiv- und Gesamt-Längen der Werkzeuge ermöglicht die Herstellung der verschiedensten Steg- und Rippen-Variationen.





MG HM | 2 | 30° | PLAIN

P.807, 808, 809, 810

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SEM84505016E	5.0	6	8	16	60
★ SEM84505020E	5.0	6	8	20	60
SEM84505026E	5.0	6	8	26	65
★ SEM84505030E	5.0	6	8	30	70
★ SEM84505035E	5.0	6	8	35	75
★ SEM84505040E	5.0	6	8	40	80
★ SEM84505050E	5.0	6	8	50	90
SEM84505060E	5.0	6	8	60	100
★ SEM84506015E	6.0	6	9	15	60
★ SEM84506020E	6.0	6	9	20	60
★ SEM84506030E	6.0	6	9	30	70
SEM84506032E	6.0	6	9	32	90
★ SEM84508025E	8.0	8	12	25	70
SEM84508030E	8.0	8	12	30	80
SEM84508042E	8.0	8	12	42	100
★ SEM84510030E	10.0	10	15	30	75
SEM84510035E	10.0	10	15	35	80
★ SEM84510045E	10.0	10	15	45	100
★ SEM84512035E	12.0	12	20	35	80
SEM84512040E	12.0	12	20	40	90
★ SEM84512050E	12.0	12	20	50	110

▶ ★ Stock Item

Size	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	0~−0.012	h6
over Ø6	0~−0.015	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○		○				

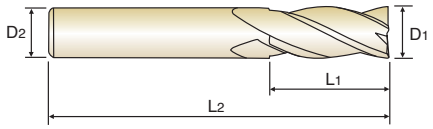
4G MILL END MILLS

SEME36 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE MULTIPLE HELIX
VOLLHARTMETALL, 4 SCHNEIDEN MEHRSPIRAL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Ausgezeichnet geeignet für das Fräsen von vorvergütetem Stahl, kohlenstoff Stahl, legiertem Stahl für Formen, bis HRc55 und Maschinenbauteile.
- Aufgrund der Multi-Helix (M-Helix) bei Schaftfräsern ≥ 3,0mm ø werden Vibrationen zuverlässig verhindert und gleichzeitig der Schneidkantenverschleiß verringert.



MG HM | 4 | M-Helix | PLAIN | P.811

D≥3

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME36008E	0.8	4	1.6	40
SEME36009E	0.9	4	1.8	40
★ SEME36010E	1.0	6	2.5	50
SEME36012E	1.2	6	3	50
★ SEME36015E	1.5	6	4	50
★ SEME36020E	2.0	6	6	50
★ SEME36025E	2.5	6	7	50
★ SEME36030E	3.0	6	8	50
★ SEME36035E	3.5	6	10	50
★ SEME36040E	4.0	6	10	50
★ SEME36045E	4.5	6	14	50
★ SEME36050E	5.0	6	15	60
★ SEME36055E	5.5	6	15	60
★ SEME36060E	6.0	6	15	60
★ SEME36065E	6.5	8	18	60
★ SEME36070E	7.0	8	20	60
★ SEME36075E	7.5	8	20	60
★ SEME36080E	8.0	8	20	70
★ SEME36085E	8.5	10	22	70
★ SEME36090E	9.0	10	22	70
★ SEME36095E	9.5	10	24	70
★ SEME36100E	10.0	10	25	75
SEME36105E	10.5	12	26	75
★ SEME36110E	11.0	12	30	75

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○		○				

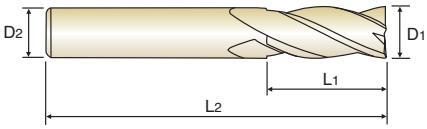
4G MILL END MILLS

SEME36 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE MULTIPLE HELIX
VOLLHARTMETALL, 4 SCHNEIDEN MEHRSPIRAL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Ausgezeichnet geeignet für das Fräsen von vorvergütetem Stahl, kohlenstoff Stahl, legiertem Stahl für Formen, bis HRc55 und Maschinenbauteile.
- Aufgrund der Multi-Helix (M-Helix) bei Schaftfräsern ≥ 3,0mm ø werden Vibrationen zuverlässig verhindert und gleichzeitig der Schneidkantenverschleiß verringert.



MG HM | 4 | M-Helix | PLAIN | D≥3

P.811

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME36115E	11.5	12	30	80
★ SEME36120E	12.0	12	30	80
SEME36130E	13.0	12	35	100
SEME3614012SE	14.0	12	35	100
★ SEME3614014SE	14.0	14	35	100
★ SEME36140E	14.0	16	35	100
SEME36150E	15.0	16	38	100
★ SEME36160E	16.0	16	40	100
SEME36170E	17.0	16	42	100
★ SEME36180E	18.0	16	45	100
★ SEME3618018SE	18.0	18	45	100
SEME36190E	19.0	20	45	100
★ SEME36200E	20.0	20	45	100
SEME36210E	21.0	20	45	100
SEME36220E	22.0	20	45	100
SEME36230E	23.0	25	50	120
SEME36240E	24.0	25	50	120
SEME36250E	25.0	25	50	120

▶ ★ Stock Item

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○		○				

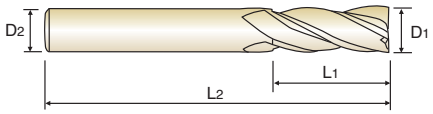
4G MILL END MILLS

SEME71 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE MULTIPLE HELIX (Sharp corner removal)
VOLLHARTMETALL, 4 SCHNEIDEN MEHRSPIRAL (Scharfe Schneidenecken entfernt)

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.
  - Designed equal index flute for long length end mills.
- Due to gash land geometry used at end tooth, heavy duty cutting can be achieved.
- Available various length products like short, regular and long length end mills etc.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Ausgezeichnet geeignet für das Fräsen von vorvergütetem Stahl, kohlenstoff Stahl, legiertem Stahl für Formen, bis HRc55 und Maschinenbauteile.
- Aufgrund der Multi-Helix (M-Helix) bei Schaftfräsern ≥ 3,0mm ø werden Vibrationen zuverlässig verhindert und gleichzeitig der Schneidkantenverschleiß verringert.
  – Designed mit gleichgeteilten Spannuten für überlange Schaftfräser.
- Aufgrund der korrigierten Stirnschneiden ist eine Schwerzerspanung möglich.
- Erhältlich in verschiedenen Variationen: kurz, lang und extra lang.



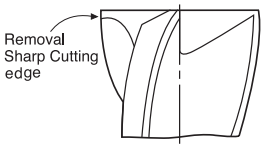
MG HM | 4 | M-Helix | PLAIN | P.811

D≥3

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEME7101001E	1.0	6	1	40	Short
SEME7101002E	1.0	6	2	40	Short
★ SEME71010E	1.0	6	2.5	50	Regular
SEME7101003E	1.0	6	3	50	Long
SEME7101004E	1.0	6	4	50	Long
SEME7101006E	1.0	6	6	50	Long
SEME7101202E	1.2	6	2	40	Short
★ SEME71012E	1.2	6	3	50	Regular
SEME7101204E	1.2	6	4	50	Long
SEME7101206E	1.2	6	6	50	Long
SEME71015015E	1.5	6	1.5	40	Short
SEME7101503E	1.5	6	3	40	Short
★ SEME71015E	1.5	6	4	50	Regular
SEME7101506E	1.5	6	6	50	Long
SEME7101508E	1.5	6	8	50	Long
SEME7101510E	1.5	6	10	50	Long
SEME7102002E	2.0	6	2	40	Short
SEME7102004E	2.0	6	4	40	Short
★ SEME71020E	2.0	6	6	50	Regular
SEME7102008E	2.0	6	8	50	Long
SEME7102010E	2.0	6	10	50	Long
SEME7102012E	2.0	6	12	50	Long
SEME71025025E	2.5	6	2.5	40	Short
SEME7102505E	2.5	6	5	40	Short
★ SEME71025E	2.5	6	7	50	Regular
SEME7102510E	2.5	6	10	50	Long

▶ ★ Stock Item



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

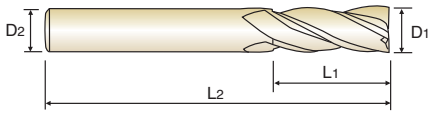
4G MILL END MILLS

SEME71 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE MULTIPLE HELIX (Sharp corner removal)
VOLLHARTMETALL, 4 SCHNEIDEN MEHRSPIRAL (Scharfe Schneidenecken entfernt)

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.
  - Designed equal index flute for long length end mills.
- Due to gash land geometry used at end tooth, heavy duty cutting can be achieved.
- Available various length products like short, regular and long length end mills etc.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Ausgezeichnet geeignet für das Fräsen von vorvergütetem Stahl, kohlenstoff Stahl, legiertem Stahl für Formen, bis HRc55 und Maschinenbauteile.
- Aufgrund der Multi-Helix (M-Helix) bei Schaftfräsern ≥ 3,0mm ø werden Vibrationen zuverlässig verhindert und gleichzeitig der Schneidkantenverschleiß verringert.
  – Designed mit gleichgeteilten Spannuten für überlange Schaftfräser.
- Aufgrund der korrigierten Stirnschneiden ist eine Schwerzerspanung möglich.
- Erhältlich in verschiedenen Variationen: kurz, lang und extra lang.



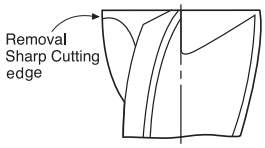
MG HM | 4 | M-Helix | PLAIN | P.811

D≥3

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEME7102512E	2.5	6	12	50	Long
SEME7103003E	3.0	6	3	40	Short
SEME7103006E	3.0	6	6	40	Short
★ SEME71030E	3.0	6	8	50	Regular
SEME7103010E	3.0	6	10	50	Long
SEME7103012E	3.0	6	12	50	Long
SEME7103014E	3.0	6	14	50	Long
SEME7104004E	4.0	6	4	40	Short
SEME7104008E	4.0	6	8	40	Short
★ SEME71040E	4.0	6	10	50	Regular
SEME7104012E	4.0	6	12	50	Long
SEME7104014E	4.0	6	14	50	Long
SEME7104016E	4.0	6	16	50	Long
SEME7105005E	5.0	6	5	50	Short
SEME7105010E	5.0	6	10	50	Short
★ SEME71050E	5.0	6	15	60	Regular
SEME7105020E	5.0	6	20	60	Long
SEME7105025E	5.0	6	25	60	Long
SEME7106006E	6.0	6	6	50	Short
SEME7106012E	6.0	6	12	50	Short
★ SEME71060E	6.0	6	15	60	Regular
SEME7106020E	6.0	6	20	60	Long
SEME7106025E	6.0	6	25	60	Long
SEME7108016E	8.0	8	16	60	Short
★ SEME71080E	8.0	8	20	70	Regular
SEME7108025E	8.0	8	25	70	Long

▶ ★ Stock Item



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

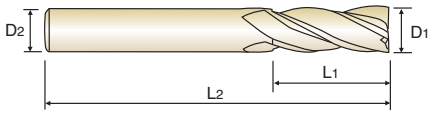
4G MILL END MILLS

SEME71 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE MULTIPLE HELIX (Sharp corner removal)
VOLLHARTMETALL, 4 SCHNEIDEN MEHRSPIRAL (Scharfe Schneidenecken entfernt)

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.
  - Designed equal index flute for long length end mills.
- Due to gash land geometry used at end tooth, heavy duty cutting can be achieved.
- Available various length products like short, regular and long length end mills etc.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Ausgezeichnet geeignet für das Fräsen von vorvergütetem Stahl, kohlenstoff Stahl, legiertem Stahl für Formen, bis HRc55 und Maschinenbauteile.
- Aufgrund der Multi-Helix (M-Helix) bei Schaftfräsern ≥ 3,0mm ø werden Vibrationen zuverlässig verhindert und gleichzeitig der Schneidkantenverschleiß verringert.
  −Designed mit gleichgeteilten Spannuten für überlange Schaftfräser.
- Aufgrund der korrigierten Stirnschneiden ist eine Schwerzerspanung möglich.
- Erhältlich in verschiedenen Variationen: kurz, lang und extra lang.



MG HM | 4 | M-Helix | PLAIN | P.811

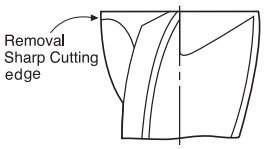
D≥3

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEME7108030E	8.0	8	30	70	Long
SEME7110022E	10.0	10	22	65	Short
★ SEME71100E	10.0	10	25	75	Regular
SEME7110030E	10.0	10	30	75	Long
SEME7110035E	10.0	10	35	75	Long
SEME7112026E	12.0	12	26	70	Short
★ SEME71120E	12.0	12	30	80	Regular
SEME7112035E	12.0	12	35	80	Long
SEME7112040E	12.0	12	40	80	Long
SEME71140E	14.0	16	35	100	Regular
★ SEME7116032E	16.0	16	32	100	Short
SEME71160E	16.0	16	40	100	Regular
SEME71180E	18.0	20	45	100	Regular
★ SEME71200E	20.0	20	45	100	Regular

▶ ★ Stock Item

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

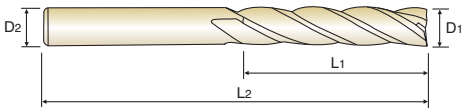
4G MILL END MILLS

SEME72 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE LONG LENGTH
VOLLHARTMETALL, 4 SCHNEIDEN LANG

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Available various length of cut and overall length products.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Erhältlich in verschiebenen Schneiden- und Gesamtlängen.



MG HM | 4 | 30° | PLAIN

P.812, 813

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
★ SEME7201003E	1.0	6	3	60
★ SEME7201004E	1.0	6	4	60
★ SEME7201005E	1.0	6	5	60
★ SEME7201006E	1.0	6	6	60
SEME7201007E	1.0	6	7	60
SEME7201008E	1.0	6	8	60
SEME7201010E	1.0	6	10	60
SEME7201012E	1.0	6	12	60
SEME7201204E	1.2	6	4	60
SEME7201206E	1.2	6	6	60
SEME7201208E	1.2	6	8	60
SEME7201210E	1.2	6	10	60
SEME7201212E	1.2	6	12	60
★ SEME7201506E	1.5	6	6	60
SEME7201508E	1.5	6	8	60
SEME7201510E	1.5	6	10	60
SEME7201512E	1.5	6	12	60
SEME7201514E	1.5	6	14	60
SEME7201516E	1.5	6	16	60
★ SEME7202008E	2.0	6	8	60
★ SEME7202010E	2.0	6	10	60
★ SEME7202012E	2.0	6	12	60
★ SEME7202014E	2.0	6	14	60
SEME7202016E	2.0	6	16	60
★ SEME7202510E	2.5	6	10	60
★ SEME7202512E	2.5	6	12	60
SEME7202516E	2.5	6	16	60
SEME7202520E	2.5	6	20	60

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

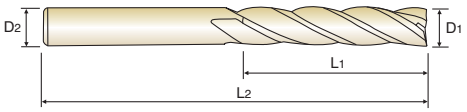
4G MILL END MILLS

SEME72 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE LONG LENGTH
VOLLHARTMETALL, 4 SCHNEIDEN LANG

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Available various length of cut and overall length products.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Erhältlich in verschiedenen Schneiden- und Gesamtlängen.



MG HM | 4 | 30° | PLAIN

P.812, 813

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME7202526E	2.5	6	26	60
SEME72030163SE	3.0	3	16	100
★ SEME7203010E	3.0	6	10	70
★ SEME7203012E	3.0	6	12	70
SEME7203014E	3.0	6	14	70
★ SEME7203016E	3.0	6	16	70
★ SEME7203020E	3.0	6	20	70
★ SEME7203026E	3.0	6	26	70
★ SEME7203030E	3.0	6	30	70
SEME72040204SE	4.0	4	20	100
★ SEME7204012E	4.0	6	12	70
★ SEME7204016E	4.0	6	16	70
★ SEME7204020E	4.0	6	20	70
★ SEME7204026E	4.0	6	26	70
★ SEME7204030E	4.0	6	30	70
★ SEME7205020E	5.0	6	20	70
★ SEME7205025E	5.0	6	25	70
SEME7205025100E	5.0	6	25	100
★ SEME7205030E	5.0	6	30	80
SEME7205035E	5.0	6	35	90
SEME7205040E	5.0	6	40	100
★ SEME7206015E	6.0	6	15	60
SEME7206015080E	6.0	6	15	80
★ SEME7206020E	6.0	6	20	70
★ SEME7206020090E	6.0	6	20	90
★ SEME7206025E	6.0	6	25	75
★ SEME7206030E	6.0	6	30	80
★ SEME7206030100E	6.0	6	30	100

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

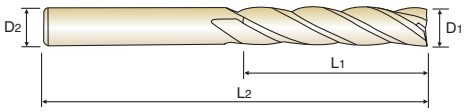
4G MILL END MILLS

SEME72 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE LONG LENGTH
VOLLHARTMETALL, 4 SCHNEIDEN LANG

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Available various length of cut and overall length products.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Erhältlich in verschiebenen Schneiden- und Gesamtlängen.



MG HM | 4 | 30° | PLAIN

P.812, 813

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME7206030150E	6.0	6	30	150
★ SEME7206035E	6.0	6	35	90
★ SEME7206040E	6.0	6	40	90
★ SEME7206040120E	6.0	6	40	120
★ SEME7206045E	6.0	6	45	150
★ SEME7208025E	8.0	8	25	80
★ SEME7208030E	8.0	8	30	80
SEME7208030100E	8.0	8	30	100
★ SEME7208035E	8.0	8	35	90
★ SEME7208040E	8.0	8	40	90
SEME7208040120E	8.0	8	40	120
SEME7208040150E	8.0	8	40	150
★ SEME7208045E	8.0	8	45	100
★ SEME7208050E	8.0	8	50	100
★ SEME7208050150E	8.0	8	50	150
★ SEME7210030E	10.0	10	30	80
★ SEME7210030100E	10.0	10	30	100
★ SEME7210035E	10.0	10	35	90
★ SEME7210040E	10.0	10	40	90
SEME7210040120E	10.0	10	40	120
★ SEME7210045E	10.0	10	45	100
★ SEME7210050E	10.0	10	50	100
SEME7210050150E	10.0	10	50	150
SEME7210050200E	10.0	10	50	200
SEME7210055E	10.0	10	55	150
SEME7210060E	10.0	10	60	110
SEME7210060200E	10.0	10	60	200
★ SEME7212035E	12.0	12	35	90

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

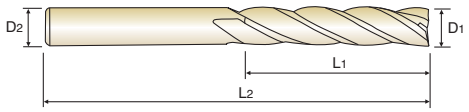
4G MILL END MILLS

SEME72 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE LONG LENGTH
VOLLHARTMETALL, 4 SCHNEIDEN LANG

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Available various length of cut and overall length products.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Erhältlich in verschiebenen Schneiden- und Gesamtlängen.



MG HM | 4 | 30° | PLAIN

P.812, 813

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
★ SEME7212040E	12.0	12	40	100
SEME7212040120E	12.0	12	40	120
★ SEME7212045E	12.0	12	45	130
★ SEME7212050E	12.0	12	50	100
SEME7212050150E	12.0	12	50	150
★ SEME7212055E	12.0	12	55	110
★ SEME7212060E	12.0	12	60	110
★ SEME7212060150E	12.0	12	60	150
SEME7212060200E	12.0	12	60	200
SEME7212065E	12.0	12	65	150
SEME7212070E	12.0	12	70	120
SEME7212070200E	12.0	12	70	200
★ SEME7214050E	14.0	16	50	110
SEME7214060E	14.0	16	60	150
SEME7216040E	16.0	16	40	150
★ SEME7216050E	16.0	16	50	110
SEME7216050150E	16.0	16	50	150
★ SEME7216060E	16.0	16	60	120
★ SEME7216070E	16.0	16	70	130
★ SEME7216070150E	16.0	16	70	150
SEME7216070200E	16.0	16	70	200
SEME7216080E	16.0	16	80	150
SEME7216090E	16.0	16	90	150
SEME72160110E	16.0	16	110	200
SEME72160120E	16.0	16	120	250
SEME7218050E	18.0	20	50	120
SEME7218070E	18.0	20	70	130
SEME72180100E	18.0	20	100	200

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

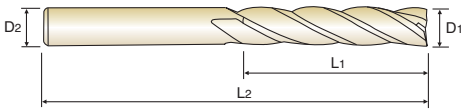
4G MILL END MILLS

SEME72 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE LONG LENGTH
VOLLHARTMETALL, 4 SCHNEIDEN LANG

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Available various length of cut and overall length products.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Erhältlich in verschiebenen Schneiden- und Gesamtlängen.



MG HM | 4 | 30° | PLAIN | P.812, 813

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME7220050E	20.0	20	50	110
SEME7220050150E	20.0	20	50	150
★ SEME7220060E	20.0	20	60	130
SEME7220070E	20.0	20	70	130
SEME7220080E	20.0	20	80	150
SEME7220090E	20.0	20	90	150
★ SEME7220090200E	20.0	20	90	200
SEME72200110E	20.0	20	110	200
SEME72200120E	20.0	20	120	250
SEME7222075E	22.0	20	75	150
SEME72220110E	22.0	20	110	200
SEME7225070E	25.0	25	70	150
★ SEME7225090E	25.0	25	90	150
SEME72250110E	25.0	25	110	200
SEME72250120	25.0	25	120	250

▶ ★ Stock Item

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

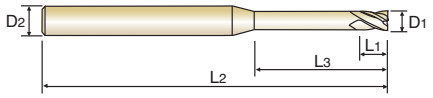
4G MILL END MILLS

SEME73 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE with EXTENDED NECK
VOLLHARTMETALL, 4 SCHNEIDEN mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Available more various effective lengths and overall lengths than previous standard products.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Erhältlich in verschiedenen gesamt Längen und effektiv Längen. Mehr Auswahlmöglichkeiten als bei den bisherigen standard Produkten.



MG HM | 4 | 30° | PLAIN

P.814, 815, 816

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SEME7301002E	1.0	4	1.5	2	50
SEME7301003E	1.0	4	1.5	3	50
★ SEME7301004E	1.0	4	1.5	4	50
★ SEME7301005E	1.0	4	1.5	5	50
★ SEME7301006E	1.0	4	1.5	6	50
SEME7301007E	1.0	4	1.5	7	50
★ SEME7301008E	1.0	4	1.5	8	50
SEME7301010E	1.0	4	1.5	10	50
SEME7301012E	1.0	4	1.5	12	50
SEME7301014E	1.0	4	1.5	14	50
SEME7301016E	1.0	4	1.5	16	50
SEME7301018E	1.0	4	1.5	18	50
SEME7301020E	1.0	4	1.5	20	50
SEME7301022E	1.0	4	1.5	22	60
SEME7301026E	1.0	4	1.5	26	60
SEME7301030E	1.0	4	1.5	30	70
SEME7301040E	1.0	4	1.5	40	80
SEME7301050E	1.0	4	1.5	50	100
SEME7301204E	1.2	4	1.8	4	50
SEME7301206E	1.2	4	1.8	6	50
SEME7301208E	1.2	4	1.8	8	50
SEME7301210E	1.2	4	1.8	10	50
SEME7301212E	1.2	4	1.8	12	50
SEME7301214E	1.2	4	1.8	14	50
SEME7301216E	1.2	4	1.8	16	50
SEME7301220E	1.2	4	1.8	20	50
SEME7301226E	1.2	4	1.8	26	60
SEME7301230E	1.2	4	1.8	30	70
SEME7301504E	1.5	4	2.3	4	50
SEME7301505E	1.5	4	2.3	5	50
★ SEME7301506E	1.5	4	2.3	6	50
SEME7301507E	1.5	4	2.3	7	50

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○		○				

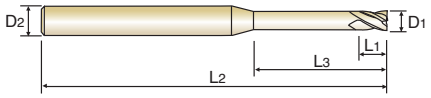
4G MILL END MILLS

SEME73 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE with EXTENDED NECK
VOLLHARTMETALL, 4 SCHNEIDEN mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Available more various effective lengths and overall lengths than previous standard products.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Erhältlich in verschiedenen gesamt Längen und effektiv Längen. Mehr Auswahlmöglichkeiten als bei den bisherigen standard Produkten.



MG HM | 4 | 30° | PLAIN

P.814, 815, 816

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
★ SEME7301508E	1.5	4	2.3	8	50
★ SEME7301510E	1.5	4	2.3	10	50
★ SEME7301512E	1.5	4	2.3	12	50
SEME7301514E	1.5	4	2.3	14	50
★ SEME7301516E	1.5	4	2.3	16	50
SEME7301518E	1.5	4	2.3	18	50
SEME7301520E	1.5	4	2.3	20	50
SEME7301522E	1.5	4	2.3	22	60
SEME7301526E	1.5	4	2.3	26	60
SEME7301530E	1.5	4	2.3	30	70
SEME7302006E	2.0	4	3	6	50
★ SEME7302008E	2.0	4	3	8	50
★ SEME7302010E	2.0	4	3	10	50
★ SEME7302012E	2.0	4	3	12	50
SEME7302014E	2.0	4	3	14	50
★ SEME7302016E	2.0	4	3	16	50
SEME7302018E	2.0	4	3	18	50
SEME7302020E	2.0	4	3	20	50
SEME7302022E	2.0	4	3	22	60
SEME7302026E	2.0	4	3	26	60
SEME7302030E	2.0	4	3	30	70
SEME7302035E	2.0	4	3	35	70
SEME7302040E	2.0	4	3	40	80
SEME7302045E	2.0	4	3	45	90
SEME7302050E	2.0	4	3	50	100
SEME7302060E	2.0	4	3	60	110
SEME7302508E	2.5	4	4	8	50
SEME7302510E	2.5	4	4	10	50
SEME7302512E	2.5	4	4	12	50
SEME7302514E	2.5	4	4	14	50
SEME7302516E	2.5	4	4	16	50
SEME7302518E	2.5	4	4	18	50

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○		○				

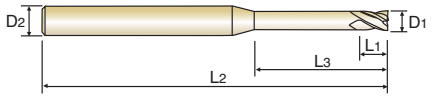
4G MILL END MILLS

SEME73 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE with EXTENDED NECK
VOLLHARTMETALL, 4 SCHNEIDEN mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Available more various effective lengths and overall lengths than previous standard products.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Erhältlich in verschiedenen gesamt Längen und effektiv Längen. Mehr Auswahlmöglichkeiten als bei den bisherigen standard Produkten.



MG HM | 4 | 30° | PLAIN

P.814, 815, 816

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SEME7302520E	2.5	4	4	20	50
SEME7302522E	2.5	4	4	22	60
SEME7302526E	2.5	4	4	26	60
SEME7302530E	2.5	4	4	30	70
SEME7302535E	2.5	4	4	35	70
SEME7302540E	2.5	4	4	40	80
SEME7302545E	2.5	4	4	45	90
SEME7302550E	2.5	4	4	50	100
SEME7303006E	3.0	6	4.5	6	50
SEME7303008E	3.0	6	4.5	8	50
★ SEME7303010E	3.0	6	4.5	10	50
★ SEME7303012E	3.0	6	4.5	12	50
SEME7303014E	3.0	6	4.5	14	60
★ SEME7303016E	3.0	6	4.5	16	60
SEME7303018E	3.0	6	4.5	18	60
★ SEME7303020E	3.0	6	4.5	20	60
SEME7303022E	3.0	6	4.5	22	65
SEME7303026E	3.0	6	4.5	26	65
★ SEME7303030E	3.0	6	4.5	30	70
SEME7303035E	3.0	6	4.5	35	70
SEME7303040E	3.0	6	4.5	40	80
SEME7303045E	3.0	6	4.5	45	90
SEME7303050E	3.0	6	4.5	50	100
SEME7303060E	3.0	6	4.5	60	100
SEME7304008E	4.0	6	6	8	50
SEME7304010E	4.0	6	6	10	50
★ SEME7304012E	4.0	6	6	12	50
SEME7304014E	4.0	6	6	14	60
★ SEME7304016E	4.0	6	6	16	60
SEME7304018E	4.0	6	6	18	60
★ SEME7304020E	4.0	6	6	20	60
SEME7304022E	4.0	6	6	22	65

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○		○				

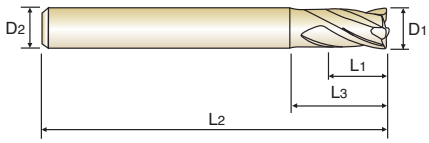
4G MILL END MILLS

SEME73 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE with EXTENDED NECK
VOLLHARTMETALL, 4 SCHNEIDEN mit ABGESETZTEM SCHAFTTETL

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Available more various effective lengths and overall lengths than previous standard products.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Erhältlich in verschiedenen gesamt Längen und effektiv Längen. Mehr Auswahlmöglichkeiten als bei den bisherigen standard Produkten.



MG HM | 4 | 30° | PLAIN

P.814, 815, 816

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SEME7304026E	4.0	6	6	26	65
★ SEME7304030E	4.0	6	6	30	70
SEME7304035E	4.0	6	6	35	70
★ SEME7304040E	4.0	6	6	40	80
SEME7304045E	4.0	6	6	45	90
SEME7304050E	4.0	6	6	50	100
SEME7304060E	4.0	6	6	60	100
SEME7305016E	5.0	6	8	16	60
★ SEME7305020E	5.0	6	8	20	60
SEME7305026E	5.0	6	8	26	65
SEME7305030E	5.0	6	8	30	70
SEME7305035E	5.0	6	8	35	75
★ SEME7305040E	5.0	6	8	40	80
SEME7305050E	5.0	6	8	50	90
SEME7305060E	5.0	6	8	60	100
★ SEME7306015E	6.0	6	9	15	60
SEME7306020E	6.0	6	9	20	60
★ SEME7306030E	6.0	6	9	30	70
SEME7306032E	6.0	6	9	32	90
★ SEME7308025E	8.0	8	12	25	70
SEME7308030E	8.0	8	12	30	80
★ SEME7308042E	8.0	8	12	42	100
★ SEME7310030E	10.0	10	15	30	75
SEME7310035E	10.0	10	15	35	80
★ SEME7310045E	10.0	10	15	45	100
★ SEME7312035E	12.0	12	20	35	80
SEME7312040E	12.0	12	20	40	90
★ SEME7312050E	12.0	12	20	50	110

▶ ★ Stock Item

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○		○				

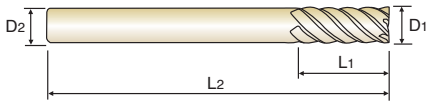
4G MILL END MILLS

SEME75 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 6 FLUTE 45° HELIX (Regular, Long Shank)
VOLLHARTMETALL, 6 SCHNEIDEN 45° RECHTSSPIRALE

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- Due to 45 helix angle, better surface roughness can be achieved at side cutting.
- Available various effective length and overall length products.

- Aufgrund einer neuartigen Beschichtung und neuer Werkzeuggeometrien hervorragende Schnittleistung und Verschleißfestigkeit
- Hervorragende Leistung bei der Zerspanung von vorvergüteten Stählen bis HRc55, welche im Werkzeug- und Formenbau Verwendung finden.
- Aufgrund der 45° Spirale werden bessere Oberlächengüten bei der Eckbearbeitung erreicht
- Erhältlich in verschiedenen gesamt Längen und effektiv Längen.



MG HM | 6 | 45° | PLAIN

P.817, 818

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
★ SEME75060E	6.0	6	15	60	Regular
SEME7506020E	6.0	6	20	70	Long
★ SEME7506030E	6.0	6	30	80	Long
SEME75060301 10E	6.0	6	30	110	Long
★ SEME75080E	8.0	8	20	70	Regular
SEME7508030E	8.0	8	30	80	Long
SEME7508035E	8.0	8	35	90	Long
★ SEME7508040E	8.0	8	40	90	Long
SEME75080401 30E	8.0	8	40	130	Long
★ SEME75100E	10.0	10	25	75	Regular
SEME7510030E	10.0	10	30	80	Long
★ SEME7510040E	10.0	10	40	90	Long
SEME7510050E	10.0	10	50	100	Long
SEME75100501 50E	10.0	10	50	150	Long
★ SEME75120E	12.0	12	30	80	Regular
SEME7512040E	12.0	12	40	90	Long
★ SEME7512050E	12.0	12	50	100	Long
SEME7512060E	12.0	12	60	110	Long
SEME75120601 50E	12.0	12	60	150	Long
★ SEME75160E	16.0	16	40	100	Regular
SEME7516050E	16.0	16	50	110	Long
★ SEME7516060E	16.0	16	60	120	Long
SEME7516090E	16.0	16	90	150	Long
SEME75160110E	16.0	16	110	200	Long
SEME751601102 50E	16.0	16	110	250	Long
★ SEME75200E	20.0	20	45	100	Regular
★ SEME7520060E	20.0	20	60	120	Long
SEME7520070E	20.0	20	70	130	Long
SEME75200110E	20.0	20	110	200	Long
SEME752001102 50E	20.0	20	110	250	Long
SEME752001103 00E	20.0	20	110	300	Long

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

▶ ★ Stock Item

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○				○						

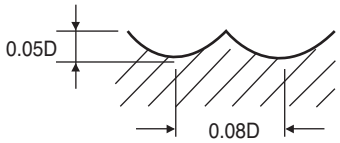
4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS

SEMD98 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS	~ HRc 35				HRc 35 ~ HRc 45				HRc 45 ~ HRc 55			
STRENGTH	~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R0.05 × 0.1	40000	550	13	0.007	40000	500	13	0.006	33000	400	10	0.006
R0.1 × 0.2	30000	720	19	0.012	30000	630	19	0.011	27000	575	17	0.011
R0.15 × 0.3	30000	900	28	0.015	30000	810	28	0.014	27000	720	25	0.013
R0.2 × 0.4	30000	1140	38	0.019	30000	1020	38	0.017	27000	900	34	0.017
R0.25 × 0.5	30000	1440	47	0.024	30000	1260	47	0.021	27000	1140	42	0.021
R0.3 × 0.6	30000	1740	57	0.029	30000	1500	57	0.025	27000	1320	51	0.024
R0.35 × 0.7	30000	2040	66	0.034	30000	1740	66	0.029	27000	1560	59	0.029
R0.4 × 0.8	30000	2340	75	0.039	30000	1980	75	0.033	27000	1800	68	0.033
R0.45 × 0.9	30000	2610	85	0.044	30000	2250	85	0.038	27000	2040	76	0.038
R0.5 × 1.0	30000	2880	94	0.048	30000	2520	94	0.042	27000	2280	85	0.042
R0.6 × 1.2	30000	3060	113	0.051	28800	2580	109	0.045	25800	2310	97	0.045
R0.75 × 1.5	30000	3240	141	0.054	28800	2700	136	0.047	25800	2400	122	0.047
R1.0 × 2.0	29820	3420	187	0.057	28680	2880	180	0.050	24000	2400	151	0.050
R1.25 × 2.5	23800	3510	187	0.074	22900	3030	180	0.066	19200	2400	151	0.063
R1.5 × 3.0	19860	3600	187	0.091	19080	3180	180	0.083	16000	2400	151	0.075
R1.75 × 3.5	17000	3600	187	0.106	16400	3180	180	0.097	13700	2400	151	0.088
R2.0 × 4.0	14900	3600	187	0.121	14340	3180	180	0.111	12000	2400	151	0.100
R2.25 × 4.5	13030	3540	184	0.136	12510	3060	177	0.122	10500	2325	148	0.111
R2.5 × 5.0	11160	3480	175	0.156	10680	2940	168	0.138	9000	2250	141	0.125
R2.75 × 5.5	9750	3195	168	0.164	9360	2700	162	0.144	7800	2055	135	0.132
R3.0 × 6.0	8340	2910	157	0.174	8040	2460	152	0.153	6600	1860	124	0.141
R3.25 × 6.5	7780	2780	159	0.179	7500	2340	153	0.156	6200	1780	127	0.144
R3.5 × 7.0	7220	2650	159	0.184	6960	2220	153	0.159	5800	1700	128	0.147
R4.0 × 8.0	6660	2520	167	0.189	6420	2100	161	0.164	5400	1620	136	0.150
R4.25 × 8.5	6300	2420	168	0.192	6060	2020	162	0.167	5100	1560	136	0.153
R4.5 × 9.0	5940	2320	168	0.195	5700	1940	161	0.170	4800	1500	136	0.156
R5.0 × 10.0	5580	2220	175	0.199	5340	1860	168	0.174	4500	1440	141	0.160
R5.5 × 11.0	4875	1995	168	0.205	4670	1680	161	0.180	3930	1290	136	0.164
R6.0 × 12.0	4170	1770	157	0.212	4000	1500	151	0.188	3360	1140	127	0.170
R6.5 × 13.0	3960	1725	162	0.218	3800	1500	155	0.197	3200	1110	131	0.173
R7.0 × 14.0	3750	1680	165	0.224	3600	1500	158	0.208	3030	1080	133	0.178
R7.5 × 15.0	3550	1635	167	0.230	3400	1500	160	0.221	2870	1050	135	0.183
R8.0 × 16.0	3340	1590	168	0.238	3210	1320	161	0.206	2700	1020	136	0.189
R9.0 × 18.0	3005	1500	170	0.250	2895	1245	164	0.215	2430	960	137	0.198
R10.0 × 20.0	2670	1410	168	0.264	2580	1170	162	0.227	2160	900	136	0.208
R12.5 × 25.0	2130	1150	167	0.270	2060	950	162	0.231	1730	730	136	0.211



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE BALL NOSE with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS mit ABGESETZTEM SCHAFTTETL

SEM846 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc 35					HRc 35 ~ HRc 45					HRc 45 ~ HRc 55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)
0.1	0.2	50000	240	16	0.002	0.009	50000	215	16	0.002	0.007	50000	190	16	0.002	0.005
0.1	0.3	50000	240	16	0.002	0.009	50000	215	16	0.002	0.007	50000	190	16	0.002	0.005
0.1	0.5	50000	240	16	0.002	0.006	50000	215	16	0.002	0.005	50000	190	16	0.002	0.004
0.1	1	45000	195	14	0.002	0.002	45000	175	14	0.002	0.002	45000	155	14	0.002	0.001
0.2	0.5	50000	335	31	0.003	0.018	50000	310	31	0.003	0.014	43200	260	27	0.003	0.010
0.2	1	50000	335	31	0.003	0.013	50000	310	31	0.003	0.010	43200	260	27	0.003	0.007
0.2	1.5	45000	270	28	0.003	0.007	45000	250	28	0.003	0.006	38880	210	24	0.003	0.004
0.2	2	45000	270	28	0.003	0.005	45000	250	28	0.003	0.004	38880	210	24	0.003	0.003
0.2	3	45000	270	28	0.003	0.003	45000	250	28	0.003	0.003	38880	210	24	0.003	0.002
0.3	1	50000	475	47	0.005	0.019	50000	430	47	0.004	0.015	42800	365	40	0.004	0.011
0.3	1.5	50000	475	47	0.005	0.019	50000	430	47	0.004	0.015	42800	365	40	0.004	0.011
0.3	2	45000	385	42	0.004	0.011	45000	350	42	0.004	0.008	38520	295	36	0.004	0.006
0.3	2.5	45000	385	42	0.004	0.007	45000	350	42	0.004	0.005	38520	295	36	0.004	0.004
0.3	3	45000	385	42	0.004	0.007	45000	350	42	0.004	0.005	38520	295	36	0.004	0.004
0.3	4	40000	305	38	0.004	0.004	40000	275	38	0.003	0.003	34240	235	32	0.003	0.002
0.3	5	30000	200	28	0.003	0.003	30000	180	28	0.003	0.002	25680	155	24	0.003	0.002
0.4	1	41000	490	52	0.006	0.036	38800	425	49	0.005	0.028	34200	340	43	0.005	0.020
0.4	1.5	41000	490	52	0.006	0.025	38800	425	49	0.005	0.020	34200	340	43	0.005	0.014
0.4	2	41000	490	52	0.006	0.025	38800	425	49	0.005	0.020	34200	340	43	0.005	0.014
0.4	2.5	36900	395	46	0.005	0.014	34920	345	44	0.005	0.011	30780	275	39	0.004	0.008
0.4	3	36900	395	46	0.005	0.014	34920	345	44	0.005	0.011	30780	275	39	0.004	0.008
0.4	4	36900	395	46	0.005	0.009	34920	345	44	0.005	0.007	30780	275	39	0.004	0.005
0.4	5	32800	315	41	0.005	0.009	31040	270	39	0.004	0.007	27360	220	34	0.004	0.005
0.4	6	32800	315	41	0.005	0.005	31040	270	39	0.004	0.004	27360	220	34	0.004	0.003
0.4	8	24600	205	31	0.004	0.004	23280	180	29	0.004	0.003	20520	145	26	0.004	0.002
0.4	10	12300	90	15	0.004	0.004	11640	75	15	0.003	0.003	10260	60	13	0.003	0.002
0.5	1	34200	685	54	0.010	0.045	32300	580	51	0.009	0.035	28500	515	45	0.009	0.025
0.5	1.5	34200	685	54	0.010	0.045	32300	580	51	0.009	0.035	28500	515	45	0.009	0.025
0.5	2	34200	685	54	0.010	0.032	32300	580	51	0.009	0.025	28500	515	45	0.009	0.018
0.5	2.5	34200	685	54	0.010	0.032	32300	580	51	0.009	0.025	28500	515	45	0.009	0.018
0.5	3	30780	555	48	0.009	0.018	29070	470	46	0.008	0.014	25650	415	40	0.008	0.010
0.5	4	30780	555	48	0.009	0.018	29070	470	46	0.008	0.014	25650	415	40	0.008	0.010
0.5	5	30780	555	48	0.009	0.011	29070	470	46	0.008	0.009	25650	415	40	0.008	0.006
0.5	6	27360	440	43	0.008	0.011	25840	370	41	0.007	0.009	22800	330	36	0.007	0.006
0.5	8	20520	290	32	0.007	0.007	19380	245	30	0.006	0.005	17100	215	27	0.006	0.004
0.5	10	20520	290	32	0.007	0.005	19380	245	30	0.006	0.004	17100	215	27	0.006	0.003
0.5	12	10260	125	16	0.006	0.005	9690	105	15	0.005	0.004	8550	95	13	0.006	0.003
0.5	14	10260	125	16	0.006	0.005	9690	105	15	0.005	0.004	8550	95	13	0.006	0.003
0.5	16	3420	35	5	0.005	0.005	3230	30	5	0.005	0.004	2850	25	4	0.004	0.003
0.6	1	34200	1025	64	0.015	0.038	32300	840	61	0.013	0.029	28500	685	54	0.012	0.021
0.6	2	34200	1025	64	0.015	0.038	32300	840	61	0.013	0.029	28500	685	54	0.012	0.021
0.6	3	34200	1025	64	0.015	0.038	32300	840	61	0.013	0.029	28500	685	54	0.012	0.021
0.6	4	30780	830	58	0.013	0.022	29070	680	55	0.012	0.017	25650	555	48	0.011	0.012
0.6	5	30780	830	58	0.013	0.014	29070	680	55	0.012	0.011	25650	555	48	0.011	0.008
0.6	6	30780	830	58	0.013	0.014	29070	680	55	0.012	0.011	25650	555	48	0.011	0.008
0.6	8	27360	655	52	0.012	0.008	25840	540	49	0.010	0.006	22800	440	43	0.010	0.005
0.6	10	20520	430	39	0.010	0.005	19380	355	37	0.009	0.004	17100	290	32	0.008	0.003
0.6	12	20520	430	39	0.010	0.005	19380	355	37	0.009	0.004	17100	290	32	0.008	0.003
0.6	14	10260	185	19	0.009	0.005	9690	150	18	0.008	0.004	8550	125	16	0.007	0.003
0.6	16	10260	185	19	0.009	0.005	9690	150	18	0.008	0.004	8550	125	16	0.007	0.003
0.7	2	34200	1130	75	0.017	0.063	32300	930	71	0.014	0.049	28500	765	63	0.013	0.035
0.7	4	30780	915	68	0.015	0.025	29070	755	64	0.013	0.020	25650	620	56	0.012	0.014
0.7	6	30780	915	68	0.015	0.016	29070	755	64	0.013	0.012	25650	620	56	0.012	0.009

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE BALL NOSE with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS mit ABGESETZTEM SCHAFTTETL

SEM846 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc 35					HRc 35 ~ HRc 45					HRc 45 ~ HRc 55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)
0.7	8	27360	725	60	0.013	0.016	25840	595	57	0.012	0.012	22800	490	50	0.011	0.009
0.7	10	27360	725	60	0.013	0.009	25840	595	57	0.012	0.007	22800	490	50	0.011	0.005
0.7	12	20520	475	45	0.012	0.006	19380	390	43	0.010	0.005	17100	320	38	0.009	0.004
0.8	2	34200	1230	86	0.018	0.072	32300	1035	81	0.016	0.056	28500	855	72	0.015	0.040
0.8	3	34200	1230	86	0.018	0.050	32300	1035	81	0.016	0.039	28500	855	72	0.015	0.028
0.8	4	34200	1230	86	0.018	0.050	32300	1035	81	0.016	0.039	28500	855	72	0.015	0.028
0.8	5	30780	995	77	0.016	0.029	29070	840	73	0.014	0.022	25650	695	64	0.014	0.016
0.8	6	30780	995	77	0.016	0.029	29070	840	73	0.014	0.022	25650	695	64	0.014	0.016
0.8	8	30780	995	77	0.016	0.018	29070	840	73	0.014	0.014	25650	695	64	0.014	0.010
0.8	10	27360	785	69	0.014	0.018	25840	660	65	0.013	0.014	22800	545	57	0.012	0.010
0.8	12	27360	785	69	0.014	0.011	25840	660	65	0.013	0.008	22800	545	57	0.012	0.006
0.8	14	20520	515	52	0.013	0.007	19380	435	49	0.011	0.006	17100	360	43	0.011	0.004
0.8	16	20520	515	52	0.013	0.007	19380	435	49	0.011	0.006	17100	360	43	0.011	0.004
0.8	20	10260	220	26	0.011	0.007	9690	185	24	0.010	0.006	8550	155	21	0.009	0.004
0.9	4	29250	1120	83	0.019	0.032	27630	935	78	0.017	0.025	24390	775	69	0.016	0.018
0.9	6	29250	1120	83	0.019	0.032	27630	935	78	0.017	0.025	24390	775	69	0.016	0.018
0.9	8	29250	1120	83	0.019	0.020	27630	935	78	0.017	0.016	24390	775	69	0.016	0.011
0.9	10	26000	885	74	0.017	0.020	24560	740	69	0.015	0.016	21680	610	61	0.014	0.011
1.0	2	30800	1540	97	0.025	0.090	29100	1310	91	0.023	0.070	25700	1075	81	0.021	0.050
1.0	3	30800	1540	97	0.025	0.090	29100	1310	91	0.023	0.070	25700	1075	81	0.021	0.050
1.0	4	30800	1540	97	0.025	0.063	29100	1310	91	0.023	0.049	25700	1075	81	0.021	0.035
1.0	5	30800	1540	97	0.025	0.063	29100	1310	91	0.023	0.049	25700	1075	81	0.021	0.035
1.0	6	27720	1245	87	0.022	0.036	26190	1060	82	0.020	0.028	23130	870	73	0.019	0.020
1.0	7	27720	1245	87	0.022	0.036	26190	1060	82	0.020	0.028	23130	870	73	0.019	0.020
1.0	8	27720	1245	87	0.022	0.036	26190	1060	82	0.020	0.028	23130	870	73	0.019	0.020
1.0	10	27720	1245	87	0.022	0.023	26190	1060	82	0.020	0.018	23130	870	73	0.019	0.013
1.0	12	24640	985	77	0.020	0.023	23280	840	73	0.018	0.018	20560	690	65	0.017	0.013
1.0	14	24640	985	77	0.020	0.014	23280	840	73	0.018	0.011	20560	690	65	0.017	0.008
1.0	16	18480	645	58	0.017	0.014	17460	550	55	0.016	0.011	15420	450	48	0.015	0.008
1.0	18	18480	645	58	0.017	0.009	17460	550	55	0.016	0.007	15420	450	48	0.015	0.005
1.0	20	18480	645	58	0.017	0.009	17460	550	55	0.016	0.007	15420	450	48	0.015	0.005
1.0	22	9240	275	29	0.015	0.009	8730	235	27	0.013	0.007	7710	195	24	0.013	0.005
1.0	26	9240	275	29	0.015	0.009	8730	235	27	0.013	0.007	7710	195	24	0.013	0.005
1.0	30	9240	275	29	0.015	0.009	8730	235	27	0.013	0.007	7710	195	24	0.013	0.005
1.0	40	3080	75	10	0.012	0.009	2910	65	9	0.011	0.007	2570	55	8	0.011	0.005
1.0	50	3080	75	10	0.012	0.006	2910	65	9	0.011	0.005	2570	55	8	0.011	0.003
1.2	4	26300	1375	99	0.026	0.076	24800	1150	93	0.023	0.059	21900	950	83	0.022	0.042
1.2	6	26300	1375	99	0.026	0.076	24800	1150	93	0.023	0.059	21900	950	83	0.022	0.042
1.2	8	23670	1115	89	0.024	0.043	22320	930	84	0.021	0.034	19710	770	74	0.020	0.024
1.2	10	23670	1115	89	0.024	0.027	22320	930	84	0.021	0.021	19710	770	74	0.020	0.015
1.2	12	23670	1115	89	0.024	0.027	22320	930	84	0.021	0.021	19710	770	74	0.020	0.015
1.2	16	21040	880	79	0.021	0.016	19840	735	75	0.019	0.013	17520	610	66	0.017	0.009
1.2	20	15780	580	59	0.018	0.011	14880	485	56	0.016	0.008	13140	400	50	0.015	0.006
1.2	26	7890	245	30	0.016	0.011	7440	205	28	0.014	0.008	6570	170	25	0.013	0.006
1.4	6	21500	1295	95	0.030	0.088	20300	1100	89	0.027	0.069	18000	935	79	0.026	0.049
1.4	8	19350	1050	85	0.027	0.050	18270	890	80	0.024	0.039	16200	755	71	0.023	0.028
1.4	10	19350	1050	85	0.027	0.050	18270	890	80	0.024	0.039	16200	755	71	0.023	0.028
1.4	16	17200	830	76	0.024	0.032	16240	705	71	0.022	0.025	14400	600	63	0.021	0.018
1.5	4	23900	1580	113	0.033	0.135	22600	1355	106	0.030	0.105	20000	1075	94	0.027	0.075
1.5	5	23900	1580	113	0.033	0.095	22600	1355	106	0.030	0.074	20000	1075	94	0.027	0.053
1.5	6	23900	1580	113	0.033	0.095	22600	1355	106	0.030	0.074	20000	1075	94	0.027	0.053
1.5	7	23900	1580	113	0.033	0.095	22600	1355	106	0.030	0.074	20000	1075	94	0.027	0.053
1.5	8	21510	1280	101	0.030	0.054	20340	1100	96	0.027	0.042	18000	870	85	0.024	0.030

DIA. = Diameter
LBS = Length Below Shank
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FEED = mm/min.
Vc = m/min.
fz = mm/t

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE BALL NOSE with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS mit ABGESETZTEM SCHAFTTETL

SEM846 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc 35					HRc 35 ~ HRc 45					HRc 45 ~ HRc 55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)
1.5	10	21510	1280	101	0.030	0.054	20340	1100	96	0.027	0.042	18000	870	85	0.024	0.030
1.5	12	21510	1280	101	0.030	0.054	20340	1100	96	0.027	0.042	18000	870	85	0.024	0.030
1.5	14	21510	1280	101	0.030	0.034	20340	1100	96	0.027	0.026	18000	870	85	0.024	0.019
1.5	16	19120	1010	90	0.026	0.034	18080	865	85	0.024	0.026	16000	690	75	0.022	0.019
1.5	18	19120	1010	90	0.026	0.034	18080	865	85	0.024	0.026	16000	690	75	0.022	0.019
1.5	20	19120	1010	90	0.026	0.02	18080	865	85	0.024	0.016	16000	690	75	0.022	0.011
1.5	22	19120	1010	90	0.026	0.02	18080	865	85	0.024	0.016	16000	690	75	0.022	0.011
1.5	26	14340	665	68	0.023	0.014	13560	570	64	0.021	0.011	12000	450	57	0.019	0.008
1.5	30	14340	665	68	0.023	0.014	13560	570	64	0.021	0.011	12000	450	57	0.019	0.008
1.5	35	7170	285	34	0.020	0.010	6780	245	32	0.018	0.008	6000	195	28	0.016	0.005
1.5	40	7170	285	34	0.020	0.010	6780	245	32	0.018	0.008	6000	195	28	0.016	0.005
1.6	4	22200	1555	112	0.035	0.101	21000	1300	106	0.031	0.078	18500	1110	93	0.030	0.056
1.6	6	22200	1555	112	0.035	0.101	21000	1300	106	0.031	0.078	18500	1110	93	0.030	0.056
1.6	8	22200	1555	112	0.035	0.101	21000	1300	106	0.031	0.078	18500	1110	93	0.030	0.056
1.6	10	19980	1260	100	0.032	0.058	18900	1055	95	0.028	0.045	16650	900	84	0.027	0.032
1.6	12	19980	1260	100	0.032	0.058	18900	1055	95	0.028	0.045	16650	900	84	0.027	0.032
1.6	16	19980	1260	100	0.032	0.036	18900	1055	95	0.028	0.028	16650	900	84	0.027	0.020
1.6	20	17760	995	89	0.028	0.036	16800	830	84	0.025	0.028	14800	710	74	0.024	0.020
1.8	4	22200	1780	126	0.040	0.113	21000	1470	119	0.035	0.088	18500	1225	105	0.033	0.063
1.8	6	22200	1780	126	0.040	0.113	21000	1470	119	0.035	0.088	18500	1225	105	0.033	0.063
1.8	8	22200	1780	126	0.040	0.113	21000	1470	119	0.035	0.088	18500	1225	105	0.033	0.063
1.8	10	19980	1440	113	0.036	0.065	18900	1190	107	0.031	0.050	16650	990	94	0.030	0.036
1.8	12	19980	1440	113	0.036	0.065	18900	1190	107	0.031	0.050	16650	990	94	0.030	0.036
1.8	16	19980	1440	113	0.036	0.041	18900	1190	107	0.031	0.032	16650	990	94	0.030	0.023
1.8	20	17760	1140	100	0.032	0.041	16800	940	95	0.028	0.032	14800	785	84	0.027	0.023
2.0	6	18000	1795	113	0.050	0.180	17000	1525	107	0.045	0.140	15000	1285	94	0.043	0.100
2.0	8	18000	1795	113	0.050	0.126	17000	1525	107	0.045	0.098	15000	1285	94	0.043	0.070
2.0	10	18000	1795	113	0.050	0.126	17000	1525	107	0.045	0.098	15000	1285	94	0.043	0.070
2.0	12	16200	1455	102	0.045	0.072	15300	1235	96	0.040	0.056	13500	1040	85	0.039	0.040
2.0	14	16200	1455	102	0.045	0.072	15300	1235	96	0.040	0.056	13500	1040	85	0.039	0.040
2.0	16	16200	1455	102	0.045	0.072	15300	1235	96	0.040	0.056	13500	1040	85	0.039	0.040
2.0	18	16200	1455	102	0.045	0.045	15300	1235	96	0.040	0.035	13500	1040	85	0.039	0.025
2.0	20	16200	1455	102	0.045	0.045	15300	1235	96	0.040	0.035	13500	1040	85	0.039	0.025
2.0	22	14400	1150	90	0.040	0.045	13600	975	85	0.036	0.035	12000	820	75	0.034	0.025
2.0	26	14400	1150	90	0.040	0.045	13600	975	85	0.036	0.035	12000	820	75	0.034	0.025
2.0	30	14400	1150	90	0.040	0.027	13600	975	85	0.036	0.021	12000	820	75	0.034	0.015
2.0	35	10800	755	68	0.035	0.018	10200	640	64	0.031	0.014	9000	540	57	0.030	0.010
2.0	40	10800	755	68	0.035	0.018	10200	640	64	0.031	0.014	9000	540	57	0.030	0.010
2.0	45	5400	325	34	0.030	0.018	5100	275	32	0.027	0.014	4500	230	28	0.026	0.010
2.0	50	5400	325	34	0.030	0.018	5100	275	32	0.027	0.014	4500	230	28	0.026	0.010
2.0	60	5400	325	34	0.030	0.018	5100	275	32	0.027	0.014	4500	230	28	0.026	0.010
2.5	8	15800	1925	124	0.061	0.158	14900	1605	117	0.054	0.123	13200	1305	104	0.049	0.088
2.5	10	15800	1925	124	0.061	0.158	14900	1605	117	0.054	0.123	13200	1305	104	0.049	0.088
2.5	12	15800	1925	124	0.061	0.158	14900	1605	117	0.054	0.123	13200	1305	104	0.049	0.088
2.5	16	14220	1560	112	0.055	0.090	13410	1300	105	0.048	0.070	11880	1055	93	0.044	0.050
2.5	20	14220	1560	112	0.055	0.090	13410	1300	105	0.048	0.070	11880	1055	93	0.044	0.050
2.5	22	14220	1560	112	0.055	0.056	13410	1300	105	0.048	0.044	11880	1055	93	0.044	0.031
2.5	26	12640	1230	99	0.049	0.056	11920	1025	94	0.043	0.044	10560	835	83	0.040	0.031
2.5	30	12640	1230	99	0.049	0.056	11920	1025	94	0.043	0.044	10560	835	83	0.040	0.031
2.5	35	12640	1230	99	0.049	0.034	11920	1025	94	0.043	0.026	10560	835	83	0.040	0.019
2.5	40	9480	810	74	0.043	0.034	8940	675	70	0.038	0.026	7920	550	62	0.035	0.019
2.5	45	9480	810	74	0.043	0.023	8940	675	70	0.038	0.018	7920	550	62	0.035	0.013
2.5	50	9480	810	74	0.043	0.023	8940	675	70	0.038	0.018	7920	550	62	0.035	0.013

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

4G MILL END MILLS

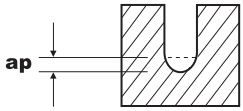
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE BALL NOSE with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS mit ABGESETZTEM SCHAFTTETL

SEM846 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc 35					HRc 35 ~ HRc 45					HRc 45 ~ HRc 55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)
3.0	6	13700	2050	129	0.075	0.270	12900	1730	122	0.067	0.210	11400	1435	107	0.063	0.150
3.0	8	13700	2050	129	0.075	0.270	12900	1730	122	0.067	0.210	11400	1435	107	0.063	0.150
3.0	10	13700	2050	129	0.075	0.189	12900	1730	122	0.067	0.147	11400	1435	107	0.063	0.105
3.0	12	13700	2050	129	0.075	0.189	12900	1730	122	0.067	0.147	11400	1435	107	0.063	0.105
3.0	14	13700	2050	129	0.075	0.189	12900	1730	122	0.067	0.147	11400	1435	107	0.063	0.105
3.0	16	12330	1660	116	0.067	0.108	11610	1400	109	0.060	0.084	10260	1160	97	0.057	0.060
3.0	18	12330	1660	116	0.067	0.108	11610	1400	109	0.060	0.084	10260	1160	97	0.057	0.060
3.0	20	12330	1660	116	0.067	0.108	11610	1400	109	0.060	0.084	10260	1160	97	0.057	0.060
3.0	22	12330	1660	116	0.067	0.108	11610	1400	109	0.060	0.084	10260	1160	97	0.057	0.060
3.0	26	12330	1660	116	0.067	0.068	11610	1400	109	0.060	0.053	10260	1160	97	0.057	0.038
3.0	30	12330	1660	116	0.067	0.068	11610	1400	109	0.060	0.053	10260	1160	97	0.057	0.038
3.0	35	10960	1310	103	0.060	0.068	10320	1105	97	0.054	0.053	9120	920	86	0.050	0.038
3.0	40	10960	1310	103	0.060	0.041	10320	1105	97	0.054	0.032	9120	920	86	0.050	0.023
3.0	45	10960	1310	103	0.060	0.041	10320	1105	97	0.054	0.032	9120	920	86	0.050	0.023
3.0	50	8220	860	77	0.052	0.027	7740	725	73	0.047	0.021	6840	605	64	0.044	0.015
3.0	60	8220	860	77	0.052	0.027	7740	725	73	0.047	0.021	6840	605	64	0.044	0.015
4.0	8	9800	1965	123	0.100	0.360	9300	1670	117	0.090	0.280	8200	1395	103	0.085	0.200
4.0	10	9800	1965	123	0.100	0.360	9300	1670	117	0.090	0.280	8200	1395	103	0.085	0.200
4.0	12	9800	1965	123	0.100	0.360	9300	1670	117	0.090	0.280	8200	1395	103	0.085	0.200
4.0	14	9800	1965	123	0.100	0.252	9300	1670	117	0.090	0.196	8200	1395	103	0.085	0.140
4.0	16	9800	1965	123	0.100	0.252	9300	1670	117	0.090	0.196	8200	1395	103	0.085	0.140
4.0	18	9800	1965	123	0.100	0.252	9300	1670	117	0.090	0.196	8200	1395	103	0.085	0.140
4.0	20	9800	1965	123	0.100	0.252	9300	1670	117	0.090	0.196	8200	1395	103	0.085	0.140
4.0	22	8820	1590	111	0.090	0.144	8370	1355	105	0.081	0.112	7380	1130	93	0.077	0.080
4.0	26	8820	1590	111	0.090	0.144	8370	1355	105	0.081	0.112	7380	1130	93	0.077	0.080
4.0	30	8820	1590	111	0.090	0.144	8370	1355	105	0.081	0.112	7380	1130	93	0.077	0.080
4.0	35	8820	1590	111	0.090	0.090	8370	1355	105	0.081	0.070	7380	1130	93	0.077	0.050
4.0	40	8820	1590	111	0.090	0.090	8370	1355	105	0.081	0.070	7380	1130	93	0.077	0.050
4.0	45	7840	1260	99	0.080	0.090	7440	1070	93	0.072	0.070	6560	895	82	0.068	0.050
4.0	50	7840	1260	99	0.080	0.090	7440	1070	93	0.072	0.070	6560	895	82	0.068	0.050
4.0	60	7840	1260	99	0.080	0.054	7440	1070	93	0.072	0.042	6560	895	82	0.068	0.030
5.0	15	7700	1845	121	0.120	0.315	7300	1455	115	0.100	0.245	6400	1285	101	0.100	0.175
5.0	20	7700	1845	121	0.120	0.315	7300	1455	115	0.100	0.245	6400	1285	101	0.100	0.175
5.0	26	6930	1495	109	0.108	0.180	6570	1180	103	0.090	0.140	5760	1040	90	0.090	0.100
5.0	30	6930	1495	109	0.108	0.180	6570	1180	103	0.090	0.140	5760	1040	90	0.090	0.100
5.0	35	6930	1495	109	0.108	0.180	6570	1180	103	0.090	0.140	5760	1040	90	0.090	0.100
5.0	40	6930	1495	109	0.108	0.180	6570	1180	103	0.090	0.140	5760	1040	90	0.090	0.100
5.0	50	6930	1495	109	0.108	0.113	6570	1180	103	0.090	0.088	5760	1040	90	0.090	0.063
5.0	60	6160	1180	97	0.096	0.113	5840	930	92	0.080	0.088	5120	820	80	0.080	0.063
6.0	20	6500	1900	123	0.146	0.378	6200	1600	117	0.129	0.294	5500	1330	104	0.121	0.210
6.0	30	6500	1900	123	0.146	0.378	6200	1600	117	0.129	0.294	5500	1330	104	0.121	0.210
8.0	25	4850	1800	122	0.186	0.504	4600	1500	116	0.163	0.392	4000	1280	101	0.160	0.280
8.0	30	4850	1800	122	0.186	0.504	4600	1500	116	0.163	0.392	4000	1280	101	0.160	0.280
10.0	30	3850	1650	121	0.214	0.900	3680	1400	116	0.190	0.700	3200	1200	101	0.188	0.500
10.0	40	3850	1650	121	0.214	0.630	3680	1400	116	0.190	0.490	3200	1200	101	0.188	0.350
12.0	32	3200	1520	121	0.238	1.080	3050	1300	115	0.213	0.840	2650	1100	100	0.208	0.600
12.0	45	3200	1520	121	0.238	0.756	3050	1300	115	0.213	0.588	2650	1100	100	0.208	0.420

(Depth of Cut per one pass)



DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

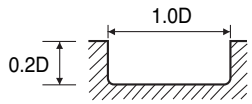
4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE CORNER RADIUS
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS

SEMD99 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS	~ HRc 35				HRc 35 ~ HRc 45				HRc 45 ~ HRc 55			
STRENGTH	~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
0.2	44000	145	28	0.002	28800	60	18	0.001	17600	40	11	0.001
0.3	41000	170	39	0.002	27000	70	25	0.001	16500	45	16	0.001
0.4	41000	170	52	0.002	27000	70	34	0.001	16500	45	21	0.001
0.5	36000	190	57	0.003	23400	80	37	0.002	14300	50	22	0.002
0.6	30000	210	57	0.004	19800	90	37	0.002	12100	55	23	0.002
0.7	30000	210	66	0.004	19800	90	44	0.002	12100	55	27	0.002
0.8	30000	210	75	0.004	19800	90	50	0.002	12100	55	30	0.002
0.9	30000	225	85	0.004	18900	90	53	0.002	11550	55	33	0.002
1.0	27600	240	87	0.004	18000	100	57	0.003	11000	60	35	0.003
1.2	24800	245	93	0.005	15750	105	59	0.003	9750	60	37	0.003
1.5	22000	250	104	0.006	13500	110	64	0.004	8500	60	40	0.004
2.0	18000	260	113	0.007	11560	120	73	0.005	7200	70	45	0.005
2.5	15000	270	118	0.009	9500	130	75	0.007	6100	70	48	0.006
3.0	13240	280	125	0.011	8560	140	81	0.008	5280	70	50	0.007
3.5	11980	310	132	0.013	7690	155	85	0.010	4790	75	53	0.008
4.0	10720	340	135	0.016	6820	170	86	0.012	4300	80	54	0.009
4.5	9940	380	141	0.019	6310	185	89	0.015	4300	90	61	0.010
5.0	9160	420	144	0.023	5800	200	91	0.017	3800	100	60	0.013
5.5	8530	460	147	0.027	5420	225	94	0.021	3540	110	61	0.016
6.0	7900	500	149	0.032	5040	250	95	0.025	3280	120	62	0.018
7.0	6950	520	153	0.037	4420	250	97	0.028	2900	120	64	0.021
8.0	6000	540	151	0.045	3800	250	96	0.033	2520	120	63	0.024
10.0	5040	540	158	0.054	3280	250	103	0.038	2020	120	63	0.030
11.0	4580	480	158	0.052	3030	240	105	0.040	1850	110	64	0.030
12.0	4120	420	155	0.051	2780	230	105	0.041	1680	100	63	0.030
14.0	3610	390	159	0.054	2440	200	107	0.041	1480	90	65	0.030
16.0	3100	360	156	0.058	2100	170	106	0.040	1280	80	64	0.031
20.0	2520	280	158	0.056	1640	120	103	0.037	1000	60	63	0.030



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

SEME61 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc 35					HRc 35 ~ HRc 45					HRc 45 ~ HRc 55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	ap(mm)	RPM	FEED	Vc	fz	ap(mm)	RPM	FEED	Vc	fz	ap(mm)
0.2	0.5	50000	170	31	0.002	0.040	34500	75	22	0.001	0.030	21150	45	13	0.001	0.024
0.2	1	50000	170	31	0.002	0.028	34500	75	22	0.001	0.021	21150	45	13	0.001	0.017
0.2	1.5	45000	140	28	0.002	0.016	31050	60	20	0.001	0.012	19040	35	12	0.001	0.010
0.2	2	45000	140	28	0.002	0.010	31050	60	20	0.001	0.008	19040	35	12	0.001	0.006
0.3	1	50000	200	47	0.002	0.042	32000	85	30	0.001	0.032	20000	50	19	0.001	0.025
0.3	2	45000	160	42	0.002	0.024	28800	70	27	0.001	0.018	18000	40	17	0.001	0.014
0.3	3	45000	160	42	0.002	0.015	28800	70	27	0.001	0.011	18000	40	17	0.001	0.009
0.4	1	50000	200	63	0.002	0.080	32000	85	40	0.001	0.060	20000	50	25	0.001	0.048
0.4	1.5	50000	200	63	0.002	0.056	32000	85	40	0.001	0.042	20000	50	25	0.001	0.034
0.4	2	50000	200	63	0.002	0.056	32000	85	40	0.001	0.042	20000	50	25	0.001	0.034
0.4	2.5	45000	160	57	0.002	0.032	28800	70	36	0.001	0.024	18000	40	23	0.001	0.019
0.4	3	45000	160	57	0.002	0.032	28800	70	36	0.001	0.024	18000	40	23	0.001	0.019
0.4	4	45000	160	57	0.002	0.020	28800	70	36	0.001	0.015	18000	40	23	0.001	0.012
0.5	1	43000	220	68	0.003	0.100	28000	95	44	0.002	0.075	17100	60	27	0.002	0.060
0.5	1.5	43000	220	68	0.003	0.100	28000	95	44	0.002	0.075	17100	60	27	0.002	0.060
0.5	2	43000	220	68	0.003	0.070	28000	95	44	0.002	0.053	17100	60	27	0.002	0.042
0.5	2.5	43000	220	68	0.003	0.070	28000	95	44	0.002	0.053	17100	60	27	0.002	0.042
0.5	3	38700	180	61	0.002	0.040	25200	75	40	0.001	0.030	15390	50	24	0.002	0.024
0.5	4	38700	180	61	0.002	0.040	25200	75	40	0.001	0.030	15390	50	24	0.002	0.024
0.5	5	38700	180	61	0.002	0.025	25200	75	40	0.001	0.019	15390	50	24	0.002	0.015
0.5	6	34400	140	54	0.002	0.025	22400	60	35	0.001	0.019	13680	40	21	0.001	0.015
0.6	2	36400	250	69	0.003	0.084	24000	110	45	0.002	0.063	14500	65	27	0.002	0.050
0.6	3	36400	250	69	0.003	0.084	24000	110	45	0.002	0.063	14500	65	27	0.002	0.050
0.6	4	32760	205	62	0.003	0.048	21600	90	41	0.002	0.036	13050	55	25	0.002	0.029
0.6	6	32760	205	62	0.003	0.030	21600	90	41	0.002	0.023	13050	55	25	0.002	0.018
0.6	8	29120	160	55	0.003	0.018	19200	70	36	0.002	0.014	11600	40	22	0.002	0.011
0.6	10	21840	105	41	0.002	0.012	14400	45	27	0.002	0.009	8700	25	16	0.001	0.007
0.7	2	36400	250	80	0.003	0.140	24000	110	53	0.002	0.105	14500	65	32	0.002	0.084
0.7	4	32760	205	72	0.003	0.056	21600	90	48	0.002	0.042	13050	55	29	0.002	0.034
0.7	6	32760	205	72	0.003	0.035	21600	90	48	0.002	0.026	13050	55	29	0.002	0.021
0.7	8	29120	160	64	0.003	0.035	19200	70	42	0.002	0.026	11600	40	26	0.002	0.021
0.7	10	29120	160	64	0.003	0.021	19200	70	42	0.002	0.016	11600	40	26	0.002	0.013
0.8	2	36400	250	91	0.003	0.160	24000	110	60	0.002	0.120	14500	65	36	0.002	0.096
0.8	3	36400	250	91	0.003	0.112	24000	110	60	0.002	0.084	14500	65	36	0.002	0.067
0.8	4	36400	250	91	0.003	0.112	24000	110	60	0.002	0.084	14500	65	36	0.002	0.067
0.8	6	32760	205	82	0.003	0.064	21600	90	54	0.002	0.048	13050	55	33	0.002	0.038
0.8	8	32760	205	82	0.003	0.040	21600	90	54	0.002	0.030	13050	55	33	0.002	0.024
0.8	10	29120	160	73	0.003	0.040	19200	70	48	0.002	0.030	11600	40	29	0.002	0.024
1.0	3	33100	280	104	0.004	0.200	21600	120	68	0.003	0.150	13200	70	41	0.003	0.120
1.0	4	33100	280	104	0.004	0.140	21600	120	68	0.003	0.105	13200	70	41	0.003	0.084
1.0	6	29790	225	94	0.004	0.080	19440	95	61	0.002	0.060	11880	55	37	0.002	0.048
1.0	8	29790	225	94	0.004	0.080	19440	95	61	0.002	0.060	11880	55	37	0.002	0.048
1.0	10	29790	225	94	0.004	0.050	19440	95	61	0.002	0.038	11880	55	37	0.002	0.030
1.0	12	26480	180	83	0.003	0.050	17280	75	54	0.002	0.038	10560	45	33	0.002	0.030
1.0	14	26480	180	83	0.003	0.030	17280	75	54	0.002	0.023	10560	45	33	0.002	0.018
1.0	16	19860	120	62	0.003	0.030	12960	50	41	0.002	0.023	7920	30	25	0.002	0.018
1.0	20	19860	120	62	0.003	0.020	12960	50	41	0.002	0.015	7920	30	25	0.002	0.012

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

SEME61 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc 35					HRc 35 ~ HRc 45					HRc 45 ~ HRc 55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	ap(mm)	RPM	FEED	Vc	fz	ap(mm)	RPM	FEED	Vc	fz	ap(mm)
1.2	3	29750	290	112	0.005	0.240	18900	125	71	0.003	0.180	11700	70	44	0.003	0.144
1.2	4	29750	290	112	0.005	0.168	18900	125	71	0.003	0.126	11700	70	44	0.003	0.101
1.2	6	29750	290	112	0.005	0.168	18900	125	71	0.003	0.126	11700	70	44	0.003	0.101
1.2	8	26780	235	101	0.004	0.096	17010	100	64	0.003	0.072	10530	55	40	0.003	0.058
1.2	10	26780	235	101	0.004	0.060	17010	100	64	0.003	0.045	10530	55	40	0.003	0.036
1.2	12	26780	235	101	0.004	0.060	17010	100	64	0.003	0.045	10530	55	40	0.003	0.036
1.2	16	23800	185	90	0.004	0.036	15120	80	57	0.003	0.027	9360	45	35	0.002	0.022
1.2	20	17850	120	67	0.003	0.024	11340	55	43	0.002	0.018	7020	30	26	0.002	0.014
1.5	4	26400	300	124	0.006	0.300	16200	130	76	0.004	0.225	10200	70	48	0.003	0.180
1.5	6	26400	300	124	0.006	0.210	16200	130	76	0.004	0.158	10200	70	48	0.003	0.126
1.5	8	23760	245	112	0.005	0.120	14580	105	69	0.004	0.090	9180	55	43	0.003	0.072
1.5	10	23760	245	112	0.005	0.120	14580	105	69	0.004	0.090	9180	55	43	0.003	0.072
1.5	12	23760	245	112	0.005	0.120	14580	105	69	0.004	0.090	9180	55	43	0.003	0.072
1.5	14	23760	245	112	0.005	0.075	14580	105	69	0.004	0.056	9180	55	43	0.003	0.045
1.5	16	21120	190	100	0.004	0.075	12960	85	61	0.003	0.056	8160	45	38	0.003	0.045
1.5	20	21120	190	100	0.004	0.045	12960	85	61	0.003	0.034	8160	45	38	0.003	0.027
1.5	22	21120	190	100	0.004	0.045	12960	85	61	0.003	0.034	8160	45	38	0.003	0.027
1.5	26	15840	125	75	0.004	0.030	9720	55	46	0.003	0.023	6120	30	29	0.002	0.018
2.0	6	21600	310	136	0.007	0.400	13800	140	87	0.005	0.300	8640	80	54	0.005	0.240
2.0	8	21600	310	136	0.007	0.280	13800	140	87	0.005	0.210	8640	80	54	0.005	0.168
2.0	10	21600	310	136	0.007	0.280	13800	140	87	0.005	0.210	8640	80	54	0.005	0.168
2.0	12	19440	250	122	0.006	0.160	12420	115	78	0.005	0.120	7780	65	49	0.004	0.096
2.0	14	19440	250	122	0.006	0.160	12420	115	78	0.005	0.120	7780	65	49	0.004	0.096
2.0	16	19440	250	122	0.006	0.160	12420	115	78	0.005	0.120	7780	65	49	0.004	0.096
2.0	20	19440	250	122	0.006	0.100	12420	115	78	0.005	0.075	7780	65	49	0.004	0.060
2.0	22	17280	200	109	0.006	0.100	11040	90	69	0.004	0.075	6910	50	43	0.004	0.060
2.0	26	17280	200	109	0.006	0.100	11040	90	69	0.004	0.075	6910	50	43	0.004	0.060
2.0	30	17280	200	109	0.006	0.060	11040	90	69	0.004	0.045	6910	50	43	0.004	0.036
2.5	8	18000	320	141	0.009	0.350	11400	150	90	0.007	0.263	7320	80	57	0.005	0.210
2.5	10	18000	320	141	0.009	0.350	11400	150	90	0.007	0.263	7320	80	57	0.005	0.210
2.5	12	18000	320	141	0.009	0.350	11400	150	90	0.007	0.263	7320	80	57	0.005	0.210
2.5	14	16200	260	127	0.008	0.200	10260	120	81	0.006	0.150	6590	65	52	0.005	0.120
2.5	16	16200	260	127	0.008	0.200	10260	120	81	0.006	0.150	6590	65	52	0.005	0.120
2.5	20	16200	260	127	0.008	0.200	10260	120	81	0.006	0.150	6590	65	52	0.005	0.120
2.5	26	14400	205	113	0.007	0.125	9120	95	72	0.005	0.094	5860	50	46	0.004	0.075
2.5	30	14400	205	113	0.007	0.125	9120	95	72	0.005	0.094	5860	50	46	0.004	0.075
3.0	8	15900	330	150	0.010	0.600	10300	160	97	0.008	0.450	6300	80	59	0.006	0.360
3.0	10	15900	330	150	0.010	0.420	10300	160	97	0.008	0.315	6300	80	59	0.006	0.252
3.0	12	15900	330	150	0.010	0.420	10300	160	97	0.008	0.315	6300	80	59	0.006	0.252
3.0	14	15900	330	150	0.010	0.420	10300	160	97	0.008	0.315	6300	80	59	0.006	0.252
3.0	16	14310	265	135	0.009	0.240	9270	130	87	0.007	0.180	5670	65	53	0.006	0.144
3.0	20	14310	265	135	0.009	0.240	9270	130	87	0.007	0.180	5670	65	53	0.006	0.144
3.0	26	14310	265	135	0.009	0.150	9270	130	87	0.007	0.113	5670	65	53	0.006	0.090
3.0	30	14310	265	135	0.009	0.150	9270	130	87	0.007	0.113	5670	65	53	0.006	0.090
3.0	35	12720	210	120	0.008	0.150	8240	100	78	0.006	0.113	5040	50	48	0.005	0.090
3.0	40	12720	210	120	0.008	0.090	8240	100	78	0.006	0.068	5040	50	48	0.005	0.054
4.0	10	12800	400	161	0.016	0.800	8200	200	103	0.012	0.600	5150	95	65	0.009	0.480

DIA. = Diameter
LBS = Length Below Shank

RPM = rev./min.
FEED = mm/min.

Vc = m/min.
fz = mm/t

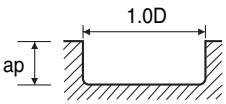
4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

SEME61 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc 35					HRc 35 ~ HRc 45					HRc 45 ~ HRc 55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	ap(mm)	RPM	FEED	Vc	fz	ap(mm)	RPM	FEED	Vc	fz	ap(mm)
4.0	12	12800	400	161	0.016	0.800	8200	200	103	0.012	0.600	5150	95	65	0.009	0.480
4.0	14	12800	400	161	0.016	0.560	8200	200	103	0.012	0.420	5150	95	65	0.009	0.336
4.0	16	12800	400	161	0.016	0.560	8200	200	103	0.012	0.420	5150	95	65	0.009	0.336
4.0	20	12800	400	161	0.016	0.560	8200	200	103	0.012	0.420	5150	95	65	0.009	0.336
4.0	26	11520	325	145	0.014	0.320	7380	160	93	0.011	0.240	4640	75	58	0.008	0.192
4.0	30	11520	325	145	0.014	0.320	7380	160	93	0.011	0.240	4640	75	58	0.008	0.192
4.0	35	11520	325	145	0.014	0.200	7380	160	93	0.011	0.150	4640	75	58	0.008	0.120
4.0	40	11520	325	145	0.014	0.200	7380	160	93	0.011	0.150	4640	75	58	0.008	0.120
4.0	45	10240	255	129	0.012	0.200	6560	130	82	0.010	0.150	4120	60	52	0.007	0.120
4.0	50	10240	255	129	0.012	0.200	6560	130	82	0.010	0.150	4120	60	52	0.007	0.120
5.0	15	11000	500	173	0.023	1.000	7000	240	110	0.017	0.750	4560	120	72	0.013	0.600
6.0	20	9500	600	179	0.032	0.840	6000	300	113	0.025	0.630	3930	140	74	0.018	0.504
6.0	30	9500	600	179	0.032	0.840	6000	300	113	0.025	0.630	3930	140	74	0.018	0.504
8.0	25	7200	640	181	0.044	1.120	4550	300	114	0.033	0.840	3020	140	76	0.023	0.672
8.0	35	7200	640	181	0.044	1.120	4550	300	114	0.033	0.840	3020	140	76	0.023	0.672
10.0	30	6000	640	188	0.053	2.000	4000	300	126	0.038	1.500	2420	140	76	0.029	1.200
10.0	40	6000	640	188	0.053	1.400	4000	300	126	0.038	1.050	2420	140	76	0.029	0.840
12.0	32	5000	500	188	0.050	2.400	3340	270	126	0.040	1.800	2000	120	75	0.030	1.440
12.0	45	5000	500	188	0.050	1.680	3340	270	126	0.040	1.260	2000	120	75	0.030	1.008
16.0	35	3720	450	187	0.060	3.200	2520	210	127	0.042	2.400	1540	95	77	0.031	1.920
16.0	50	3720	450	187	0.060	2.240	2520	210	127	0.042	1.680	1540	95	77	0.031	1.344
20.0	40	3000	330	188	0.055	4.000	1950	140	123	0.036	3.000	1200	70	75	0.029	2.400
20.0	55	3000	330	188	0.055	4.000	1950	140	123	0.036	3.000	1200	70	75	0.029	2.400



DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

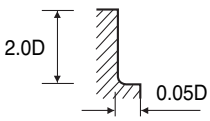
4G MILL END MILLS

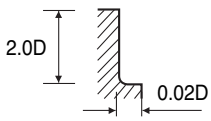
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 4 FLUTE MULTIPLE HELIX CORNER RADIUS
VOLLHARTMETALL, 4 SCHNEIDEN MEHRSPIRAL ECKENRADIUS

SEME01 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS	~ HRc 35				HRc 35 ~ HRc 45				HRc 45 ~ HRc 55			
STRENGTH	~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
1.0	27600	300	87	0.003	18000	220	57	0.003	11000	120	35	0.003
1.2	24800	305	93	0.003	15750	225	59	0.004	9750	120	37	0.003
1.5	22000	310	104	0.004	13500	230	64	0.004	8500	120	40	0.004
2.0	18000	320	113	0.004	11560	240	73	0.005	7200	130	45	0.005
2.5	15000	330	118	0.006	9500	250	75	0.007	6100	130	48	0.005
3.0	13240	340	125	0.006	8560	260	81	0.008	5280	130	50	0.006
3.5	11980	380	132	0.008	7690	280	85	0.009	4790	135	53	0.007
4.0	10720	420	135	0.010	6820	300	86	0.011	4300	140	54	0.008
4.5	9940	425	141	0.011	6310	330	89	0.013	4050	155	57	0.010
5.0	9160	430	144	0.012	5800	360	91	0.016	3800	170	60	0.011
5.5	8530	430	147	0.013	5420	360	94	0.017	3540	170	61	0.012
6.0	7900	430	149	0.014	5040	360	95	0.018	3280	170	62	0.013
7.0	6950	445	153	0.016	4420	360	97	0.020	2900	170	64	0.015
8.0	6000	460	151	0.019	3800	360	96	0.024	2520	170	63	0.017
10.0	5040	460	158	0.023	3280	360	103	0.027	2020	170	63	0.021
11.0	4580	410	158	0.022	3030	340	105	0.028	1850	155	64	0.021
12.0	4120	360	155	0.022	2780	320	105	0.029	1680	140	63	0.021
14.0	3610	320	159	0.022	2440	275	107	0.028	1480	125	65	0.021
16.0	3100	280	156	0.023	2100	230	106	0.027	1280	115	64	0.022
20.0	2520	230	158	0.023	1640	180	103	0.027	1000	90	63	0.023





* 1.5XD Axial cutting depth should be for diameter over 16mm

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 4 FLUTE MULTIPLE HELIX CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 4 SCHNEIDEN MEHRSPIRAL ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

SEME64 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc 35					HRc 35 ~ HRc 45					HRc 45 ~ HRc 55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	Ae(mm)	RPM	FEED	Vc	fz	Ae(mm)	RPM	FEED	Vc	fz	Ae(mm)
1.0	4	33100	360	104	0.003	0.021	21600	260	68	0.003	0.016	13200	140	41	0.003	0.013
1.0	6	29790	290	94	0.002	0.012	19440	210	61	0.003	0.009	11880	115	37	0.002	0.007
1.0	8	29790	290	94	0.002	0.012	19440	210	61	0.003	0.009	11880	115	37	0.002	0.007
1.0	10	29790	290	94	0.002	0.008	19440	210	61	0.003	0.006	11880	115	37	0.002	0.005
1.0	12	26480	230	83	0.002	0.008	17280	165	54	0.002	0.006	10560	90	33	0.002	0.005
1.0	16	19860	150	62	0.002	0.005	12960	110	41	0.002	0.003	7920	60	25	0.002	0.003
1.0	20	19860	150	62	0.002	0.003	12960	110	41	0.002	0.002	7920	60	25	0.002	0.002
1.0	22	9930	65	31	0.002	0.003	6480	45	20	0.002	0.002	3960	25	12	0.002	0.002
1.0	26	9930	65	31	0.002	0.003	6480	45	20	0.002	0.002	3960	25	12	0.002	0.002
1.2	3	29750	365	112	0.003	0.036	18900	265	71	0.004	0.027	11700	140	44	0.003	0.022
1.2	4	29750	365	112	0.003	0.025	18900	265	71	0.004	0.019	11700	140	44	0.003	0.015
1.2	6	29750	365	112	0.003	0.025	18900	265	71	0.004	0.019	11700	140	44	0.003	0.015
1.2	8	26780	295	101	0.003	0.014	17010	215	64	0.003	0.011	10530	115	40	0.003	0.009
1.2	10	26780	295	101	0.003	0.009	17010	215	64	0.003	0.007	10530	115	40	0.003	0.005
1.2	12	26780	295	101	0.003	0.009	17010	215	64	0.003	0.007	10530	115	40	0.003	0.005
1.2	16	23800	235	90	0.002	0.005	15120	170	57	0.003	0.004	9360	90	35	0.002	0.003
1.2	20	17850	155	67	0.002	0.004	11340	110	43	0.002	0.003	7020	60	26	0.002	0.002
1.5	4	26400	370	124	0.004	0.045	16200	270	76	0.004	0.034	10200	140	48	0.003	0.027
1.5	6	26400	370	124	0.004	0.032	16200	270	76	0.004	0.024	10200	140	48	0.003	0.019
1.5	8	23760	300	112	0.003	0.018	14580	220	69	0.004	0.014	9180	115	43	0.003	0.011
1.5	10	23760	300	112	0.003	0.018	14580	220	69	0.004	0.014	9180	115	43	0.003	0.011
1.5	12	23760	300	112	0.003	0.018	14580	220	69	0.004	0.014	9180	115	43	0.003	0.011
1.5	14	23760	300	112	0.003	0.011	14580	220	69	0.004	0.008	9180	115	43	0.003	0.007
1.5	16	21120	235	100	0.003	0.011	12960	175	61	0.003	0.008	8160	90	38	0.003	0.007
1.5	20	21120	235	100	0.003	0.007	12960	175	61	0.003	0.005	8160	90	38	0.003	0.004
1.5	22	21120	235	100	0.003	0.007	12960	175	61	0.003	0.005	8160	90	38	0.003	0.004
1.5	26	15840	155	75	0.002	0.005	9720	115	46	0.003	0.003	6120	60	29	0.002	0.003
2.0	6	21600	380	136	0.004	0.060	13800	280	87	0.005	0.045	8640	150	54	0.004	0.036
2.0	8	21600	380	136	0.004	0.042	13800	280	87	0.005	0.032	8640	150	54	0.004	0.025
2.0	10	21600	380	136	0.004	0.042	13800	280	87	0.005	0.032	8640	150	54	0.004	0.025
2.0	12	19440	310	122	0.004	0.024	12420	225	78	0.005	0.018	7780	120	49	0.004	0.014
2.0	14	19440	310	122	0.004	0.024	12420	225	78	0.005	0.018	7780	120	49	0.004	0.014
2.0	16	19440	310	122	0.004	0.024	12420	225	78	0.005	0.018	7780	120	49	0.004	0.014
2.0	20	19440	310	122	0.004	0.015	12420	225	78	0.005	0.011	7780	120	49	0.004	0.009
2.0	22	17280	245	109	0.004	0.015	11040	180	69	0.004	0.011	6910	95	43	0.003	0.009
2.0	26	17280	245	109	0.004	0.015	11040	180	69	0.004	0.011	6910	95	43	0.003	0.009
2.0	30	17280	245	109	0.004	0.009	11040	180	69	0.004	0.007	6910	95	43	0.003	0.005
2.5	8	18000	390	141	0.005	0.053	11400	300	90	0.007	0.039	7320	150	57	0.005	0.032
2.5	10	18000	390	141	0.005	0.053	11400	300	90	0.007	0.039	7320	150	57	0.005	0.032
2.5	12	18000	390	141	0.005	0.053	11400	300	90	0.007	0.039	7320	150	57	0.005	0.032
2.5	14	16200	315	127	0.005	0.030	10260	245	81	0.006	0.023	6590	120	52	0.005	0.018
2.5	16	16200	315	127	0.005	0.030	10260	245	81	0.006	0.023	6590	120	52	0.005	0.018
2.5	20	16200	315	127	0.005	0.030	10260	245	81	0.006	0.023	6590	120	52	0.005	0.018
2.5	26	14400	250	113	0.004	0.019	9120	190	72	0.005	0.014	5860	95	46	0.004	0.011
2.5	30	14400	250	113	0.004	0.019	9120	190	72	0.005	0.014	5860	95	46	0.004	0.011

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

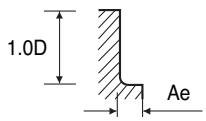
4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 4 FLUTE MULTIPLE HELIX CORNER RADIUS with EXTENDED NECK
VOLLHARTMETALL, 4 SCHNEIDEN MEHRSPIRAL ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

SEME64 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc 35					HRc 35 ~ HRc 45					HRc 45 ~ HRc 55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	Ae(mm)	RPM	FEED	Vc	fz	Ae(mm)	RPM	FEED	Vc	fz	Ae(mm)
3.0	8	15900	400	150	0.006	0.090	10300	310	97	0.008	0.068	6300	150	59	0.006	0.054
3.0	10	15900	400	150	0.006	0.063	10300	310	97	0.008	0.047	6300	150	59	0.006	0.038
3.0	12	15900	400	150	0.006	0.063	10300	310	97	0.008	0.047	6300	150	59	0.006	0.038
3.0	14	15900	400	150	0.006	0.063	10300	310	97	0.008	0.047	6300	150	59	0.006	0.038
3.0	16	14310	325	135	0.006	0.036	9270	250	87	0.007	0.027	5670	120	53	0.005	0.022
3.0	20	14310	325	135	0.006	0.036	9270	250	87	0.007	0.027	5670	120	53	0.005	0.022
3.0	26	14310	325	135	0.006	0.023	9270	250	87	0.007	0.017	5670	120	53	0.005	0.014
3.0	30	14310	325	135	0.006	0.023	9270	250	87	0.007	0.017	5670	120	53	0.005	0.014
3.0	35	12720	255	120	0.005	0.023	8240	200	78	0.006	0.017	5040	95	48	0.005	0.014
3.0	40	12720	255	120	0.005	0.014	8240	200	78	0.006	0.010	5040	95	48	0.005	0.008
4.0	10	12800	500	161	0.010	0.120	8200	360	103	0.011	0.090	5150	160	65	0.008	0.072
4.0	12	12800	500	161	0.010	0.120	8200	360	103	0.011	0.090	5150	160	65	0.008	0.072
4.0	14	12800	500	161	0.010	0.084	8200	360	103	0.011	0.063	5150	160	65	0.008	0.050
4.0	16	12800	500	161	0.010	0.084	8200	360	103	0.011	0.063	5150	160	65	0.008	0.050
4.0	20	12800	500	161	0.010	0.084	8200	360	103	0.011	0.063	5150	160	65	0.008	0.050
4.0	26	11520	405	145	0.009	0.048	7380	290	93	0.010	0.036	4640	130	58	0.007	0.029
4.0	30	11520	405	145	0.009	0.048	7380	290	93	0.010	0.036	4640	130	58	0.007	0.029
4.0	35	11520	405	145	0.009	0.030	7380	290	93	0.010	0.023	4640	130	58	0.007	0.018
4.0	40	11520	405	145	0.009	0.030	7380	290	93	0.010	0.023	4640	130	58	0.007	0.018
4.0	45	10240	320	129	0.008	0.030	6560	230	82	0.009	0.023	4120	100	52	0.006	0.018
4.0	50	10240	320	129	0.008	0.030	6560	230	82	0.009	0.023	4120	100	52	0.006	0.018
5.0	15	11000	510	173	0.012	0.150	7000	430	110	0.015	0.113	4560	200	72	0.011	0.090
6.0	20	9500	510	179	0.013	0.126	6000	430	113	0.018	0.095	3930	200	74	0.013	0.076
6.0	30	9500	510	179	0.013	0.126	6000	430	113	0.018	0.095	3930	200	74	0.013	0.076
8.0	25	7200	550	181	0.019	0.168	4550	430	114	0.024	0.126	3020	200	76	0.017	0.101
8.0	35	7200	550	181	0.019	0.168	4550	430	114	0.024	0.126	3020	200	76	0.017	0.101
10.0	30	6000	550	188	0.023	0.300	4000	430	126	0.027	0.225	2420	200	76	0.021	0.180
10.0	40	6000	550	188	0.023	0.210	4000	430	126	0.027	0.158	2420	200	76	0.021	0.126
12.0	32	5000	430	188	0.022	0.360	3340	380	126	0.028	0.270	2000	160	75	0.020	0.216
12.0	45	5000	430	188	0.022	0.252	3340	380	126	0.028	0.189	2000	160	75	0.020	0.151
16.0	35	3720	330	187	0.022	0.480	2520	280	127	0.028	0.360	1540	135	77	0.022	0.288
16.0	50	3720	330	187	0.022	0.336	2520	280	127	0.028	0.252	1540	135	77	0.022	0.202
20.0	40	3000	270	188	0.023	0.600	1950	210	123	0.027	0.450	1200	100	75	0.021	0.360
20.0	55	3000	270	188	0.023	0.600	1950	210	123	0.027	0.450	1200	100	75	0.021	0.360



DIA. = Diameter
LBS = Length Below Shank

RPM = rev./min.
FEED = mm/min.

Vc = m/min.
fz = mm/t

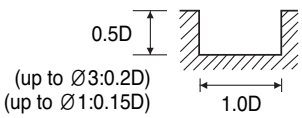
4G MILL END MILLS

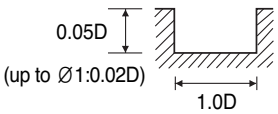
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE
VOLLHARTMETALL, 2 SCHNEIDEN

SEME35 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				STAINLESS STEELS				HARDENED STEELS			
HARDNESS	~ HRc 35				HRc 35 ~ HRc 45								HRc 45 ~ HRc 55			
STRENGTH	~ 1100N/mm²				1110 ~ 1500N/mm²								1500 ~ 2000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
0.1	42000	80	13	0.001	25200	47	8	0.001	21000	40	7	0.001	16800	16	5	0.000
0.2	42000	85	26	0.001	25200	50	16	0.001	21000	39	13	0.001	16800	17	11	0.001
0.3	39000	90	37	0.001	23400	54	22	0.001	19500	45	18	0.001	15600	18	15	0.001
0.4	39000	95	49	0.001	23400	57	29	0.001	19500	47	25	0.001	15600	19	20	0.001
0.5	36000	110	57	0.002	21600	66	34	0.002	18000	55	28	0.002	14400	22	23	0.001
0.6	32000	125	60	0.002	19200	76	36	0.002	16000	63	30	0.002	12800	25	24	0.001
0.7	28000	140	62	0.003	16800	85	37	0.003	14000	70	31	0.003	11200	28	25	0.001
0.8	25000	155	63	0.003	15000	95	38	0.003	12500	79	31	0.003	10000	32	25	0.002
0.9	23500	165	66	0.004	14100	98	40	0.003	11750	81	33	0.003	9400	33	27	0.002
1.0	21500	170	68	0.004	12900	101	41	0.004	10750	84	34	0.004	8600	34	27	0.002
1.2	18000	175	68	0.005	10800	104	41	0.005	9000	87	34	0.005	7200	35	27	0.002
1.5	15000	180	71	0.006	9000	107	42	0.006	7500	89	35	0.006	6000	36	28	0.003
2.0	11560	200	73	0.009	7560	125	48	0.008	6300	95	40	0.008	5040	37	32	0.004
2.5	10240	210	80	0.010	6560	135	52	0.010	5460	110	43	0.010	4200	39	33	0.005
3.0	8920	220	84	0.012	5560	145	52	0.013	4620	125	44	0.014	3360	42	32	0.006
3.5	8240	270	91	0.016	5090	170	56	0.017	4250	140	47	0.016	3150	42	35	0.007
4.0	7560	315	95	0.021	4620	190	58	0.021	3880	160	49	0.021	2940	42	37	0.007
4.5	6930	325	98	0.023	4200	195	59	0.023	3520	165	50	0.023	2630	47	37	0.009
5.0	6300	335	99	0.027	3780	200	59	0.026	3160	170	50	0.027	2320	53	36	0.011
5.5	5930	350	102	0.030	3570	215	62	0.030	3000	180	52	0.030	2160	55	37	0.013
6.0	5560	370	105	0.033	3360	230	63	0.034	2840	190	54	0.033	2000	58	38	0.015
6.5	5220	375	107	0.036	3150	225	64	0.036	2655	190	54	0.036	1920	63	39	0.016
7.0	4880	385	107	0.039	2940	220	65	0.037	2470	190	54	0.038	1840	68	40	0.018
7.5	4540	390	107	0.043	2730	215	64	0.039	2285	190	54	0.042	1760	74	41	0.021
8.0	4200	400	106	0.048	2520	210	63	0.042	2100	190	53	0.045	1680	79	42	0.024
8.5	3965	385	106	0.049	2390	200	64	0.042	1995	185	53	0.046	1600	74	43	0.023
9.0	3730	375	105	0.050	2260	190	64	0.042	1890	180	53	0.048	1520	68	43	0.022
9.5	3495	355	104	0.051	2130	180	64	0.042	1785	175	53	0.049	1440	63	43	0.022
10.0	3260	345	102	0.053	2000	170	63	0.043	1680	170	53	0.051	1360	63	43	0.023
10.5	3130	330	103	0.053	1920	160	63	0.042	1600	160	53	0.050	1310	61	43	0.023
11.0	3000	320	104	0.053	1840	150	64	0.041	1520	150	53	0.049	1260	58	44	0.023
11.5	2870	305	104	0.053	1760	140	64	0.040	1440	140	52	0.049	1210	58	44	0.024
12.0	2740	295	103	0.054	1680	135	63	0.040	1360	135	51	0.050	1160	58	44	0.025
13.0	2605	280	106	0.054	1600	130	65	0.041	1285	130	52	0.051	1095	55	45	0.025
14.0	2470	265	109	0.054	1520	125	67	0.041	1210	125	53	0.052	1030	49	45	0.024
15.0	2335	245	110	0.052	1440	120	68	0.042	1135	120	53	0.053	965	45	45	0.023
16.0	2200	230	111	0.052	1360	115	68	0.042	1060	115	53	0.054	900	42	45	0.023
17.0	2070	215	111	0.052	1285	105	69	0.041	1005	105	54	0.052	845	39	45	0.023
18.0	1940	205	110	0.053	1210	100	68	0.041	950	100	54	0.053	790	37	45	0.023
19.0	1810	190	108	0.052	1135	90	68	0.040	895	90	53	0.050	735	34	44	0.023
20.0	1680	180	106	0.054	1060	84	67	0.040	840	84	53	0.050	680	32	43	0.024
21.0	1615	170	107	0.053	1015	82	67	0.040	800	80	53	0.050	650	29	43	0.022
22.0	1550	165	107	0.053	970	80	67	0.041	775	76	54	0.049	620	27	43	0.022
23.0	1480	150	107	0.051	925	78	67	0.042	745	71	54	0.048	600	25	43	0.021
24.0	1425	140	107	0.049	885	76	67	0.043	715	67	54	0.047	570	23	43	0.020
25.0	1360	135	107	0.050	840	74	66	0.044	680	63	53	0.046	540	21	42	0.019





RPM = rev./min. Vc = m/min.
FEED = mm/min. fz = mm/t

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE LONG LENGTH
VOLLHARTMETALL, 2 SCHNEIDEN

SEME70 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS		~ HRc 35				HRc 35 ~ HRc 45				HRc 45 ~ HRc 55			
STRENGTH		~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²			
DIA.	LOC	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
1.0	3	16000	70	50	0.002	12800	60	40	0.002	8000	30	25	0.002
1.0	4	16000	70	50	0.002	12800	60	40	0.002	8000	30	25	0.002
1.0	5	16000	70	50	0.002	12800	60	40	0.002	8000	30	25	0.002
1.0	6	14400	55	45	0.002	11520	50	36	0.002	7200	25	23	0.002
1.0	7	14400	55	45	0.002	11520	50	36	0.002	7200	25	23	0.002
1.0	8	14400	50	45	0.002	11520	45	36	0.002	7200	20	23	0.001
1.0	10	14400	50	45	0.002	11520	45	36	0.002	7200	20	23	0.001
1.0	12	12800	40	40	0.002	10240	35	32	0.002	6400	15	20	0.001
1.2	4	13500	75	51	0.003	10800	65	41	0.003	6750	30	25	0.002
1.2	6	13500	75	51	0.003	10800	65	41	0.003	6750	30	25	0.002
1.2	8	12150	60	46	0.002	9720	50	37	0.003	6080	25	23	0.002
1.2	10	12150	55	46	0.002	9720	45	37	0.002	6080	20	23	0.002
1.2	12	12150	55	46	0.002	9720	45	37	0.002	6080	20	23	0.002
1.5	6	11200	80	53	0.004	8960	70	42	0.004	5600	30	26	0.003
1.5	8	10080	70	48	0.003	8060	60	38	0.004	5040	30	24	0.003
1.5	10	10080	65	48	0.003	8060	55	38	0.003	5040	25	24	0.002
1.5	12	10080	60	48	0.003	8060	50	38	0.003	5040	25	24	0.002
1.5	14	10080	60	48	0.003	8060	50	38	0.003	5040	25	24	0.002
1.5	16	8960	45	42	0.003	7170	40	34	0.003	4480	20	21	0.002
2.0	8	9070	85	57	0.005	7260	70	46	0.005	4540	35	29	0.004
2.0	10	9070	85	57	0.005	7260	70	46	0.005	4540	35	29	0.004
2.0	12	8160	70	51	0.004	6530	60	41	0.005	4090	30	26	0.004
2.0	14	8160	70	51	0.004	6530	60	41	0.005	4090	30	26	0.004
2.0	16	8160	60	51	0.004	6530	50	41	0.004	4090	25	26	0.003
2.5	10	7700	95	60	0.006	6200	80	49	0.006	3850	40	30	0.005
2.5	12	7700	95	60	0.006	6200	80	49	0.006	3850	40	30	0.005
2.5	16	6930	75	54	0.005	5580	65	44	0.006	3470	30	27	0.004
2.5	20	6930	70	54	0.005	5580	55	44	0.005	3470	30	27	0.004
2.5	26	6160	55	48	0.004	4960	45	39	0.005	3080	20	24	0.003
3.0	10	6350	100	60	0.008	5150	85	49	0.008	3170	40	30	0.006
3.0	12	6350	100	60	0.008	5150	85	49	0.008	3170	40	30	0.006
3.0	14	6350	100	60	0.008	5150	85	49	0.008	3170	40	30	0.006
3.0	16	5720	90	54	0.008	4640	75	44	0.008	2850	40	27	0.007
3.0	20	5720	80	54	0.007	4640	70	44	0.008	2850	35	27	0.006
3.0	26	5720	70	54	0.006	4640	60	44	0.006	2850	30	27	0.005
3.0	30	5720	70	54	0.006	4640	60	44	0.006	2850	30	27	0.005
4.0	12	5150	120	65	0.012	4100	100	52	0.012	2580	50	32	0.010
4.0	16	5150	120	65	0.012	4100	100	52	0.012	2580	50	32	0.010
4.0	20	5150	120	65	0.012	4100	100	52	0.012	2580	50	32	0.010
4.0	26	4640	95	58	0.010	3690	85	46	0.012	2320	40	29	0.009
4.0	30	4640	95	58	0.010	3690	85	46	0.012	2320	40	29	0.009
5.0	20	4400	150	69	0.017	3480	125	55	0.018	2280	55	36	0.012
5.0	25	4400	150	69	0.017	3480	125	55	0.018	2280	55	36	0.012
5.0	30	3960	120	62	0.015	3130	100	49	0.016	2050	45	32	0.011
5.0	35	3960	120	62	0.015	3130	100	49	0.016	2050	45	32	0.011
5.0	40	3960	110	62	0.014	3130	90	49	0.014	2050	40	32	0.010
6.0	15	3800	180	72	0.024	3050	150	57	0.025	1970	70	37	0.018
6.0	20	3800	180	72	0.024	3050	150	57	0.025	1970	70	37	0.018
6.0	25	3800	180	72	0.024	3050	150	57	0.025	1970	70	37	0.018
6.0	30	3800	155	72	0.020	3050	130	57	0.021	1970	60	37	0.015
6.0	35	3420	140	64	0.020	2750	115	52	0.021	1770	55	33	0.016
6.0	40	3420	120	64	0.018	2750	100	52	0.018	1770	50	33	0.014
6.0	45	3420	120	64	0.018	2750	100	52	0.018	1770	50	33	0.014

DIA. = Diameter
LOC = Length of Cut

RPM = rev./min.
FEED = mm/min.

Vc = m/min.
fz = mm/t

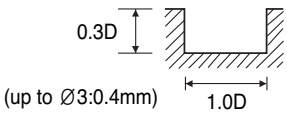
4G MILL END MILLS

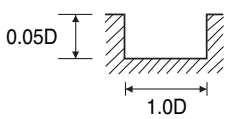
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE LONG LENGTH
VOLLHARTMETALL, 2 SCHNEIDEN

SEME70 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS		~ HRc 35				HRc 35 ~ HRc 45				HRc 45 ~ HRc 55			
STRENGTH		~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²			
DIA.	LOC	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
8.0	25	2880	190	72	0.033	2280	150	57	0.033	1510	70	38	0.023
8.0	30	2880	190	72	0.033	2280	150	57	0.033	1510	70	38	0.023
8.0	35	2880	190	72	0.033	2280	150	57	0.033	1510	70	38	0.023
8.0	40	2880	160	72	0.028	2280	125	57	0.027	1510	60	38	0.020
8.0	45	2590	145	65	0.028	2050	115	52	0.028	1360	55	34	0.020
8.0	50	2590	130	65	0.025	2050	100	52	0.024	1360	50	34	0.018
10.0	30	2450	190	77	0.039	2000	150	63	0.038	1210	70	38	0.029
10.0	35	2450	190	77	0.039	2000	150	63	0.038	1210	70	38	0.029
10.0	40	2450	190	77	0.039	2000	150	63	0.038	1210	70	38	0.029
10.0	45	2450	160	77	0.033	2000	125	63	0.031	1210	60	38	0.025
10.0	50	2450	160	77	0.033	2000	125	63	0.031	1210	60	38	0.025
10.0	55	2210	145	69	0.033	1800	115	57	0.032	1090	55	34	0.025
10.0	60	2210	130	69	0.029	1800	100	57	0.028	1090	50	34	0.023
12.0	35	2000	150	75	0.038	1670	135	63	0.040	1010	55	38	0.027
12.0	40	2000	150	75	0.038	1670	135	63	0.040	1010	55	38	0.027
12.0	45	2000	130	75	0.033	1670	115	63	0.034	1010	45	38	0.022
12.0	50	2000	130	75	0.033	1670	115	63	0.034	1010	45	38	0.022
12.0	55	2000	130	75	0.033	1670	115	63	0.034	1010	45	38	0.022
12.0	60	2000	110	75	0.028	1670	100	63	0.030	1010	40	38	0.020
12.0	65	1800	100	68	0.028	1500	90	57	0.030	910	35	34	0.019
12.0	70	1800	100	68	0.028	1500	90	57	0.030	910	35	34	0.019
14.0	50	1850	125	81	0.034	1480	100	65	0.034	910	45	40	0.025
14.0	60	1850	125	81	0.034	1480	100	65	0.034	910	45	40	0.025
16.0	40	1700	140	85	0.041	1280	105	64	0.041	800	50	40	0.031
16.0	50	1700	140	85	0.041	1280	105	64	0.041	800	50	40	0.031
16.0	60	1700	120	85	0.035	1280	90	64	0.035	800	40	40	0.025
16.0	70	1700	120	85	0.035	1280	90	64	0.035	800	40	40	0.025
16.0	80	1700	105	85	0.031	1280	80	64	0.031	800	35	40	0.022
16.0	90	1530	95	77	0.031	1150	70	58	0.030	720	30	36	0.021
16.0	110	1530	95	77	0.031	1150	70	58	0.030	720	30	36	0.021
16.0	120	1530	95	77	0.031	1150	70	58	0.030	720	30	36	0.021
18.0	50	1450	120	82	0.041	1120	90	63	0.040	700	40	40	0.029
18.0	70	1450	100	82	0.034	1120	75	63	0.033	700	35	40	0.025
18.0	100	1310	80	74	0.031	1000	60	57	0.030	630	30	36	0.024
20.0	50	1220	100	77	0.041	950	75	60	0.039	600	35	38	0.029
20.0	60	1220	100	77	0.041	950	75	60	0.039	600	35	38	0.029
20.0	70	1220	85	77	0.035	950	65	60	0.034	600	30	38	0.025
20.0	80	1220	85	77	0.035	950	65	60	0.034	600	30	38	0.025
20.0	90	1220	75	77	0.031	950	55	60	0.029	600	25	38	0.021
20.0	110	1100	70	69	0.032	860	50	54	0.029	540	25	34	0.023
20.0	120	1100	70	69	0.032	860	50	54	0.029	540	25	34	0.023
22.0	75	1100	75	76	0.034	840	55	58	0.033	550	30	38	0.027
22.0	110	1100	70	76	0.032	840	50	58	0.030	550	25	38	0.023
25.0	70	980	80	77	0.041	750	60	59	0.040	480	30	38	0.031
25.0	90	980	70	77	0.036	750	50	59	0.033	480	25	38	0.026
25.0	110	980	70	77	0.036	750	50	59	0.033	480	25	38	0.026
25.0	120	980	60	77	0.031	750	45	59	0.030	480	25	38	0.026





DIA. = Diameter
LOC = Length of Cut
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN mit ABGESETZTEM SCHAFTTETL

SEM845 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc 35					HRc 35 ~ HRc 45					HRc 45 ~ HRc 55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)
0.1	0.3	50000	315	16	0.003	0.009	46200	230	15	0.002	0.007	40600	170	13	0.002	0.005
0.1	0.5	50000	315	16	0.003	0.006	46200	230	15	0.002	0.005	40600	170	13	0.002	0.004
0.1	1	45000	255	14	0.003	0.002	41580	185	13	0.002	0.002	36540	140	11	0.002	0.001
0.2	0.5	38500	380	24	0.005	0.018	36300	270	23	0.004	0.014	32100	200	20	0.003	0.010
0.2	1	38500	380	24	0.005	0.013	36300	270	23	0.004	0.010	32100	200	20	0.003	0.007
0.2	1.5	34650	310	22	0.004	0.007	32670	220	21	0.003	0.006	28890	160	18	0.003	0.004
0.2	2	34650	310	22	0.004	0.005	32670	220	21	0.003	0.004	28890	160	18	0.003	0.003
0.3	1	34200	390	32	0.006	0.019	32300	270	30	0.004	0.015	28500	230	27	0.004	0.011
0.3	1.5	34200	390	32	0.006	0.019	32300	270	30	0.004	0.015	28500	230	27	0.004	0.011
0.3	2	30780	315	29	0.005	0.011	29070	220	27	0.004	0.008	25650	185	24	0.004	0.006
0.3	2.5	30780	315	29	0.005	0.007	29070	220	27	0.004	0.005	25650	185	24	0.004	0.004
0.3	3	30780	315	29	0.005	0.007	29070	220	27	0.004	0.005	25650	185	24	0.004	0.004
0.3	4	27360	250	26	0.005	0.004	25840	175	24	0.003	0.003	22800	145	21	0.003	0.002
0.3	5	20520	165	19	0.004	0.003	19380	115	18	0.003	0.002	17100	95	16	0.003	0.002
0.4	1	27400	540	34	0.010	0.036	25800	380	32	0.007	0.028	22800	280	29	0.006	0.02
0.4	1.5	27400	540	34	0.010	0.025	25800	380	32	0.007	0.020	22800	280	29	0.006	0.014
0.4	2	27400	540	34	0.010	0.025	25800	380	32	0.007	0.020	22800	280	29	0.006	0.014
0.4	2.5	24660	435	31	0.009	0.014	23220	310	29	0.007	0.011	20520	225	26	0.005	0.008
0.4	3	24660	435	31	0.009	0.014	23220	310	29	0.007	0.011	20520	225	26	0.005	0.008
0.4	4	24660	435	31	0.009	0.009	23220	310	29	0.007	0.007	20520	225	26	0.005	0.005
0.4	5	21920	345	28	0.008	0.009	20640	245	26	0.006	0.007	18240	180	23	0.005	0.005
0.4	6	21920	345	28	0.008	0.005	20640	245	26	0.006	0.004	18240	180	23	0.005	0.003
0.4	8	16440	225	21	0.007	0.004	15480	160	19	0.005	0.003	13680	120	17	0.004	0.002
0.4	10	8220	95	10	0.006	0.004	7740	70	10	0.005	0.003	6840	50	9	0.004	0.002
0.5	1	27400	540	43	0.010	0.045	25800	425	41	0.008	0.035	22800	285	36	0.006	0.025
0.5	1.5	27400	540	43	0.010	0.045	25800	425	41	0.008	0.035	22800	285	36	0.006	0.025
0.5	2	27400	540	43	0.010	0.032	25800	425	41	0.008	0.025	22800	285	36	0.006	0.018
0.5	2.5	27400	540	43	0.010	0.032	25800	425	41	0.008	0.025	22800	285	36	0.006	0.018
0.5	3	24660	435	39	0.009	0.018	23220	345	36	0.007	0.014	20520	230	32	0.006	0.010
0.5	4	24660	435	39	0.009	0.018	23220	345	36	0.007	0.014	20520	230	32	0.006	0.010
0.5	5	24660	435	39	0.009	0.011	23220	345	36	0.007	0.009	20520	230	32	0.006	0.006
0.5	6	21920	345	34	0.008	0.011	20640	270	32	0.007	0.009	18240	180	29	0.005	0.006
0.5	8	16440	225	26	0.007	0.007	15480	180	24	0.006	0.005	13680	120	21	0.004	0.004
0.5	10	16440	225	26	0.007	0.005	15480	180	24	0.006	0.004	13680	120	21	0.004	0.003
0.5	12	8220	95	13	0.006	0.005	7740	75	12	0.005	0.004	6840	50	11	0.004	0.003
0.5	14	8220	95	13	0.006	0.005	7740	75	12	0.005	0.004	6840	50	11	0.004	0.003
0.5	16	2740	25	4	0.005	0.005	2580	20	4	0.004	0.004	2280	15	4	0.003	0.003
0.6	2	27400	775	52	0.014	0.038	25800	545	49	0.011	0.029	22800	405	43	0.009	0.021
0.6	3	27400	775	52	0.014	0.038	25800	545	49	0.011	0.029	22800	405	43	0.009	0.021
0.6	4	24660	630	46	0.013	0.022	23220	440	44	0.009	0.017	20520	330	39	0.008	0.012
0.6	5	24660	630	46	0.013	0.014	23220	440	44	0.009	0.011	20520	330	39	0.008	0.008
0.6	6	24660	630	46	0.013	0.014	23220	440	44	0.009	0.011	20520	330	39	0.008	0.008
0.6	8	21920	495	41	0.011	0.008	20640	350	39	0.008	0.006	18240	260	34	0.007	0.005
0.6	10	16440	325	31	0.010	0.005	15480	230	29	0.007	0.004	13680	170	26	0.006	0.003
0.6	12	16440	325	31	0.010	0.005	15480	230	29	0.007	0.004	13680	170	26	0.006	0.003
0.6	14	8220	140	15	0.009	0.005	7740	100	15	0.006	0.004	6840	75	13	0.005	0.003
0.6	16	8220	140	15	0.009	0.005	7740	100	15	0.006	0.004	6840	75	13	0.005	0.003
0.7	2	27400	775	60	0.014	0.063	25800	545	57	0.011	0.049	22800	405	50	0.009	0.035
0.7	4	24660	630	54	0.013	0.025	23220	440	51	0.009	0.020	20520	330	45	0.008	0.014
0.7	6	24660	630	54	0.013	0.016	23220	440	51	0.009	0.012	20520	330	45	0.008	0.009
0.7	8	21920	495	48	0.011	0.016	20640	350	45	0.008	0.012	18240	260	40	0.007	0.009
0.7	10	21920	495	48	0.011	0.009	20640	350	45	0.008	0.007	18240	260	40	0.007	0.005
0.7	12	16440	325	36	0.010	0.006	15480	230	34	0.007	0.005	13680	170	30	0.006	0.004

DIA. = Diameter RPM = rev./min. Vc = m/min.
LOC = Length of Cut FEED = mm/min. fz = mm/t

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN mit ABGESETZTEM SCHAFTTETL

SEM845 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc 35					HRc 35 ~ HRc 45					HRc 45 ~ HRc 55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)
0.8	2	27400	775	69	0.014	0.072	25800	605	65	0.012	0.056	22800	450	57	0.010	0.040
0.8	3	27400	775	69	0.014	0.050	25800	605	65	0.012	0.039	22800	450	57	0.010	0.028
0.8	4	27400	775	69	0.014	0.050	25800	605	65	0.012	0.039	22800	450	57	0.010	0.028
0.8	5	24660	630	62	0.013	0.029	23220	490	58	0.011	0.022	20520	365	52	0.009	0.016
0.8	6	24660	630	62	0.013	0.029	23220	490	58	0.011	0.022	20520	365	52	0.009	0.016
0.8	8	24660	630	62	0.013	0.018	23220	490	58	0.011	0.014	20520	365	52	0.009	0.010
0.8	10	21920	495	55	0.011	0.018	20640	385	52	0.009	0.014	18240	290	46	0.008	0.010
0.8	12	21920	495	55	0.011	0.011	20640	385	52	0.009	0.008	18240	290	46	0.008	0.006
0.8	14	16440	325	41	0.010	0.007	15480	255	39	0.008	0.006	13680	190	34	0.007	0.004
0.8	16	16440	325	41	0.010	0.007	15480	255	39	0.008	0.006	13680	190	34	0.007	0.004
0.8	20	8220	140	21	0.009	0.007	7740	110	19	0.007	0.006	6840	80	17	0.006	0.004
0.9	6	22140	575	63	0.013	0.032	20970	440	59	0.010	0.025	18450	330	52	0.009	0.018
0.9	8	22140	575	63	0.013	0.020	20970	440	59	0.010	0.016	18450	330	52	0.009	0.011
0.9	10	19680	455	56	0.012	0.020	18640	350	53	0.009	0.016	16400	260	46	0.008	0.011
1.0	2	24600	1045	77	0.021	0.090	23300	890	73	0.019	0.070	20500	665	64	0.016	0.050
1.0	3	24600	1045	77	0.021	0.090	23300	890	73	0.019	0.070	20500	665	64	0.016	0.050
1.0	4	24600	1045	77	0.021	0.063	23300	890	73	0.019	0.049	20500	665	64	0.016	0.035
1.0	5	24600	1045	77	0.021	0.063	23300	890	73	0.019	0.049	20500	665	64	0.016	0.035
1.0	6	22140	845	70	0.019	0.036	20970	720	66	0.017	0.028	18450	540	58	0.015	0.020
1.0	7	22140	845	70	0.019	0.036	20970	720	66	0.017	0.028	18450	540	58	0.015	0.020
1.0	8	22140	845	70	0.019	0.036	20970	720	66	0.017	0.028	18450	540	58	0.015	0.020
1.0	10	22140	845	70	0.019	0.023	20970	720	66	0.017	0.018	18450	540	58	0.015	0.013
1.0	12	19680	670	62	0.017	0.023	18640	570	59	0.015	0.018	16400	425	52	0.013	0.013
1.0	14	19680	670	62	0.017	0.014	18640	570	59	0.015	0.011	16400	425	52	0.013	0.008
1.0	16	14760	440	46	0.015	0.014	13980	375	44	0.013	0.011	12300	280	39	0.011	0.008
1.0	18	14760	440	46	0.015	0.009	13980	375	44	0.013	0.007	12300	280	39	0.011	0.005
1.0	20	14760	440	46	0.015	0.009	13980	375	44	0.013	0.007	12300	280	39	0.011	0.005
1.0	22	7380	190	23	0.013	0.009	6990	160	22	0.011	0.007	6150	120	19	0.010	0.005
1.0	26	7380	190	23	0.013	0.009	6990	160	22	0.011	0.007	6150	120	19	0.010	0.005
1.0	30	7380	190	23	0.013	0.009	6990	160	22	0.011	0.007	6150	120	19	0.010	0.005
1.0	40	2460	50	8	0.010	0.009	2330	45	7	0.010	0.007	2050	35	6	0.009	0.005
1.0	50	2460	50	8	0.010	0.006	2330	45	7	0.010	0.005	2050	35	6	0.009	0.003
1.2	4	21900	930	83	0.021	0.076	20700	720	78	0.017	0.059	18200	485	69	0.013	0.042
1.2	6	21900	930	83	0.021	0.076	20700	720	78	0.017	0.059	18200	485	69	0.013	0.042
1.2	8	19710	755	74	0.019	0.043	18630	585	70	0.016	0.034	16380	395	62	0.012	0.024
1.2	10	19710	755	74	0.019	0.027	18630	585	70	0.016	0.021	16380	395	62	0.012	0.015
1.2	12	19710	755	74	0.019	0.027	18630	585	70	0.016	0.021	16380	395	62	0.012	0.015
1.2	14	17520	595	66	0.017	0.027	16560	460	62	0.014	0.021	14560	310	55	0.011	0.015
1.2	16	17520	595	66	0.017	0.016	16560	460	62	0.014	0.013	14560	310	55	0.011	0.009
1.2	20	13140	390	50	0.015	0.011	12420	300	47	0.012	0.008	10920	205	41	0.009	0.006
1.2	26	6570	165	25	0.013	0.011	6210	130	23	0.010	0.008	5460	85	21	0.008	0.006
1.2	30	6570	165	25	0.013	0.011	6210	130	23	0.010	0.008	5460	85	21	0.008	0.006
1.4	6	19200	815	84	0.021	0.088	18100	570	80	0.016	0.069	16000	425	70	0.013	0.049
1.4	8	17280	660	76	0.019	0.050	16290	460	72	0.014	0.039	14400	345	63	0.012	0.028
1.4	10	17280	660	76	0.019	0.050	16290	460	72	0.014	0.039	14400	345	63	0.012	0.028
1.4	14	17280	660	76	0.019	0.032	16290	460	72	0.014	0.025	14400	345	63	0.012	0.018
1.4	16	15360	520	68	0.017	0.032	14480	365	64	0.013	0.025	12800	270	56	0.011	0.018
1.4	20	15360	520	68	0.017	0.019	14480	365	64	0.013	0.015	12800	270	56	0.011	0.011
1.5	4	19200	905	90	0.024	0.135	18100	635	85	0.018	0.105	16000	475	75	0.015	0.075
1.5	5	19200	905	90	0.024	0.095	18100	635	85	0.018	0.074	16000	475	75	0.015	0.053
1.5	6	19200	905	90	0.024	0.095	18100	635	85	0.018	0.074	16000	475	75	0.015	0.053
1.5	7	19200	905	90	0.024	0.095	18100	635	85	0.018	0.074	16000	475	75	0.015	0.053
1.5	8	17280	735	81	0.021	0.054	16290	515	77	0.016	0.042	14400	385	68	0.013	0.030

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN mit ABGESETZTEM SCHAFTTETL

SEM845 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc 35					HRc 35 ~ HRc 45					HRc 45 ~ HRc 55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)
1.5	10	17280	735	81	0.021	0.054	16290	515	77	0.016	0.042	14400	385	68	0.013	0.030
1.5	12	17280	735	81	0.021	0.054	16290	515	77	0.016	0.042	14400	385	68	0.013	0.030
1.5	14	17280	735	81	0.021	0.034	16290	515	77	0.016	0.026	14400	385	68	0.013	0.019
1.5	16	15360	580	72	0.019	0.034	14480	405	68	0.014	0.026	12800	305	60	0.012	0.019
1.5	18	15360	580	72	0.019	0.034	14480	405	68	0.014	0.026	12800	305	60	0.012	0.019
1.5	20	15360	580	72	0.019	0.020	14480	405	68	0.014	0.016	12800	305	60	0.012	0.011
1.5	22	15360	580	72	0.019	0.020	14480	405	68	0.014	0.016	12800	305	60	0.012	0.011
1.5	26	11520	380	54	0.016	0.014	10860	265	51	0.012	0.011	9600	200	45	0.010	0.008
1.5	30	11520	380	54	0.016	0.014	10860	265	51	0.012	0.011	9600	200	45	0.010	0.008
1.6	8	17800	840	89	0.024	0.101	16800	655	84	0.019	0.078	14800	490	74	0.017	0.056
1.6	10	16020	680	81	0.021	0.058	15120	530	76	0.018	0.045	13320	395	67	0.015	0.032
1.6	12	16020	680	81	0.021	0.058	15120	530	76	0.018	0.045	13320	395	67	0.015	0.032
1.6	16	16020	680	81	0.021	0.036	15120	530	76	0.018	0.028	13320	395	67	0.015	0.020
1.6	20	14240	540	72	0.019	0.036	13440	420	68	0.016	0.028	11840	315	60	0.013	0.020
1.8	8	17800	840	101	0.024	0.113	16800	655	95	0.019	0.088	14800	490	84	0.017	0.063
1.8	10	16020	680	91	0.021	0.065	15120	530	86	0.018	0.050	13320	395	75	0.015	0.036
1.8	12	16020	680	91	0.021	0.065	15120	530	86	0.018	0.050	13320	395	75	0.015	0.036
1.8	16	16020	680	91	0.021	0.041	15120	530	86	0.018	0.032	13320	395	75	0.015	0.023
1.8	20	14240	540	81	0.019	0.041	13440	420	76	0.016	0.032	11840	315	67	0.013	0.023
2.0	6	14400	820	90	0.028	0.180	13600	620	85	0.023	0.140	12000	475	75	0.020	0.100
2.0	8	14400	820	90	0.028	0.126	13600	620	85	0.023	0.098	12000	475	75	0.020	0.070
2.0	10	14400	820	90	0.028	0.126	13600	620	85	0.023	0.098	12000	475	75	0.020	0.070
2.0	12	12960	665	81	0.026	0.072	12240	500	77	0.020	0.056	10800	385	68	0.018	0.040
2.0	14	12960	665	81	0.026	0.072	12240	500	77	0.020	0.056	10800	385	68	0.018	0.040
2.0	16	12960	665	81	0.026	0.072	12240	500	77	0.020	0.056	10800	385	68	0.018	0.040
2.0	18	12960	665	81	0.026	0.045	12240	500	77	0.020	0.035	10800	385	68	0.018	0.025
2.0	20	12960	665	81	0.026	0.045	12240	500	77	0.020	0.035	10800	385	68	0.018	0.025
2.0	22	11520	525	72	0.023	0.045	10880	395	68	0.018	0.035	9600	305	60	0.016	0.025
2.0	26	11520	525	72	0.023	0.045	10880	395	68	0.018	0.035	9600	305	60	0.016	0.025
2.0	30	11520	525	72	0.023	0.027	10880	395	68	0.018	0.021	9600	305	60	0.016	0.015
2.0	35	8640	345	54	0.020	0.018	8160	260	51	0.016	0.014	7200	200	45	0.014	0.010
2.0	40	8640	345	54	0.020	0.018	8160	260	51	0.016	0.014	7200	200	45	0.014	0.010
2.0	45	4320	150	27	0.017	0.018	4080	110	26	0.013	0.014	3600	85	23	0.012	0.010
2.0	50	4320	150	27	0.017	0.018	4080	110	26	0.013	0.014	3600	85	23	0.012	0.010
2.0	60	4320	150	27	0.017	0.018	4080	110	26	0.013	0.014	3600	85	23	0.012	0.010
2.5	8	12300	970	97	0.039	0.158	11600	680	91	0.029	0.123	10300	510	81	0.025	0.088
2.5	10	12300	970	97	0.039	0.158	11600	680	91	0.029	0.123	10300	510	81	0.025	0.088
2.5	12	12300	970	97	0.039	0.158	11600	680	91	0.029	0.123	10300	510	81	0.025	0.088
2.5	14	11070	785	87	0.035	0.090	10440	550	82	0.026	0.070	9270	415	73	0.022	0.050
2.5	16	11070	785	87	0.035	0.090	10440	550	82	0.026	0.070	9270	415	73	0.022	0.050
2.5	18	11070	785	87	0.035	0.090	10440	550	82	0.026	0.070	9270	415	73	0.022	0.050
2.5	20	11070	785	87	0.035	0.090	10440	550	82	0.026	0.070	9270	415	73	0.022	0.050
2.5	22	11070	785	87	0.035	0.056	10440	550	82	0.026	0.044	9270	415	73	0.022	0.031
2.5	26	9840	620	77	0.032	0.056	9280	435	73	0.023	0.044	8240	325	65	0.020	0.031
2.5	30	9840	620	77	0.032	0.056	9280	435	73	0.023	0.044	8240	325	65	0.020	0.031
2.5	35	9840	620	77	0.032	0.034	9280	435	73	0.023	0.026	8240	325	65	0.020	0.019
2.5	40	7380	405	58	0.027	0.034	6960	285	55	0.020	0.026	6180	215	49	0.017	0.019
2.5	45	7380	405	58	0.027	0.023	6960	285	55	0.020	0.018	6180	215	49	0.017	0.013
2.5	50	7380	405	58	0.027	0.023	6960	285	55	0.020	0.018	6180	215	49	0.017	0.013
3.0	6	10900	860	103	0.039	0.270	10300	605	97	0.029	0.210	6600	450	62	0.034	0.150
3.0	8	10900	860	103	0.039	0.270	10300	605	97	0.029	0.210	6600	450	62	0.034	0.150
3.0	10	10900	860	103	0.039	0.189	10300	605	97	0.029	0.147	6600	450	62	0.034	0.105
3.0	12	10900	860	103	0.039	0.189	10300	605	97	0.029	0.147	6600	450	62	0.034	0.105

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

4G MILL END MILLS

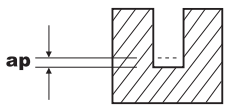
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN mit ABGESETZTEM SCHAFTTETL

SEM845 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc 35					HRc 35 ~ HRc 45					HRc 45 ~ HRc 55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)
3.0	14	10900	860	103	0.039	0.189	10300	605	97	0.029	0.147	6600	450	62	0.034	0.105
3.0	16	9810	695	92	0.035	0.108	9270	490	87	0.026	0.084	5940	365	56	0.031	0.060
3.0	18	9810	695	92	0.035	0.108	9270	490	87	0.026	0.084	5940	365	56	0.031	0.060
3.0	20	9810	695	92	0.035	0.108	9270	490	87	0.026	0.084	5940	365	56	0.031	0.060
3.0	22	9810	695	92	0.035	0.108	9270	490	87	0.026	0.084	5940	365	56	0.031	0.060
3.0	26	9810	695	92	0.035	0.068	9270	490	87	0.026	0.053	5940	365	56	0.031	0.038
3.0	30	9810	695	92	0.035	0.068	9270	490	87	0.026	0.053	5940	365	56	0.031	0.038
3.0	35	8720	550	82	0.032	0.068	8240	385	78	0.023	0.053	5280	290	50	0.027	0.038
3.0	40	8720	550	82	0.032	0.041	8240	385	78	0.023	0.032	5280	290	50	0.027	0.023
3.0	45	8720	550	82	0.032	0.041	8240	385	78	0.023	0.032	5280	290	50	0.027	0.023
3.0	50	6540	360	62	0.028	0.027	6180	255	58	0.021	0.021	3960	190	37	0.024	0.015
3.0	60	6540	360	62	0.028	0.027	6180	255	58	0.021	0.021	3960	190	37	0.024	0.015
4.0	8	8000	1300	101	0.081	0.360	7600	1160	96	0.076	0.280	6700	770	84	0.057	0.200
4.0	10	8000	1300	101	0.081	0.360	7600	1160	96	0.076	0.280	6700	770	84	0.057	0.200
4.0	12	8000	1300	101	0.081	0.360	7600	1160	96	0.076	0.280	6700	770	84	0.057	0.200
4.0	14	8000	1300	101	0.081	0.252	7600	1160	96	0.076	0.196	6700	770	84	0.057	0.140
4.0	16	8000	1300	101	0.081	0.252	7600	1160	96	0.076	0.196	6700	770	84	0.057	0.140
4.0	18	8000	1300	101	0.081	0.252	7600	1160	96	0.076	0.196	6700	770	84	0.057	0.140
4.0	20	8000	1300	101	0.081	0.252	7600	1160	96	0.076	0.196	6700	770	84	0.057	0.140
4.0	22	7200	1055	90	0.073	0.144	6840	940	86	0.069	0.112	6030	625	76	0.052	0.080
4.0	26	7200	1055	90	0.073	0.144	6840	940	86	0.069	0.112	6030	625	76	0.052	0.080
4.0	30	7200	1055	90	0.073	0.144	6840	940	86	0.069	0.112	6030	625	76	0.052	0.080
4.0	35	7200	1055	90	0.073	0.090	6840	940	86	0.069	0.070	6030	625	76	0.052	0.050
4.0	40	7200	1055	90	0.073	0.090	6840	940	86	0.069	0.070	6030	625	76	0.052	0.050
4.0	45	6400	830	80	0.065	0.090	6080	740	76	0.061	0.070	5360	495	67	0.046	0.050
4.0	50	6400	830	80	0.065	0.090	6080	740	76	0.061	0.070	5360	495	67	0.046	0.050
4.0	60	6400	830	80	0.065	0.054	6080	740	76	0.061	0.042	5360	495	67	0.046	0.030
5.0	16	6400	1155	101	0.090	0.315	6100	900	96	0.074	0.245	5400	605	85	0.056	0.175
5.0	20	6400	1155	101	0.090	0.315	6100	900	96	0.074	0.245	5400	605	85	0.056	0.175
5.0	26	5760	935	90	0.081	0.180	5490	730	86	0.066	0.140	4860	490	76	0.050	0.100
5.0	30	5760	935	90	0.081	0.180	5490	730	86	0.066	0.140	4860	490	76	0.050	0.100
5.0	35	5760	935	90	0.081	0.180	5490	730	86	0.066	0.140	4860	490	76	0.050	0.100
5.0	40	5760	935	90	0.081	0.180	5490	730	86	0.066	0.140	4860	490	76	0.050	0.100
5.0	50	5760	935	90	0.081	0.113	5490	730	86	0.066	0.088	4860	490	76	0.050	0.063
5.0	60	5120	740	80	0.072	0.113	4880	575	77	0.059	0.088	4320	385	68	0.045	0.063
6.0	15	5300	1055	100	0.100	0.540	5000	820	94	0.082	0.420	4400	550	83	0.063	0.300
6.0	20	5300	1055	100	0.100	0.378	5000	820	94	0.082	0.294	4400	550	83	0.063	0.210
6.0	30	5300	1055	100	0.100	0.378	5000	820	94	0.082	0.294	4400	550	83	0.063	0.210
6.0	32	4770	855	90	0.090	0.216	4500	665	85	0.074	0.168	3960	445	75	0.056	0.120
8.0	25	4000	950	101	0.119	0.504	3800	750	96	0.099	0.392	3300	500	83	0.076	0.280
8.0	30	4000	950	101	0.119	0.504	3800	750	96	0.099	0.392	3300	500	83	0.076	0.280
8.0	42	3600	770	90	0.107	0.288	3400	605	85	0.089	0.224	2950	405	74	0.069	0.160
10.0	30	3200	900	101	0.141	0.900	3050	680	96	0.111	0.700	2630	400	83	0.076	0.500
10.0	35	3200	900	101	0.141	0.630	3050	680	96	0.111	0.490	2630	400	83	0.076	0.350
10.0	45	3200	900	101	0.141	0.630	3050	680	96	0.111	0.490	2630	400	83	0.076	0.350
12.0	35	2650	800	100	0.151	1.080	2520	600	95	0.119	0.840	2180	350	82	0.080	0.600
12.0	40	2650	800	100	0.151	0.756	2520	600	95	0.119	0.588	2180	350	82	0.080	0.420
12.0	50	2650	800	100	0.151	0.756	2520	600	95	0.119	0.588	2180	350	82	0.080	0.420

(Depth of Cut per one pass)



DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

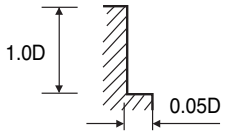
4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 4 FLUTE MULTIPLE HELIX
VOLLHARTMETALL, 4 SCHNEIDEN MEHRSPIRAL

SEME36, SEME71 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				STAINLESS STEELS				HARDENED STEELS			
HARDNESS	~ HRc 35				HRc 35 ~ HRc 45								HRc 45 ~ HRc 55			
STRENGTH	~ 1100N/mm²				1110 ~ 1500N/mm²								1500 ~ 2000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
0.8	31250	235	79	0.002	18750	140	47	0.002	15630	120	39	0.002	12500	42	31	0.001
0.9	29300	245	83	0.002	17580	145	50	0.002	14650	120	41	0.002	11720	42	33	0.001
1.0	26800	250	84	0.002	16080	150	51	0.002	13400	125	42	0.002	10720	47	34	0.001
1.2	22500	265	85	0.003	13500	160	51	0.003	11250	130	42	0.003	9000	47	34	0.001
1.5	18750	270	88	0.004	11250	165	53	0.004	9380	135	44	0.004	7500	47	35	0.002
2.0	14450	295	91	0.005	9450	180	59	0.005	7880	145	50	0.005	6300	53	40	0.002
2.5	12800	315	101	0.006	8200	195	64	0.006	6830	165	54	0.006	5250	58	41	0.003
3.0	11150	335	105	0.008	6950	210	66	0.008	5780	180	54	0.008	4200	63	40	0.004
3.5	10300	465	113	0.011	6360	290	70	0.011	5310	235	58	0.011	3940	63	43	0.004
4.0	9450	600	119	0.016	5780	370	73	0.016	4850	295	61	0.015	3680	63	46	0.004
4.5	8660	615	122	0.018	5250	375	74	0.018	4400	305	62	0.017	3290	70	47	0.005
5.0	7880	630	124	0.020	4730	380	74	0.020	3950	315	62	0.020	2900	75	46	0.006
5.5	7410	660	128	0.022	4460	405	77	0.023	3750	330	65	0.022	2700	80	47	0.007
6.0	6950	695	131	0.025	4200	430	79	0.026	3550	345	67	0.024	2500	85	47	0.009
6.5	6530	710	133	0.027	3940	425	80	0.027	3320	350	68	0.026	2400	95	49	0.010
7.0	6100	720	134	0.030	3680	415	81	0.028	3090	355	68	0.029	2300	100	51	0.011
7.5	5680	735	134	0.032	3410	410	80	0.030	2860	360	67	0.031	2200	110	52	0.013
8.0	5250	745	132	0.035	3150	400	79	0.032	2630	370	66	0.035	2100	115	53	0.014
8.5	4960	720	132	0.036	2990	380	80	0.032	2490	355	66	0.036	2000	110	53	0.014
9.0	4660	695	132	0.037	2830	355	80	0.031	2360	340	67	0.036	1900	105	54	0.014
9.5	4370	665	130	0.038	2660	335	79	0.031	2230	330	67	0.037	1800	100	54	0.014
10.0	4080	640	128	0.039	2500	315	79	0.032	2100	315	66	0.038	1700	95	53	0.014
10.5	3910	620	129	0.040	2400	305	79	0.032	2000	300	66	0.038	1640	95	54	0.014
11.0	3750	595	130	0.040	2300	290	79	0.032	1900	285	66	0.038	1580	90	55	0.014
11.5	3590	570	130	0.040	2200	280	79	0.032	1800	270	65	0.038	1510	90	55	0.015
12.0	3430	545	129	0.040	2100	265	79	0.032	1700	250	64	0.037	1450	85	55	0.015
13.0	3260	520	133	0.040	2000	250	82	0.031	1620	240	66	0.037	1370	80	56	0.015
14.0	3090	490	136	0.040	1900	235	84	0.031	1540	230	68	0.037	1290	75	57	0.015
15.0	2920	460	138	0.039	1800	225	85	0.031	1460	220	69	0.038	1210	70	57	0.014
16.0	2750	440	138	0.040	1700	215	85	0.032	1380	210	69	0.038	1130	65	57	0.014
17.0	2590	410	138	0.040	1610	200	86	0.031	1290	200	69	0.039	1060	60	57	0.014
18.0	2430	385	137	0.040	1510	190	85	0.031	1210	185	68	0.038	990	55	56	0.014
19.0	2260	360	135	0.040	1420	180	85	0.032	1130	175	67	0.039	920	47	55	0.013
20.0	2100	335	132	0.040	1330	170	84	0.032	1050	160	66	0.038	850	42	53	0.012
21.0	2020	320	133	0.040	1270	165	84	0.032	1010	150	67	0.037	820	42	54	0.013
22.0	1940	310	134	0.040	1220	160	84	0.033	970	145	67	0.037	780	39	54	0.013
23.0	1860	295	134	0.040	1160	145	84	0.031	930	140	67	0.038	750	37	54	0.012
24.0	1780	280	134	0.039	1110	140	84	0.032	890	130	67	0.037	710	32	54	0.011
25.0	1700	265	134	0.039	1050	135	82	0.032	850	125	67	0.037	680	32	53	0.012



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 4 FLUTE LONG LENGTH
VOLLHARTMETALL, 4 SCHNEIDEN

SEME72 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS		~ HRc 35				HRc 35 ~ HRc 45				HRc 45 ~ HRc 55			
STRENGTH		~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²			
DIA.	LOC	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
1.0	3	19200	180	60	0.002	10940	70	34	0.002	6720	35	21	0.001
1.0	4	19200	180	60	0.002	10940	70	34	0.002	6720	35	21	0.001
1.0	5	19200	180	60	0.002	10940	70	34	0.002	6720	35	21	0.001
1.0	6	17280	145	54	0.002	9850	60	31	0.002	6050	30	19	0.001
1.0	7	17280	145	54	0.002	9850	60	31	0.002	6050	30	19	0.001
1.0	8	17280	130	54	0.002	9850	50	31	0.001	6050	25	19	0.001
1.0	10	17280	130	54	0.002	9850	50	31	0.001	6050	25	19	0.001
1.0	12	15360	100	48	0.002	8760	40	28	0.001	5380	20	17	0.001
1.2	4	16200	205	61	0.003	9230	80	35	0.002	5670	40	21	0.002
1.2	6	16200	205	61	0.003	9230	80	35	0.002	5670	40	21	0.002
1.2	8	14580	165	55	0.003	8310	65	31	0.002	5100	35	19	0.002
1.2	10	14580	145	55	0.002	8310	60	31	0.002	5100	30	19	0.001
1.2	12	14580	145	55	0.002	8310	60	31	0.002	5100	30	19	0.001
1.5	6	13800	215	65	0.004	7870	85	37	0.003	4830	45	23	0.002
1.5	8	12420	195	59	0.004	7080	80	33	0.003	4350	40	20	0.002
1.5	10	12420	175	59	0.004	7080	70	33	0.002	4350	35	20	0.002
1.5	12	12420	155	59	0.003	7080	60	33	0.002	4350	30	20	0.002
1.5	14	12420	155	59	0.003	7080	60	33	0.002	4350	30	20	0.002
1.5	16	11040	120	52	0.003	6290	50	30	0.002	3860	25	18	0.002
2.0	8	10580	240	66	0.006	6050	95	38	0.004	3780	55	24	0.004
2.0	10	10580	240	66	0.006	6050	95	38	0.004	3780	55	24	0.004
2.0	12	9530	195	60	0.005	5440	80	34	0.004	3400	45	21	0.003
2.0	14	9530	195	60	0.005	5440	80	34	0.004	3400	45	21	0.003
2.0	16	9530	175	60	0.005	5440	70	34	0.003	3400	40	21	0.003
2.5	10	8990	260	71	0.007	5170	110	41	0.005	3210	60	25	0.005
2.5	12	8990	260	71	0.007	5170	110	41	0.005	3210	60	25	0.005
2.5	16	8090	210	64	0.006	4650	85	37	0.005	2890	50	23	0.004
2.5	20	8090	185	64	0.006	4650	80	37	0.004	2890	45	23	0.004
2.5	26	7200	145	57	0.005	4130	60	32	0.004	2570	35	20	0.003
3.0	10	7400	275	70	0.009	4280	120	40	0.007	2640	65	25	0.006
3.0	12	7400	275	70	0.009	4280	120	40	0.007	2640	65	25	0.006
3.0	14	7400	275	70	0.009	4280	120	40	0.007	2640	65	25	0.006
3.0	16	6660	250	63	0.009	3860	110	36	0.007	2380	60	22	0.006
3.0	20	6660	225	63	0.008	3860	95	36	0.006	2380	55	22	0.006
3.0	26	6660	200	63	0.008	3860	85	36	0.006	2380	50	22	0.005
3.0	30	6660	200	63	0.008	3860	85	36	0.006	2380	50	22	0.005
4.0	12	6000	335	75	0.014	3410	140	43	0.010	2150	70	27	0.008
4.0	16	6000	335	75	0.014	3410	140	43	0.010	2150	70	27	0.008
4.0	20	6000	335	75	0.014	3410	140	43	0.010	2150	70	27	0.008
4.0	26	5400	270	68	0.013	3070	110	39	0.009	1930	60	24	0.008
4.0	30	5400	270	68	0.013	3070	110	39	0.009	1930	60	24	0.008
5.0	20	5120	430	80	0.021	2900	170	46	0.015	1900	85	30	0.011
5.0	25	5120	430	80	0.021	2900	170	46	0.015	1900	85	30	0.011
5.0	30	4610	350	72	0.019	2610	135	41	0.013	1710	70	27	0.010
5.0	35	4610	350	72	0.019	2610	135	41	0.013	1710	70	27	0.010
5.0	40	4610	310	72	0.017	2610	120	41	0.011	1710	60	27	0.009
6.0	15	4420	515	83	0.029	2520	215	48	0.021	1640	110	31	0.017
6.0	20	4420	515	83	0.029	2520	215	48	0.021	1640	110	31	0.017
6.0	25	4420	515	83	0.029	2520	215	48	0.021	1640	110	31	0.017
6.0	30	4420	440	83	0.025	2520	185	48	0.018	1640	90	31	0.014
6.0	35	3970	395	75	0.025	2270	165	43	0.018	1480	85	28	0.014
6.0	40	3970	350	75	0.022	2270	145	43	0.016	1480	75	28	0.013
6.0	45	3970	350	75	0.022	2270	145	43	0.016	1480	75	28	0.013

DIA. = Diameter
LOC = Length of Cut
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

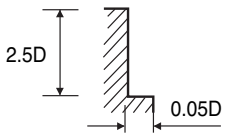
4G MILL END MILLS

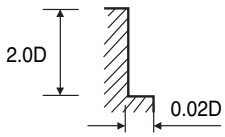
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 4 FLUTE LONG LENGTH
VOLLHARTMETALL, 4 SCHNEIDEN

SEME72 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS		~ HRc 35				HRc 35 ~ HRc 45				HRc 45 ~ HRc 55			
STRENGTH		~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²			
DIA.	LOC	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
8.0	25	3360	550	84	0.041	1900	215	48	0.028	1260	110	32	0.022
8.0	30	3360	550	84	0.041	1900	215	48	0.028	1260	110	32	0.022
8.0	35	3360	550	84	0.041	1900	215	48	0.028	1260	110	32	0.022
8.0	40	3360	470	84	0.035	1900	185	48	0.024	1260	90	32	0.018
8.0	45	3020	420	76	0.035	1710	165	43	0.024	1130	85	28	0.019
8.0	50	3020	375	76	0.031	1710	145	43	0.021	1130	75	28	0.017
10.0	30	2820	550	89	0.049	1640	215	52	0.033	1010	110	32	0.027
10.0	35	2820	550	89	0.049	1640	215	52	0.033	1010	110	32	0.027
10.0	40	2820	550	89	0.049	1640	215	52	0.033	1010	110	32	0.027
10.0	45	2820	470	89	0.042	1640	185	52	0.028	1010	90	32	0.022
10.0	50	2820	470	89	0.042	1640	185	52	0.028	1010	90	32	0.022
10.0	55	2540	420	80	0.041	1480	165	46	0.028	910	85	29	0.023
10.0	60	2540	375	80	0.037	1480	145	46	0.024	910	75	29	0.021
12.0	35	2300	430	87	0.047	1390	190	52	0.034	840	85	32	0.025
12.0	40	2300	430	87	0.047	1390	190	52	0.034	840	85	32	0.025
12.0	45	2300	365	87	0.040	1390	165	52	0.030	840	70	32	0.021
12.0	50	2300	365	87	0.040	1390	165	52	0.030	840	70	32	0.021
12.0	55	2300	365	87	0.040	1390	165	52	0.030	840	70	32	0.021
12.0	60	2300	325	87	0.035	1390	145	52	0.026	840	65	32	0.019
12.0	65	2070	290	78	0.035	1250	130	47	0.026	760	55	29	0.018
12.0	70	2070	290	78	0.035	1250	130	47	0.026	760	55	29	0.018
14.0	50	2120	345	93	0.041	1230	145	54	0.029	760	65	33	0.021
14.0	60	2120	345	93	0.041	1230	145	54	0.029	760	65	33	0.021
16.0	40	1940	385	98	0.050	1070	150	54	0.035	670	70	34	0.026
16.0	50	1940	385	98	0.050	1070	150	54	0.035	670	70	34	0.026
16.0	60	1940	325	98	0.042	1070	130	54	0.030	670	60	34	0.022
16.0	70	1940	325	98	0.042	1070	130	54	0.030	670	60	34	0.022
16.0	80	1940	290	98	0.037	1070	115	54	0.027	670	55	34	0.021
16.0	90	1750	260	88	0.037	960	100	48	0.026	600	50	30	0.021
16.0	110	1750	260	88	0.037	960	100	48	0.026	600	50	30	0.021
16.0	120	1750	260	88	0.037	960	100	48	0.026	600	50	30	0.021
18.0	50	1680	330	95	0.049	940	130	53	0.035	590	65	33	0.028
18.0	70	1680	280	95	0.042	940	110	53	0.029	590	55	33	0.023
18.0	100	1510	225	85	0.037	850	85	48	0.025	530	45	30	0.021
20.0	50	1420	275	89	0.048	820	110	52	0.034	500	55	31	0.028
20.0	60	1420	275	89	0.048	820	110	52	0.034	500	55	31	0.028
20.0	70	1420	235	89	0.041	820	90	52	0.027	500	45	31	0.023
20.0	80	1420	235	89	0.041	820	90	52	0.027	500	45	31	0.023
20.0	90	1420	205	89	0.036	820	80	52	0.024	500	40	31	0.020
20.0	110	1270	185	80	0.036	730	75	46	0.026	450	35	28	0.019
20.0	120	1270	185	80	0.036	730	75	46	0.026	450	35	28	0.019
22.0	75	1260	205	87	0.041	820	90	57	0.027	500	45	35	0.023
22.0	110	1260	180	87	0.036	820	80	57	0.024	500	40	35	0.020
25.0	70	1100	215	86	0.049	820	110	64	0.034	500	55	39	0.028
25.0	90	1100	185	86	0.042	820	90	64	0.027	500	45	39	0.023
25.0	110	1100	185	86	0.042	820	90	64	0.027	500	45	39	0.023
25.0	120	1100	160	86	0.036	820	80	64	0.024	500	40	39	0.020





DIA. = Diameter
LOC = Length of Cut
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 4 FLUTE with EXTENDED NECK
VOLLHARTMETALL, 4 SCHNEIDEN mit ABGESETZTEM SCHAFTTETL

SEME73 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc 35					HRc 35 ~ HRc 45					HRc 45 ~ HRc 55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	ae(mm)	RPM	FEED	Vc	fz	ae(mm)	RPM	FEED	Vc	fz	ae(mm)
1.0	2	22000	310	69	0.004	0.021	13500	180	42	0.003	0.016	8500	50	27	0.001	0.013
1.0	3	22000	310	69	0.004	0.021	13500	180	42	0.003	0.016	8500	50	27	0.001	0.013
1.0	4	22000	310	69	0.004	0.015	13500	180	42	0.003	0.011	8500	50	27	0.001	0.009
1.0	5	22000	310	69	0.004	0.015	13500	180	42	0.003	0.011	8500	50	27	0.001	0.009
1.0	6	19800	250	62	0.003	0.008	12150	145	38	0.003	0.006	7650	40	24	0.001	0.005
1.0	7	19800	250	62	0.003	0.008	12150	145	38	0.003	0.006	7650	40	24	0.001	0.005
1.0	8	19800	250	62	0.003	0.008	12150	145	38	0.003	0.006	7650	40	24	0.001	0.005
1.0	10	19800	250	62	0.003	0.005	12150	145	38	0.003	0.004	7650	40	24	0.001	0.003
1.0	12	17600	200	55	0.003	0.005	10800	115	34	0.003	0.004	6800	30	21	0.001	0.003
1.0	14	17600	200	55	0.003	0.003	10800	115	34	0.003	0.002	6800	30	21	0.001	0.002
1.0	16	13200	130	41	0.002	0.003	8100	75	25	0.002	0.002	5100	20	16	0.001	0.002
1.0	18	13200	130	41	0.002	0.002	8100	75	25	0.002	0.002	5100	20	16	0.001	0.001
1.0	20	13200	130	41	0.002	0.002	8100	75	25	0.002	0.002	5100	20	16	0.001	0.001
1.0	22	6600	55	21	0.002	0.002	4050	30	13	0.002	0.002	2550	10	8	0.001	0.001
1.0	26	6600	55	21	0.002	0.002	4050	30	13	0.002	0.002	2550	10	8	0.001	0.001
1.0	30	6600	55	21	0.002	0.002	4050	30	13	0.002	0.002	2550	10	8	0.001	0.001
1.0	40	2200	15	7	0.002	0.002	1350	10	4	0.002	0.002	850	5	3	0.001	0.001
1.0	50	2200	15	7	0.002	0.002	1350	10	4	0.002	0.002	850	5	3	0.001	0.001
1.2	4	19500	315	74	0.004	0.018	12100	185	46	0.004	0.013	7500	50	28	0.002	0.011
1.2	6	19500	315	74	0.004	0.018	12100	185	46	0.004	0.013	7500	50	28	0.002	0.011
1.2	8	17550	255	66	0.004	0.010	10890	150	41	0.003	0.008	6750	40	25	0.001	0.006
1.2	10	17550	255	66	0.004	0.006	10890	150	41	0.003	0.005	6750	40	25	0.001	0.004
1.2	12	17550	255	66	0.004	0.006	10890	150	41	0.003	0.005	6750	40	25	0.001	0.004
1.2	14	15600	200	59	0.003	0.006	9680	120	36	0.003	0.005	6000	30	23	0.001	0.004
1.2	16	15600	200	59	0.003	0.004	9680	120	36	0.003	0.003	6000	30	23	0.001	0.002
1.2	20	11700	130	44	0.003	0.003	7260	80	27	0.003	0.002	4500	20	17	0.001	0.002
1.2	26	5850	55	22	0.002	0.003	3630	35	14	0.002	0.002	2250	10	8	0.001	0.002
1.2	30	5850	55	22	0.002	0.003	3630	35	14	0.002	0.002	2250	10	8	0.001	0.002
1.5	4	17000	320	80	0.005	0.032	10700	190	50	0.004	0.024	6500	50	31	0.002	0.019
1.5	5	17000	320	80	0.005	0.022	10700	190	50	0.004	0.017	6500	50	31	0.002	0.013
1.5	6	17000	320	80	0.005	0.022	10700	190	50	0.004	0.017	6500	50	31	0.002	0.013
1.5	7	17000	320	80	0.005	0.022	10700	190	50	0.004	0.017	6500	50	31	0.002	0.013
1.5	8	15300	260	72	0.004	0.013	9630	155	45	0.004	0.009	5850	40	28	0.002	0.008
1.5	10	15300	260	72	0.004	0.013	9630	155	45	0.004	0.009	5850	40	28	0.002	0.008
1.5	12	15300	260	72	0.004	0.013	9630	155	45	0.004	0.009	5850	40	28	0.002	0.008
1.5	14	15300	260	72	0.004	0.008	9630	155	45	0.004	0.006	5850	40	28	0.002	0.005
1.5	16	13600	205	64	0.004	0.008	8560	120	40	0.004	0.006	5200	30	25	0.001	0.005
1.5	18	13600	205	64	0.004	0.008	8560	120	40	0.004	0.006	5200	30	25	0.001	0.005
1.5	20	13600	205	64	0.004	0.005	8560	120	40	0.004	0.004	5200	30	25	0.001	0.003
1.5	22	13600	205	64	0.004	0.005	8560	120	40	0.004	0.004	5200	30	25	0.001	0.003
1.5	26	10200	135	48	0.003	0.003	6420	80	30	0.003	0.002	3900	20	18	0.001	0.002
1.5	30	10200	135	48	0.003	0.003	6420	80	30	0.003	0.002	3900	20	18	0.001	0.002
2.0	6	13900	330	87	0.006	0.042	9070	200	57	0.006	0.032	6000	60	38	0.003	0.025
2.0	8	13900	330	87	0.006	0.029	9070	200	57	0.006	0.022	6000	60	38	0.003	0.018
2.0	10	13900	330	87	0.006	0.029	9070	200	57	0.006	0.022	6000	60	38	0.003	0.018
2.0	12	12510	265	79	0.005	0.017	8160	160	51	0.005	0.013	5400	50	34	0.002	0.010
2.0	16	12510	265	79	0.005	0.017	8160	160	51	0.005	0.013	5400	50	34	0.002	0.010

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 4 FLUTE with EXTENDED NECK
VOLLHARTMETALL, 4 SCHNEIDEN mit ABGESETZTEM SCHAFTTETL

SEME73 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc 35					HRc 35 ~ HRc 45					HRc 45 ~ HRc 55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	ae(mm)	RPM	FEED	Vc	fz	ae(mm)	RPM	FEED	Vc	fz	ae(mm)
2.0	18	12510	265	79	0.005	0.011	8160	160	51	0.005	0.008	5400	50	34	0.002	0.006
2.0	20	12510	265	79	0.005	0.011	8160	160	51	0.005	0.008	5400	50	34	0.002	0.006
2.0	22	11120	210	70	0.005	0.011	7260	130	46	0.004	0.008	4800	40	30	0.002	0.006
2.0	26	11120	210	70	0.005	0.011	7260	130	46	0.004	0.008	4800	40	30	0.002	0.006
2.0	30	11120	210	70	0.005	0.006	7260	130	46	0.004	0.005	4800	40	30	0.002	0.004
2.0	35	8340	140	52	0.004	0.004	5440	85	34	0.004	0.003	3600	25	23	0.002	0.003
2.0	40	8340	140	52	0.004	0.004	5440	85	34	0.004	0.003	3600	25	23	0.002	0.003
2.0	45	4170	60	26	0.004	0.004	2720	35	17	0.003	0.003	1800	10	11	0.001	0.003
2.0	50	4170	60	26	0.004	0.004	2720	35	17	0.003	0.003	1800	10	11	0.001	0.003
2.0	60	4170	60	26	0.004	0.004	2720	35	17	0.003	0.003	1800	10	11	0.001	0.003
2.5	8	12000	350	94	0.007	0.037	7600	220	60	0.007	0.028	4500	60	35	0.003	0.022
2.5	10	12000	350	94	0.007	0.037	7600	220	60	0.007	0.028	4500	60	35	0.003	0.022
2.5	12	12000	350	94	0.007	0.037	7600	220	60	0.007	0.028	4500	60	35	0.003	0.022
2.5	14	10800	285	85	0.007	0.021	6840	180	54	0.007	0.016	4050	50	32	0.003	0.013
2.5	16	10800	285	85	0.007	0.021	6840	180	54	0.007	0.016	4050	50	32	0.003	0.013
2.5	18	10800	285	85	0.007	0.021	6840	180	54	0.007	0.016	4050	50	32	0.003	0.013
2.5	20	10800	285	85	0.007	0.021	6840	180	54	0.007	0.016	4050	50	32	0.003	0.013
2.5	22	10800	285	85	0.007	0.013	6840	180	54	0.007	0.010	4050	50	32	0.003	0.008
2.5	26	9600	225	75	0.006	0.013	6080	140	48	0.006	0.010	3600	40	28	0.003	0.008
2.5	30	9600	225	75	0.006	0.013	6080	140	48	0.006	0.010	3600	40	28	0.003	0.008
2.5	35	9600	225	75	0.006	0.008	6080	140	48	0.006	0.006	3600	40	28	0.003	0.005
2.5	40	7200	145	57	0.005	0.008	4560	90	36	0.005	0.006	2700	25	21	0.002	0.005
2.5	45	7200	145	57	0.005	0.005	4560	90	36	0.005	0.004	2700	25	21	0.002	0.003
2.5	50	7200	145	57	0.005	0.005	4560	90	36	0.005	0.004	2700	25	21	0.002	0.003
3.0	6	10700	380	101	0.009	0.063	6670	240	63	0.009	0.047	4030	70	38	0.004	0.038
3.0	8	10700	380	101	0.009	0.063	6670	240	63	0.009	0.047	4030	70	38	0.004	0.038
3.0	10	10700	380	101	0.009	0.044	6670	240	63	0.009	0.033	4030	70	38	0.004	0.026
3.0	12	10700	380	101	0.009	0.044	6670	240	63	0.009	0.033	4030	70	38	0.004	0.026
3.0	14	10700	380	101	0.009	0.044	6670	240	63	0.009	0.033	4030	70	38	0.004	0.026
3.0	16	9630	310	91	0.008	0.025	6000	195	57	0.008	0.019	3630	55	34	0.004	0.015
3.0	18	9630	310	91	0.008	0.025	6000	195	57	0.008	0.019	3630	55	34	0.004	0.015
3.0	20	9630	310	91	0.008	0.025	6000	195	57	0.008	0.019	3630	55	34	0.004	0.015
3.0	22	9630	310	91	0.008	0.025	6000	195	57	0.008	0.019	3630	55	34	0.004	0.015
3.0	26	9630	310	91	0.008	0.016	6000	195	57	0.008	0.012	3630	55	34	0.004	0.009
3.0	30	9630	310	91	0.008	0.016	6000	195	57	0.008	0.012	3630	55	34	0.004	0.009
3.0	35	8560	245	81	0.007	0.016	5340	155	50	0.007	0.012	3220	45	30	0.003	0.009
3.0	40	8560	245	81	0.007	0.009	5340	155	50	0.007	0.007	3220	45	30	0.003	0.006
3.0	45	8560	245	81	0.007	0.009	5340	155	50	0.007	0.007	3220	45	30	0.003	0.006
3.0	50	6420	160	61	0.006	0.006	4000	100	38	0.006	0.005	2420	30	23	0.003	0.004
3.0	60	6420	160	61	0.006	0.006	4000	100	38	0.006	0.005	2420	30	23	0.003	0.004
4.0	8	9070	680	114	0.019	0.084	5540	420	70	0.019	0.063	3530	70	44	0.005	0.050
4.0	10	9070	680	114	0.019	0.084	5540	420	70	0.019	0.063	3530	70	44	0.005	0.050
4.0	12	9070	680	114	0.019	0.084	5540	420	70	0.019	0.063	3530	70	44	0.005	0.050
4.0	14	9070	680	114	0.019	0.059	5540	420	70	0.019	0.044	3530	70	44	0.005	0.035
4.0	16	9070	680	114	0.019	0.059	5540	420	70	0.019	0.044	3530	70	44	0.005	0.035
4.0	18	9070	680	114	0.019	0.059	5540	420	70	0.019	0.044	3530	70	44	0.005	0.035
4.0	20	9070	680	114	0.019	0.059	5540	420	70	0.019	0.044	3530	70	44	0.005	0.035

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

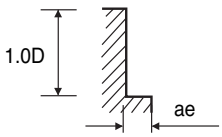
4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 4 FLUTE with EXTENDED NECK
VOLLHARTMETALL, 4 SCHNEIDEN mit ABGESETZTEM SCHAFTTETL

SEME73 SERIES

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc 35					HRc 35 ~ HRc 45					HRc 45 ~ HRc 55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	ae(mm)	RPM	FEED	Vc	fz	ae(mm)	RPM	FEED	Vc	fz	ae(mm)
4.0	22	8160	550	103	0.017	0.034	4990	340	63	0.017	0.025	3180	55	40	0.004	0.020
4.0	26	8160	550	103	0.017	0.034	4990	340	63	0.017	0.025	3180	55	40	0.004	0.020
4.0	30	8160	550	103	0.017	0.034	4990	340	63	0.017	0.025	3180	55	40	0.004	0.020
4.0	35	8160	550	103	0.017	0.021	4990	340	63	0.017	0.016	3180	55	40	0.004	0.013
4.0	40	8160	550	103	0.017	0.021	4990	340	63	0.017	0.016	3180	55	40	0.004	0.013
4.0	45	7260	435	91	0.015	0.021	4430	270	56	0.015	0.016	2820	45	35	0.004	0.013
4.0	50	7260	435	91	0.015	0.021	4430	270	56	0.015	0.016	2820	45	35	0.004	0.013
4.0	60	7260	435	91	0.015	0.013	4430	270	56	0.015	0.009	2820	45	35	0.004	0.008
5.0	16	7560	720	119	0.024	0.074	4530	430	71	0.024	0.055	2780	85	44	0.008	0.044
5.0	20	7560	720	119	0.024	0.074	4530	430	71	0.024	0.055	2780	85	44	0.008	0.044
5.0	26	6800	585	107	0.022	0.042	4080	350	64	0.021	0.032	2500	70	39	0.007	0.025
5.0	30	6800	585	107	0.022	0.042	4080	350	64	0.021	0.032	2500	70	39	0.007	0.025
5.0	35	6800	585	107	0.022	0.042	4080	350	64	0.021	0.032	2500	70	39	0.007	0.025
5.0	40	6800	585	107	0.022	0.042	4080	350	64	0.021	0.032	2500	70	39	0.007	0.025
5.0	50	6800	585	107	0.022	0.026	4080	350	64	0.021	0.020	2500	70	39	0.007	0.016
5.0	60	6050	460	95	0.019	0.026	3620	275	57	0.019	0.020	2220	55	35	0.006	0.016
6.0	15	6670	790	126	0.030	0.126	4030	490	76	0.030	0.095	2400	95	45	0.010	0.076
6.0	20	6670	790	126	0.030	0.088	4030	490	76	0.030	0.066	2400	95	45	0.010	0.053
6.0	30	6670	790	126	0.030	0.088	4030	490	76	0.030	0.066	2400	95	45	0.010	0.053
6.0	32	6000	640	113	0.027	0.050	3630	395	68	0.027	0.038	2160	75	41	0.009	0.030
8.0	25	5040	850	127	0.042	0.118	3020	450	76	0.037	0.088	2010	130	51	0.016	0.071
8.0	30	5040	850	127	0.042	0.118	3020	450	76	0.037	0.088	2010	130	51	0.016	0.071
8.0	42	4540	690	114	0.038	0.067	2720	365	68	0.034	0.050	1810	105	45	0.015	0.040
10.0	30	3910	730	123	0.047	0.210	2400	360	75	0.038	0.158	1630	105	51	0.016	0.126
10.0	35	3910	730	123	0.047	0.147	2400	360	75	0.038	0.110	1630	105	51	0.016	0.088
10.0	45	3910	730	123	0.047	0.147	2400	360	75	0.038	0.110	1630	105	51	0.016	0.088
12.0	35	3300	620	124	0.047	0.252	2010	300	76	0.037	0.189	1400	95	53	0.017	0.151
12.0	40	3300	620	124	0.047	0.176	2010	300	76	0.037	0.132	1400	95	53	0.017	0.106
12.0	50	3300	620	124	0.047	0.176	2010	300	76	0.037	0.132	1400	95	53	0.017	0.106



DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

4G MILL END MILLS

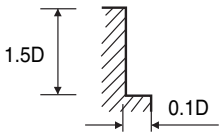
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

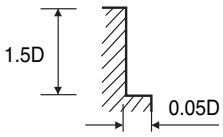
CARBIDE, 6 FLUTE 45° HELIX
VOLLHARTMETALL, 6 SCHNEIDEN

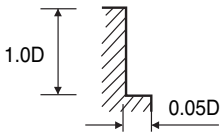
SEME75 SERIES

■ NORMAL SPEED

MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS		~ HRc 35				HRc 35 ~ HRc 45				HRc 45 ~ HRc 55			
STRENGTH		~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²			
DIA.	LOC	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	15	5840	2100	110	0.060	4075	1440	77	0.059	1660	220	31	0.022
6.0	20	5840	2100	110	0.060	4075	1440	77	0.059	1660	220	31	0.022
6.0	30	5840	1785	110	0.051	4075	1225	77	0.050	1660	190	31	0.019
8.0	20	4410	2100	111	0.079	3085	1440	78	0.078	1220	220	31	0.030
8.0	30	4410	2100	111	0.079	3085	1440	78	0.078	1220	220	31	0.030
8.0	35	4410	2100	111	0.079	3085	1440	78	0.078	1220	220	31	0.030
8.0	40	4410	1785	111	0.067	3085	1225	78	0.066	1220	190	31	0.026
10.0	25	3530	2100	111	0.099	2435	1440	76	0.099	1050	220	33	0.035
10.0	30	3530	2100	111	0.099	2435	1440	76	0.099	1050	220	33	0.035
10.0	40	3530	2100	111	0.099	2435	1440	76	0.099	1050	220	33	0.035
10.0	50	3530	1785	111	0.084	2435	1225	76	0.084	1050	190	33	0.030
12.0	30	2980	1765	112	0.099	2100	1220	79	0.097	880	190	33	0.036
12.0	40	2980	1765	112	0.099	2100	1220	79	0.097	880	190	33	0.036
12.0	50	2980	1500	112	0.084	2100	1035	79	0.082	880	165	33	0.031
12.0	60	2980	1325	112	0.074	2100	915	79	0.073	880	140	33	0.027
16.0	40	2205	1325	111	0.100	1555	925	78	0.099	670	135	34	0.034
16.0	50	2205	1325	111	0.100	1555	925	78	0.099	670	135	34	0.034
16.0	60	2205	1125	111	0.085	1555	790	78	0.085	670	115	34	0.029
16.0	90	1985	895	100	0.075	1395	625	70	0.075	610	95	31	0.026
16.0	110	1985	895	100	0.075	1395	625	70	0.075	610	95	31	0.026
20.0	45	1765	1060	111	0.100	1220	725	77	0.099	525	115	33	0.037
20.0	60	1765	1060	111	0.100	1220	725	77	0.099	525	115	33	0.037
20.0	70	1765	905	111	0.085	1220	615	77	0.084	525	100	33	0.032
20.0	110	1585	715	100	0.075	1090	490	68	0.075	475	80	30	0.028







DIA. = Diameter
LOC = Length of Cut
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

4G MILL END MILLS

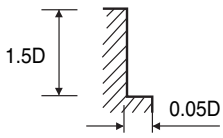
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

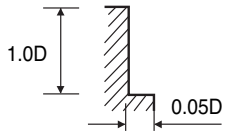
CARBIDE, 6 FLUTE 45° HELIX
VOLLHARTMETALL, 6 SCHNEIDEN

SEME75 SERIES

■ HIGH SPEED

MATERIAL		ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS		HRc 35 ~ HRc 45				HRc 45 ~ HRc 55			
STRENGTH		1110 ~ 1500N/mm²				1500 ~ 2000N/mm²			
DIAMETER	Length of Cut	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	15	17640	6395	333	0.060	8820	3205	166	0.061
6.0	20	17640	6395	333	0.060	8820	3205	166	0.061
6.0	30	17640	5435	333	0.051	8820	2720	166	0.051
8.0	20	13230	6395	333	0.081	6615	3205	166	0.081
8.0	30	13230	6395	333	0.081	6615	3205	166	0.081
8.0	35	13230	6395	333	0.081	6615	3205	166	0.081
8.0	40	13230	5435	333	0.068	6615	2725	166	0.069
10.0	25	10480	6290	329	0.100	5290	3205	166	0.101
10.0	30	10480	6290	329	0.100	5290	3205	166	0.101
10.0	40	10480	6290	329	0.100	5290	3205	166	0.101
10.0	50	10480	5345	329	0.085	5290	2720	166	0.086
12.0	30	8820	5290	333	0.100	4410	2645	166	0.100
12.0	40	8820	5290	333	0.100	4410	2645	166	0.100
12.0	50	8820	4500	333	0.085	4410	2245	166	0.085
12.0	60	8820	3970	333	0.075	4410	1985	166	0.075
16.0	40	6615	3970	333	0.100	3320	1985	167	0.100
16.0	50	6615	3970	333	0.100	3320	1985	167	0.100
16.0	60	6615	3375	333	0.085	3320	1685	167	0.085
16.0	90	5955	2680	299	0.075	2980	1340	150	0.075
16.0	110	5955	2680	299	0.075	2980	1340	150	0.075
20.0	45	5290	3205	332	0.101	2645	1545	166	0.097
20.0	60	5290	3205	332	0.101	2645	1545	166	0.097
20.0	70	5290	2720	332	0.086	2645	1315	166	0.083
20.0	110	4765	2165	299	0.076	2385	1040	150	0.073





RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE

YG

Being the best through innovation

X-SPEED ROUGHER

X-SPEED ROUGHER FRÄSER

- Roughing End Mills for High-Feed Machining with reduced vibrations
- Schrupp Fräser für die HSC Bearbeitung mit verminderten Vibrationen

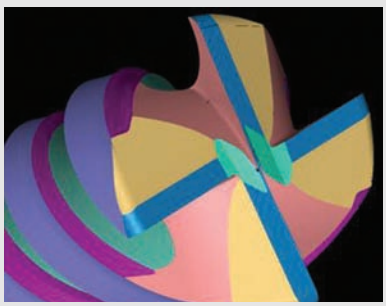
SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
G9D75 G9D67		CARBIDE, 4&5 FLUTE MULTIPLE HELIX SHORT LENGTH CORNER RADIUS VOLLHARTMETALL, 4&5 SCHNEIDEN MEHRSPIRAL FRÄSER KURZ ECKENRADIUS	D6.0	D20.0	822
G9D76 G9D68		CARBIDE, 4&5 FLUTE MULTIPLE HELIX LONG LENGTH CORNER RADIUS VOLLHARTMETALL, 4&5 SCHNEIDEN MEHRSPIRAL FRÄSER LANG ECKENRADIUS	D6.0	D20.0	823
G9D77 G9D69		CARBIDE, 4&5 FLUTE MULTIPLE HELIX LONG REACH CORNER RADIUS VOLLHARTMETALL, 4&5 SCHNEIDEN MEHRSPIRAL FRÄSER GROßE REICHWEITE ECKENRADIUS	D6.0	D20.0	824
GAE53		HSS-PM, 4&5 FLUTE MULTIPLE HELIX SHORT LENGTH CORNER RADIUS HSS-PM, 4&5 SCHNEIDEN MEHRSPIRAL FRÄSER KURZ ECKENRADIUS	D6.0	D20.0	825
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			826

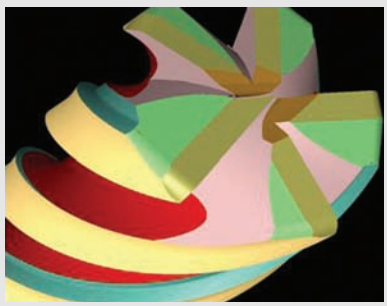
CHARACTERISTICS

- Unique flute design for excellent chip evacuation and vibration reduction.
- Optimal roughing tooth profile to reduce cutting forces.
- Special tool geometry for high feed rate and heavy cutting.
- Strong end tooth design for plunge and pocket milling.
- Custom engineered coating to allow long tool life and excellent chip evacuation.

▶ 4 FLUTE



▶ 5 FLUTE



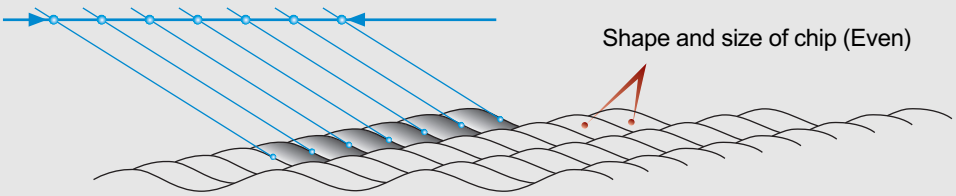
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○		◎		○				
◎	◎	◎	○			○		◎		○				
◎	◎	◎	○			○		◎		○				
◎	◎	○				○		◎		◎				

CHIP THICKNESS AND SHAPE

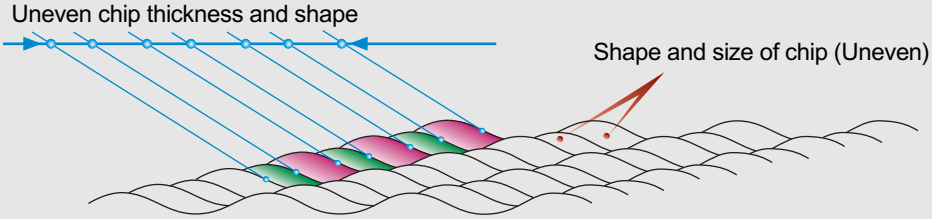
▶ Conventional Roughing End Mills

Even chip thickness and shape



▶ X-SPEED Rougher

Uneven chip thickness and shape



X-SPEED ROUGHER END MILLS

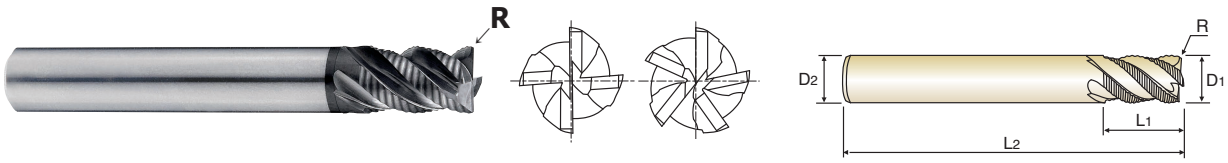
G9D75 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

G9D67 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 4&5 FLUTE MULTIPLE HELIX SHORT LENGTH CORNER RADIUS
VOLLHARTMETALL, 4&5 SCHNEIDEN MEHRSPIRAL FRÄSER KURZ ECKENRADIUS

- Unique flute design for excellent chip evacuation and vibration reduction.
- Optimal roughing tooth profile to reduce cutting forces.
- Special tool geometry for high feed rate and heavy cutting.
- Strong end tooth design for plunge and pocket milling.
- Custom engineered coating to allow long tool life and excellent chip evacuation.

- einzigartige Nutengeometrie für hervorragenden Spänetransport und Vibrationsreduzierung
- neuartiges Schruppprofil zur reduzierung der Schnittkräfte
- Spezielle Werkzeuggeometrie für Hochvorschub- und Schwerzerspanung geeignet
- speziell entwickelte Schneidengeometrie für Tauch- und Taschenfräsen
- YG-1 eigene Beschichtung um lange lebensdauer und sehr guten Spänetransport zu gewährleisten



MG HM | 4&5 | M-Helix | PLAIN | FLAT

P.826

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	No. of Flute
G9D75060	G9D67060	R0.5	6.0	6	9	57	4
G9D75080	G9D67080	R0.5	8.0	8	12	63	4
G9D75100	G9D67100	R0.5	10.0	10	15	72	4
G9D75120	G9D67120	R0.5	12.0	12	18	83	4
G9D75160	G9D67160	R1.0	16.0	16	24	92	5
G9D75200	G9D67200	R1.0	20.0	20	30	104	5

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.05	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○		◎		○				

X-SPEED ROUGHER END MILLS

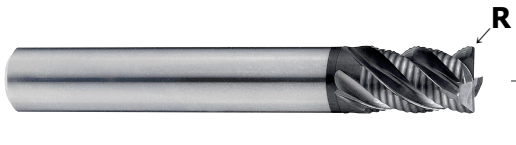
G9D76 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

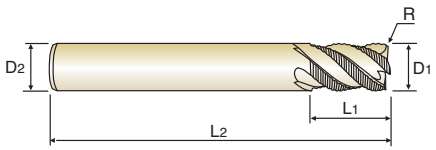
G9D68 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 4&5 FLUTE MULTIPLE HELIX LONG LENGTH CORNER RADIUS
VOLLHARTMETALL, 4&5 SCHNEIDEN MEHRSPIRAL FRÄSER LANG ECKENRADIUS

- Unique flute design for excellent chip evacuation and vibration reduction.
- Optimal roughing tooth profile to reduce cutting forces.
- Special tool geometry for high feed rate and heavy cutting.
- Strong end tooth design for plunge and pocket milling.
- Custom engineered coating to allow long tool life and excellent chip evacuation.

- einzigartige Nutengeometrie für hervorragenden Spänetransport und Vibrationsreduzierung
- neuartiges Schruppprofil zur reduzierung der Schnittkräfte
- Spezielle Werkzeuggeometrie für Hochvorschub- und Schwerzerspanung geeignet
- speziell entwickelte Schneidengeometrie für Tauch- und Taschenfräsen
- YG-1 eigene Beschichtung um lange lebensdauer und sehr guten Spänetransport zu gewährleisten





MG HM | 4&5 | M-Helix | PLAIN | FLAT

P.826

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
PLAIN	FLAT	R	D1	D2	L1	L2	
G9D76060	G9D68060	R0.5	6.0	6	12	57	4
G9D76080	G9D68080	R0.5	8.0	8	16	63	4
G9D76100	G9D68100	R0.5	10.0	10	20	72	4
G9D76120	G9D68120	R0.5	12.0	12	24	83	4
G9D76160	G9D68160	R1.0	16.0	16	32	92	5
G9D76200	G9D68200	R1.0	20.0	20	40	104	5

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.05	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○		◎		○				

X-SPEED ROUGHER END MILLS

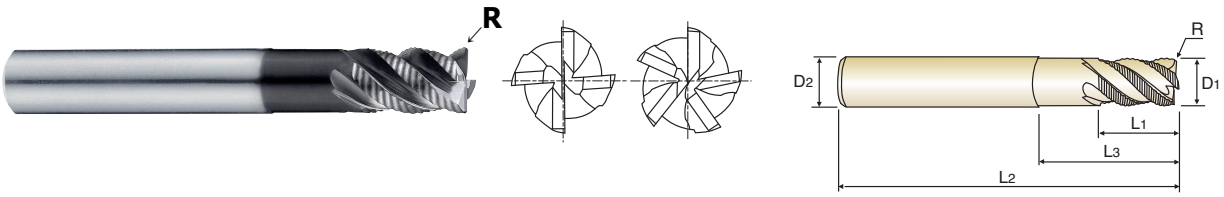
G9D77 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

G9D69 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 4&5 FLUTE MULTIPLE HELIX LONG REACH CORNER RADIUS
VOLLHARTMETALL, 4&5 SCHNEIDEN MEHRSPIRAL FRÄSER GROßE REICHWEITE ECKENRADIUS

- Unique flute design for excellent chip evacuation and vibration reduction.
- Optimal roughing tooth profile to reduce cutting forces.
- Special tool geometry for high feed rate and heavy cutting.
- Strong end tooth design for plunge and pocket milling.
- Custom engineered coating to allow long tool life and excellent chip evacuation.

- einzigartige Nutengeometrie für hervorragenden Spänetransport und Vibrationsreduzierung
- neuartiges Schruppprofil zur reduzierung der Schnittkräfte
- Spezielle Werkzeuggeometrie für Hochvorschub- und Schwerzerspanung geeignet
- speziell entwickelte Schneidengeometrie für Tauch- und Taschenfräsen
- YG-1 eigene Beschichtung um lange lebensdauer und sehr guten Spänetransport zu gewährleisten



MG HM | 4&5 | M-Helix | PLAIN | FLAT

P.826

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	No. of Flute
G9D77060	G9D69060	R0.5	6.0	6	9	18	57	4
G9D77080	G9D69080	R0.5	8.0	8	12	24	63	4
G9D77100	G9D69100	R0.5	10.0	10	15	30	72	4
G9D77120	G9D69120	R0.5	12.0	12	18	36	83	4
G9D77160	G9D69160	R1.0	16.0	16	24	48	100	5
G9D77200	G9D69200	R1.0	20.0	20	30	60	110	5

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.05	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○		◎		○				

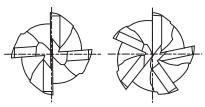
X-SPEED ROUGHER END MILLS

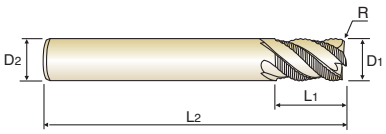
GAE53 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

HSS-PM, 4&5 FLUTE MULTIPLE HELIX SHORT LENGTH CORNER RADIUS
HSS-PM, 4&5 SCHNEIDEN MEHRSPIRAL FRÄSER KURZ ECKENRADIUS

- Unique flute design for excellent chip evacuation and vibration reduction.
- Optimal roughing tooth profile to reduce cutting forces.
- Special tool geometry for high feed rate and heavy cutting.
- Strong end tooth design for plunge and pocket milling.
- Custom engineered coating to allow long tool life and excellent chip evacuation.

- einzigartige Nutengeometrie für hervorragenden Spänetransport und Vibrationsreduzierung
- neuartiges Schruppprofil zur reduzierung der Schnittkräfte
- Spezielle Werkzeuggeometrie für Hochvorschub- und Schwerzerspanung geeignet
- speziell entwickelte Schneidengeometrie für Tauch- und Taschenfräsen
- YG-1 eigene Beschichtung um lange lebensdauer und sehr guten Spänetransport zu gewährleisten





HSS PM | 4&5 | M-Helix | FLAT

P.827

Unit : mm

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
FLAT	R	D1(js12)	D2(h6)	L1	L2	
GAE53060	R0.5	6.0	6	13	57	4
GAE53070	R0.5	7.0	10	16	66	4
GAE53080	R0.5	8.0	10	19	69	4
GAE53090	R0.5	9.0	10	19	69	4
GAE53100	R0.5	10.0	10	22	72	4
GAE53120	R0.5	12.0	12	26	83	4
GAE53140	R1.0	14.0	16	26	83	5
GAE53160	R1.0	16.0	16	32	92	5
GAE53180	R1.0	18.0	20	32	92	5
GAE53200	R1.0	20.0	20	38	104	5

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm						
Nominal-Diameter in mm / Nennmaßbereich in mm						
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
js12	± 50	± 60	± 75	± 90	± 105	± 125
h6	0 / − 6	0 / − 8	0 / − 9	0 / − 11	0 / − 13	0 / − 16

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○				○		◎		◎				

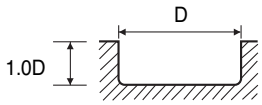
X-SPEED ROUGHER END MILLS

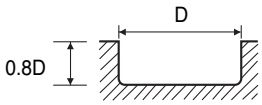
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 4&5 FLUTE MULTIPLE HELIX CORNER RADIUS - SLOTTING
VOLLHARTMETALL, 4&5 SCHNEIDEN MEHRSPIRAL FRÄSER ECKENRADIUS - NUTENFRÄSEN

G9D75, G9D67, G9D76, G9D68, G9D77, G9D69 SERIES

MATERIAL	ALLOYED STEELS, CARBON STEELS TOOL STEELS, CAST IRON				ALLOYED STEELS, CARBON STEELS TOOL STEELS, CAST IRON PREHARDENED STEELS			
HARDNESS	~ HRc 25				HRc 25 ~ HRc 40			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	12000	1550	225	0.032	10600	1100	200	0.026
8.0	9000	1650	225	0.046	8100	1180	205	0.036
10.0	7200	1650	225	0.057	6400	1180	200	0.046
12.0	6000	1540	225	0.064	5400	1140	205	0.053
16.0	4500	1500	225	0.067	4100	1050	205	0.051
20.0	3600	1330	225	0.074	3200	900	200	0.056



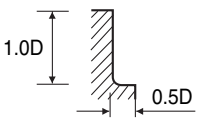


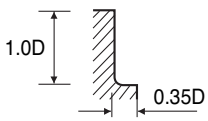
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE, 4&5 FLUTE MULTIPLE HELIX CORNER RADIUS - SIDE CUTTING
VOLLHARTMETALL,4&5 SCHNEIDEN MEHRSPIRAL FRÄSER ECKENRADIUS- SEITENFRÄSEN

G9D75, G9D67, G9D76, G9D68, G9D77, G9D69 SERIES

MATERIAL	ALLOYED STEELS, CARBON STEELS TOOL STEELS, CAST IRON				ALLOYED STEELS, CARBON STEELS TOOL STEELS, CAST IRON PREHARDENED STEELS			
HARDNESS	~ HRc 25				HRc 25 ~ HRc 40			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	15800	2570	300	0.041	14300	1850	270	0.032
8.0	11900	2700	300	0.057	10700	1950	270	0.046
10.0	9500	2700	300	0.071	8500	1950	265	0.057
12.0	8000	2570	300	0.080	7100	1850	270	0.065
16.0	6000	2450	300	0.082	5400	1750	270	0.065
20.0	4800	2140	300	0.089	4300	1500	270	0.070





RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

X-SPEED ROUGHER END MILLS

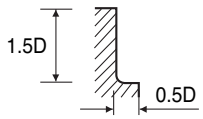
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

HSS-PM, 4&5 FLUTE MULTIPLE HELIX SHORT LENGTH CORNER RADIUS
HSS-PM, 4&5 SCHNEIDEN MEHRSPIRAL FRÄSER KURZ ECKENRADIUS

GAE53 SERIES

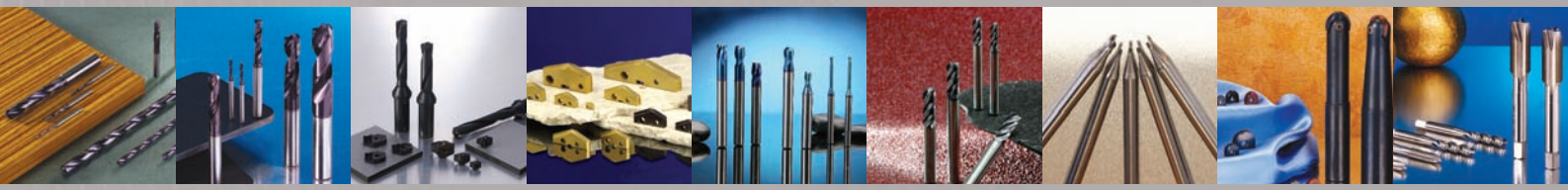
MATERIAL	STRUCTURAL STEELS CARBON STEELS				STRUCTURAL STEELS CARBON STEELS, CAST IRONS				CARBON STEELS ALLOY STEELS, TOOL STELLS			
HARDNESS					~ HRc 20				HRc 20 ~ 30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	3250	240	60	0.019	2500	185	48	0.018	1800	120	34	0.017
8.0	2750	300	70	0.027	2150	240	54	0.028	1550	170	38	0.027
10.0	2150	430	70	0.050	1700	330	54	0.049	1200	205	38	0.043
12.0	1800	430	70	0.060	1400	350	54	0.063	1000	240	38	0.059
14.0	1550	430	70	0.055	1200	350	54	0.073	850	240	38	0.069
16.0	1400	430	70	0.063	1100	350	54	0.081	750	240	38	0.080
18.0	1200	430	70	0.072	1000	350	54	0.085	700	240	38	0.086
20.0	1100	445	70	0.080	850	350	54	0.101	600	240	38	0.100

MATERIAL	PREHARDENED STEELS ALLOY STEELS, TOOL STEELS				STAINLESS STEELS			
HARDNESS	HRc 30 ~ 40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	1500	110	28	0.018	1750	130	33	0.019
8.0	1200	130	32	0.028	1450	170	36	0.029
10.0	1000	170	32	0.041	1150	200	36	0.045
12.0	850	190	32	0.055	950	245	36	0.064
14.0	700	190	32	0.065	850	245	36	0.074
16.0	600	190	32	0.075	700	245	36	0.085
18.0	550	190	32	0.082	650	245	36	0.093
20.0	500	190	32	0.092	600	245	36	0.107



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

Global Cutting Tool Leader **YG-1**



CARBIDE

Being the best through innovation

X-POWER

X-POWER FRÄSER

- Medium Steels to High Hardened Steels up to HRc65
- Für mittlere und gehärtete Stähle bis HRc65

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
EM810		CARBIDE, 2 FLUTE MINIATURE VOLLHARTMETALL, 2 SCHNEIDEN MINI	D0.4	D1.5	834
EM810 EM820		CARBIDE, 2 FLUTE SHORT LENGTH VOLLHARTMETALL, 2 SCHNEIDEN KURZ	D1.0	D25.0	835
EM816 EM826		CARBIDE, 2 FLUTE LONG LENGTH VOLLHARTMETALL, 2 SCHNEIDEN LANG	D2.0	D25.0	837
EM836 EM846		CARBIDE, 3 FLUTE MINIATURE VOLLHARTMETALL, 3 SCHNEIDEN MINI	D1.0	D20.0	838
EM895 EM896		CARBIDE, 3 FLUTE 38° HELIX SHORT LENGTH VOLLHARTMETALL, 3 SCHNEIDEN 38° RECHTSSPIRALE KURZ	D1.0	D20.0	839
EM811 EM821		CARBIDE, 4 FLUTE SHORT LENGTH VOLLHARTMETALL, 4 SCHNEIDEN KURZ	D2.0	D25.0	840
EM817 EM827		CARBIDE, 4 FLUTE LONG LENGTH VOLLHARTMETALL, 4 SCHNEIDEN LANG	D2.0	D25.0	842
EM812 EM822		CARBIDE, 6&8 FLUTE 45° HELIX LONG LENGTH VOLLHARTMETALL, 6&8 SCHNEIDEN 45° RECHTSSPIRALE LANG	D6.0	D25.0	843
EM834 EM844		CARBIDE, 6 FLUTE 45° HELIX EXTRA LONG LENGTH VOLLHARTMETALL, 6 SCHNEIDEN 45° RECHTSSPIRALE EXTRA LANG	D6.0	D25.0	844
EM876 EM877		CARBIDE, 2 FLUTE SHORT LENGTH BALL NOSE VOLLHARTMETALL, 2 SCHNEIDEN KURZ STIRNRADIUS	R0.5	R12.5	845
EM813 EM823		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE VOLLHARTMETALL, 2 SCHNEIDEN LANG STIRNRADIUS	R0.5	R12.5	846
EM899 EM900		CARBIDE, 2 FLUTE, MEDIUM, BALL NOSE with NECK VOLLHARTMETALL, 2 SCHNEIDEN MEDIUM STIRNRADIUS mit ABGESETZTEM SCHAFTTEIL	R1.5	R12.5	847
EM838 EM848		CARBIDE, 2 FLUTE LONG REACH BALL NOSE VOLLHARTMETALL, 2 SCHNEIDEN GROßE REICHWEITE STIRNRADIUS	R1.0	R10.0	848
EM902 EM904		CARBIDE, 2 FLUTE BALL NOSE with TAPER NECK VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS mit KONISCH ABGESETZTEM SCHAFTTEIL	R0.5	R6.0	849
EM878 EM879		CARBIDE, 2 FLUTE STUB LENGTH HIGH PRECISION BALL NOSE VOLLHARTMETALL, 2 SCHNEIDEN EXTRA KURZ PRÄZISER STIRNRADIUS	R0.5	R12.5	850
G4953 G4954		CARBIDE, 2 FLUTE STUB LENGTH BALL NOSE for OVER HRc55 VOLLHARTMETALL, 2 SCHNEIDEN, STIRNRADIUS, EXTRA KURZ für ÜBER HRc55	R0.5	R12.5	851
EM865		CARBIDE, 2 FLUTE MINIATURE BALL NOSE VOLLHARTMETALL, 2 SCHNEIDEN MINI STIRNRADIUS	R0.3	R1.5	852
EM669		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE-ECONOMIC VERSION VOLLHARTMETALL, 2 SCHNEIDEN LANG STIRNRADIUS-KOSTENGÜNSTIG	R1.5	R8.0	854
EM673		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE-ECONOMIC VERSION VOLLHARTMETALL, 4 SCHNEIDEN LANG STIRNRADIUS-KOSTENGÜNSTIG	R2.5	R8.0	855

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
EM863		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE-SPHERE VERSION VOLLHARTMETALL, 2 SCHNEIDEN LANG STIRNRADIUS-KUGELFORM	R1.5	R8.0	856
EM864		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE-SPHERE VERSION VOLLHARTMETALL, 4 SCHNEIDEN LANG STIRNRADIUS-KUGELFORM	R2.5	R8.0	857
EM815 EM825		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE VOLLHARTMETALL, 4 SCHNEIDEN LANG STIRNRADIUS	R0.5	R12.5	858
EM832 EM842		CARBIDE, MULTI FLUTE 20˚ HELIX SHORT LENGTH ROUGHING VOLLHARTMETALL, MULTI SCHNEIDEN 20˚ RECHTSSPIRALE KURZ SCHRUPPFRÄSER	D6.0	D25.0	859
EM814 EM824		CARBIDE, MULTI FLUTE 20˚ HELIX LONG LENGTH ROUGHING VOLLHARTMETALL, MULTI SCHNEIDEN 20˚ RECHTSSPIRALE LANG SCHRUPPFRÄSER	D6.0	D25.0	860
EM833 EM843		CARBIDE, 3&4 FLUTE 20˚ HELIX LONG LENGTH ROUGHING BALL NOSE VOLLHARTMETALL, 3&4 SCHNEIDEN 20˚ RECHTSSPIRALE LANG SCHRUPPFRÄSER STIRNRADIUS	R3.0	R10.0	861
EM818 EM828		CARBIDE, 2 FLUTE LONG LENGTH CORNER RADIUS VOLLHARTMETALL, 2 SCHNEIDEN LANG ECKENRADIUS	D3.0	D20.0	862
EM905		CARBIDE, 4 FLUTE 45˚ HELIX SHORT LENGTH CORNER RADIUS VOLLHARTMETALL, 4 SCHNEIDEN 45˚ RECHTSSPIRALE KURZ ECKENRADIUS	D10.0	D22.0	863
EM819 EM829		CARBIDE, 4 FLUTE LONG LENGTH CORNER RADIUS VOLLHARTMETALL, 4 SCHNEIDEN LANG ECKENRADIUS	D3.0	D20.0	864
EM897 EM898		CARBIDE, 6 FLUTE 45˚ HELIX STUB LENGTH CORNER RADIUS VOLLHARTMETALL, 6 SCHNEIDEN 45˚ RECHTSSPIRALE EXTRA KURZ ECKENRADIUS	D6.0	D12.0	865
EM835 EM845		CARBIDE, 6 FLUTE 45˚ HELIX LONG LENGTH CORNER RADIUS VOLLHARTMETALL, 6 SCHNEIDEN 45˚ RECHTSSPIRALE LANG ECKENRADIUS	D6.0	D20.0	866
EM839 EM849		CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS VOLLHARTMETALL, 4 SCHNEIDEN EXTRA KURZ ECKENRADIUS	D2.0	D16.0	867
EM837 EM847		CARBIDE, 2 FLUTE TAPER VOLLHARTMETALL, 2 SCHNEIDEN KONISCH	D2.0	D8.0	868
EM883		CARBIDE, 2 FLUTE for RIB PROCESSING VOLLHARTMETALL, 2 SCHNEIDEN für SCHMALE RIPPEN	D0.4	D6.0	869
EM886		CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS für SCHMALE RIPPEN	R0.2	R3.0	873
EM8A1		CARBIDE, 2 FLUTE CORNER RADIUS for RIB PROCESSING VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS für SCHMALE RIPPEN	D0.5	D6.0	876
EM889		CARBIDE, 4 FLUTE 25˚ HELIX TAPER for RIB PROCESSING VOLLHARTMETALL, 4 SCHNEIDEN 25˚ RECHTSSPIRALE KONISCH für SCHMALE RIPPEN	D1.0	D2.0	880
EM890		CARBIDE, 4 FLUTE 25˚ HELIX TAPER BALL NOSE for RIB PROCESSING VOLLHARTMETALL, 4 SCHNEIDEN 25˚ RECHTSSPIRALE KONISCH STIRNRADIUS für SCHMALE RIPPEN	R0.5	R1.0	882
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			884

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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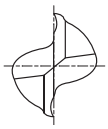
X-POWER END MILLS

EM810 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE MINIATURE
VOLLHARTMETALL, 2 SCHNEIDEN MINI

- ▶ High precision milling in medical, optical, electronics and aero space industries.
- ▶ Excellent performance on hardened steel

- ▶ Hochpräzises Fräsen für Medizintechnik, Optik, Elektronik und Raumfahrt.
- ▶ Ausgezeichnete Leistung bei der Bearbeitung von gehärtetem Stahl.



MG HM | 2 | 30° | PLAIN | P.885

Unit : mm

EDP No. PLAIN	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EM810004	0.4	3	0.8	40
EM810005	0.5	3	1	40
EM810006	0.6	3	1.2	40
EM810007	0.7	3	1.4	40
EM810008	0.8	3	1.6	40
EM810009	0.9	3	2	40
EM810010	1.0	4	2.5	40
EM810011	1.1	4	2.5	40
EM810012	1.2	4	4	40
EM810013	1.3	4	4	40
EM810014	1.4	4	4	40
EM810015	1.5	4	4	40

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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X-POWER END MILLS

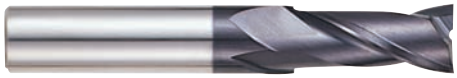
EM810 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

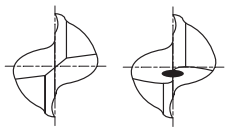
EM820 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 2 FLUTE SHORT LENGTH
VOLLHARTMETALL, 2 SCHNEIDEN KURZ

- Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- Superior workpiece finishes.
- Increased feed rates.

- Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- Bessere Werkstückoberflächen.
- Höhere Vorschübe.





up to Ø3mm over Ø3mm

MG HM | 2 | 30° | PLAIN | FLAT

P.884

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EM810901	EM820901	1.0	6	2.5	40
EM810902	EM820902	1.5	6	4	40
EM810020	—	2.0	4	6	40
EM810903	EM820020	2.0	6	6	40
EM810025	—	2.5	4	8	40
EM810904	EM820903	2.5	6	8	40
EM810030	EM820030	3.0	6	8	45
EM810035	EM820035	3.5	6	10	45
EM810040	EM820040	4.0	6	11	45
EM810045	EM820045	4.5	6	11	45
EM810050	EM820050	5.0	6	13	50
EM810055	EM820055	5.5	6	13	50
EM810060	EM820060	6.0	6	13	50
EM810065	EM820065	6.5	8	16	60
EM810070	EM820070	7.0	8	16	60
EM810075	EM820075	7.5	8	16	60
EM810080	EM820080	8.0	8	19	60
EM810085	EM820085	8.5	10	19	70
EM810090	EM820090	9.0	10	19	70
EM810095	EM820095	9.5	10	19	70
EM810100	EM820100	10.0	10	22	70
EM810105	EM820105	10.5	12	22	75
EM810110	EM820110	11.0	12	22	75
EM810115	EM820115	11.5	12	22	75

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○		○				

X-POWER END MILLS

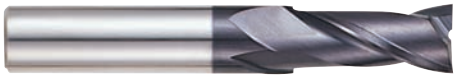
EM810 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

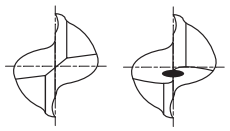
EM820 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 2 FLUTE SHORT LENGTH
VOLLHARTMETALL, 2 SCHNEIDEN KURZ

- Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- Superior workpiece finishes.
- Increased feed rates.

- Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- Bessere Werkstückoberflächen.
- Höhere Vorschübe.





up to Ø3mm over Ø3mm

MG HM | 2 | 30° | PLAIN | FLAT

P.884

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EM810120	EM820120	12.0	12	26	75
EM810906	EM820906	13.0	12	26	85
EM810140	EM820140	14.0	14	26	85
EM810905	EM820905	14.0	16	26	85
EM810908	EM820908	15.0	16	26	90
EM810160	EM820160	16.0	16	32	100
EM810909	EM820909	17.0	16	32	100
EM810180	EM820180	18.0	18	32	100
EM810911	EM820911	19.0	20	32	100
EM810200	EM820200	20.0	20	38	105
EM810220	EM820220	22.0	20	38	105
EM810240	EM820240	24.0	25	45	120
EM810250	EM820250	25.0	25	45	120

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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X-POWER END MILLS

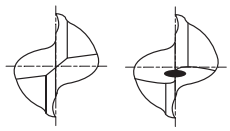
EM816 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

EM826 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 2 FLUTE LONG LENGTH
VOLLHARTMETALL, 2 SCHNEIDEN LANG

- Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- Superior workpiece finishes.
- Increased feed rates.

- Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- Bessere Werkstückoberflächen
- Höhere Vorschübe.



up to Ø3mm over Ø3mm

MG HM | 2 | 30° | PLAIN | FLAT

P.885

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EM816020	—	2.0	4	8	40
EM816030	EM826030	3.0	6	12	50
EM816040	EM826040	4.0	6	15	50
EM816050	EM826050	5.0	6	20	60
EM816060	EM826060	6.0	6	20	60
EM816080	EM826080	8.0	8	25	70
EM816100	EM826100	10.0	10	30	90
EM816120	EM826120	12.0	12	30	90
EM816140	EM826140	14.0	16	40	110
EM816160	EM826160	16.0	16	50	110
EM816180	EM826180	18.0	20	50	110
EM816200	EM826200	20.0	20	55	110
EM816250	EM826250	25.0	25	75	140

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○		○				

X-POWER END MILLS

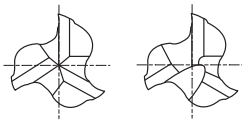
EM836 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

EM846 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 3 FLUTE MINIATURE
VOLLHARTMETALL, 3 SCHNEIDEN MINI

▶ The Miniature end mill developed by YG-1 is universally adopted as the most cost effective system for small milling cutters and possesses the advantage of 2 flute and 4 flute end mill.

▶ Der von YG-1 entwickelte Miniature-Fräser gilt als eins der wirtschaftlichsten Frässysteme und besitzt die Vorteile von 2 und 4 Schneiden Fräsern.



under Ø3mm　　from Ø3mm

MG HM | 3 | 30° | PLAIN | FLAT

P.886, 887

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EM836010	—	1.0	4	2	35
EM836020	—	2.0	4	4	35
EM836030	EM846030	3.0	6	5	36
EM836040	EM846040	4.0	6	7	38
EM836050	EM846050	5.0	6	8	39
EM836060	EM846060	6.0	6	8	39
EM836080	EM846080	8.0	8	11	43
EM836100	EM846100	10.0	10	13	50
EM836120	EM846120	12.0	12	15	55
EM836140	EM846140	14.0	14	15	58
EM836160	EM846160	16.0	16	18	62
EM836180	EM846180	18.0	18	20	70
EM836200	EM846200	20.0	20	22	75

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent　○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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X-POWER END MILLS

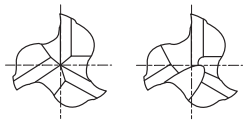
EM895 SERIES PLAIN SHANK GLATTER ZYLINDERSCHAFT

EM896 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 3 FLUTE 38° HELIX SHORT LENGTH
VOLLHARTMETALL, 3 SCHNEIDEN 38° RECHTSSPIRALE KURZ

- Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- Possesses the advantage of 2 flute and 4 flute end mill.
- Superior workpiece finishes.

- Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- Besitzt die Vorteile von 2 und 4 Schneiden Fräsern
- Bessere Werkstückoberflächen



under Ø3mm from Ø3mm

MG HM | 3 | 38° | PLAIN | FLAT

P.886, 887

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EM895010	—	1.0	3	2.5	38
EM895015	—	1.5	4	5	50
EM895025	—	2.5	3	7	38
EM895030	—	3.0	3	10	38
EM895901	EM896901	3.0	6	10	50
EM895035	—	3.5	4	12	50
EM895902	EM896902	3.5	6	12	50
EM895040	—	4.0	4	12	50
EM895903	EM896040	4.0	6	12	50
EM895045	EM896045	4.5	6	14	57
EM895050	—	5.0	5	14	50
EM895904	EM896903	5.0	6	14	57
EM895060	EM896060	6.0	6	16	57
EM895080	EM896080	8.0	8	20	63
EM895100	EM896100	10.0	10	22	72
EM895120	EM896120	12.0	12	25	73
EM895140	EM896140	14.0	14	25	75
EM895160	EM896160	16.0	16	32	82
EM895180	EM896180	18.0	18	32	92
EM895200	EM896200	20.0	20	38	92

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○		○				

X-POWER END MILLS

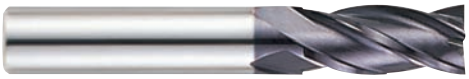
EM811 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

EM821 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 4 FLUTE SHORT LENGTH
VOLLHARTMETALL, 4 SCHNEIDEN KURZ

- Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- 4 flute allows for better workpiece finishes.
- Increased production.

- Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- 4 Schneiden erzeugen eine bessere Oberfläche des Werkstücks.
- Höhere Produktivität.



MG HM | 4 | 30° | PLAIN | FLAT

P.888

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EM811020	—	2.0	4	6	40
EM811901	EM821901	2.0	6	6	40
EM811025	—	2.5	4	8	40
EM811902	EM821902	2.5	6	8	40
EM811030	EM821030	3.0	6	8	45
EM811035	EM821035	3.5	6	10	45
EM811040	EM821040	4.0	6	11	45
EM811045	EM821045	4.5	6	11	45
EM811050	EM821050	5.0	6	13	50
EM811055	EM821055	5.5	6	13	50
EM811060	EM821060	6.0	6	13	50
EM811065	EM821065	6.5	8	16	60
EM811070	EM821070	7.0	8	16	60
EM811075	EM821075	7.5	8	16	60
EM811080	EM821080	8.0	8	19	60
EM811085	EM821085	8.5	10	19	70
EM811090	EM821090	9.0	10	19	70
EM811095	EM821095	9.5	10	19	70
EM811100	EM821100	10.0	10	22	70
EM811105	EM821105	10.5	12	22	75
EM811110	EM821110	11.0	12	22	75
EM811115	EM821115	11.5	12	22	75
EM811120	EM821120	12.0	12	26	75
EM811904	EM821904	13.0	12	26	85

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○		○				

X-POWER END MILLS

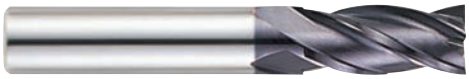
EM811 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

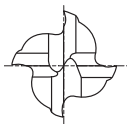
EM821 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 4 FLUTE SHORT LENGTH
VOLLHARTMETALL, 4 SCHNEIDEN KURZ

- Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- 4 flute allows for better workpiece finishes.
- Increased production.

- Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- 4 Schneiden erzeugen eine bessere Oberfläche des Werkstücks.
- Höhere Produktivität.





MG HM | 4 | 30° | PLAIN | FLAT

P.888

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EM811140	EM821140	14.0	14	26	85
EM811905	EM821905	14.0	12	26	85
EM811903	EM821903	14.0	16	26	85
EM811906	EM821906	15.0	16	26	90
EM811160	EM821160	16.0	16	32	100
EM811907	EM821907	17.0	16	32	100
EM811180	EM821180	18.0	18	32	100
EM811908	EM821908	18.0	16	32	100
EM811909	EM821909	19.0	20	32	100
EM811200	EM821200	20.0	20	38	105
EM811220	EM821220	22.0	20	38	105
EM811240	EM821240	24.0	25	45	120
EM811250	EM821250	25.0	25	45	120

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○		○				

X-POWER END MILLS

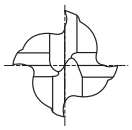
EM817 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

EM827 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 4 FLUTE LONG LENGTH
VOLLHARTMETALL, 4 SCHNEIDEN LANG

- Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- 4 flute allows for better workpiece finishes.
- Increased production.

- Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- 4 Schneiden erzeugen eine bessere Oberfläche des Werkstücks.
- Höhere Produktivität.



MG HM | 4 | 30° | PLAIN | FLAT

P.889

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EM817020	—	2.0	4	8	40
EM817030	EM827030	3.0	6	12	50
EM817040	EM827040	4.0	6	15	50
EM817050	EM827050	5.0	6	20	60
EM817060	EM827060	6.0	6	20	60
EM817080	EM827080	8.0	8	25	70
EM817100	EM827100	10.0	10	30	90
EM817120	EM827120	12.0	12	30	90
EM817140	EM827140	14.0	16	40	110
EM817160	EM827160	16.0	16	50	110
EM817180	EM827180	18.0	20	50	110
EM817200	EM827200	20.0	20	55	110
EM817250	EM827250	25.0	25	75	140

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

X-POWER END MILLS

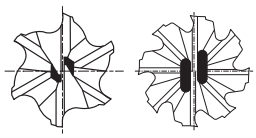
EM812 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

EM822 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 6&8 FLUTE 45° HELIX LONG LENGTH
VOLLHARTMETALL, 6&8 SCHNEIDEN 45° RECHTSSPIRALE LANG

- ▶ Designed to machine hardened materials.
- ▶ High speed cutting and finish milling with high feed rates.
- ▶ Superior workpiece finishes.
- ▶ Superior wear resistant.
- ▶ Suitable for dry milling.

- ▶ Geeignet zum Fräsen von hochgehärteten Stählen.
- ▶ Hochgeschwindigkeitsfräsen und Finishing mit erhöhtem Vorschub.
- ▶ Bessere Werkstückoberflächen
- ▶ Höhere Verschleißfestigkeit.
- ▶ Geeignet zum Trocken-Fräsen.



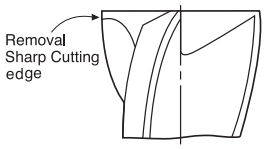
MG HM | 6&8 | 45° | PLAIN | FLAT

P.890

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
EM812060	EM822060	6.0	6	13	57	6
EM812070	EM822070	7.0	8	16	63	6
EM812080	EM822080	8.0	8	19	63	6
EM812090	EM822090	9.0	10	19	72	6
EM812100	EM822100	10.0	10	22	72	6
EM812120	EM822120	12.0	12	26	83	6
EM812140	EM822140	14.0	14	26	83	6
EM812901	EM822901	14.0	16	26	83	6
EM812160	EM822160	16.0	16	32	92	6
EM812180	EM822180	18.0	18	32	92	8
EM812200	EM822200	20.0	20	38	104	8
EM812250	EM822250	25.0	25	44	104	8

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

X-POWER END MILLS

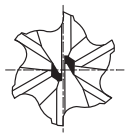
EM834 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

EM844 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 6 FLUTE 45° HELIX EXTRA LONG LENGTH
VOLLHARTMETALL, 6 SCHNEIDEN 45° RECHTSSPIRALE EXTRA LANG

- Designed to machine hardened materials.
- High speed cutting and finish milling with high feed rates.
- Superior workpiece finishes.
- Superior wear resistant.
- Suitable for dry milling.

- Geeignet zum Fräsen von hochgehärteten Stählen.
- Hochgeschwindigkeitsfräsen und Finishing mit erhöhtem Vorschub.
- Bessere Werkstückoberflächen
- Höhere Verschleißfestigkeit.
- Geeignet zum Trocken-Fräsen.

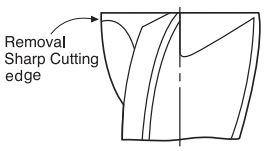


MG HM | 6 | 45° | PLAIN | FLAT P.891

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EM834060	EM844060	6.0	6	26	70
EM834080	EM844080	8.0	8	36	90
EM834100	EM844100	10.0	10	46	100
EM834120	EM844120	12.0	12	56	110
EM834160	EM844160	16.0	16	66	130
EM834200	EM844200	20.0	20	76	140
EM834250	EM844250	25.0	25	92	180

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

X-POWER END MILLS

EM876 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

EM877 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 2 FLUTE SHORT LENGTH BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN KURZ STIRNRADIUS

- ▶ Economic type with short overall length.
- ▶ Radius tolerance ±0.02mm & short length of cut.
- ▶ Günstige Variante, kurze Gesamlänge.
- ▶ Radius Toleranz ±0.02mm und kurze Schneidenlänge.

MG HM | 2 | 30° | R ±0.02 | PLAIN | FLAT

P.892

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Radius of Ball Nose R (±0.02)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EM876010	—	R0.5	1.0	3	3	38
EM876012	—	R0.6	1.2	3	3	38
EM876015	—	R0.75	1.5	3	3	38
EM876020	EM877020	R1.0	2.0	6	3	50
EM876025	EM877025	R1.25	2.5	6	4	50
EM876030	EM877030	R1.5	3.0	6	4	50
EM876040	EM877040	R2.0	4.0	6	5	54
EM876050	EM877050	R2.5	5.0	6	6	54
EM876060	EM877060	R3.0	6.0	6	7	54
EM876070	EM877070	R3.5	7.0	8	8	58
EM876080	EM877080	R4.0	8.0	8	9	58
EM876090	EM877090	R4.5	9.0	10	10	66
EM876100	EM877100	R5.0	10.0	10	11	66
EM876120	EM877120	R6.0	12.0	12	12	73
EM876140	EM877140	R7.0	14.0	14	14	75
EM876160	EM877160	R8.0	16.0	16	16	82
EM876180	EM877180	R9.0	18.0	18	18	84
EM876200	EM877200	R10.0	20.0	20	20	92
EM876250	EM877250	R12.5	25.0	25	25	104

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○			○						

X-POWER END MILLS

EM813 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

EM823 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN LANG STIRNRADIUS

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- For copy - milling machines.

- Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- Kopierbearbeitungen.

MG HM | 2 | 30° | R ±0.02 | PLAIN | FLAT

P.892

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Radius of Ball Nose R (±0.02)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EM813010	—	R0.5	1.0	4	2.5	50
EM813901	EM823901	R0.5	1.0	6	2.5	50
EM813012	—	R0.6	1.2	4	3	50
EM813015	—	R0.75	1.5	4	4	50
EM813902	EM823902	R0.75	1.5	6	4	50
EM813020	EM823020	R1.0	2.0	6	5	50
EM813025	EM823025	R1.25	2.5	6	6	60
EM813030	EM823030	R1.5	3.0	6	8	60
EM813035	EM823035	R1.75	3.5	6	8	70
EM813040	EM823040	R2.0	4.0	6	8	70
EM813050	EM823050	R2.5	5.0	6	10	80
EM813060	EM823060	R3.0	6.0	6	12	90
EM813070	EM823070	R3.5	7.0	8	14	90
EM813080	EM823080	R4.0	8.0	8	14	100
EM813090	EM823090	R4.5	9.0	10	18	100
EM813100	EM823100	R5.0	10.0	10	18	100
EM813120	EM823120	R6.0	12.0	12	22	110
EM813140	EM823140	R7.0	14.0	14	26	110
EM813903	EM823903	R7.0	14.0	16	26	110
EM813160	EM823160	R8.0	16.0	16	30	140
EM813180	EM823180	R9.0	18.0	18	34	140
EM813200	EM823200	R10.0	20.0	20	38	160
EM813250	EM823250	R12.5	25.0	25	50	180

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○			○						

X-POWER END MILLS

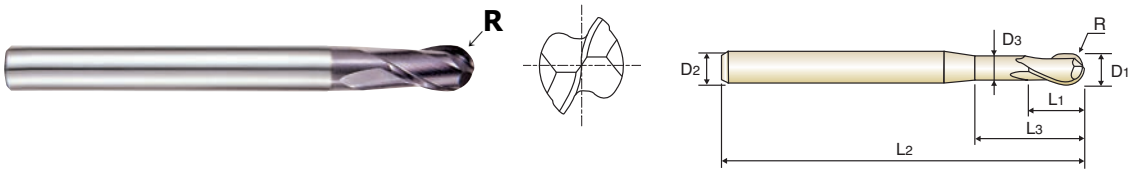
EM899 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

EM900 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 2 FLUTE MEDIUM BALL NOSE with NECK
VOLLHARTMETALL, 2 SCHNEIDEN MEDIUM STIRNRADIUS mit ABGESETZTEM SCHAFTTEIL

- Deep slotting milling is possible by reduced neck.
- High efficiency milling is possible in deep slotting with projection of the end mill being long.

- Mit abgesetztem Schaftteil ist Tiefnutenfräsen möglich.
- Effizientes Tiefnutenfräsen von tiefliegenden Bereichen möglich.



MG HM | 2 | 30° | R ±0.02 | PLAIN | FLAT | P.893

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Radius of Ball Nose R (±0.02)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
EM899030	EM900030	R1.5	3.0	6	8	—	70	—
EM899040	EM900040	R2.0	4.0	6	8	—	70	—
EM899050	EM900050	R2.5	5.0	6	12	—	80	—
EM899060	EM900060	R3.0	6.0	6	12	22	80	5.8
EM899070	EM900070	R3.5	7.0	8	14	—	90	—
EM899080	EM900080	R4.0	8.0	8	14	27	90	7.8
EM899100	EM900100	R5.0	10.0	10	18	31	100	9.8
EM899120	EM900120	R6.0	12.0	12	22	35	110	11.8
EM899140	EM900140	R7.0	14.0	12	26	—	120	—
EM899160	EM900160	R8.0	16.0	16	30	50	140	15.8
EM899180	EM900180	R9.0	18.0	16	34	—	140	—
EM899200	EM900200	R10.0	20.0	20	38	58	160	19.8
EM899250	EM900250	R12.5	25.0	25	55	75	180	24.8

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○			○						

X-POWER END MILLS

EM838 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

EM848 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 2 FLUTE LONG REACH BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN GROßE REICHWEITE STIRNRADIUS

▶ Longer overall length than EM813, EM823 types and suitable for machining deeply located area.

▶ Längere Gesamtlänge als bei EM813, EM823 typen und geeignet für extrem tiefliegende Bohrungen.

MG HM | 2 | 30° | R ±0.02 | PLAIN | FLAT

P.894

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Radius of Ball Nose R (±0.02)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EM838020	—	R1.0	2.0	3	6	80
EM838030	—	R1.5	3.0	3	8	100
EM838040	—	R2.0	4.0	4	8	100
EM838050	EM848050	R2.5	5.0	6	10	120
EM838060	EM848060	R3.0	6.0	6	10	120
EM838080	EM848080	R4.0	8.0	8	14	140
EM838100	EM848100	R5.0	10.0	10	18	180
EM838120	EM848120	R6.0	12.0	12	22	200
EM838160	EM848160	R8.0	16.0	16	30	250
EM838200	EM848200	R10.0	20.0	20	38	250

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○			○						

YG X-POWER END MILLS

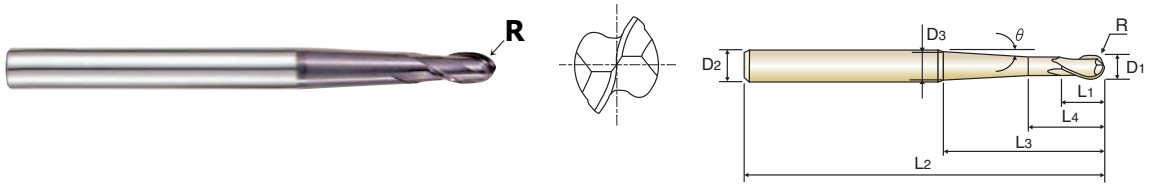
EM902 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

EM904 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 2 FLUTE BALL NOSE with TAPER NECK
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS mit KONISCH ABGESETZTEM SCHAFTTEIL

▶ High efficiency milling in deep slotting due to long projection of the end mills.

▶ Effizientes Tiefnutenfräsen von tiefliegenden Bereichen möglich.



MG HM | 2 | 30° | R ±0.01 | PLAIN | FLAT

P.895

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Radius of Ball Nose R (±0.01)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Under Neck Parallel Length L4	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Neck Taper Angle θ
EM902010	EM904010	R0.5	1.0	6	2	4	23	60	2	1°30′
EM902901	EM904901	R0.5	1.0	6	2	4	23	60	4.3	5°
EM902902	EM904902	R0.5	1.0	6	2	4	42	80	5	3°
EM902020	EM904020	R1.0	2.0	6	4	6	23	60	2.9	1°30′
EM902903	EM904903	R1.0	2.0	6	4	6	23	60	5	5°
EM902904	EM904904	R1.0	2.0	6	4	6	41	80	5.7	3°
EM902030	EM904030	R1.5	3.0	6	6	8	32	70	5.6	3°
EM902905	EM904905	R1.5	3.0	6	6	8	52	90	5.3	1°30′
EM902040	EM904040	R2.0	4.0	6	8	10	28	70	6	3°
EM902906	EM904906	R2.0	4.0	6	8	10	49	90	6	1°30′
EM902050	EM904050	R2.5	5.0	8	10	12	41	90	8	3°
EM902907	EM904907	R2.5	5.0	8	10	12	61	110	7	1°30′
EM902060	EM904060	R3.0	6.0	8	12	15	34	90	8	3°
EM902908	EM904908	R3.0	6.0	8	12	15	53	110	8	1°30′
EM902080	EM904080	R4.0	8.0	10	14	17	36	100	10	3°
EM902909	EM904909	R4.0	8.0	10	14	17	55	120	10	1°30′
EM902100	EM904100	R5.0	10.0	12	18	21	40	110	12	3°
EM902910	EM904910	R5.0	10.0	12	18	21	59	130	12	1°30′
EM902120	EM904120	R6.0	12.0	16	22	25	63	140	16	3°
EM902911	EM904911	R6.0	12.0	16	22	25	83	160	15	1°30′

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	○	◎	◎	○										

X-POWER END MILLS

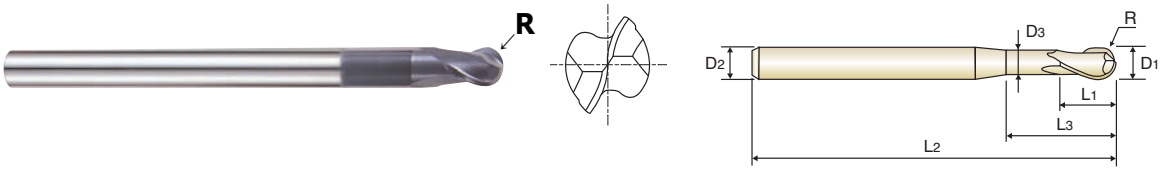
EM878 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

EM879 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 2 FLUTE STUB LENGTH HIGH PRECISION BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN EXRTA KURZ PRÄZISER STIRNRADIUS

- Designed for high precision milling operation.
- Radius toleracne ±0.01mm and improved surface roughness.

- Geeignet zum Hochpräzisem Fräsen
- Radius Toleranz ±0.01mm und höhere Oberflächengüte.



MG HM | 2 | 30° | R ±0.01 | PLAIN | FLAT

P.892

Unit : mm

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
PLAIN	FLAT	R (±0.01)	D1	D2	L1	L3	L2	D3
EM878010	—	R0.5	1.0	4	1	2.2	50	0.95
EM878901	—	R0.5	1.0	6	1	2.2	50	0.95
EM878012	—	R0.6	1.2	4	1.2	2.6	50	1.1
EM878015	—	R0.75	1.5	4	1.5	3	50	1.4
EM878020	EM879020	R1.0	2.0	6	2	4	50	1.9
EM878025	EM879025	R1.25	2.5	6	2.5	5	60	2.4
EM878030	EM879030	R1.5	3.0	6	3	6	60	2.9
EM878040	EM879040	R2.0	4.0	6	4	8	70	3.9
EM878050	EM879050	R2.5	5.0	6	5	10	80	4.9
EM878060	EM879060	R3.0	6.0	6	6	12	90	5.9
EM878070	EM879070	R3.5	7.0	8	7	14	90	6.9
EM878080	EM879080	R4.0	8.0	8	8	16	100	7.9
EM878090	EM879090	R4.5	9.0	10	9	18	100	8.9
EM878100	EM879100	R5.0	10.0	10	10	20	100	9.9
EM878120	EM879120	R6.0	12.0	12	12	24	110	11.9
EM878140	EM879140	R7.0	14.0	14	14	28	110	13.8
EM878160	EM879160	R8.0	16.0	16	16	32	140	15.8
EM878180	EM879180	R9.0	18.0	18	18	36	140	17.8
EM878200	EM879200	R10.0	20.0	20	20	40	160	19.8
EM878250	EM879250	R12.5	25.0	25	25	50	180	24.8

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
	○	◎	◎	○	○			○						

X-POWER END MILLS

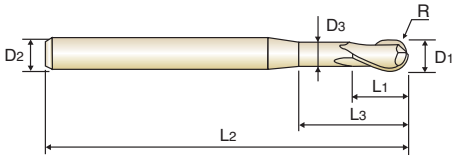
G4953 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

G4954 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 2 FLUTE STUB LENGTH BALL NOSE for OVER HRc55
VOLLHARTMETALL, 2 SCHNEIDEN EXTRA KURZ STIRNRADIUS für ÜBER HRc55

- ▶ Suitable for HRc55~HRc70 high hardened materials.
- ▶ Strong cutting edges and higher tool rigidity.
- ▶ Radius tolerance ±0.01mm.

- ▶ Geeignet zum Fräsen von HRc55 ~ HRc70
- ▶ Robuste Schneidkanten und hohe Werkzeughärte.
- ▶ Radius Toleranz ±0.01mm.



MG HM | 2 | 30° | R ±0.01 | PLAIN | FLAT

P.896

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Radius of Ball Nose R (±0.01)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
G4953010	—	R0.5	1.0	4	1	2.2	50	0.95
G4953012	—	R0.6	1.2	4	1.2	2.6	50	1.1
G4953015	—	R0.75	1.5	4	1.5	3	50	1.4
G4953020	G4954020	R1.0	2.0	6	2	4	50	1.9
G4953030	G4954030	R1.5	3.0	6	3	6	60	2.9
G4953040	G4954040	R2.0	4.0	6	4	8	70	3.9
G4953050	G4954050	R2.5	5.0	6	5	10	80	4.9
G4953060	G4954060	R3.0	6.0	6	6	12	90	5.9
G4953070	G4954070	R3.5	7.0	8	7	14	90	6.9
G4953080	G4954080	R4.0	8.0	8	8	16	100	7.9
G4953090	G4954090	R4.5	9.0	10	9	18	100	8.9
G4953100	G4954100	R5.0	10.0	10	10	20	100	9.9
G4953120	G4954120	R6.0	12.0	12	12	24	110	11.9
G4953140	G4954140	R7.0	14.0	14	14	28	110	13.8
G4953160	G4954160	R8.0	16.0	16	16	32	140	15.8
G4953180	G4954180	R9.0	18.0	18	18	36	140	17.8
G4953200	G4954200	R10.0	20.0	20	20	40	160	19.8
G4953250	G4954250	R12.5	25.0	25	25	50	180	24.8

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
			○	◎	◎									

X-POWER END MILLS

EM865 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE MINIATURE BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN MINI STIRNRADIUS

- High precision milling in medical, optical, electronics and aerospace industries.
- Excellent performance at dry cutting conditon.
- Excellent performance on hardened steel

- Hochpräzises Fräsen für Medizintechink, Optik, Elektronik und Raumfahrt.
- Ausgezeichnete Leistung bei der trockenen Schneidbedingung.
- Ausgezeichnete Leistung bei der Bearbeitung von gehärtetem Stahl.

MG HM | 2 | 30° | R ±0.01 | PLAIN | P.889

Unit : mm

EDP No. PLAIN	Radius of Ball Nose R (±0.01)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EM865006	R0.3	0.6	3	1.1	40
EM865007	R0.35	0.7	3	1.5	40
EM865008	R0.4	0.8	3	2	40
EM865009	R0.45	0.9	3	2.2	40
EM865010	R0.5	1.0	3	2.5	40
EM865011	R0.55	1.1	3	3	40
EM865012	R0.6	1.2	3	3	40
EM865013	R0.65	1.3	3	3.5	40
EM865014	R0.7	1.4	3	3.5	40
EM865015	R0.75	1.5	3	4	40
EM865020	R1.0	2.0	3	5	40
EM865030	R1.5	3.0	3	8	40

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

X-POWER END MILLS

X-POWER BALL NOSE END MILLS-MMC
X-POWER STIRNRADIUS FRÄSER-MMC

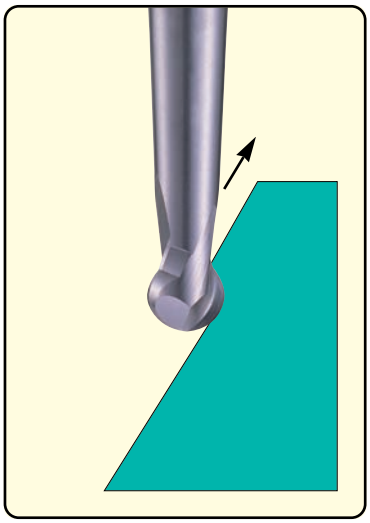
Useful Field Area / Geeignete Anwendungsgebiete

- Die & Mold making, Turbine manufacturing and Aircraft Industry, etc.
  Vorrichtungsbau, Turbinenherstellung, Luftfahrtindustrie, etc.
- Difficult 3-D Forms.
  Schwierige 3-D Formen.
- Profiling of up to HRc 60 high hardened steels and Alloy steels, Nickelbase alloys, Titanium alloys.
  Profilfräsen von bis zu HRc 60 gehätetem Stahl und Stahllegierungen Nickellegierungen, Titanlegierungen.

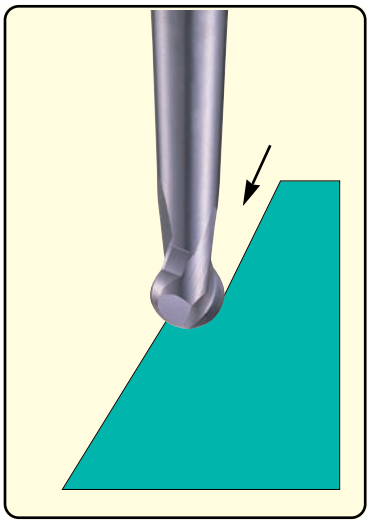
Characteristic / Eigenschaften

- Ultra micro grain carbide which increase both toughness and hardness.
  Ultra micro grain Vollhartmetall, erhöht sowohl Zähigkeit wie auch Härte.
- YG-1's unique X-POWER coating suitable for dry cutting and high speed cutting.
  YG-1's einzigartige X-POWER-Beschichtung, geeignet zum Trockenfräsen und HSC-Fräsen.
- Oustanding tool geometry and sphere shape ball enables more increased tool life and higher speed and feed operation.
  Aussergewöhnliche Werkzeug-Geometrie und Kugelform ergeben eine langere Standzeit sowie eine höhere Geschwindigkeit und Vorschubbewegung.

Surpassing Milling Operation / Fräsvorgang

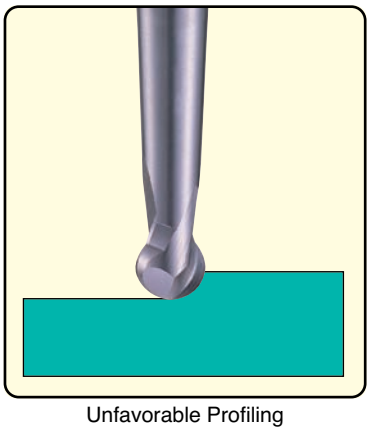


Favorable Back Milling
Vorteilhaftes Rückwärtsfräsen

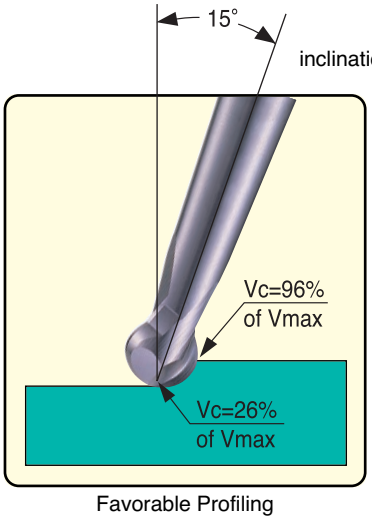


Unfavorable Drilling
Unvorteilhaftes Fräsen

- Operating angle 14° ~ 16°, higher speed and feed are possible by decreased cutting resistance at the cutting edges contacting the workpiece.
  Bearbeitungswinkel 14° ~ 16°, höhere Geschwindigkeit und Vorschub sind möglich durch geringeren Fräswiderstand an der Schneidkante des Werkstückes.
- Excellent surface finish and faster milling process.
  Ausgezeichnete Oberflächengüte und Schnellere Bearbeitung.
- Enable to milling with higher speed and feed when Back Milling.
  Ermöglicht Fräsen mit grösserer Geschwindigkeit und höherem Vorschub beim Rückwärtsfräsen.



Unfavorable Profiling
Unvorteihaftes Profilfräsen



Favorable Profiling
Vovorteilhaftes Profilfräsen

- When 15° inclination milling operation, more productivity and higher speed and feed are possible.
  Beim Fräsvorgang mit 15° Neigung ergibt sich eine höhere Produktivität, sowie eine grössere Geschwindigkeit und ein höherer Vorschub sind möglich.
- Decreased cutting force.
  Reduzierte Fräskraft.
- Excellent surface roughness and brightness.
  Ausgezeichnete Oberflächengüte und Glanz.

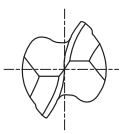
X-POWER END MILLS

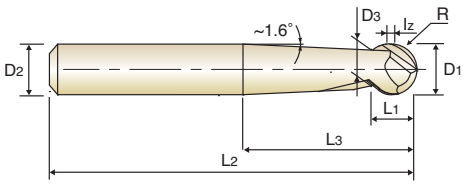
EM669 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE-MMC
VOLLHARTMETALL, 2 SCHNEIDEN LANG STIRNRADIUS-MMC

- ▶ Designed for copy milling.
- ▶ Increased feed rates.
- ▶ 15° inclination.
- ▶ Easy to regrind.
- ▶ Radius Tolerance ±0.01mm.

- ▶ Geeignet zum Kopierfräsen.
- ▶ Höhere Vorschub möglich.
- ▶ 15° Neigung.
- ▶ Leicht nachschleifbar.
- ▶ Radius Toleranz ±0.01mm.





MG HM | 2 | 30° | R ±0.01 | PLAIN

P.897

● 2 FLUTE LONG LENGTH- ECONOMIC VERSION
● 2 SCHNEIDEN LANG-KOSTENGÜNSTIG

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	lz
PLAIN	R (±0.01)	D1	D2	L1	L3	L2	D3	
EM669030	R1.5	3.0	6	4	30	80	2.5	1.5
EM669040	R2.0	4.0	6	5	30	80	3.3	1.5
EM669050	R2.5	5.0	6	6	43	80	4.1	2
EM669060	R3.0	6.0	6	7	30	100	4.7	2
EM669080	R4.0	8.0	8	9	36	100	6.5	3
EM669100	R5.0	10.0	10	11	43	100	8.2	3
EM669120	R6.0	12.0	12	13	52	100	9.8	3
EM669160	R8.0	16.0	16	15	61	150	13.4	3

※ECONOMIC TYPE HAS MORE ADVANTAGE IN RESHARPENING THAN SPHERE TYPE.

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○			○						

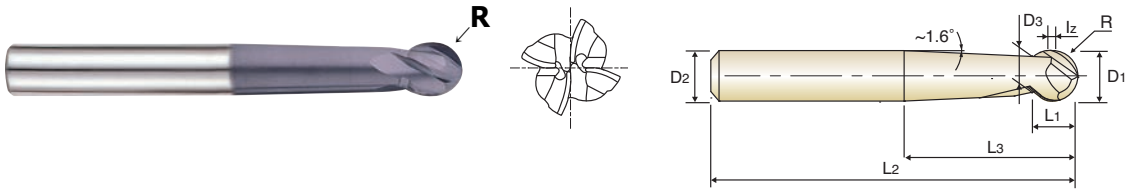
X-POWER END MILLS

EM673 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE-MMC
VOLLHARTMETALL, 4 SCHNEIDEN LANG STIRNRADIUS-MMC

- ▶ Designed for copy milling.
- ▶ Increased feed rates.
- ▶ 15° inclination.
- ▶ Easy to regrind.
- ▶ Radius Tolerance ±0.01mm.

- ▶ Geeignet zum Kopierfräsen.
- ▶ Höhere Vorschub möglich.
- ▶ 15° Neigung.
- ▶ Leicht nachschleifbar.
- ▶ Radius Toleranz ±0.01mm.



MG HM | 4 | 30° | R ±0.01 | PLAIN

P.898

● 4 FLUTE LONG LENGTH- ECONOMIC VERSION
● 4 SCHNEIDEN LANG-KOSTENGÜNSTIG

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Iz
PLAIN	R (±0.01)	D1	D2	L1	L3	L2	D3	
EM673050	R2.5	**5.0**	6	6	43	80	4.1	2
EM673060	R3.0	**6.0**	6	7	30	100	4.7	2
EM673080	R4.0	**8.0**	8	9	36	100	6.5	3
EM673100	R5.0	**10.0**	10	11	43	100	8.2	3
EM673120	R6.0	**12.0**	12	13	52	100	9.8	3
EM673160	R8.0	**16.0**	16	15	61	150	13.4	3

※ECONOMIC TYPE HAS MORE ADVANTAGE IN RESHARPENING THAN SPHERE TYPE.

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○			○						

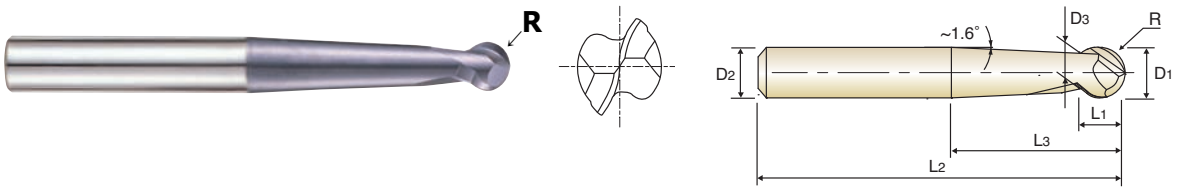
X-POWER END MILLS

EM863 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE-MMC
VOLLHARTMETALL, 2 SCHNEIDEN LANG STIRANRADIUS-MMC

- ▶ Designed for copy milling.
- ▶ Increased feed rates.
- ▶ 15° inclination.
- ▶ Easy to regrind.
- ▶ Radius Tolerance ±0.01mm.

- ▶ Geeignet zum Kopierfräsen.
- ▶ Höhere Vorschub möglich.
- ▶ 15° Neigung.
- ▶ Leicht nachschleifbar.
- ▶ Radius Toleranz ±0.01mm.



MG HM | 2 | 30° | R ±0.01 | PLAIN

P.897

● 2 FLUTE LONG LENGTH- SPHERE VERSION
● 2 SCHNEIDEN LANG-KUGELFORM

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
PLAIN	R (±0.01)	D_1	D_2	L_1	L_3	L_2	D_3
EM863030	R1.5	**3.0**	6	2.3	30	80	2.5
EM863040	R2.0	**4.0**	6	3.1	30	80	3.3
EM863050	R2.5	**5.0**	6	3.9	38	80	4.1
EM863060	R3.0	**6.0**	6	4.9	28	100	4.7
EM863080	R4.0	**8.0**	8	6.3	33	100	6.5
EM863100	R5.0	**10.0**	10	7.9	40	100	8.2
EM863120	R6.0	**12.0**	12	9.5	49	100	9.8
EM863160	R8.0	**16.0**	16	12.4	59	150	13.4

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○			○						

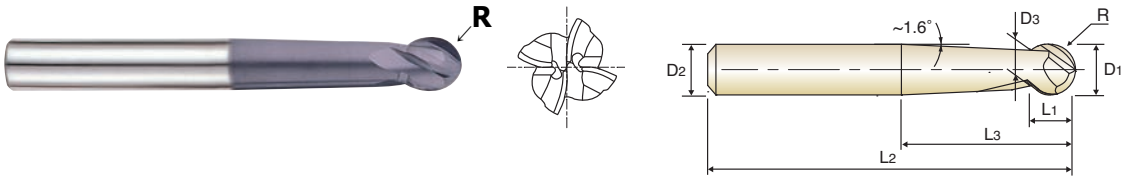
X-POWER END MILLS

EM864 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE-MMC
VOLLHARTMETALL, 4 SCHNEIDEN LANG STIRNRADIUS-MMC

- ▶ Designed for copy milling.
- ▶ Increased feed rates.
- ▶ 15° inclination.
- ▶ Easy to regrind.
- ▶ Radius Tolerance ±0.01mm.

- ▶ Geeignet zum Kopierfräsen.
- ▶ Höhere Vorschub möglich.
- ▶ 15° Neigung.
- ▶ Leicht nachschleifbar.
- ▶ Radius Toleranz ±0.01mm.



MG HM | 4 | 30° | R ±0.01 | PLAIN | P.898

● 4 FLUTE LONG LENGTH- SPHERE VERSION
● 4 SCHNEIDEN LANG-KUGELFORM

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
PLAIN	R (±0.01)	D1	D2	L1	L3	L2	D3
EM864050	R2.5	**5.0**	6	3.9	38	80	4.1
EM864060	R3.0	**6.0**	6	4.9	28	100	4.7
EM864080	R4.0	**8.0**	8	6.3	33	100	6.5
EM864100	R5.0	**10.0**	10	7.9	40	100	8.2
EM864120	R6.0	**12.0**	12	9.5	49	100	9.8
EM864160	R8.0	**16.0**	16	12.4	59	150	13.4

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○			○						

X-POWER END MILLS

EM815 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

EM825 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE
VOLLHARTMETALL, 4 SCHNEIDEN LANG STIRNRADIUS

- Designed to machine tool steels, alloy steels, mold steels and other high hardened materials.
- For copy - milling machines.
- 4 Flute design - higher feed than EM813, EM823 series

- Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- Kopierbearbeitungen.
- 4 Schneiden - Höherer Vorschub als bei EM 813, EM 823 serien.

MG HM | 4 | 30° | R ±0.02 | PLAIN | FLAT

P.899

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Radius of Ball Nose R (±0.02)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EM815010	—	R0.5	1.0	4	2.5	50
EM815901	EM825901	R0.5	1.0	6	2.5	50
EM815015	—	R0.75	1.5	4	4	50
EM815902	EM825902	R0.75	1.5	6	4	50
EM815020	EM825020	R1.0	2.0	6	5	50
EM815030	EM825030	R1.5	3.0	6	8	60
EM815040	EM825040	R2.0	4.0	6	8	70
EM815050	EM825050	R2.5	5.0	6	10	80
EM815060	EM825060	R3.0	6.0	6	12	90
EM815070	EM825070	R3.5	7.0	8	14	90
EM815080	EM825080	R4.0	8.0	8	14	100
EM815090	EM825090	R4.5	9.0	10	18	100
EM815100	EM825100	R5.0	10.0	10	18	100
EM815120	EM825120	R6.0	12.0	12	22	110
EM815140	EM825140	R7.0	14.0	14	26	110
EM815903	EM825903	R7.0	14.0	16	26	110
EM815160	EM825160	R8.0	16.0	16	30	140
EM815180	EM825180	R9.0	18.0	18	34	140
EM815200	EM825200	R10.0	20.0	20	38	160
EM815250	EM825250	R12.5	25.0	25	50	180

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○			○						

X-POWER END MILLS

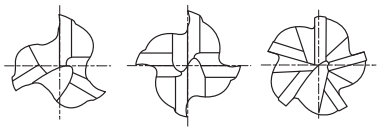
EM832 SERIES PLAIN SHANK GLATTER ZYLINDERSCHAFT

EM842 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, MULTI FLUTE 20° HELIX SHORT LENGTH ROUGHING - FINE
VOLLHARTMETALL, MULTI SCHNEIDEN 20° RECHTSSPIRALE KURZ SCHRUPPFRÄSER - FEIN

- Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- High velocity milling of hardened steels.
- For dry and wet milling.
- Fast chip ejection.

- Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- Hochgeschwindigkeitsfräsen von gehärteten Stählen.
- Für Trocken - und Naßfräsen.
- Schnelle Spanausfuhr.



MG HM | FINE | 3-5 | 20° | PLAIN | FLAT

P.900

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Mill Diameter h10	Shank Diameter h6	Length of Cut	Overall Length	No. of Flute
EM832060	EM842060	6.0	6	7	54	3
EM832070	EM842070	7.0	8	8	58	3
EM832080	EM842080	8.0	8	9	58	3
EM832090	EM842090	9.0	10	13	66	4
EM832100	EM842100	10.0	10	14	66	4
EM832120	EM842120	12.0	12	16	73	4
EM832140	EM842140	14.0	14	18	75	4
EM832160	EM842160	16.0	16	22	82	4
EM832180	EM842180	18.0	18	24	84	4
EM832200	EM842200	20.0	20	26	92	4
EM832250	EM842250	25.0	25	25	110	5

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛

Nominal-Diameter in ㎜ / Nennmaßbereich in ㎜

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○		○				

X-POWER END MILLS

EM814 SERIES PLAIN SHANK GLATTER ZYLINDERSCHAFT

EM824 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, MULTI FLUTE 20° HELIX LONG LENGTH ROUGHING- FINE
VOLLHARTMETALL, MULTI SCHNEIDEN 20° RECHTSSPIRALE LANG SCHRUPPFRÄSER - FEIN

- Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- High velocity milling of hardened steels.
- For dry and wet milling.
- Fast chip ejection.
- Longer flute length than EM832, EM842 series.

- Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- Hochgeschwindigkeitsfräsen von gehärteten Stählen.
- Für Trocken - und Nabfräsen.
- Schnelle Spanausfuhr.
- Längere Schneiden als bei EM832 und EM842 Serien.

MG HM | FINE | 3-5 | 20° | PLAIN | FLAT

P.900

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Mill Diameter h10	Shank Diameter h6	Length of Cut	Overall Length	No. of Flute
EM814060	EM824060	6.0	6	16	57	3
EM814070	EM824070	7.0	8	16	63	3
EM814080	EM824080	8.0	8	16	63	3
EM814090	EM824090	9.0	10	19	72	4
EM814100	EM824100	10.0	10	22	72	4
EM814120	EM824120	12.0	12	26	83	4
EM814140	EM824140	14.0	14	26	83	4
EM814901	EM824901	14.0	16	26	83	4
EM814160	EM824160	16.0	16	32	92	4
EM814180	EM824180	18.0	18	32	92	4
EM814200	EM824200	20.0	20	38	104	4
EM814250	EM824250	25.0	25	45	121	5

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm Nominal-Diameter in mm / Nennmaßbereich in mm					
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○		○				

X-POWER END MILLS

EM833 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

EM843 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 3&4 FLUTE 20° HELIX LONG LENGTH ROUGHING BALL NOSE - FINE
VOLLHARTMETALL, 3&4 SCHNEIDEN 20° RECHTSSPIRALE LANG SCHRUPPFRÄSER STIRNRADIUS - FEIN

- Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- High velocity milling of hardened steels.
- For dry and wet milling.
- Fast chip ejection.

- Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- Hochgeschwindigkeitsfräsen von gehärteten Stählen.
- Für Trocken und Naßfräsen.
- Schnelle Spanausfuhr.

MG HM | FINE | 3&4 | 20° | R ±0.02 | PLAIN | FLAT

P.901

Unit : mm

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
PLAIN	FLAT	R (±0.02)	h10	h6			
EM833060	EM843060	R3.0	**6.0**	6	16	57	3
EM833080	EM843080	R4.0	**8.0**	8	16	63	3
EM833100	EM843100	R5.0	**10.0**	10	22	72	4
EM833120	EM843120	R6.0	**12.0**	12	26	83	4
EM833140	EM843140	R7.0	**14.0**	14	26	83	4
EM833160	EM843160	R8.0	**16.0**	16	32	92	4
EM833180	EM843180	R9.0	**18.0**	18	32	92	4
EM833200	EM843200	R10.0	**20.0**	20	38	104	4

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm					
Nominal-Diameter in mm / Nennmaßbereich in mm					
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○		○				

X-POWER END MILLS

EM818 SERIES PLAIN SHANK GLATTER ZYLINDERSCHAFT

EM828 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 2 FLUTE LONG LENGTH CORNER RADIUS
VOLLHARTMETALL, 2 SCHNEIDEN LANG ECKENRADIUS

- Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- Superior workpiece finishes.
- Increased feed rates.

- Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- Bessere Werkstückoberflächen.
- Gesteigerte Vorschubrate.

MG HM | 2 | 30° | PLAIN | FLAT

P.902

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EM818030	EM828030	R0.3	3.0	6	12	50
EM818040	EM828040	R0.3	4.0	6	15	50
EM818911	EM828911	R0.5	4.0	6	15	50
EM818050	EM828050	R0.3	5.0	6	20	60
EM818912	EM828912	R0.5	5.0	6	20	60
EM818913	EM828913	R0.3	6.0	6	20	60
EM818060	EM828060	R0.5	6.0	6	20	60
EM818901	EM828901	R1.0	6.0	6	20	60
EM818914	EM828914	R0.3	8.0	8	25	70
EM818080	EM828080	R0.5	8.0	8	25	70
EM818902	EM828902	R1.0	8.0	8	25	70
EM818903	EM828903	R1.5	8.0	8	25	70
EM818904	EM828904	R2.0	8.0	8	25	70
EM818915	EM828915	R0.3	10.0	10	30	90
EM818100	EM828100	R0.5	10.0	10	30	90
EM818905	EM828905	R1.0	10.0	10	30	90
EM818906	EM828906	R1.5	10.0	10	30	90
EM818907	EM828907	R2.0	10.0	10	30	90
EM818120	EM828120	R0.5	12.0	12	30	90
EM818908	EM828908	R1.0	12.0	12	30	90
EM818909	EM828909	R1.5	12.0	12	30	90
EM818910	EM828910	R2.0	12.0	12	30	90
EM818160	EM828160	R0.5	16.0	16	50	110
EM818916	EM828916	R1.0	16.0	16	50	110
EM818917	EM828917	R1.5	16.0	16	50	110
EM818918	EM828918	R2.0	16.0	16	50	110
EM818200	EM828200	R0.5	20.0	20	55	110
EM818919	EM828919	R1.0	20.0	20	55	110
EM818920	EM828920	R1.5	20.0	20	55	110
EM818921	EM828921	R2.0	20.0	20	55	110

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○										

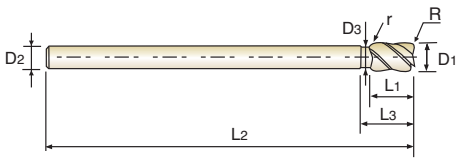
X-POWER END MILLS

EM905 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE 45° HELIX SHORT LENGTH CORNER RADIUS
VOLLHARTMETALL, 4 SCHNEIDEN 45° RECHTSSPIRALE KURZ ECKENRADIUS

- No line is marked on the boundary section during step milling because this tool has radius on the end faces of the shank
- High speed cutting in wide deep wall with step milling
- Suitable for deep side milling, helical milling, contour milling

- Hohe Oberflächengüte, auch an den Übergangsflächen, durch Radien am Auslauf der Schneidkanten.
- Hochgeschwindigkeitsfräsen auch bei grosser Auskraglänge.
- Geeignet für tiefes Seitenfräsen, Spiralfräsen und Konturfräsen.



MG HM | 4 | 45° | PLAIN

P.908, 909

Unit : mm

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
PLAIN	R	D_1	D_2	L_1	L_3	L_2	D_3
EM905100	R0.5	**10.0**	8	15	19.2	130	7.5
EM905901	R1.0	**10.0**	8	15	19.2	130	7.5
EM905120	R0.5	**12.0**	10	18	22.2	150	9.5
EM905902	R1.0	**12.0**	10	18	22.2	150	9.5
EM905140	R0.5	**14.0**	12	21	25.2	160	11.5
EM905903	R1.0	**14.0**	12	21	25.2	160	11.5
EM905180	R0.5	**18.0**	16	27	31.2	180	15.5
EM905904	R1.0	**18.0**	16	27	31.2	180	15.5
EM905220	R0.5	**22.0**	20	33	37.2	200	19.5
EM905905	R1.0	**22.0**	20	33	37.2	200	19.5

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○		○				

X-POWER END MILLS

EM819 SERIES PLAIN SHANK GLATTER ZYLINDERSCHAFT

EM829 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 4 FLUTE LONG LENGTH CORNER RADIUS
VOLLHARTMETALL, 4 SCHNEIDEN LANG ECKENRADIUS

- Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- 4 flute allows for better workpiece finishes.
- Increased production.

- Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- 4 Schneiden erlauben bessere Oberflächengüte des Werkstücks.
- Gesteigerte Productivität.

MG HM | 4 | 30° | PLAIN | FLAT

P.902

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EM819030	EM829030	R0.3	3.0	6	12	50
EM819040	EM829040	R0.3	4.0	6	15	50
EM819911	EM829911	R0.5	4.0	6	15	50
EM819050	EM829050	R0.3	5.0	6	20	60
EM819912	EM829912	R0.5	5.0	6	20	60
EM819913	EM829913	R0.3	6.0	6	20	60
EM819060	EM829060	R0.5	6.0	6	20	60
EM819901	EM829901	R1.0	6.0	6	20	60
EM819914	EM829914	R0.3	8.0	8	25	70
EM819080	EM829080	R0.5	8.0	8	25	70
EM819902	EM829902	R1.0	8.0	8	25	70
EM819903	EM829903	R1.5	8.0	8	25	70
EM819904	EM829904	R2.0	8.0	8	25	70
EM819915	EM829915	R0.3	10.0	10	30	90
EM819100	EM829100	R0.5	10.0	10	30	90
EM819905	EM829905	R1.0	10.0	10	30	90
EM819906	EM829906	R1.5	10.0	10	30	90
EM819907	EM829907	R2.0	10.0	10	30	90
EM819120	EM829120	R0.5	12.0	12	30	90
EM819908	EM829908	R1.0	12.0	12	30	90
EM819909	EM829909	R1.5	12.0	12	30	90
EM819910	EM829910	R2.0	12.0	12	30	90
EM819160	EM829160	R0.5	16.0	16	50	110
EM819916	EM829916	R1.0	16.0	16	50	110
EM819917	EM829917	R1.5	16.0	16	50	110
EM819918	EM829918	R2.0	16.0	16	50	110
EM819200	EM829200	R0.5	20.0	20	55	110
EM819919	EM829919	R1.0	20.0	20	55	110
EM819920	EM829920	R1.5	20.0	20	55	110
EM819921	EM829921	R2.0	20.0	20	55	110

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○		○				

X-POWER END MILLS

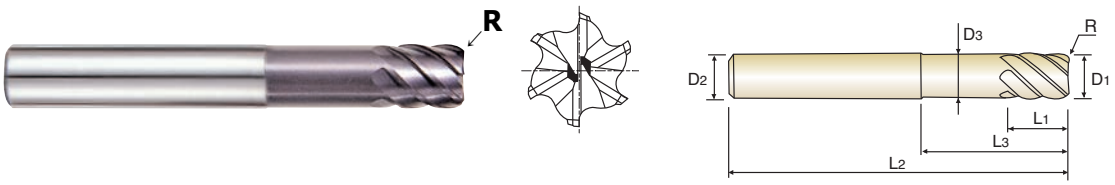
EM897 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

EM898 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 6 FLUTE 45° HELIX STUB LENGTH CORNER RADIUS
VOLLHARTMETALL, 6 SCHNEIDEN 45° RECHTSSPIRALE EXTRA KURZ ECKENRADIUS

- ▶ High speed cutting
- ▶ Excellent performance in dry cutting
- ▶ Cutting up to three times length of the cutting diameter due to reduced neck.

- ▶ Hochgeschwindigkeitsfräsen.
- ▶ Ausgezeichnete Leistung bei Trocken - Zerspanung.
- ▶ Fräst bis Zur dreifachen Größe des Durchmessers des abgesetzten Schaftteils.



MG HM | 6 | 45° | PLAIN | FLAT

P.903

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
PLAIN	FLAT	R	D_1	D_2	L_1	L_3	L_2	D_3
EM897060	**EM898060**	R0.5	**6.0**	6	6	14	50	5.7
EM897080	**EM898080**	R0.5	**8.0**	8	8	24	60	7.65
EM897100	**EM898100**	R1.0	**10.0**	10	10	30	70	9.65
EM897120	**EM898120**	R1.0	**12.0**	12	12	30	75	11.6

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

X-POWER END MILLS

EM835 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT
EM845 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 6 FLUTE 45° HELIX LONG LENGTH CORNER RADIUS
VOLLHARTMETALL, 6 SCHNEIDEN 45° RECHTSSPIRALE LANG ECKENRADIUS

- Designed to machine hardened materials.
- High speed cutting and finish milling with high feed rates.
- Superior workpiece finishes.
- Superior wear resistant.
- Suitable for dry milling.

- Geeignet zum Fräsen von Hochgehärteten Stählen.
- Hochgeschwindigkeitsfräsen und Finishing mit erhöhtem Vorschub.
- Bessere Werkstückoberflächen.
- Höhere Verschleißfestigkeit.
- Geeignet zum Trocken-Fräsen.

MG HM | 6 | 45° | PLAIN | FLAT P.891

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EM835060	EM845060	R0.5	6.0	6	13	70
EM835080	EM845080	R0.5	8.0	8	19	90
EM835100	EM845100	R0.5	10.0	10	22	100
EM835901	EM845901	R1.0	10.0	10	22	100
EM835120	EM845120	R0.5	12.0	12	26	110
EM835902	EM845902	R1.0	12.0	12	26	110
EM835160	EM845160	R1.0	16.0	16	32	130
EM835903	EM845903	R1.5	16.0	16	32	130
EM835200	EM845200	R1.0	20.0	20	38	140
EM835904	EM845904	R1.5	20.0	20	38	140
EM835905	EM845905	R2.0	20.0	20	38	140

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

X-POWER END MILLS

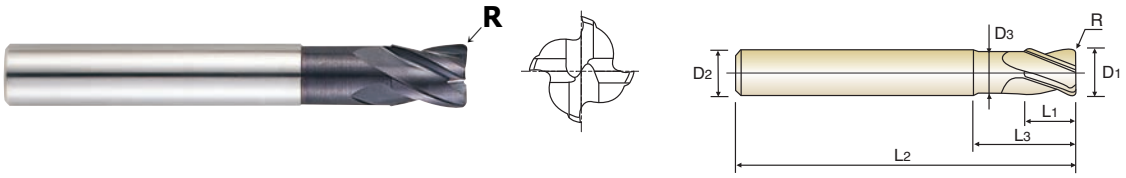
EM839 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

EM849 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS
VOLLHARTMETALL, 4 SCHNEIDEN EXTRA KURZ ECKENRADIUS

- Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- Superior workpiece finishes.
- Increased feed rates.

- Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.
- Bessere Werkstückoberflächen.
- Gesteigerte Vorschubrate.



MG HM | 4 | 30° | PLAIN | FLAT

P.903

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
PLAIN	FLAT	R	D_1	D_2	L_1	L_3	L_2	D_3
EM839020	**EM849020**	R0.2	**2.0**	6	2.5	5	50	1.9
EM839025	**EM849025**	R0.25	**2.5**	6	3	6	50	2.4
EM839030	**EM849030**	R0.3	**3.0**	6	4	7	50	2.8
EM839035	**EM849035**	R0.35	**3.5**	6	4.5	8	50	3.2
EM839040	**EM849040**	R0.4	**4.0**	6	5	9	50	3.7
EM839050	**EM849050**	R0.5	**5.0**	6	6	12	50	4.6
EM839060	**EM849060**	R0.6	**6.0**	6	7	14	55	5.6
EM839080	**EM849080**	R0.8	**8.0**	8	10	18	60	7.4
EM839100	**EM849100**	R1.0	**10.0**	10	12	25	70	9.4
EM839120	**EM849120**	R1.2	**12.0**	12	15	30	80	11.4
EM839160	**EM849160**	R1.6	**16.0**	16	18	35	90	15.4

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

X-POWER END MILLS

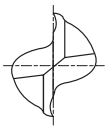
EM837 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

EM847 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 2 FLUTE TAPER
VOLLHARTMETALL, 2 SCHNEIDEN KONISCH

- Designed for milling die cavity.
- Suitable for machining tool steels, alloy steels, mold steels and other hardened materials.

- Entworfen zur Gußformbearbeitung.
- Zur Bearbeitung: Werkzeugstählen, Legierten Stählen, Stahlguß und gehärteten Stählen.



MG HM | 2 | 30° | PLAIN | FLAT

P.907

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Taper Angle
EM837913	—	2.0	4	6	45	30′
EM837020	—	2.0	4	6	45	1°
EM837901	—	2.0	4	6	45	2°
EM837902	—	2.0	4	6	45	3°
EM837914	EM847914	3.0	6	10	55	30′
EM837030	EM847030	3.0	6	10	55	1°
EM837903	EM847903	3.0	6	10	55	2°
EM837904	EM847904	3.0	6	10	55	3°
EM837915	EM847915	4.0	6	15	55	30′
EM837040	EM847040	4.0	6	15	55	1°
EM837905	EM847905	4.0	6	15	55	2°
EM837906	EM847906	4.0	6	15	55	3°
EM837916	EM847916	5.0	6	15	60	30′
EM837050	EM847050	5.0	6	15	60	1°
EM837907	EM847907	5.0	6	15	60	2°
EM837908	EM847908	5.0	6	15	60	3°
EM837917	EM847917	6.0	6	20	60	30′
EM837060	EM847060	6.0	6	20	60	1°
EM837909	EM847909	6.0	6	20	60	2°
EM837910	EM847910	6.0	8	20	65	3°
EM837918	EM847918	8.0	8	25	70	30′
EM837080	EM847080	8.0	8	25	70	1°
EM837911	EM847911	8.0	8	25	70	2°
EM837912	EM847912	8.0	10	25	75	3°

▶ We can supply various sizes and taper angles.

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance	Taper Angle Tolerance
0~−0.03	h6	±5′

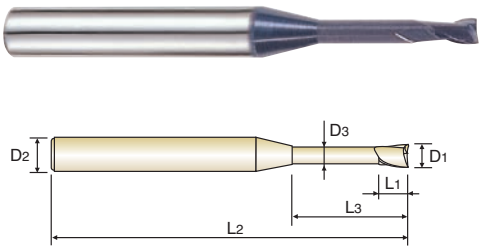
◎ : Excellent ○ : Good

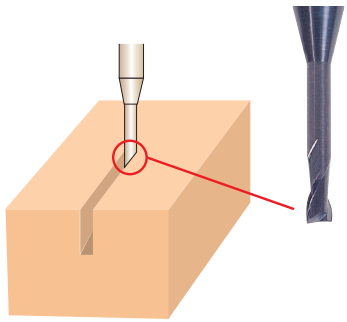
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

X-POWER END MILLS

EM883 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN für SCHMALE RIPPEN





MG HM | 2 | 30° | PLAIN

P.904

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
EM883004	0.4	4	0.6	2	45	0.37
EM883984	0.4	4	0.6	3	45	0.37
EM883985	0.4	4	0.6	4	45	0.37
EM883986	0.4	4	0.6	5	45	0.37
EM883005	0.5	4	0.7	2	45	0.45
EM883988	0.5	4	0.7	4	45	0.45
EM883989	0.5	4	0.7	6	45	0.45
EM883990	0.5	4	0.7	8	45	0.45
EM883006	0.6	4	0.9	2	45	0.55
EM883991	0.6	4	0.9	4	45	0.55
EM883992	0.6	4	0.9	6	45	0.55
EM883993	0.6	4	0.9	8	45	0.55
EM883819	0.6	4	0.9	10	45	0.55
EM883007	0.7	4	1.0	2	45	0.65
EM883820	0.7	4	1.0	3	45	0.65
EM883906	0.7	4	1.0	4	45	0.65
EM883907	0.7	4	1.0	6	45	0.65
EM883821	0.7	4	1.0	8	45	0.65
EM883822	0.7	4	1.0	10	45	0.65
EM883008	0.8	4	1.2	4	45	0.75
EM883908	0.8	4	1.2	6	45	0.75
EM883909	0.8	4	1.2	8	45	0.75
EM883994	0.8	4	1.2	10	45	0.75
EM883995	0.8	4	1.2	12	45	0.75
EM883009	0.9	4	1.35	6	45	0.85
EM883910	0.9	4	1.35	8	45	0.85
EM883911	0.9	4	1.35	10	45	0.85
EM883823	0.9	4	1.35	15	50	0.85
EM883996	1.0	4	1.5	4	45	0.95
EM883010	1.0	4	1.5	6	45	0.95
EM883912	1.0	4	1.5	8	45	0.95
EM883913	1.0	4	1.5	10	45	0.95

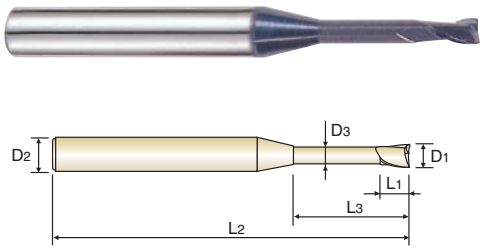
◎ : Excellent ○ : Good

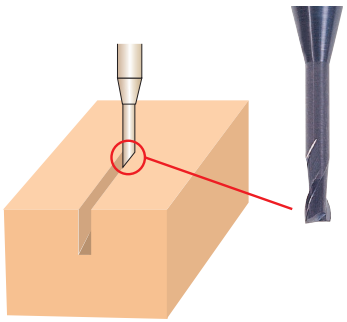
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

X-POWER END MILLS

EM883 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN für SCHMALE RIPPEN





MG HM | 2 | 30° | PLAIN

P.904

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
EM883914	1.0	4	1.5	12	45	0.95
EM883997	1.0	4	1.5	16	50	0.95
EM883998	1.0	4	1.5	20	55	0.95
EM883012	1.2	4	1.8	6	45	1.15
EM883915	1.2	4	1.8	8	45	1.15
EM883916	1.2	4	1.8	10	45	1.15
EM883917	1.2	4	1.8	12	45	1.15
EM883999	1.2	4	1.8	16	50	1.15
EM883824	1.4	4	2.1	6	45	1.35
EM883918	1.4	4	2.1	8	45	1.35
EM883919	1.4	4	2.1	10	45	1.35
EM883920	1.4	4	2.1	12	45	1.35
EM883921	1.4	4	2.1	14	50	1.35
EM883922	1.4	4	2.1	16	50	1.35
EM883825	1.4	4	2.1	22	55	1.35
EM883015	1.5	4	2.3	6	45	1.45
EM883923	1.5	4	2.3	8	45	1.45
EM883924	1.5	4	2.3	10	45	1.45
EM883925	1.5	4	2.3	12	45	1.45
EM883926	1.5	4	2.3	14	50	1.45
EM883927	1.5	4	2.3	16	50	1.45
EM883928	1.5	4	2.3	18	55	1.45
EM883810	1.5	4	2.3	20	55	1.45
EM883930	1.6	4	2.4	6	45	1.55
EM883016	1.6	4	2.4	8	45	1.55
EM883931	1.6	4	2.4	10	45	1.55
EM883932	1.6	4	2.4	12	45	1.55
EM883826	1.6	4	2.4	14	50	1.55
EM883827	1.6	4	2.4	16	50	1.55
EM883828	1.6	4	2.4	18	55	1.55
EM883829	1.6	4	2.4	20	55	1.55
EM883830	1.6	4	2.4	26	60	1.55

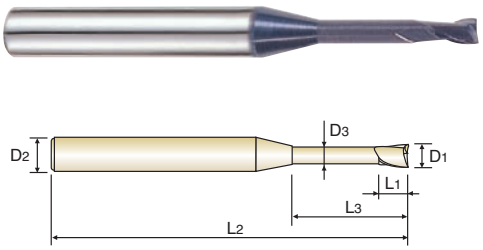
◎ : Excellent ○ : Good

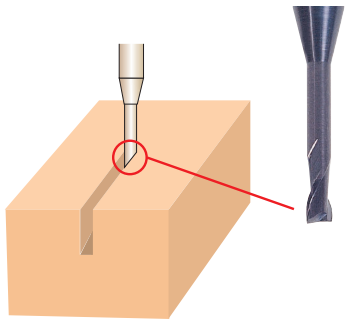
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

X-POWER END MILLS

EM883 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN für SCHMALE RIPPEN





MG HM | 2 | 30° | PLAIN

P.904

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
EM883018	1.8	4	2.7	6	45	1.75
EM883944	1.8	4	2.7	8	45	1.75
EM883945	1.8	4	2.7	10	45	1.75
EM883946	1.8	4	2.7	12	45	1.75
EM883947	1.8	4	2.7	14	50	1.75
EM883948	1.8	4	2.7	16	50	1.75
EM883949	1.8	4	2.7	18	55	1.75
EM883950	1.8	4	2.7	20	55	1.75
EM883831	1.8	4	2.7	25	60	1.75
EM883958	2.0	4	3.0	6	45	1.95
EM883020	2.0	4	3.0	8	45	1.95
EM883959	2.0	4	3.0	10	45	1.95
EM883960	2.0	4	3.0	12	45	1.95
EM883961	2.0	4	3.0	14	50	1.95
EM883962	2.0	4	3.0	16	50	1.95
EM883963	2.0	4	3.0	18	55	1.95
EM883964	2.0	4	3.0	20	55	1.95
EM883966	2.0	4	3.0	25	60	1.95
EM883814	2.0	4	3.0	30	70	1.95
EM883967	2.5	4	3.7	8	45	2.40
EM883025	2.5	4	3.7	10	45	2.40
EM883968	2.5	4	3.7	12	45	2.40
EM883969	2.5	4	3.7	14	50	2.40
EM883970	2.5	4	3.7	16	55	2.40
EM883971	2.5	4	3.7	18	55	2.40
EM883972	2.5	4	3.7	20	60	2.40
EM883973	2.5	4	3.7	25	70	2.40
EM883974	2.5	4	3.7	30	80	2.40
EM883030	3.0	6	4.5	8	45	2.85
EM883975	3.0	6	4.5	10	45	2.85
EM883976	3.0	6	4.5	12	45	2.85
EM883977	3.0	6	4.5	14	50	2.85

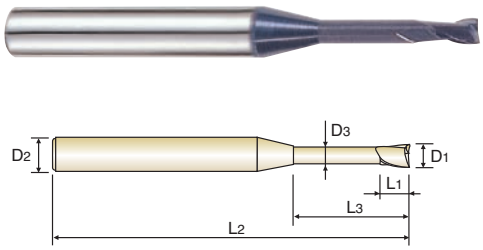
◎ : Excellent ○ : Good

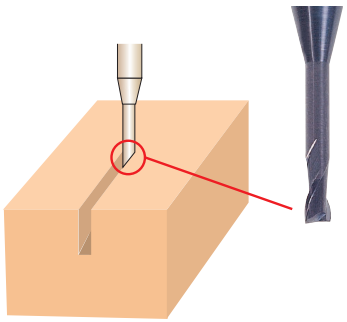
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

X-POWER END MILLS

EM883 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN für SCHMALE RIPPEN





MG HM | 2 | 30° | PLAIN

P.904

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
EM883978	3.0	6	4.5	16	55	2.85
EM883979	3.0	6	4.5	18	55	2.85
EM883980	3.0	6	4.5	20	60	2.85
EM883981	3.0	6	4.5	25	65	2.85
EM883832	3.0	6	4.5	30	70	2.85
EM883833	3.0	6	4.5	35	80	2.85
EM883983	3.0	6	4.5	40	90	2.85
EM883040	4.0	6	6	12	50	3.85
EM883801	4.0	6	6	16	60	3.85
EM883802	4.0	6	6	20	60	3.85
EM883803	4.0	6	6	25	70	3.85
EM883834	4.0	6	6	30	70	3.85
EM883835	4.0	6	6	35	80	3.85
EM883836	4.0	6	6	40	90	3.85
EM883837	4.0	6	6	45	90	3.85
EM883838	4.0	6	6	50	100	3.85
EM883050	5.0	6	7.5	16	60	4.85
EM883804	5.0	6	7.5	20	60	4.85
EM883805	5.0	6	7.5	25	70	4.85
EM883806	5.0	6	7.5	30	80	4.85
EM883839	5.0	6	7.5	35	80	4.85
EM883840	5.0	6	7.5	40	80	4.85
EM883841	5.0	6	7.5	50	110	4.85
EM883060	6.0	6	9	20	80	5.85
EM883807	6.0	6	9	30	90	5.85
EM883808	6.0	6	9	40	100	5.85
EM883809	6.0	6	9	50	110	5.85

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.015	h6

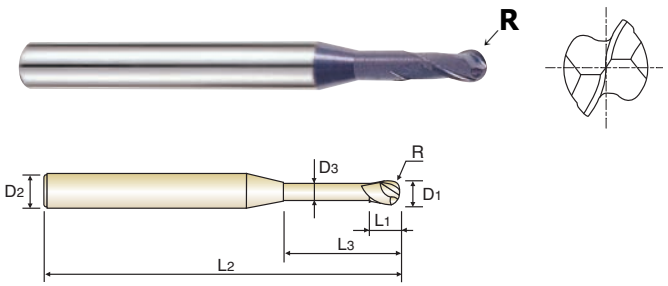
◎ : Excellent ○ : Good

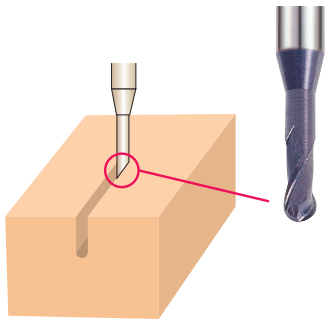
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

X-POWER END MILLS

EM886 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS für SCHMALE RIPPEN





MG HM | 2 | 30° | R ±0.01 | PLAIN | P.905

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
PLAIN	R (±0.01)	D1	D2	L1	L3	L2	D3
EM886004	R0.2	0.4	4	0.6	1	45	0.37
EM886960	R0.2	0.4	4	0.6	2	45	0.37
EM886961	R0.2	0.4	4	0.6	3	45	0.37
EM886005	R0.25	0.5	4	0.7	2	45	0.45
EM886962	R0.25	0.5	4	0.7	4	45	0.45
EM886963	R0.25	0.5	4	0.7	6	45	0.45
EM886964	R0.25	0.5	4	0.7	8	45	0.45
EM886957	R0.3	0.6	4	0.9	2	45	0.55
EM886915	R0.3	0.6	4	0.9	4	45	0.55
EM886006	R0.3	0.6	3	0.9	6	35	0.55
EM886916	R0.3	0.6	4	0.9	6	45	0.55
EM886917	R0.3	0.6	4	0.9	8	45	0.55
EM886918	R0.4	0.8	4	1.2	2	45	0.75
EM886919	R0.4	0.8	4	1.2	4	45	0.75
EM886008	R0.4	0.8	4	1.2	6	45	0.75
EM886901	R0.4	0.8	4	1.2	8	45	0.75
EM886965	R0.4	0.8	4	1.2	10	45	0.75
EM886920	R0.5	1.0	4	1.5	3	45	0.95
EM886921	R0.5	1.0	4	1.5	4	45	0.95
EM886923	R0.5	1.0	4	1.5	5	45	0.95
EM886010	R0.5	1.0	4	1.5	6	45	0.95
EM886924	R0.5	1.0	4	1.5	7	45	0.95
EM886902	R0.5	1.0	4	1.5	8	45	0.95
EM886925	R0.5	1.0	4	1.5	9	45	0.95
EM886903	R0.5	1.0	4	1.5	10	45	0.95
EM886904	R0.5	1.0	4	1.5	12	45	0.95
EM886926	R0.5	1.0	4	1.5	14	50	0.95
EM886927	R0.5	1.0	4	1.5	16	50	0.95
EM886966	R0.5	1.0	4	1.5	20	55	0.95
EM886012	R0.6	1.2	4	1.8	8	45	1.15
EM886905	R0.6	1.2	4	1.8	12	45	1.15
EM886928	R0.7	1.4	4	2.1	8	45	1.35

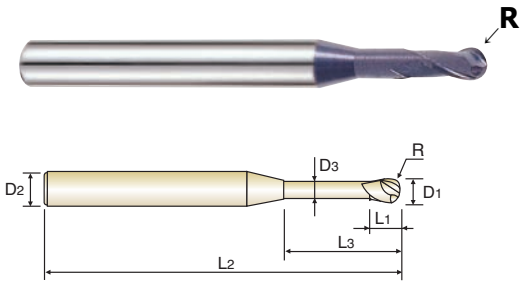
◎ : Excellent ○ : Good

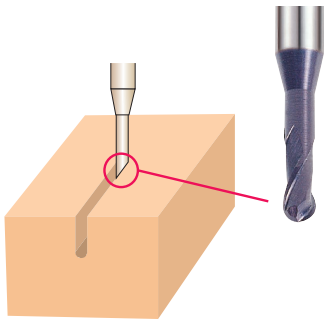
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

X-POWER END MILLS

EM886 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS für SCHMALE RIPPEN





MG HM | 2 | 30° | R ±0.01 | PLAIN | P.905

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
PLAIN	R (±0.01)	D1	D2	L1	L3	L2	D3
EM886014	R0.7	1.4	4	2.1	12	45	1.35
EM886929	R0.7	1.4	4	2.1	16	50	1.35
EM886930	R0.75	1.5	4	2.3	6	45	1.45
EM886015	R0.75	1.5	4	2.3	8	45	1.45
EM886931	R0.75	1.5	4	2.3	10	45	1.45
EM886906	R0.75	1.5	4	2.3	12	45	1.45
EM886907	R0.75	1.5	4	2.3	16	50	1.45
EM886932	R0.75	1.5	4	2.3	20	55	1.45
EM886933	R0.8	1.6	4	2.4	8	45	1.55
EM886934	R0.8	1.6	4	2.4	12	45	1.55
EM886016	R0.8	1.6	4	2.4	16	50	1.55
EM886935	R0.8	1.6	4	2.4	20	55	1.55
EM886936	R0.9	1.8	4	2.7	8	45	1.75
EM886937	R0.9	1.8	4	2.7	12	45	1.75
EM886018	R0.9	1.8	4	2.7	16	50	1.75
EM886938	R0.9	1.8	4	2.7	20	55	1.75
EM886939	R1.0	2.0	4	3	4	45	1.95
EM886940	R1.0	2.0	4	3	6	45	1.95
EM886020	R1.0	2.0	4	3	8	45	1.95
EM886941	R1.0	2.0	4	3	10	45	1.95
EM886942	R1.0	2.0	4	3	12	50	1.95
EM886943	R1.0	2.0	4	3	14	50	1.95
EM886909	R1.0	2.0	4	3	16	50	1.95
EM886910	R1.0	2.0	4	3	20	55	1.95
EM886944	R1.0	2.0	4	3	22	60	1.95
EM886945	R1.0	2.0	4	3	25	60	1.95
EM886967	R1.0	2.0	4	3	30	70	1.95
EM886946	R1.5	3.0	6	4.5	8	50	2.85
EM886947	R1.5	3.0	6	4.5	10	50	2.85
EM886948	R1.5	3.0	6	4.5	12	50	2.85
EM886030	R1.5	3.0	6	4.5	16	55	2.85
EM886911	R1.5	3.0	6	4.5	20	60	2.85

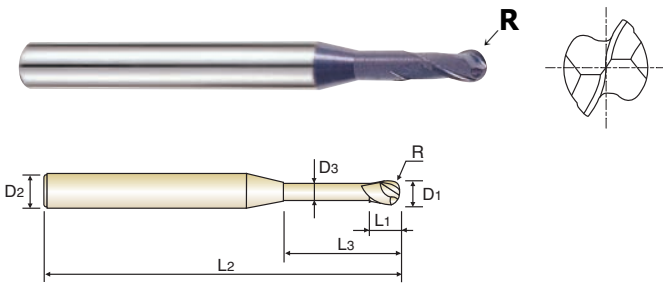
◎ : Excellent ○ : Good

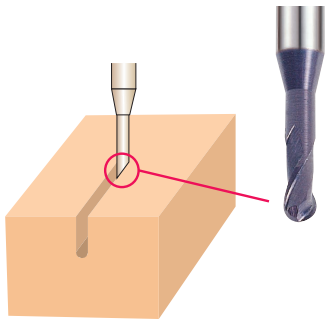
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

X-POWER END MILLS

EM886 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS für SCHMALE RIPPEN





MG HM | 2 | 30° | R ±0.01 | PLAIN | P.905

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
PLAIN	R (±0.01)	D1	D2	L1	L3	L2	D3
EM886968	R1.5	3.0	6	4.5	25	65	2.85
EM886969	R1.5	3.0	6	4.5	30	70	2.85
EM886970	R1.5	3.0	6	4.5	35	80	2.85
EM886949	R2.0	4.0	6	6	10	60	3.85
EM886950	R2.0	4.0	6	6	12	60	3.85
EM886040	R2.0	4.0	6	6	16	60	3.85
EM886912	R2.0	4.0	6	6	20	65	3.85
EM886913	R2.0	4.0	6	6	25	70	3.85
EM886971	R2.0	4.0	6	6	30	70	3.85
EM886972	R2.0	4.0	6	6	35	80	3.85
EM886973	R2.0	4.0	6	6	40	90	3.85
EM886974	R2.0	4.0	6	6	45	90	3.85
EM886975	R2.0	4.0	6	6	50	100	3.85
EM886050	R2.5	5.0	6	7.5	16	60	4.85
EM886951	R2.5	5.0	6	7.5	20	60	4.85
EM886952	R2.5	5.0	6	7.5	25	70	4.85
EM886953	R2.5	5.0	6	7.5	30	80	4.85
EM886976	R2.5	5.0	6	7.5	35	80	4.85
EM886060	R3.0	6.0	6	9	20	80	5.85
EM886954	R3.0	6.0	6	9	30	90	5.85
EM886955	R3.0	6.0	6	9	40	100	5.85
EM886956	R3.0	6.0	6	9	50	110	5.85

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.02	h6

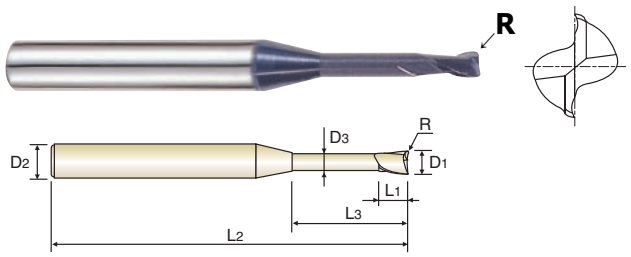
◎ : Excellent ○ : Good

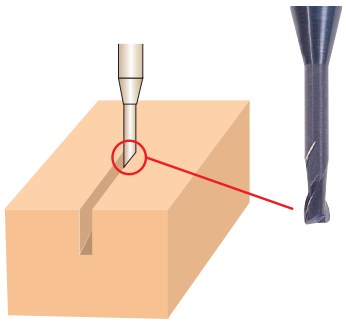
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

X-POWER END MILLS

EM8A1 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE CORNER RADIUS for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS für SCHMALE RIPPEN





MG HM | 2 | 30° | PLAIN

P.904

Unit : mm

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
PLAIN	R	D1	D2	L1	L3	L2	D3
EM8A1005	R0.05	0.5	4	0.7	2	45	0.45
EM8A1901	R0.05	0.5	4	0.7	4	45	0.45
EM8A1902	R0.05	0.5	4	0.7	6	45	0.45
EM8A1903	R0.05	0.5	4	0.7	8	45	0.45
EM8A1006	R0.05	0.6	4	0.9	2	45	0.55
EM8A1905	R0.05	0.6	4	0.9	4	45	0.55
EM8A1906	R0.05	0.6	4	0.9	6	45	0.55
EM8A1907	R0.05	0.6	4	0.9	8	45	0.55
EM8A1904	R0.05	0.6	4	0.9	10	45	0.55
EM8A1007	R0.1	0.7	4	1	2	45	0.65
EM8A1908	R0.1	0.7	4	1	3	45	0.65
EM8A1911	R0.1	0.7	4	1	4	45	0.65
EM8A1912	R0.1	0.7	4	1	6	45	0.65
EM8A1909	R0.1	0.7	4	1	8	45	0.65
EM8A1910	R0.1	0.7	4	1	10	45	0.65
EM8A1008	R0.1	0.8	4	1.2	4	45	0.75
EM8A1913	R0.1	0.8	4	1.2	6	45	0.75
EM8A1914	R0.1	0.8	4	1.2	8	45	0.75
EM8A1915	R0.1	0.8	4	1.2	10	45	0.75
EM8A1916	R0.1	0.8	4	1.2	12	45	0.75
EM8A1009	R0.1	0.9	4	1.35	6	45	0.85
EM8A1918	R0.1	0.9	4	1.35	8	45	0.85
EM8A1919	R0.1	0.9	4	1.35	10	45	0.85
EM8A1917	R0.1	0.9	4	1.35	15	50	0.85
EM8A1923	R0.1	1.0	4	1.5	4	45	0.95
EM8A1010	R0.1	1.0	4	1.5	6	45	0.95
EM8A1920	R0.1	1.0	4	1.5	8	45	0.95
EM8A1921	R0.1	1.0	4	1.5	10	45	0.95
EM8A1922	R0.1	1.0	4	1.5	12	45	0.95
EM8A1924	R0.1	1.0	4	1.5	16	50	0.95
EM8A1925	R0.1	1.0	4	1.5	20	55	0.95
EM8A1012	R0.2	1.2	4	1.8	6	45	1.15

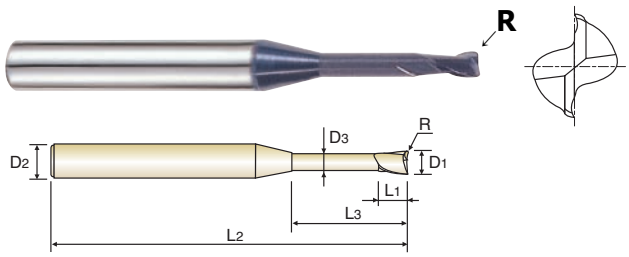
◎ : Excellent ○ : Good

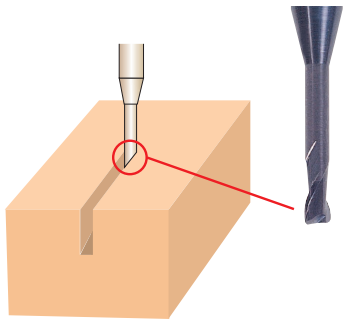
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

X-POWER END MILLS

EM8A1 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE CORNER RADIUS for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS für SCHMALE RIPPEN





MG HM | 2 | 30° | PLAIN

P.904

Unit : mm

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
PLAIN	R	D1	D2	L1	L3	L2	D3
EM8A1926	R0.2	1.2	4	1.8	8	45	1.15
EM8A1927	R0.2	1.2	4	1.8	10	45	1.15
EM8A1928	R0.2	1.2	4	1.8	12	45	1.15
EM8A1929	R0.2	1.2	4	1.8	16	50	1.15
EM8A1014	R0.2	1.4	4	2.1	6	45	1.35
EM8A1931	R0.2	1.4	4	2.1	8	45	1.35
EM8A1932	R0.2	1.4	4	2.1	10	45	1.35
EM8A1933	R0.2	1.4	4	2.1	12	45	1.35
EM8A1934	R0.2	1.4	4	2.1	14	50	1.35
EM8A1935	R0.2	1.4	4	2.1	16	50	1.35
EM8A1930	R0.2	1.4	4	2.1	22	55	1.35
EM8A1015	R0.2	1.5	4	2.3	6	45	1.45
EM8A1937	R0.2	1.5	4	2.3	8	45	1.45
EM8A1938	R0.2	1.5	4	2.3	10	45	1.45
EM8A1939	R0.2	1.5	4	2.3	12	45	1.45
EM8A1940	R0.2	1.5	4	2.3	14	50	1.45
EM8A1941	R0.2	1.5	4	2.3	16	50	1.45
EM8A1942	R0.2	1.5	4	2.3	18	55	1.45
EM8A1936	R0.2	1.5	4	2.3	20	55	1.45
EM8A1948	R0.2	1.6	4	2.4	6	45	1.55
EM8A1016	R0.2	1.6	4	2.4	8	45	1.55
EM8A1949	R0.2	1.6	4	2.4	10	45	1.55
EM8A1950	R0.2	1.6	4	2.4	12	45	1.55
EM8A1943	R0.2	1.6	4	2.4	14	50	1.55
EM8A1944	R0.2	1.6	4	2.4	16	50	1.55
EM8A1945	R0.2	1.6	4	2.4	18	55	1.55
EM8A1946	R0.2	1.6	4	2.4	20	55	1.55
EM8A1947	R0.2	1.6	4	2.4	26	60	1.55
EM8A1018	R0.2	1.8	4	2.7	6	45	1.75
EM8A1952	R0.2	1.8	4	2.7	8	45	1.75
EM8A1953	R0.2	1.8	4	2.7	10	45	1.75
EM8A1954	R0.2	1.8	4	2.7	12	45	1.75

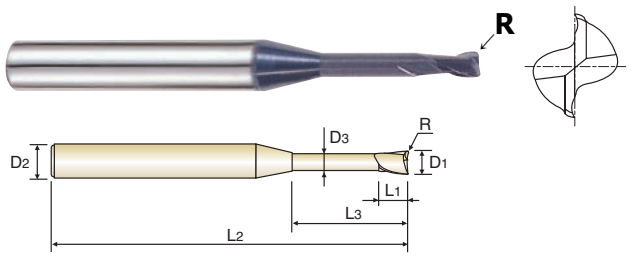
◎ : Excellent ○ : Good

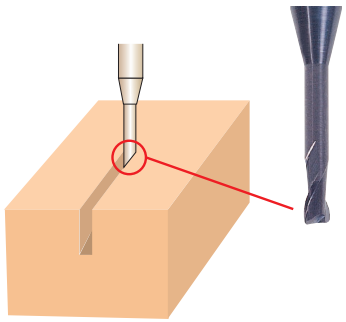
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

X-POWER END MILLS

EM8A1 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE CORNER RADIUS for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS für SCHMALE RIPPEN





MG HM | 2 | 30° | PLAIN

P.904

Unit : mm

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
PLAIN	R	D1	D2	L1	L3	L2	D3
EM8A1955	R0.2	**1.8**	4	2.7	14	50	1.75
EM8A1956	R0.2	**1.8**	4	2.7	16	50	1.75
EM8A1957	R0.2	**1.8**	4	2.7	18	55	1.75
EM8A1958	R0.2	**1.8**	4	2.7	20	55	1.75
EM8A1951	R0.2	**1.8**	4	2.7	25	60	1.75
EM8A1960	R0.2	**2.0**	4	3	6	45	1.95
EM8A1020	R0.2	**2.0**	4	3	8	45	1.95
EM8A1961	R0.2	**2.0**	4	3	10	45	1.95
EM8A1962	R0.2	**2.0**	4	3	12	45	1.95
EM8A1963	R0.2	**2.0**	4	3	14	50	1.95
EM8A1964	R0.2	**2.0**	4	3	16	50	1.95
EM8A1965	R0.2	**2.0**	4	3	18	55	1.95
EM8A1966	R0.2	**2.0**	4	3	20	55	1.95
EM8A1967	R0.2	**2.0**	4	3	25	60	1.95
EM8A1959	R0.2	**2.0**	4	3	30	70	1.95
EM8A1968	R0.2	**2.5**	4	3.7	8	45	2.40
EM8A1025	R0.2	**2.5**	4	3.7	10	45	2.40
EM8A1969	R0.2	**2.5**	4	3.7	12	45	2.40
EM8A1970	R0.2	**2.5**	4	3.7	14	50	2.40
EM8A1971	R0.2	**2.5**	4	3.7	16	55	2.40
EM8A1972	R0.2	**2.5**	4	3.7	18	55	2.40
EM8A1973	R0.2	**2.5**	4	3.7	20	60	2.40
EM8A1974	R0.2	**2.5**	4	3.7	25	70	2.40
EM8A1975	R0.2	**2.5**	4	3.7	30	80	2.40
EM8A1030	R0.3	**3.0**	6	4.5	8	45	2.85
EM8A1978	R0.3	**3.0**	6	4.5	10	45	2.85
EM8A1979	R0.3	**3.0**	6	4.5	12	45	2.85
EM8A1980	R0.3	**3.0**	6	4.5	14	50	2.85
EM8A1981	R0.3	**3.0**	6	4.5	16	55	2.85
EM8A1982	R0.3	**3.0**	6	4.5	18	55	2.85
EM8A1983	R0.3	**3.0**	6	4.5	20	60	2.85
EM8A1984	R0.3	**3.0**	6	4.5	25	65	2.85

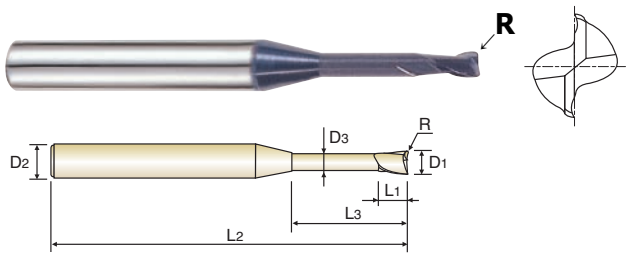
◎ : Excellent ○ : Good

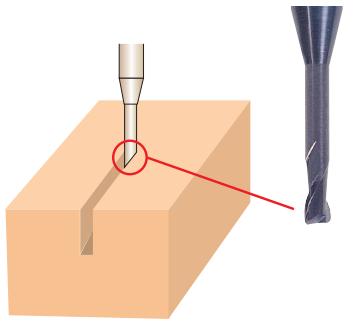
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

X-POWER END MILLS

EM8A1 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE CORNER RADIUS for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS für SCHMALE RIPPEN





MG HM | 2 | 30° | PLAIN

P.904

Unit : mm

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
PLAIN	R	D1	D2	L1	L3	L2	D3
EM8A1976	R0.3	**3.0**	6	4.5	30	70	2.85
EM8A1977	R0.3	**3.0**	6	4.5	35	80	2.85
EM8A1985	R0.3	**3.0**	6	4.5	40	90	2.85
EM8A1040	R0.3	**4.0**	6	6	12	50	3.85
EM8A1986	R0.3	**4.0**	6	6	16	60	3.85
EM8A1987	R0.3	**4.0**	6	6	20	60	3.85
EM8A1988	R0.3	**4.0**	6	6	25	70	3.85
EM8A1989	R0.3	**4.0**	6	6	30	70	3.85
EM8A1990	R0.3	**4.0**	6	6	35	80	3.85
EM8A1991	R0.3	**4.0**	6	6	40	90	3.85
EM8A1992	R0.3	**4.0**	6	6	45	90	3.85
EM8A1993	R0.3	**4.0**	6	6	50	100	3.85
EM8A1050	R0.5	**5.0**	6	7.5	16	60	4.85
EM8A1994	R0.5	**5.0**	6	7.5	20	60	4.85
EM8A1995	R0.5	**5.0**	6	7.5	25	70	4.85
EM8A1996	R0.5	**5.0**	6	7.5	30	80	4.85
EM8A1997	R0.5	**5.0**	6	7.5	35	80	4.85
EM8A1998	R0.5	**5.0**	6	7.5	40	80	4.85
EM8A1999	R0.5	**5.0**	6	7.5	50	110	4.85
EM8A1060	R0.5	**6.0**	6	9	20	80	5.85
EM8A1801	R0.5	**6.0**	6	9	30	90	5.85
EM8A1802	R0.5	**6.0**	6	9	40	100	5.85
EM8A1803	R0.5	**6.0**	6	9	50	110	5.85

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.015	h6

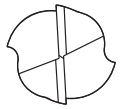
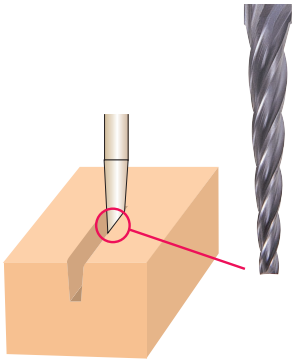
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

X-POWER END MILLS

EM889 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE 25° HELIX TAPER for RIB PROCESSING
VOLLHARTMETALL, 4 SCHNEIDEN 25° RECHTSSPIRALE KONISCH für SCHMALE RIPPEN

MG HM | 4 | 25° | PLAIN | P.906

Unit : mm

EDP No. PLAIN	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Taper Angle
EM889952	1.0	4	8	45	30′
EM889954	1.0	4	12	45	30′
EM889010	1.0	4	8	45	1°
EM889959	1.0	4	12	45	1°
EM889960	1.0	4	8	45	1° 30′
EM889962	1.0	4	12	45	1° 30′
EM889963	1.0	4	8	45	2°
EM889965	1.0	4	12	45	2°
EM889968	1.2	4	8	45	30′
EM889970	1.2	4	12	45	30′
EM889012	1.2	4	8	45	1°
EM889977	1.2	4	12	45	1°
EM889979	1.2	4	8	45	1° 30′
EM889981	1.2	4	12	45	1° 30′
EM889983	1.2	4	8	45	2°
EM889985	1.2	4	12	45	2°
EM889987	1.5	4	8	45	30′
EM889991	1.5	4	12	45	30′
EM889992	1.5	4	16	50	30′
EM889015	1.5	4	8	45	1°
EM889801	1.5	4	12	45	1°
EM889802	1.5	4	16	50	1°
EM889804	1.5	4	8	45	1° 30′
EM889806	1.5	4	12	45	1° 30′
EM889807	1.5	4	16	50	1° 30′
EM889809	1.5	4	8	45	2°
EM889811	1.5	4	12	45	2°
EM889812	1.5	4	16	50	2°

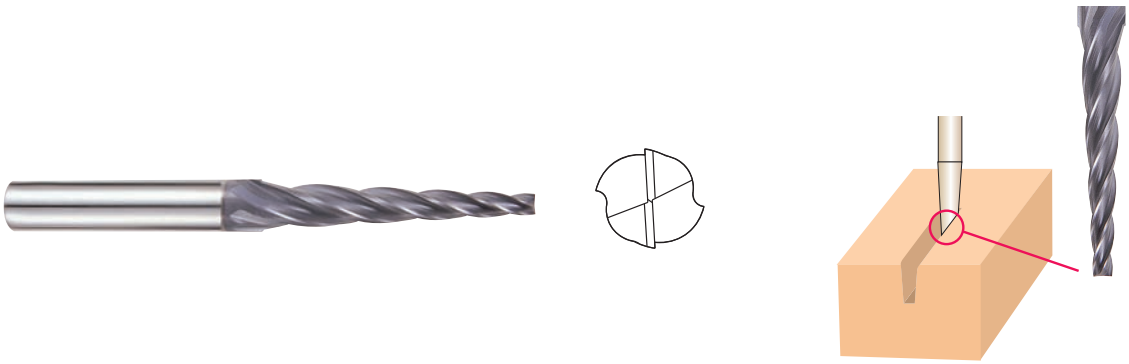
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

X-POWER END MILLS

EM889 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE 25° HELIX TAPER for RIB PROCESSING
VOLLHARTMETALL, 4 SCHNEIDEN 25° RECHTSSPIRALE KONISCH für SCHMALE RIPPEN



MG HM | 4 | 25° | PLAIN | P.906

Unit : mm

EDP No. PLAIN	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Taper Angle
EM889869	2.0	4	12	45	30′
EM889870	2.0	4	16	50	30′
EM889878	2.0	4	12	45	1°
EM889879	2.0	4	16	50	1°
EM889883	2.0	4	12	45	1° 30′
EM889884	2.0	4	16	50	1° 30′
EM889888	2.0	4	12	45	2°
EM889889	2.0	4	16	50	2°

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance	Taper Angle Tolerance
0~−0.015	0~−0.008	±5′

◎ : Excellent ○ : Good

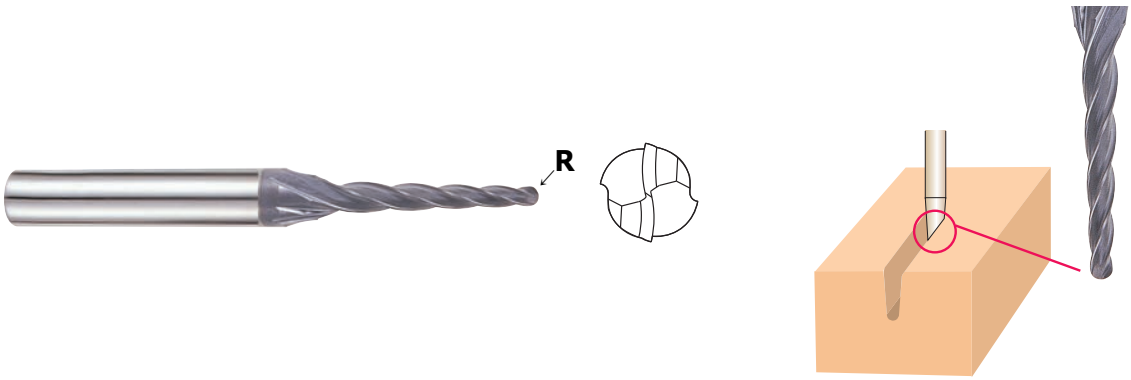
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

X-POWER END MILLS

EM890 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE 25° HELIX TAPER BALL NOSE for RIB PROCESSING

VOLLHARTMETALL, 4 SCHNEIDEN 25° RECHTSSPIRALE KONISCH STIRNRADIUS für SCHMALE RIPPEN



MG HM | 4 | 25° | R ±0.01 | PLAIN

P.906

Unit : mm

EDP No. PLAIN	Radius of Ball Nose R (±0.01)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Taper Angle
EM890909	R0.5	1.0	4	8	45	30′
EM890911	R0.5	1.0	4	12	45	30′
EM890010	R0.5	1.0	4	8	45	1°
EM890916	R0.5	1.0	4	12	45	1°
EM890917	R0.5	1.0	4	8	45	1° 30′
EM890919	R0.5	1.0	4	12	45	1° 30′
EM890920	R0.5	1.0	4	8	45	2°
EM890922	R0.5	1.0	4	12	45	2°
EM890923	R0.6	1.2	4	8	45	30′
EM890925	R0.6	1.2	4	12	45	30′
EM890012	R0.6	1.2	4	8	45	1°
EM890932	R0.6	1.2	4	12	45	1°
EM890934	R0.6	1.2	4	8	45	1° 30′
EM890936	R0.6	1.2	4	12	45	1° 30′
EM890938	R0.6	1.2	4	8	45	2°
EM890940	R0.6	1.2	4	12	45	2°
EM890942	R0.75	1.5	4	8	45	30′
EM890944	R0.75	1.5	4	12	45	30′
EM890945	R0.75	1.5	4	16	50	30′
EM890015	R0.75	1.5	4	8	45	1°
EM890953	R0.75	1.5	4	12	45	1°
EM890954	R0.75	1.5	4	16	50	1°
EM890956	R0.75	1.5	4	8	45	1° 30′
EM890958	R0.75	1.5	4	12	45	1° 30′
EM890959	R0.75	1.5	4	16	50	1° 30′
EM890961	R0.75	1.5	4	8	45	2°
EM890963	R0.75	1.5	4	12	45	2°
EM890964	R0.75	1.5	4	16	50	2°

◎ : Excellent ○ : Good

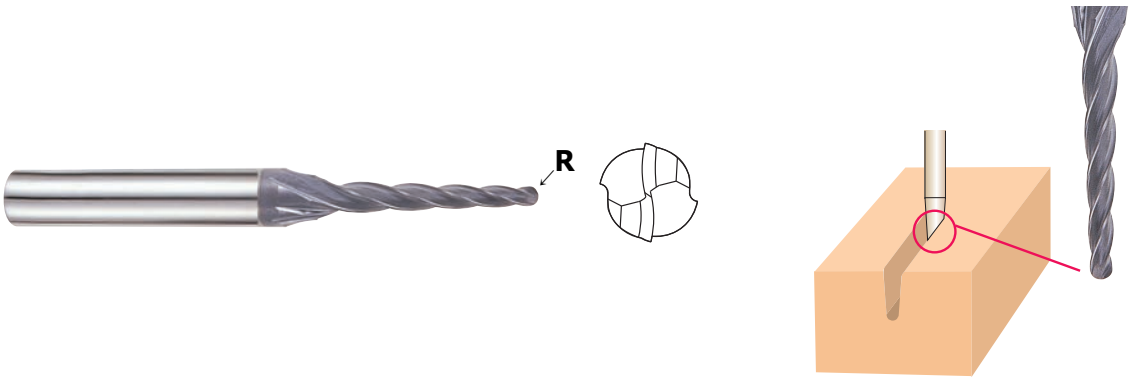
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

X-POWER END MILLS

EM890 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE 25° HELIX TAPER BALL NOSE for RIB PROCESSING

VOLLHARTMETALL, 4 SCHNEIDEN 25° RECHTSSPIRALE KONISCH STIRNRADIUS für SCHMALE RIPPEN



MG HM | 4 | 25° | R ±0.01 | PLAIN

P.906

Unit : mm

EDP No. PLAIN	Radius of Ball Nose R (±0.01)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Taper Angle
EM890816	R1.0	2.0	4	12	45	30′
EM890817	R1.0	2.0	4	16	50	30′
EM890825	R1.0	2.0	4	12	45	1°
EM890826	R1.0	2.0	4	16	50	1°
EM890830	R1.0	2.0	4	12	45	1° 30′
EM890831	R1.0	2.0	4	16	50	1° 30′
EM890835	R1.0	2.0	4	12	45	2°
EM890836	R1.0	2.0	4	16	50	2°

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance	Taper Angle Tolerance
0~−0.015	0~−0.008	±5′

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○				○						

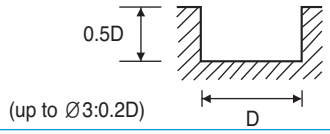
X-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

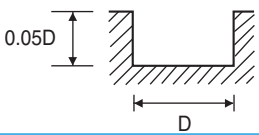
CARBIDE, 2 FLUTE SHORT - SLOTTING
VOLLHARTMETALL, 2 SCHNEIDEN KURZ - NUTENFRÄSEN

EM810, EM820 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				STAINLESS STEELS			
HARDNESS	~ HRc30				HRc30 ~ HRc45							
STRENGTH	~ 1000N/mm²				1000 ~ 1500N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	9250	190	60	0.010	6050	120	40	0.010	5050	90	30	0.009
3.0	7150	210	65	0.015	4450	140	40	0.016	3700	120	35	0.016
4.0	6050	300	75	0.025	3700	180	45	0.024	3100	150	40	0.024
5.0	5050	320	80	0.032	3020	190	45	0.031	2530	160	40	0.032
6.0	4450	350	85	0.039	2690	220	50	0.041	2270	180	45	0.040
8.0	3360	380	85	0.057	2020	200	50	0.050	1680	180	40	0.054
10.0	2600	330	80	0.063	1600	160	50	0.050	1350	160	40	0.059
12.0	2200	280	85	0.064	1350	130	50	0.048	1090	130	40	0.060
16.0	1760	220	90	0.063	1090	110	55	0.050	850	110	45	0.065
20.0	1350	170	85	0.063	850	80	55	0.047	670	80	40	0.060
25.0	1090	130	85	0.060	670	70	55	0.052	550	60	45	0.055



MATERIAL	HARDENED STEELS				HARDENED STEELS			
HARDNESS	HRc45 ~ HRc55				HRc55 ~ HRc65			
STRENGTH	1500 ~ 2000N/mm²				2000N/mm² ~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	4030	35	25	0.004				
3.0	2690	40	25	0.007	1900	40	20	0.011
4.0	2350	40	30	0.009	1480	40	20	0.014
5.0	1860	50	30	0.013	1260	40	20	0.016
6.0	1600	55	30	0.017	1100	40	20	0.018
8.0	1350	75	35	0.028	840	40	20	0.024
10.0	1090	60	35	0.028	680	35	20	0.026
12.0	930	55	35	0.030	560	35	20	0.031
16.0	720	40	35	0.028	440	20	20	0.023
20.0	550	30	35	0.027	320	20	20	0.031
25.0	430	20	35	0.023	260	15	20	0.029



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

X-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE MINIATURE - SLOTTING
VOLLHARTMETALL, 2 SCHNEIDEN MINI - NUTENFRÄSEN

EM810 SERIES

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS	HRc30 ~ HRc45				HRc45 ~ HRc55			
STRENGTH	1000 ~ 1500N/mm²				1500 ~ 2000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
0.4	30000	90	40	0.002	23000	50	30	0.001
0.8	24000	150	60	0.003	18000	65	45	0.002
1.0	20000	160	65	0.004	15000	75	45	0.003
1.2	16000	160	60	0.005	12000	75	45	0.003
1.5	12000	150	55	0.006	9000	70	40	0.004

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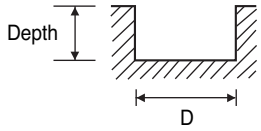

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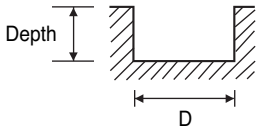
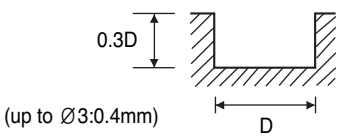


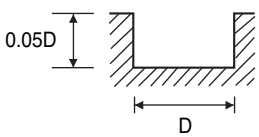
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE, 2 FLUTE LONG - SLOTTING
VOLLHARTMETALL, 2 SCHNEIDEN LANG - NUTENFRÄSEN

EM816, EM826 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS	~ HRc30				HRc30 ~ HRc45				HRc45 ~ HRc55			
STRENGTH	~ 1000N/mm²				1000 ~ 1500N/mm²				1500 ~ 2000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	7560	70	50	0.005	6050	60	40	0.005	3780	30	25	0.004
3.0	5290	85	50	0.008	4280	70	40	0.008	2640	35	25	0.007
4.0	4280	100	55	0.012	3410	85	45	0.012	2150	40	25	0.009
5.0	3660	125	55	0.017	2900	100	45	0.017	1900	45	30	0.012
6.0	3160	150	60	0.024	2520	125	50	0.025	1640	60	30	0.018
8.0	2400	160	60	0.033	1900	125	50	0.033	1260	60	30	0.024
10.0	2020	160	65	0.040	1640	125	50	0.038	1010	60	30	0.030
12.0	1640	125	60	0.038	1390	115	50	0.041	840	45	30	0.027
16.0	1390	115	70	0.041	1070	90	55	0.042	670	40	35	0.030
20.0	1010	85	65	0.042	820	60	50	0.037	500	30	30	0.030





RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

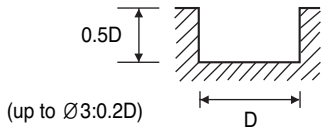
X-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

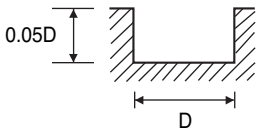
CARBIDE, 3 FLUTE - SLOTTING
VOLLHARTMETALL, 3 SCHNEIDEN - NUTENFRÄSEN

EM895, EM896, EM836, EM846 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				STAINLESS STEELS			
HARDNESS	~ HRc30				HRc30 ~ HRc45							
STRENGTH	~ 1000N/mm²				1000 ~ 1500N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	11560	170	75	0.005	7560	110	50	0.005	6300	80	40	0.004
3.0	8920	190	85	0.007	5560	130	50	0.008	4620	110	45	0.008
4.0	7560	270	95	0.012	4620	160	60	0.012	3880	130	50	0.011
5.0	6300	280	100	0.015	3780	170	60	0.015	3160	140	50	0.015
6.0	5560	310	105	0.019	3360	200	65	0.020	2840	160	55	0.019
8.0	4200	340	105	0.027	2520	180	65	0.024	2100	160	55	0.025
10.0	3260	300	100	0.031	2000	140	65	0.023	1680	145	55	0.029
12.0	2740	250	105	0.030	1680	120	65	0.024	1360	120	50	0.029
16.0	2200	200	110	0.030	1360	100	70	0.025	1060	100	55	0.031
18.0	1940	175	110	0.030	1210	85	70	0.023	950	85	55	0.030
20.0	1680	150	105	0.030	1060	70	65	0.022	840	70	55	0.028



MATERIAL	HARDENED STEELS				HARDENED STEELS			
HARDNESS	HRc45 ~ HRc55				HRc55 ~ HRc65			
STRENGTH	1500 ~ 2000N/mm²				2000N/mm² ~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	5040	30	30	0.002				
3.0	3360	35	30	0.003	1900	40	20	0.007
4.0	2940	35	35	0.004	1480	35	20	0.008
5.0	2320	45	35	0.006	1260	35	20	0.009
6.0	2000	50	40	0.008	1100	35	20	0.011
8.0	1680	65	40	0.013	840	35	20	0.014
10.0	1360	55	45	0.013	680	30	20	0.015
12.0	1160	50	45	0.014	560	30	20	0.018
16.0	900	35	45	0.013	440	20	20	0.015
18.0	790	30	45	0.013	380	20	20	0.018
20.0	680	25	45	0.012	320	20	20	0.021



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

X-POWER END MILLS

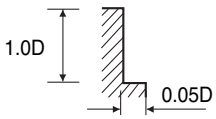
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 3 FLUTE - SIDE CUTTING
VOLLHARTMETALL, 3 SCHNEIDEN - SEITENFRÄSEN

EM895, EM896, EM836, EM846 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				STAINLESS STEELS			
HARDNESS	~ HRc30				HRc30 ~ HRc45							
STRENGTH	~ 1000N/mm²				1000 ~ 1500N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	11560	210	75	0.006	7560	140	50	0.006	6300	115	40	0.006
3.0	8920	240	85	0.009	5560	150	50	0.009	4620	125	45	0.009
4.0	7560	430	95	0.019	4620	260	60	0.019	3880	210	50	0.018
5.0	6300	450	100	0.024	3780	270	60	0.024	3160	230	50	0.024
6.0	5560	500	105	0.030	3360	310	65	0.031	2840	250	55	0.029
8.0	4200	530	105	0.042	2520	290	65	0.038	2100	265	55	0.042
10.0	3260	460	100	0.047	2000	230	65	0.038	1680	230	55	0.046
12.0	2740	390	105	0.047	1680	190	65	0.038	1360	180	50	0.044
16.0	2200	310	110	0.047	1360	150	70	0.037	1060	150	55	0.047
18.0	1940	280	110	0.048	1210	135	70	0.037	950	130	55	0.046
20.0	1680	240	105	0.048	1060	120	65	0.038	840	115	55	0.046

MATERIAL	HARDENED STEELS				HARDENED STEELS			
HARDNESS	HRc45 ~ HRc55				HRc55 ~ HRc65			
STRENGTH	1500 ~ 2000N/mm²				2000N/mm² ~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	5040	30	30	0.002				
3.0	3360	40	30	0.004	1900	45	20	0.008
4.0	2940	45	35	0.005	1480	45	20	0.010
5.0	2320	55	35	0.008	1260	45	20	0.012
6.0	2000	60	40	0.010	1100	45	20	0.014
8.0	1680	80	40	0.016	840	45	20	0.018
10.0	1360	70	45	0.017	680	35	20	0.017
12.0	1160	60	45	0.017	560	35	20	0.021
16.0	900	45	45	0.017	440	20	20	0.015
18.0	790	35	45	0.015	380	20	20	0.018
20.0	680	30	45	0.015	320	20	20	0.021



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

X-POWER END MILLS

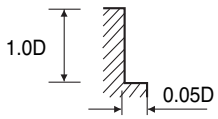
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 4 FLUTE SHORT - SIDE CUTTING
VOLLHARTMETALL, 4 SCHNEIDEN KURZ - SEITENFRÄSEN

EM811, EM821 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				STAINLESS STEELS			
HARDNESS	~ HRc30				HRc30 ~ HRc45							
STRENGTH	~ 1000N/mm²				1000 ~ 1500N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	11560	280	75	0.006	7560	170	50	0.006	6300	140	40	0.006
3.0	8920	320	85	0.009	5560	200	50	0.009	4620	170	45	0.009
4.0	7560	570	95	0.019	4620	350	60	0.019	3880	280	50	0.018
5.0	6300	600	100	0.024	3780	360	60	0.024	3160	300	50	0.024
6.0	5560	660	105	0.030	3360	410	65	0.031	2840	330	55	0.029
8.0	4200	710	105	0.042	2520	380	65	0.038	2100	350	55	0.042
10.0	3260	610	100	0.047	2000	300	65	0.038	1680	300	55	0.045
12.0	2740	520	105	0.047	1680	250	65	0.037	1360	240	50	0.044
16.0	2200	410	110	0.047	1360	200	70	0.037	1100	200	55	0.045
20.0	1680	320	105	0.048	1060	160	65	0.038	840	150	55	0.045
25.0	1360	250	105	0.046	840	130	65	0.039	680	120	55	0.044

MATERIAL	HARDENED STEELS				HARDENED STEELS			
HARDNESS	HRc45 ~ HRc55				HRc55 ~ HRc65			
STRENGTH	1500 ~ 2000N/mm²				2000N/mm² ~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	5040	50	30	0.002				
3.0	3360	60	30	0.004	1900	50	20	0.007
4.0	2940	60	35	0.005	1480	50	20	0.008
5.0	2320	70	35	0.008	1260	50	20	0.010
6.0	2000	80	40	0.010	1100	50	20	0.011
8.0	1680	110	40	0.016	840	50	20	0.015
10.0	1360	90	45	0.017	680	40	20	0.015
12.0	1160	80	45	0.017	560	40	20	0.018
16.0	900	60	45	0.017	440	25	20	0.014
20.0	680	40	45	0.015	320	25	20	0.020
25.0	540	30	40	0.014	260	20	20	0.019



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

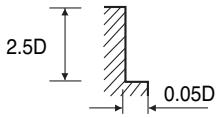
X-POWER END MILLS

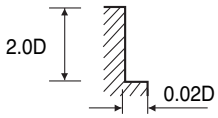
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 4 FLUTE LONG - SIDE CUTTING
VOLLHARTMETALL, 4 SCHNEIDEN LANG - SEITENFRÄSEN

EM817, EM827 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS				HARDENED STEELS			
HARDNESS	~ HRc30				HRc30 ~ HRc45				HRc45 ~ HRc55				HRc55 ~ HRc65			
STRENGTH	~ 1000N/mm²				1000 ~ 1500N/mm²				1500 ~ 2000N/mm²				2000N/mm² ~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	8820	200	55	0.006	5040	80	30	0.004	3150	45	20	0.004				
3.0	6170	230	60	0.009	3570	100	35	0.007	2200	55	20	0.006	1890	30	20	0.004
4.0	5000	280	65	0.014	2840	115	35	0.010	1790	60	20	0.008	1470	35	20	0.006
5.0	4270	360	65	0.021	2420	140	40	0.014	1580	70	25	0.011	1260	40	20	0.008
6.0	3680	430	70	0.029	2100	180	40	0.021	1370	90	25	0.016	1160	50	20	0.011
8.0	2800	460	70	0.041	1580	180	40	0.028	1050	90	25	0.021	840	50	20	0.015
10.0	2350	460	75	0.049	1370	180	45	0.033	840	90	25	0.027	670	50	20	0.019
12.0	1920	360	70	0.047	1160	160	45	0.034	700	70	25	0.025	560	40	20	0.018
16.0	1620	320	80	0.049	890	125	45	0.035	560	60	30	0.027	440	35	20	0.020
20.0	1180	230	75	0.049	680	90	45	0.033	420	45	25	0.027	340	25	20	0.018





RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE, 2 FLUTE MINIATURE BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN MINI STIRNRADIUS

EM865 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				HARDENED STEELS			
HARDNESS	HRc30 ~ HRc45				HRc45 ~ HRc55			
STRENGTH	1000 ~ 1500N/mm²				1500 ~ 2000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R0.3 × 0.6	30000	510	55	0.009	30000	360	55	0.006
R0.4 × 0.8	27000	560	70	0.010	27000	330	70	0.006
R0.5 × 1.0	25000	560	80	0.011	25000	340	80	0.007
R0.6 × 1.2	24000	570	90	0.012	24000	350	90	0.007
R0.75 × 1.5	23000	600	110	0.013	23000	370	110	0.008
R1.0 × 2.0	19000	570	120	0.015	19000	320	120	0.008
R1.5 × 3.0	14000	480	130	0.017	14000	280	130	0.010

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ae=0.15×D

D≧1
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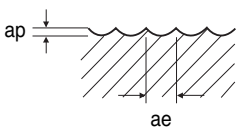
ae=0.15×D



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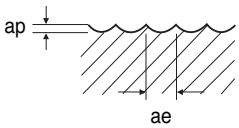


RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

X-POWER END MILLS

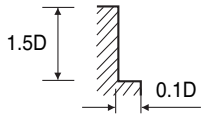
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

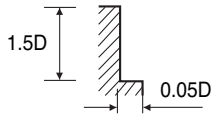
CARBIDE, 6&8 FLUTE 45° HELIX LONG - SIDE CUTTING
VOLLHARTMETALL, 6&8 SCHNEIDEN 45° RECHTSSPIRALE LANG - SEITENFRÄSEN

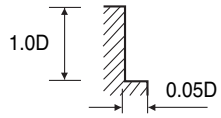
EM812, EM822 SERIES

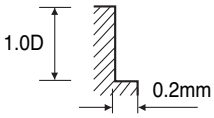
■ NORMAL SPEED

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS				HARDENED STEELS			
HARDNESS	~ HRc30				HRc30 ~ HRc50				HRc50 ~ HRc60				HRc60 ~ HRc65			
STRENGTH	~ 1000N/mm²				1000 ~ 1750N/mm²				1750 ~ 2080N/mm²				2080N/mm² ~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	5560	2000	105	0.060	3880	1370	75	0.059	1580	210	30	0.022	1100	130	20	0.020
8.0	4200	2000	105	0.079	2940	1370	75	0.078	1160	210	30	0.030	840	130	20	0.026
10.0	3360	2000	105	0.099	2320	1370	75	0.098	1000	210	30	0.035	680	130	20	0.032
12.0	2840	1680	105	0.099	2000	1160	75	0.097	840	180	30	0.036	560	110	20	0.033
16.0	2100	1260	105	0.100	1480	880	75	0.099	640	130	30	0.034	420	70	20	0.028
20.0	1680	1010	105	0.075	1160	690	75	0.074	500	110	30	0.028	320	60	20	0.023
25.0	1500	900	120	0.075	1100	600	85	0.068	430	90	35	0.026	260	50	20	0.024





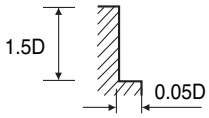


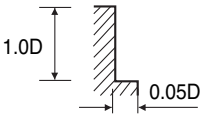


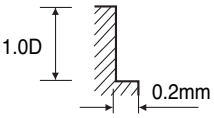
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

■ HIGH SPEED

MATERIAL	HEAT RESISTANT STEELS HARDENED STEELS				HARDENED STEELS				HARDENED STEELS			
HARDNESS	~ HRc50				HRc50 ~ HRc60				HRc60 ~ HRc65			
STRENGTH	~ 1750N/mm²				1750 ~ 2080N/mm²				2080N/mm² ~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	16800	6090	315	0.060	8400	3050	160	0.061	4200	1470	80	0.058
8.0	12600	6090	315	0.081	6300	3050	160	0.081	3160	1470	80	0.078
10.0	9980	5990	315	0.100	5040	3050	160	0.101	2520	1470	80	0.097
12.0	8400	5040	315	0.100	4200	2520	160	0.100	2100	1260	80	0.100
16.0	6300	3780	315	0.100	3160	1890	160	0.100	1580	950	80	0.100
20.0	5040	3050	315	0.076	2520	1470	160	0.073	1260	760	80	0.075
25.0	4500	2700	355	0.075	2200	1300	175	0.074	1120	670	90	0.075







RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

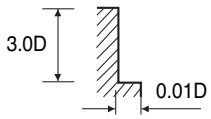
X-POWER END MILLS

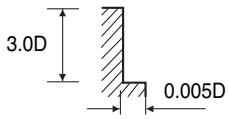
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 6 FLUTE 45° HELIX EXTRA LONG - SIDE CUTTING
VOLLHARTMETALL, 6 SCHNEIDEN 45° RECHTSSPIRALE EXTRA LANG - SEITENFRÄSEN

EM834, EM844 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS				HARDENED STEELS			
HARDNESS	~ HRc40				HRc40 ~ HRc50				HRc50 ~ HRc60				HRc60 ~ HRc65			
STRENGTH	~ 1250N/mm²				1250 ~ 1750N/mm²				1750 ~ 2080N/mm²				2080N/mm² ~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	2230	470	40	0.035	1670	350	30	0.035	1390	250	25	0.030	1110	200	20	0.030
8.0	1670	450	40	0.045	1250	330	30	0.044	1050	240	25	0.038	840	180	20	0.036
10.0	1330	440	40	0.055	1000	300	30	0.050	840	230	25	0.046	680	160	20	0.039
12.0	1110	400	40	0.060	840	270	30	0.054	690	210	25	0.051	560	150	20	0.045
16.0	840	330	40	0.065	630	230	30	0.061	530	170	25	0.053	420	130	20	0.052
20.0	670	280	40	0.070	500	200	30	0.067	420	150	25	0.060	320	120	20	0.063
25.0	540	240	40	0.074	400	170	30	0.071	340	130	25	0.064	270	95	20	0.059





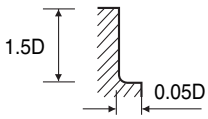
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

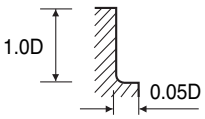
CARBIDE, 6 FLUTE 45° HELIX CORNER RADIUS - SIDE CUTTING
VOLLHARTMETALL, 6 SCHNEIDEN 45° RECHTSSPIRALE ECKENRADIUS - SEITENFRÄSEN

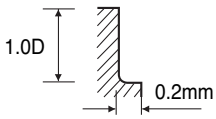
EM835, EM845 SERIES

■ HIGH SPEED

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS				HARDENED STEELS			
HARDNESS	~ HRc50				HRc50 ~ HRc60				HRc60 ~ HRc65			
STRENGTH	~ 1750N/mm²				1750 ~ 2080N/mm²				2080N/mm² ~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	16800	6090	315	0.060	8400	3050	160	0.061	4200	1470	80	0.058
8.0	12600	6090	315	0.081	6300	3050	160	0.081	3150	1470	80	0.078
10.0	9980	5990	315	0.100	5040	3050	160	0.101	2520	1470	80	0.097
12.0	8400	5040	315	0.100	4200	2520	160	0.100	2100	1260	80	0.100
16.0	6300	3780	315	0.100	3150	1890	160	0.100	1580	950	80	0.100
20.0	5040	3050	315	0.101	2520	1470	160	0.097	1260	760	80	0.101







RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

X-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

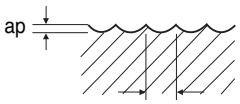
CARBIDE, 2 FLUTE BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS

EM876, EM877, EM813, EM823, EM878, EM879 SERIES

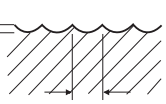
■ NORMAL SPEED

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS	~ HRc30				HRc30 ~ HRc40				HRc45 ~ HRc65			
STRENGTH	~ 1000N/mm²				1000 ~ 1250N/mm²				1500N/mm² ~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R0.5 × 1.0	15760	250	50	0.008	12720	200	40	0.008	5800	90	20	0.008
R0.75 × 1.5	15760	350	75	0.011	12140	270	55	0.011	5320	120	25	0.011
R1.0 × 2.0	14400	750	90	0.026	10700	490	65	0.023	4680	150	30	0.016
R1.25 × 2.5	14400	750	115	0.026	10700	490	85	0.023	4680	150	35	0.016
R1.5 × 3.0	13100	680	125	0.026	10000	460	95	0.023	4520	150	45	0.017
R2.0 × 4.0	10500	740	130	0.035	8400	530	105	0.032	4200	180	55	0.021
R2.5 × 5.0	9140	820	145	0.045	7300	580	115	0.040	3680	180	60	0.024
R3.0 × 6.0	8490	1020	160	0.060	6900	830	130	0.060	3180	190	60	0.030
R4.0 × 8.0	7160	1290	180	0.090	5770	920	145	0.080	2470	220	62	0.045
R5.0 × 10.0	6370	1530	200	0.120	5090	1020	160	0.100	2040	225	65	0.055
R6.0 × 12.0	5840	1750	220	0.150	4640	1110	175	0.120	1750	245	65	0.070
R8.0 × 16.0	4770	1720	240	0.180	3780	1060	190	0.140	1350	245	70	0.091
R10.0 × 20.0	4140	1660	260	0.200	3260	1040	205	0.160	1110	250	70	0.113

ap: D1~D6=0.2mm
D8~D20=0.3mm
ae: 0.2 × D



ap: D1~D6=0.2mm
D8~D20=0.3mm
ae: 0.1 × D

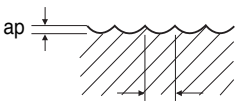


RPM = rev./min. Vc = m/min.
FEED = mm/min. fz = mm/t

■ HIGH SPEED

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				HARDENED STEELS			
HARDNESS	~ HRc45				HRc45 ~ HRc65			
STRENGTH	~ 1500N/mm²				1500N/mm² ~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R0.5 × 1.0	25000	1300	80	0.026	25000	800	80	0.016
R0.75 × 1.5	23000	1400	110	0.030	23000	860	110	0.019
R1.0 × 2.0	21000	1480	130	0.035	21000	940	130	0.022
R1.25 × 2.5	21000	1760	165	0.042	19000	980	150	0.026
R1.5 × 3.0	21000	2000	200	0.048	17000	1040	160	0.031
R2.0 × 4.0	21000	2940	265	0.070	13660	1160	170	0.042
R2.5 × 5.0	21000	3600	330	0.086	12000	1200	190	0.050
R3.0 × 6.0	21000	4000	395	0.095	10500	1250	200	0.060
R4.0 × 8.0	16700	4000	420	0.120	8360	1250	210	0.075
R5.0 × 10.0	14000	3900	440	0.139	7000	1200	220	0.086
R6.0 × 12.0	12200	3900	460	0.160	6100	1160	230	0.095
R8.0 × 16.0	9550	3450	480	0.181	4770	1000	240	0.105
R10.0 × 20.0	7960	3180	500	0.200	3980	920	250	0.116

ap: D1~D6=0.2mm
D8~D20=0.3mm
ae: 0.05 × D



RPM = rev./min. Vc = m/min.
FEED = mm/min. fz = mm/t

X-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

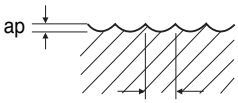
CARBIDE, 2 FLUTE BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS

EM899, EM900 SERIES

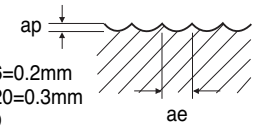
■ NORMAL SPEED

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS	~ HRc30				HRc30 ~ HRc40				HRc45 ~ HRc65			
STRENGTH	~ 1000N/mm²				1000 ~ 1250N/mm²				1500N/mm² ~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R0.5 × 1.0	15760	250	50	0.008	12720	200	40	0.008	5800	90	20	0.008
R0.75 × 1.5	15760	350	75	0.011	12140	270	55	0.011	5320	120	25	0.011
R1.0 × 2.0	14400	750	90	0.026	10700	490	65	0.023	4680	150	30	0.016
R1.25 × 2.5	14400	750	115	0.026	10700	490	85	0.023	4680	150	35	0.016
R1.5 × 3.0	13100	680	125	0.026	10000	460	95	0.023	4520	150	45	0.017
R2.0 × 4.0	10500	740	130	0.035	8400	530	105	0.032	4200	180	55	0.021
R2.5 × 5.0	9140	820	145	0.045	7300	580	115	0.040	3680	180	60	0.024
R3.0 × 6.0	8490	1020	160	0.060	6900	830	130	0.060	3180	190	60	0.030
R4.0 × 8.0	7160	1290	180	0.090	5770	920	145	0.080	2470	220	60	0.045
R5.0 × 10.0	6370	1530	200	0.120	5090	1020	160	0.100	2040	225	65	0.055
R6.0 × 12.0	5840	1750	220	0.150	4640	1110	175	0.120	1750	245	65	0.070
R8.0 × 16.0	4770	1720	240	0.180	3780	1060	190	0.140	1350	245	70	0.091
R10.0 × 20.0	4140	1660	260	0.200	3260	1040	205	0.160	1110	250	70	0.113

ap: D1~D6=0.2mm
D8~D20=0.3mm
ae: 0.2 × D



ap: D1~D6=0.2mm
D8~D20=0.3mm
ae: 0.1 × D

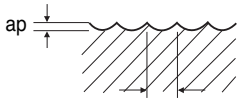


RPM = rev./min. Vc = m/min.
FEED = mm/min. fz = mm/t

■ HIGH SPEED

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				HARDENED STEELS			
HARDNESS	~ HRc45				HRc45 ~ HRc65			
STRENGTH	~ 1500N/mm²				1500N/mm² ~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R0.5 × 1.0	25000	1300	80	0.026	25000	800	80	0.016
R0.75 × 1.5	23000	1400	110	0.030	23000	860	110	0.019
R1.0 × 2.0	21000	1480	130	0.035	21000	940	130	0.022
R1.25 × 2.5	21000	1760	165	0.042	19000	980	150	0.026
R1.5 × 3.0	21000	2000	200	0.048	17000	1040	160	0.031
R2.0 × 4.0	21000	2940	265	0.070	13660	1160	170	0.042
R2.5 × 5.0	21000	3600	330	0.086	12000	1200	190	0.050
R3.0 × 6.0	21000	4000	395	0.095	10500	1250	200	0.060
R4.0 × 8.0	16700	4000	420	0.120	8360	1250	210	0.075
R5.0 × 10.0	14000	3900	440	0.139	7000	1200	220	0.086
R6.0 × 12.0	12200	3900	460	0.160	6100	1160	230	0.095
R8.0 × 16.0	9550	3450	480	0.181	4770	1000	240	0.105
R10.0 × 20.0	7960	3180	500	0.200	3980	920	250	0.116

ap: D1~D6=0.2mm
D8~D20=0.3mm
ae: 0.05 × D



RPM = rev./min. Vc = m/min.
FEED = mm/min. fz = mm/t

X-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

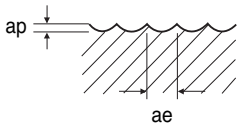
CARBIDE, 2 FLUTE LONG REACH BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN LANG STIRNRADIUS

EM838, EM848 SERIES

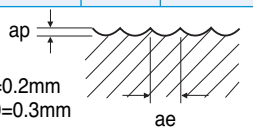
■ NORMAL SPEED

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS	~ HRc30				HRc30 ~ HRc40				HRc45 ~ HRc65			
STRENGTH	~ 1000N/mm²				1000 ~ 1250N/mm²				1500N/mm² ~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R0.5 × 1.0	12600	200	40	0.008	10180	160	30	0.008	4640	70	15	0.008
R0.75 × 1.5	12600	280	60	0.011	9710	220	45	0.011	4250	95	20	0.011
R1.0 × 2.0	12600	420	80	0.017	9250	260	60	0.014	3870	90	25	0.012
R1.25 × 2.5	11520	600	90	0.026	8560	390	65	0.023	3740	120	30	0.016
R1.5 × 3.0	10500	540	100	0.026	8000	370	75	0.023	3620	120	35	0.017
R2.0 × 4.0	8400	590	105	0.035	6720	420	85	0.031	3360	140	40	0.021
R2.5 × 5.0	7310	660	115	0.045	5840	460	90	0.039	2940	140	45	0.024
R3.0 × 6.0	6800	820	130	0.060	5500	600	105	0.055	2550	150	50	0.029
R4.0 × 8.0	5700	1030	145	0.090	4600	740	115	0.080	2000	175	50	0.044
R5.0 × 10.0	5100	1220	160	0.120	4070	820	130	0.101	1650	180	50	0.055
R6.0 × 12.0	4700	1400	175	0.149	3700	890	140	0.120	1400	195	55	0.070
R8.0 × 16.0	3800	1380	190	0.182	3000	850	150	0.142	1100	195	55	0.089
R10.0 × 20.0	3300	1330	205	0.202	2600	830	165	0.160	890	200	55	0.112

ap: D1~D6=0.2mm
D8~D20=0.3mm
ae: 0.2 × D



ap: D1~D6=0.2mm
D8~D20=0.3mm
ae: 0.1 × D

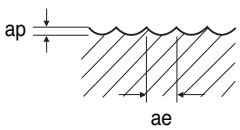


RPM = rev./min. Vc = m/min.
FEED = mm/min. fz = mm/t

■ HIGH SPEED

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				HARDENED STEELS			
HARDNESS	~ HRc45				HRc45 ~ HRc65			
STRENGTH	~ 1500N/mm²				1500N/mm² ~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R0.5 × 1.0	20000	1040	65	0.026	20000	640	65	0.016
R0.75 × 1.5	18400	1100	85	0.030	18400	690	85	0.019
R1.0 × 2.0	16800	1200	105	0.036	16800	750	105	0.022
R1.25 × 2.5	16800	1400	130	0.042	15200	780	120	0.026
R1.5 × 3.0	16800	1600	160	0.048	13600	830	130	0.031
R2.0 × 4.0	16800	2350	210	0.070	10930	930	135	0.043
R2.5 × 5.0	16800	2880	265	0.086	9600	960	150	0.050
R3.0 × 6.0	16800	3200	315	0.095	8400	1000	160	0.060
R4.0 × 8.0	13400	3200	335	0.119	6700	1000	170	0.075
R5.0 × 10.0	11200	3100	350	0.138	5600	960	175	0.086
R6.0 × 12.0	9800	3100	370	0.158	4900	930	185	0.095
R8.0 × 16.0	7600	2750	380	0.181	3800	800	190	0.105
R10.0 × 20.0	6400	2550	400	0.199	3200	740	200	0.116

ap: D1~D6 =0.2mm
D8~D20=0.3mm
ae: 0.05 × D



RPM = rev./min. Vc = m/min.
FEED = mm/min. fz = mm/t

X-POWER END MILLS

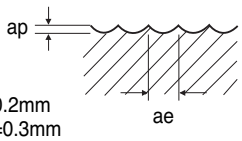
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE BALL NOSE with TAPER NECK
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS mit KONISCH ABGESETZTEM SCHAFTTEIL

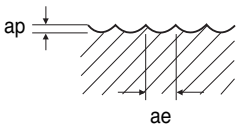
EM902, EM904 SERIES

■ NORMAL SPEED

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS				HARDENED STEELS			
HARDNESS	HRc30 ~ HRc40				HRc40 ~ HRc50				HRc50 ~ HRc55			
STRENGTH	1000 ~ 1250N/mm²				1250 ~ 1750N/mm²				1750 ~ 2000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R0.5 × 1.0	10180	160	30	0.008	16000	370	50	0.012	16000	320	50	0.010
R1.0 × 2.0	9250	260	60	0.014	11500	640	70	0.028	11300	590	70	0.026
R1.5 × 3.0	8000	370	75	0.023	10200	880	95	0.043	9800	850	90	0.043
R2.0 × 4.0	6720	420	85	0.031	8500	880	105	0.052	8200	850	105	0.052
R2.5 × 5.0	5840	460	90	0.039	7500	880	120	0.059	7200	850	115	0.059
R3.0 × 6.0	5500	660	105	0.060	6900	920	130	0.067	6500	880	125	0.068
R4.0 × 8.0	4600	740	115	0.080	5600	840	140	0.075	5300	800	135	0.075
R5.0 × 10.0	4070	820	130	0.101	4850	800	150	0.082	4650	770	145	0.083
R6.0 × 12.0	3700	890	140	0.120	4350	800	165	0.092	4150	770	155	0.093



ap: D1~D6=0.2mm
D8~D12=0.3mm
ae: 0.2×D

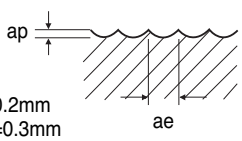


ap: D1~D4=0.05×D
D5~D8=0.25mm
D10~D12=0.30mm
ae: 0.1×D

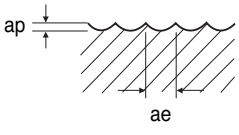
RPM = rev./min. Vc = m/min.
FEED = mm/min. fz = mm/t

■ HIGH SPEED

MATERIAL	NON-ALLOY STEELS ALLOY STEELS CAST IRON				HARDENED STEELS				HARDENED STEELS			
HARDNESS	~ HRc45				HRc45 ~ HRc50				HRc50 ~ HRc55			
STRENGTH	~ 1500N/mm²				1250 ~ 1750N/mm²				1750 ~ 2000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R0.5 × 1.0	20000	1040	65	0.026	16000	620	50	0.019	16000	550	50	0.017
R1.0 × 2.0	16800	1200	105	0.036	11500	850	70	0.037	11400	980	70	0.043
R1.5 × 3.0	16800	1600	160	0.048	10200	1400	95	0.069	9800	1300	90	0.066
R2.0 × 4.0	16800	2350	210	0.070	8500	1350	105	0.079	8200	1300	105	0.079
R2.5 × 5.0	16800	2880	265	0.086	7500	1320	120	0.088	7200	1250	115	0.087
R3.0 × 6.0	16800	3200	315	0.095	6900	1400	130	0.101	6600	1350	125	0.102
R4.0 × 8.0	13400	3200	335	0.119	5600	1250	140	0.112	5300	1150	135	0.108
R5.0 × 10.0	11200	3100	350	0.138	4800	1150	150	0.120	4600	1100	145	0.120
R6.0 × 12.0	9800	3100	370	0.158	4350	1130	165	0.130	4150	1050	155	0.127



ap: D1~D6=0.2mm
D8~D12=0.3mm
ae: 0.05×D



ap: D1~D4=0.05×D
D5~D8=0.25mm
D10~D20=0.30mm
ae: 0.05×D

RPM = rev./min. Vc = m/min.
FEED = mm/min. fz = mm/t

X-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

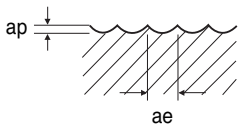
CARBIDE, 2 FLUTE STUB LENGTH BALL NOSE for OVER HRc55
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS EXTRA KURZ für ÜBER HRc55

G4953, G4954 SERIES

■ NORMAL SPEED

MATERIAL	HARDENED STEELS				HARDENED STEELS				HARDENED STEELS				HARDENED STEELS			
HARDNESS	HRc45 ~ HRc50				HRc50 ~ HRc55				HRc55 ~ HRc60				HRc60 ~ HRc70			
STRENGTH	1500 ~ 1750N/mm²				1750 ~ 2000N/mm²				2000 ~ 2080N/mm²				2080N/mm² ~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R0.5 ×1.0	20000	460	65	0.012	20000	400	65	0.010	20000	350	65	0.009	20000	240	65	0.006
R0.75×1.5	16300	640	75	0.020	16100	580	75	0.018	16000	570	75	0.018	14200	360	65	0.013
R1.0 ×2.0	14500	800	90	0.028	14200	740	90	0.026	13850	760	85	0.027	11300	465	70	0.021
R1.25×2.5	13400	950	105	0.035	13000	890	100	0.034	12600	920	100	0.037	9600	560	75	0.029
R1.5 ×3.0	12700	1100	120	0.043	12300	1050	115	0.043	11800	1000	110	0.042	8400	660	80	0.039
R2.0 ×4.0	10600	1100	135	0.052	10300	1050	130	0.051	9800	1000	125	0.051	6650	650	85	0.049
R2.5 ×5.0	9400	1100	150	0.059	9050	1050	140	0.058	8600	950	135	0.055	5600	680	90	0.061
R3.0 ×6.0	8600	1150	160	0.067	8250	1100	155	0.067	7850	950	150	0.061	4850	700	90	0.072
R4.0 ×8.0	7000	1050	175	0.075	6700	1000	170	0.075	6350	950	160	0.075	3800	650	95	0.086
R5.0 ×10.0	6050	1000	190	0.083	5800	960	180	0.083	5450	900	170	0.083	3200	620	100	0.097
R6.0 ×12.0	5450	1000	205	0.092	5200	960	195	0.092	4900	900	185	0.092	2750	610	105	0.111
R8.0 ×16.0	4350	870	220	0.100	4150	830	210	0.100	3900	820	195	0.105	2150	265	110	0.062
R10.0×20.0	3500	690	220	0.099	3300	650	205	0.098	3150	630	200	0.100	1700	220	105	0.065

ap: D1~D4 = 0.05×D
D5~D8 = 0.25mm
D10~D20 = 0.30mm
ae: D1~D20 = 0.1×D

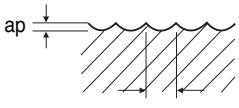


RPM = rev./min. Vc = m/min.
FEED = mm/min. fz = mm/t

■ HIGH SPEED

MATERIAL	HARDENED STEELS				HARDENED STEELS				HARDENED STEELS			
HARDNESS	HRc45 ~ HRc50				HRc50 ~ HRc55				HRc55 ~ HRc70			
STRENGTH	1500 ~ 1750N/mm²				1750 ~ 2000N/mm²				2000N/mm² ~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R0.5 × 1.0	20000	770	65	0.019	20000	700	65	0.018	20000	410	65	0.010
R0.75 × 1.5	16300	1050	75	0.032	16100	980	75	0.030	16000	580	75	0.018
R1.0 × 2.0	14500	1300	90	0.045	14200	1230	90	0.043	13850	700	85	0.025
R1.25 × 2.5	13400	1500	105	0.056	13000	1430	100	0.055	12600	780	100	0.031
R1.5 × 3.0	12700	1750	120	0.069	12300	1670	115	0.068	11800	860	110	0.036
R2.0 × 4.0	10600	1700	135	0.080	10300	1620	130	0.079	9800	860	125	0.044
R2.5 × 5.0	9400	1650	150	0.088	9050	1570	140	0.087	8600	860	135	0.050
R3.0 × 6.0	8600	1750	160	0.102	8250	1670	155	0.101	7850	865	150	0.055
R4.0 × 8.0	7000	1550	175	0.111	6700	1460	170	0.109	6350	890	160	0.070
R5.0 × 10.0	6050	1450	190	0.120	5800	1360	180	0.117	5450	870	170	0.080
R6.0 × 12.0	5450	1420	205	0.130	5200	1330	195	0.128	4900	785	185	0.080
R8.0 × 16.0	4350	1230	220	0.141	4150	1130	210	0.136	3900	485	195	0.062
R10.0 × 20.0	3500	1000	220	0.143	3300	900	205	0.136	3150	410	200	0.065

ap: D1~D4 = 0.05×D
D5~D8 = 0.25mm
D10~D20 = 0.30mm
ae: D1~D20 = 0.05×D

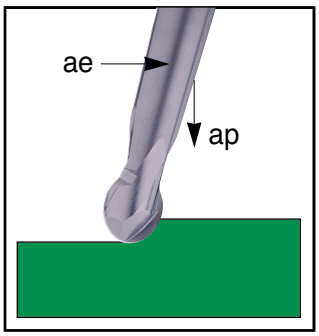


RPM = rev./min. Vc = m/min.
FEED = mm/min. fz = mm/t

X-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE BALL NOSE MMC
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS MMC



▶ ae = 0.05 × D
▶ ap = 0.02 × D

EM669, EM863 SERIES

■ NORMAL SPEED

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS	~ HRc30				HRc30 ~ HRc40				HRc45 ~ HRc65			
STRENGTH	~ 1000N/mm²				1000 ~ 1250N/mm²				1500N/mm² ~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R1.5 × 3.0	35000	2800	330	0.040	33000	2600	310	0.039	12000	900	115	0.038
R2.0 × 4.0	26000	2300	325	0.044	25000	2200	315	0.044	9000	800	115	0.044
R2.5 × 5.0	21000	2100	330	0.050	20000	2000	315	0.050	7000	700	110	0.050
R3.0 × 6.0	17000	1900	320	0.056	16000	1800	300	0.056	6000	650	115	0.054
R4.0 × 8.0	13000	1700	325	0.065	12000	1600	300	0.067	4500	550	115	0.061
R5.0 × 10.0	10500	1450	330	0.069	10000	1400	315	0.070	3500	500	110	0.071
R6.0 × 12.0	9000	1400	340	0.078	8000	1300	300	0.081	3000	450	115	0.075
R8.0 × 16.0	6000	1200	300	0.100	5500	1100	275	0.100	2000	400	100	0.100

RPM = rev./min. Vc = m/min.
FEED = mm/min. fz = mm/t

■ HIGH SPEED

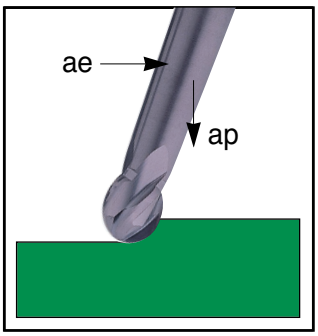
MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS	~ HRc30				HRc30 ~ HRc40				HRc45 ~ HRc65			
STRENGTH	~ 1000N/mm²				1000 ~ 1250N/mm²				1500N/mm² ~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R1.5 × 3.0	47000	3700	445	0.039	44000	3500	415	0.040	17000	1400	160	0.041
R2.0 × 4.0	35000	3200	440	0.046	33000	3000	415	0.045	13000	1200	165	0.046
R2.5 × 5.0	28000	2800	440	0.050	27000	2600	425	0.048	10000	1100	155	0.055
R3.0 × 6.0	23000	2600	435	0.057	22000	2400	415	0.055	8000	950	150	0.059
R4.0 × 8.0	18000	2300	450	0.064	17000	2100	425	0.062	6000	850	150	0.071
R5.0 × 10.0	14000	2000	440	0.071	13000	1900	410	0.073	5000	750	155	0.075
R6.0 × 12.0	12000	1800	450	0.075	11000	1800	415	0.082	4000	700	150	0.088
R8.0 × 16.0	9000	1600	450	0.089	8000	1500	400	0.094	3300	600	165	0.091

RPM = rev./min. Vc = m/min.
FEED = mm/min. fz = mm/t

X-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 4 FLUTE BALL NOSE MMC
VOLLHARTMETALL, 4 SCHNEIDEN STIRNRADIUS MMC



- ae = 0.05 × D
- ap = 0.02 × D

EM673, EM864 SERIES

■ NORMAL SPEED

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS	~ HRc30				HRc30 ~ HRc40				HRc45 ~ HRc65			
STRENGTH	~ 1000N/mm²				1000 ~ 1250N/mm²				1500N/mm² ~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R2.5 × 5.0	21000	4000	330	0.048	20000	4000	315	0.050	7000	1400	110	0.050
R3.0 × 6.0	17000	4000	320	0.059	16000	3500	300	0.055	6000	1300	115	0.054
R4.0 × 8.0	13000	3500	325	0.067	12000	3000	300	0.063	4500	1100	115	0.061
R5.0 × 10.0	10500	3000	330	0.071	10000	2500	315	0.063	3500	1000	110	0.071
R6.0 × 12.0	9000	2800	340	0.078	8000	2500	300	0.078	3000	950	115	0.079
R8.0 × 16.0	6000	2800	300	0.117	5500	2200	275	0.100	2000	800	100	0.100

RPM = rev./min. Vc = m/min.
FEED = mm/min. fz = mm/t

■ HIGH SPEED

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS	~ HRc30				HRc30 ~ HRc40				HRc45 ~ HRc65			
STRENGTH	~ 1000N/mm²				1000 ~ 1250N/mm²				1500N/mm² ~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R2.5 × 5.0	28000	5600	440	0.050	27000	5300	425	0.049	11000	2100	175	0.048
R3.0 × 6.0	23000	5100	435	0.055	22000	4900	415	0.056	9000	1900	170	0.053
R4.0 × 8.0	18000	4600	450	0.064	17000	4300	425	0.063	7000	1700	175	0.061
R5.0 × 10.0	14000	3900	440	0.070	13000	3700	410	0.071	5000	1400	155	0.070
R6.0 × 12.0	12000	3700	450	0.077	11000	3500	415	0.080	4500	1300	170	0.072
R8.0 × 16.0	9000	3100	450	0.086	8000	3000	400	0.094	3300	1100	165	0.083

RPM = rev./min. Vc = m/min.
FEED = mm/min. fz = mm/t

X-POWER END MILLS

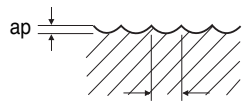
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 4 FLUTE LONG BALL NOSE
VOLLHARTMETALL, 4 SCHNEIDEN LANG STIRNRADIUS

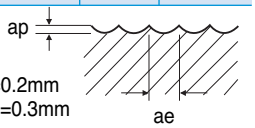
EM815, EM825 SERIES

■ NORMAL SPEED

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS	~ HRc30				HRc30 ~ HRc40				HRc45 ~ HRc65			
STRENGTH	~ 1000N/mm²				1000 ~ 1250N/mm²				1500N/mm² ~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R0.5 × 1.0	15760	380	50	0.006	12720	300	40	0.006	5800	130	20	0.006
R0.75 × 1.5	15760	530	75	0.008	12140	410	55	0.008	5320	180	25	0.008
R1.0 × 2.0	15760	800	100	0.013	11560	480	75	0.010	4840	160	30	0.008
R1.5 × 3.0	13100	1020	125	0.019	10000	690	95	0.017	4520	220	45	0.012
R2.0 × 4.0	10500	1110	130	0.026	8400	800	105	0.024	4200	270	55	0.016
R2.5 × 5.0	9140	1230	145	0.034	7300	870	115	0.030	3680	270	60	0.018
R3.0 × 6.0	8490	1530	160	0.045	6900	1250	130	0.045	3180	280	60	0.022
R4.0 × 8.0	7160	1950	180	0.068	5770	1380	145	0.060	2470	330	60	0.033
R5.0 × 10.0	6370	2300	200	0.090	5090	1530	160	0.075	2040	340	65	0.042
R6.0 × 12.0	5840	2600	220	0.111	4640	1650	175	0.089	1750	370	65	0.053
R8.0 × 16.0	4770	2600	240	0.136	3780	1600	190	0.106	1350	370	70	0.069
R10.0 × 20.0	4140	2500	260	0.151	3260	1560	205	0.120	1110	375	70	0.084



ap: D1~D6=0.2mm
D8~D20=0.3mm
ae: 0.2×D

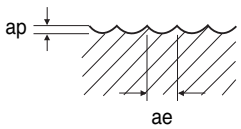


ap: D1~D6=0.2mm
D8~D20=0.3mm
ae: 0.1×D

RPM = rev./min. Vc = m/min.
FEED = mm/min. fz = mm/t

■ HIGH SPEED

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				HARDENED STEELS			
HARDNESS	~ HRc45				HRc45 ~ HRc65			
STRENGTH	~ 1500N/mm²				1500N/mm² ~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R0.5 × 1.0	25000	1950	80	0.020	25000	1200	80	0.012
R0.75 × 1.5	23000	2100	110	0.023	23000	1290	110	0.014
R1.0 × 2.0	21000	2200	130	0.026	21000	1400	130	0.017
R1.5 × 3.0	21000	3000	200	0.036	17000	1560	160	0.023
R2.0 × 4.0	21000	4400	265	0.052	13660	1740	170	0.032
R2.5 × 5.0	21000	5400	330	0.064	12000	1800	190	0.038
R3.0 × 6.0	21000	6000	395	0.071	10500	1880	200	0.045
R4.0 × 8.0	16700	6000	420	0.090	8360	1880	210	0.056
R5.0 × 10.0	14000	5850	440	0.104	7000	1800	220	0.064
R6.0 × 12.0	12200	5850	460	0.120	6100	1740	230	0.071
R8.0 × 16.0	9550	5180	480	0.136	4770	1500	240	0.079
R10.0 × 20.0	7960	4770	500	0.150	3980	1380	250	0.087



ap: D1~D6=0.2mm
D8~D20=0.3mm
ae: 0.05×D

RPM = rev./min. Vc = m/min.
FEED = mm/min. fz = mm/t

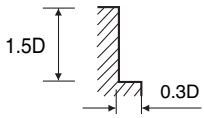
X-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

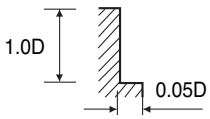
CARBIDE, MULTI FLUTE 20° HELIX ROUGHING - SIDE CUTTING
VOLLHARTMETALL, MULTI SCHNEIDEN 20° RECHTSSPIRALE SCHRUPPFRÄSER - SEITENFRÄSEN

EM832, EM842, EM814, EM824 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				STAINLESS STEELS			
HARDNESS	~ HRc30				HRc30 ~ HRc38				HRc38 ~ HRc45			
STRENGTH	~ 1000N/mm²				1000 ~ 1200N/mm²				1200 ~ 1400N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	15600	2320	295	0.050	12400	840	235	0.023	8400	570	160	0.023
8.0	11600	2320	290	0.067	9200	840	230	0.030	6300	570	160	0.030
10.0	9200	2320	290	0.063	7600	840	240	0.028	5100	570	160	0.028
12.0	8000	2400	300	0.075	6000	800	225	0.033	4200	570	160	0.034
14.0	6800	2400	300	0.088	5200	840	230	0.040	3600	570	160	0.040
16.0	6000	2400	300	0.100	4800	760	240	0.040	3300	510	165	0.039
18.0	5200	2320	295	0.112	4400	720	250	0.041	2700	420	155	0.039
20.0	4800	2160	300	0.113	3600	560	225	0.039	2400	360	150	0.038
25.0	4300	2150	340	0.100	3200	620	250	0.039	2160	410	170	0.038



MATERIAL	HARDENED STEELS				HARDENED STEELS			
HARDNESS	HRc45 ~ HRc55				HRc55 ~ HRc65			
STRENGTH	1400 ~ 2000N/mm²				2000N/mm² ~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	3400	260	65	0.025	2400	190	45	0.026
8.0	2400	240	60	0.033	1800	180	45	0.033
10.0	2000	290	65	0.036	1300	190	40	0.037
12.0	1680	260	65	0.039	1200	190	45	0.040
14.0	1400	200	60	0.036	900	130	40	0.036
16.0	1200	160	60	0.033	800	110	40	0.034
18.0	1100	150	60	0.034	700	100	40	0.036
20.0	1000	150	65	0.038	660	100	40	0.038
25.0	900	160	70	0.036	600	100	45	0.033



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

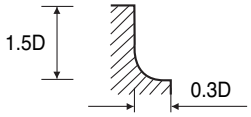
X-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

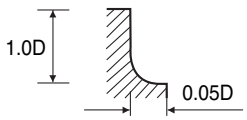
CARBIDE, 3&4 FLUTE 20° HELIX ROUGHING BALL NOSE - SIDE CUTTING
VOLLHARTMETALL, 3&4 SCHNEIDEN 20° RECHTSSPIRALE SCHRUPPFRÄSER STIRNRADIUS - SEITENFRÄSEN

EM833, EM843 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				ALLOY STEELS HEAT RESISTANT STEELS			
HARDNESS	~ HRc30				HRc30 ~ HRc38				HRc38 ~ HRc45			
STRENGTH	~ 1000N/mm²				1000 ~ 1200N/mm²				1200 ~ 1400N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R1.5 × 3.0	15600	2320	295	0.050	12400	840	235	0.023	8400	570	160	0.023
R2.0 × 4.0	11600	2320	290	0.067	9200	840	230	0.030	6300	570	160	0.030
R2.5 × 5.0	9200	2320	290	0.063	7600	840	240	0.028	5100	570	160	0.028
R3.0 × 6.0	8000	2400	300	0.075	6000	800	225	0.033	4200	570	160	0.034
R4.0 × 8.0	6800	2400	300	0.088	5200	840	230	0.040	3600	570	160	0.040
R5.0 × 10.0	6000	2400	300	0.100	4800	760	240	0.040	3300	510	165	0.039
R6.0 × 12.0	5200	2320	295	0.112	4400	720	250	0.041	2700	420	155	0.039
R8.0 × 16.0	4800	2160	300	0.113	3600	560	225	0.039	2400	360	150	0.038



MATERIAL	HARDENED STEELS				HARDENED STEELS			
HARDNESS	HRc45 ~ HRc55				HRc55 ~ HRc65			
STRENGTH	1400 ~ 2000N/mm²				2000N/mm² ~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R1.5 × 3.0	3400	260	65	0.025	2400	190	45	0.026
R2.0 × 4.0	2400	240	60	0.033	1800	180	45	0.033
R2.5 × 5.0	2000	290	65	0.036	1300	190	40	0.037
R3.0 × 6.0	1680	260	65	0.039	1200	190	45	0.040
R4.0 × 8.0	1400	200	60	0.036	900	130	40	0.036
R5.0 × 10.0	1200	160	60	0.033	800	110	40	0.034
R6.0 × 12.0	1100	150	60	0.034	700	100	40	0.036
R8.0 × 16.0	1000	150	65	0.038	660	100	40	0.038



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

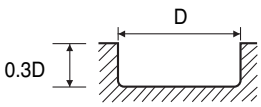
X-POWER END MILLS

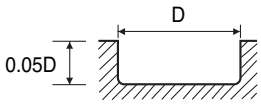
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE LONG CORNER RADIUS - SLOTTING
VOLLHARTMETALL, 2 SCHNEIDEN LANG ECKENRADIUS - NUTENFRÄSEN

EM818, EM828 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS				HARDENED STEELS			
HARDNESS	~ HRc30				HRc30 ~ HRc45				HRc45 ~ HRc55				HRc55 ~ HRc65			
STRENGTH	~ 1000N/mm²				1000 ~ 1500N/mm²				1500 ~ 2000N/mm²				2000N/mm² ~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
3.0	6620	140	60	0.011	4280	70	40	0.008	2640	35	25	0.007	1870	18	20	0.005
4.0	5360	170	65	0.016	3410	85	45	0.012	2150	40	25	0.009	1470	20	20	0.007
5.0	4580	210	70	0.023	2900	100	45	0.017	1900	50	30	0.013	1260	25	20	0.010
6.0	3950	250	75	0.032	2520	125	50	0.025	1640	60	30	0.018	1160	35	20	0.015
8.0	3000	270	75	0.045	1900	125	50	0.033	1260	60	30	0.024	840	35	20	0.021
10.0	2520	270	80	0.054	1640	125	50	0.038	1010	60	30	0.030	670	35	20	0.026
12.0	2060	210	80	0.051	1390	115	50	0.041	840	50	30	0.030	550	25	20	0.023
16.0	1740	190	85	0.055	1070	90	55	0.042	670	40	35	0.030	440	20	20	0.023
20.0	1260	140	80	0.056	820	60	50	0.037	500	30	30	0.030	340	15	20	0.022



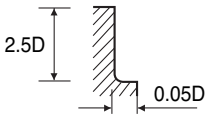


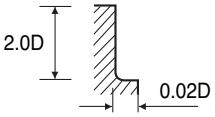
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

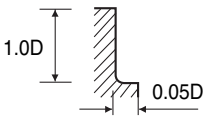
CARBIDE, 4 FLUTE LONG CORNER RADIUS - SIDE CUTTING
VOLLHARTMETALL, 4 SCHNEIDEN LANG ECKENRADIUS - SEITENFRÄSEN

EM819, EM829 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS				HARDENED STEELS			
HARDNESS	~ HRc30				HRc30 ~ HRc45				HRc45 ~ HRc55				HRc55 ~ HRc65			
STRENGTH	~ 1000N/mm²				1000 ~ 1500N/mm²				1500 ~ 2000N/mm²				2000N/mm² ~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
3.0	6620	170	60	0.006	4280	130	40	0.008	2640	65	25	0.006	1870	30	20	0.004
4.0	5360	210	65	0.010	3410	150	45	0.011	2150	70	25	0.008	1470	35	20	0.006
5.0	4580	215	70	0.012	2900	180	45	0.016	1900	85	30	0.011	1260	40	20	0.008
6.0	3950	215	75	0.014	2520	180	50	0.018	1640	85	30	0.013	1160	50	20	0.011
8.0	3000	230	75	0.019	1900	180	50	0.024	1260	85	30	0.017	840	50	20	0.015
10.0	2520	230	80	0.023	1640	180	50	0.027	1010	85	30	0.021	670	50	20	0.019
12.0	2060	180	80	0.022	1390	160	50	0.029	840	70	30	0.021	550	40	20	0.018
16.0	1740	160	85	0.023	1070	125	55	0.029	670	60	35	0.022	440	35	20	0.020
20.0	1260	115	80	0.023	820	90	50	0.027	500	45	30	0.023	340	25	20	0.018







RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

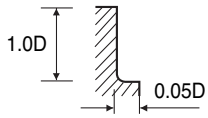
X-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 4 FLUTE STUB CORNER RADIUS - SIDE CUTTING
VOLLHARTMETALL, 4 SCHNEIDEN EXTRA KURZ ECKENRADIUS - SEITENFRÄSEN

EM839, EM849 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS				HARDENED STEELS			
HARDNESS	~ HRc30				HRc30 ~ HRc45				HRc45 ~ HRc55				HRc55 ~ HRc65			
STRENGTH	~ 1000N/mm²				1000 ~ 1500N/mm²				1500 ~ 2000N/mm²				2000N/mm² ~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	13870	340	85	0.006	9070	205	55	0.006	6050	60	40	0.002				
2.5	12290	360	95	0.007	7870	220	60	0.007	5040	65	40	0.003				
3.0	10700	385	100	0.009	6670	240	65	0.009	4030	70	40	0.004	2280	70	20	0.008
3.5	9890	535	110	0.014	6100	330	65	0.014	3780	70	40	0.005	2030	70	20	0.009
4.0	9070	685	115	0.019	5540	420	70	0.019	3530	70	45	0.005	1780	70	20	0.010
5.0	7560	720	120	0.024	4540	430	70	0.024	2780	85	45	0.008	1510	70	25	0.012
6.0	6670	790	125	0.030	4030	490	75	0.030	2400	95	45	0.010	1320	70	25	0.013
8.0	5040	850	125	0.042	3020	455	75	0.038	2020	130	50	0.016	1010	70	25	0.017
10.0	3910	730	125	0.047	2400	360	75	0.038	1630	110	50	0.017	820	60	25	0.018
12.0	3290	625	125	0.047	2020	300	75	0.037	1390	95	50	0.017	670	60	25	0.022
16.0	2640	490	135	0.046	1630	240	80	0.037	1080	70	55	0.016	530	35	25	0.017

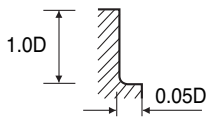


RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE, 6 FLUTE STUB CORNER RADIUS - SIDE CUTTING
VOLLHARTMETALL, 6 SCHNEIDEN EXTRA KURZ ECKENRADIUS - SEITENFRÄSEN

EM897, EM898 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS				HARDENED STEELS			
HARDNESS	~ HRc30				HRc30 ~ HRc45				HRc45 ~ HRc55				HRc55 ~ HRc65			
STRENGTH	~ 1000N/mm²				1000 ~ 1500N/mm²				1500 ~ 2000N/mm²				2000N/mm² ~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	6670	790	125	0.020	4030	490	75	0.020	2400	95	45	0.007	1320	70	25	0.009
8.0	5040	850	125	0.028	3020	455	75	0.025	2020	130	50	0.011	1010	70	25	0.012
10.0	3910	730	125	0.031	2400	360	75	0.025	1630	110	50	0.011	820	60	25	0.012
12.0	3290	625	125	0.032	2020	300	75	0.025	1390	95	50	0.011	670	60	25	0.015



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

X-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

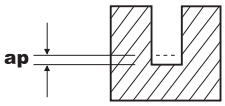
CARBIDE, 2 FLUTE for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN für SCHMALE RIPPEN

EM883, EM8A1 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS				
HARDNESS	~ HRc30					HRc30 ~ HRc45				
STRENGTH	~ 1000N/mm²					1000 ~ 1500N/mm²				
DIAMETER	RPM	FEED	ap (mm)	Vc	fz	RPM	FEED	ap (mm)	Vc	fz
0.4	31000~40000	200~440	0.007~0.018	39~50	0.003~0.006	22500~28000	85~340	0.007~0.018	28~35	0.002~0.006
0.5	31000~40000	200~440	0.009~0.022	49~63	0.003~0.006	22500~28000	85~340	0.009~0.022	35~44	0.002~0.006
0.6	31000~40000	250~570	0.011~0.026	58~75	0.004~0.007	22500~28000	110~430	0.011~0.026	42~53	0.002~0.008
0.7	31000~40000	250~570	0.012~0.031	68~88	0.004~0.007	22500~28000	110~430	0.012~0.031	49~62	0.002~0.008
0.8	27000~35000	280~630	0.014~0.035	68~88	0.005~0.009	19500~24500	120~480	0.014~0.035	49~62	0.003~0.010
0.9	25000~31500	280~720	0.030~0.060	71~98	0.006~0.010	17500~22500	160~540	0.030~0.060	49~64	0.005~0.012
1.0	22500~28000	280~810	0.045~0.090	71~88	0.006~0.014	15700~20000	190~600	0.045~0.090	49~63	0.006~0.015
1.2	18500~22500	280~900	0.055~0.100	70~85	0.008~0.020	13000~16500	190~600	0.055~0.100	49~62	0.007~0.018
1.4	16000~20000	280~900	0.062~0.125	70~88	0.009~0.023	11500~14000	190~600	0.062~0.125	51~62	0.008~0.021
1.5	14500~18500	280~900	0.070~0.135	68~87	0.010~0.024	10500~13500	190~600	0.070~0.135	49~64	0.009~0.022
1.6	14000~18000	280~900	0.075~0.145	70~90	0.010~0.025	10200~12800	190~600	0.075~0.145	51~64	0.009~0.023
1.8	13000~16500	280~900	0.080~0.160	74~93	0.011~0.027	9200~11500	190~600	0.080~0.160	52~65	0.010~0.026
2.0	12000~14500	280~900	0.090~0.180	75~91	0.012~0.031	8300~10500	190~600	0.090~0.180	52~66	0.011~0.029
2.5	9500~12000	280~900	0.112~0.235	75~94	0.015~0.038	6700~8500	190~600	0.112~0.235	53~67	0.014~0.035
3.0	8000~10000	280~900	0.135~0.270	75~94	0.018~0.045	5500~7000	190~600	0.135~0.270	52~66	0.017~0.043
4.0	6000~7500	280~900	0.180~0.360	75~94	0.023~0.060	4100~5300	190~600	0.180~0.360	52~67	0.023~0.057
5.0	4800~6000	280~900	0.225~0.450	75~94	0.029~0.075	3300~4200	190~600	0.225~0.450	52~66	0.029~0.071
6.0	4000~5000	280~900	0.270~0.540	75~94	0.035~0.090	2800~3500	190~600	0.270~0.540	53~66	0.034~0.086

MATERIAL	HARDENED STEELS				
HARDNESS	HRc45 ~ HRc55				
STRENGTH	1500 ~ 2000N/mm²				
DIAMETER	RPM	FEED	ap (mm)	Vc	fz
0.4	14300~17000	30~90	0.004~0.008	18~21	0.001~0.003
0.5	14300~17000	30~90	0.004~0.009	22~27	0.001~0.003
0.6	14300~17000	40~110	0.005~0.011	27~32	0.001~0.003
0.7	14300~17000	40~110	0.006~0.013	31~37	0.001~0.003
0.8	12500~14800	45~125	0.007~0.015	31~37	0.002~0.004
0.9	11000~12500	55~130	0.008~0.016	31~35	0.003~0.005
1.0	10000~12500	65~130	0.009~0.018	31~39	0.003~0.005
1.2	8300~10500	65~130	0.010~0.022	31~40	0.004~0.006
1.4	7200~9000	65~130	0.012~0.025	32~40	0.005~0.007
1.5	6700~8200	65~130	0.014~0.028	32~39	0.005~0.008
1.6	6400~8000	65~130	0.015~0.030	32~40	0.005~0.008
1.8	5700~7200	65~130	0.016~0.032	32~41	0.006~0.009
2.0	5300~6600	65~130	0.018~0.035	33~41	0.006~0.010
2.5	4300~5300	65~130	0.022~0.045	34~42	0.008~0.012
3.0	3500~4400	65~130	0.028~0.055	33~41	0.009~0.015
4.0	2600~3300	65~130	0.036~0.072	33~41	0.013~0.020
5.0	2100~2600	65~130	0.045~0.090	33~41	0.015~0.025
6.0	1750~2600	65~130	0.054~0.108	33~49	0.019~0.025

(Depth of Cut per one pass)



RPM = rev./min. Vc = m/min.
FEED = mm/min. fz = mm/t

X-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

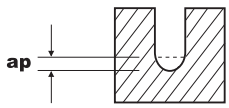
CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS für SCHMALE RIPPEN

EM886 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS				
HARDNESS	~ HRc30					HRc30 ~ HRc45				
STRENGTH	~ 1000N/mm²					1000 ~ 1500N/mm²				
DIAMETER	RPM	FEED	ap (mm)	Vc	fz	RPM	FEED	ap (mm)	Vc	fz
0.4	31000~40000	175~490	0.018~0.036	39~50	0.003~0.006	22500~28500	88~270	0.018~0.036	28~36	0.002~0.005
0.5	31000~40000	175~490	0.023~0.045	49~63	0.003~0.006	22500~28500	88~270	0.023~0.045	35~45	0.002~0.005
0.6	31000~40000	225~630	0.027~0.054	58~75	0.004~0.008	22500~28500	110~350	0.027~0.054	42~54	0.002~0.006
0.8	31000~40000	225~630	0.036~0.072	78~101	0.004~0.008	22500~28500	110~350	0.036~0.072	57~72	0.002~0.006
1.0	29000~36500	250~700	0.045~0.090	91~115	0.004~0.010	20500~26000	125~390	0.045~0.090	64~82	0.003~0.008
1.2	24000~30500	250~780	0.055~0.100	90~115	0.005~0.013	17000~21500	125~390	0.055~0.100	64~81	0.004~0.009
1.4	21000~26000	250~780	0.062~0.125	92~114	0.006~0.015	15000~18000	125~390	0.062~0.125	66~79	0.004~0.011
1.5	19000~24000	250~780	0.070~0.135	90~113	0.007~0.016	13500~17500	125~390	0.070~0.135	64~82	0.005~0.011
1.6	18000~23500	250~780	0.075~0.145	90~118	0.007~0.017	13200~16500	125~390	0.075~0.145	66~83	0.005~0.012
1.8	17000~21500	250~780	0.080~0.160	96~122	0.007~0.018	12000~15000	125~390	0.080~0.160	68~85	0.005~0.013
2.0	15500~19000	250~780	0.090~0.180	97~119	0.008~0.021	11000~13500	125~390	0.090~0.180	69~85	0.006~0.014
3.0	10500~13000	250~780	0.135~0.270	99~123	0.012~0.030	7000~9000	125~390	0.135~0.270	66~85	0.009~0.022
4.0	8500~11000	250~780	0.180~0.360	107~138	0.015~0.035	5800~7800	125~390	0.180~0.360	73~98	0.011~0.025
5.0	6800~8800	250~780	0.225~0.450	107~138	0.018~0.044	4600~6200	125~390	0.225~0.450	72~97	0.014~0.031
6.0	5700~7300	250~780	0.270~0.540	107~138	0.022~0.053	3900~5200	125~390	0.270~0.540	74~98	0.016~0.038

MATERIAL	HARDENED STEELS				
HARDNESS	HRc45 ~ HRc55				
STRENGTH	1500 ~ 2000N/mm²				
DIAMETER	RPM	FEED	ap (mm)	Vc	fz
0.4	14300~18000	88~175	0.004~0.007	18~23	0.003~0.005
0.5	14300~18000	88~175	0.005~0.009	22~28	0.003~0.005
0.6	14300~18000	110~225	0.005~0.011	27~34	0.004~0.006
0.8	14300~18000	110~225	0.007~0.014	36~45	0.004~0.006
1.0	13000~16300	125~250	0.009~0.018	41~51	0.005~0.008
1.2	10800~13700	125~250	0.010~0.022	41~52	0.006~0.009
1.4	9400~11700	125~250	0.012~0.025	41~51	0.007~0.011
1.5	8700~10700	125~250	0.014~0.028	41~50	0.007~0.012
1.6	8300~10400	125~250	0.015~0.030	42~52	0.008~0.012
1.8	7400~9400	125~250	0.016~0.032	42~53	0.008~0.013
2.0	6900~8600	125~250	0.018~0.035	43~54	0.009~0.015
3.0	4600~5700	125~250	0.028~0.055	43~54	0.014~0.022
4.0	3900~4900	125~250	0.035~0.070	49~62	0.016~0.026
5.0	3100~3900	125~250	0.044~0.088	49~61	0.020~0.032
6.0	2600~3300	125~250	0.053~0.105	49~62	0.024~0.038

(Depth of Cut per one pass)



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

X-POWER END MILLS

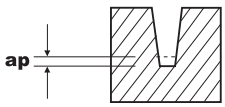
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 4 FLUTE TAPER for RIB PROCESSING
VOLLHARTMETALL, 4 SCHNEIDEN KONISCH für SCHMALE RIPPEN

EM889 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS	~ HRc30					HRc30 ~ HRc45					HRc45 ~ HRc55				
STRENGTH	~ 1000N/mm²					1000 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIAMETER	RPM	FEED	ap(mm)	Vc	fz	RPM	FEED	ap(mm)	Vc	fz	RPM	FEED	ap(mm)	Vc	fz
1.0	20000	700	0.020~0.040	65	0.009	15000	500	0.020~0.030	45	0.008	10000	300	0.010~0.020	30	0.008
1.2	16000	700	0.025~0.050	60	0.011	13000	500	0.025~0.040	50	0.010	8000	300	0.012~0.025	30	0.009
1.5	13000	700	0.030~0.060	60	0.013	10000	500	0.030~0.050	45	0.013	6500	300	0.015~0.030	30	0.012
2.0	10000	700	0.040~0.080	65	0.018	8000	500	0.040~0.060	50	0.016	5000	300	0.020~0.040	30	0.015

(Depth of Cut per one pass)



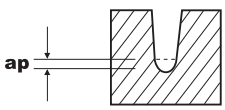
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE, 4 FLUTE TAPER BALL NOSE for RIB PROCESSING
VOLLHARTMETALL, 4 SCHNEIDEN KONISCH STIRNRADIUS für SCHMALE RIPPEN

EM890 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS	~ HRc30					HRc30 ~ HRc45					HRc45 ~ HRc55				
STRENGTH	~ 1000N/mm²					1000 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIAMETER	RPM	FEED	ap(mm)	Vc	fz	RPM	FEED	ap(mm)	Vc	fz	RPM	FEED	ap(mm)	Vc	fz
R0.5 X 1.0	20000	700	0.020~0.040	65	0.009	15000	500	0.020~0.030	45	0.008	10000	300	0.010~0.020	30	0.008
R0.6 X 1.2	16000	700	0.025~0.050	60	0.011	13000	500	0.025~0.040	50	0.010	8000	300	0.012~0.025	30	0.009
R0.75 X 1.5	13000	700	0.030~0.060	60	0.013	10000	500	0.030~0.050	45	0.013	6500	300	0.015~0.030	30	0.012
R1.0 X 2.0	10000	700	0.040~0.080	65	0.018	8000	500	0.040~0.060	50	0.016	5000	300	0.020~0.040	30	0.015

(Depth of Cut per one pass)



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

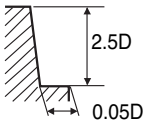
X-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE TAPER - SIDE CUTTING
VOLLHARTMETALL, 2 SCHNEIDEN KONISCH - SEITENFRÄSEN

EM837, EM847 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS				ALLOY STEELS HEAT RESISTANT STEELS			
HARDNESS	~ HRc30				HRc30 ~ HRc45			
STRENGTH	~ 1000N/mm²				1000 ~ 1500N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	8400	170	55	0.010	6300	125	40	0.010
3.0	4410	120	40	0.014	3570	100	35	0.014
4.0	3570	140	45	0.020	2840	115	35	0.020
5.0	3050	180	50	0.030	2410	145	40	0.030
6.0	2630	210	50	0.040	2100	170	40	0.040
8.0	2000	250	50	0.063	1580	180	40	0.057



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

X-POWER END MILLS

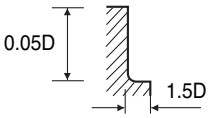
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 4 FLUTE 45° HELIX CORNER RADIUS - SIDE CUTTING
VOLLHARTMETALL, 4 SCHNEIDEN 45° RECHTSSPIRALE ECKENRADIUS - SEITENFRÄSEN

EM905 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				STAINLESS STEELS			
HARDNESS	~ HRc30				HRc30 ~ HRc45							
STRENGTH	~ 1000N/mm²				1000 ~ 1500N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
10.0	7690	2000	240	0.065	7690	1220	240	0.040	5680	920	180	0.040
12.0	5760	2000	215	0.087	5760	1220	215	0.053	4260	920	160	0.054
14.0	4600	1800	200	0.098	4600	1220	200	0.066	3410	920	150	0.067
18.0	3850	1530	220	0.099	3850	1220	220	0.079	2840	920	160	0.081
22.0	3300	1300	230	0.098	3300	1220	230	0.092	2430	920	170	0.095

MATERIAL	HARDENED STEELS				HARDENED STEELS			
HARDNESS	HRc45 ~ HRc55				HRc55 ~ HRc65			
STRENGTH	1500 ~ 2000N/mm²				2000N/mm² ~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
10.0	5680	740	180	0.033	3840	480	120	0.031
12.0	4260	740	160	0.043	2880	480	110	0.042
14.0	3410	740	150	0.054	2300	480	100	0.052
18.0	2840	740	160	0.065	1920	480	110	0.063
22.0	2430	740	170	0.076	1650	480	115	0.073



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

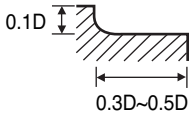
X-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

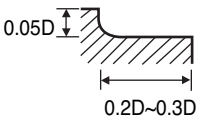
CARBIDE, 4 FLUTE 45° HELIX CORNER RADIUS - CONTOURING
VOLLHARTMETALL, 4 SCHNEIDEN 45° RECHTSSPIRALE ECKENRADIUS

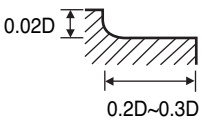
EM905 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				STAINLESS STEELS			
HARDNESS	~ HRc30				HRc30 ~ HRc45							
STRENGTH	~ 1000N/mm²				1000 ~ 1500N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
10.0	7690	1150	240	0.037	5680	920	180	0.040	5680	800	180	0.035
12.0	5760	1150	215	0.050	4260	920	160	0.054	4260	800	160	0.047
14.0	4600	1150	200	0.063	3410	920	150	0.067	3410	800	150	0.059
18.0	3850	1150	220	0.075	2840	920	160	0.081	2840	800	160	0.070
22.0	3300	1150	230	0.087	2430	920	170	0.095	2430	800	170	0.082



MATERIAL	HARDENED STEELS				HARDENED STEELS			
HARDNESS	HRc45 ~ HRc55				HRc55 ~ HRc65			
STRENGTH	1500 ~ 2000N/mm²				2000N/mm² ~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
10.0	5680	460	180	0.020	3840	290	120	0.019
12.0	4260	460	160	0.027	2880	290	110	0.025
14.0	3410	460	150	0.034	2300	290	100	0.032
18.0	2840	460	160	0.040	1920	290	110	0.038
22.0	2430	460	170	0.047	1650	290	115	0.044





RPM = rev./min.
FEED = mm/min.
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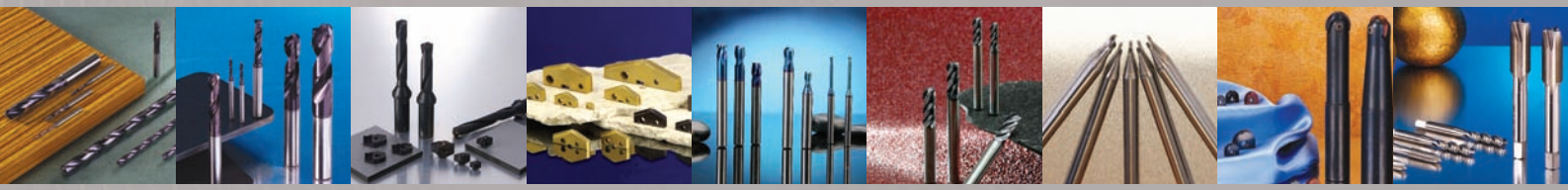
Global Cutting Tool Leader **YG-1**



CARBIDE

YG

Being the best through innovation

JET-POWER

JET-POWER FRÄSER

- Exotic materials like Stainless Steels, Nickel alloys and Titanium
- Für zähe Werkstoffe, wie rostfreier Stahl, Titan und Nickellegierungen

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
EH911 EH912		CARBIDE, 2 FLUTE 35° HELIX SHORT LENGTH VOLLHARTMETALL, 2 SCHNEIDEN 35° RECHTSSPIRALE KURZ	D1.0	D25.0	914
EH913 EH914		CARBIDE, 4 FLUTE 35° HELIX SHORT LENGTH VOLLHARTMETALL, 4 SCHNEIDEN 35° RECHTSSPIRALE KURZ	D2.0	D25.0	915
EH830 EH840		CARBIDE, 3&4 FLUTE 50° HELIX LONG LENGTH VOLLHARTMETALL, 3&4 SCHNEIDEN 50° RECHTSSPIRALE LANG	D6.0	D25.0	916
EH915 EH916		CARBIDE, 6&8 FLUTE 45° HELIX LONG LENGTH (Positive Rake Angle) VOLLHARTMETALL, 6&8 SCHNEIDEN 45° RECHTSSPIRALE LANG	D6.0	D25.0	917
EE515		PREMIUM HSS-PM, 4&6 FLUTE SHORT LENGTH PREMIUM HSS-PM, 4&6 SCHNEIDEN KURZ	D3.0	D25.0	918
EH852 EH862		CARBIDE, MULTI FLUTE SHORT LENGTH ROUGHING - FINE VOLLHARTMETALL, MULTI SCHNEIDEN KURZ SCHRUPPFRÄSER - FEIN	D6.0	D25.0	919
EH831 EH841		CARBIDE, MULTI FLUTE LONG LENGTH ROUGHING - FINE VOLLHARTMETALL, MULTI SCHNEIDEN LANG SCHRUPPFRÄSER - FEIN	D6.0	D25.0	920
EH917 EH918		CARBIDE, MULTI FLUTE 45° HELIX SHORT LENGTH ROUGHING - FINE VOLLHARTMETALL, MULTI SCHNEIDEN 45° RECHTSSPIRALE KURZ SCHRUPPFRÄSER - FEIN	D6.0	D20.0	921
EH919 EH920		CARBIDE, MULTI FLUTE 45° HELIX LONG LENGTH ROUGHING - FINE VOLLHARTMETALL, MULTI SCHNEIDEN 45° RECHTSSPIRALE LANG SCHRUPPFRÄSER - FEIN	D4.0	D25.0	922
EH921 EH942		CARBIDE, MULTI FLUTE 45° HELIX LONG REACH ROUGHING - FINE VOLLHARTMETALL, MULTI SCHNEIDEN 45° RECHTSSPIRALE GRO&E REICHWEITE SCHRUPPFRÄSER - FEIN	D6.0	D20.0	923
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			924

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○							◎	◎			
○	◎	◎	○							◎	◎			
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JET-POWER END MILLS

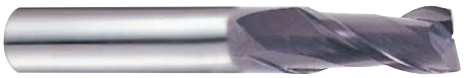
EH911 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

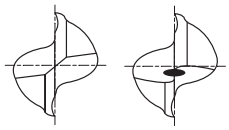
EH912 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 2 FLUTE 35° HELIX SHORT LENGTH
VOLLHARTMETALL, 2 SCHNEIDEN 35° RECHTSSPIRALE KURZ

- Ultra micro grain carbide
- Reduces chipping of corner edges
- Suitable for low hardness materials(under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steels, etc

- Ultra Feinstkorn - Vollhartmetall.
- Verstärkte Schneidkante.
- zur Bearbeitung von: Werkstoffen bis 45 HRc, rostfreien Stählen, Titan und Nickellegierungen.





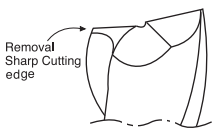
up to Ø3mm over Ø3mm

MG HM | 2 | 35° | PLAIN | FLAT | P.924

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EH911010	-	1.0	4	2.5	40
EH911901	EH912901	1.0	6	2.5	40
EH911015	-	1.5	4	4	40
EH911902	EH912902	1.5	6	4	40
EH911020	-	2.0	4	6	40
EH911903	EH912903	2.0	6	6	40
EH911025	-	2.5	4	8	40
EH911904	EH912904	2.5	6	8	40
EH911030	EH912030	3.0	6	8	45
EH911035	EH912035	3.5	6	10	45
EH911040	EH912040	4.0	6	11	45
EH911045	EH912045	4.5	6	11	45
EH911050	EH912050	5.0	6	13	50
EH911055	EH912055	5.5	6	13	50
EH911060	EH912060	6.0	6	13	50
EH911065	EH912065	6.5	8	16	60
EH911070	EH912070	7.0	8	16	60
EH911075	EH912075	7.5	8	16	60
EH911080	EH912080	8.0	8	19	60
EH911085	EH912085	8.5	10	19	70
EH911090	EH912090	9.0	10	19	70
EH911095	EH912095	9.5	10	19	70
EH911100	EH912100	10.0	10	22	70
EH911110	EH912110	11.0	12	22	75
EH911120	EH912120	12.0	12	26	75
EH911140	EH912140	14.0	16	26	85
EH911160	EH912160	16.0	16	32	100
EH911180	EH912180	18.0	16	32	100
EH911200	EH912200	20.0	20	38	105
EH911220	EH912220	22.0	20	38	105
EH911250	EH912250	25.0	25	45	120

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○							◎	◎			

JET-POWER END MILLS

EH913 SERIES PLAIN SHANK GLATTER ZYLINDERSCHAFT

EH914 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 4 FLUTE 35° HELIX SHORT LENGTH
VOLLHARTMETALL, 4 SCHNEIDEN 35° RECHTSSPIRALE KURZ

- Ultra micro grain carbide
- Reduces chipping of corner edges
- Suitable for low hardness materials(under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steels, etc

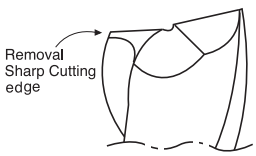
- Ultra Feinstkorn - Vollhartmetall
- Verstärkte Schneidkante.
- Für die Bearbeitung von: Werkstoffen bis 45 HRc, rostfreien Stählen, Titan und Nickellegierungen.

MG HM | 4 | 35° | PLAIN | FLAT | P.924

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EH913020	-	2.0	4	6	40
EH913901	EH914901	2.0	6	6	40
EH913025	-	2.5	4	8	40
EH913902	EH914902	2.5	6	8	40
EH913030	EH914030	3.0	6	8	45
EH913035	EH914035	3.5	6	10	45
EH913040	EH914040	4.0	6	11	45
EH913045	EH914045	4.5	6	11	45
EH913050	EH914050	5.0	6	13	50
EH913055	EH914055	5.5	6	13	50
EH913060	EH914060	6.0	6	13	50
EH913065	EH914065	6.5	8	16	60
EH913070	EH914070	7.0	8	16	60
EH913075	EH914075	7.5	8	16	60
EH913080	EH914080	8.0	8	19	60
EH913085	EH914085	8.5	10	19	70
EH913090	EH914090	9.0	10	19	70
EH913095	EH914095	9.5	10	19	70
EH913100	EH914100	10.0	10	22	70
EH913110	EH914110	11.0	12	22	75
EH913120	EH914120	12.0	12	26	75
EH913140	EH914140	14.0	16	26	85
EH913160	EH914160	16.0	16	32	100
EH913180	EH914180	18.0	16	32	100
EH913200	EH914200	20.0	20	38	105
EH913220	EH914220	22.0	20	38	105
EH913250	EH914250	25.0	25	45	120

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○							◎	◎			

JET-POWER END MILLS

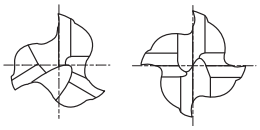
EH830 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

EH840 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 3&4 FLUTE 50° HELIX LONG LENGTH
VOLLHARTMETALL, 3&4 SCHNEIDEN 50° RECHTSSPIRALE LANG

- Ultra micro grain carbide
- Reduces chipping of corner edges
- Suitable for low hardness materials(under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steels, etc

- Ultra Feinstkorn - Vollhartmetall
- Verstärkte Schneidkante.
- zur Bearbeitung von: Werkstoffen bis 45 HRc, rostfreien Stählen, Titan und Nickellegierungen.

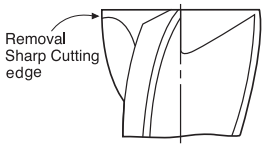


MG HM | 3&4 | 50° | PLAIN | FLAT | P.925

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
EH830060	EH840060	6.0	6	13	50	3
EH830080	EH840080	8.0	8	19	60	3
EH830100	EH840100	10.0	10	22	70	3
EH830120	EH840120	12.0	12	25	75	3
EH830160	EH840160	16.0	16	32	90	3
EH830180	EH840180	18.0	18	32	90	3
EH830200	EH840200	20.0	20	38	100	4
EH830250	EH840250	25.0	25	45	120	4

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○							◎	◎	○		

JET-POWER END MILLS

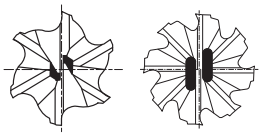
EH915 SERIES PLAIN SHANK GLATTER ZYLINDERSCHAFT

EH916 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 6&8 FLUTE 45° HELIX LONG LENGTH (Positive Rake Angle)
VOLLHARTMETALL, 6&8 SCHNEIDEN 45° RECHTSSPIRALE LANG

- ▶ Ultra micro grain carbide
- ▶ Reduces chipping of corner edges
- ▶ Suitable for low hardness materials(under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steels, etc

- ▶ Ultra Feinstkorn - Vollhartmetall
- ▶ Verstärkte Schneidkante.
- ▶ zur Bearbeitung von: Werkstoffen bis 45 HRc, rostfreien Stählen, Titan und Nickellegierungen.

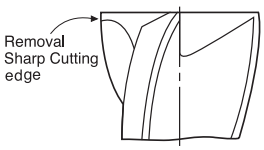


MG HM | 6&8 | 45° | PLAIN | FLAT | P.926

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
EH915060	EH916060	6.0	6	13	57	6
EH915070	EH916070	7.0	8	16	63	6
EH915080	EH916080	8.0	8	19	63	6
EH915090	EH916090	9.0	10	19	72	6
EH915100	EH916100	10.0	10	22	72	6
EH915120	EH916120	12.0	12	26	83	6
EH915140	EH916140	14.0	14	26	83	6
EH915160	EH916160	16.0	16	32	92	6
EH915180	EH916180	18.0	18	32	92	8
EH915200	EH916200	20.0	20	38	104	8
EH915250	EH916250	25.0	25	44	104	8

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○							◎	◎	○		

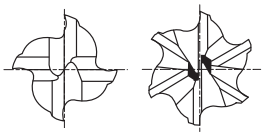
JET-POWER END MILLS

EE515 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

PREMIUM HSS-PM, 4&6 FLUTE SHORT LENGTH
PREMIUM HSS-PM, 4&6 SCHNEIDEN KURZ

- Excellent performance on Low handness materials (under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, Stainless Steel, Titanium, Inconel.
- High chemical stability prevents built-up edge, micro cracks and crater wear.
- Superior workpiece finish.

- Ausgezeichnete Eignung zur Bearbeitung von weichen Materialien (bis HRc45), Legierten Stählen, kraterbildung, vorgehärtetem Stahl, rostfreiem Stahl, Titanium und Inconel.
- Hohe chemische Stabilität verhindert Kantenbildung, Mikrorisse und Krateraufzug.
- Höhere Oberflächengüte.



YPM | 4&6 | 30° | FLAT

P.927

Unit : mm

EDP No. FLAT	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
EE515030	3.0	6	8	52	4
EE515040	4.0	6	11	55	4
EE515050	5.0	6	13	57	4
EE515060	6.0	6	13	57	4
EE515080	8.0	10	19	69	4
EE515100	10.0	10	22	72	4
EE515120	12.0	12	26	83	4
EE515140	14.0	12	26	83	4
EE515160	16.0	16	32	92	6
EE515180	18.0	16	32	92	6
EE515200	20.0	20	38	104	6
EE515250	25.0	25	45	121	6

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~+0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○							◎	◎	○		

JET-POWER END MILLS

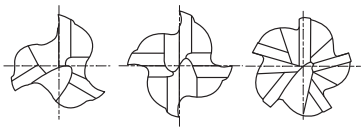
EH852 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

EH862 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, MULTI FLUTE SHORT LENGTH ROUGHING - FINE
VOLLHARTMETALL, MULTI SCHNEIDEN KURZ SCHRUPPFRÄSER - FEIN

- Suitable for low hardness materials(under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steels, etc
- High velocity milling operation.
- Fast chip ejection.

- zur Bearbeitung von: Werkstoffen bis 45 HRc, rostfreien Stählen, Titan und Nickellegierungen..
- Hochgeschwindigkeitsfräsen.
- Schnelle Spanausfuhr.



MG HM | FINE | 3-5 | 30° | PLAIN | FLAT

P.928

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Mill Diameter h10	Shank Diameter h6	Length of Cut	Overall Length	No. of Flute
EH852060	EH862060	6.0	6	7	54	3
EH852070	EH862070	7.0	8	8	58	3
EH852080	EH862080	8.0	8	9	58	3
EH852090	EH862090	9.0	10	13	66	4
EH852100	EH862100	10.0	10	14	66	4
EH852120	EH862120	12.0	12	16	73	4
EH852140	EH862140	14.0	14	18	75	4
EH852160	EH862160	16.0	16	22	82	4
EH852180	EH862180	18.0	18	24	84	4
EH852200	EH862200	20.0	20	26	92	4
EH852250	EH862250	25.0	25	25	110	5

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛
Nominal-Diameter in ㎜ / Nennmaßbereich in ㎜

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 / — 40	0 / — 48	0 / — 58	0 / — 70	0 / — 84
h6	0 / — 6	0 / — 8	0 / — 9	0 / — 11	0 / — 13

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○							◎	◎	○		

JET-POWER END MILLS

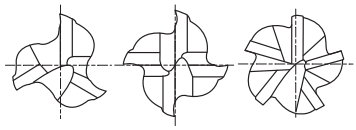
EH831 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

EH841 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, MULTI FLUTE LONG LENGTH ROUGHING - FINE
VOLLHARTMETALL, MULTI SCHNEIDEN LANG SCHRUPPFRÄSER - FEIN

- Longer flute length than EH852, EH862.
- Suitable for low hardness materials(under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steels, etc.
- High velocity milling operation.
- Fast chip ejection.

- Längere Schneiden als bei EH852 und EH862.
- zur Bearbeitung von: Werkstoffen bis 45 HRc, rostfreien Stählen, Titan und Nickellegierungen..
- Hochgeschwindigkeitsfräsen.
- Schnelle Spanausfuhr.



MG HM | FINE | 3-5 | 30° | PLAIN | FLAT

P.928

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Mill Diameter h10	Shank Diameter h6	Length of Cut	Overall Length	No. of Flute
EH831060	EH841060	6.0	6	16	57	3
EH831070	EH841070	7.0	8	16	63	3
EH831080	EH841080	8.0	8	16	63	3
EH831090	EH841090	9.0	10	19	72	4
EH831100	EH841100	10.0	10	22	72	4
EH831120	EH841120	12.0	12	26	83	4
EH831140	EH841140	14.0	14	26	83	4
EH831160	EH841160	16.0	16	32	92	4
EH831180	EH841180	18.0	18	32	92	4
EH831200	EH841200	20.0	20	38	104	4
EH831250	EH841250	25.0	25	45	121	5

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm					
Nominal-Diameter in mm / Nennmaßbereich in mm					
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 / — 40	0 / — 48	0 / — 58	0 / — 70	0 / — 84
h6	0 / — 6	0 / — 8	0 / — 9	0 / — 11	0 / — 13

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○							◎	◎	○		

JET-POWER END MILLS

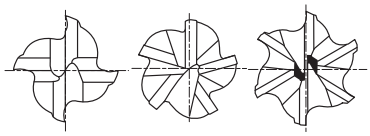
EH917 SERIES PLAIN SHANK GLATTER ZYLINDERSCHAFT

EH918 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, MULTI FLUTE 45° HELIX SHORT LENGTH ROUGHING - FINE
VOLLHARTMETALL, MULTI SCHNEIDEN 45° RECHTSSPIRALE KURZ SCHRUPPFRÄSER - FEIN

- Ultra micro grain carbide
- High chip removal and minimizing breakages of cutting edges.
- Suitable for low hardness materials(under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steels, etc

- Ultra Feinstkorn - Vollhartmetall
- Schnelle Spanausfuhr und Minimierung von Abbrechen von Schneidkanten.
- zur Bearbeitung von: Werkstoffen bis 45 HRc, rostfreien Stählen, Titan und Nickellegierungen..



MG HM | FINE | 4-6 | 45° | PLAIN | FLAT

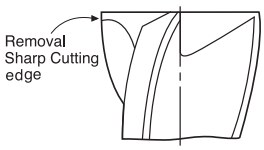
P.929

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
PLAIN	FLAT	h10	h6			
EH917060	EH918060	6.0	6	7	54	4
EH917080	EH918080	8.0	8	9	58	4
EH917100	EH918100	10.0	10	14	66	4
EH917120	EH918120	12.0	12	16	73	4
EH917160	EH918160	16.0	16	22	82	5
EH917200	EH918200	20.0	20	26	92	6

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛					
Nominal-Diameter in mm / Nennmaßbereich in mm					
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○							◎	◎	○		

JET-POWER END MILLS

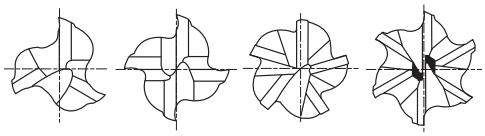
EH919 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

EH920 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, MULTI FLUTE 45° HELIX LONG LENGTH ROUGHING - FINE
VOLLHARTMETALL, MULTI SCHNEIDEN 45° RECHTSSPIRALE LANG SCHRUPPFRÄSER - FEIN

- Ultra micro grain carbide
- High chip removal and minimizing breakages of cutting edges.
- Suitable for low hardness materials(under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steels, etc

- Ultra Feinstkorn - Vollhartmetall
- Schnelle Spanausfuhr und Minimierung von Abbrechen von Schneidkanten.
- zur Bearbeitung von: Werkstoffen bis 45 HRc, rostfreien Stählen, Titan und Nickellegierungen..



MG HM | FINE | 3-6 | 45° | PLAIN | FLAT

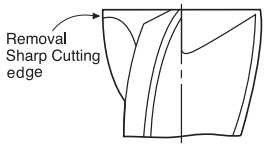
P.930

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
PLAIN	FLAT	h10	h6			
EH919040	EH920040	4.0	6	11	57	3
EH919050	EH920050	5.0	6	13	57	4
EH919060	EH920060	6.0	6	16	57	4
EH919070	EH920070	7.0	8	16	63	4
EH919080	EH920080	8.0	8	16	63	4
EH919090	EH920090	9.0	10	19	72	4
EH919100	EH920100	10.0	10	22	72	4
EH919120	EH920120	12.0	12	26	83	4
EH919140	EH920140	14.0	14	26	83	5
EH919160	EH920160	16.0	16	32	92	5
EH919200	EH920200	20.0	20	38	104	6
EH919250	EH920250	25.0	25	45	121	6

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm					
Nominal-Diameter in mm / Nennmaßbereich in mm					
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○							◎	◎	○		

JET-POWER END MILLS

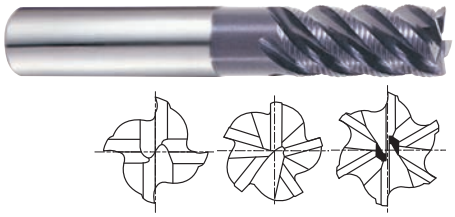
EH921 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

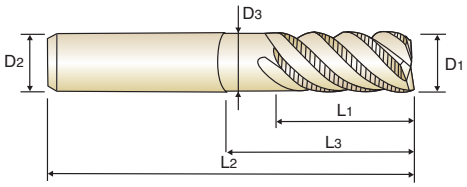
EH942 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, MULTI FLUTE 45° HELIX LONG REACH ROUGHING - FINE
VOLLHARTMETALL, MULTI SCHNEIDEN 45° RECHTSSPIRALE GROßE REICHWEITE SCHRUPPFRÄSER - FEIN

- Ultra micro grain carbide
- High chip removal and minimizing breakages of cutting edges.
- Suitable for low hardness materials(under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steels, etc

- Ultra Feinstkorn - Vollhartmetall
- Schnelle Spanausfuhr und Minimierung von Abbrechen von Schneidkanten.
- zur Bearbeitung von: Werkstoffen bis 45 HRc, rostfreien Stählen, Titan und Nickellegierungen..





MG HM | FINE | 4-6 | 45° | PLAIN | FLAT

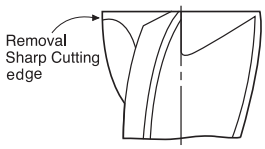
P.929

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	No. of Flute
PLAIN	FLAT	D1(h10)	D2(h6)	L1	L3	L2	D3	
EH921060	EH942060	6.0	6	16	20	57	5.5	4
EH921080	EH942080	8.0	8	16	26	63	7.5	4
EH921100	EH942100	10.0	10	22	31	72	9.5	4
EH921120	EH942120	12.0	12	26	37	83	11.5	4
EH921160	EH942160	16.0	16	32	51	100	15.5	5
EH921200	EH942200	20.0	20	38	59	110	19.2	6

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm					
Nominal-Diameter in mm / Nennmaßbereich in mm					
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○							◎	◎	○		

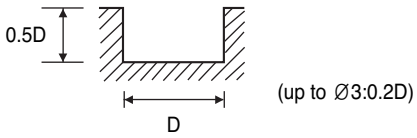
JET-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE SHORT - SLOTTING
VOLLHARTMETALL, 2 SCHNEIDEN KURZ - NUTENFRÄSEN

EH911, EH912 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS TITANIUM ALLOY			
HARDNESS	~ HRc30				HRc30 ~ HRc45							
STRENGTH	1000N/mm²				1000 ~ 1500N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	11560	190	75	0.008	7560	120	50	0.008	6300	90	40	0.007
3.0	8920	210	85	0.012	5560	140	50	0.013	4620	120	45	0.013
4.0	7560	300	95	0.020	4620	180	60	0.019	3880	150	50	0.019
5.0	6300	320	100	0.025	3780	190	60	0.025	3160	160	50	0.025
6.0	5560	350	105	0.031	3360	220	65	0.033	2840	180	55	0.032
8.0	4200	380	105	0.045	2520	200	65	0.040	2100	180	55	0.043
10.0	3260	330	100	0.051	2000	160	65	0.040	1680	160	55	0.048
12.0	2740	280	105	0.051	1680	130	65	0.039	1360	130	50	0.048
16.0	2200	220	110	0.050	1360	110	70	0.040	1060	110	55	0.052
20.0	1680	170	105	0.051	1060	80	65	0.038	840	80	55	0.048
25.0	1360	130	105	0.048	840	70	65	0.042	680	60	55	0.044

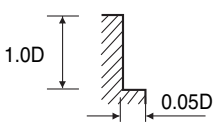


RPM = rev./min. Vc = m/min.
FEED = mm/min. fz = mm/t

CARBIDE, 4 FLUTE SHORT - SIDE CUTTING
VOLLHARTMETALL, 4 SCHNEIDEN KURZ - SEITENFRÄSEN

EH913, EH914 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS TITANIUM ALLOY			
HARDNESS	~ HRc30				HRc30 ~ HRc45							
STRENGTH	1000N/mm²				1000 ~ 1500N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	11560	280	75	0.006	7560	170	50	0.006	6300	140	40	0.006
3.0	8920	320	85	0.009	5560	200	50	0.009	4620	170	45	0.009
4.0	7560	570	95	0.019	4620	350	60	0.019	3880	280	50	0.018
5.0	6300	600	100	0.024	3780	360	60	0.024	3160	300	50	0.024
6.0	5560	660	105	0.030	3360	410	65	0.031	2840	330	55	0.029
8.0	4200	710	105	0.042	2520	380	65	0.038	2100	350	55	0.042
10.0	3260	610	100	0.047	2000	300	65	0.038	1680	300	55	0.045
12.0	2740	520	105	0.047	1680	250	65	0.037	1360	240	50	0.044
16.0	2200	410	110	0.047	1360	200	70	0.037	1060	200	55	0.047
20.0	1680	320	105	0.048	1060	160	65	0.038	840	150	55	0.045
25.0	1360	250	105	0.046	840	130	65	0.039	680	120	55	0.044



RPM = rev./min. Vc = m/min.
FEED = mm/min. fz = mm/t

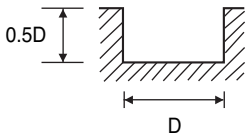
JET-POWER END MILLS

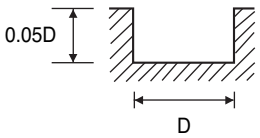
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 3&4 FLUTE 50° HELIX LONG - SLOTTING
VOLLHARTMETALL, 3&4 SCHNEIDEN 50° RECHTSSPIRALE LANG - NUTENFRÄSEN

EH830, EH840 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS TITANIUM ALLOY				INCONEL			
HARDNESS	~ HRc30				HRc30 ~ HRc45											
STRENGTH	1000N/mm²				1000 ~ 1500N/mm²											
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	5560	310	105	0.019	3360	200	65	0.020	2840	160	55	0.019	1160	40	20	0.011
8.0	4200	340	105	0.027	2520	180	65	0.024	2100	160	55	0.025	840	40	20	0.016
10.0	3260	300	100	0.031	2000	140	65	0.023	1680	140	55	0.028	670	40	20	0.020
12.0	2740	250	105	0.030	1680	120	65	0.024	1370	120	50	0.029	560	30	20	0.018
16.0	2200	200	110	0.030	1360	100	70	0.025	1050	100	55	0.032	420	25	20	0.020
18.0	1940	175	110	0.030	1210	85	70	0.023	950	85	55	0.030	370	20	20	0.018
20.0	1680	150	105	0.022	1060	70	65	0.017	840	70	55	0.021	320	20	20	0.016
25.0	1360	115	105	0.021	840	60	65	0.018	670	60	55	0.022	270	15	20	0.014



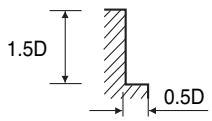


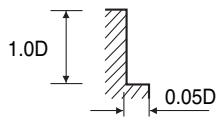
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

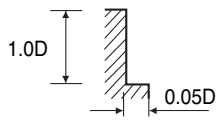
CARBIDE, 3&4 FLUTE 50° HELIX - SIDE CUTTING
VOLLHARTMETALL, 3&4 SCHNEIDEN 50° RECHTSSPIRALE - SEITENFRÄSEN

EH830, EH840 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS TITANIUM ALLOY				INCONEL			
HARDNESS	~ HRc30				HRc30 ~ HRc45											
STRENGTH	1000N/mm²				1000 ~ 1500N/mm²											
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	5560	400	105	0.024	3360	250	65	0.025	2840	250	55	0.029	1050	55	20	0.017
8.0	4200	420	105	0.033	2520	230	65	0.030	2100	265	55	0.042	840	50	20	0.020
10.0	3260	370	100	0.038	2000	180	65	0.030	1680	230	55	0.046	680	50	20	0.025
12.0	2740	310	105	0.038	1680	150	65	0.030	1370	180	50	0.044	560	45	20	0.027
16.0	2200	250	110	0.038	1360	120	70	0.029	1050	150	55	0.048	420	35	20	0.028
18.0	1940	220	110	0.038	1210	110	70	0.030	950	130	55	0.046	370	30	20	0.027
20.0	1680	190	105	0.028	1060	95	65	0.022	840	115	55	0.034	340	30	20	0.022
25.0	1360	150	105	0.028	840	75	65	0.022	670	90	55	0.034	270	25	20	0.023







RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

JET-POWER END MILLS

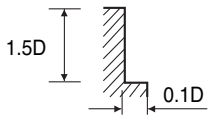
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

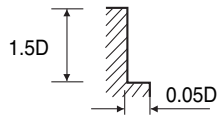
CARBIDE, 6&8 FLUTE 45° HELIX LONG - SIDE CUTTING
VOLLHARTMETALL, 6&8 SCHNEIDEN 45° RECHTSSPIRALE LANG - SEITENFRÄSEN

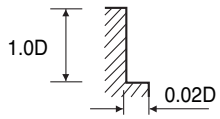
EH915, EH916 SERIES

■ NORMAL SPEED

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS TITANIUM ALLOY				INCONEL			
HARDNESS	~ HRc30				HRc30 ~ HRc45											
STRENGTH	1000N/mm²				1000 ~ 1500N/mm²											
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	5560	2000	105	0.060	3880	1370	75	0.059	3370	1100	65	0.054	1350	280	25	0.035
8.0	4200	2000	105	0.079	2940	1370	75	0.078	2490	1100	65	0.074	1000	280	25	0.047
10.0	3360	2000	105	0.099	2320	1370	75	0.098	1920	1100	60	0.095	440	280	15	0.106
12.0	2840	1680	105	0.099	2000	1160	75	0.097	1610	1000	60	0.104	400	250	15	0.104
16.0	2100	1260	105	0.100	1480	880	75	0.099	1160	770	60	0.111	310	190	15	0.102
20.0	1680	1010	105	0.075	1160	690	75	0.074	900	620	55	0.086	250	155	15	0.078
25.0	1500	900	120	0.075	1100	600	85	0.068	850	540	65	0.079	220	135	15	0.077



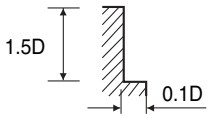


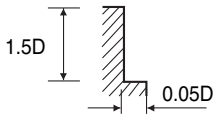


RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

■ HIGH SPEED

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS	~ HRc30				HRc30 ~ HRc45			
STRENGTH	1000N/mm²				1000 ~ 1500N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	22200	8000	420	0.060	16800	6090	315	0.060
8.0	16800	8000	420	0.079	12600	6090	315	0.081
10.0	13400	8000	420	0.100	9980	5990	315	0.100
12.0	11350	6720	430	0.099	8400	5040	315	0.100
16.0	8400	5040	420	0.100	6300	3780	315	0.100
20.0	6700	4040	420	0.075	5040	3050	315	0.076
25.0	6000	3600	470	0.075	4500	2700	355	0.075





RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

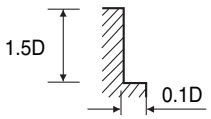
JET-POWER END MILLS

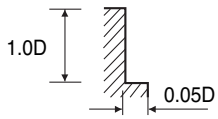
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

PREMIUM HSS-PM, 4&6 FLUTE SHORT- SIDE CUTTING
PREMIUM HSS-PM, 4&6 SCHNEIDEN KURZ - SEITENFRÄSEN

EE515 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS TITANIUM ALLOY				INCONEL			
HARDNESS	~ HRc30				HRc30 ~ HRc45											
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
3.0	4400	185	40	0.011	1100	23	10	0.005	2200	110	20	0.013	880	28	10	0.008
4.0	3600	210	45	0.015	900	31	10	0.009	1800	125	25	0.017	720	37	10	0.013
5.0	3000	225	45	0.019	750	30	10	0.010	1500	135	25	0.023	600	36	10	0.015
6.0	2600	235	50	0.023	600	29	10	0.012	1300	140	25	0.027	480	35	10	0.018
8.0	2000	250	50	0.031	500	28	15	0.014	1000	150	25	0.038	400	34	10	0.021
10.0	1600	285	50	0.045	410	30	15	0.018	800	170	25	0.053	330	36	10	0.027
12.0	1320	250	50	0.047	340	29	15	0.021	660	150	25	0.057	270	35	10	0.032
14.0	1160	235	50	0.051	290	27	15	0.023	580	140	25	0.060	230	32	10	0.035
16.0	1000	225	50	0.038	250	26	15	0.017	500	135	25	0.045	200	31	10	0.026
18.0	900	210	50	0.039	225	23	15	0.017	450	125	25	0.046	180	28	10	0.026
20.0	800	200	50	0.042	200	17	15	0.014	400	120	25	0.050	160	21	10	0.022
25.0	640	165	50	0.043	165	15	15	0.015	320	100	25	0.052	130	18	10	0.023





RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

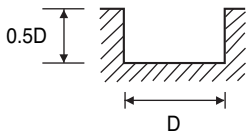
JET-POWER END MILLS

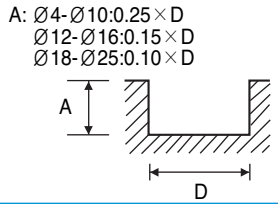
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

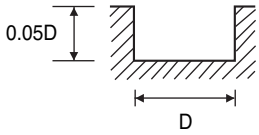
CARBIDE, MULTI FLUTE ROUGHING - SLOTTING
VOLLHARTMETALL, MULTI SCHNEIDEN SCHRUPPFRÄSER

EH852, EH862, EH831, EH841 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS TITANIUM ALLOY				INCONEL			
HARDNESS	~ HRc30				HRc30 ~ HRc45											
STRENGTH	1000N/mm²				1000 ~ 1500N/mm²											
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	15600	1390	294	0.030	12400	500	234	0.013	8400	340	158	0.013	2400	115	45	0.016
8.0	11600	1390	292	0.040	9200	500	231	0.018	6300	340	158	0.018	1800	110	45	0.020
10.0	9200	1390	289	0.038	7600	500	239	0.016	5100	340	160	0.017	1300	115	41	0.022
12.0	8000	1440	302	0.045	6000	480	226	0.020	4200	340	158	0.020	1200	115	45	0.024
14.0	6800	1440	299	0.053	5200	500	229	0.024	3600	340	158	0.024	900	80	40	0.022
16.0	6000	1440	302	0.060	4800	460	241	0.024	3300	310	166	0.023	800	65	40	0.020
18.0	5200	1390	294	0.067	4400	430	249	0.024	2700	250	153	0.023	700	60	40	0.021
20.0	4800	1300	302	0.068	3600	340	226	0.024	2400	220	151	0.023	660	60	41	0.023
25.0	4300	1290	338	0.060	3200	370	251	0.023	2160	250	170	0.023	600	65	47	0.022







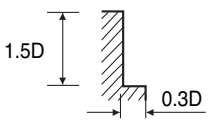
※ The FEED, in long & long reach types, should be reduced by around 50%

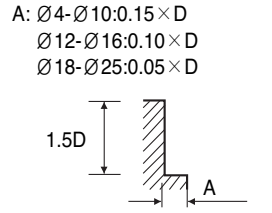
RPM = rev./min. Vc = m/min.
FEED = mm/min. fz = mm/t

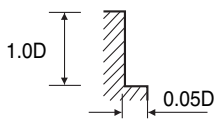
CARBIDE, MULTI FLUTE ROUGHING - SIDE CUTTING
VOLLHARTMETALL, MULTI SCHNEIDEN SCHRUPPFRÄSER

EH852, EH862, EH831, EH841 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS TITANIUM ALLOY				INCONEL			
HARDNESS	~ HRc30				HRc30 ~ HRc45											
STRENGTH	1000N/mm²				1000 ~ 1500N/mm²											
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	15600	2320	294	0.050	12400	840	234	0.023	8400	570	158	0.023	2400	190	45	0.026
8.0	11600	2320	292	0.067	9200	840	231	0.030	6300	570	158	0.030	1800	180	45	0.033
10.0	9200	2320	289	0.063	7600	840	239	0.028	5100	570	160	0.028	1300	190	41	0.037
12.0	8000	2400	302	0.075	6000	800	226	0.033	4200	570	158	0.034	1200	190	45	0.040
14.0	6800	2400	299	0.088	5200	840	229	0.040	3600	570	158	0.040	900	130	40	0.036
16.0	6000	2400	302	0.100	4800	760	241	0.040	3300	510	166	0.039	800	110	40	0.034
18.0	5200	2320	294	0.112	4400	720	249	0.041	2700	420	153	0.039	700	100	40	0.036
20.0	4800	2160	302	0.113	3600	560	226	0.039	2400	360	151	0.038	660	100	41	0.038
25.0	4300	2150	338	0.100	3200	620	251	0.039	2160	410	170	0.038	600	110	47	0.037







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RPM = rev./min. Vc = m/min.
FEED = mm/min. fz = mm/t

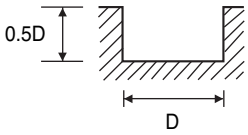
JET-POWER END MILLS

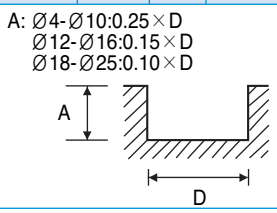
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

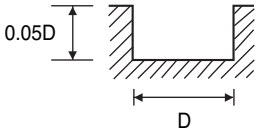
CARBIDE, MULTI FLUTE ROUGHING - SLOTTING
VOLLHARTMETALL, MULTI SCHNEIDEN SCHRUPPFRÄSER

EH917, EH918, EH921, EH942 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS TITANIUM ALLOY				INCONEL			
HARDNESS	~ HRc30				HRc30 ~ HRc45											
STRENGTH	1000N/mm²				1000 ~ 1500N/mm²											
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	15600	1390	294	0.022	12400	500	234	0.010	8400	340	158	0.010	2400	115	45	0.012
8.0	11600	1390	292	0.030	9200	500	231	0.014	6300	340	158	0.013	1800	110	45	0.015
10.0	9200	1390	289	0.038	7600	500	239	0.016	5100	340	160	0.017	1300	115	41	0.022
12.0	8000	1440	302	0.045	6000	480	226	0.020	4200	340	158	0.020	1200	115	45	0.024
16.0	6000	1440	302	0.048	4800	460	241	0.019	3300	310	166	0.019	800	65	40	0.016
20.0	4800	1300	302	0.045	3600	340	226	0.016	2400	220	151	0.015	660	60	41	0.015







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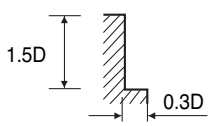
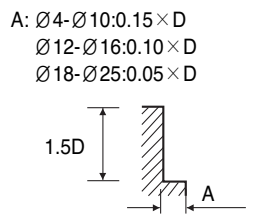
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

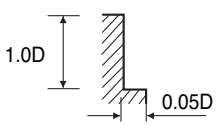
CARBIDE, MULTI FLUTE ROUGHING - SIDE CUTTING
VOLLHARTMETALL, MULTI SCHNEIDEN SCHRUPPFRÄSER

EH917, EH918, EH921, EH942 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS TITANIUM ALLOY				INCONEL			
HARDNESS	~ HRc30				HRc30 ~ HRc45											
STRENGTH	1000N/mm²				1000 ~ 1500N/mm²											
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	15600	2320	294	0.037	12400	840	234	0.017	8400	570	158	0.017	2400	190	45	0.020
8.0	11600	2320	292	0.050	9200	840	231	0.023	6300	570	158	0.023	1800	180	45	0.025
10.0	9200	2320	289	0.063	7600	840	239	0.028	5100	570	160	0.028	1300	190	41	0.037
12.0	8000	2400	302	0.075	6000	800	226	0.033	4200	570	158	0.034	1200	190	45	0.040
16.0	6000	2400	302	0.080	4800	760	241	0.032	3300	510	166	0.031	800	110	40	0.028
20.0	4800	2160	302	0.075	3600	560	226	0.026	2400	360	151	0.025	660	100	41	0.025







※ The FEED, in long & long reach types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

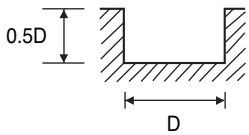
JET-POWER END MILLS

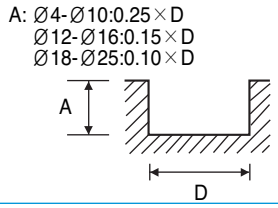
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

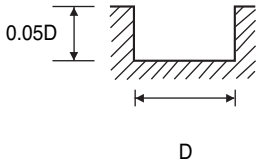
CARBIDE, MULTI FLUTE ROUGHING - SLOTTING
VOLLHARTMETALL, MULTI SCHNEIDEN SCHRUPPFRÄSER

EH919, EH920 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS TITANIUM ALLOY				INCONEL			
HARDNESS	~ HRc30				HRc30 ~ HRc45											
STRENGTH	1000N/mm²				1000 ~ 1500N/mm²											
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
4.0	23400	1390	294	0.020	18600	500	234	0.009	12600	340	158	0.009	3600	115	45	0.011
6.0	15600	1390	294	0.022	12400	500	234	0.010	8400	340	158	0.010	2400	115	45	0.012
8.0	11600	1390	292	0.030	9200	500	231	0.014	6300	340	158	0.013	1800	110	45	0.015
10.0	9200	1390	289	0.038	7600	500	239	0.016	5100	340	160	0.017	1300	115	41	0.022
12.0	8000	1440	302	0.045	6000	480	226	0.020	4200	340	158	0.020	1200	115	45	0.024
14.0	6800	1440	299	0.042	5200	500	229	0.019	3600	340	158	0.019	900	80	40	0.018
16.0	6000	1440	302	0.048	4800	460	241	0.019	3300	310	166	0.019	800	65	40	0.016
20.0	4800	1300	302	0.045	3600	340	226	0.016	2400	220	151	0.015	660	60	41	0.015
25.0	4300	1290	338	0.050	3200	370	251	0.019	2160	250	170	0.019	600	65	47	0.018







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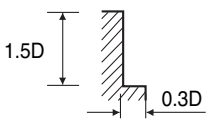
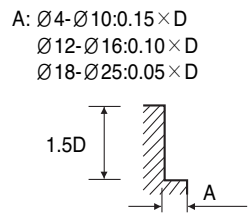
RPM = rev./min. Vc = m/min.
FEED = mm/min. fz = mm/t

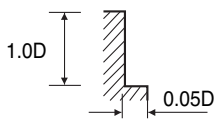
CARBIDE, MULTI FLUTE ROUGHING - SIDE CUTTING
VOLLHARTMETALL, MULTI SCHNEIDEN SCHRUPPFRÄSER

EH919, EH920 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS TITANIUM ALLOY				INCONEL			
HARDNESS	~ HRc30				HRc30 ~ HRc45											
STRENGTH	1000N/mm²				1000 ~ 1500N/mm²											
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
4.0	23400	2320	294	0.033	18600	840	234	0.015	12600	570	158	0.015	3600	190	45	0.018
6.0	15600	2320	294	0.037	12400	840	234	0.017	8400	570	158	0.017	2400	190	45	0.020
8.0	11600	2320	292	0.050	9200	840	231	0.023	6300	570	158	0.023	1800	180	45	0.025
10.0	9200	2320	289	0.063	7600	840	239	0.028	5100	570	160	0.028	1300	190	41	0.037
12.0	8000	2400	302	0.075	6000	800	226	0.033	4200	570	158	0.034	1200	190	45	0.040
14.0	6800	2400	299	0.071	5200	840	229	0.032	3600	570	158	0.032	900	130	40	0.029
16.0	6000	2400	302	0.080	4800	760	241	0.032	3300	510	166	0.031	800	110	40	0.028
20.0	4800	2160	302	0.075	3600	560	226	0.026	2400	360	151	0.025	660	100	41	0.025
25.0	4300	2150	338	0.083	3200	620	251	0.032	2160	410	170	0.032	600	110	47	0.031







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RPM = rev./min. Vc = m/min.
FEED = mm/min. fz = mm/t

CARBIDE

Being the best through innovation

TN MILL
TN FRÄSER

- For Titanium, Titanium Alloys, Inconel and Stainless Steels
- Für Titan, Titanlegierungen, Inconel und rostfreie Stähle

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
EHE54 **EHE55**		CARBIDE, 5 FLUTE 40° HELIX CORNER RADIUS ROUGHING - FINE VOLLHARTMETALL, 5 SCHNEIDEN 40° RECHTSSPIRALE ECKENRADIUS SCHRUPPFRÄSER - FEIN	D6.0	D25.0	**934**
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			**935**

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										○	◎	○		

TN MILL END MILLS

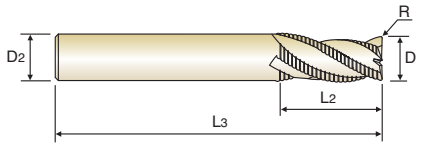
EHE54 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

EHE55 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 5 FLUTE 40° HELIX CORNER RADIUS ROUGHING - FINE
VOLLHARTMETALL, 5 SCHNEIDEN 40° RECHTSSPIRALE ECKENRADIUS SCHRUPPFRÄSER - FEIN

- Suitable for Titanium, Titanium Alloys, Inconel and Stainless Steels.
- Optimized flute design for chip evacuation and rigidity when machining difficult-to-cut materials.
- Special roughing profile for machining Titanium and Titanium Alloys.
- Longer tool life with special coating.

- Geeignet für Titan, Titanlegierungen, Inconel und rostfreie Stähle.
- Optimierte Spannutgeometrie zur Verbesserung der Spanabfuhr und Steifigkeit bei der Bearbeitung von schwer zerspanbaren Materialien.
- Spezielles Schrupp-Profil zur Bearbeitung von Titan und Titanlegierungen.
- Längere Standzeit durch Spezial-Beschichtung



MG HM | 5 | 40° | PLAIN | FLAT

P.935

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R	h10	h6		
EHE54060	**EHE55060**	R0.2	**6.0**	6	16	57
EHE54080	**EHE55080**	R0.2	**8.0**	8	16	63
EHE54100	**EHE55100**	R0.3	**10.0**	10	22	72
EHE54120	**EHE55120**	R0.3	**12.0**	12	26	83
EHE54140	**EHE55140**	R0.3	**14.0**	14	26	83
EHE54160	**EHE55160**	R0.3	**16.0**	16	32	92
EHE54200	**EHE55200**	R0.3	**20.0**	20	38	104
EHE54250	**EHE55250**	R0.3	**25.0**	25	45	121

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛					
Nominal-Diameter in ㎜ / Nennmaßbereich in ㎜					
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										○	◎	○		

TN MILL END MILLS

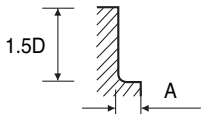
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

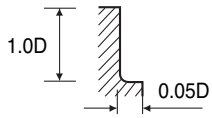
CARBIDE, 5 FLUTE CORNER RADIUS - SIDE CUTTING
VOLLHARTMETALL, 5 SCHNEIDEN ECKENRADIUS - SEITENFRÄSEN

EHE54, EHE55 SERIES

MATERIAL	STAINLESS STEELS				TITANIUM TITANIUM ALLOY				INCONEL			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	4250	530	80	0.025	3450	380	65	0.022	2100	210	40	0.020
8.0	3200	545	80	0.034	2600	405	65	0.031	1600	200	40	0.025
10.0	2550	520	80	0.041	2050	390	65	0.038	1250	230	40	0.037
12.0	2100	535	80	0.051	1700	390	65	0.046	1050	210	40	0.040
14.0	1800	515	80	0.057	1500	390	65	0.052	900	210	40	0.046
16.0	1600	505	80	0.063	1300	375	65	0.058	800	210	40	0.052
20.0	1250	505	80	0.081	1050	390	65	0.074	650	200	40	0.061
25.0	1000	455	80	0.091	850	355	65	0.084	500	170	40	0.068

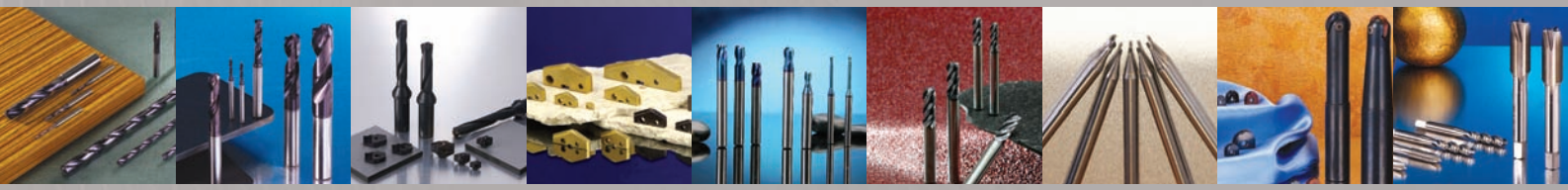
A: Ø6-Ø10:0.15×D
Ø12-Ø16:0.10×D
Ø20-Ø25:0.05×D





RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

Global Cutting Tool Leader **YG-1**



CARBIDE

Being the best through innovation

V7 Mill

V7 FRÄSER

- The unique design for high-speed and heavy duty cutting

- Einzigartiges Design für High-Speed (HSC) und Schwerzerspanung

V7 Mill STEEL

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
EMD42 EMD43		CARBIDE, 4 FLUTE MULTIPLE HELIX SHORT LENGTH VOLLHARTMETALL, 4 SCHNEIDEN MEHRSCHNEIDIG FRÄSER KURZ	D3.0	D20.0	940
EMD44 EMD45		CARBIDE, 4 FLUTE MULTIPLE HELIX SHORT LENGTH CORNER RADIUS VOLLHARTMETALL, 4 SCHNEIDEN MEHRSCHNEIDIG FRÄSER KURZ ECKENRADIUS	D3.0	D20.0	941
EMD38 EMD39		CARBIDE, 4 FLUTE MULTIPLE HELIX LONG LENGTH VOLLHARTMETALL, 4 SCHNEIDEN MEHRSCHNEIDIG FRÄSER LANG	D3.0	D25.0	942
EMD40 EMD41		CARBIDE, 4 FLUTE MULTIPLE HELIX LONG LENGTH CORNER RADIUS VOLLHARTMETALL, 4 SCHNEIDEN MEHRSCHNEIDIG FRÄSER LANG ECKENRADIUS	D3.0	D25.0	943
EME05 EME06		CARBIDE, 4 FLUTE MULTIPLE HELIX with EXTENDED NECK VOLLHARTMETALL, 4 SCHNEIDEN MEHRSCHNEIDIG FRÄSER mit ABGESETZTEM SCHAFTTETL	D3.0	D20.0	944
EME33 EME34		CARBIDE, 4 FLUTE MULTIPLE HELIX with EXTENDED NECK CORNER RADIUS VOLLHARTMETALL, 4 SCHNEIDEN MEHRSCHNEIDIG FRÄSER mit ABGESETZTEM SCHAFTTETL ECKENRADIUS	D3.0	D20.0	945
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			954

V7 Mill INOX

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
EMB41 EMB42		CARBIDE, 4 FLUTE SHORT LENGTH VOLLHARTMETALL, 4 SCHNEIDEN KURZ	D3.0	D20.0	946
EMB43 EMB44		CARBIDE, 4 FLUTE SHORT LENGTH CORNER RADIUS VOLLHARTMETALL, 4 SCHNEIDEN KURZ ECKENRADIUS	D3.0	D20.0	947
EMB14 EMB39		CARBIDE, 4 FLUTE LONG LENGTH VOLLHARTMETALL, 4 SCHNEIDEN LANG	D3.0	D25.0	948
EMB15 EMB40		CARBIDE, 4 FLUTE LONG LENGTH CORNER RADIUS VOLLHARTMETALL, 4 SCHNEIDEN LANG ECKENRADIUS	D3.0	D25.0	949
EMC84 EMC85		CARBIDE, 4 FLUTE with EXTENDED NECK VOLLHARTMETALL, 4 SCHNEIDEN mit ABGESETZTEM SCHAFTTETL	D3.0	D20.0	950
EME31 EME32		CARBIDE, 4 FLUTE with EXTENDED NECK CORNER RADIUS VOLLHARTMETALL, 4 SCHNEIDEN mit ABGESETZTEM SCHAFTTETL ECKENRADIUS	D3.0	D20.0	951
EMB74 EMB75		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE VOLLHARTMETALL, 4 SCHNEIDEN LANG STIRNRADIUS	R1.5	R12.5	952
EMB72 EMB73		CARBIDE, 5 FLUTE LONG LENGTH VOLLHARTMETALL, 5 SCHNEIDEN LANG	D6.0	D25.0	953
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			954

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○					○		○				
◎	◎	◎	○					○		○				
◎	◎	◎	○					○		○				
◎	◎	◎	○					○		○				
◎	◎	◎	○					○		○				
◎	◎	◎	○					○		○				

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○								◎	◎	○		
◎	○	○								◎	◎	○		
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◎	○	○								◎	◎	○		

V7 Mill STEEL END MILLS

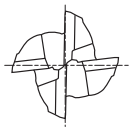
EMD42 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

EMD43 SERIES FLAT SHANK / SEITLICHEN MITNAHMEFLÄCHEN

CARBIDE, 4 FLUTE MULTIPLE HELIX SHORT LENGTH
VOLLHARTMETALL, 4 SCHNEIDEN MEHRSCHNEIDIG FRÄSER KURZ

- Special flute geometry and multiple helix eliminate vibrations
- Designed to machine mild steels, cast irons, tool steels, and low hardened steels up to HRc40.
- Excellent work piece finishes.
- Higher speeds, deeper cuts, and higher metal removal rates.

- Besondere Nutenform und variable Drallsteigung verhindern Vibrationen.
- Für die Bearbeitung von Baustahl, Guss, Werkzeugstahl und niedrig legierten Stählen bis HRc40.
- Ausgezeichnete Werkstückoberfläche.
- Höhere Schnittgeschwindigkeit, tieferer Schnitt und größeres Entspanungsvolumen.



MG HM | DIN 6527 | 4 | PLAIN | FLAT P.954

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EMD42030	EMD43030	3.0	6	5	50
EMD42040	EMD43040	4.0	6	8	54
EMD42050	EMD43050	5.0	6	9	54
EMD42060	EMD43060	6.0	6	10	54
EMD42080	EMD43080	8.0	8	12	58
EMD42100	EMD43100	10.0	10	14	66
EMD42120	EMD43120	12.0	12	16	73
EMD42140	EMD43140	14.0	14	18	75
EMD42160	EMD43160	16.0	16	22	82
EMD42180	EMD43180	18.0	18	24	84
EMD42200	EMD43200	20.0	20	26	92

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○					○		○				

V7 Mill STEEL END MILLS

EMD44 SERIES PLAIN SHANK GLATTER ZYLINDERSCHAFT

EMD45 SERIES FLAT SHANK SEITLICHEN MITNAHMEFLÄCHEN

CARBIDE, 4 FLUTE MULTIPLE HELIX SHORT LENGTH CORNER RADIUS
VOLLHARTMETALL, 4 SCHNEIDEN MEHRSCHNEIDIG FRÄSER KURZ ECKENRADIUS

- ▶ Special flute geometry and multiple helix eliminate vibrations
- ▶ Designed to machine mild steels, cast irons, tool steels, and low hardened steels up to HRc40.
- ▶ Excellent work piece finishes.
- ▶ Higher speeds, deeper cuts, and higher metal removal rates.

- ▶ Besondere Nutenform und variable Drallsteigung verhindern Vibrationen.
- ▶ Für die Bearbeitung von Baustahl, Guss, Werkzeugstahl und niedrig legierten Stählen bis HRc40.
- ▶ Ausgezeichnete Werkstückoberfläche.
- ▶ Höhere Schnittgeschwindigkeit, tieferer Schnitt und größeres Entspanungsvolumen.

MG HM | DIN 6527 | 4 | PLAIN | FLAT

P.954

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EMD44030	EMD45030	R0.3	3.0	6	5	50
EMD44040	EMD45040	R0.3	4.0	6	8	54
EMD44050	EMD45050	R0.3	5.0	6	9	54
EMD44060	EMD45060	R0.4	6.0	6	10	54
EMD44080	EMD45080	R0.4	8.0	8	12	58
EMD44100	EMD45100	R0.4	10.0	10	14	66
EMD44120	EMD45120	R0.6	12.0	12	16	73
EMD44140	EMD45140	R0.6	14.0	14	18	75
EMD44160	EMD45160	R0.8	16.0	16	22	82
EMD44180	EMD45180	R0.8	18.0	18	24	84
EMD44200	EMD45200	R0.8	20.0	20	26	92

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○					○		○				

V7 Mill STEEL END MILLS

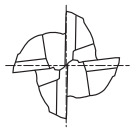
EMD38 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

EMD39 SERIES FLAT SHANK / SEITLICHEN MITNAHMEFLÄCHEN

CARBIDE, 4 FLUTE MULTIPLE HELIX LONG LENGTH
VOLLHARTMETALL, 4 SCHNEIDEN MEHRSCHNEIDIG FRÄSER LANG

- Special flute geometry and multiple helix eliminate vibrations
- Designed to machine mild steels, cast irons, tool steels, and low hardened steels up to HRc40.
- Excellent work piece finishes.
- Higher speeds, deeper cuts, and higher metal removal rates.

- Besondere Nutenform und variable Drallsteigung verhindern Vibrationen.
- Für die Bearbeitung von Baustahl, Guss, Werkzeugstahl und niedrig legierten Stählen bis HRc40.
- Ausgezeichnete Werkstückoberfläche.
- Höhere Schnittgeschwindigkeit, tieferer Schnitt und größeres Entspanungsvolumen.



MG HM | DIN 6527 | 4 | PLAIN | FLAT P.954

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EMD38030	EMD39030	3.0	6	8	57
EMD38040	EMD39040	4.0	6	11	57
EMD38050	EMD39050	5.0	6	13	57
EMD38060	EMD39060	6.0	6	13	57
EMD38080	EMD39080	8.0	8	19	63
EMD38100	EMD39100	10.0	10	22	72
EMD38120	EMD39120	12.0	12	26	83
EMD38140	EMD39140	14.0	14	26	83
EMD38160	EMD39160	16.0	16	32	92
EMD38180	EMD39180	18.0	18	32	92
EMD38200	EMD39200	20.0	20	38	104
EMD38250	EMD39250	25.0	25	38	104

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○					○		○				

V7 Mill STEEL END MILLS

EMD40 SERIES PLAIN SHANK GLATTER ZYLINDERSCHAFT

EMD41 SERIES FLAT SHANK SEITLICHEN MITNAHMEFLÄCHEN

CARBIDE, 4 FLUTE MULTIPLE HELIX LONG LENGTH CORNER RADIUS
VOLLHARTMETALL, 4 SCHNEIDEN MEHRSCHNEIDIG FRÄSER LANG ECKENRADIUS

- ▶ Special flute geometry and multiple helix eliminate vibrations
- ▶ Designed to machine mild steels, cast irons, tool steels, and low hardened steels up to HRc40.
- ▶ Excellent work piece finishes.
- ▶ Higher speeds, deeper cuts, and higher metal removal rates.

- ▶ Besondere Nutenform und variable Drallsteigung verhindern Vibrationen.
- ▶ Für die Bearbeitung von Baustahl, Guss, Werkzeugstahl und niedrig legierten Stählen bis HRc40.
- ▶ Ausgezeichnete Werkstückoberfläche.
- ▶ Höhere Schnittgeschwindigkeit, tieferer Schnitt und größeres Entspanungsvolumen.

MG HM | DIN 6527 | 4 | PLAIN | FLAT

P.954

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EMD40030	EMD41030	R0.3	3.0	6	8	57
EMD40040	EMD41040	R0.3	4.0	6	11	57
EMD40050	EMD41050	R0.3	5.0	6	13	57
EMD40060	EMD41060	R0.4	6.0	6	13	57
EMD40080	EMD41080	R0.4	8.0	8	19	63
EMD40100	EMD41100	R0.4	10.0	10	22	72
EMD40120	EMD41120	R0.6	12.0	12	26	83
EMD40140	EMD41140	R0.6	14.0	14	26	83
EMD40160	EMD41160	R0.8	16.0	16	32	92
EMD40180	EMD41180	R0.8	18.0	18	32	92
EMD40200	EMD41200	R0.8	20.0	20	38	104
EMD40250	EMD41250	R0.8	25.0	25	38	104

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○					○		○				

V7 Mill STEEL END MILLS

EME05 SERIES PLAIN SHANK GLATTER ZYLINDERSCHAFT

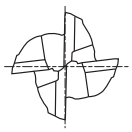
EME06 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 4 FLUTE MULTIPLE HELIX with EXTENDED NECK

VOLLHARTMETALL, 4 SCHNEIDEN MEHRSCHNEIDIG FRÄSER mit ABGESETZTEM SCHAFTTETL

- Special flute geometry and multiple helix eliminate vibrations
- Designed to machine mild steels, cast irons, tool steels, and low hardened steels up to HRc40.
- Excellent work piece finishes.
- Higher speeds, deeper cuts, and higher metal removal rates.

- Besondere Nutenform und variable Drallsteigung verhindern Vibrationen.
- Für die Bearbeitung von Baustahl, Guss, Werkzeugstahl und niedrig legierten Stählen bis HRc40.
- Ausgezeichnete Werkstückoberfläche.
- Höhere Schnittgeschwindigkeit, tieferer Schnitt und größeres Entspanungsvolumen.



MG HM | 4 | PLAIN | FLAT

P.954

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Mill Diameter	Shank Diameter h6	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
EME05030	EME06030	3.0	6	7	12	54	2.7
EME05913	EME06913	3.0	6	7	17	57	2.7
EME05040	EME06040	4.0	6	8	15	57	3.7
EME05914	EME06914	4.0	6	8	22	63	3.7
EME05050	EME06050	5.0	6	10	17	57	4.7
EME05915	EME06915	5.0	6	10	27	67	4.7
EME05060	EME06060	6.0	6	10	15	57	5.5
EME05901	EME06901	6.0	6	10	20	62	5.5
EME05902	EME06902	6.0	6	10	32	74	5.5
EME05080	EME06080	8.0	8	12	20	63	7.5
EME05903	EME06903	8.0	8	12	30	73	7.5
EME05904	EME06904	8.0	8	12	46	90	7.5
EME05100	EME06100	10.0	10	14	25	72	9.2
EME05905	EME06905	10.0	10	14	35	82	9.2
EME05906	EME06906	10.0	10	14	55	102	9.2
EME05120	EME06120	12.0	12	16	30	83	11
EME05907	EME06907	12.0	12	16	40	93	11
EME05908	EME06908	12.0	12	16	64	117	11
EME05160	EME06160	16.0	16	22	38	92	15
EME05909	EME06909	16.0	16	22	55	109	15
EME05910	EME06910	16.0	16	22	87	141	15
EME05200	EME06200	20.0	20	26	50	104	19
EME05911	EME06911	20.0	20	26	70	124	19
EME05912	EME06912	20.0	20	26	110	164	19

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○					○		○				

V7 Mill STEEL END MILLS

EME33 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

EME34 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 4 FLUTE MULTIPLE HELIX with EXTENDED NECK CORNER RADIUS
VOLLHARTMETALL, 4 SCHNEIDEN MEHRSCHNEIDIG FRÄSER mit ABGESETZTEM SCHAFTTETL ECKENRADIUS

- Special flute geometry and multiple helix eliminate vibrations
- Designed to machine mild steels, cast irons, tool steels, and low hardened steels up to HRc40.
- Excellent work piece finishes.
- Higher speeds, deeper cuts, and higher metal removal rates.

- Besondere Nutenform und variable Drallsteigung verhindern Vibrationen.
- Für die Bearbeitung von Baustahl, Guss, Werkzeugstahl und niedrig legierten Stählen bis HRc40.
- Ausgezeichnete Werkstückoberfläche.
- Höhere Schnittgeschwindigkeit, tieferer Schnitt und größeres Entspanungsvolumen.

MG HM | 4 | PLAIN | FLAT P.954

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Corner Radius R	Mill Diameter	Shank Diameter h6	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
EME33030	EME34030	R0.3	3.0	6	7	12	54	2.7
EME33901	EME34901	R0.3	3.0	6	7	17	57	2.7
EME33040	EME34040	R0.3	4.0	6	8	15	57	3.7
EME33902	EME34902	R0.3	4.0	6	8	22	63	3.7
EME33050	EME34050	R0.3	5.0	6	10	17	57	4.7
EME33903	EME34903	R0.3	5.0	6	10	27	67	4.7
EME33060	EME34060	R0.5	6.0	6	10	15	57	5.5
EME33904	EME34904	R0.5	6.0	6	10	20	62	5.5
EME33905	EME34905	R0.5	6.0	6	10	32	74	5.5
EME33080	EME34080	R0.5	8.0	8	12	20	63	7.5
EME33906	EME34906	R0.5	8.0	8	12	30	73	7.5
EME33907	EME34907	R0.5	8.0	8	12	46	90	7.5
EME33100	EME34100	R0.5	10.0	10	14	25	72	9.2
EME33908	EME34908	R0.5	10.0	10	14	35	82	9.2
EME33909	EME34909	R0.5	10.0	10	14	55	102	9.2
EME33120	EME34120	R0.7	12.0	12	16	30	83	11
EME33910	EME34910	R0.7	12.0	12	16	40	93	11
EME33911	EME34911	R0.7	12.0	12	16	64	117	11
EME33160	EME34160	R1.0	16.0	16	22	38	92	15
EME33912	EME34912	R1.0	16.0	16	22	55	109	15
EME33913	EME34913	R1.0	16.0	16	22	87	141	15
EME33200	EME34200	R1.0	20.0	20	26	50	104	19
EME33914	EME34914	R1.0	20.0	20	26	70	124	19
EME33915	EME34915	R1.0	20.0	20	26	110	164	19

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○					○		○				

V7 Mill INOX END MILLS

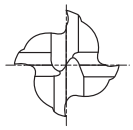
EMB41 SERIES PLAIN SHANK GLATTER ZYLINDERSCHAFT

EMB42 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 4 FLUTE SHORT LENGTH
VOLLHARTMETALL, 4 SCHNEDEN KURZ

- ▶ Special flute geometry eliminates vibrations
- ▶ Designed to mild steels, stainless steels, cast iron, tool steels, titanium alloys, prehardened steels and low hardness materials under HRc40
- ▶ Excellent work piece finishes
- ▶ Higher speeds, deeper cuts and metal removal rates

- ▶ Spezielle Schneidengeometrie verhindert Vibrationen
- ▶ Geeignet für Baustähle, Rostfreie Stähle, Grauguss, Werkzeugstähle, Titanlegierungen, hochfeste Stähle und Werkstoffe unter 40 HRc
- ▶ Bessere Werkstückoberflächen.
- ▶ Höhere Schnittgeschwindigkeiten, größere Profiltiefe und größeres Zerspanungsvolumen



MG HM | 4 | PLAIN | FLAT | P.955

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Mill Diameter	Shank Diameter h6	Length of Cut	Overall Length
EMB41030	EMB42030	3.0	6	7	54
EMB41040	EMB42040	4.0	6	8	54
EMB41050	EMB42050	5.0	6	10	54
EMB41060	EMB42060	6.0	6	10	54
EMB41080	EMB42080	8.0	8	12	58
EMB41100	EMB42100	10.0	10	14	66
EMB41120	EMB42120	12.0	12	16	73
EMB41140	EMB42140	14.0	14	18	75
EMB41160	EMB42160	16.0	16	22	82
EMB41180	EMB42180	18.0	18	24	84
EMB41200	EMB42200	20.0	20	26	92

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○								◎	◎	○		

V7 Mill INOX END MILLS

EMB43 SERIES PLAIN SHANK GLATTER ZYLINDERSCHAFT

EMB44 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 4 FLUTE SHORT LENGTH CORNER RADIUS
VOLLHARTMETALL, 4 SCHNEIDEN KURZ ECKENRADIUS

- ▶ Special flute geometry eliminates vibrations
- ▶ Designed to mild steels, stainless steels, cast iron, tool steels, titanium alloys, prehardened steels and low hardness materials under HRc40
- ▶ Excellent work piece finishes
- ▶ Higher speeds, deeper cuts and metal removal rates

- ▶ Spezielle Schneidengeometrie verhindert Vibrationen
- ▶ Geeignet für Baustähle, Rostfreie Stähle, Grauguss, Werkzeugstähle, Titanlegierungen, hochfeste Stähle und Werkstoffe unter 40 HRc
- ▶ Bessere Werkstückoberflächen.
- ▶ Höhere Schnittgeschwindigkeiten, größere Profiltiefe und größeres Zerspanungsvolumen

MG HM | 4 | PLAIN | FLAT P.955

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R		h6		
EMB43030	**EMB44030**	R0.3	**3.0**	6	7	54
EMB43040	**EMB44040**	R0.3	**4.0**	6	8	54
EMB43050	**EMB44050**	R0.3	**5.0**	6	10	54
EMB43060	**EMB44060**	R0.5	**6.0**	6	10	54
EMB43080	**EMB44080**	R0.5	**8.0**	8	12	58
EMB43100	**EMB44100**	R0.5	**10.0**	10	14	66
EMB43120	**EMB44120**	R0.7	**12.0**	12	16	73
EMB43140	**EMB44140**	R0.7	**14.0**	14	18	75
EMB43160	**EMB44160**	R1.0	**16.0**	16	22	82
EMB43180	**EMB44180**	R1.0	**18.0**	18	24	84
EMB43200	**EMB44200**	R1.0	**20.0**	20	26	92

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○								◎	◎	○		

V7 Mill INOX END MILLS

EMB14 SERIES PLAIN SHANK GLATTER ZYLINDERSCHAFT

EMB39 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 4 FLUTE LONG LENGTH
VOLLHARTMETALL, 4 SCHNEIDEN LANG

- ▶ Special flute geometry eliminates vibrations
- ▶ Designed to mild steels, stainless steels, cast iron, tool steels, titanium alloys, prehardened steels and low hardness materials under HRc40
- ▶ Excellent work piece finishes
- ▶ Higher speeds, deeper cuts and metal removal rates

- ▶ Spezielle Schneidengeometrie verhindert Vibrationen
- ▶ Geeignet für Baustähle, Rostfreie Stähle, Grauguss, Werkzeugstähle, Titanlegierungen, hochfeste Stähle und Werkstoffe unter 40 HRc
- ▶ Bessere Werkstückoberflächen.
- ▶ Höhere Schnittgeschwindigkeiten, größere Profiltiefe und größeres Zerspanungsvolumen

MG HM | 4 | PLAIN | FLAT | P.955

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Mill Diameter	Shank Diameter h6	Length of Cut	Overall Length
EMB14030	EMB39030	3.0	6	8	57
EMB14040	EMB39040	4.0	6	11	57
EMB14050	EMB39050	5.0	6	13	57
EMB14060	EMB39060	6.0	6	13	57
EMB14080	EMB39080	8.0	8	19	63
EMB14100	EMB39100	10.0	10	22	72
EMB14120	EMB39120	12.0	12	26	83
EMB14140	EMB39140	14.0	14	26	83
EMB14160	EMB39160	16.0	16	32	92
EMB14180	EMB39180	18.0	18	32	92
EMB14200	EMB39200	20.0	20	38	104
EMB14250	EMB39250	25.0	25	38	104

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○								◎	◎	○		

V7 Mill INOX END MILLS

EMB15 SERIES PLAIN SHANK GLATTER ZYLINDERSCHAFT

EMB40 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 4 FLUTE LONG LENGTH CORNER RADIUS
VOLLHARTMETALL, 4 SCHNEIDEN LANG ECKENRADIUS

- ▶ Special flute geometry eliminates vibrations
- ▶ Designed to mild steels, stainless steels, cast iron, tool steels, titanium alloys, prehardened steels and low hardness materials under HRc40
- ▶ Excellent work piece finishes
- ▶ Higher speeds, deeper cuts and metal removal rates

- ▶ Spezielle Schneidengeometrie verhindert Vibrationen
- ▶ Geeignet für Baustähle, Rostfreie Stähle, Grauguss, Werkzeugstähle, Titanlegierungen, hochfeste Stähle und Werkstoffe unter 40 HRc
- ▶ Bessere Werkstückoberflächen.
- ▶ Höhere Schnittgeschwindigkeiten, größere Profiltiefe und größeres Zerspanungsvolumen

MG HM | 4 | PLAIN | FLAT P.955

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R		h6		
EMB15030	**EMB40030**	R0.3	**3.0**	6	8	57
EMB15040	**EMB40040**	R0.3	**4.0**	6	11	57
EMB15050	**EMB40050**	R0.3	**5.0**	6	13	57
EMB15060	**EMB40060**	R0.5	**6.0**	6	13	57
EMB15080	**EMB40080**	R0.5	**8.0**	8	19	63
EMB15100	**EMB40100**	R0.5	**10.0**	10	22	72
EMB15120	**EMB40120**	R0.7	**12.0**	12	26	83
EMB15140	**EMB40140**	R0.7	**14.0**	14	26	83
EMB15160	**EMB40160**	R1.0	**16.0**	16	32	92
EMB15180	**EMB40180**	R1.0	**18.0**	18	32	92
EMB15200	**EMB40200**	R1.0	**20.0**	20	38	104
EMB15250	**EMB40250**	R1.0	**25.0**	25	38	104

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○								◎	◎	○		

V7 Mill INOX END MILLS

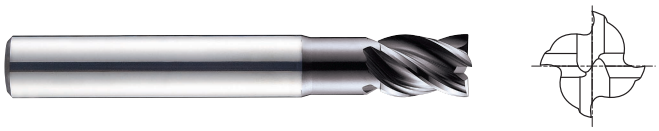
EMC84 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

EMC85 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 4 FLUTE with EXTENDED NECK
VOLLHARTMETALL, 4 SCHNEIDEN mit ABGESETZTEM SCHAFTTETL

- Special flute geometry eliminates vibrations
- Designed to mild steels, stainless steels, cast iron, tool steels, titanium alloys, prehardened steels and low hardness materials under HRc40
- Excellent work piece finishes
- Higher speeds, deeper cuts and metal removal rates

- Spezielle Schneidengeometrie verhindert Vibrationen
- Geeignet für Baustähle, Rostfreie Stähle, Grauguss, Werkzeugstähle, Titanlegierungen, hochfeste Stähle und Werkstoffe unter 40 HRc
- Bessere Werkstückoberflächen.
- Höhere Schnittgeschwindigkeiten, größere Profiltiefe und größeres Zerspanungsvolumen



MG HM | 4 | PLAIN | FLAT P.955

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Mill Diameter	Shank Diameter h6	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
EMC84030	EMC85030	3.0	6	7	12	54	2.7
EMC84913	EMC85913	3.0	6	7	17	57	2.7
EMC84040	EMC85040	4.0	6	8	15	57	3.7
EMC84914	EMC85914	4.0	6	8	22	63	3.7
EMC84050	EMC85050	5.0	6	10	17	57	4.7
EMC84915	EMC85915	5.0	6	10	27	67	4.7
EMC84060	EMC85060	6.0	6	10	15	57	5.5
EMC84901	EMC85901	6.0	6	10	20	62	5.5
EMC84902	EMC85902	6.0	6	10	32	74	5.5
EMC84080	EMC85080	8.0	8	12	20	63	7.5
EMC84903	EMC85903	8.0	8	12	30	73	7.5
EMC84904	EMC85904	8.0	8	12	46	90	7.5
EMC84100	EMC85100	10.0	10	14	25	72	9.2
EMC84905	EMC85905	10.0	10	14	35	82	9.2
EMC84906	EMC85906	10.0	10	14	55	102	9.2
EMC84120	EMC85120	12.0	12	16	30	83	11
EMC84907	EMC85907	12.0	12	16	40	93	11
EMC84908	EMC85908	12.0	12	16	64	117	11
EMC84160	EMC85160	16.0	16	22	38	92	15
EMC84909	EMC85909	16.0	16	22	55	109	15
EMC84910	EMC85910	16.0	16	22	87	141	15
EMC84200	EMC85200	20.0	20	26	50	104	19
EMC84911	EMC85911	20.0	20	26	70	124	19
EMC84912	EMC85912	20.0	20	26	110	164	19

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○								◎	◎	○		

V7 Mill INOX END MILLS

EME31 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

EME32 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 4 FLUTE with EXTENDED NECK CORNER RADIUS
VOLLHARTMETALL, 4 SCHNEIDEN mit ABGESETZTEM SCHAFTTETL ECKENRADIUS

- ▶ Special flute geometry eliminates vibrations
- ▶ Designed to mild steels, stainless steels, cast iron, tool steels, titanium alloys, prehardened steels and low hardness materials under HRc40
- ▶ Excellent work piece finishes
- ▶ Higher speeds, deeper cuts and metal removal rates

- ▶ Spezielle Schneidengeometrie verhindert Vibrationen
- ▶ Geeignet für Baustähle, Rostfreie Stähle, Grauguss, Werkzeugstähle, Titanlegierungen, hochfeste Stähle und Werkstoffe unter 40 HRc
- ▶ Bessere Werkstückoberflächen.
- ▶ Höhere Schnittgeschwindigkeiten, größere Profiltiefe und größeres Zerspanungsvolumen

MG HM | 4 | PLAIN | FLAT P.955

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Corner Radius R	Mill Diameter	Shank Diameter h6	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
EME31030	EME32030	R0.3	3.0	6	7	12	54	2.7
EME31901	EME32901	R0.3	3.0	6	7	17	57	2.7
EME31040	EME32040	R0.3	4.0	6	8	15	57	3.7
EME31902	EME32902	R0.3	4.0	6	8	22	63	3.7
EME31050	EME32050	R0.3	5.0	6	10	17	57	4.7
EME31903	EME32903	R0.3	5.0	6	10	27	67	4.7
EME31060	EME32060	R0.5	6.0	6	10	15	57	5.5
EME31904	EME32904	R0.5	6.0	6	10	20	62	5.5
EME31905	EME32905	R0.5	6.0	6	10	32	74	5.5
EME31080	EME32080	R0.5	8.0	8	12	20	63	7.5
EME31906	EME32906	R0.5	8.0	8	12	30	73	7.5
EME31907	EME32907	R0.5	8.0	8	12	46	90	7.5
EME31100	EME32100	R0.5	10.0	10	14	25	72	9.2
EME31908	EME32908	R0.5	10.0	10	14	35	82	9.2
EME31909	EME32909	R0.5	10.0	10	14	55	102	9.2
EME31120	EME32120	R0.7	12.0	12	16	30	83	11
EME31910	EME32910	R0.7	12.0	12	16	40	93	11
EME31911	EME32911	R0.7	12.0	12	16	64	117	11
EME31160	EME32160	R1.0	16.0	16	22	38	92	15
EME31912	EME32912	R1.0	16.0	16	22	55	109	15
EME31913	EME32913	R1.0	16.0	16	22	87	141	15
EME31200	EME32200	R1.0	20.0	20	26	50	104	19
EME31914	EME32914	R1.0	20.0	20	26	70	124	19
EME31915	EME32915	R1.0	20.0	20	26	110	164	19

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○								◎	◎	○		

V7 Mill INOX END MILLS

EMB74 SERIES PLAIN SHANK GLATTER ZYLINDERSCHAFT

EMB75 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE
VOLLHARTMETALL, 4 SCHNEIDEN LANG STIRNRADIUS

- ▶ Special flute geometry eliminates vibrations
- ▶ Designed to mild steels, stainless steels, cast iron, tool steels, titanium alloys, prehardened steels and low hardness materials under HRc40
- ▶ Excellent work piece finishes
- ▶ Higher speeds, deeper cuts and metal removal rates

- ▶ Spezielle Schneidengeometrie verhindert Vibrationen
- ▶ Geeignet für Baustähle, Rostfreie Stähle, Grauguss, Werkzeugstähle, Titanlegierungen, hochfeste Stähle und Werkstoffe unter 40 HRc
- ▶ Bessere Werkstückoberflächen.
- ▶ Höhere Schnittgeschwindigkeiten, größere Profiltiefe und größeres Zerspanungsvolumen

MG HM | 4 | R ±0.02 | PLAIN | FLAT | P.956

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Radius of Ball Nose R (±0.02)	Mill Diameter	Shank Diameter h6	Length of Cut	Overall Length
EMB74030	EMB75030	R1.5	3.0	6	8	57
EMB74040	EMB75040	R2.0	4.0	6	11	57
EMB74050	EMB75050	R2.5	5.0	6	13	57
EMB74060	EMB75060	R3.0	6.0	6	13	57
EMB74080	EMB75080	R4.0	8.0	8	19	63
EMB74100	EMB75100	R5.0	10.0	10	22	72
EMB74120	EMB75120	R6.0	12.0	12	26	83
EMB74160	EMB75160	R8.0	16.0	16	32	92
EMB74200	EMB75200	R10.0	20.0	20	38	104
EMB74250	EMB75250	R12.5	25.0	25	38	104

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○								◎	◎	○		

V7 Mill INOX END MILLS

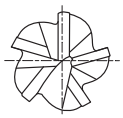
EMB72 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

EMB73 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 5 FLUTE LONG LENGTH
VOLLHARTMETALL, 5 SCHNEIDEN LANG

- ▶ Special flute geometry eliminates vibrations
- ▶ Designed to mild steels, stainless steels, cast iron, tool steels, titanium alloys, prehardened steels and low hardness materials under HRc40
- ▶ Excellent work piece finishes
- ▶ Higher speeds, deeper cuts and metal removal rates

- ▶ Spezielle Schneidengeometrie verhindert Vibrationen
- ▶ Geeignet für Baustähle, Rostfreie Stähle, Grauguss, Werkzeugstähle, Titanlegierungen, hochfeste Stähle und Werkstoffe unter 40 HRc
- ▶ Bessere Werkstückoberflächen.
- ▶ Höhere Schnittgeschwindigkeiten, größere Profiltiefe und größeres Zerspanungsvolumen



MG HM | 5 | PLAIN | FLAT P.957

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Mill Diameter	Shank Diameter h6	Length of Cut	Overall Length
EMB72060	EMB73060	6.0	6	13	57
EMB72080	EMB73080	8.0	8	19	63
EMB72100	EMB73100	10.0	10	22	72
EMB72120	EMB73120	12.0	12	26	83
EMB72140	EMB73140	14.0	14	26	83
EMB72160	EMB73160	16.0	16	32	92
EMB72180	EMB73180	18.0	18	32	92
EMB72200	EMB73200	20.0	20	38	104
EMB72250	EMB73250	25.0	25	38	104

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○								◎	◎	○		

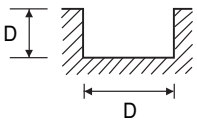
V7 Mill STEEL END MILLS

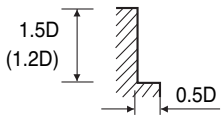
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 4 FLUTE
VOLLHARTMETALL, 4 SCHNEIDEN

EMD42, EMD43, EMD44, EMD45, EMD38, EMD39, EMD40, EMD41, EME05, EME06, EME33, EME34 SERIES

MATERIAL	ALLOY STEELS TOOL STEELS CARBON STEELS				ALLOY STEELS TOOL STEELS CARBON STEELS			
HARDNESS	~ HB 300				HB 300 ~ HB 380			
STRENGTH	~ 1000N/mm²				1000 ~ 1300N/mm²			
DIAMETER	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz
3.0	13475	275	125	0.005	9430	190	90	0.005
4.0	10105	330	125	0.008	7070	230	90	0.008
5.0	8085	370	125	0.011	5660	260	90	0.011
6.0	6735	435	125	0.016	4715	305	90	0.016
8.0	5050	555	125	0.027	3535	385	90	0.027
10.0	4455	690	140	0.039	3115	480	100	0.039
12.0	3710	695	140	0.047	2600	485	100	0.047
14.0	3180	620	140	0.049	2225	435	100	0.049
16.0	2785	590	140	0.053	1950	410	100	0.053
18.0	2475	585	140	0.059	1730	410	100	0.059
20.0	2225	580	140	0.065	1560	405	100	0.065
25.0	1780	450	140	0.063	1245	315	100	0.063





* ( ) : Short length Type

1.2 x D Axial cutting depth should be applied for Short length series DIA over 8mm

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

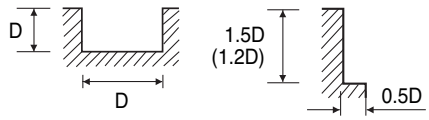
V7 Mill INOX END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 4 FLUTE
VOLLHARTMETALL, 4 SCHNEIDEN

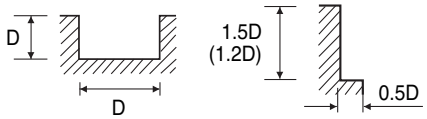
EMB41, EMB42, EMB43, EMB44, EMB14, EMB39, EMB15, EMB40, EMC84, EMC85, EME31, EME32 SERIES

MATERIAL	ALLOY STEELS CAST IRON				STAINLESS STEELS 300SERIES				STAINLESS STEELS 400SERIES			
HARDNESS	~HB230				HRc30 ~ HRc45							
STRENGTH	~1000N/mm²				1000 ~ 1500N/mm²							
DIAMETER	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz
3.0	13475	275	125	0.005	10185	195	95	0.005	14260	205	135	0.004
4.0	10105	330	125	0.008	7600	250	95	0.008	14260	255	180	0.004
5.0	8085	370	125	0.011	6110	310	95	0.013	8655	310	135	0.009
6.0	6735	435	125	0.016	5095	360	95	0.018	7130	360	135	0.013
8.0	5050	555	125	0.027	3820	435	95	0.028	5345	465	135	0.022
10.0	4455	690	140	0.039	3055	590	95	0.048	4275	585	135	0.034
12.0	3710	695	140	0.047	2545	565	95	0.056	3565	565	135	0.040
14.0	3180	620	140	0.049	2180	520	95	0.060	3055	520	135	0.043
16.0	2785	590	140	0.053	1910	480	95	0.063	2670	480	135	0.045
18.0	2475	585	140	0.059	1695	475	95	0.070	2375	475	135	0.050
20.0	2225	580	140	0.065	1525	470	95	0.077	2140	470	135	0.055
25.0	1780	450	140	0.063	1215	380	95	0.078	1710	380	135	0.056

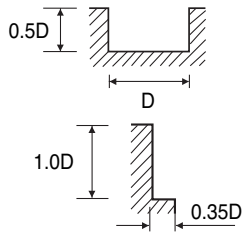


*( ): short lenth type
1.2 x D Axial cutting depth should be applied for Short length series diameter over 8mm

MATERIAL	TITANIUM				INCONEL			
HARDNESS								
STRENGTH								
DIAMETER	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz
3.0	10185	205	95	0.005	2715	55	25	0.005
4.0	7600	255	95	0.008	2005	55	25	0.007
5.0	6110	310	95	0.013	1630	80	25	0.012
6.0	5095	360	95	0.018	1355	95	25	0.018
8.0	3280	465	80	0.035	1015	125	25	0.031
10.0	3055	585	95	0.048	815	155	25	0.048
12.0	2545	565	95	0.056	675	150	25	0.056
14.0	2180	520	95	0.060	580	140	25	0.060
16.0	1910	480	95	0.063	505	130	25	0.064
18.0	1695	475	95	0.070	450	125	25	0.069
20.0	1525	470	95	0.077	405	125	25	0.077
25.0	1215	380	95	0.078	320	110	25	0.086



1.2 x D Axial cutting depth should be applied for Short length series diameter over 8mm



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

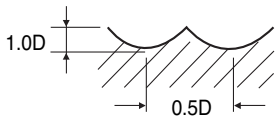
V7 Mill INOX END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

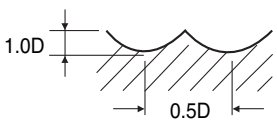
CARBIDE, 4 FLUTE BALL NOSE
VOLLHARTMETALL, 4 SCHNEIDEN STIRNRADIUS

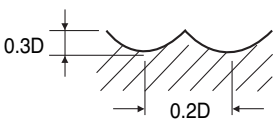
EMB74, EMB75 SERIES

MATERIAL	ALLOY STEELS CAST IRON				STAINLESS STEELS 300SERIES				STAINLESS STEELS 400SERIES			
HARDNESS	~HB230											
STRENGTH	~1000N/mm²											
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R1.5 × 3.0	14324	1430	135	0.025	8220	650	75	0.020	7420	440	70	0.015
R2.0 × 4.0	10740	1070	135	0.025	6160	490	75	0.020	5570	330	70	0.015
R2.5 × 5.0	8590	1030	135	0.030	4930	490	75	0.025	4450	440	70	0.025
R3.0 × 6.0	7460	1140	140	0.038	4110	670	75	0.041	3710	440	70	0.030
R4.0 × 8.0	5370	1280	135	0.060	3080	550	75	0.045	2780	440	70	0.040
R5.0 × 10.0	4290	1030	135	0.060	2460	490	75	0.050	2220	400	70	0.045
R6.0 × 12.0	3580	1000	135	0.070	2050	450	75	0.055	1850	370	70	0.050
R8.0 × 16.0	2680	800	135	0.075	1540	370	75	0.060	1390	300	70	0.054
R9.0 × 18.0	2380	760	135	0.080	1370	350	75	0.064	1230	290	70	0.059
R10.0 × 20.0	2140	770	135	0.090	1230	320	75	0.065	1110	260	70	0.059
R12.5 × 25.0	1710	680	135	0.099	980	270	75	0.069	890	210	70	0.059



MATERIAL	TITANIUM				INCONEL			
HARDNESS								
STRENGTH								
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R1.5 × 3.0	5830	280	55	0.012	3180	140	30	0.011
R2.0 × 4.0	4370	210	55	0.012	2380	100	30	0.011
R2.5 × 5.0	3500	210	55	0.015	1910	80	30	0.010
R3.0 × 6.0	2910	230	55	0.020	1590	100	30	0.016
R4.0 × 8.0	2180	260	55	0.030	1190	120	30	0.025
R5.0 × 10.0	1750	210	55	0.030	950	100	30	0.026
R6.0 × 12.0	1450	230	55	0.040	790	120	30	0.038
R8.0 × 16.0	1090	190	55	0.044	590	110	30	0.047
R9.0 × 18.0	970	190	55	0.049	530	110	30	0.052
R10.0 × 20.0	870	210	55	0.060	470	100	30	0.053
R12.5 × 25.0	700	190	55	0.068	380	80	30	0.053





RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

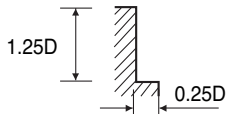
V7 Mill INOX END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

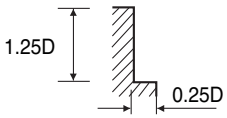
CARBIDE, 5 FLUTE
VOLLHARTMETALL, 5 SCHNEIDEN

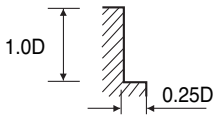
EMB72, EMB73 SERIES

MATERIAL	ALLOY STEELS CAST IRON				STAINLESS STEELS 300SERIES				STAINLESS STEELS 400SERIES			
HARDNESS	~HB230											
STRENGTH	~1000N/mm²											
DIAMETER	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz
6.0	7270	1240	135	0.034	6060	920	115	0.030	5660	860	105	0.030
8.0	5450	1040	135	0.038	4540	720	115	0.032	4240	670	105	0.032
10.0	4360	1100	135	0.050	3630	690	115	0.038	3390	640	105	0.038
12.0	3630	1150	135	0.063	3030	960	115	0.063	3830	820	145	0.043
14.0	3110	1080	135	0.069	2600	850	115	0.065	2420	770	105	0.064
16.0	2720	1040	135	0.076	2270	780	115	0.069	2120	720	105	0.068
20.0	2180	970	135	0.089	1810	690	115	0.076	1690	640	105	0.076



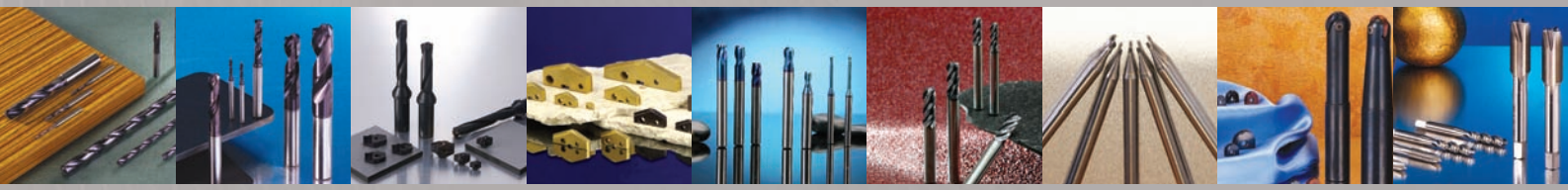
MATERIAL	TITANIUM				INCONEL			
HARDNESS								
STRENGTH								
DIAMETER	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz
6.0	4440	670	85	0.030	1450	120	25	0.017
8.0	3330	520	85	0.031	1090	110	25	0.020
10.0	2660	500	85	0.038	870	110	25	0.025
12.0	2220	560	85	0.050	720	130	25	0.036
14.0	1900	540	85	0.057	620	140	25	0.045
16.0	1660	520	85	0.063	540	130	25	0.048
20.0	1330	500	85	0.075	430	130	25	0.060





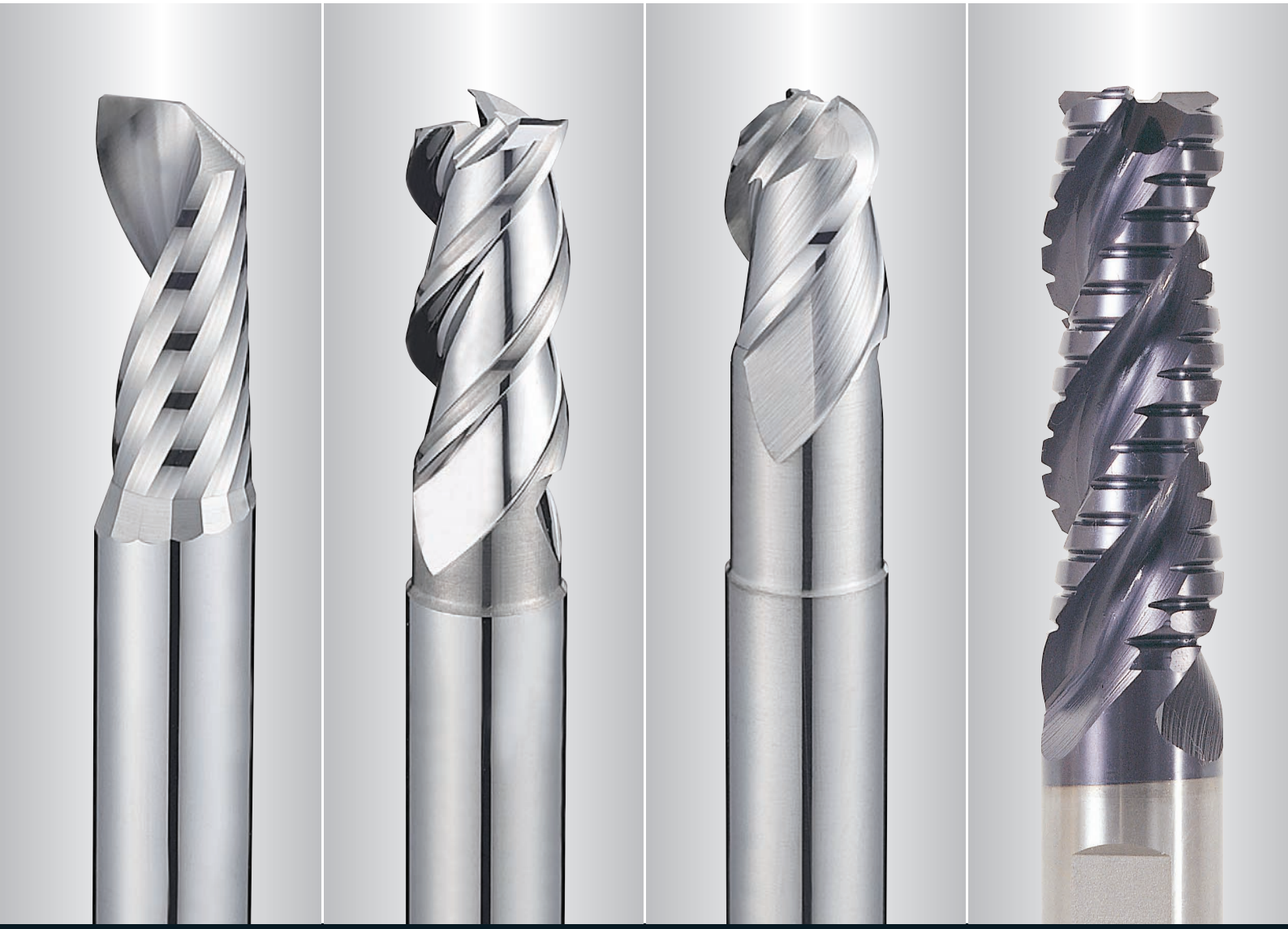
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

Global Cutting Tool Leader **YG-1**



CARBIDE

Being the best through innovation



ALU-POWER

ALU-POWER FRÄSER

- Aluminium Alloys and Silent Cutting
- Für Aluminiumlegierungen in schwerem und ruhigem Schnitt

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
E5E47		CARBIDE, 1 FLUTE VOLLHARTMETALL, 1 SCHNEIDEN	D2.0	D12.0	962
E5930		CARBIDE, 2 FLUTE 25° HELIX CORNER RADIUS with NECK VOLLHARTMETALL, 2 SCHNEIDEN 25° RECHTSSPIRALE ECKENRADIUS mit ABGESETZTEM SCHAFTTETL	D2.0	D20.0	963
E5E48		CARBIDE, 2 FLUTE 45° HELIX SHORT LENGTH VOLLHARTMETALL, 2 SCHNEIDEN 45° RECHTSSPIRALE KURZ	D3.0	D20.0	964
E5522 E5521		CARBIDE, 2 FLUTE 45° HELIX LONG LENGTH VOLLHARTMETALL, 2 SCHNEIDEN 45° RECHTSSPIRALE LANG	D3.0	D20.0	965
E5909		CARBIDE, 2 FLUTE CORNER RADIUS with NECK VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS mit ABGESETZTEM SCHAFTTETL	D4.0	D20.0	966
E5E50		CARBIDE, 3 FLUTE 45° HELIX with NECK VOLLHARTMETALL, 3 SCHNEIDEN 45° RECHTSSPIRALE mit ABGESETZTEM SCHAFTTETL	D3.0	D20.0	967
E5E49		CARBIDE, 3 FLUTE 45° HELIX LONG LENGTH VOLLHARTMETALL, 3 SCHNEIDEN 45° RECHTSSPIRALE LANG	D3.0	D20.0	968
E5E51		CARBIDE, 3 FLUTE 45° HELIX LONG LENGTH CORNER RADIUS VOLLHARTMETALL, 3 SCHNEIDEN 45° RECHTSSPIRALE LANG ECKENRADIUS	D3.0	D20.0	969
E5910		CARBIDE, 2 FLUTE 50° HELIX BALL NOSE with NECK VOLLHARTMETALL, 2 SCHNEIDEN 50° RECHTSSPIRALE STIRNRADIUS mit ABGESETZTEM SCHAFTTETL	R3.0	R10.0	970
E5908		CARBIDE, 3 FLUTE 40° HELIX BALL NOSE with NECK VOLLHARTMETALL, 3 SCHNEIDEN 40° RECHTSSPIRALE STIRNRADIUS mit ABGESETZTEM SCHAFTTETL	R1.0	R8.0	971
E5742 E5711		CARBIDE, 3 FLUTE LONG LENGTH ROUGHING VOLLHARTMETALL, 3 SCHNEIDEN LANG SCHRUPPFRÄSER	D6.0	D25.0	972
E5E39 E5E40		CARBIDE, 3 FLUTE ROUGHING with NECK VOLLHARTMETALL, 3 SCHNEIDEN SCHRUPPFRÄSER mit ABGESETZTEM SCHAFTTETL	D6.0	D20.0	973
EP922 EP923		YPM, 3 FLUTE 42° HELIX SHORT LENGTH ROUGHING TiAlN COATED PREMIUM HSS-PM, 3 SCHNEIDEN 42° RECHTSSPIRALE KURZ SCHRUPPFRÄSER TiAlN-BESCHICHTET	D12.0	D32.0	974
EP924 EP925		YPM, 3 FLUTE 42° HELIX LONG LENGTH ROUGHING TiAlN COATED PREMIUM HSS-PM, 3 SCHNEIDEN 42° RECHTSSPIRALE LANG SCHRUPPFRÄSER TiAlN-BESCHICHTET	D12.0	D32.0	975
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			976

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									◎				◎	
									◎					
									◎					
									◎					
						○			◎					
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○	○							○	◎					
								○	◎					
								○	◎					

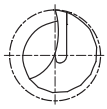
ALU-POWER END MILLS

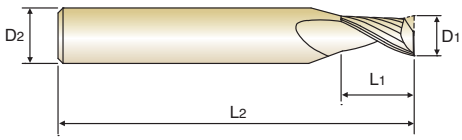
E5E47 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 1 FLUTE
VOLLHARTMETALL, 1 SCHNEIDEN

- Designed to non-ferrous material and non-metal like aluminum and acrylic
- 1 Flute allows for excellent workpiece finishes and chip evacuation

- Entwickelt für NE-Metalle und nichtmetallische Werkstoffe wie Aluminium und Acryl
- 1 Spannute ermöglicht hervorragende Werkstückoberflächen und Spanabfuhr





MG HM | 1 | 30° | PLAIN P.976

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
E5E47020	2.0	3	8	50
E5E47030	3.0	3	12	50
E5E47040	4.0	4	15	60
E5E47050	5.0	5	17	60
E5E47060	6.0	6	20	65
E5E47080	8.0	8	22	65
E5E47100	10.0	10	25	75
E5E47120	12.0	12	30	80

- TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									◎				◎	

ALU-POWER END MILLS

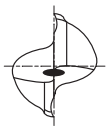
E5930 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

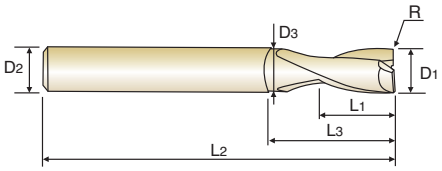
CARBIDE, 2 FLUTE 25° HELIX CORNER RADIUS with NECK

VOLLHARTMETALL, 2 SCHNEIDEN 25° RECHTSSPIRALE ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

- Designed for the machining aluminum and aluminum alloys, non-ferrous materials
- Mirror surface - Excellent surface finishes
- Increased tool life and higher cutting accuracy
- Maximum-metal removal rate
- Superior chip evacuation
- Corner Radius for avoiding the chipping

- Entwickelt für die Bearbeitung von Aluminium, Aluminiumlegierungen, NE-Metalle
- Spiegel-Oberfläche - Hervorragendes Oberflächenfinishing.
- Verbesserte Standzeiten und höhere Fräsgenauigkeit.
- Maximale Zerspanungsleistung.
- Überlegene Spanabfuhr
- Eckradien verhindern Schneidkantenausbrüche





MG HM | 2 | 25° | PLAIN

P.976

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
E5930020	R0.2	2.0	3	3	6	40	1.9
E5930030	R0.2	3.0	3	4	8	40	2.9
E5930040	R0.2	4.0	4	5	12	50	3.8
E5930050	R0.2	5.0	5	8	14	50	4.8
E5930060	R0.2	6.0	6	8	18	65	5.7
E5930080	R0.2	8.0	8	10	22	70	7.7
E5930100	R0.2	10.0	10	14	28	80	9.7
E5930120	R0.2	12.0	12	16	35	90	11.5
E5930160	R0.2	16.0	16	20	40	90	15.5
E5930200	R0.2	20.0	20	25	50	100	19.5

- TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									◎					

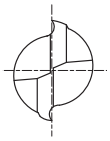
ALU-POWER END MILLS

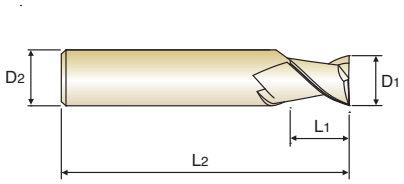
E5E48 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE 45° HELIX SHORT LENGTH
VOLLHARTMETALL, 2 SCHNEIDEN 45° RECHTSSPIRALE KURZ

- Suitable for high speed machining in aluminum and other non-ferrous materials
- Mirror surface - Excellent surface finishes
- Superior chip evacuation
- Reduces chipping of corner edges

- Zur HSC- Bearbeitung von Aluminium und anderen Nichteisenmetallen.
- Spiegel-Oberfläche - Hervorragendes Oberflächenfinishing.
- Überlegene Spanabfuhr
- Reduzierung von Schneideckenausbrüchen.





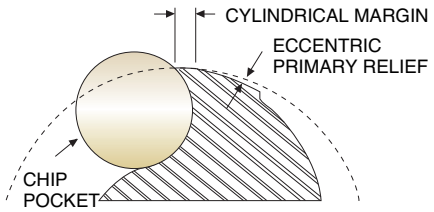
MG HM | 2 | 45° | PLAIN P.978

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
E5E48030	3.0	6	5	50
E5E48040	4.0	6	8	54
E5E48050	5.0	6	9	54
E5E48060	6.0	6	10	54
E5E48080	8.0	8	12	58
E5E48100	10.0	10	14	66
E5E48120	12.0	12	16	73
E5E48140	14.0	14	18	75
E5E48160	16.0	16	22	82
E5E48180	18.0	18	24	84
E5E48200	20.0	20	26	92

- TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.015	h6



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									◎					

ALU-POWER END MILLS

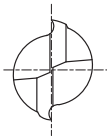
E5522 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

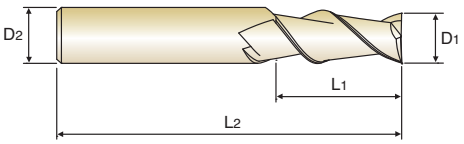
E5521 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 2 FLUTE 45° HELIX LONG LENGTH
VOLLHARTMETALL, 2 SCHNEIDEN 45° RECHTSSPIRALE LANG

- Suitable for high speed machining in aluminum and other non-ferrous materials
- Mirror surface - Excellent surface finishes
- Superior chip evacuation
- Reduces chipping of corner edges

- Zur HSC- Bearbeitung von Aluminium und anderen Nichteisenmetallen.
- Spiegel-Oberfläche - Hervorragendes Oberflächenfinishing.
- Überlegene Spanabfuhr
- Reduzierung von Schneideckenausbrüchen.





MG HM | 2 | 45° | PLAIN | FLAT

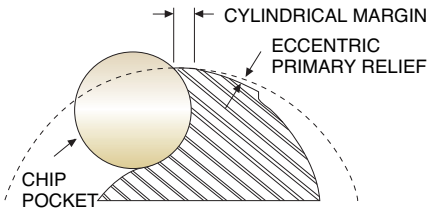
P.978

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	D_1	D_2	L_1	L_2
E5522030	E5521030	3.0	6	8	57
E5522040	E5521040	4.0	6	11	57
E5522050	E5521050	5.0	6	13	57
E5522060	E5521060	6.0	6	13	57
E5522080	E5521080	8.0	8	19	63
E5522100	E5521100	10.0	10	22	72
E5522120	E5521120	12.0	12	26	83
E5522140	E5521140	14.0	14	26	83
E5522160	E5521160	16.0	16	32	92
E5522180	E5521180	18.0	18	32	92
E5522200	E5521200	20.0	20	38	104

- TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.015	h6



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									◎					

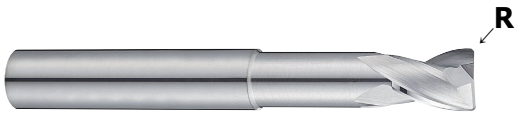
ALU-POWER END MILLS

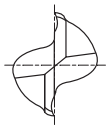
E5909 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

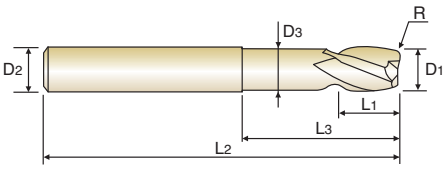
CARBIDE, 2 FLUTE CORNER RADIUS with NECK
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

- Excellent cutting qualities on aluminum, copper
- Increased tool life and higher cutting accuracy
- Mirror surface - Excellent surface finishes

- Ausgezeichnete Schneideigenschaften in Aluminium, Kupfer
- Verbesserte Standzeiten und höhere Fräsgenauigkeit.
- Spiegel-Oberfläche - Hervorragendes Oberflächenfinishing.







MG HM | 2 | 30° | PLAIN

P.977

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
E5909040	R0.3	4.0	6	5	10	50	3.6
E5909060	R0.5	6.0	6	8	20	60	5.4
E5909080	R0.6	8.0	8	10	30	70	7.2
E5909100	R0.8	10.0	10	12	36	80	9
E5909120	R1.0	12.0	12	14	40	90	11
E5909160	R1.3	16.0	16	18	45	100	14.5
E5909200	R1.6	20.0	20	24	45	100	18

- TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
						○			◎					

ALU-POWER END MILLS

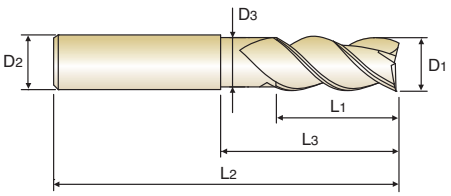
E5E50 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 3 FLUTE 45° HELIX with NECK

VOLLHARTMETALL, 3 SCHNEIDEN 45° RECHTSSPIRALE mit ABGESETZTEM SCHAFTTETL

- ▶ Excellent cutting qualities on aluminum, copper
- ▶ Increased tool life and higher cutting accuracy
- ▶ Mirror surface - Excellent surface finishes
- ▶ Superior chip evacuation
- ▶ Reduces chipping of corner edges

- ▶ Ausgezeichnete Schneideigenschaften in Aluminium, Kupfer
- ▶ Verbesserte Standzeiten und höhere Fräsgenauigkeit.
- ▶ Spiegel-Oberfläche - Hervorragendes Oberflächenfinishing.
- ▶ Überlegene Spanabfuhr
- ▶ Reduzierung von Schneideckenausbrüchen.



MG HM | 3 | 45° | PLAIN

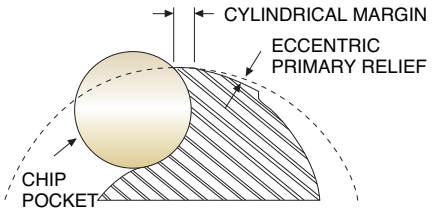
P.978

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
E5E50030	3.0	6	8	12	57	2.7
E5E50040	4.0	6	11	18	57	3.7
E5E50050	5.0	6	13	18	57	4.7
E5E50060	6.0	6	13	18	57	5.7
E5E50080	8.0	8	21	25	63	7.4
E5E50100	10.0	10	22	30	72	9.2
E5E50120	12.0	12	26	36	83	11
E5E50160	16.0	16	36	42	92	15
E5E50200	20.0	20	41	52	104	19

▶ TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.015	h6



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									◎					

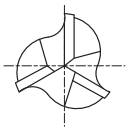
ALU-POWER END MILLS

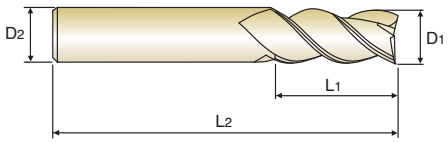
E5E49 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 3 FLUTE 45° HELIX LONG LENGTH
VOLLHARTMETALL, 3 SCHNEIDEN 45° RECHTSSPIRALE LANG

- Excellent cutting qualities on aluminum, copper
- Increased tool life and higher cutting accuracy
- Mirror surface - Excellent surface finishes
- Superior chip evacuation
- Reduces chipping of corner edges

- Ausgezeichnete Schneideigenschaften in Aluminium, Kupfer
- Verbesserte Standzeiten und höhere Fräsgenauigkeit.
- Spiegel-Oberfläche - Hervorragendes Oberflächenfinishing.
- Überlegene Spanabfuhr
- Reduzierung von Schneideckenausbrüchen.





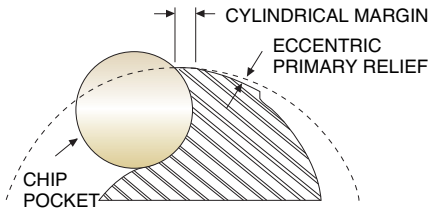
MG HM | 3 | 45° | PLAIN P.978

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
E5E49030	3.0	6	12	57
E5E49040	4.0	6	15	57
E5E49050	5.0	6	20	57
E5E49060	6.0	6	20	65
E5E49080	8.0	8	22	65
E5E49100	10.0	10	25	70
E5E49120	12.0	12	25	75
E5E49160	16.0	16	35	90
E5E49200	20.0	20	40	100

▶ TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.015	h6



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									◎					

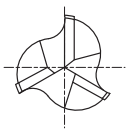
ALU-POWER END MILLS

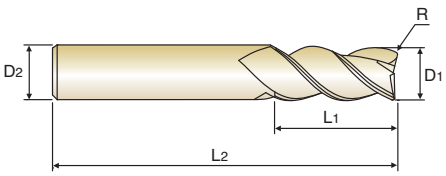
E5E51 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

CARBIDE, 3 FLUTE 45° HELIX LONG LENGTH CORNER RADIUS
VOLLHARTMETALL, 3 SCHNEIDEN 45° RECHTSSPIRALE LANG ECKENRADIUS

- Excellent cutting qualities on aluminum, copper
- Increased tool life and higher cutting accuracy
- Mirror surface - Excellent surface finishes
- Superior chip evacuation

- Ausgezeichnete Schneideigenschaften in Aluminium, Kupfer
- Verbesserte Standzeiten und höhere Fräsgenauigkeit.
- Spiegel-Oberfläche - Hervorragendes Oberflächenfinishing.
- Überlegene Spanabfuhr





MG HM | 3 | 45° | PLAIN

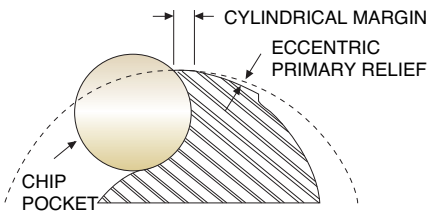
P.979

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
E5E51030	R0.5	3.0	6	12	57
E5E51901	R1.0	3.0	6	12	57
E5E51040	R0.5	4.0	6	15	57
E5E51902	R1.0	4.0	6	15	57
E5E51050	R0.5	5.0	6	20	57
E5E51903	R1.0	5.0	6	20	57
E5E51060	R0.5	6.0	6	20	65
E5E51904	R1.0	6.0	6	20	65
E5E51080	R0.5	8.0	8	22	65
E5E51905	R1.0	8.0	8	22	65
E5E51100	R0.5	10.0	10	25	70
E5E51906	R1.0	10.0	10	25	70
E5E51907	R2.0	10.0	10	25	70
E5E51120	R0.5	12.0	12	25	75
E5E51908	R1.0	12.0	12	25	75
E5E51909	R2.0	12.0	12	25	75
E5E51160	R0.5	16.0	16	35	90
E5E51910	R1.0	16.0	16	35	90
E5E51911	R2.0	16.0	16	35	90
E5E51200	R0.5	20.0	20	40	100
E5E51912	R1.0	20.0	20	40	100
E5E51913	R2.0	20.0	20	40	100

- TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.015	h6



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									◎					

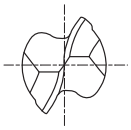
ALU-POWER END MILLS

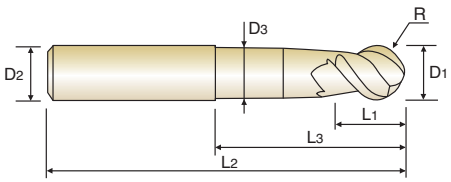
E5910 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE 50° HELIX BALL NOSE with NECK

VOLLHARTMETALL, 2 SCHNEIDEN 50° RECHTSSPIRALE STIRNRADIUS mit ABGESETZTEM SCHAFTTETL

- Excellent cutting qualities on aluminum, copper
- Increased tool life and higher cutting accuracy
- Ausgezeichnete Schneideigenschaften in Aluminium, Kupfer
- Verbesserte Standzeiten und höhere Fräsgenauigkeit.





MG HM | 2 | 50° | R ±0.01 | PLAIN

P.980

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
E5910060	R3.0	6.0	6	5.5	25	55	5.4
E5910080	R4.0	8.0	8	7	30	65	7.2
E5910100	R5.0	10.0	10	8.5	35	75	9
E5910120	R6.0	12.0	12	10.5	40	75	11
E5910160	R8.0	16.0	16	14	50	90	14.5
E5910200	R10.0	20.0	20	17	50	100	18

- TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
±0.02	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
						○			◎					

ALU-POWER END MILLS

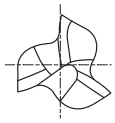
E5908 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

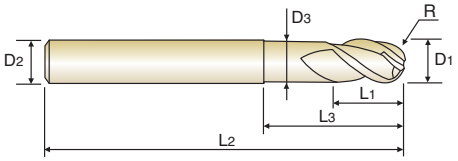
CARBIDE, 3 FLUTE 40° HELIX BALL NOSE with NECK

VOLLHARTMETALL, 3 SCHNEIDEN 40° RECHTSSPIRALE STIRNRADIUS mit ABGESETZTEM SCHAFTTETL

- Excellent cutting qualities on aluminum, copper
- Increased tool life and higher cutting accuracy
- Mirror surface - Excellent surface finishes

- Ausgezeichnete Schneideigenschaften in Aluminium, Kupfer
- Verbesserte Standzeiten und höhere Fräsgenauigkeit.
- Spiegel-Oberfläche - Hervorragendes Oberflächenfinishing.





MG HM | 3 | 40° | R ±0.01 | PLAIN

P.980

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
E5908020	R1.0	2.0	6	3	5	60	1.9
E5908025	R1.25	2.5	6	4	6	60	2.4
E5908030	R1.5	3.0	6	4.5	6.5	60	2.8
E5908035	R1.75	3.5	6	5	7	65	3.2
E5908040	R2.0	4.0	6	6	8	65	3.7
E5908050	R2.5	5.0	6	7.5	10	65	4.6
E5908060	R3.0	6.0	6	9	12	75	5.6
E5908080	R4.0	8.0	8	12	25	75	7.4
E5908100	R5.0	10.0	10	15	30	80	9.4
E5908120	R6.0	12.0	12	18	36	90	11.4
E5908160	R8.0	16.0	16	24	40	100	15.4

- TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
						○			◎					

ALU-POWER END MILLS

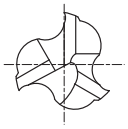
E5742 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

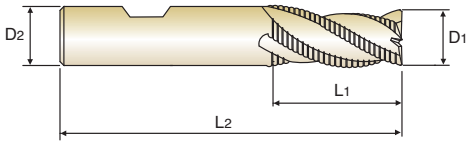
E5711 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 3 FLUTE LONG LENGTH ROUGHING
VOLLHARTMETALL, 3 SCHNEIDEN LANG SCHRUPPFRÄSER

- Excellent cutting qualities on aluminum, copper
- Increased tool life and superior chip evacuation
- Reduces chipping of corner edges

- Ausgezeichnete Schneideigenschaften in Aluminium, Kupfer
- Verbesserte Standzeiten und höhere Fräsgenauigkeit.
- Reduzierung von Schneideckenausbrüchen.





MG HM | YG STD | WR | ALU | 3 | 30° | DIN 6535HA | DIN 6535HB

P.979

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Mill Diameter D1(h10)	Shank Diameter D2(h6)	Length of Cut L1	Overall Length L2
E5742060	E5711060	6.0	6	16	57
E5742070	E5711070	7.0	8	16	63
E5742080	E5711080	8.0	8	16	63
E5742090	E5711090	9.0	10	19	72
E5742100	E5711100	10.0	10	22	72
E5742120	E5711120	12.0	12	26	83
E5742140	E5711140	14.0	14	26	83
E5742160	E5711160	16.0	16	32	92
E5742180	E5711180	18.0	18	32	92
E5742200	E5711200	20.0	20	38	104
E5742250	E5711250	25.0	25	45	121

- TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm Nominal-Diameter in mm / Nennmaßbereich in mm					
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	○							○	◎					

ALU-POWER END MILLS

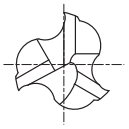
E5E39 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

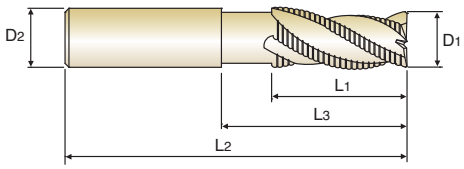
E5E40 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 3 FLUTE ROUGHING with NECK
VOLLHARTMETALL, 3 SCHNEIDEN SCHRUPPFRÄSER mit ABGESETZTEM SCHAFTTETL

- Excellent cutting qualities on aluminum, copper
- Increased tool life and superior chip evacuation
- Reduces chipping of corner edges

- Ausgezeichnete Schneideigenschaften in Aluminium, Kupfer
- Verbesserte Standzeiten und höhere Fräsgenauigkeit.
- Reduzierung von Schneideckenausbrüchen.





MG HM | YG STD | WR | ALU | 3 | 30° | DIN 6535HA | DIN 6535HB

P.979

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
PLAIN	FLAT	D_1	D_2	L_1	L_3	L_2	D_3
E5E39060	**E5E40060**	**6.0**	6	16	20	57	5
E5E39080	**E5E40080**	**8.0**	8	16	25	63	7
E5E39100	**E5E40100**	**10.0**	10	22	30	72	9
E5E39120	**E5E40120**	**12.0**	12	26	36	83	10.5
E5E39160	**E5E40160**	**16.0**	16	32	42	92	14.5
E5E39200	**E5E40200**	**20.0**	20	38	52	104	18.5

- TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛
Nominal-Diameter in ㎜ / Nennmaßbereich in ㎜

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	○							○	◎					

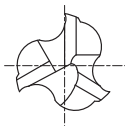
ALU-POWER END MILLS

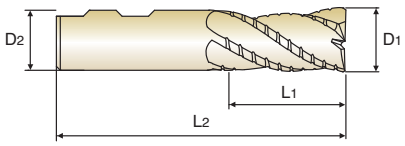
EP922 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT
EP923 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

YPM, 3 FLUTE 42° HELIX SHORT LENGTH ROUGHING TiAlN COATED
PREMIUM HSS-PM, 3 SCHNEIDEN 42° RECHTSSPIRALE KURZ SCHRUPPFRÄSER TiAlN-BESCHICHTET

- Maximum metal removal rate at High Speed Condition
- Reduces vibrations and improves surface roughness
- Reduces chipping of corner edges

- Maximale Zerspanungsleistung bei der High-Speed-Bearbeitung (HSC)
- Reduziert Vibrationen und verbessert die Oberflächenrauhigkeit
- Reduzierung von Schneideckenausbrüchen.





YPM | ALU | 3 | 42° | PLAIN | FLAT

P.981

Unit : mm

EDP No. PLAIN	EDP No. FLAT	Mill Diameter D1(js12)	Shank Diameter D2(h6)	Length of Cut L1	Overall Length L2
EP922120	EP923120	12.0	12	26	83
EP922140	EP923140	14.0	12	26	83
EP922160	EP923160	16.0	16	32	92
EP922180	EP923180	18.0	16	32	92
EP922200	EP923200	20.0	20	38	104
EP922220	EP923220	22.0	20	38	104
EP922250	EP923250	25.0	25	45	121
EP922280	EP923280	28.0	25	45	121
EP922320	EP923320	32.0	32	53	133

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm Nominal-Diameter in mm / Nennmaßbereich in mm						
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
js12	± 50	± 60	± 75	± 90	± 105	± 125
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13	0 — 16

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
								○	◎					

ALU-POWER END MILLS

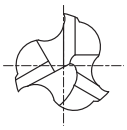
EP924 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

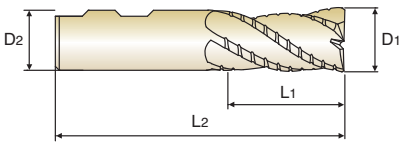
EP925 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

YPM, 3 FLUTE 42° HELIX LONG LENGTH ROUGHING TiAlN COATED
PREMIUM HSS-PM, 3 SCHNEIDEN 42° RECHTSSPIRALE LANG SCHRUPPFRÄSER TiAlN-BESCHICHTET

- Maximum metal removal rate at High Speed Condition
- Reduces vibrations and improves surface roughness
- Reduces chipping of corner edges

- Maximale Zerspanungsleistung bei der High-Speed-Bearbeitung (HSC)
- Reduziert Vibrationen und verbessert die Oberflächenrauhigkeit
- Reduzierung von Schneideckenausbrüchen.





YPM ALU 3 42° PLAIN FLAT P.981

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	D1(js12)	D2(h6)	L1	L2
EP924120	**EP925120**	**12.0**	12	53	110
EP924140	**EP925140**	**14.0**	12	53	110
EP924160	**EP925160**	**16.0**	16	63	123
EP924180	**EP925180**	**18.0**	16	63	123
EP924200	**EP925200**	**20.0**	20	75	141
EP924220	**EP925220**	**22.0**	20	75	141
EP924250	**EP925250**	**25.0**	25	90	166
EP924280	**EP925280**	**28.0**	25	90	166
EP924320	**EP925320**	**32.0**	32	106	186

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm						
Nominal-Diameter in mm / Nennmaßbereich in mm						
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
js12	± 50	± 60	± 75	± 90	± 105	± 125
h6	0 / − 6	0 / − 8	0 / − 9	0 / − 11	0 / − 13	0 / − 16

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
								○	◎					

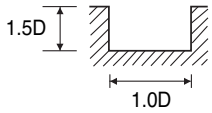
ALU-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 1 FLUTE
VOLLHARTMETALL, 1 SCHNEIDEN

E5E47 SERIES

MATERIAL	ACRYLIC				ALUMINUM ALUMINUM ALLOY			
DIAMETER	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz
2.0	32000	2200	200	0.069	23000	1500	145	0.065
3.0	25000	2400	235	0.096	18000	1700	170	0.094
4.0	20000	2400	250	0.120	15000	1800	190	0.120
5.0	15000	2200	235	0.147	12000	1800	190	0.150
6.0	13500	2300	255	0.170	10000	1800	190	0.180
8.0	10000	2400	250	0.240	7800	1900	195	0.244
10.0	8000	2400	250	0.300	6000	2000	190	0.333
12.0	6700	2300	255	0.343	5000	2200	190	0.440

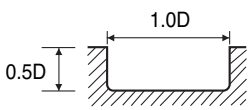


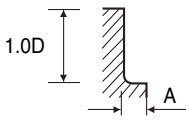
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE, 2FLUTE 25° HELIX CORNER RADIUS with NECK
VOLLHARTMETALL, 2 SCHNEIDEN 25° RECHTSSPIRALE ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

E5930 SERIES

MATERIAL	ALUMINUM ALUMINUM ALLOY							
DIAMETER	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz
2.0	10400	460	65	0.022	10400	810	65	0.039
3.0	10400	720	100	0.035	10400	960	100	0.046
4.0	10400	960	130	0.046	10400	1120	130	0.054
5.0	10400	1040	165	0.050	10400	1360	165	0.065
6.0	10400	1200	195	0.058	10400	1600	195	0.077
8.0	8000	1440	200	0.090	8000	1840	200	0.115
10.0	8000	1760	250	0.110	8000	2160	250	0.135
12.0	8000	2160	300	0.135	8000	2720	300	0.170
16.0	6400	2000	320	0.156	6400	2480	320	0.194
20.0	4000	1600	250	0.200	4000	2000	250	0.250





A : Ø2 ~ Ø10 = 0.25 × D
Ø12 ~ Ø20 = 0.5 × D

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

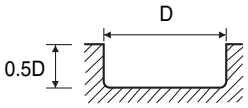
ALU-POWER END MILLS

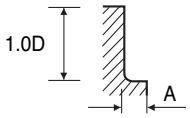
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE CORNER RADIUS with NECK
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

E5909 SERIES

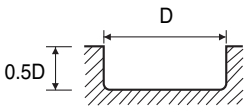
MATERIAL	ALUMINUM ALUMINUM ALLOY							
DIAMETER	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz
4.0	10400	960	130	0.046	10400	1120	130	0.054
6.0	10400	1200	195	0.058	10400	1600	195	0.077
8.0	8000	1440	200	0.090	8000	1840	200	0.115
10.0	8000	1760	250	0.110	8000	2160	250	0.135
12.0	8000	2160	300	0.135	8000	2720	300	0.170
16.0	6400	2000	320	0.156	6400	2480	320	0.194
20.0	4000	1600	250	0.200	4000	2000	250	0.250

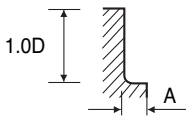




A : ~Ø10=0.25D
Ø12~Ø20=0.5D

MATERIAL	COPPER ALLOY							
DIAMETER	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz
4.0	3120	240	40	0.038	3120	280	40	0.045
6.0	3120	305	60	0.049	3120	400	60	0.064
8.0	2400	360	60	0.075	2400	465	60	0.097
10.0	2400	440	75	0.092	2400	545	75	0.114
12.0	2400	545	90	0.114	2400	680	90	0.142
16.0	1920	505	95	0.132	1920	625	95	0.163
20.0	1200	400	75	0.167	1200	505	75	0.210





A : ~Ø10=0.25D
Ø12~Ø20=0.5D

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

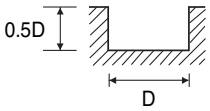
ALU-POWER END MILLS

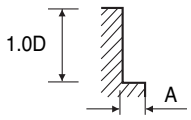
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE 45° HELIX
VOLLHARTMETALL, 2 SCHNEIDEN 45° RECHTSSPIRALE

E5E48, E5522, E5521 SERIES

MATERIAL	ALUMINUM ALUMINUM ALLOY							
DIAMETER	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz
3.0	10000	700	95	0.035	10000	900	95	0.045
4.0	10000	900	125	0.045	10000	1100	125	0.055
5.0	10000	1000	155	0.050	10000	1300	155	0.065
6.0	10000	1200	190	0.060	10000	1500	190	0.075
8.0	8000	1400	200	0.088	8000	1800	200	0.113
10.0	8000	1700	250	0.106	8000	2100	250	0.131
12.0	8000	2100	300	0.131	8000	2600	300	0.163
14.0	6000	1800	265	0.150	6000	2200	265	0.183
16.0	6000	1900	300	0.158	6000	2400	300	0.200
18.0	4000	1400	225	0.175	4000	1800	225	0.225
20.0	4000	1600	250	0.200	4000	1900	250	0.238





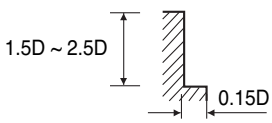
A : Ø3 ~ Ø10 = 0.25 × D
Ø12 ~ Ø20 = 0.5 × D

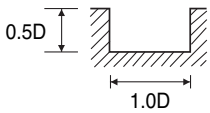
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE, 3 FLUTE 45° HELIX
VOLLHARTMETALL, 3 SCHNEIDEN 45° RECHTSSPIRALE

E5E49, E5E50 SERIES

MATERIAL	ALUMINUM LOW SILICON ALUMINUM							
DIAMETER	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz
3.0	7000	940	65	0.045	7000	730	65	0.035
4.0	7000	1150	90	0.055	7000	940	90	0.045
5.0	7000	1360	110	0.065	7000	1050	110	0.050
6.0	7000	1580	130	0.075	7000	1250	130	0.060
8.0	5600	1900	140	0.113	5600	1470	140	0.088
9.0	5600	2050	160	0.122	5600	1630	160	0.097
10.0	5600	2200	175	0.131	5600	1780	175	0.106
12.0	5600	2740	210	0.163	5600	2200	210	0.131
16.0	4200	2520	210	0.200	4200	1990	210	0.158
20.0	2800	2000	175	0.238	2800	1680	175	0.200





RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

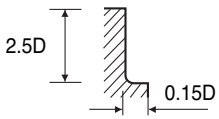
ALU-POWER END MILLS

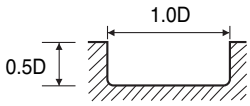
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 3 FLUTE 45° HELIX CORNER RADIUS
VOLLHARTMETALL, 3 SCHNEIDEN 45° RECHTSSPIRALE ECKENRADIUS

E5E51 SERIES

MATERIAL	ALUMINUM LOW SILICON ALUMINUM							
DIAMETER	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz
3.0	10000	1490	95	0.050	10000	1160	95	0.039
4.0	10000	1820	125	0.061	10000	1490	125	0.050
5.0	10000	2150	155	0.072	10000	1650	155	0.055
6.0	10000	2480	190	0.083	10000	1980	190	0.066
8.0	8000	3000	200	0.125	8000	2310	200	0.096
10.0	8000	3470	250	0.145	8000	2810	250	0.117
12.0	8000	4290	300	0.179	8000	3470	300	0.145
16.0	6000	3960	300	0.220	6000	3140	300	0.174
20.0	4000	3140	250	0.262	4000	2640	250	0.220



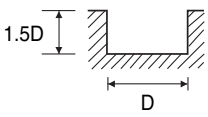


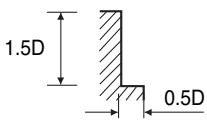
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE, 3 FLUTE ROUGHING
VOLLHARTMETALL, 3 SCHNEIDEN SCHRUPPFRÄSER

E5E39, E5E40, E5742, E5711 SERIES

MATERIAL	ALUMINUM							
DIAMETER	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz
6.0	13500	6800	200	0.168	10500	5300	198	0.168
8.0	10500	5300	200	0.168	8000	4000	201	0.167
10.0	8500	4300	205	0.169	6500	3500	204	0.179
12.0	8500	4200	320	0.165	6400	3200	241	0.167
16.0	6400	3200	322	0.167	4800	2400	241	0.167
20.0	5100	2500	320	0.163	3850	1900	242	0.165





RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

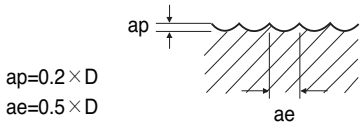
ALU-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE 50° HELIX BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN 50° RECHTSSPIRALE STIRNRADIUS

E5910 SERIES

MATERIAL	ALUMINUM ALUMINUM ALLOY				COPPER ALLOY			
DIAMETER	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz
R3.0 × 6.0	14400	1400	270	0.049	4400	350	85	0.040
R4.0 × 8.0	11200	1600	280	0.071	3360	400	85	0.060
R5.0 × 10.0	11200	1880	350	0.084	3360	465	105	0.069
R6.0 × 12.0	11200	2400	420	0.107	3360	600	125	0.089
R8.0 × 16.0	8800	2160	440	0.123	2640	535	135	0.101
R10.0 × 20.0	5600	1760	350	0.157	1680	440	105	0.131



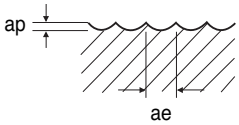
ap=0.2×D
ae=0.5×D

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE, 3 FLUTE 40° HELIX BALL NOSE
VOLLHARTMETALL, 3 SCHNEIDEN 40° RECHTSSPIRALE STIRNRADIUS

E5908 SERIES

MATERIAL	ALUMINUM ALUMINUM ALLOY				COPPER ALLOY			
DIAMETER	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz
R1.0 × 2.0	21600	760	135	0.018	6400	190	40	0.015
R1.25 × 2.5	17600	760	140	0.022	5200	190	40	0.018
R1.5 × 3.0	14400	760	135	0.026	4400	190	40	0.022
R1.75 × 3.5	14400	800	160	0.028	4400	190	50	0.022
R2.0 × 4.0	14400	1000	180	0.035	4400	250	55	0.028
R2.5 × 5.0	14400	1080	225	0.038	4400	270	70	0.031
R3.0 × 6.0	14400	1400	270	0.049	4400	350	85	0.040
R4.0 × 8.0	11200	1600	280	0.071	3360	400	85	0.060
R5.0 × 10.0	11200	1880	350	0.084	3360	465	105	0.069
R6.0 × 12.0	11200	2400	420	0.107	3360	600	125	0.089
R8.0 × 16.0	8800	2160	440	0.123	2640	535	135	0.101



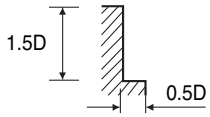
ap=0.2×D
ae=0.5×D

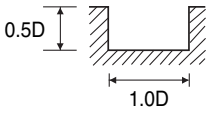
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

YPM, 3 FLUTE 42° HELIX ROUGHING TiAlN COATED
PREMIUM HSS-PM, 3 SCHNEIDEN 42° RECHTSSPIRALE SCHRUPPFRÄSER TiAlN-BESCHICHTET

EP922, EP923, EP924, EP925 SERIES

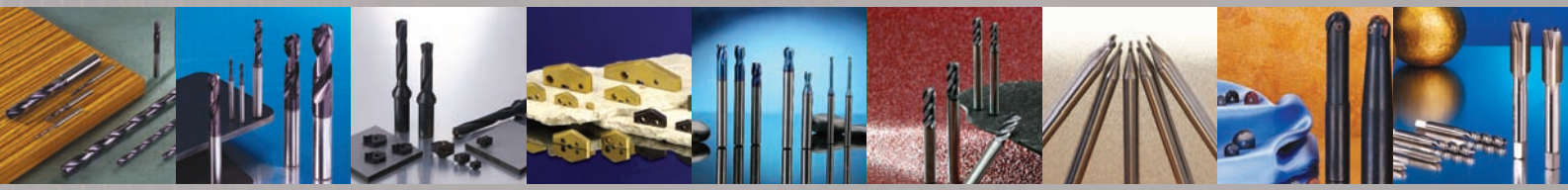
MATERIAL	ALUMINUM ALUMINUM ALLOY							
DIAMETER	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz
12.0	2800	550	105	0.065	2800	410	105	0.049
14.0	2500	600	110	0.080	2500	450	110	0.060
16.0	2200	625	110	0.095	2200	465	110	0.070
18.0	1950	680	110	0.116	1950	510	110	0.087
20.0	1700	700	105	0.137	1700	525	105	0.103
22.0	1600	685	110	0.143	1600	515	110	0.107
25.0	1400	625	110	0.149	1400	465	110	0.111
28.0	1250	675	110	0.180	1250	505	110	0.135
32.0	1100	700	110	0.212	1100	525	110	0.159





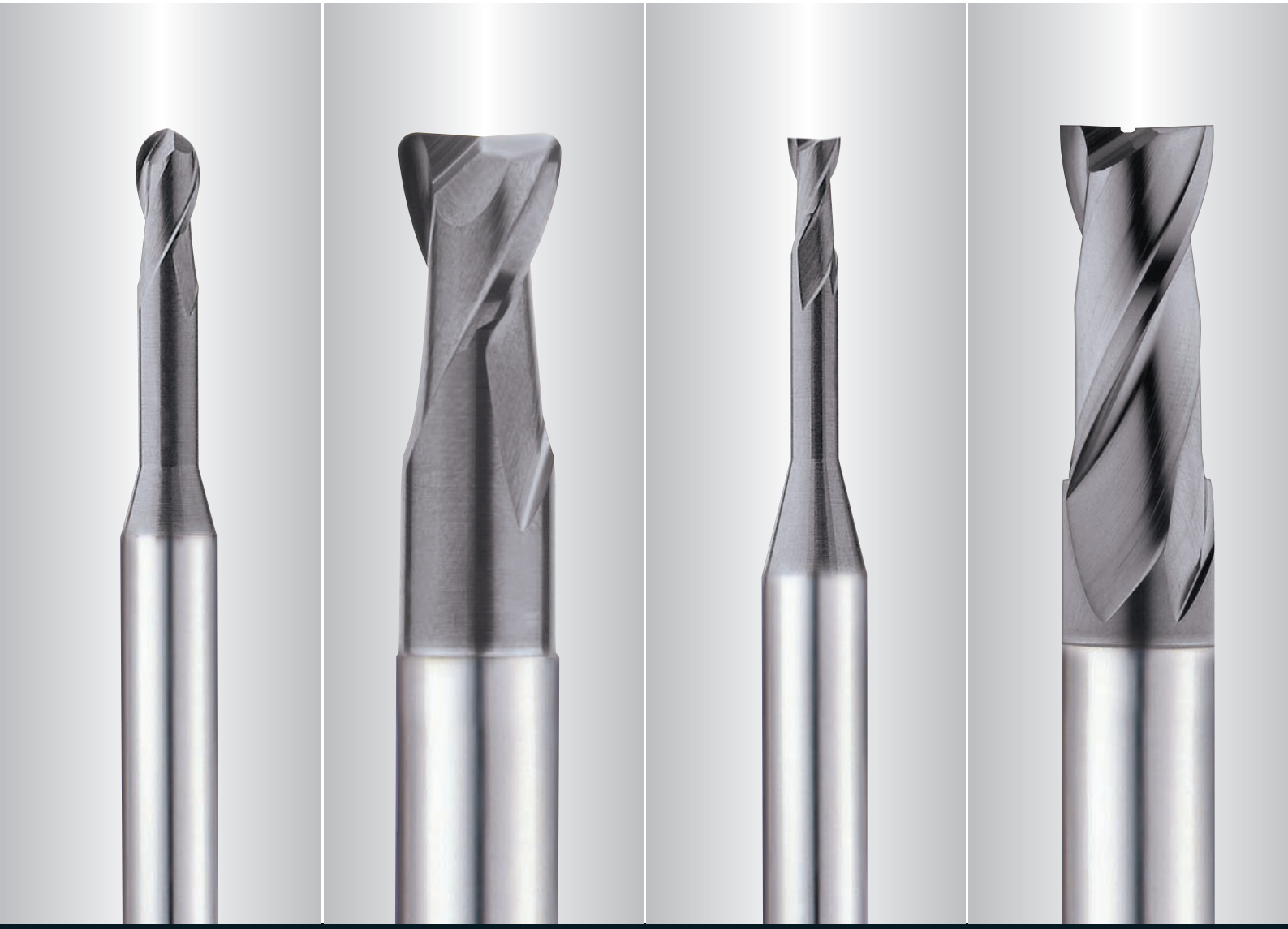
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

Global Cutting Tool Leader **YG-1**



CARBIDE

Being the best through innovation



CRX S

CRX S FRÄSER

- DLC Coated Carbide End Mills for Copper
- DLC beschichtete VHM Fräser für die Kuper - und Kupferlegierungen zu bearbeiten

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
SGED27		CARBIDE, 2 FLUTE BALL NOSE DLC COATING with EXTENDED NECK VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS DLC BESCHICHTUNG mit ABGESETZTEM SCHAFTTETL	R0.25	R6.0	986
SGED28		CARBIDE, 2 FLUTE BALL NOSE DLC COATING VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS DLC BESCHICHTUNG	R0.5	R6.0	988
SGED29		CARBIDE, 2 FLUTE CORNER RADIUS DLC COATING with EXTENDED NECK VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS DLC BESCHICHTUNG mit ABGESETZTEM SCHAFTTETL	D1.0	D12.0	989
SGED30		CARBIDE, 2 FLUTE DLC COATING with EXTENDED NECK VOLLHARTMETALL, 2 SCHNEIDEN DLC BESCHICHTUNG mit ABGESETZTEM SCHAFTTETL	D0.5	D12.0	991
SGED31		CARBIDE, 2 FLUTE DLC COATING VOLLHARTMETALL, 2 SCHNEIDEN DLC BESCHICHTUNG	D1.0	D12.0	993
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			994

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
						◎			○					
						◎			○					
						◎			○					
						◎			○					
						◎			○					

CRX S END MILLS

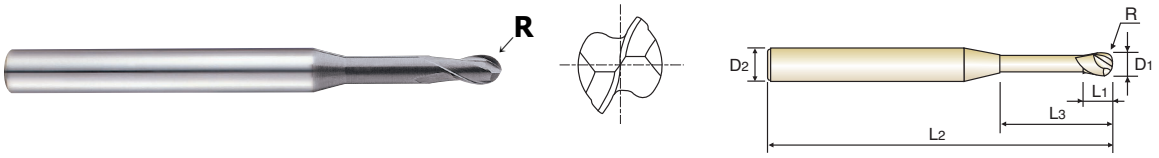
SGED27 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE BALL NOSE DLC COATING with EXTENDED NECK

VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS DLC BESCHICHTUNG mit ABGESETZTEM SCHAFTTETL

- Designed for copper, copper alloys soft graphites, reinforced plastics and the materials affiliated with non-ferrous metals.
- Tight radius tolerance is applied (±0.005mm tolerance under R3).
- Excellent surface roughness thanks to Mirror Face of cutting edges
- High strength and minimized vibration are available due to two step taper neck(under R0.5).

- Entwickelt für die Bearbeitung von Kupfer, Kupferlegierungen, sowie faserverstärkten Kunststoffen, NE- Metallen
- Hochgenaue Raduistoleranz (±0.005mm Toleranz unter R3mm)
- Sehr gute Oberflächenrauhigkeit wird durch die besonders behandelte Schneide erreicht
- Hohe Zähigkeit und verminderte Vibrationen werden durch den besonderen kegelförmigen Hals erreicht, (unter R 0,5mm)



NG HM | 2 | 30° | R ±0.005 (R0.25~R3) | R ±0.010 (R4~R6) | PLAIN | P.994

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SGED2700502	R0.25	0.5	4	0.5	2	45
SGED2700504	R0.25	0.5	4	0.5	4	45
SGED2700506	R0.25	0.5	4	0.5	6	45
SGED2700508	R0.25	0.5	4	0.5	8	45
SGED2700510	R0.25	0.5	4	0.5	10	45
SGED2700602	R0.3	0.6	4	0.6	2	45
SGED2700604	R0.3	0.6	4	0.6	4	45
SGED2700606	R0.3	0.6	4	0.6	6	45
SGED2700608	R0.3	0.6	4	0.6	8	45
SGED2700610	R0.3	0.6	4	0.6	10	45
SGED2700804	R0.4	0.8	4	0.8	4	45
SGED2700806	R0.4	0.8	4	0.8	6	45
SGED2700808	R0.4	0.8	4	0.8	8	45
SGED2700810	R0.4	0.8	4	0.8	10	45
SGED2700812	R0.4	0.8	4	0.8	12	45
SGED2701004	R0.5	1.0	4	1	4	45
SGED2701006	R0.5	1.0	4	1	6	45
SGED2701008	R0.5	1.0	4	1	8	45
SGED2701010	R0.5	1.0	4	1	10	45
SGED2701012	R0.5	1.0	4	1	12	45
SGED2701506	R0.75	1.5	4	1.5	6	45
SGED2701508	R0.75	1.5	4	1.5	8	45
SGED2701510	R0.75	1.5	4	1.5	10	45
SGED2701512	R0.75	1.5	4	1.5	12	45
SGED2701516	R0.75	1.5	4	1.5	16	50

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
						◎			○					

CRX S END MILLS

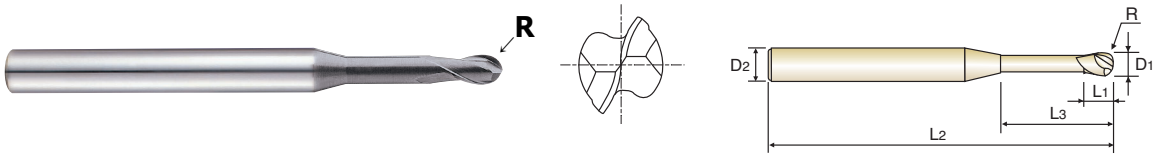
SGED27 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE BALL NOSE DLC COATING with EXTENDED NECK

VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS DLC BESCHICHTUNG mit ABGESETZTEM SCHAFTTETL

- Designed to copper, copper alloys soft graphites, reinforced plastics and the materials affiliated with non-ferrous metals.
- Tight radius tolerance is applied (±0.005mm tolerance under R3).
- Excellent surface roughness thanks to Mirror Face of cutting edges
- High strength and minimized vibration are available due to two step taper neck(under R0.5).

- Entwickelt für die Bearbeitung von Kupfer, Kupferlegierungen, sowie faserverstärkten Kunststoffen, NE- Metallen
- Hochgenaue Raduistoleranz (±0.005mm Toleranz unter R3mm)
- Sehr gute Oberflächenrauhigkeit wird durch die besonders behandelte Schneide erreicht
- Hohe Zähigkeit und verminderte Vibrationen werden durch den besonderen kegelförmigen Hals erreicht, (unter R 0,5mm)



NG HM | 2 | 30° | R ±0.005 (R0.25~R3) | R ±0.010 (R4~R6) | PLAIN | P.994

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SGED2702006	R1.0	2.0	4	3	6	45
SGED2702008	R1.0	2.0	4	3	8	45
SGED2702010	R1.0	2.0	4	3	10	45
SGED2702012	R1.0	2.0	4	3	12	45
SGED2702016	R1.0	2.0	4	3	16	50
SGED2703010	R1.5	3.0	6	4	10	50
SGED2703012	R1.5	3.0	6	4	12	50
SGED2703016	R1.5	3.0	6	4	16	60
SGED2703020	R1.5	3.0	6	4	20	60
SGED2704010	R2.0	4.0	6	5	10	50
SGED2704012	R2.0	4.0	6	5	12	50
SGED2704016	R2.0	4.0	6	5	16	60
SGED2704020	R2.0	4.0	6	5	20	60
SGED2704025	R2.0	4.0	6	5	25	60
SGED2706020	R3.0	6.0	6	8	20	60
SGED2706030	R3.0	6.0	6	8	30	90
SGED2708020	R4.0	8.0	8	10	20	70
SGED2710025	R5.0	10.0	10	12	25	80
SGED2712025	R6.0	12.0	12	14	25	80

Size	Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to R3	±0.005	0~−0.012	h6
over R3	±0.010	0~−0.015	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
						◎			○					

CRX S END MILLS

SGED28 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE BALL NOSE DLC COATING
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS DLC BESCHICHTUNG

- Designed to copper, copper alloys soft graphites, reinforced plastics and the materials affiliated with non-ferrous metals.
- Tight radius tolerance is applied (±0.005mm tolerance under R3).
- Excellent surface roughness thanks to Mirror Face of cutting edges

- Entwickelt für die Bearbeitung von Kupfer, Kupferlegierungen, sowie faserverstärkten Kunststoffen, NE- Metallen
- Hochgenaue Raduistoleranz (±0.005mm Toleranz unter R3mm)
- Sehr gute Oberflächenrauhigkeit wird durch die besonders behandelte Schneide erreicht

NG HM | 2 | 30° | R ±0.005 | PLAIN

P.994

Unit : mm

EDP No.	Radius of Ball Nose R (±0.005)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
SGED28010	R0.5	1.0	6	2.5	50
SGED28015	R0.75	1.5	6	4	50
SGED28020	R1.0	2.0	6	5	50
SGED28030	R1.5	3.0	6	8	60
SGED28040	R2.0	4.0	6	8	70
SGED28050	R2.5	5.0	6	12	90
SGED28060	R3.0	6.0	6	12	90
SGED28080	R4.0	8.0	8	16	100
SGED28100	R5.0	10.0	10	20	100
SGED28120	R6.0	12.0	12	25	110

Size	Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to R3	±0.005	0~−0.012	h6
over R3		0~−0.015	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
						◎			○					

CRX S END MILLS

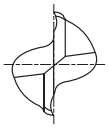
SGED29 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

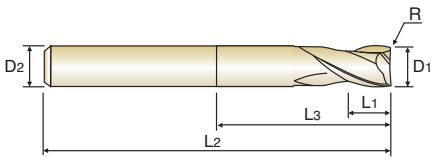
CARBIDE, 2 FLUTE CORNER RADIUS DLC COATING with EXTENDED NECK

VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS DLC BESCHICHTUNG mit ABGESETZTEM SCHAFTTETL

- Designed to copper, copper alloys soft graphites, reinforced plastics and the materials affiliated with non-ferrous metals.
- Suitable for various cutting application like roughing, semi-finishing and finishing thanks to application

- Entwickelt für die Bearbeitung von Kupfer, Kupferlegierungen, sowie faserverstärkten Kunststoffen, NE- Metallen
- Ausgelegt für verschiedene Anwendungen, z.B. schruppen, schruppschlichten und zur schlicht Bearbeitung, aufgrund der neuartigen Geometrie





NG HM | 2 | 30° | R ±0.010 (Ø1~Ø6) | R ±0.015 (Ø8~Ø12) | PLAIN | P.995

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SGED290100104	R0.1	1.0	4	1.5	4	45
SGED290100106	R0.1	1.0	4	1.5	6	45
SGED290100108	R0.1	1.0	4	1.5	8	45
SGED290100204	R0.2	1.0	4	1.5	4	45
SGED290100206	R0.2	1.0	4	1.5	6	45
SGED290100208	R0.2	1.0	4	1.5	8	45
SGED290150106	R0.1	1.5	4	2.3	6	45
SGED290150108	R0.1	1.5	4	2.3	8	45
SGED290150110	R0.1	1.5	4	2.3	10	45
SGED290150206	R0.2	1.5	4	2.3	6	45
SGED290150208	R0.2	1.5	4	2.3	8	45
SGED290150210	R0.2	1.5	4	2.3	10	45
SGED290200208	R0.2	2.0	4	3	8	45
SGED290200210	R0.2	2.0	4	3	10	45
SGED290200212	R0.2	2.0	4	3	12	45
SGED290200508	R0.5	2.0	4	3	8	45
SGED290200510	R0.5	2.0	4	3	10	45
SGED290200512	R0.5	2.0	4	3	12	45
SGED290300210	R0.2	3.0	6	4.5	10	50
SGED290300212	R0.2	3.0	6	4.5	12	50
SGED290300216	R0.2	3.0	6	4.5	16	60
SGED290300310	R0.3	3.0	6	4.5	10	50
SGED290300312	R0.3	3.0	6	4.5	12	50
SGED290300316	R0.3	3.0	6	4.5	16	60

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
						◎			○					

CRX S END MILLS

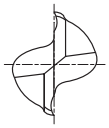
SGED29 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

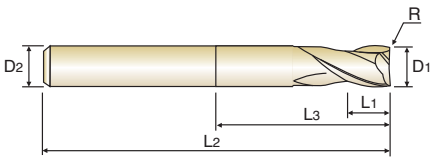
CARBIDE, 2 FLUTE CORNER RADIUS DLC COATING with EXTENDED NECK

VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS DLC BESCHICHTUNG mit ABGESETZTEM SCHAFTTETL

- Designed to copper, copper alloys soft graphites, reinforced plastics and the materials affiliated with non-ferrous metals.
- Suitable for various cutting application like roughing, semi-finishing and finishing thanks to application

- Entwickelt für die Bearbeitung von Kupfer, Kupferlegierungen, sowie faserverstärkten Kunststoffen, NE- Metallen
- Ausgelegt für verschiedene Anwendungen, z.B. schruppen, schruppschlichten und zur schlicht Bearbeitung, aufgrund der neuartigen Geometrie





NG HM | 2 | 30° | R ±0.010 Ø1~Ø6 | R ±0.015 Ø8~Ø12 | PLAIN

P.995

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SGED290400212	R0.2	4.0	6	6	12	50
SGED290400216	R0.2	4.0	6	6	16	60
SGED290400220	R0.2	4.0	6	6	20	60
SGED290400512	R0.5	4.0	6	6	12	50
SGED290400516	R0.5	4.0	6	6	16	60
SGED290400520	R0.5	4.0	6	6	20	60
SGED290600320	R0.3	6.0	6	9	20	60
SGED290600520	R0.5	6.0	6	9	20	60
SGED290601020	R1.0	6.0	6	9	20	60
SGED290800325	R0.3	8.0	8	12	25	65
SGED290800525	R0.5	8.0	8	12	25	65
SGED290801025	R1.0	8.0	8	12	25	65
SGED291000530	R0.5	10.0	10	15	30	70
SGED291001030	R1.0	10.0	10	15	30	70
SGED291200532	R0.5	12.0	12	18	32	80
SGED291201032	R1.0	12.0	12	18	32	80

Size	Corner Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	±0.010	0~−0.012	h6
over Ø6	±0.015	0~−0.015	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
						◎			○					

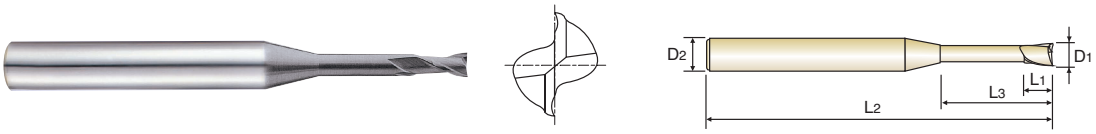
CRX S END MILLS

SGED30 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE DLC COATING with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN DLC BESCHICHTUNG mit ABGESETZTEM SCHAFTTETL

- Designed to copper, copper alloys soft graphites, reinforced plastics and the materials affiliated with non-ferrous metals.
- High toughness and minimized vibration are available due to two step taper neck(under dia. 1.0mm)
- Excellent surface roughness due to special flute geometry for removing burrs

- Entwickelt für die Bearbeitung von Kupfer, Kupferlegierungen, sowie faserverstärkten Kunststoffen, NE- Metallen
- Hohe Zähigkeit und verminderte Vibrationen werden durch den besonderen kegelförmigen Hals erreicht, (unter Ø 1mm)
- Hervorragende Oberflächenrauheit durch speziell behandelte Nutengeometrie



NG HM | 2 | 30° | PLAIN

P.996

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SGED3000502	0.5	4	0.7	2	45
SGED3000504	0.5	4	0.7	4	45
SGED3000506	0.5	4	0.7	6	45
SGED3000508	0.5	4	0.7	8	45
SGED3000510	0.5	4	0.7	10	45
SGED3000602	0.6	4	0.9	2	45
SGED3000604	0.6	4	0.9	4	45
SGED3000606	0.6	4	0.9	6	45
SGED3000608	0.6	4	0.9	8	45
SGED3000610	0.6	4	0.9	10	45
SGED3000804	0.8	4	1.2	4	45
SGED3000806	0.8	4	1.2	6	45
SGED3000808	0.8	4	1.2	8	45
SGED3000810	0.8	4	1.2	10	45
SGED3000812	0.8	4	1.2	12	45
SGED3001004	1.0	4	1.5	4	45
SGED3001006	1.0	4	1.5	6	45
SGED3001008	1.0	4	1.5	8	45
SGED3001010	1.0	4	1.5	10	45
SGED3001012	1.0	4	1.5	12	45
SGED3001506	1.5	4	2.3	6	45
SGED3001508	1.5	4	2.3	8	45
SGED3001510	1.5	4	2.3	10	45
SGED3001512	1.5	4	2.3	12	45
SGED3001516	1.5	4	2.3	16	50

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
						◎			○					

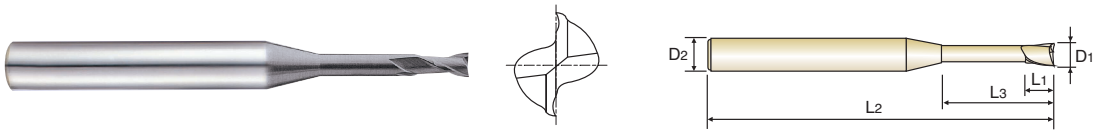
CRX S END MILLS

SGED30 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE DLC COATING with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN DLC BESCHICHTUNG mit ABGESETZTEM SCHAFTTETL

- Designed to copper, copper alloys soft graphites, reinforced plastics and the materials affiliated with non-ferrous metals.
- High toughness and minimized vibration are available due to two step taper neck(under dia. 1.0mm)
- Excellent surface roughness due to special flute geometry for removing burrs

- Entwickelt für die Bearbeitung von Kupfer, Kupferlegierungen, sowie faserverstärkten Kunststoffen, NE- Metallen
- Hohe Zähigkeit und verminderte Vibrationen werden durch den besonderen kegelförmigen Hals erreicht, (unter Ø 1mm)
- Hervorragende Oberflächenrauheit durch speziell behandelte Nutengeometrie



NG HM | 2 | 30° | PLAIN

P.996

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SGED3002008	2.0	4	3	8	45
SGED3002010	2.0	4	3	10	45
SGED3002012	2.0	4	3	12	45
SGED3002016	2.0	4	3	16	50
SGED3003008	3.0	6	4.5	8	50
SGED3003010	3.0	6	4.5	10	50
SGED3003012	3.0	6	4.5	12	50
SGED3003016	3.0	6	4.5	16	60
SGED3003020	3.0	6	4.5	20	60
SGED3004010	4.0	6	6	10	50
SGED3004012	4.0	6	6	12	50
SGED3004016	4.0	6	6	16	60
SGED3004020	4.0	6	6	20	60
SGED3004025	4.0	6	6	25	60
SGED3006020	6.0	6	8	20	60
SGED3006030	6.0	6	8	30	90
SGED3008020	8.0	8	12	20	70
SGED3010025	10.0	10	15	25	80
SGED3012025	12.0	12	18	25	80

Size	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	0~−0.012	h6
over Ø6	0~−0.015	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
						◎			○					

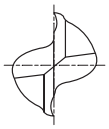
CRX S END MILLS

SGED31 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE DLC COATING
VOLLHARTMETALL, 2 SCHNEIDEN DLC BESCHICHTUNG

- Designed to copper, copper alloys soft graphites, reinforced plastics and the materials affiliated with non-ferrous metals.
- Excellent surface roughness thanks to special flute geometry for reduced burr

- Entwickelt für die Bearbeitung von Kupfer, Kupferlegierungen, sowie faserverstärkten Kunststoffen, NE- Metallen
- Hervorragende Oberflächenrauheit durch speziell behandelte Nutengeometrie was zur verminderten Gratbildung führt



NG HM | 2 | 30° | PLAIN | P.996

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
SGED31010	1.0	6	2.5	50
SGED31015	1.5	6	4	50
SGED31020	2.0	6	6	50
SGED31025	2.5	6	8	50
SGED31030	3.0	6	10	50
SGED31040	4.0	6	12	50
SGED31050	5.0	6	15	60
SGED31060	6.0	6	15	60
SGED31080	8.0	8	20	65
SGED31100	10.0	10	25	70
SGED31120	12.0	12	30	80

Size	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	0~−0.012	h6
over Ø6	0~−0.015	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
						◎			○					

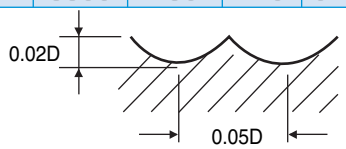
CRX S END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE BALL NOSE DLC COATING with EXTENDED NECK
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS DLC BESCHICHTUNG mit ABGESETZTEM SCHAFTTETL

SGED27 SERIES

MATERIAL	WROUGHT ALUMINIUM				UNALLOYED COPPER				THERMOPLASTICS			
DIAMETER	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz
R0.25 × 0.5	50000	500	80	0.005	50000	500	80	0.005	50000	380	80	0.004
R0.3 × 0.6	50000	700	95	0.007	50000	650	95	0.007	50000	450	95	0.005
R0.4 × 0.8	50000	850	125	0.009	44000	770	110	0.009	50000	600	125	0.006
R0.5 × 1.0	50000	1000	155	0.010	35000	770	110	0.011	50000	630	155	0.006
R1.0 × 2.0	39600	1716	250	0.022	19800	780	125	0.020	50000	1250	315	0.013
R1.5 × 3.0	26000	1584	245	0.030	13000	720	125	0.028	39000	1512	370	0.019
R2.0 × 4.0	19000	1606	240	0.042	9500	730	120	0.038	28500	1533	360	0.027
R2.5 × 5.0	15400	1606	240	0.052	7700	730	120	0.047	23100	1533	365	0.033
R3.0 × 6.0	13000	1584	245	0.061	6500	720	125	0.055	19500	1512	370	0.039
R4.0 × 8.0	10000	1584	250	0.079	5000	720	125	0.072	15000	1512	375	0.050
R5.0 × 10.0	8000	1606	250	0.100	4000	730	125	0.091	12000	1533	375	0.064
R6.0 × 12.0	6600	1606	250	0.122	3300	730	125	0.111	9900	1533	375	0.077

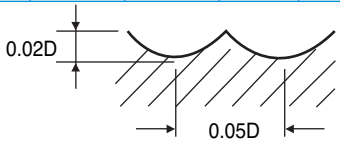


RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE, 2 FLUTE BALL NOSE DLC COATING
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS DLC BESCHICHTUNG

SGED28 SERIES

MATERIAL	WROUGHT ALUMINIUM				UNALLOYED COPPER				THERMOPLASTICS			
DIAMETER	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz
R0.5 × 1.0	50000	1000	155	0.010	42000	930	130	0.011	50000	750	155	0.008
R1.0 × 2.0	47520	2068	300	0.022	24000	940	150	0.020	50000	1500	315	0.015
R1.5 × 3.0	31200	1914	295	0.031	15800	870	150	0.028	47400	1800	445	0.019
R2.0 × 4.0	22800	1936	285	0.042	11500	880	145	0.038	34500	1825	435	0.026
R2.5 × 5.0	18500	1936	290	0.052	9300	880	145	0.047	28000	1825	440	0.033
R3.0 × 6.0	15600	1892	295	0.061	7800	860	145	0.055	23500	1800	445	0.038
R4.0 × 8.0	12000	1892	300	0.079	6000	860	150	0.072	18000	1800	450	0.050
R5.0 × 10.0	9600	1936	300	0.101	4800	880	150	0.092	14500	1825	455	0.063
R6.0 × 12.0	8000	1914	300	0.120	4000	870	150	0.109	12000	1825	450	0.076



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

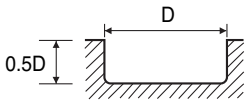
CRX S END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE CORNER RADIUS DLC COATING with EXTENDED NECK - SLOTTING
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS DLC BESCHICHTUNG mit ABGESETZTEM SCHAFTTETL- NUTENFRÄSEN

SGED29 SERIES

MATERIAL	WROUGHT ALUMINIUM				UNALLOYED COPPER				THERMOPLASTICS			
DIAMETER	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz
1.0	50000	1000	155	0.010	50000	1000	155	0.010	50000	700	155	0.007
2.0	50000	1800	315	0.018	50000	1700	315	0.017	50000	1400	315	0.014
3.0	50000	2600	470	0.026	44500	2350	420	0.026	50000	2100	470	0.021
4.0	50000	3680	630	0.037	33400	2100	420	0.031	50000	2600	630	0.026
5.0	50000	4300	785	0.043	27000	2100	425	0.039	50000	3400	785	0.034
6.0	44500	4670	840	0.052	22300	2100	420	0.047	50000	4200	940	0.042
8.0	33400	4560	840	0.068	16700	2100	420	0.063	50000	5700	1255	0.057
10.0	26700	4770	840	0.089	13370	2100	420	0.079	40000	5500	1255	0.069
12.0	22200	4660	835	0.105	11100	2100	420	0.095	33500	5600	1265	0.084

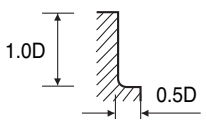


RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE, 2 FLUTE CORNER RADIUS DLC COATING with EXTENDED NECK - SIDE CUTTING
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS DLC BESCHICHTUNG mit ABGESETZTEM SCHAFTTETL- SEITENFRÄSEN

SGED29 SERIES

MATERIAL	WROUGHT ALUMINIUM				UNALLOYED COPPER				THERMOPLASTICS			
DIAMETER	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz
1.0	50000	1400	155	0.014	50000	1200	155	0.012	50000	1200	155	0.012
2.0	50000	2800	315	0.028	50000	2500	315	0.025	50000	2500	315	0.025
3.0	50000	4200	470	0.042	50000	3700	470	0.037	50000	3700	470	0.037
4.0	50000	5300	630	0.053	50000	4700	630	0.047	50000	5000	630	0.050
5.0	50000	6500	785	0.065	40000	4800	630	0.060	50000	6500	785	0.065
6.0	50000	7850	940	0.079	33400	4900	630	0.073	50000	7500	940	0.075
8.0	37500	7850	940	0.105	25000	4700	630	0.094	50000	8400	1255	0.084
10.0	30000	7850	940	0.131	20000	4800	630	0.120	40000	8400	1255	0.105
12.0	25000	7850	940	0.157	16700	4700	630	0.141	33500	8400	1265	0.125



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

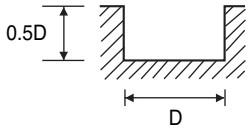
CRX S END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE DLC COATING - SLOTTING
VOLLHARTMETALL, 2 SCHNEIDEN DLC BESCHICHTUNG-NUTENFRÄSEN

SGED30, SGED31 SERIES

MATERIAL	WROUGHT ALUMINIUM				UNALLOYED COPPER				THERMOPLASTICS			
DIAMETER	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz
0.5	50000	480	80	0.005	50000	480	80	0.005	50000	140	80	0.001
0.6	50000	600	95	0.006	50000	570	95	0.006	50000	170	95	0.002
0.8	50000	780	125	0.008	43000	675	105	0.008	50000	220	125	0.002
1.0	50000	990	155	0.010	35000	690	110	0.010	50000	280	155	0.003
2.0	50000	990	315	0.010	25400	495	160	0.010	50000	429	315	0.004
3.0	35200	1590	330	0.023	17400	795	165	0.023	50000	689	470	0.007
4.0	26000	1680	325	0.032	13000	840	160	0.032	39000	728	490	0.009
6.0	17400	1680	325	0.048	8700	840	165	0.048	26100	728	490	0.014
8.0	13200	1680	330	0.064	6600	840	165	0.064	19800	728	500	0.018
10.0	10400	1680	325	0.081	5200	840	160	0.081	15600	728	490	0.023
12.0	8800	1710	330	0.097	4400	855	165	0.097	13200	741	495	0.028

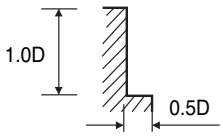


RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE, 2 FLUTE DLC COATING - SIDE CUTTING
VOLLHARTMETALL, 2 SCHNEIDEN DLC BESCHICHTUNG-SEITENFRÄSEN

SGED30, SGED31 SERIES

MATERIAL	WROUGHT ALUMINIUM				UNALLOYED COPPER				THERMOPLASTICS			
DIAMETER	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz
0.5	50000	510	80	0.005	50000	480	80	0.005	50000	390	80	0.004
0.6	50000	630	95	0.006	45000	525	85	0.006	50000	480	95	0.005
0.8	50000	840	125	0.008	34000	510	85	0.008	50000	630	125	0.006
1.0	41250	864	130	0.010	27500	540	85	0.010	50000	789	155	0.008
2.0	41100	864	260	0.011	27400	540	170	0.010	50000	864	315	0.009
3.0	27900	1368	260	0.025	18600	855	175	0.023	37200	1368	350	0.018
4.0	21000	1440	265	0.034	14000	900	175	0.032	28000	1440	350	0.026
6.0	14400	1536	270	0.053	9600	960	180	0.050	19200	1536	360	0.040
8.0	10500	1440	265	0.069	7000	900	175	0.064	14000	1440	350	0.051
10.0	8400	1440	265	0.086	5600	900	175	0.080	11200	1440	350	0.064
12.0	7200	1536	270	0.107	4800	960	180	0.100	9600	1536	360	0.080



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE

YG

Being the best through innovation

D-POWER GRAPHITE

D-POWER GRAPHIT

- High performance on graphite
- Leistungsstark bei Graphit

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
EI997		CARBIDE, 2 FLUTE MINIATURE BALL NOSE with NECK VOLLHARTMETALL, 2 SCHNEIDEN MINI STIRNRADIUS mit ABGESETZTEM SCHAFTTETL	R0.1	R3.0	1000
EIB93		CARBIDE, 2 FLUTE MINIATURE BALL NOSE with NECK VOLLHARTMETALL, 2 SCHNEIDEN MINI STIRNRADIUS mit ABGESETZTEM SCHAFTTETL	R0.2	R2.0	1002
EI880		CARBIDE, 2 FLUTE SHORT LENGTH BALL NOSE with NECK VOLLHARTMETALL, 2 SCHNEIDEN KURZ STIRNRADIUS mit ABGESETZTEM SCHAFTTETL	R1.0	R6.0	1003
EI451		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE with NECK VOLLHARTMETALL, 2 SCHNEIDEN LANG STIRNRADIUS mit ABGESETZTEM SCHAFTTETL	R1.0	R6.0	1004
EI450		CARBIDE, 2 FLUTE LONG REACH BALL NOSE with NECK VOLLHARTMETALL, 2 SCHNEIDEN GROßE REICHWEITE STIRNRADIUS mit ABGESETZTEM SCHAFTTETL	R1.0	R6.0	1005
EI881		CARBIDE, 3 FLUTE SHORT LENGTH BALL NOSE with NECK VOLLHARTMETALL, 3 SCHNEIDEN KURZ STIRNRADIUS mit ABGESETZTEM SCHAFTTETL	R1.0	R6.0	1006
EIB04		CARBIDE, 2 FLUTE LONG LENGTH with NECK VOLLHARTMETALL, 2 SCHNEIDEN LANG mit ABGESETZTEM SCHAFTTETL	D0.5	D12.0	1007
EIB87		CARBIDE, 2 FLUTE BALL NOSE with TAPER NECK VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS mit KONISCH ABGESETZTEM SCHAFTTEIL	R0.5	R1.0	1008
EI996		CARBIDE, 2 FLUTE MINIATURE CORNER RADIUS with NECK VOLLHARTMETALL, 2 SCHNEIDEN MINI ECKENRADIUS mit ABGESETZTEM SCHAFTTETL	D0.2	D6.0	1009
EIB86		CARBIDE, 2 FLUTE CORNER RADIUS with TAPER NECK VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS mit KONISCH ABGESETZTEM SCHAFTTEIL	D1.0	D2.0	1011
EIB88		CARBIDE, 4 FLUTE CORNER RADIUS with NECK VOLLHARTMETALL, 4 SCHNEIDEN ECKENRADIUS mit ABGESETZTEM SCHAFTTETL	D6.0	D12.0	1012
EIA13		CARBIDE, 3 FLUTE 40˚ HELIX SHORT LENGTH CORNER RADIUS VOLLHARTMETALL, 3 SCHNEIDEN 40˚ RECHTSSPIRALE KURZ ECKENRADIUS	D2.0	D12.0	1013
EIA14		CARBIDE, 3 FLUTE 40˚ HELIX LONG LENGTH CORNER RADIUS VOLLHARTMETALL, 3 SCHNEIDEN 40˚ RECHTSSPIRALE LANG ECKENRADIUS	D2.0	D12.0	1014
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			1015

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
							◎		○					○
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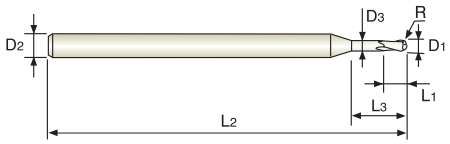
D-POWER GRAPHITE END MILLS

EI997 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE MINIATURE BALL NOSE with NECK
VOLLHARTMETALL, 2 SCHNEIDEN MINI STIRNRADIUS mit ABGESETZTEM SCHAFTTETL

- Higher hardness of film and excellent wear-resistance increase the tool life surprisingly.
- Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass etc. YG-1's diamond coated carbide ball end mills have good result for the machining of non-ferrous metals and non-metallic materials.

- Höhere Härte der Beschichtung und ausgezeichnete Verschleißfestigkeit verlängern die Standzeit beachtlich.
- Ultrafeiner Film auf YG-1 Diamant - beschichteten Hartmetall Schaftfräser gewährleisten eine glatte und ausgezeichnete Oberflächengüte.
- Hohe Leistungsfähigkeit bei Graphit, Aluminium ohne Silicon, Bakelit, Plastik, Holz, Messing, etc. YG-1 Diamant - beschichtete Hartmetall Schaftfräser zeigen gute Ergebnisse beim Bearbeiten von NE - Metallen und Nichtmetall - Werkstoffen.



MG HM | 2 | 30° | R ±0.01 | PLAIN

P.1015

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
EI997002000040	R0.1	**0.2**	3	0.2	-	40	-
EI997003000040	R0.15	**0.3**	3	0.3	-	40	-
EI997004000040	R0.2	**0.4**	3	0.4	-	40	-
EI997005025040	R0.25	**0.5**	3	0.5	2.5	40	0.45
EI997006	R0.3	**0.6**	3	0.6	3	40	0.55
EI997006050040	R0.3	**0.6**	3	0.6	5	40	0.55
EI997008	R0.4	**0.8**	3	0.8	4	40	0.75
EI997008070040	R0.4	**0.8**	3	0.8	7	40	0.75
EI997010	R0.5	**1.0**	3	1	5	40	0.95
EI997903	R0.5	**1.0**	3	1	8.5	40	0.95
EI997010120040	R0.5	**1.0**	3	1	12	40	0.95
EI997012	R0.6	**1.2**	3	1.2	6	50	1.15
EI997012100050	R0.6	**1.2**	3	1.2	10	50	1.15
EI997015	R0.75	**1.5**	3	1.5	7.5	50	1.4
EI997906	R0.75	**1.5**	3	1.5	12	50	1.4
EI997015180050	R0.75	**1.5**	3	1.5	18	50	1.4
EI997020	R1.0	**2.0**	3	2.2	10	60	1.9
EI997908	R1.0	**2.0**	3	2.2	16	60	1.9
EI997020250060	R1.0	**2.0**	3	2.2	25	60	1.9
EI997030100065	R1.5	**3.0**	4	3	10	65	2.9
EI997030150065	R1.5	**3.0**	4	3	15	65	2.9
EI997030200065	R1.5	**3.0**	4	3	20	65	2.9
EI997030250075	R1.5	**3.0**	4	3	25	75	2.9
EI997030300075	R1.5	**3.0**	4	3	30	75	2.9
EI997040200065	R2.0	**4.0**	6	4	20	65	3.9
EI997040300075	R2.0	**4.0**	6	4	30	75	3.9
EI997040400090	R2.0	**4.0**	6	4	40	90	3.9

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
							◎		○					○

D-POWER GRAPHITE END MILLS

EI997 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE MINIATURE BALL NOSE with NECK
VOLLHARTMETALL, 2 SCHNEIDEN MINI STIRNRADIUS mit ABGESETZTEM SCHAFTTETL

- Higher hardness of film and excellent wear-resistance increase the tool life surprisingly.
- Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass etc. YG-1's diamond coated carbide ball end mills have good result for the machining of non-ferrous metals and non-metallic materials.

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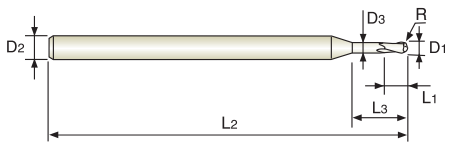

MG HM | 2 | 30° | R ±0.01 | PLAIN

P.1015

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
EI997050200065	R2.5	**5.0**	6	5	20	65	4.9
EI997050300075	R2.5	**5.0**	6	5	30	75	4.9
EI997050400090	R2.5	**5.0**	6	5	40	90	4.9
EI997050500090	R2.5	**5.0**	6	5	50	90	4.9
EI997060300075	R3.0	**6.0**	6	6	30	75	5.9
EI997060400090	R3.0	**6.0**	6	6	40	90	5.9
EI997060500090	R3.0	**6.0**	6	6	50	90	5.9
EI997060600100	R3.0	**6.0**	6	6	60	100	5.9

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.02	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
							◎		○					○

D-POWER GRAPHITE END MILLS

EIB93 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE MINIATURE BALL NOSE with NECK
VOLLHARTMETALL, 2 SCHNEIDEN MINI STIRNRADIUS mit ABGESETZTEM SCHAFTTETL

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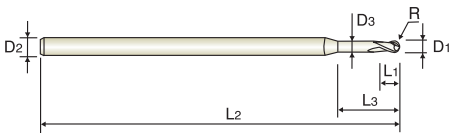
- Höhere Härte der Beschichtung und ausgezeichnete Verschleißfestigkeit verlängern die Standzeit beachtlich.
- Ultrafeiner Film auf YG-1 Diamant - beschichteten Hartmetall Schaftfräser gewährleisten eine glatte und ausgezeichnete Oberflächengüte.
- Hohe Leistungsfähigkeit bei Graphit, Aluminium ohne Silicon, Bakelit, Plastik, Holz, Messing, etc. YG-1 Diamant - beschichtete Hartmetall Schaftfräser zeigen gute Ergebnisse beim Bearbeiten von NE - Metallen und Nichtmetall - Werkstoffen.



MG HM | 2 | 30° | R ±0.01 | PLAIN

P.1015

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
EIB93004040	R0.2	0.4	4	0.6	4	45	0.36
EIB93004060	R0.2	0.4	4	0.6	6	45	0.36
EIB93006040	R0.3	0.6	4	1	4	45	0.56
EIB93006060	R0.3	0.6	4	1	6	45	0.56
EIB93006080	R0.3	0.6	4	1	8	45	0.56
EIB93010060	R0.5	1.0	4	1.5	6	45	0.95
EIB93010080	R0.5	1.0	4	1.5	8	45	0.95
EIB93010120	R0.5	1.0	4	1.5	12	45	0.95
EIB93015120	R0.75	1.5	4	1.75	12	45	1.45
EIB93020080	R1.0	2.0	4	3	8	60	1.95
EIB93020120	R1.0	2.0	4	3	12	60	1.95
EIB93020160	R1.0	2.0	4	3	16	60	1.95
EIB93040160	R2.0	4.0	4	6	16	60	3.9

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.02	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
							◎		○					○

D-POWER GRAPHITE END MILLS

EI880 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE SHORT LENGTH BALL NOSE with NECK
VOLLHARTMETALL, 2 SCHNEIDEN KURZ STIRNRADIUS mit ABGESETZTEM SCHAFTTETL

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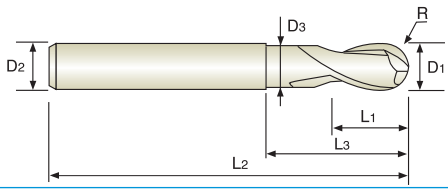
- Höhere Härte der Beschichtung und ausgezeichnete Verschleißfestigkeit verlängern die Standzeit beachtlich.
- Ultrafeiner Film auf YG-1 Diamant - beschichteten Hartmetall Schaftfräser gewährleisten eine glatte und ausgezeichnete Oberflächengüte.
- Hohe Leistungsfähigkeit bei Graphit, Aluminium ohne Silicon, Bakelit, Plastik, Holz, Messing, etc. YG-1 Diamant - beschichtete Hartmetall Schaftfräser zeigen gute Ergebnisse beim Bearbeiten von NE - Metallen und Nichtmetall - Werkstoffen.



MG HM | 2 | 30° | R ±0.01 | PLAIN

P.1015

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
EI880020	R1.0	**2.0**	6	3	5	60	1.9
EI880025	R1.25	**2.5**	6	4	6	60	2.4
EI880030	R1.5	**3.0**	6	4.5	6.5	60	2.8
EI880035	R1.75	**3.5**	6	5	7	65	3.2
EI880040	R2.0	**4.0**	6	6	8	65	3.7
EI880050	R2.5	**5.0**	6	7.5	10	65	4.6
EI880060	R3.0	**6.0**	6	9	12	75	5.6
EI880080	R4.0	**8.0**	8	12	25	75	7.4
EI880100	R5.0	**10.0**	10	15	30	80	9.4
EI880120	R6.0	**12.0**	12	18	36	90	11.4

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
							◎		○					○

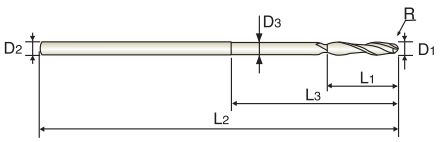
D-POWER GRAPHITE END MILLS

EI451 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE with NECK
VOLLHARTMETALL, 2 SCHNEIDEN LANG STIRNRADIUS mit ABGESETZTEM SCHAFTTETL

- Higher hardness of film and excellent wear-resistance increase the tool life surprisingly.
- Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass etc. YG-1's diamond coated carbide ball end mills have good result for the machining of non-ferrous metals and non-metallic materials.

- Höhere Härte der Beschichtung und ausgezeichnete Verschleißfestigkeit verlängern die Standzeit beachtlich.
- Ultrafeiner Film auf YG-1 Diamant - beschichteten Hartmetall Schaftfräser gewährleisten eine glatte und ausgezeichnete Oberflächengüte.
- Hohe Leistungsfähigkeit bei Graphit, Aluminium ohne Silicon, Bakelit, Plastik, Holz, Messing, etc. YG-1 Diamant - beschichtete Hartmetall Schaftfräser zeigen gute Ergebnisse beim Bearbeiten von NE - Metallen und Nichtmetall - Werkstoffen.



MG HM | 2 | 30° | R ±0.01 | PLAIN

P.1015

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
EI451020	R1.0	2.0	4	10	20	80	1.95
EI451030	R1.5	3.0	4	15	25	80	2.9
EI451040	R2.0	4.0	4	20	30	80	3.9
EI451050	R2.5	5.0	6	30	50	100	4.9
EI451060	R3.0	6.0	6	30	50	100	5.5
EI451070	R3.5	7.0	6	30	-	100	-
EI451080	R4.0	8.0	8	40	60	110	7.5
EI451090	R4.5	9.0	8	40	-	110	-
EI451100	R5.0	10.0	10	50	70	120	9.5
EI451120	R6.0	12.0	12	55	75	130	11.5

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
							◎		○					○

D-POWER GRAPHITE END MILLS

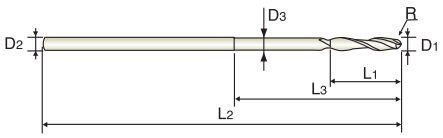
EI450 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE LONG REACH BALL NOSE with NECK

VOLLHARTMETALL, 2 SCHNEIDEN GROßE REICHWEITE STIRNRADIUS mit ABGESETZTEM SCHAFTTETL

- Higher hardness of film and excellent wear-resistance increase the tool life surprisingly.
- Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass etc. YG-1's diamond coated carbide ball end mills have good result for the machining of non-ferrous metals and non-metallic materials.

- Höhere Härte der Beschichtung und ausgezeichnete Verschleißfestigkeit verlängern die Standzeit beachtlich.
- Ultrafeiner Film auf YG-1 Diamant - beschichteten Hartmetall Schaftfräser gewährleisten eine glatte und ausgezeichnete Oberflächengüte.
- Hohe Leistungsfähigkeit bei Graphit, Aluminium ohne Silicon, Bakelit, Plastik, Holz, Messing, etc. YG-1 Diamant - beschichtete Hartmetall Schaftfräser zeigen gute Ergebnisse beim Bearbeiten von NE - Metallen und Nichtmetall - Werkstoffen.



MG HM | 2 | 30° | R ±0.01 | PLAIN

P.1015

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
EI450020	R1.0	**2.0**	4	10	20	100	1.95
EI450030	R1.5	**3.0**	4	15	25	100	2.9
EI450040	R2.0	**4.0**	4	20	30	100	3.9
EI450050	R2.5	**5.0**	6	30	50	120	4.9
EI450060	R3.0	**6.0**	6	30	50	150	5.5
EI450070	R3.5	**7.0**	6	30	-	150	-
EI450080	R4.0	**8.0**	8	40	60	150	7.5
EI450090	R4.5	**9.0**	8	40	-	150	-
EI450100	R5.0	**10.0**	10	50	70	180	9.5
EI450120	R6.0	**12.0**	12	55	75	200	11.5

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
							◎		○					○

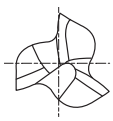
D-POWER GRAPHITE END MILLS

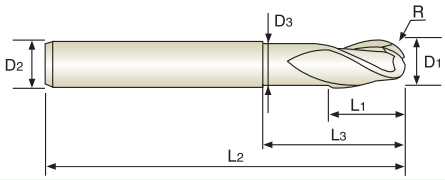
EI881 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 3 FLUTE SHORT LENGTH BALL NOSE with NECK
VOLLHARTMETALL, 3 SCHNEIDEN KURZ STIRNRADIUS mit ABGESETZTEM SCHAFTTETL

- Higher hardness of film and excellent wear-resistance increase the tool life surprisingly.
- Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass etc. YG-1's diamond coated carbide ball end mills have good result for the machining of non-ferrous metals and non-metallic materials.

- Höhere Härte der Beschichtung und ausgezeichnete Verschleißfestigkeit verlängern die Standzeit beachtlich.
- Ultrafeiner Film auf YG-1 Diamant - beschichteten Hartmetall Schaftfräser gewährleisten eine glatte und ausgezeichnete Oberflächengüte.
- Hohe Leistungsfähigkeit bei Graphit, Aluminium ohne Silicon, Bakelit, Plastik, Holz, Messing, etc. YG-1 Diamant - beschichtete Hartmetall Schaftfräser zeigen gute Ergebnisse beim Bearbeiten von NE - Metallen und Nichtmetall - Werkstoffen.





MG HM | 3 | 30° | R ±0.01 | PLAIN

P.1015

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
EI881020	R1.0	2.0	6	3	5	60	1.9
EI881025	R1.25	2.5	6	4	6	60	2.4
EI881030	R1.5	3.0	6	4.5	6.5	60	2.8
EI881035	R1.75	3.5	6	5	7	65	3.2
EI881040	R2.0	4.0	6	6	8	65	3.7
EI881050	R2.5	5.0	6	7.5	10	65	4.6
EI881060	R3.0	6.0	6	9	12	75	5.6
EI881080	R4.0	8.0	8	12	25	75	7.4
EI881100	R5.0	10.0	10	15	30	80	9.4
EI881120	R6.0	12.0	12	18	36	90	11.4

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
							◎		○					○

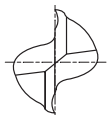
D-POWER GRAPHITE END MILLS

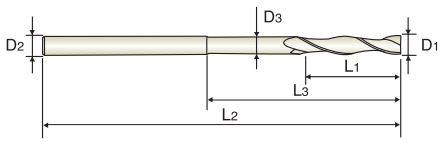
EIB04 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE LONG LENGTH with NECK
VOLLHARTMETALL, 2 SCHNEIDEN LANG mit ABGESETZTEM SCHAFTTETL

- Higher hardness of film and excellent wear-resistance increase the tool life surprisingly.
- Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass etc. YG-1's diamond coated carbide ball end mills have good result for the machining of non-ferrous metals and non-metallic materials.

- Höhere Härte der Beschichtung und ausgezeichnete Verschleißfestigkeit verlängern die Standzeit beachtlich.
- Ultrafeiner Film auf YG-1 Diamant - beschichteten Hartmetall Schaftfräser gewährleisten eine glatte und ausgezeichnete Oberflächengüte.
- Hohe Leistungsfähigkeit bei Graphit, Aluminium ohne Silicon, Bakelit, Plastik, Holz, Messing, etc. YG-1 Diamant - beschichtete Hartmetall Schaftfräser zeigen gute Ergebnisse beim Bearbeiten von NE - Metallen und Nichtmetall - Werkstoffen.





MG HM | 2 | 30° | PLAIN

P.1015

Unit : mm

EDP No.	Mill Diameter D_1	Shank Diameter D_2	Length of Cut L_1	Length Below Shank L_3	Overall Length L_2	Neck Diameter D_3
EIB0400502040	0.5	3	1	2	40	0.45
EIB0400603040	0.6	3	2	3	40	0.55
EIB0400704040	0.7	3	2	4	40	0.65
EIB0400805040	0.8	3	2	5	40	0.75
EIB0400906040	0.9	3	2	6	40	0.85
EIB0401008075	1.0	4	3	8	75	0.95
EIB0401510075	1.5	4	4	10	75	1.45
EIB0402016100	2.0	4	6	16	100	1.9
EIB0402520100	2.5	4	8	20	100	2.4
EIB0403030100	3.0	6	8	30	100	2.8
EIB0403535100	3.5	6	10	35	100	3.2
EIB0404040100	4.0	6	20	40	100	3.7
EIB0405050125	5.0	6	25	50	125	4.6
EIB0406060140	6.0	6	30	60	140	5.6
EIB0407000140	7.0	6	35	-	140	-
EIB0408080150	8.0	8	40	80	150	7.4
EIB0409000150	9.0	8	45	-	150	-
EIB0410080150	10.0	10	50	80	150	9.4
EIB0411000150	11.0	10	50	-	150	-
EIB0412080150	12.0	12	55	80	150	11.4

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
							◎		○					○

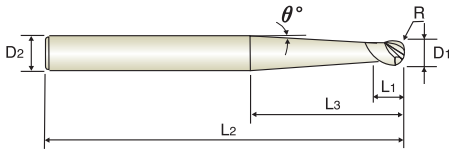
D-POWER GRAPHITE END MILLS

EIB87 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE BALL NOSE with TAPER NECK
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS mit KONISCH ABGESETZTEM SCHAFTTEIL

- Higher hardness of film and excellent wear-resistance increase the tool life surprisingly.
- Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- High performance on graphite, wrought aluminum, bakelite, plastics, woods, brass etc. YG-1's diamond coated carbide ball end mills have good result for the machining of non-ferrous metals and non-metallic materials.

- Höhere Härte der Beschichtung und ausgezeichnete Verschleißfestigkeit verlängern die Standzeit beachtlich.
- Ultrafeiner Film auf YG-1 Diamant - beschichteten Hartmetall Schaftfräser gewährleisten eine glatte und ausgezeichnete Oberflächengüte.
- Hohe Leistungsfähigkeit bei Graphit, Aluminium ohne Silicon, Bakelit, Plastik, Holz, Messing, etc. YG-1 Diamant - beschichtete Hartmetall Schaftfräser zeigen gute Ergebnisse beim Bearbeiten von NE - Metallen und Nichtmetall - Werkstoffen.



MG HM | 2 | 30° | R ±0.01 | PLAIN

P.1015

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Taper Angle θ°
EIB87010	R0.5	1.0	3	2	-	40	8°30′
EIB87901	R0.5	1.0	3	2	30	60	2°
EIB87902	R0.5	1.0	3	2	70	100	1°
EIB87015	R0.75	1.5	3	3	-	40	6°15′
EIB87903	R0.75	1.5	3	3	30	60	1°30′
EIB87904	R0.75	1.5	3	3	58	100	45′
EIB87020	R1.0	2.0	3	4	-	40	4°15′
EIB87905	R1.0	2.0	3	4	30	60	1°
EIB87906	R1.0	2.0	4	4	70	100	1°

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.02	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
							◎		○					○

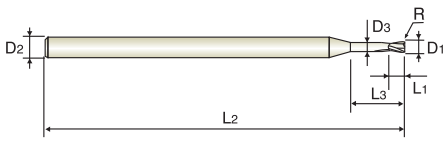
D-POWER GRAPHITE END MILLS

EI996 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE MINIATURE CORNER RADIUS with NECK
VOLLHARTMETALL, 2 SCHNEIDEN MINI ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

- Higher hardness of film and excellent wear-resistance increase the tool life surprisingly.
- Ultra fine film of YG-1's diamond coated carbide end mills ensure the smooth and excellent surface on work materials.
- High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass etc. YG-1's diamond coated carbide end mills have good result for the machining of non-ferrous metals and non-metallic materials.

- Höhere Härte der Beschichtung und ausgezeichnete Verschleißfestigkeit verlängern die Standzeit beachtlich.
- Ultrafeiner Film auf YG-1 Diamant - beschichteten Hartmetall Schaftfräser gewährleisten eine glatte und ausgezeichnete Oberflächengüte.
- Hohe Leistungsfähigkeit bei Graphit, Aluminium ohne Silicon, Bakelit, Plastik, Holz, Messing, etc. YG-1 Diamant - beschichtete Hartmetall Schaftfräser zeigen gute Ergebnisse beim Bearbeiten von NE - Metallen und Nichtmetall - Werkstoffen.



MG HM | 2 | 30° | PLAIN P.1016

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
EI99600200000	-	0.2	3	0.3	-	40	-
EI99600300000	-	0.3	3	0.5	-	40	-
EI99600400000	-	0.4	3	0.6	-	40	-
EI99600505025	R0.05	0.5	3	0.7	2.5	40	0.45
EI99600505040	R0.05	0.5	3	0.7	4	40	0.45
EI996006	R0.05	0.6	3	0.9	3	40	0.55
EI99600605050	R0.05	0.6	3	0.9	5	40	0.55
EI996008	R0.05	0.8	3	1.2	4	40	0.75
EI99600805070	R0.05	0.8	3	1.2	7	40	0.75
EI996010	R0.1	1.0	3	1.5	5	40	0.95
EI996904	R0.1	1.0	3	1.5	8.5	40	0.95
EI99601010120	R0.1	1.0	3	1.5	12	40	0.95
EI996012	R0.1	1.2	3	1.8	6	50	1.15
EI99601210100	R0.1	1.2	3	1.8	10	50	1.15
EI996015	R0.15	1.5	3	2.2	7.5	50	1.4
EI996907	R0.15	1.5	3	2.2	12	50	1.4
EI99601515180	R0.15	1.5	3	2.2	18	50	1.4
EI996020	R0.15	2.0	3	2.2	10	60	1.9
EI996909	R0.15	2.0	3	2.2	16	60	1.9
EI99602015250	R0.15	2.0	3	2.2	25	60	1.9
EI99603020100	R0.2	3.0	4	3	10	65	2.9
EI99603020150	R0.2	3.0	4	3	15	65	2.9
EI99603020200	R0.2	3.0	4	3	20	65	2.9
EI99603020250	R0.2	3.0	4	3	25	75	2.9
EI99603020300	R0.2	3.0	4	3	30	75	2.9
EI99604020200	R0.2	4.0	6	4	20	65	3.9
EI99604020300	R0.2	4.0	6	4	30	75	3.9
EI99604020400	R0.2	4.0	6	4	40	90	3.9

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
							◎		○					○

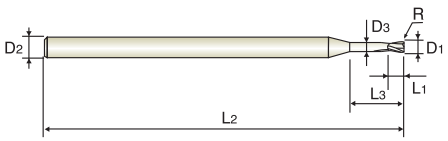
D-POWER GRAPHITE END MILLS

EI996 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE MINIATURE CORNER RADIUS with NECK
VOLLHARTMETALL, 2 SCHNEIDEN MINI ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

- Higher hardness of film and excellent wear-resistance increase the tool life surprisingly.
- Ultra fine film of YG-1's diamond coated carbide end mills ensure the smooth and excellent surface on work materials.
- High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass etc. YG-1's diamond coated carbide end mills have good result for the machining of non-ferrous metals and non-metallic materials.

- Höhere Härte der Beschichtung und ausgezeichnete Verschleißfestigkeit verlängern die Standzeit beachtlich.
- Ultrafeiner Film auf YG-1 Diamant - beschichteten Hartmetall Schaftfräser gewährleisten eine glatte und ausgezeichnete Oberflächengüte.
- Hohe Leistungsfähigkeit bei Graphit, Aluminium ohne Silicon, Bakelit, Plastik, Holz, Messing, etc. YG-1 Diamant - beschichtete Hartmetall Schaftfräser zeigen gute Ergebnisse beim Bearbeiten von NE - Metallen und Nichtmetall - Werkstoffen.



MG HM | 2 | 30° | PLAIN

P.1016

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
EI99605030200	R0.3	5.0	6	5	20	75	4.9
EI99605030300	R0.3	5.0	6	5	30	75	4.9
EI99605030400	R0.3	5.0	6	5	40	90	4.9
EI99605030500	R0.3	5.0	6	5	50	90	4.9
EI99606030300	R0.3	6.0	6	6	30	75	5.9
EI99606030400	R0.3	6.0	6	6	40	90	5.9
EI99606030500	R0.3	6.0	6	6	50	90	5.9
EI99606030600	R0.3	6.0	6	6	60	100	5.9

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.02	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
							◎		○					○

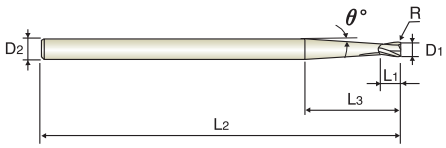
D-POWER GRAPHITE END MILLS

EIB86 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE CORNER RADIUS with TAPER NECK
VOLLHARTMETALL, 2 SCHEIDEN ECKENRADIUS mit KONISCH ABGESETZTEM SCHAFTTEIL

- Higher hardness of film and excellent wear-resistance increase the tool life surprisingly.
- Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass etc. YG-1's diamond coated carbide ball end mills have good result for the machining of non-ferrous metals and non-metallic materials.

- Höhere Härte der Beschichtung und ausgezeichnete Verschleißfestigkeit verlängern die Standzeit beachtlich.
- Ultrafeiner Film auf YG-1 Diamant - beschichteten Hartmetall Schaftfräser gewährleisten eine glatte und ausgezeichnete Oberflächengüte.
- Hohe Leistungsfähigkeit bei Graphit, Aluminium ohne Silicon, Bakelit, Plastik, Holz, Messing, etc. YG-1 Diamant - beschichtete Hartmetall Schaftfräser zeigen gute Ergebnisse beim Bearbeiten von NE - Metallen und Nichtmetall - Werkstoffen.



MG HM | 2 | 30° | PLAIN

P.1016

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Taper Angle θ°
EIB86010	R0.1	1.0	3	2	30	60	2°
EIB86901	R0.1	1.0	3	2	70	100	1°
EIB86015	R0.15	1.5	3	3	30	60	1°30′
EIB86902	R0.15	1.5	3	3	50	100	1°
EIB86020	R0.15	2.0	3	4	30	60	1°
EIB86903	R0.15	2.0	4	4	70	100	1°

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.02	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
							◎		○					○

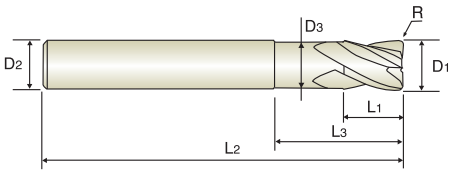
D-POWER GRAPHITE END MILLS

EIB88 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE CORNER RADIUS with NECK
VOLLHARTMETALL, 4 SCHNEIDEN ECKENRADIUS mit ABGESETZTEM SCHAFTTETL

- Higher hardness of film and excellent wear-resistance increase the tool life surprisingly.
- Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass etc. YG-1's diamond coated carbide ball end mills have good result for the machining of non-ferrous metals and non-metallic materials.

- Höhere Härte der Beschichtung und ausgezeichnete Verschleißfestigkeit verlängern die Standzeit beachtlich.
- Ultrafeiner Film auf YG-1 Diamant - beschichteten Hartmetall Schaftfräser gewährleisten eine glatte und ausgezeichnete Oberflächengüte.
- Hohe Leistungsfähigkeit bei Graphit, Aluminium ohne Silicon, Bakelit, Plastik, Holz, Messing, etc. YG-1 Diamant - beschichtete Hartmetall Schaftfräser zeigen gute Ergebnisse beim Bearbeiten von NE - Metallen und Nichtmetall - Werkstoffen.



MG HM | 4 | 30° | PLAIN

P.1016

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
EIB88060	R0.5	6.0	6	10	40	80	5.9
EIB88080	R0.5	8.0	8	10	40	80	7.8
EIB88901	R1.0	8.0	8	10	60	100	7.8
EIB88100	R0.5	10.0	10	25	-	75	-
EIB88902	R0.5	10.0	10	12	40	80	9.8
EIB88903	R1.0	10.0	10	12	40	80	9.8
EIB88904	R0.5	10.0	10	12	80	125	9.8
EIB88120	R0.5	12.0	12	25	-	80	-
EIB88905	R0.5	12.0	12	15	40	80	11.8
EIB88906	R1.0	12.0	12	15	40	80	11.8
EIB88907	R1.0	12.0	12	15	80	125	11.8

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
							◎		○					○

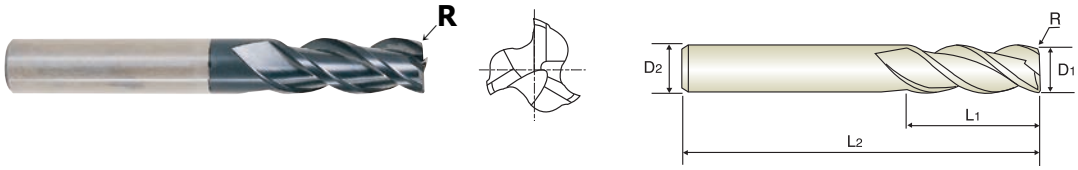
D-POWER GRAPHITE END MILLS

EIA13 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 3 FLUTE 40° HELIX SHORT LENGTH CORNER RADIUS
VOLLHARTMETALL, 3 SCHNEIDEN 40° RECHTSSPIRALE KURZ ECKENRADIUS

- Higher hardness of film and excellent wear-resistance increase the tool life surprisingly.
- Ultra fine film of YG-1's diamond coated carbide end mills ensure the smooth and excellent surface on work materials.
- High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass etc. YG-1's diamond coated carbide end mills have good result for the machining of non-ferrous metals and non-metallic materials.

- Höhere Härte der Beschichtung und ausgezeichnete Verschleißfestigkeit verlängern die Standzeit beachtlich.
- Ultrafeiner Film auf YG-1 Diamant - beschichteten Hartmetall Schaftfräser gewährleisten eine glatte und ausgezeichnete Oberflächengüte.
- Hohe Leistungsfähigkeit bei Graphit, Aluminium ohne Silicon, Bakelit, Plastik, Holz, Messing, etc. YG-1 Diamant - beschichtete Hartmetall Schaftfräser zeigen gute Ergebnisse beim Bearbeiten von NE - Metallen und Nichtmetall - Werkstoffen.



MG HM | 3 | 40° | PLAIN

P.1016

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
EIA13020	R0.15	2.0	3	6	40
EIA13030	R0.15	3.0	3	12	40
EIA13040	R0.2	4.0	4	14	50
EIA13050	R0.3	5.0	5	16	50
EIA13060	R0.3	6.0	6	20	65
EIA13080	R0.5	8.0	8	20	65
EIA13100	R0.5	10.0	10	25	75
EIA13120	R0.5	12.0	12	25	75

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
							◎		○					○

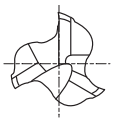
D-POWER GRAPHITE END MILLS

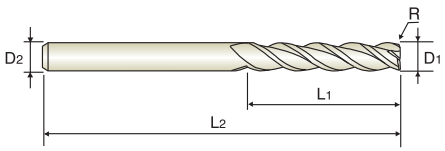
EIA14 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 3 FLUTE 40° HELIX LONG LENGTH CORNER RADIUS
VOLLHARTMETALL, 3 SCHNEIDN 40° RECHTSSPIRALE LANG ECKENRADIUS

- Higher hardness of film and excellent wear-resistance increase the tool life surprisingly.
- Ultra fine film of YG-1's diamond coated carbide end mills ensure the smooth and excellent surface on work materials.
- High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass etc. YG-1's diamond coated carbide end mills have good result for the machining of non-ferrous metals and non-metallic materials.

- Höhere Härte der Beschichtung und ausgezeichnete Verschleißfestigkeit verlängern die Standzeit beachtlich.
- Ultrafeiner Film auf YG-1 Diamant - beschichteten Hartmetall Schaftfräser gewährleisten eine glatte und ausgezeichnete Oberflächengüte.
- Hohe Leistungsfähigkeit bei Graphit, Aluminium ohne Silicon, Bakelit, Plastik, Holz, Messing, etc. YG-1 Diamant - beschichtete Hartmetall Schaftfräser zeigen gute Ergebnisse beim Bearbeiten von NE - Metallen und Nichtmetall - Werkstoffen.





MG HM | 3 | 40° | PLAIN

P.1016

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
EIA14020	R0.15	2.0	3	9	60
EIA14030	R0.15	3.0	3	30	60
EIA14040	R0.2	4.0	4	30	60
EIA14050	R0.3	5.0	5	35	70
EIA14060	R0.3	6.0	6	40	100
EIA14080	R0.5	8.0	8	40	100
EIA14100	R0.5	10.0	10	40	100
EIA14120	R0.5	12.0	12	45	100

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
							◎		○					○

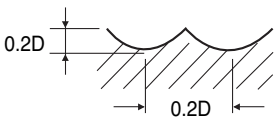
D-POWER GRAPHITE END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE MINIATURE BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN MINI STIRNRADIUS

EI997, EIB93, EIB87 SERIES

MATERIAL	GRAPHITE			
DIAMETER	RPM	FEED	Vc	fz
R0.2 × 0.4	40000	600	50	0.008
R0.3 × 0.6	40000	800	75	0.010
R0.4 × 0.8	40000	960	100	0.012
R0.5 × 1.0	40000	1200	125	0.015
R0.6 × 1.2	40000	1440	150	0.018
R0.75 × 1.5	40000	1600	190	0.020
R1.0 × 2.0	40000	2000	250	0.025
R1.5 × 3.0	27000	2200	255	0.041
R2.0 × 4.0	20000	2900	250	0.073
R2.5 × 5.0	16000	2900	250	0.091
R3.0 × 6.0	14000	2900	265	0.104

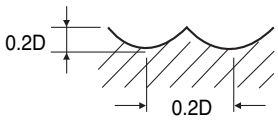


RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE, 2 FLUTE BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS

EI880, EI451, EI450 SERIES

MATERIAL	GRAPHITE			
DIAMETER	RPM	FEED	Vc	fz
R1.0 × 2.0	16000	800	100	0.025
R1.25 × 2.5	16000	1120	125	0.035
R1.5 × 3.0	16000	1450	150	0.045
R1.75 × 3.5	16000	1750	175	0.055
R2.0 × 4.0	16000	2100	200	0.066
R2.5 × 5.0	15500	2550	245	0.082
R3.0 × 6.0	15000	2950	285	0.098
R4.0 × 8.0	13000	3000	325	0.115
R5.0 × 10.0	11500	3050	360	0.133
R6.0 × 12.0	10500	3150	395	0.150



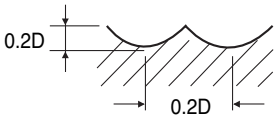
※ The FEED, in long & long reach types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE, 3 FLUTE BALL NOSE
VOLLHARTMETALL, 3 SCHNEIDEN STIRNRADIUS

EI881 SERIES

MATERIAL	GRAPHITE			
DIAMETER	RPM	FEED	Vc	fz
R1.0 × 2.0	16000	1200	100	0.025
R1.25 × 2.5	16000	1700	125	0.035
R1.5 × 3.0	16000	2150	150	0.045
R1.75 × 3.5	16000	2650	175	0.055
R2.0 × 4.0	16000	3100	200	0.065
R2.5 × 5.0	15500	3800	245	0.082
R3.0 × 6.0	15000	4450	285	0.099
R4.0 × 8.0	13000	4500	325	0.115
R5.0 × 10.0	11500	4600	360	0.133
R6.0 × 12.0	10500	4750	395	0.151

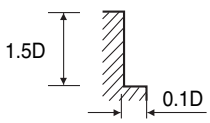


RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE, 2 FLUTE LONG LENGTH
VOLLHARTMETALL, 2 SCHNEIDEN LANG

EIB04 SERIES

MATERIAL	GRAPHITE			
DIAMETER	RPM	FEED	Vc	fz
0.4	40000	200	50	0.003
0.6	40000	350	75	0.004
0.8	40000	550	100	0.007
1.0	40000	700	125	0.009
1.5	40000	800	190	0.010
2.0	25000	800	155	0.016
3.0	20000	800	190	0.020
4.0	18000	950	225	0.026
5.0	14000	1200	220	0.043
6.0	11000	1400	205	0.064
8.0	8000	1300	200	0.081
10.0	6500	1200	205	0.092
12.0	5500	1200	205	0.109



※ The FEED, in long & long reach types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

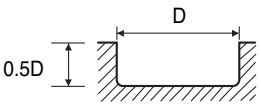
D-POWER GRAPHITE END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE MINIATURE CORNER RADIUS
VOLLHARTMETALL, 2 SCHNEIDEN MINI ECKENRADIUS

EI996, EIB86 SERIES

MATERIAL	GRAPHITE			
DIAMETER	RPM	FEED	Vc	fz
0.4	40000	640	50	0.008
0.6	40000	640	75	0.008
0.8	40000	800	100	0.010
1.0	40000	960	125	0.012
1.2	40000	1200	150	0.015
1.5	40000	1440	190	0.018
2.0	40000	1600	250	0.020
3.0	27000	1900	255	0.035
4.0	20000	2300	250	0.058
5.0	16000	2300	250	0.072
6.0	14000	2300	265	0.082

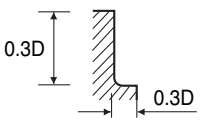


RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE, 3 FLUTE 40˚ HELIX CORNER RADIUS
VOLLHARTMETALL, 3 SCHNEIDEN 40˚ RECHTSSPIRALE ECKENRADIUS

EIA13, EIA14 SERIES

MATERIAL	GRAPHITE			
DIAMETER	RPM	FEED	Vc	fz
2.0	40000	3000	250	0.025
3.0	40000	4200	375	0.035
4.0	40000	6000	505	0.050
5.0	40000	7200	630	0.060
6.0	40000	8400	755	0.070
8.0	32000	8400	805	0.088
10.0	26000	8600	815	0.110
12.0	21000	8200	790	0.130



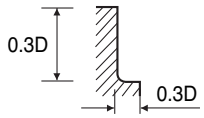
※ The FEED, in long & long reach types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE, 4 FLUTE CORNER RADIUS
VOLLHARTMETALL, 4 SCHNEIDEN ECKENRADIUS

EIB88 SERIES

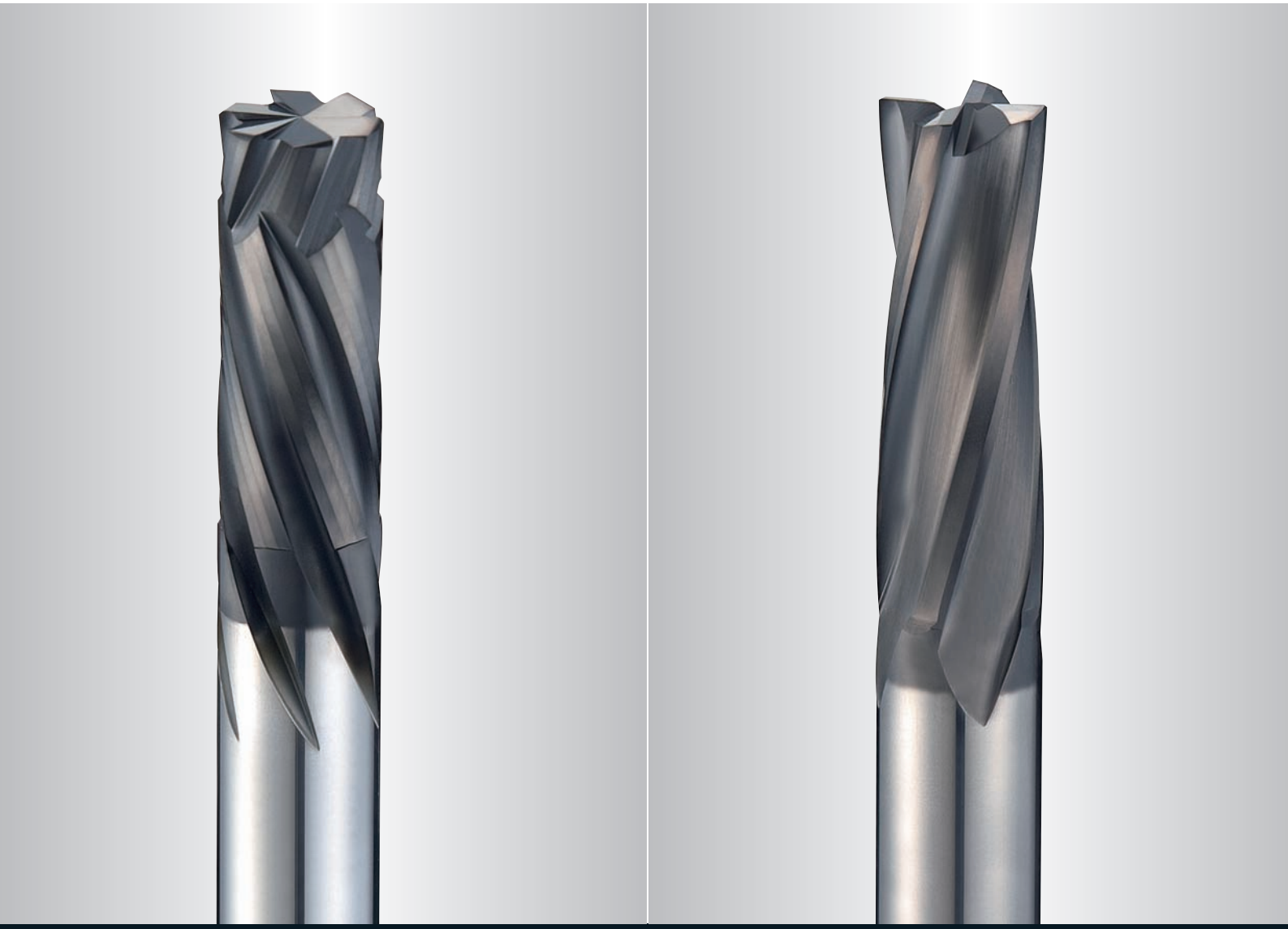
MATERIAL	GRAPHITE			
DIAMETER	RPM	FEED	Vc	fz
6.0	40000	5600	755	0.035
8.0	32000	5600	805	0.044
10.0	26000	5700	815	0.055
12.0	21000	5450	790	0.065



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE

Being the best through innovation



D-POWER CFRP

D-POWER CFK

- For composite materials including CFRP, GFRP
- Für Verbund Materialien einschl. CFK und GFK

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
GUF40		CARBIDE, MULTI FLUTE DUAL HELIX VOLLHARTMETALL, MULTI SCHNEIDEN DOPPEL HELIX	D6.0	D12.0	1020
GUF39		CARBIDE, 4 FLUTE VOLLHARTMETALL, 4 SCHNEIDEN	D6.0	D12.0	1021
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			1022

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
							○							◎
							○							◎

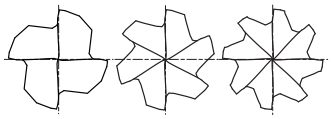
D-POWER CFRP END MILLS

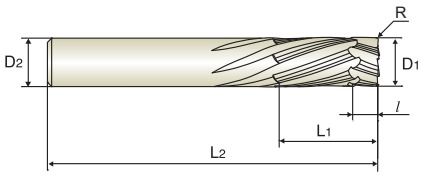
GUF40 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, MULTI FLUTE DUAL HELIX
VOLLHARTMETALL, MULTI SCHNEIDEN DOPPEL HELIX

- For composite materials - CFRP, GFRP.
- Reduce delamination and burrs.
- Diamond coating with excellent abrasion resistance

- Für verbund materialien - CFK und GFK
- Verringert Ablösungen (Delamination) und Gratbildung
- Diamant-Beschichtung mit ausgezeichneter Abriebfestigkeit.





MG HM | 4-8 | 20°/20° | PLAIN

P.1022

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1(l)	Overall Length L2	No. of Flute
GUF40060	R0.5	6.0	6	12(3)	65	4
GUF40080	R0.5	8.0	8	16(4)	70	6
GUF40100	R0.5	10.0	10	20(5)	80	6
GUF40120	R0.5	12.0	12	24(6)	90	8

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
							○							◎

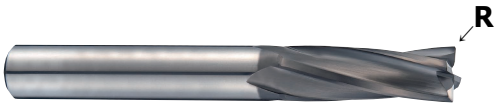
D-POWER CFRP END MILLS

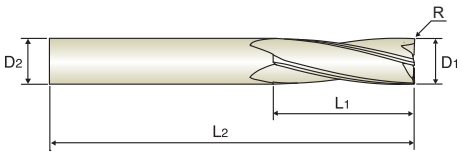
GUF39 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE
VOLLHARTMETALL, 4 SCHNEIDEN

- For composite materials - CFRP, GFRP.
- Reduce delamination and burrs.
- Diamond coating with excellent abrasion resistance

- Für verbund materialien - CFK und GFK
- Verringert Ablösungen (Delamination) und Gratbildung
- Diamant-Beschichtung mit ausgezeichneter Abriebfestigkeit.





MG HM | 4 | 15° | PLAIN

P.1022

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D_1	D_2	L_1	L_2
GUF39060	R0.2	**6.0**	6	18	65
GUF39080	R0.2	**8.0**	8	24	70
GUF39080	R0.3	**10.0**	10	30	80
GUF39120	R0.3	**12.0**	12	36	100

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
							○							◎

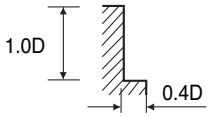
D-POWER CFRP END MILLS

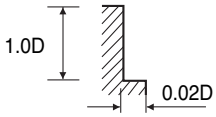
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, MULTI FLUTE DUAL HELIX
VOLLHARTMETALL, MULTI SCHNEIDEN DOPPEL HELIX

GUF40 SERIES

MATERIAL	CFRP				GFRP				CFRP				GFRP			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	7950	1115	150	0.035	4240	425	80	0.025	10610	1995	200	0.047	5300	740	100	0.035
8.0	5960	1610	150	0.045	3180	590	80	0.031	7950	2955	200	0.062	3970	955	100	0.040
10.0	4770	1575	150	0.055	2540	565	80	0.037	6360	2940	200	0.077	3180	860	100	0.045
12.0	3970	2065	150	0.065	2120	730	80	0.043	5300	3900	200	0.092	2650	1060	100	0.050



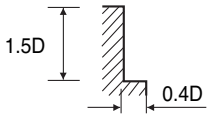


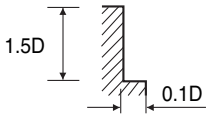
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE, 4 FLUTE
VOLLHARTMETALL, 4 SCHNEIDEN

GUF39 SERIES

MATERIAL	CFRP				GFRP				CFRP				GFRP			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	10610	1485	200	0.035	5300	530	100	0.025	10610	1190	200	0.028	5300	530	100	0.025
8.0	7950	1430	200	0.045	3970	490	100	0.031	7950	1145	200	0.036	3970	445	100	0.028
10.0	6360	1400	200	0.055	3180	470	100	0.037	6360	1120	200	0.044	3180	405	100	0.032
12.0	5300	1380	200	0.065	2650	455	100	0.043	5300	1100	200	0.052	2650	370	100	0.035





RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE

Being the best through innovation

ROUTERS

MIKROVERZAHNTER

- For composite materials including CFRP, GFRP
- Für Verbund Materialien einschl. CFK und GFK

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
RTI104		CARBIDE, ROUTER END MILL TYPE MIKROVERZAHNTER VHM FRÄSER	D3.0	D12.0	**1026**
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			**1027**

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
														◎

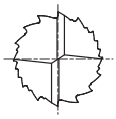
ROUTERS

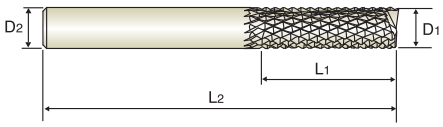
RTI104 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, ROUTER END MILL TYPE
MIKROVERZAHNTER VHM FRÄSER

- For composite materials - CFRP, GFRP.
- Reduce delamination and burrs.
- Diamond coating with excellent abrasion resistance

- Für verbund materialien - CFK und GFK
- Verringert Ablösungen (Delamination) und Gratbildung
- Diamant-Beschichtung mit ausgezeichneter Abriebfestigkeit.



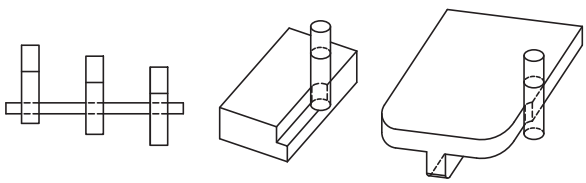


MG HM PLAIN P.1027

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
RTI104030	3.0	3	9	50
RTI104040	4.0	4	12	50
RTI104050	5.0	5	15	50
RTI104060	6.0	6	18	65
RTI104080	8.0	8	24	75
RTI104100	10.0	10	30	85
RTI104120	12.0	12	36	100

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
-0.02~-0.08	h6



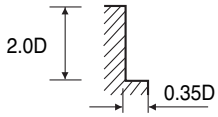
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
														◎

CARBIDE, ROUTER
VOLLHARTMETALL, MIKROVERZAHNTER

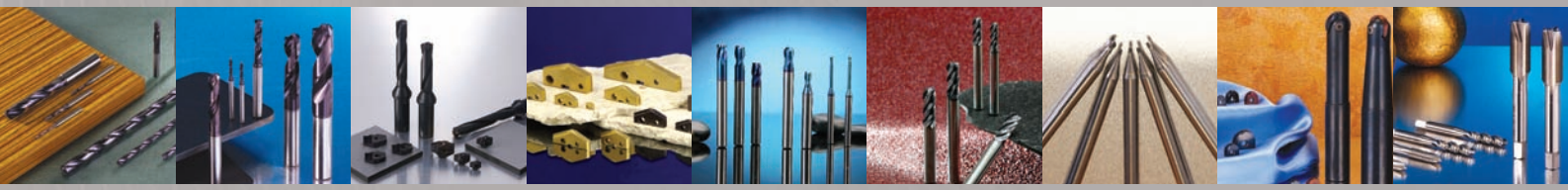
RTI104 SERIES

MATERIAL	CFRP			GFRP		
DIAMETER	RPM	FEED	Vc	RPM	FEED	Vc
3.0	21220	1270	200	10610	635	100
4.0	15910	1430	200	7950	715	100
5.0	12730	1910	200	6360	950	100
6.0	10610	2225	200	5300	1110	100
8.0	7950	2620	200	3970	1310	100
10.0	6360	3050	200	3180	1525	100
12.0	5300	3390	200	2650	1695	100



RPM = rev./min.
FEED = mm/min.
Vc = m/min.

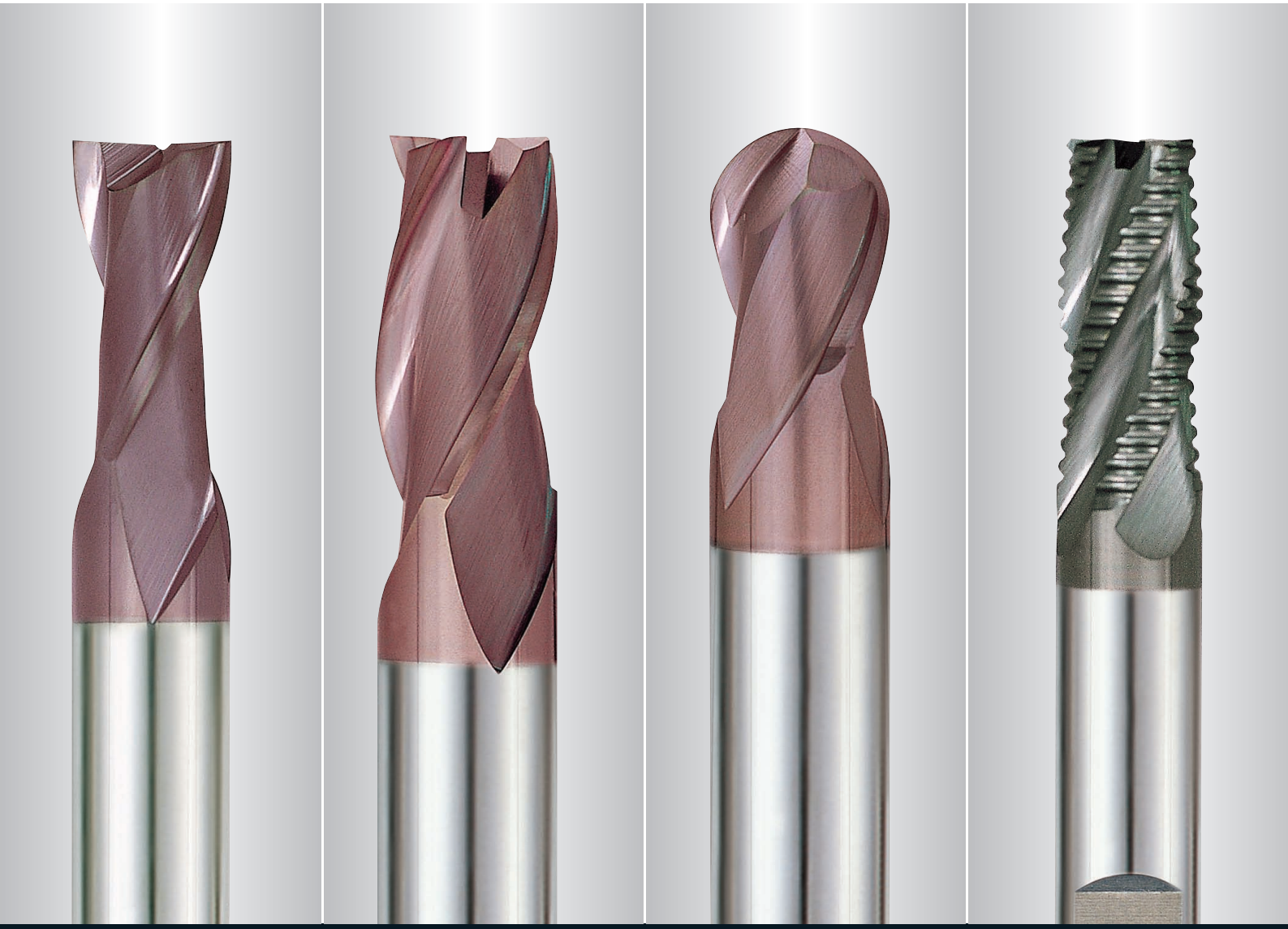
Global Cutting Tool Leader **YG-1**



CARBIDE

YG

Being the best through innovation



K-2 CARBIDE

K-2 VOLLHARTMETALL FRÄSER

- General Purpose with Coating
  Conventional or High Speed Milling, Wet or Dry Cutting

- Beschichtet für allgemeinen Einsatz
  Konventionelles oder HSC-Fräsen, Nass- oder Trockenfräsen

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
G9424		CARBIDE, 2 FLUTE SHORT LENGTH VOLLHARTMETALL, 2 SCHNEIDEN KURZ	D1.0	D20.0	1034
G9A68		CARBIDE, 2 FLUTE SHORT LENGTH VOLLHARTMETALL, 2 SCHNEIDEN KURZ	D1.0	D20.0	1035
G9444		CARBIDE, 2 FLUTE SHORT LENGTH VOLLHARTMETALL, 2 SCHNEIDEN KURZ	D2.0	D20.0	1036
G9527		CARBIDE, 2 FLUTE LONG LENGTH VOLLHARTMETALL, 2 SCHNEIDEN LANG	D3.5	D20.0	1037
G9445		CARBIDE, 2 FLUTE LONG LENGTH VOLLHARTMETALL, 2 SCHNEIDEN LANG	D2.0	D20.0	1038
G9452		CARBIDE, 2 FLUTE EXTRA LONG LENGTH VOLLHARTMETALL, 2 SCHNEIDEN EXTRA LANG	D3.0	D20.0	1039
G9553 G9410		CARBIDE, 3 FLUTE SHORT LENGTH THROW AWAY VOLLHARTMETALL, 3 SCHNEIDEN KURZ EINWEGFRÄSER	D0.5	D20.0	1040
G9425		CARBIDE, 3 FLUTE SHORT LENGTH VOLLHARTMETALL, 3 SCHNEIDEN KURZ	D1.0	D20.0	1041
G9439		CARBIDE, 3 FLUTE SHORT LENGTH VOLLHARTMETALL, 3 SCHNEIDEN KURZ	D2.0	D20.0	1042
G9528		CARBIDE, 3 FLUTE LONG LENGTH VOLLHARTMETALL, 3 SCHNEIDEN LANG	D3.5	D20.0	1043
G9433		CARBIDE, 3 FLUTE LONG LENGTH VOLLHARTMETALL, 3 SCHNEIDEN LANG	D3.0	D20.0	1044
G9447		CARBIDE, 3 FLUTE 45° HELIX LONG LENGTH VOLLHARTMETALL, 3 SCHNEIDEN 45° RECHTSSPIRALE LANG	D3.0	D20.0	1045
G9432		CARBIDE, 4 FLUTE SHORT LENGTH VOLLHARTMETALL, 4 SCHNEIDEN KURZ	D1.0	D20.0	1046
G9A69		CARBIDE, 4 FLUTE SHORT LENGTH VOLLHARTMETALL, 4 SCHNEIDEN KURZ	D1.0	D20.0	1047
G9448		CARBIDE, 4 FLUTE SHORT LENGTH VOLLHARTMETALL, 4 SCHNEIDEN KURZ	D2.0	D20.0	1048
G9540		CARBIDE, 4 FLUTE LONG LENGTH VOLLHARTMETALL, 4 SCHNEIDEN LANG	D3.5	D20.0	1049
G9449		CARBIDE, 4 FLUTE LONG LENGTH VOLLHARTMETALL, 4 SCHNEIDEN LANG	D2.0	D20.0	1050

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
G9453		CARBIDE, 4 FLUTE EXTRA LONG LENGTH VOLLHARTMETALL, 4 SCHNEIDEN EXTRA LANG	D3.0	D20.0	1051
G9624		CARBIDE, 2 FULTE SHORT LENGTH BALL NOSE VOLLHARTMETALL, 2 SCHNEIDEN KURZ STIRNRADIUS	R1.0	R10.0	1052
G9A70		CARBIDE, 2 FULTE SHORT LENGTH BALL NOSE VOLLHARTMETALL, 2 SCHNEIDEN KURZ STIRNRADIUS	R0.5	R10.0	1053
G9437		CARBIDE, 2 FLUTE SHORT LENGTH BALL NOSE VOLLHARTMETALL, 2 SCHNEIDEN KURZ STIRNRADIUS	R1.0	R10.0	1054
G9438		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE VOLLHARTMETALL, 2 SCHNEIDEN LANG STIRNRADIUS	R1.0	R10.0	1055
G9454		CARBIDE, 2 FLUTE LONG REACH BALL NOSE VOLLHARTMETALL, 2 SCHNEIDEN GROßE REICHWEITE STIRNRADIUS	R1.5	R10.0	1056
G9455		CARBIDE, 2 FLUTE EXTRA LONG LENGTH BALL NOSE VOLLHARTMETALL, 2 SCHNEIDEN EXTRA LANG STIRNRADIUS	R1.5	R10.0	1057
G9634		CARBIDE, 4 FLUTE SHORT LENGTH BALL NOSE VOLLHARTMETALL, 4 SCHNEIDEN KURZ STIRNRADIUS	R1.0	R10.0	1058
G9A42		CARBIDE, MULTI FLUTE LONG LENGTH ROUGHING - COARSE VOLLHARTMETALL, MEHRSCHNEIDEN LANG SCHRUPPFRÄSER - GROB	D6.0	D25.0	1059
G9B80		CARBIDE, 2 FLUTE RIB PROCESSING VOLLHARTMETALL, 2 SCHNEIDEN SCHMALE RIPPEN	D0.4	D4.0	1060
G9B81		CARBIDE, 2 FLUTE BALL NOSE RIB PROCESSING VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS SCHMALE RIPPEN	R0.2	R2.0	1062
G9B82		CARBIDE, 2 FLUTE SHORT LENGTH CORNER RADIUS VOLLHARTMETALL, 2 SCHNEIDEN KURZ ECKENRADIUS	D2.0	D12.0	1064
G9B83		CARBIDE, 2 FLUTE LONG REACH CORNER RADIUS VOLLHARTMETALL, 2 SCHNEIDEN GROßE REICHWEITE ECKENRADIUS	D3.0	D12.0	1066
G9B84		CARBIDE, 4 FLUTE SHORT LENGTH CORNER RADIUS VOLLHARTMETALL, 4 SCHNEIDEN KURZ ECKENRADIUS	D2.0	D12.0	1067
G9B85		CARBIDE, 4 FLUTE LONG REACH CORNER RADIUS VOLLHARTMETALL, 4 SCHNEIDEN GROßE REICHWEITE ECKENRADIUS	D3.0	D12.0	1069
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			1070

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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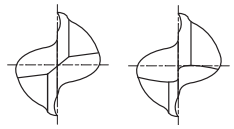
K-2 CARBIDE END MILLS

G9424 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE SHORT LENGTH
VOLLHARTMETALL, 2 SCHNEIDEN KURZ

- ▶ Suitable for dry milling applications at high temperatures.
- ▶ Excellent high-performance end mills.
- ▶ 2 flute design for slotting.

- ▶ Für die Trockenbearbeitung.
- ▶ Hervorragendes Preis - Leistungsverhältnis.
- ▶ 2 Schneiden zum Nutenfräsen.



up to Ø3mm over Ø3mm

MG HM | 2 | 30° | DIN 6535HA

P.1070

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9424010	1.0	4	3	40
G9424015	1.5	4	4.5	40
G9424020	2.0	2	8	32
G9424025	2.5	2.5	8	32
G9424030	3.0	3	12	32
G9424035	3.5	3.5	12	32
G9424040	4.0	4	12	40
G9424045	4.5	4.5	14	50
G9424050	5.0	5	14	50
G9424055	5.5	5.5	16	50
G9424060	6.0	6	16	50
G9424070	7.0	7	20	60
G9424080	8.0	8	20	60
G9424090	9.0	9	20	60
G9424100	10.0	10	22	70
G9424120	12.0	12	22	70
G9424140	14.0	14	25	75
G9424160	16.0	16	25	75
G9424200	20.0	20	32	100

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○	○	○		

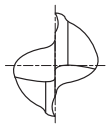
K-2 CARBIDE END MILLS

G9A68 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE SHORT LENGTH
VOLLHARTMETALL, 2 SCHNEIDEN KURZ

- ▶ Suitable for dry milling applications at high temperatures.
- ▶ Excellent high-performance end mills.
- ▶ 2 flute design for slotting.

- ▶ Für die Trockenbearbeitung.
- ▶ Hervorragendes Preis - Leistungsverhältnis.
- ▶ 2 Schneiden zum Nutenfräsen.



MG HM | 2 | 30° | DIN 6535HA P.1070

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9A68010	1.0	3	3	39
G9A68015	1.5	3	5	39
G9A68020	2.0	3	7	39
G9A68025	2.5	3	7	39
G9A68030	3.0	3	9	39
G9A68040	4.0	4	14	51
G9A68050	5.0	5	16	51
G9A68060	6.0	6	19	64
G9A68080	8.0	8	21	64
G9A68100	10.0	10	22	70
G9A68120	12.0	12	25	76
G9A68160	16.0	16	32	89
G9A68200	20.0	20	38	102

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○	○	○		

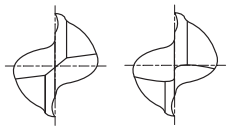
K-2 CARBIDE END MILLS

G9444 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 2 FLUTE SHORT LENGTH
VOLLHARTMETALL, 2 SCHNEIDEN KURZ

- ▶ Suitable for dry milling applications at high temperatures.
- ▶ Excellent high-performance end mills.
- ▶ 2 flute design for slotting.

- ▶ Für die Trockenbearbeitung.
- ▶ Hervorragendes Preis - Leistungsverhältnis.
- ▶ 2 Schneiden zum Nutenfräsen.



up to Ø2mm over Ø2mm

MG HM | DIN 6527 | 2 | ≈30° | DIN 6535HB

P.1070

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9444020	2.0	6	3	50
G9444030	3.0	6	4	50
G9444035	3.5	6	4	50
G9444040	4.0	6	5	54
G9444045	4.5	6	5	54
G9444050	5.0	6	6	54
G9444060	6.0	6	7	54
G9444070	7.0	8	8	58
G9444080	8.0	8	9	58
G9444090	9.0	10	10	66
G9444100	10.0	10	11	66
G9444120	12.0	12	12	73
G9444140	14.0	14	14	75
G9444160	16.0	16	16	82
G9444180	18.0	18	18	84
G9444200	20.0	20	20	92

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○	○	○		

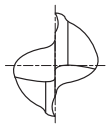
K-2 CARBIDE END MILLS

G9527 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE LONG LENGTH
VOLLHARTMETALL, 2 SCHNEIDEN LANG

- ▶ Suitable for dry milling applications at high temperatures.
- ▶ Excellent high-performance end mills.
- ▶ 2 flute design for slotting.

- ▶ Für die Trockenbearbeitung.
- ▶ Hervorragendes Preis - Leistungsverhältnis.
- ▶ 2 Schneiden zum Nutenfräsen.



MG HM | DIN 6528 | 2 | ≈30° | DIN 6535HA

P.1070

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9527035	3.5	3.5	7	50
G9527040	4.0	4	8	50
G9527045	4.5	4.5	8	50
G9527050	5.0	5	10	50
G9527055	5.5	5.5	10	57
G9527060	6.0	6	10	57
G9527065	6.5	6.5	13	60
G9527070	7.0	7	13	60
G9527075	7.5	7.5	16	63
G9527080	8.0	8	16	63
G9527085	8.5	8.5	16	67
G9527090	9.0	9	16	67
G9527095	9.5	9.5	19	72
G9527100	10.0	10	19	72
G9527110	11.0	11	22	83
G9527120	12.0	12	22	83
G9527130	13.0	13	22	83
G9527140	14.0	14	22	83
G9527150	15.0	15	26	92
G9527160	16.0	16	26	92
G9527180	18.0	18	26	92
G9527200	20.0	20	32	104

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○	○	○		

K-2 CARBIDE END MILLS

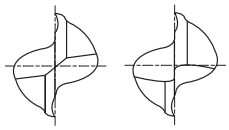
G9445 SERIES

PLAIN SHANK
GLATTER ZYLINDERSCHAFT
FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 2 FLUTE LONG LENGTH
VOLLHARTMETALL, 2 SCHNEIDEN LANG

- ▶ Suitable for dry milling applications at high temperatures.
- ▶ Excellent high-performance end mills.
- ▶ 2 flute design for slotting.

- ▶ Für die Trockenbearbeitung.
- ▶ Hervorragendes Preis - Leistungsverhältnis.
- ▶ 2 Schneiden zum Nutenfräsen.



up to Ø2mm over Ø2mm

MG HM | DIN 6527 | 2 | ≈30° | DIN 6535HA | DIN 6535HB

P.1070

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9445901	2.0	● 3	6	38
G9445028	2.8	6	7	57
G9445030	3.0	6	7	57
G9445035	3.5	6	7	57
G9445038	3.8	6	8	57
G9445040	4.0	6	8	57
G9445045	4.5	6	8	57
G9445048	4.8	6	10	57
G9445050	5.0	6	10	57
G9445957	5.75	6	10	57
G9445060	6.0	6	10	57
G9445967	6.75	8	13	63
G9445070	7.0	8	13	63
G9445977	7.75	8	16	63
G9445080	8.0	8	16	63
G9445087	8.7	10	16	72
G9445090	9.0	10	16	72
G9445097	9.7	10	19	72
G9445100	10.0	10	19	72
G9445117	11.7	12	22	83
G9445120	12.0	12	22	83
G9445137	13.7	14	22	83
G9445140	14.0	14	22	83
G9445157	15.7	16	26	92
G9445160	16.0	16	26	92
G9445177	17.7	18	26	92
G9445180	18.0	18	26	92
G9445197	19.7	20	32	104
G9445200	20.0	20	32	104

● with plain shank

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○	○	○		

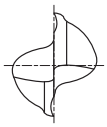
K-2 CARBIDE END MILLS

G9452 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE EXTRA LONG LENGTH
VOLLHARTMETALL, 2 SCHNEIDEN EXTRA LANG

- Suitable for dry milling applications at high temperatures.
- Excellent high-performance end mills.
- 2 flute design for slotting.

- Für die Trockenbearbeitung.
- Hervorragendes Preis - Leistungsverhältnis.
- 2 Schneiden zum Nutenfräsen.



MG HM | 2 | 30° | DIN 6535HA

P.1070

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9452903	3.0	3	20	60
G9452904	4.0	4	20	60
G9452905	5.0	5	25	75
G9452906	6.0	6	30	75
G9452908	8.0	8	30	75
G9452910	10.0	10	40	100
G9452912	12.0	12	45	100
G9452914	14.0	14	45	100
G9452916	16.0	16	45	100
G9452918	18.0	18	45	100
G9452920	20.0	20	45	100

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○	○	○		

K-2 CARBIDE END MILLS

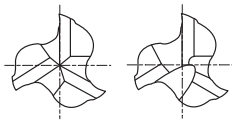
G9553 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

G9410 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 3 FLUTE SHORT LENGTH THROW AWAY
VOLLHARTMETALL, 3 SCHNEIDEN KURZ EINWEGFRÄSER

- Suitable for dry milling applications at high temperatures.
- Excellent high-performance end mills.
- 3 flute design possess the advantage of 2 flute and 4 flute end mill.

- Für die Trockenbearbeitung.
- Hervorragendes Preis - Leistungsverhältnis.
- 3 Schneiden verbinden die Vorteile von 2 - und 4 - schneidigen Schaftfräsern.



MG HM | 3 | 30° | PLAIN | FLAT

P.1071, 1072

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9553005	0.5	● 3	1.5	38
G9553006	0.6	● 3	1.5	38
G9553008	0.8	● 3	2	38
G9553010	1.0	● 3	2	38
G9553012	1.2	● 3	2	38
G9553015	1.5	● 3	2	38
G9553018	1.8	● 3	2	38
G9410020	2.0	6	4	35
G9410025	2.5	6	5	36
G9410030	3.0	6	5	36
G9410035	3.5	6	6	37
G9410040	4.0	6	7	38
G9410045	4.5	6	8	38
G9410050	5.0	6	8	39
G9410055	5.5	6	8	39
G9410957	5.75	6	8	39
G9410060	6.0	6	8	39
G9410967	6.75	8	10	42
G9410070	7.0	8	10	42
G9410977	7.75	8	10	42
G9410080	8.0	8	11	43
G9410087	8.7	10	11	48
G9410090	9.0	10	11	48
G9410097	9.7	10	11	48
G9410100	10.0	10	13	50
G9410120	12.0	12	15	55
G9410140	14.0	14	15	58
G9410160	16.0	16	18	62
G9410180	18.0	18	20	70
G9410200	20.0	20	22	75

● with plain shank

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○	○	○		

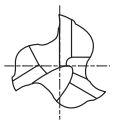
K-2 CARBIDE END MILLS

G9425 SERIES PLAIN SHANK GLATTER ZYLINDERSCHAFT

CARBIDE, 3 FLUTE SHORT LENGTH
VOLLHARTMETALL, 3 SCHNEIDEN KURZ

- Suitable for dry milling applications at high temperatures.
- Excellent high-performance end mills.
- 3 flute design possess the advantage of 2 flute and 4 flute end mill.

- Für die Trockenbearbeitung.
- Hervorragendes Preis - Leistungsverhältnis.
- 3 Schneiden verbinden die Vorteile von 2 - und 4 - schneidigen Schaftfräsern.



MG HM | 3 | 30° | DIN 6535HA

P.1071, 1072

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9425010	1.0	4	3	40
G9425015	1.5	4	4.5	40
G9425020	2.0	2	8	32
G9425025	2.5	2.5	8	32
G9425030	3.0	3	12	32
G9425035	3.5	3.5	12	32
G9425040	4.0	4	12	40
G9425045	4.5	4.5	14	50
G9425050	5.0	5	14	50
G9425055	5.5	5.5	16	50
G9425060	6.0	6	16	50
G9425070	7.0	7	20	60
G9425080	8.0	8	20	60
G9425090	9.0	9	20	60
G9425100	10.0	10	22	70
G9425120	12.0	12	22	70
G9425140	14.0	14	25	75
G9425160	16.0	16	25	75
G9425200	20.0	20	32	100

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○	○	○		

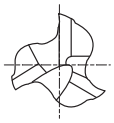
K-2 CARBIDE END MILLS

G9439 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 3 FLUTE SHORT LENGTH
VOLLHARTMETALL, 3 SCHNEIDEN KURZ

- Suitable for dry milling applications at high temperatures.
- Excellent high-performance end mills.
- 3 flute design possess the advantage of 2 flute and 4 flute end mill.

- Für die Trockenbearbeitung.
- Hervorragendes Preis - Leistungsverhältnis.
- 3 Schneiden verbinden die Vorteile von 2 - und 4 - schneidigen Schaftfräsern.



MG HM | DIN 6527 | 3 | ≈30° | DIN 6535HB

P.1071, 1072

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9439020	2.0	6	3	50
G9439030	3.0	6	4	50
G9439035	3.5	6	4	50
G9439040	4.0	6	5	54
G9439045	4.5	6	5	54
G9439050	5.0	6	6	54
G9439060	6.0	6	7	54
G9439070	7.0	8	8	58
G9439080	8.0	8	9	58
G9439090	9.0	10	10	66
G9439100	10.0	10	11	66
G9439120	12.0	12	12	73
G9439140	14.0	14	14	75
G9439160	16.0	16	16	82
G9439180	18.0	18	18	84
G9439200	20.0	20	20	92

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○	○	○		

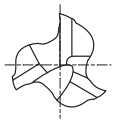
K-2 CARBIDE END MILLS

G9528 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 3 FLUTE LONG LENGTH
VOLLHARTMETALL, 3 SCHNEIDEN LANG

- Suitable for dry milling applications at high temperatures.
- Excellent high-performance end mills.
- 3 flute design possess the advantage of 2 flute and 4 flute end mill.

- Für die Trockenbearbeitung.
- Hervorragendes Preis - Leistungsverhältnis.
- 3 Schneiden verbinden die Vorteile von 2 - und 4 - schneidigen Schaftfräsern.



MG HM | DIN 6528 | 3 | ≈30° | DIN 6535HA

P.1071, 1072

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9528035	3.5	3.5	7	50
G9528040	4.0	4	8	50
G9528045	4.5	4.5	8	50
G9528050	5.0	5	10	50
G9528055	5.5	5.5	10	57
G9528060	6.0	6	10	57
G9528065	6.5	6.5	13	60
G9528070	7.0	7	13	60
G9528075	7.5	7.5	16	63
G9528080	8.0	8	16	63
G9528085	8.5	8.5	16	67
G9528090	9.0	9	16	67
G9528095	9.5	9.5	19	72
G9528100	10.0	10	19	72
G9528110	11.0	11	22	83
G9528120	12.0	12	22	83
G9528130	13.0	13	22	83
G9528140	14.0	14	22	83
G9528150	15.0	15	26	92
G9528160	16.0	16	26	92
G9528180	18.0	18	26	92
G9528200	20.0	20	32	104

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○	○	○		

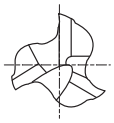
K-2 CARBIDE END MILLS

G9433 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 3 FLUTE LONG LENGTH
VOLLHARTMETALL, 3 SCHNEIDEN LANG

- Suitable for dry milling applications at high temperatures.
- Excellent high-performance end mills.
- 3 flute design possess the advantage of 2 flute and 4 flute end mill.

- Für die Trockenbearbeitung.
- Hervorragendes Preis - Leistungsverhältnis.
- 3 Schneiden verbinden die Vorteile von 2 - und 4 - schneidigen Schaftfräsern.



MG HM | DIN 6527 | 3 | ≈30° | DIN 6535HB

P.1071, 1072

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9433030	3.0	6	7	57
G9433040	4.0	6	8	57
G9433050	5.0	6	10	57
G9433060	6.0	6	10	57
G9433080	8.0	8	16	63
G9433090	9.0	10	16	72
G9433100	10.0	10	19	72
G9433120	12.0	12	22	83
G9433140	14.0	14	22	83
G9433160	16.0	16	26	92
G9433180	18.0	18	26	92
G9433200	20.0	20	32	104

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

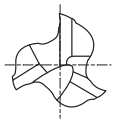
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○	○	○		

K-2 CARBIDE END MILLS

G9447 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 3 FLUTE 45° HELIX, LONG LENGTH
VOLLHARTMETALL, 3 SCHNEIDEN 45° RECHTSSPIRALE LANG

- ▶ Suitable for dry milling applications at high temperatures.
- ▶ Excellent high-performance end mills.
- ▶ Für die Trockenbearbeitung.
- ▶ Hervorragendes Preis - Leistungsverhältnis.



MG HM | DIN 6527 | 3 | 45° | DIN 6535HB

P.1071, 1072

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9447030	3.0	6	7	57
G9447035	3.5	6	7	57
G9447040	4.0	6	8	57
G9447045	4.5	6	8	57
G9447050	5.0	6	10	57
G9447060	6.0	6	10	57
G9447070	7.0	8	13	63
G9447080	8.0	8	16	63
G9447090	9.0	10	16	72
G9447100	10.0	10	19	72
G9447120	12.0	12	22	83
G9447140	14.0	14	22	83
G9447160	16.0	16	26	92
G9447180	18.0	18	26	92
G9447200	20.0	20	32	104

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				◎		○	◎	○	○	○		

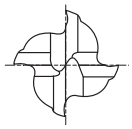
K-2 CARBIDE END MILLS

G9432 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE SHORT LENGTH
VOLLHARTMETALL, 4 SCHNEIDEN KURZ

- Suitable for dry milling applications at high temperatures.
- Excellent high-performance end mills.
- 4 flute allows for better work piece finishes.

- Für die Trockenbearbeitung.
- Hervorragendes Preis - Leistungsverhältnis.
- 4 Schneiden erzeugen eine bessere Oberflächengüte des Werkstücks.



MG HM | 4 | 30° | DIN 6535HA

P.1073

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9432010	1.0	4	3	40
G9432015	1.5	4	4.5	40
G9432020	2.0	2	8	32
G9432025	2.5	2.5	8	32
G9432030	3.0	3	12	32
G9432035	3.5	3.5	12	32
G9432040	4.0	4	12	40
G9432045	4.5	4.5	14	50
G9432050	5.0	5	14	50
G9432055	5.5	5.5	16	50
G9432060	6.0	6	16	50
G9432070	7.0	7	20	60
G9432080	8.0	8	20	60
G9432090	9.0	9	20	60
G9432100	10.0	10	22	70
G9432120	12.0	12	22	70
G9432140	14.0	14	25	75
G9432160	16.0	16	25	75
G9432200	20.0	20	32	100

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○	○	○		

K-2 CARBIDE END MILLS

G9A69 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE SHORT LENGTH
VOLLHARTMETALL, 4 SCHNEIDEN KURZ

- ▶ Suitable for dry milling applications at high temperatures.
- ▶ Excellent high-performance end mills.
- ▶ 4 flute allows for better work piece finishes.

- ▶ Für die Trockenbearbeitung.
- ▶ Hervorragendes Preis - Leistungsverhältnis.
- ▶ 4 Schneiden erzeugen eine bessere Oberflächengüte des Werkstücks.

MG HM | 4 | 30° | DIN 6535HA P.1073

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9A69010	1.0	3	3	39
G9A69015	1.5	3	5	39
G9A69020	2.0	3	7	39
G9A69025	2.5	3	7	39
G9A69030	3.0	3	10	39
G9A69040	4.0	4	14	51
G9A69050	5.0	5	16	51
G9A69060	6.0	6	19	64
G9A69080	8.0	8	21	64
G9A69100	10.0	10	22	70
G9A69120	12.0	12	25	76
G9A69160	16.0	16	32	89
G9A69200	20.0	20	38	102

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○	○	○		

K-2 CARBIDE END MILLS

G9448 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 4 FLUTE SHORT LENGTH
VOLLHARTMETALL, 4 SCHNEIDEN KURZ

- Suitable for dry milling applications at high temperatures.
- Excellent high-performance end mills.
- 4 flute allows for better work piece finishes.

- Für die Trockenbearbeitung.
- Hervorragendes Preis - Leistungsverhältnis.
- 4 Schneiden erzeugen eine bessere Oberflächengüte des Werkstücks.

MG HM | DIN 6527 | 4 | ≈30° | DIN 6535HB

P.1073

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9448020	2.0	6	4	50
G9448025	2.5	6	4	50
G9448030	3.0	6	5	50
G9448035	3.5	6	6	50
G9448040	4.0	6	8	54
G9448045	4.5	6	8	54
G9448050	5.0	6	9	54
G9448060	6.0	6	10	54
G9448070	7.0	8	11	58
G9448080	8.0	8	12	58
G9448090	9.0	10	13	66
G9448100	10.0	10	14	66
G9448120	12.0	12	16	73
G9448140	14.0	14	18	75
G9448160	16.0	16	22	82
G9448180	18.0	18	24	84
G9448200	20.0	20	26	92

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○	○	○		

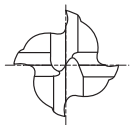
K-2 CARBIDE END MILLS

G9540 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE LONG LENGTH
VOLLHARTMETALL, 4 SCHNEIDEN LANG

- Suitable for dry milling applications at high temperatures.
- Excellent high-performance end mills.
- 4 flute allows for better work piece finishes.

- Für die Trockenbearbeitung.
- Hervorragendes Preis - Leistungsverhältnis.
- 4 Schneiden erzeugen eine bessere Oberflächengüte des Werkstücks.



MG HM | DIN 6528 | 4 | ≈30° | DIN 6535HA

P.1073

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9540035	3.5	3.5	10	50
G9540040	4.0	4	11	50
G9540045	4.5	4.5	11	50
G9540050	5.0	5	13	50
G9540055	5.5	5.5	13	57
G9540060	6.0	6	13	57
G9540065	6.5	6.5	16	60
G9540070	7.0	7	16	60
G9540075	7.5	7.5	19	63
G9540080	8.0	8	19	63
G9540085	8.5	8.5	19	67
G9540090	9.0	9	19	67
G9540095	9.5	9.5	22	72
G9540100	10.0	10	22	72
G9540110	11.0	11	26	83
G9540120	12.0	12	26	83
G9540130	13.0	13	26	83
G9540140	14.0	14	26	83
G9540150	15.0	15	32	92
G9540160	16.0	16	32	92
G9540180	18.0	18	32	92
G9540200	20.0	20	38	104

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○	○	○		

K-2 CARBIDE END MILLS

G9449 SERIES

PLAIN SHANK
GLATTER ZYLINDERSCHAFT
FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 4 FLUTE LONG LENGTH
VOLLHARTMETALL, 4 SCHNEIDEN LANG

- ▶ Suitable for dry milling applications at high temperatures.
- ▶ Excellent high-performance end mills.
- ▶ 4 flute allows for better work piece finishes.

- ▶ Für die Trockenbearbeitung.
- ▶ Hervorragendes Preis - Leistungsverhältnis.
- ▶ 4 Schneiden erzeugen eine bessere Oberflächengüte des Werkstücks.

MG HM | DIN 6527 | 4 | ≈30° | DIN 6535HA | DIN 6535HB

P.1073

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9449901	2.0	● 3	7	38
G9449030	3.0	6	8	57
G9449035	3.5	6	10	57
G9449040	4.0	6	11	57
G9449045	4.5	6	11	57
G9449050	5.0	6	13	57
G9449060	6.0	6	13	57
G9449070	7.0	8	16	63
G9449080	8.0	8	19	63
G9449090	9.0	10	19	72
G9449100	10.0	10	22	72
G9449120	12.0	12	26	83
G9449140	14.0	14	26	83
G9449160	16.0	16	32	92
G9449180	18.0	18	32	92
G9449200	20.0	20	38	104

● with plain shank

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○	○	○		

K-2 CARBIDE END MILLS

G9453 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE EXTRA LONG LENGTH
VOLLHARTMETALL, 4 SCHNEIDEN EXTRA LANG

- Suitable for dry milling applications at high temperatures.
- Excellent high-performance end mills.
- 4 flute allows for better work piece finishes.

- Für die Trockenbearbeitung.
- Hervorragendes Preis - Leistungsverhältnis.
- 4 Schneiden erzeugen eine bessere Oberflächengüte des Werkstücks.

MG HM | 4 | 30° | DIN 6535HA

P.1073

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9453903	3.0	3	20	60
G9453904	4.0	4	20	60
G9453905	5.0	5	25	75
G9453906	6.0	6	30	75
G9453908	8.0	8	30	75
G9453910	10.0	10	40	100
G9453912	12.0	12	45	100
G9453914	14.0	14	45	100
G9453916	16.0	16	45	100
G9453918	18.0	18	45	100
G9453920	20.0	20	45	100

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○	○	○		

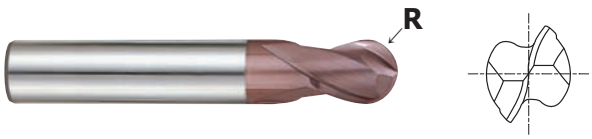
K-2 CARBIDE END MILLS

G9624 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FULTE SHORT LENGTH BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN KURZ STIRNRADIUS

- Suitable for dry milling applications at high temperatures.
- Excellent high-performance end mills.
- Designed for milling of radius bottom slots, fillets and special contours.

- Für die Trockenbearbeitung.
- Hervorragendes Preis - Leistungsverhältnis.
- Bestimmt für das Fräsen von Nuten mit konvexem Grund, Sonderprofilen und zum Kopieren.



P.1075

Unit : mm

EDP No.	Radius of Ball Nose R (±0.02)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9624020	R 1.0	2.0	6	4	48
G9624025	R 1.25	2.5	6	4	48
G9624030	R 1.5	3.0	6	4	48
G9624040	R 2.0	4.0	6	6	50
G9624901	R 2.0	4.0	4	12	40
G9624050	R 2.5	5.0	6	7	51
G9624902	R 2.5	5.0	5	14	50
G9624060	R 3.0	6.0	6	7	51
G9624080	R 4.0	8.0	8	9	59
G9624100	R 5.0	10.0	10	10	60
G9624120	R 6.0	12.0	12	14	71
G9624140	R 7.0	14.0	14	14	71
G9624160	R 8.0	16.0	16	16	76
G9624180	R 9.0	18.0	18	18	76
G9624200	R 10.0	20.0	20	20	82

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○		○	○	○	○	○		

K-2 CARBIDE END MILLS

G9A70 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FULTE SHORT LENGTH BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN KURZ STIRNRADIUS

- Suitable for dry milling applications at high temperatures.
- Excellent high-performance end mills.
- Designed for milling of radius bottom slots, fillets and special contours.

- Für die Trockenbearbeitung.
- Hervorragendes Preis - Leistungsverhältnis.
- Bestimmt für das Fräsen von Nuten mit konvexem Grund, Sonderprofilen und zum Kopieren.

MG HM | 2 | 30° | R ±0.02 | DIN 6535HA

P.1075

Unit : mm

EDP No.	Radius of Ball Nose R (±0.02)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9A70010	R 0.5	1.0	3	3	39
G9A70015	R 0.75	1.5	3	5	39
G9A70020	R 1.0	2.0	3	7	39
G9A70025	R 1.25	2.5	3	8	39
G9A70030	R 1.5	3.0	3	9	39
G9A70040	R 2.0	4.0	4	14	51
G9A70050	R 2.5	5.0	5	16	51
G9A70060	R 3.0	6.0	6	19	64
G9A70080	R 4.0	8.0	8	21	64
G9A70100	R 5.0	10.0	10	22	70
G9A70110	R 5.5	11.0	11	25	70
G9A70120	R 6.0	12.0	12	25	76
G9A70160	R 8.0	16.0	16	32	89
G9A70200	R 10.0	20.0	20	38	102

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○		○	○	○	○	○		

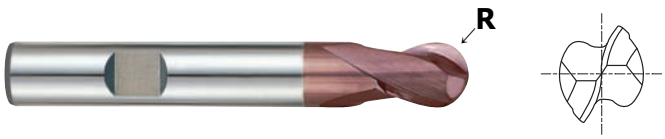
K-2 CARBIDE END MILLS

G9437 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 2 FULTE SHORT LENGTH BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN KURZ STIRNRADIUS

- Suitable for dry milling applications at high temperatures.
- Excellent high-performance end mills.
- Designed for milling of radius bottom slots, fillets and special contours.

- Für die Trockenbearbeitung.
- Hervorragendes Preis - Leistungsverhältnis.
- Bestimmt für das Fräsen von Nuten mit konvexem Grund, Sonderprofilen und zum Kopieren.



MG HM | DIN 6527 | 2 | ≈30° | R ±0.02 | DIN 6535HB

P.1075

Unit : mm

EDP No.	Radius of Ball Nose R (±0.02)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9437020	R 1.0	2.0	6	3	50
G9437030	R 1.5	3.0	6	4	50
G9437040	R 2.0	4.0	6	5	54
G9437050	R 2.5	5.0	6	6	54
G9437060	R 3.0	6.0	6	7	54
G9437080	R 4.0	8.0	8	9	58
G9437100	R 5.0	10.0	10	11	66
G9437120	R 6.0	12.0	12	12	73
G9437140	R 7.0	14.0	14	14	75
G9437180	R 9.0	18.0	18	18	84
G9437200	R 10.0	20.0	20	20	92

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○		○	○	○	○	○		

K-2 CARBIDE END MILLS

G9438 SERIES

PLAIN SHANK
GLATTER ZYLINDERSCHAFT
FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN LANG STIRNRADIUS

- Suitable for dry milling applications at high temperatures.
- Excellent high-performance end mills.
- Designed for milling of radius bottom slots, fillets and special contours.

- Für die Trockenbearbeitung.
- Hervorragendes Preis - Leistungsverhältnis.
- Bestimmt für das Fräsen von Nuten mit konvexem Grund, Sonderprofilen und zum Kopieren.

MG HM | DIN 6527 | 2 | 30° | R ±0.02 | DIN 6535HA | DIN 6535HB

P.1075

Unit : mm

EDP No.	Radius of Ball Nose R (±0.02)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9438020	R 1.0	2.0	● 3	6	38
G9438030	R 1.5	3.0	6	7	57
G9438040	R 2.0	4.0	6	8	57
G9438050	R 2.5	5.0	6	10	57
G9438060	R 3.0	6.0	6	10	57
G9438080	R 4.0	8.0	8	16	63
G9438100	R 5.0	10.0	10	19	72
G9438120	R 6.0	12.0	12	22	83
G9438140	R 7.0	14.0	14	22	83
G9438160	R 8.0	16.0	16	26	92
G9438180	R 9.0	18.0	18	26	92
G9438200	R 10.0	20.0	20	32	104

● with plain shank

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○		○	○	○	○	○		

K-2 CARBIDE END MILLS

G9454 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE LONG REACH BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN GROßE REICHWEITE STIRNRADIUS

- Suitable for dry milling applications at high temperatures.
- Excellent high-performance end mills.
- Designed for milling of radius bottom slots, fillets and special contours.

- Für die Trockenbearbeitung.
- Hervorragendes Preis - Leistungsverhältnis.
- Bestimmt für das Fräsen von Nuten mit konvexem Grund, Sonderprofilen und zum Kopieren.

P.1075

Unit : mm

EDP No.	Radius of Ball Nose R (±0.02)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9454030	R 1.5	3.0	3	5	75
G9454040	R 2.0	4.0	4	8	75
G9454050	R 2.5	5.0	5	9	75
G9454060	R 3.0	6.0	6	10	100
G9454080	R 4.0	8.0	8	12	100
G9454100	R 5.0	10.0	10	14	100
G9454120	R 6.0	12.0	12	16	100
G9454140	R 7.0	14.0	14	18	100
G9454160	R 8.0	16.0	16	22	150
G9454200	R 10.0	20.0	20	26	150

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○		○	○	○	○	○		

K-2 CARBIDE END MILLS

G9455 SERIES PLAIN SHANK GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE EXTRA LONG LENGTH BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN EXTRA LANG STIRNRADIUS

- Suitable for dry milling applications at high temperatures.
- Excellent high-performance end mills.
- Designed for milling of radius bottom slots, fillets and special contours.

- Für die Trockenbearbeitung.
- Hervorragendes Preis - Leistungsverhältnis.
- Bestimmt für das Fräsen von Nuten mit konvexem Grund, Sonderprofilen und zum Kopieren.

P.1075

Unit : mm

EDP No.	Radius of Ball Nose R (±0.02)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9455903	R 1.5	3.0	3	20	60
G9455904	R 2.0	4.0	4	20	60
G9455905	R 2.5	5.0	5	25	75
G9455906	R 3.0	6.0	6	30	75
G9455908	R 4.0	8.0	8	30	75
G9455910	R 5.0	10.0	10	40	100
G9455912	R 6.0	12.0	12	45	100
G9455914	R 7.0	14.0	14	45	100
G9455916	R 8.0	16.0	16	45	100
G9455918	R 9.0	18.0	18	45	100
G9455920	R 10.0	20.0	20	45	100

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○		○	○	○	○	○		

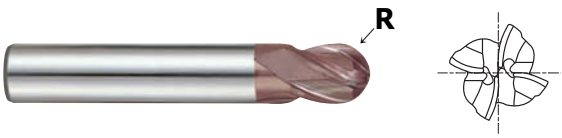
K-2 CARBIDE END MILLS

G9634 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE SHORT LENGTH BALL NOSE
VOLLHARTMETALL, 4 SCHNEIDEN KURZ STIRNRADIUS

- Suitable for dry milling applications at high temperatures.
- Excellent high-performance end mills.
- 4 flute allows for better work piece finishes.
- Designed for milling of radius bottom slots, fillets and special contours.

- Für die Trockenbearbeitung.
- Hervorragendes Preis - Leistungsverhältnis.
- 4 Schneiden erzeugen eine bessere Oberflächengüte des Werkstücks.
- Bestimmt für das Fräsen von Nuten mit konvexem Grund, Sonderprofilen und zum Kopieren.



MG HM | 4 | 30° | R ±0.02 | DIN 6535HA

P.1076

Unit : mm

EDP No.	Radius of Ball Nose R (±0.02)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9634020	R 1.0	2.0	6	4	48
G9634030	R 1.5	3.0	6	4	48
G9634040	R 2.0	4.0	6	6	50
G9634050	R 2.5	5.0	6	7	51
G9634060	R 3.0	6.0	6	7	51
G9634080	R 4.0	8.0	8	9	59
G9634100	R 5.0	10.0	10	10	60
G9634120	R 6.0	12.0	12	14	71
G9634140	R 7.0	14.0	14	14	71
G9634160	R 8.0	16.0	16	16	76
G9634180	R 9.0	18.0	18	18	76
G9634200	R 10.0	20.0	20	20	82

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○		○	○	○	○	○		

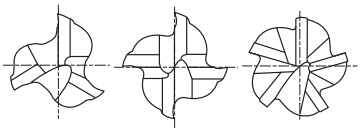
K-2 CARBIDE END MILLS

G9A42 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, MULTI FLUTE LONG LENGTH ROUGHING - COARSE
VOLLHARTMETALL, MEHRSCHNEIDEN LANG SCHRUPPFRÄSER - GROB

- ▶ Suitable for dry milling applications at high temperatures.
- ▶ Excellent high-performance end mills.
- ▶ Fast chip ejection.

- ▶ Für die Trockenbearbeitung.
- ▶ Hervorragendes Preis - Leistungsverhältnis.
- ▶ Guter Spanauswurf.



MG HM | COARSE | 3-5 | 30° | DIN 6535HB

P.1074

Unit : mm

EDP No.	Mill Diameter h10	Shank Diameter h6	Length of Cut	Overall Length	No. of Flute
G9A42060	6.0	6	16	57	3
G9A42080	8.0	8	16	63	3
G9A42100	10.0	10	22	72	4
G9A42120	12.0	12	26	83	4
G9A42140	14.0	14	26	83	4
G9A42160	16.0	16	32	92	4
G9A42180	18.0	18	32	92	4
G9A42200	20.0	20	38	104	4
G9A42250	25.0	25	45	121	5

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛					
Nominal-Diameter in ㎜ / Nennmaßbereich in ㎜					
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○	○	○		

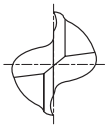
K-2 CARBIDE END MILLS

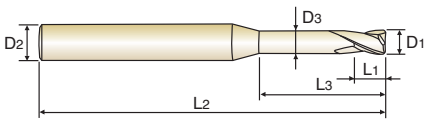
G9B80 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN SCHMALE RIPPEN

- Suitable for dry milling applications at high temperatures.
- Excellent high-performance end mills.
- 2 flute design for slotting.

- Für die Trockenbearbeitung.
- Hervorragendes Preis - Leistungsverhältnis.
- 2 Schneiden zum Nutenfräsen.





MG HM | 2 | 30° | DIN 6535HA

P.1077

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
G9B80004	0.4	4	0.7	2	50	0.37
G9B80901	0.4	4	0.7	4	50	0.37
G9B80005	0.5	4	0.75	2	50	0.45
G9B80902	0.5	4	0.75	4	50	0.45
G9B80903	0.5	4	0.75	6	50	0.45
G9B80006	0.6	4	0.9	2	50	0.55
G9B80904	0.6	4	0.9	4	50	0.55
G9B80905	0.6	4	0.9	6	50	0.55
G9B80007	0.7	4	1.1	4	50	0.65
G9B80906	0.7	4	1.1	6	50	0.65
G9B80008	0.8	4	1.2	4	50	0.75
G9B80907	0.8	4	1.2	6	50	0.75
G9B80908	0.8	4	1.2	8	50	0.75
G9B80009	0.9	4	1.4	6	50	0.85
G9B80909	0.9	4	1.4	8	50	0.85
G9B80910	0.9	4	1.4	10	50	0.85
G9B80010	1.0	4	1.5	6	50	0.95
G9B80911	1.0	4	1.5	8	50	0.95
G9B80912	1.0	4	1.5	10	50	0.95
G9B80913	1.0	4	1.5	12	50	0.95
G9B80012	1.2	4	1.8	6	50	1.15
G9B80914	1.2	4	1.8	8	50	1.15
G9B80915	1.2	4	1.8	10	50	1.15
G9B80916	1.2	4	1.8	12	50	1.15
G9B80015	1.5	4	2.3	6	50	1.45
G9B80917	1.5	4	2.3	8	50	1.45
G9B80918	1.5	4	2.3	10	50	1.45
G9B80919	1.5	4	2.3	12	50	1.45
G9B80920	1.5	4	2.3	14	50	1.45
G9B80921	1.5	4	2.3	16	50	1.45

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○				

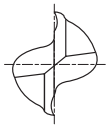
K-2 CARBIDE END MILLS

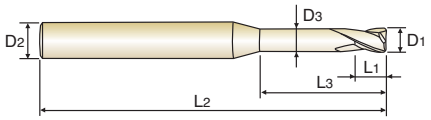
G9B80 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN SCHMALE RIPPEN

- ▶ Suitable for dry milling applications at high temperatures.
- ▶ Excellent high-performance end mills.
- ▶ 2 flute design for slotting.

- ▶ Für die Trockenbearbeitung.
- ▶ Hervorragendes Preis - Leistungsverhältnis.
- ▶ 2 Schneiden zum Nutenfräsen.





MG HM | 2 | 30° | DIN 6535HA

P.1077

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
G9B80922	1.5	4	2.3	18	50	1.45
G9B80923	1.5	4	2.3	20	50	1.45
G9B80020	2.0	4	3	6	50	1.95
G9B80924	2.0	4	3	8	50	1.95
G9B80925	2.0	4	3	10	50	1.95
G9B80926	2.0	4	3	12	50	1.95
G9B80927	2.0	4	3	14	50	1.95
G9B80928	2.0	4	3	16	50	1.95
G9B80929	2.0	4	3	18	50	1.95
G9B80930	2.0	4	3	20	50	1.95
G9B80025	2.5	4	3.7	8	50	2.40
G9B80931	2.5	4	3.7	12	50	2.40
G9B80932	2.5	4	3.7	16	50	2.40
G9B80933	2.5	4	3.7	20	50	2.40
G9B80030	3.0	6	4.5	8	50	2.85
G9B80934	3.0	6	4.5	12	50	2.85
G9B80935	3.0	6	4.5	16	60	2.85
G9B80936	3.0	6	4.5	20	60	2.85
G9B80937	3.0	6	4.5	25	75	2.85
G9B80040	4.0	6	6	12	50	3.85
G9B80938	4.0	6	6	16	60	3.85
G9B80939	4.0	6	6	20	75	3.85
G9B80940	4.0	6	6	25	75	3.85
G9B80941	4.0	6	6	30	75	3.85
G9B80942	4.0	6	6	35	75	3.85

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○				

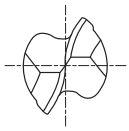
K-2 CARBIDE END MILLS

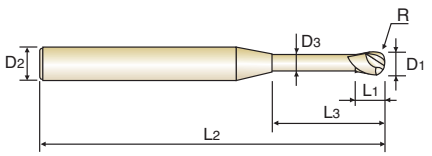
G9B81 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS für SCHMALE RIPPEN

- Suitable for dry milling applications at high temperatures.
- Excellent high-performance end mills.
- Designed for milling of radius bottom slots, fillets and special contours.

- Für die Trockenbearbeitung.
- Hervorragendes Preis - Leistungsverhältnis.
- Bestimmt für das Fräsen von Nuten mit konvexem Grund, Sonderprofilen und zum Kopieren.





MG HM | 2 | 30° | R ±0.02 | DIN 6535HA

P.1078

Unit : mm

EDP No.	Radius of Ball Nose R (±0.02)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
G9B81004	R0.2	0.4	4	0.7	2	50	0.37
G9B81005	R0.25	0.5	4	0.75	2	50	0.45
G9B81901	R0.25	0.5	4	0.75	4	50	0.45
G9B81902	R0.25	0.5	4	0.75	6	50	0.45
G9B81006	R0.3	0.6	4	0.9	2	50	0.55
G9B81903	R0.3	0.6	4	0.9	4	50	0.55
G9B81904	R0.3	0.6	4	0.9	6	50	0.55
G9B81008	R0.4	0.8	4	1.2	4	50	0.75
G9B81905	R0.4	0.8	4	1.2	6	50	0.75
G9B81906	R0.4	0.8	4	1.2	8	50	0.75
G9B81010	R0.5	1.0	4	1.5	6	50	0.95
G9B81907	R0.5	1.0	4	1.5	8	50	0.95
G9B81908	R0.5	1.0	4	1.5	10	50	0.95
G9B81909	R0.5	1.0	4	1.5	12	50	0.95
G9B81012	R0.6	1.2	4	1.8	8	50	1.15
G9B81910	R0.6	1.2	4	1.8	12	50	1.15
G9B81014	R0.7	1.4	4	2.1	16	50	1.35
G9B81015	R0.75	1.5	4	2.3	6	50	1.45
G9B81911	R0.75	1.5	4	2.3	8	50	1.45
G9B81912	R0.75	1.5	4	2.3	10	50	1.45
G9B81913	R0.75	1.5	4	2.3	12	50	1.45
G9B81914	R0.75	1.5	4	2.3	16	50	1.45
G9B81915	R0.75	1.5	4	2.3	20	50	1.45
G9B81016	R0.8	1.6	4	2.4	8	50	1.55
G9B81916	R0.8	1.6	4	2.4	12	50	1.55
G9B81917	R0.8	1.6	4	2.4	16	50	1.55

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○				

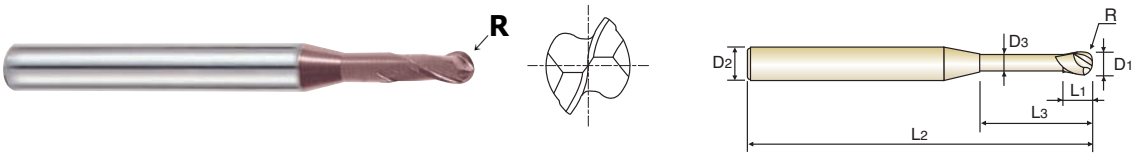
K-2 CARBIDE END MILLS

G9B81 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS für SCHMALE RIPPEN

- Suitable for dry milling applications at high temperatures.
- Excellent high-performance end mills.
- Designed for milling of radius bottom slots, fillets and special contours.

- Für die Trockenbearbeitung.
- Hervorragendes Preis - Leistungsverhältnis.
- Bestimmt für das Fräsen von Nuten mit konvexem Grund, Sonderprofilen und zum Kopieren.



MG HM | 2 | 30° | R ±0.02 | DIN 6535HA

P.1078

Unit : mm

EDP No.	Radius of Ball Nose R (±0.02)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
G9B81918	R0.8	1.6	4	2.4	20	50	1.55
G9B81020	R1.0	2.0	4	3	8	50	1.95
G9B81919	R1.0	2.0	4	3	10	50	1.95
G9B81920	R1.0	2.0	4	3	12	50	1.95
G9B81921	R1.0	2.0	4	3	14	50	1.95
G9B81922	R1.0	2.0	4	3	16	50	1.95
G9B81923	R1.0	2.0	4	3	20	50	1.95
G9B81030	R1.5	3.0	6	4.5	10	50	2.85
G9B81924	R1.5	3.0	6	4.5	12	50	2.85
G9B81925	R1.5	3.0	6	4.5	16	60	2.85
G9B81926	R1.5	3.0	6	4.5	20	60	2.85
G9B81927	R1.5	3.0	6	4.5	25	75	2.85
G9B81040	R2.0	4.0	6	6	12	50	3.85
G9B81928	R2.0	4.0	6	6	16	60	3.85
G9B81929	R2.0	4.0	6	6	20	75	3.85
G9B81930	R2.0	4.0	6	6	25	75	3.85
G9B81931	R2.0	4.0	6	6	30	75	3.85

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○				

K-2 CARBIDE END MILLS

G9B82 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE SHORT LENGTH CORNER RADIUS
VOLLHARTMETALL, 2 SCHNEIDEN KURZ ECKENRADIUS

- Suitable for dry milling applications at high temperatures.
- Excellent high-performance end mills.
- 2 flute design for slotting.

- Für die Trockenbearbeitung.
- Hervorragendes Preis - Leistungsverhältnis.
- 2 Schneiden zum Nutenfräsen.

MG HM | 2 | 30° | DIN 6535HA

P.1079

Unit : mm

EDP No.	Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9B82020	R0.2	2.0	4	4	50
G9B82901	R0.3	2.0	4	4	50
G9B82902	R0.5	2.0	4	4	50
G9B82025	R0.2	2.5	4	5	50
G9B82903	R0.3	2.5	4	5	50
G9B82904	R0.5	2.5	4	5	50
G9B82030	R0.2	3.0	4	6	50
G9B82905	R0.3	3.0	4	6	50
G9B82906	R0.5	3.0	4	6	50
G9B82907	R1.0	3.0	4	6	50
G9B82040	R0.2	4.0	4	8	50
G9B82908	R0.3	4.0	4	8	50
G9B82909	R0.5	4.0	4	8	50
G9B82910	R1.0	4.0	4	8	50
G9B82050	R0.2	5.0	6	10	50
G9B82911	R0.3	5.0	6	10	50
G9B82912	R0.5	5.0	6	10	50
G9B82913	R1.0	5.0	6	10	50
G9B82060	R0.2	6.0	6	12	50
G9B82914	R0.3	6.0	6	12	50
G9B82915	R0.5	6.0	6	12	50
G9B82916	R1.0	6.0	6	12	50

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○				

K-2 CARBIDE END MILLS

G9B82 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE SHORT LENGTH CORNER RADIUS
VOLLHARTMETALL, 2 SCHNEIDEN KURZ ECKENRADIUS

- ▶ Suitable for dry milling applications at high temperatures.
- ▶ Excellent high-performance end mills.
- ▶ 2 flute design for slotting.

- ▶ Für die Trockenbearbeitung.
- ▶ Hervorragendes Preis - Leistungsverhältnis.
- ▶ 2 Schneiden zum Nutenfräsen.

MG HM | 2 | 30° | DIN 6535HA

P.1079

Unit : mm

EDP No.	Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9B82080	R0.5	8.0	8	16	60
G9B82917	R1.0	8.0	8	16	60
G9B82918	R1.5	8.0	8	16	60
G9B82919	R2.0	8.0	8	16	60
G9B82920	R2.5	8.0	8	16	60
G9B82100	R0.5	10.0	10	20	75
G9B82921	R1.0	10.0	10	20	75
G9B82922	R1.5	10.0	10	20	75
G9B82923	R2.0	10.0	10	20	75
G9B82924	R2.5	10.0	10	20	75
G9B82120	R0.5	12.0	12	24	75
G9B82925	R1.0	12.0	12	24	75
G9B82926	R1.5	12.0	12	24	75
G9B82927	R2.0	12.0	12	24	75
G9B82928	R2.5	12.0	12	24	75

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○				

K-2 CARBIDE END MILLS

G9B83 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE LONG REACH CORNER RADIUS
VOLLHARTMETALL, 2 SCHNEIDEN GROßE REICHWEITE ECKENRADIUS

- Suitable for dry milling applications at high temperatures.
- Excellent high-performance end mills.
- 2 flute design for slotting.

- Für die Trockenbearbeitung.
- Hervorragendes Preis - Leistungsverhältnis.
- 2 Schneiden zum Nutenfräsen.

MG HM | 2 | 30° | DIN 6535HA

P.1079

Unit : mm

EDP No.	Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9B83030	R0.5	3.0	4	6	75
G9B83901	R1.0	3.0	4	6	75
G9B83040	R0.5	4.0	4	8	75
G9B83902	R1.0	4.0	4	8	75
G9B83050	R0.5	5.0	6	10	75
G9B83903	R1.0	5.0	6	10	75
G9B83060	R0.5	6.0	6	12	75
G9B83904	R1.0	6.0	6	12	75
G9B83080	R0.5	8.0	8	16	100
G9B83905	R1.0	8.0	8	16	100
G9B83906	R1.5	8.0	8	16	100
G9B83907	R2.0	8.0	8	16	100
G9B83908	R2.5	8.0	8	16	100
G9B83100	R0.5	10.0	10	20	100
G9B83909	R1.0	10.0	10	20	100
G9B83910	R1.5	10.0	10	20	100
G9B83911	R2.0	10.0	10	20	100
G9B83912	R2.5	10.0	10	20	100
G9B83120	R0.5	12.0	12	24	100
G9B83913	R1.0	12.0	12	24	100
G9B83914	R1.5	12.0	12	24	100
G9B83915	R2.0	12.0	12	24	100
G9B83916	R2.5	12.0	12	24	100

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○				

K-2 CARBIDE END MILLS

G9B84 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE SHORT LENGTH CORNER RADIUS
VOLLHARTMETALL, 4 SCHNEIDEN KURZ ECKENRADIUS

- Suitable for dry milling applications at high temperatures.
- Excellent high-performance end mills.
- Designed for milling of radius bottom slots, fillets and special contours.

- Für die Trockenbearbeitung.
- Hervorragendes Preis - Leistungsverhältnis.
- Bestimmt für das Fräsen von Nuten mit konvexem Grund, Sonderprofilen und zum Kopieren.

P.1080

Unit : mm

EDP No.	Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9B84020	R0.2	2.0	4	4	50
G9B84901	R0.3	2.0	4	4	50
G9B84902	R0.5	2.0	4	4	50
G9B84025	R0.2	2.5	4	5	50
G9B84903	R0.3	2.5	4	5	50
G9B84904	R0.5	2.5	4	5	50
G9B84030	R0.2	3.0	4	6	50
G9B84905	R0.3	3.0	4	6	50
G9B84906	R0.5	3.0	4	6	50
G9B84907	R1.0	3.0	4	6	50
G9B84040	R0.2	4.0	4	8	50
G9B84908	R0.3	4.0	4	8	50
G9B84909	R0.5	4.0	4	8	50
G9B84910	R1.0	4.0	4	8	50
G9B84050	R0.2	5.0	6	10	50
G9B84911	R0.3	5.0	6	10	50
G9B84912	R0.5	5.0	6	10	50
G9B84913	R1.0	5.0	6	10	50
G9B84060	R0.2	6.0	6	12	50
G9B84914	R0.3	6.0	6	12	50
G9B84915	R0.5	6.0	6	12	50
G9B84916	R1.0	6.0	6	12	50

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○				

K-2 CARBIDE END MILLS

G9B84 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE SHORT LENGTH CORNER RADIUS
VOLLHARTMETALL, 4 SCHNEIDEN KURZ ECKENRADIUS

- Suitable for dry milling applications at high temperatures.
- Excellent high-performance end mills.
- Designed for milling of radius bottom slots, fillets and special contours.

- Für die Trockenbearbeitung.
- Hervorragendes Preis - Leistungsverhältnis.
- Bestimmt für das Fräsen von Nuten mit konvexem Grund, Sonderprofilen und zum Kopieren.

MG HM | 4 | 30° | DIN 6535HA

P.1080

Unit : mm

EDP No.	Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9B84080	R0.5	8.0	8	16	60
G9B84917	R1.0	8.0	8	16	60
G9B84918	R1.5	8.0	8	16	60
G9B84919	R2.0	8.0	8	16	60
G9B84920	R2.5	8.0	8	16	60
G9B84100	R0.5	10.0	10	20	75
G9B84921	R1.0	10.0	10	20	75
G9B84922	R1.5	10.0	10	20	75
G9B84923	R2.0	10.0	10	20	75
G9B84924	R2.5	10.0	10	20	75
G9B84120	R0.5	12.0	12	24	75
G9B84925	R1.0	12.0	12	24	75
G9B84926	R1.5	12.0	12	24	75
G9B84927	R2.0	12.0	12	24	75
G9B84928	R2.5	12.0	12	24	75

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○				

K-2 CARBIDE END MILLS

G9B85 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE LONG REACH CORNER RADIUS
VOLLHARTMETALL, 4 SCHNEIDEN GROßE REICHWEITE ECKENRADIUS

- Suitable for dry milling applications at high temperatures.
- Excellent high-performance end mills.
- Designed for milling of radius bottom slots, fillets and special contours.

- Für die Trockenbearbeitung.
- Hervorragendes Preis - Leistungsverhältnis.
- Bestimmt für das Fräsen von Nuten mit konvexem Grund, Sonderprofilen und zum Kopieren.

P.1080

Unit : mm

EDP No.	Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
G9B85030	R0.5	3.0	4	6	75
G9B85901	R1.0	3.0	4	6	75
G9B85040	R0.5	4.0	4	8	75
G9B85902	R1.0	4.0	4	8	75
G9B85050	R0.5	5.0	6	10	75
G9B85903	R1.0	5.0	6	10	75
G9B85060	R0.5	6.0	6	12	75
G9B85904	R1.0	6.0	6	12	75
G9B85080	R0.5	8.0	8	16	100
G9B85905	R1.0	8.0	8	16	100
G9B85906	R1.5	8.0	8	16	100
G9B85907	R2.0	8.0	8	16	100
G9B85908	R2.5	8.0	8	16	100
G9B85100	R0.5	10.0	10	20	100
G9B85909	R1.0	10.0	10	20	100
G9B85910	R1.5	10.0	10	20	100
G9B85911	R2.0	10.0	10	20	100
G9B85912	R2.5	10.0	10	20	100
G9B85120	R0.5	12.0	12	24	100
G9B85913	R1.0	12.0	12	24	100
G9B85914	R1.5	12.0	12	24	100
G9B85915	R2.0	12.0	12	24	100
G9B85916	R2.5	12.0	12	24	100

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○				

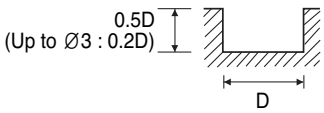
K-2 CARBIDE END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

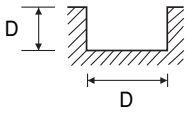
CARBIDE, 2 FLUTE
VOLLHARTMETALL, 2 SCHNEIDEN

G9424, G9A68, G9444, G9527, G9445, G9452 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS TOOL STEELS				ALLOY STEELS, HEAT RESISTANT STEELS				STAINLESS STEELS			
HARDNESS	~ HRc 30				HRc 30 ~ HRc 45							
STRENGTH	~1000N/mm²				1000~1500N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
1.0	14300	105	45	0.004	8500	65	25	0.004	7150	50	20	0.003
1.5	9350	150	45	0.008	5550	85	25	0.008	5600	80	25	0.007
2.0	7850	160	50	0.010	5150	100	30	0.010	4300	80	25	0.009
3.0	6100	180	55	0.015	3800	120	35	0.016	3150	100	30	0.016
4.0	5150	255	65	0.025	3150	155	40	0.025	2650	130	35	0.025
5.0	4300	270	70	0.031	2550	160	40	0.031	2150	135	35	0.031
6.0	3800	300	70	0.039	2300	190	45	0.041	1950	155	35	0.040
8.0	2850	325	70	0.057	1700	170	45	0.050	1450	155	35	0.053
10.0	2200	280	70	0.064	1350	135	40	0.050	1150	135	35	0.059
12.0	1850	240	70	0.065	1150	110	45	0.048	950	110	35	0.058
14.0	1700	215	75	0.063	1050	100	45	0.048	850	100	35	0.059
16.0	1500	185	75	0.062	950	95	50	0.050	700	95	35	0.068
20.0	1150	145	70	0.063	700	70	45	0.050	550	70	35	0.064



MATERIAL	CAST IRON				ALUMINUM ALLOYS				COPPER. BRASS NON-FERROUS METALS			
HARDNESS												
STRENGTH												
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
1.0	18700	205	60	0.005	44000	330	140	0.004	24700	200	80	0.004
1.5	12100	205	55	0.008	27500	385	130	0.007	20300	300	95	0.007
2.0	9350	220	60	0.012	22000	460	140	0.010	16500	340	105	0.010
3.0	6050	220	55	0.018	15400	460	145	0.015	11000	340	105	0.015
4.0	4600	220	60	0.024	11000	460	140	0.021	8800	340	110	0.019
5.0	3650	220	55	0.030	9150	460	145	0.025	6800	340	105	0.025
6.0	2950	255	55	0.043	7600	485	145	0.032	5700	375	105	0.033
8.0	2200	275	55	0.063	5700	485	145	0.043	4400	375	110	0.043
10.0	1850	285	60	0.077	4600	485	145	0.053	3400	375	105	0.055
12.0	1450	295	55	0.102	3750	485	140	0.065	2850	375	105	0.066
14.0	1300	310	55	0.119	3300	485	145	0.073	2400	375	105	0.078
16.0	1100	320	55	0.145	2850	485	145	0.085	2200	375	110	0.085
20.0	900	340	55	0.189	2200	485	140	0.110	1700	375	105	0.110



※ The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

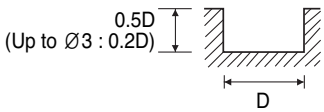
K-2 CARBIDE END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

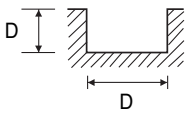
CARBIDE, 3 FLUTE FINISH SLOTTING
VOLLHARTMETALL, 3 SCHNEIDEN SCHLICHTEN NUTENFRÄSEN

G9553, G9410, G9425, G9439, G9528, G9433, G9447 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS TOOL STEELS				ALLOY STEELS, HEAT RESISTANT STEELS				STAINLESS STEELS			
HARDNESS	~ HRc 30				HRc 30 ~ HRc 45							
STRENGTH	~1000N/mm²				1000~1500N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
1.0	14300	75	45	0.002	8500	45	25	0.002	7150	35	20	0.002
1.5	12750	105	60	0.003	5550	60	25	0.004	5600	55	25	0.003
2.0	7850	110	50	0.005	5150	70	30	0.005	4300	55	25	0.004
3.0	6100	125	55	0.007	3800	85	35	0.007	3150	70	30	0.007
4.0	5150	180	65	0.012	3150	110	40	0.012	2650	90	35	0.011
5.0	4300	190	70	0.015	2550	110	40	0.014	2150	95	35	0.015
6.0	3800	210	70	0.018	2300	135	45	0.020	1950	110	35	0.019
8.0	2850	230	70	0.027	1700	120	45	0.024	1450	110	35	0.025
10.0	2200	195	70	0.030	1350	95	40	0.023	1150	95	35	0.028
12.0	1850	170	70	0.031	1150	75	45	0.022	950	75	35	0.026
14.0	1700	150	75	0.029	1050	70	45	0.022	850	70	35	0.027
16.0	1500	130	75	0.029	950	65	50	0.023	700	65	35	0.031
20.0	1150	100	70	0.029	700	50	45	0.024	550	50	35	0.030



MATERIAL	CAST IRON				ALUMINUM ALLOYS				COPPER. BRASS NON-FERROUS METALS			
HARDNESS												
STRENGTH												
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
1.0	18700	185	60	0.003	44000	300	140	0.002	24700	180	80	0.002
1.5	12100	185	55	0.005	27500	345	130	0.004	20300	270	95	0.004
2.0	9350	200	60	0.007	22000	420	140	0.006	16500	310	105	0.006
3.0	6050	200	55	0.011	15400	430	145	0.009	11000	310	105	0.009
4.0	4600	185	60	0.013	11000	420	140	0.013	8800	310	110	0.012
5.0	3650	200	55	0.018	9150	420	145	0.015	6800	310	105	0.015
6.0	2950	230	55	0.026	7600	440	145	0.019	5700	340	105	0.020
8.0	2200	240	55	0.036	5700	440	145	0.026	4400	330	110	0.025
10.0	1850	255	60	0.046	4600	440	145	0.032	3400	330	105	0.032
12.0	1450	275	55	0.063	3750	430	140	0.038	2850	330	105	0.039
14.0	1300	285	55	0.073	3300	430	145	0.043	2400	330	105	0.046
16.0	1100	285	55	0.086	2850	430	145	0.050	2200	330	110	0.050
20.0	900	310	55	0.115	2200	430	140	0.065	1700	330	105	0.065



※ The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

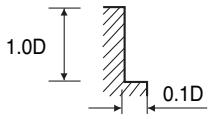
K-2 CARBIDE END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

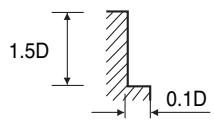
CARBIDE, 3 FLUTE FINISH SIDE CUTTING
VOLLHARTMETALL, 3 SCHNEIDEN SCHLICHTEN SEITENFRÄSEN

G9553, G9410, G9425, G9439, G9528, G9433, G9447 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS TOOL STEELS				ALLOY STEELS, HEAT RESISTANT STEELS				STAINLESS STEELS			
HARDNESS	~ HRc 30				HRc 30 ~ HRc 45							
STRENGTH	~1000N/mm²				1000~1500N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
1.0	17600	110	55	0.002	10250	65	30	0.002	8650	55	25	0.002
1.5	11800	160	55	0.005	7050	85	35	0.004	7050	90	35	0.004
2.0	9850	180	60	0.006	6450	120	40	0.006	5350	100	35	0.006
3.0	7600	205	70	0.009	4750	130	45	0.009	3950	105	35	0.009
4.0	6450	365	80	0.019	3950	220	50	0.019	3300	180	40	0.018
5.0	5350	385	85	0.024	3200	230	50	0.024	2700	195	40	0.024
6.0	4750	425	90	0.030	2850	265	55	0.031	2400	215	45	0.030
8.0	3550	450	90	0.042	2150	245	55	0.038	1800	225	45	0.042
10.0	2750	390	85	0.047	1700	195	55	0.038	1450	195	45	0.045
12.0	2350	330	90	0.047	1450	160	55	0.037	1150	155	45	0.045
14.0	2100	465	90	0.074	1300	145	55	0.037	1050	140	45	0.044
16.0	1850	265	95	0.048	1150	130	60	0.038	900	130	45	0.048
20.0	1450	205	90	0.047	900	100	55	0.037	700	100	45	0.048



MATERIAL	CAST IRON				ALUMINUM ALLOYS				COPPER. BRASS NON-FERROUS METALS			
HARDNESS												
STRENGTH												
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
1.0	18700	460	60	0.008	44000	750	140	0.006	24700	450	80	0.006
1.5	12100	460	55	0.013	27500	860	130	0.010	20300	675	95	0.011
2.0	9350	475	60	0.017	22000	1035	140	0.016	16500	770	105	0.016
3.0	6050	475	55	0.026	15400	990	145	0.021	11000	760	105	0.023
4.0	4600	485	60	0.035	11000	1035	140	0.031	8800	770	110	0.029
5.0	3650	485	55	0.044	9150	1010	145	0.037	6800	760	105	0.037
6.0	2950	570	55	0.064	7600	1100	145	0.048	5700	825	105	0.048
8.0	2200	615	55	0.093	5700	1100	145	0.064	4400	825	110	0.063
10.0	1850	640	60	0.115	4600	1100	145	0.080	3400	825	105	0.081
12.0	1450	670	55	0.154	3750	1100	140	0.098	2850	825	105	0.096
14.0	1300	705	55	0.181	3300	1100	145	0.111	2400	825	105	0.115
16.0	1100	725	55	0.220	2850	1100	145	0.129	2200	825	110	0.125
20.0	900	770	55	0.285	2200	1100	140	0.167	1700	825	105	0.162



※ The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

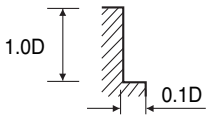
K-2 CARBIDE END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

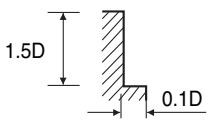
CARBIDE, 4 FLUTE FINISH SIDE CUTTING
VOLLHARTMETALL, 4 SCHNEIDEN SCHLICHTEN SEITENFRÄSEN

G9432, G9A69, G9448, G9540, G9449, G9453 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS TOOL STEELS				ALLOY STEELS HEAT RESISTANT STEELS				STAINLESS STEELS			
HARDNESS	~ HRc 30				HRc 30 ~ HRc 45							
STRENGTH	~1000N/mm²				1000~1500N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
1.0	17600	150	55	0.002	10250	85	30	0.002	8650	75	25	0.002
1.5	11800	215	55	0.005	7050	115	35	0.004	7050	120	35	0.004
2.0	9850	240	60	0.006	6450	145	40	0.006	5350	120	35	0.006
3.0	7600	270	70	0.009	4750	170	45	0.009	3950	145	35	0.009
4.0	6450	485	80	0.019	3950	300	50	0.019	3300	240	40	0.018
5.0	5350	510	85	0.024	3200	305	50	0.024	2700	255	40	0.024
6.0	4750	560	90	0.029	2850	350	55	0.031	2400	280	45	0.029
8.0	3550	605	90	0.043	2150	325	55	0.038	1800	300	45	0.042
10.0	2750	520	85	0.047	1700	255	55	0.038	1450	255	45	0.044
12.0	2350	440	90	0.047	1450	215	55	0.037	1150	205	45	0.045
14.0	2100	395	90	0.047	1300	195	55	0.038	1050	190	45	0.045
16.0	1850	350	95	0.047	1150	170	60	0.037	950	170	50	0.045
20.0	1450	270	90	0.047	900	135	55	0.038	700	130	45	0.046



MATERIAL	CAST IRON				ALUMINUM ALLOYS				COPPER. BRASS NON-FERROUS METALS			
HARDNESS												
STRENGTH												
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
1.0	18700	620	60	0.008	44000	1050	140	0.006	24700	605	80	0.006
1.5	12100	620	55	0.013	27500	1160	130	0.011	20300	910	95	0.011
2.0	9350	640	60	0.017	22000	1320	140	0.015	16500	1035	105	0.016
3.0	6050	640	55	0.026	15400	1320	145	0.021	11000	1035	105	0.024
4.0	4600	640	60	0.035	11000	1320	140	0.030	8800	1035	110	0.029
5.0	3650	640	55	0.044	9150	1320	145	0.036	6800	1035	105	0.038
6.0	2950	770	55	0.065	7600	1430	145	0.047	5700	1100	105	0.048
8.0	2200	815	55	0.093	5700	1430	145	0.063	4400	1100	110	0.063
10.0	1850	860	60	0.116	4600	1430	145	0.078	3400	1100	105	0.081
12.0	1450	900	55	0.155	3750	1430	140	0.095	2850	1100	105	0.096
14.0	1300	945	55	0.182	3300	1430	145	0.108	2400	1100	105	0.115
16.0	1100	970	55	0.220	2850	1430	145	0.125	2200	1100	110	0.125
20.0	900	1035	55	0.288	2200	1430	140	0.163	1700	1100	105	0.162



※ The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

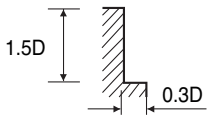
K-2 CARBIDE END MILLS

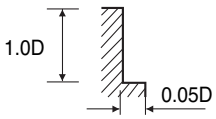
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, MULTI FLUTE ROUGHING SIDE CUTTING
VOLLHARTMETALL, MULTI SCHNEIDEN SCHRUPPFRÄSER SEITENFRÄSEN

G9A42 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS TOOL STEELS				ALLOY STEELS HEAT RESISTANT STEELS				STAINLESS STEELS				INCONEL			
HARDNESS	~ HRc30				HRc30 ~ HRc38				HRc38 ~ HRc45							
STRENGTH	1000N/mm²				1000 ~ 1200N/mm²				1200 ~ 1400N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	13250	1970	250	0.050	10550	710	200	0.022	7150	480	135	0.022	2050	160	40	0.026
8.0	9850	1970	250	0.067	7800	710	195	0.023	5350	480	135	0.022	1550	150	40	0.024
10.0	7800	1970	245	0.063	6450	710	205	0.028	4350	480	135	0.028	1100	160	35	0.036
12.0	6800	2040	255	0.075	5100	680	190	0.033	3550	480	135	0.034	1000	160	40	0.040
14.0	5800	2040	255	0.088	4400	710	195	0.040	3050	480	135	0.039	750	110	35	0.037
16.0	5100	2040	255	0.100	4100	650	205	0.040	2800	430	140	0.038	700	90	35	0.032
18.0	4400	1970	250	0.112	3750	610	210	0.041	2300	360	130	0.039	600	90	35	0.038
20.0	4100	1840	260	0.112	3050	480	190	0.039	2050	310	130	0.038	550	90	35	0.041
25.0	3650	1830	285	0.100	2700	530	210	0.039	1850	350	145	0.038	500	90	40	0.060





※ The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

K-2 CARBIDE END MILLS

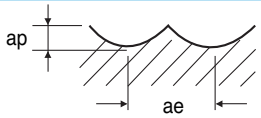
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS

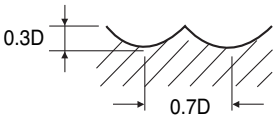
G9624, G9A70, G9437, G9438, G9454, G9455 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				HARDENED STEELS			
HARDNESS	~ HRc 30				HRc 30 ~ HRc 45				HRc 45 ~ HRc 50			
STRENGTH	~1000N/mm²				1000~1500N/mm²				1500N/mm²~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R1.0 × 2.0	12350	640	80	0.026	9150	415	55	0.023	4000	125	25	0.016
R1.5 × 3.0	11400	575	105	0.025	8550	390	80	0.023	3800	125	35	0.016
R2.0 × 4.0	8950	630	110	0.035	7150	450	90	0.031	3600	150	45	0.021
R2.5 × 5.0	7800	700	125	0.045	6200	490	95	0.040	3100	150	50	0.024
R3.0 × 6.0	7250	870	135	0.060	5900	705	110	0.060	2700	160	50	0.030
R4.0 × 8.0	6100	1090	155	0.089	4900	785	125	0.080	2050	190	50	0.046
R5.0 × 10.0	5450	1330	170	0.122	4350	870	135	0.100	1750	190	55	0.054
R6.0 × 12.0	4990	1500	190	0.150	3950	950	150	0.120	1500	210	55	0.070
R7.0 × 14.0	4530	1495	200	0.165	3600	925	160	0.128	1300	210	55	0.081
R8.0 × 16.0	4085	1470	205	0.180	3200	905	160	0.141	1150	210	60	0.091
R9.0 × 18.0	3800	1425	215	0.188	3000	890	170	0.148	1050	210	60	0.100
R10.0 × 20.0	3550	1425	225	0.201	2800	885	175	0.158	950	210	60	0.111

ap : D1~D6=0.2mm
D8~D20=0.3mm
ae : 0.2D



MATERIAL	CAST IRON				ALUMINUM ALLOYS			
HARDNESS								
STRENGTH								
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R1.0 × 2.0	10500	220	65	0.010	30800	395	195	0.006
R1.5 × 3.0	7050	230	65	0.016	20500	395	195	0.010
R2.0 × 4.0	5150	285	65	0.028	15400	395	195	0.013
R2.5 × 5.0	4150	330	65	0.040	12100	470	190	0.019
R3.0 × 6.0	3400	360	65	0.053	10300	470	195	0.023
R4.0 × 8.0	2500	460	65	0.092	7900	540	200	0.034
R5.0 × 10.0	2050	460	65	0.112	6150	540	195	0.044
R6.0 × 12.0	1750	460	65	0.131	5150	630	195	0.061
R7.0 × 14.0	1400	460	60	0.164	4300	630	190	0.073
R8.0 × 16.0	1300	460	65	0.177	3850	540	195	0.070
R9.0 × 18.0	1100	460	60	0.209	3400	540	190	0.079
R10.0 × 20.0	1050	420	65	0.200	2950	540	185	0.092



※ The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

K-2 CARBIDE END MILLS

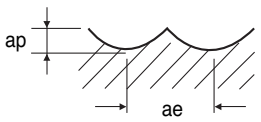
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 4 FLUTE BALL NOSE
VOLLHARTMETALL, 4 SCHNEIDEN STIRNRADIUS

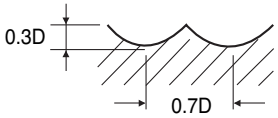
G9634 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				HARDENED STEELS			
HARDNESS	~ HRc 30				HRc 30 ~ HRc 45				HRc 45 ~ HRc 50			
STRENGTH	~1000N/mm²				1000~1500N/mm²				1500N/mm²~			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R1.0 × 2.0	13300	680	85	0.013	10000	405	65	0.010	4100	135	25	0.008
R1.5 × 3.0	11500	870	110	0.019	8550	585	80	0.017	3850	190	35	0.012
R2.0 × 4.0	8950	950	110	0.027	7150	680	90	0.024	3600	230	45	0.016
R2.5 × 5.0	7800	1045	125	0.033	6200	745	95	0.030	3100	230	50	0.019
R3.0 × 6.0	7250	1330	135	0.046	5900	1090	110	0.046	2700	235	50	0.022
R4.0 × 8.0	6100	1660	155	0.068	4900	1185	125	0.060	2100	285	55	0.034
R5.0 × 10.0	5450	1950	170	0.089	4350	1330	135	0.076	1750	290	55	0.041
R6.0 × 12.0	4985	2230	190	0.112	4000	1425	150	0.089	1500	320	55	0.053
R7.0 × 14.0	4500	2230	200	0.124	3600	1425	160	0.099	1300	320	55	0.062
R8.0 × 16.0	4085	2230	205	0.136	3200	1380	160	0.108	1100	320	55	0.073
R9.0 × 18.0	3800	2135	215	0.140	3000	1330	170	0.111	1050	320	60	0.076
R10.0 × 20.0	3550	2135	225	0.150	2800	1330	175	0.119	950	320	60	0.084

ap : D1~D6=0.2mm
D8~D20=0.3mm
ae : 0.2D



MATERIAL	CAST IRON				ALUMINUM ALLOYS			
HARDNESS								
STRENGTH								
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R1.0 × 2.0	10500	330	65	0.008	30800	605	195	0.005
R1.5 × 3.0	7050	340	65	0.012	20500	605	195	0.007
R2.0 × 4.0	5150	430	65	0.021	15400	605	195	0.010
R2.5 × 5.0	4150	495	65	0.030	12100	715	190	0.015
R3.0 × 6.0	3400	540	65	0.040	10300	715	195	0.017
R4.0 × 8.0	2500	680	65	0.068	7900	820	200	0.026
R5.0 × 10.0	2050	680	65	0.083	6150	820	195	0.033
R6.0 × 12.0	1750	680	65	0.097	5150	945	195	0.046
R7.0 × 14.0	1400	700	60	0.125	4300	945	190	0.055
R8.0 × 16.0	1300	700	65	0.135	3850	820	195	0.053
R9.0 × 18.0	1100	700	60	0.159	3400	820	190	0.060
R10.0 × 20.0	1050	630	65	0.150	2950	820	185	0.069



※ The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

K-2 CARBIDE END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

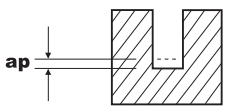
CARBIDE, 2 FLUTE for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN für SCHMALE RIPPEN

G9B80 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS				
HARDNESS	~ HRc30				
STRENGTH	~ 1000N/mm²				
DIAMETER	RPM	FEED	ap (mm)	Vc	fz
0.4	26500~34000	170~370	0.007~0.018	33~43	0.003~0.005
0.5	26500~34000	170~370	0.009~0.022	42~53	0.003~0.005
0.6	26500~34000	210~485	0.011~0.026	50~64	0.004~0.007
0.7	26500~34000	210~485	0.012~0.031	58~75	0.004~0.007
0.8	23000~30000	240~535	0.014~0.035	58~75	0.005~0.009
0.9	21500~27000	240~610	0.030~0.060	61~76	0.006~0.011
1.0	19000~24000	240~690	0.045~0.090	60~75	0.006~0.014
1.2	15500~19000	240~765	0.055~0.100	58~72	0.008~0.020
1.4	13600~17000	240~765	0.062~0.125	60~75	0.009~0.023
1.5	12500~15500	240~765	0.070~0.135	59~73	0.010~0.025
1.6	12000~15000	240~765	0.075~0.145	60~75	0.010~0.026
1.8	11000~14000	240~765	0.080~0.160	62~79	0.011~0.027
2.0	10000~12500	240~765	0.090~0.180	63~79	0.012~0.031
2.5	8000~10000	240~765	0.112~0.235	63~79	0.015~0.038
3.0	6800~8500	240~765	0.135~0.270	64~80	0.018~0.045
4.0	5100~6500	240~765	0.180~0.360	64~82	0.024~0.059

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS				
HARDNESS	HRc30 ~ HRc45				
STRENGTH	1000 ~ 1500N/mm²				
DIAMETER	RPM	FEED	ap (mm)	Vc	fz
0.4	19000~24000	72~290	0.007~0.018	24~30	0.002~0.006
0.5	19000~24000	72~290	0.009~0.022	30~38	0.002~0.006
0.6	19000~24000	95~365	0.011~0.026	36~45	0.003~0.008
0.7	19000~24000	95~365	0.012~0.031	42~53	0.003~0.008
0.8	16500~21000	100~410	0.014~0.035	41~53	0.003~0.010
0.9	15000~19000	135~460	0.030~0.060	42~54	0.005~0.012
1.0	13500~17000	160~510	0.045~0.090	42~53	0.006~0.015
1.2	11000~14000	160~510	0.055~0.100	41~53	0.007~0.018
1.4	9800~12000	160~510	0.062~0.125	43~53	0.008~0.021
1.5	8950~11500	160~510	0.070~0.135	42~54	0.009~0.022
1.6	8700~10900	160~510	0.075~0.145	44~55	0.009~0.023
1.8	7800~9800	160~510	0.080~0.160	44~55	0.010~0.026
2.0	7000~8950	160~510	0.090~0.180	44~56	0.011~0.028
2.5	5700~7200	160~510	0.112~0.235	45~57	0.014~0.035
3.0	4700~6000	160~510	0.135~0.270	44~57	0.017~0.043
4.0	3500~4500	160~510	0.180~0.360	44~57	0.023~0.057

(Depth of Cut per one pass)



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RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

K-2 CARBIDE END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

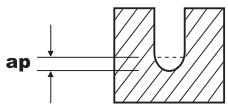
CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS für SCHMALE RIPPEN

G9B81 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS				
HARDNESS	~ HRc30				
STRENGTH	~ 1000N/mm²				
DIAMETER	RPM	FEED	ap (mm)	Vc	fz
0.4	26350~34000	150~415	0.018~0.036	33~43	0.003~0.006
0.5	26350~34000	150~415	0.023~0.045	41~53	0.003~0.006
0.6	26350~34000	190~535	0.027~0.054	50~64	0.004~0.008
0.8	26350~34000	190~535	0.036~0.072	66~85	0.004~0.008
1.0	24650~31000	210~595	0.045~0.090	77~97	0.004~0.010
1.2	20500~26000	210~665	0.055~0.100	77~98	0.005~0.013
1.4	18000~22000	210~665	0.062~0.125	79~97	0.006~0.015
1.5	16000~20500	210~665	0.070~0.135	75~97	0.007~0.016
1.6	15500~20000	210~665	0.075~0.145	78~101	0.007~0.017
1.8	14500~18200	210~665	0.080~0.160	82~103	0.007~0.018
2.0	13000~16000	210~665	0.090~0.180	82~101	0.008~0.021
3.0	9000~11000	210~665	0.135~0.270	85~104	0.012~0.030
4.0	7200~9350	210~665	0.180~0.360	90~117	0.015~0.036

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS				
HARDNESS	HRc30 ~ HRc45				
STRENGTH	1000 ~ 1500N/mm²				
DIAMETER	RPM	FEED	ap (mm)	Vc	fz
0.4	19100~24200	75~230	0.018~0.036	24~30	0.002~0.005
0.5	19100~24200	75~230	0.023~0.045	30~38	0.002~0.005
0.6	19100~24200	95~300	0.027~0.054	36~46	0.002~0.006
0.8	19100~24200	95~300	0.036~0.072	48~61	0.002~0.006
1.0	17400~22100	105~330	0.045~0.090	55~69	0.003~0.007
1.2	14500~18300	105~330	0.055~0.100	55~69	0.004~0.009
1.4	12800~15300	105~330	0.062~0.125	56~67	0.004~0.011
1.5	11500~14900	105~330	0.070~0.135	54~70	0.005~0.011
1.6	11200~14000	105~330	0.075~0.145	56~70	0.005~0.012
1.8	10200~12800	105~330	0.080~0.160	58~72	0.005~0.013
2.0	9400~11500	105~330	0.090~0.180	59~72	0.006~0.014
3.0	6000~11500	105~330	0.135~0.270	57~108	0.009~0.014
4.0	5000~6600	105~330	0.180~0.360	63~83	0.011~0.025

(Depth of Cut per one pass)



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FEED = mm/min.
Vc = m/min.
fz = mm/t

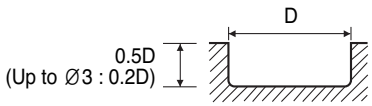
K-2 CARBIDE END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

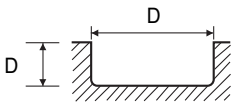
CARBIDE, 2 FLUTE CORNER RADIUS FINISH SLOTTING
VOLLHARTMETALL, 2 SCHNEIDEN ECKENRADIUS SCHLICHTEN NUTENFRÄSEN

G9B82, G9B83 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS TOOL STEELS				ALLOY STEELS, HEAT RESISTANT STEELS				STAINLESS STEELS			
HARDNESS	~ HRc 30				HRc 30 ~ HRc 45							
STRENGTH	~1000N/mm²				1000~1500N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	7850	160	50	0.010	5150	100	30	0.010	4300	80	25	0.009
3.0	6100	180	55	0.015	3800	120	35	0.016	3150	100	30	0.016
4.0	5150	255	65	0.025	3150	155	40	0.025	2650	130	35	0.025
5.0	4300	270	70	0.031	2550	160	40	0.031	2150	135	35	0.031
6.0	3800	300	70	0.039	2300	190	45	0.041	1950	155	35	0.040
8.0	2850	325	70	0.057	1700	170	45	0.050	1450	155	35	0.053
10.0	2200	280	70	0.064	1350	135	40	0.050	1150	135	35	0.059
12.0	1850	240	70	0.065	1150	110	45	0.048	950	110	35	0.058



MATERIAL	CAST IRON				ALUMINUM ALLOYS				COPPER. BRASS NON-FERROUS METALS			
HARDNESS												
STRENGTH												
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	9350	220	60	0.012	22000	460	140	0.010	16500	340	105	0.010
3.0	6050	220	55	0.018	15400	460	145	0.015	11000	340	105	0.015
4.0	4600	220	60	0.024	11000	460	140	0.021	8800	340	110	0.019
5.0	3650	220	55	0.030	9150	460	145	0.025	6800	340	105	0.025
6.0	2950	255	55	0.043	7600	485	145	0.032	5700	375	105	0.033
8.0	2200	275	55	0.063	5700	485	145	0.043	4400	375	110	0.043
10.0	1850	285	60	0.077	4600	485	145	0.053	3400	375	105	0.055
12.0	1450	295	55	0.102	3750	485	140	0.065	2850	375	105	0.066



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RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

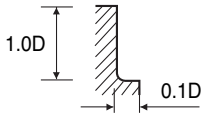
K-2 CARBIDE END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

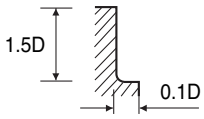
CARBIDE, 4 FLUTE CORNER RADIUS FINISH SIDE CUTTING
VOLLHARTMETALL, 4 SCHNEIDEN ECKENRADIUS SCHLICHTEN SEITENFRÄSEN

G9B84, G9B85 SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS TOOL STEELS				ALLOY STEELS, HEAT RESISTANT STEELS				STAINLESS STEELS			
HARDNESS	~ HRc 30				HRc 30 ~ HRc 45							
STRENGTH	~1000N/mm²				1000~1500N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
1.0	17600	150	55	0.002	10250	85	30	0.002	8650	75	25	0.002
1.5	11800	215	55	0.005	7050	115	35	0.004	7050	120	35	0.004
2.0	9850	240	60	0.006	6450	145	40	0.006	5350	120	35	0.006
3.0	7600	270	70	0.009	4750	170	45	0.009	3950	145	35	0.009
4.0	6450	485	80	0.019	3950	300	50	0.019	3300	240	40	0.018
5.0	5350	510	85	0.024	3200	305	50	0.024	2700	255	40	0.024
6.0	4750	560	90	0.029	2850	350	55	0.031	2400	280	45	0.029
8.0	3550	605	90	0.043	2150	325	55	0.038	1800	300	45	0.042
10.0	2750	520	85	0.047	1700	255	55	0.038	1450	255	45	0.044
12.0	2350	440	90	0.047	1450	215	55	0.037	1150	205	45	0.045



MATERIAL	CAST IRON				ALUMINUM ALLOYS				COPPER. BRASS NON-FERROUS METALS			
HARDNESS												
STRENGTH												
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
1.0	18700	620	60	0.008	44000	1050	140	0.006	24700	605	80	0.006
1.5	12100	620	55	0.013	27500	1160	130	0.011	20300	910	95	0.011
2.0	9350	640	60	0.017	22000	1320	140	0.015	16500	1035	105	0.016
3.0	6050	640	55	0.026	15400	1320	145	0.021	11000	1035	105	0.024
4.0	4600	640	60	0.035	11000	1320	140	0.030	8800	1035	110	0.029
5.0	3650	640	55	0.044	9150	1320	145	0.036	6800	1035	105	0.038
6.0	2950	770	55	0.065	7600	1430	145	0.047	5700	1100	105	0.048
8.0	2200	815	55	0.093	5700	1430	145	0.063	4400	1100	110	0.063
10.0	1850	860	60	0.116	4600	1430	145	0.078	3400	1100	105	0.081
12.0	1450	900	55	0.155	3750	1430	140	0.095	2850	1100	105	0.096



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fz = mm/t

CARBIDE

Being the best through innovation

CARBIDE

VOLLHARTMETALL FRÄSER

- General Purpose, Non-coated, Any Coating Available
- Unbeschichtet für allgemeinen Einsatz. Jegliche Beschichtung möglich

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
E5424 E5416		CARBIDE, 2 FLUTE SHORT LENGTH VOLLHARTMETALL, 2 SCHNEIDEN KURZ	D1.0 D6.0	D20.0	1086
E5444		CARBIDE, 2 FLUTE SHORT LENGTH VOLLHARTMETALL, 2 SCHNEIDEN KURZ	D2.0	D20.0	1087
E5445		CARBIDE, 2 FLUTE LONG LENGTH VOLLHARTMETALL, 2 SCHNEIDEN LANG	D2.0	D20.0	1088
E5527		CARBIDE, 2 FLUTE LONG LENGTH VOLLHARTMETALL, 2 SCHNEIDEN LANG	D3.5	D20.0	1089
E5452		CARBIDE, 2 FLUTE EXTRA LONG LENGTH VOLLHARTMETALL, 2 SCHNEIDEN EXTRA LANG	D3.0	D20.0	1090
E5553 E5410		CARBIDE, 3 FLUTE SHORT LENGTH THROW AWAY VOLLHARTMETALL, 3 SCHNEIDEN KURZ EINWEG FRÄSER	D0.5	D20.0	1091
E5SET410		CARBIDE, THROW AWAY SET (NON-COATED) VOLLHARTMETALL, EINWEG-SCHAFTFRÄSER SET (NICHT-BESCHICHTET)	D2.0	D10.0	1092
E5425 E5417		CARBIDE, 3 FLUTE SHORT LENGTH VOLLHARTMETALL, 3 SCHNEIDEN KURZ	D2.0 D6.0	D20.0	1093
E5439		CARBIDE, 3 FLUTE SHORT LENGTH VOLLHARTMETALL, 3 SCHNEIDEN KURZ	D2.0	D20.0	1094
E5433		CARBIDE, 3 FLUTE LONG LENGTH VOLLHARTMETALL, 3 SCHNEIDEN LANG	D3.0	D20.0	1095
E5528		CARBIDE, 3 FLUTE LONG LENGTH VOLLHARTMETALL, 3 SCHNEIDEN LANG	D3.5	D20.0	1096
E5882		CARBIDE, 3 FLUTE 35° HELIX CORNER RADIUS VOLLHARTMETALL, 3 SCHNEIDEN 35° RECHTSSPIRALE ECKENRADIUS	D3.0	D20.0	1097
E5423 E5415		CARBIDE, 3 FLUTE 45° HELIX SHORT LENGTH VOLLHARTMETALL, 3 SCHNEIDEN 45° RECHTSSPIRALE KURZ	D3.0	D20.0	1098
E5446		CARBIDE, 3 FLUTE 45° HELIX SHORT LENGTH VOLLHARTMETALL, 3 SCHNEIDEN 45° RECHTSSPIRALE KURZ	D1.5	D20.0	1099
E5447		CARBIDE, 3 FLUTE 45° HELIX LONG LENGTH VOLLHARTMETALL, 3 SCHNEIDEN 45° RECHTSSPIRALE LANG	D3.0	D20.0	1100
E5432 E5595		CARBIDE, 4 FLUTE SHORT LENGTH VOLLHARTMETALL, 4 SCHNEIDEN KURZ	D2.0 D6.0	D20.0	1101
E5448		CARBIDE, 4 FLUTE SHORT LENGTH VOLLHARTMETALL, 4 SCHNEIDEN KURZ	D2.0	D20.0	1102
E5449		CARBIDE, 4 FLUTE LONG LENGTH VOLLHARTMETALL, 4 SCHNEIDEN LANG	D2.0	D20.0	1103
E5540		CARBIDE, 4 FLUTE LONG LENGTH VOLLHARTMETALL, 4 SCHNEIDEN LANG	D3.5	D20.0	1104

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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☞ NEXT

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
E5453		CARBIDE, 4 FLUTE EXTRA LONG LENGTH VOLLHARTMETALL, 4 SCHNEIDEN EXTRA LANG	D3.0	D20.0	1105
E5624 E5650		CARBIDE, 2 FLUTE SHORT LENGTH BALL NOSE VOLLHARTMETALL, 2 SCHNEIDEN KURZ STIRNRADIUS	R1.0	R10.0	1106
E5437		CARBIDE, 2 FLUTE SHORT LENGTH BALL NOSE VOLLHARTMETALL, 2 SCHNEIDEN KURZ STIRNRADIUS	R1.0	R10.0	1107
E5438		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE VOLLHARTMETALL, 2 SCHNEIDEN LANG STIRNRADIUS	R1.0	R10.0	1108
E5454		CARBIDE, 2 FLUTE LONG REACH BALL NOSE VOLLHARTMETALL, 2 SCHNEIDEN GROßE REICHWEITE STIRNRADIUS	R1.5	R10.0	1109
E5455		CARBIDE, 2 FLUTE EXTRA LONG LENGTH BALL NOSE VOLLHARTMETALL, 2 SCHNEIDEN EXTRA LANG STIRNRADIUS	R1.5	R10.0	1110
E5634 E5524		CARBIDE, 4 FLUTE SHORT LENGTH BALL NOSE VOLLHARTMETALL, 4 SCHNEIDEN KURZ STIRNRADIUS	R1.0	R10.0	1111
E5400		CARBIDE, 2 FLUTE DRILL MILLS VOLLHARTMETALL, 2 SCHNEIDEN BOHRNUTEN FRÄSER	D3.0	D20.0	1112
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			1113

◎ : Excellent ○ : Good

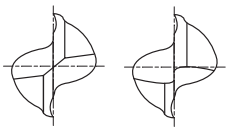
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○				
◎	◎	◎	○					○	○					
◎	◎	◎	○					○	○					
◎	◎	◎	○					○	○					
◎	◎	◎	○					○	○					
◎	◎	◎	○					○	○					
◎	◎	◎	○					○	○					
◎	◎	◎						○	○	○				

CARBIDE END MILLS

E5424 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

E5416 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 2 FLUTE SHORT LENGTH
VOLLHARTMETALL, 2 SCHNEIDEN KURZ



MG HM | YG STD | N | 2 | 30° | DIN 6535HA | DIN 6535HB

P.1113, 1114

Unit : mm

EDP No. PLAIN	ITEM No. PLAIN	EDP No. FLAT	ITEM No. FLAT	Mill Diameter h10	Shank Diameter h6	Length of Cut	Overall Length
E5424010	T2GRS-010X	—	—	1.0	4	3	40
E5424015	T2GRS-015X	—	—	1.5	4	4.5	40
E5424020	T2GRS-020Z	—	—	2.0	2	8	32
E5424025	T2GRS-025Z	—	—	2.5	2.5	8	32
E5424030	T2GRS-030Z	—	—	3.0	3	12	32
E5424035	T2GRS-035Z	—	—	3.5	3.5	12	32
E5424040	T2GRS-040Z	—	—	4.0	4	12	40
E5424045	T2GRS-045Z	—	—	4.5	4.5	14	50
E5424050	T2GRS-050Z	—	—	5.0	5	14	50
E5424055	T2GRS-055Z	—	—	5.5	5.5	16	50
E5424060	T2GRS-060Z	E5416060	T2GRS-060ZF	6.0	6	16	50
E5424070	T2GRS-070Z	—	—	7.0	7	20	60
E5424080	T2GRS-080Z	E5416080	T2GRS-080ZF	8.0	8	20	60
E5424090	T2GRS-090Z	—	—	9.0	9	20	60
E5424100	T2GRS-100Z	E5416100	T2GRS-100ZF	10.0	10	22	70
E5424120	T2GRS-120Z	E5416120	T2GRS-120ZF	12.0	12	22	70
E5424140	T2GRS-140Z	E5416140	T2GRS-140ZF	14.0	14	25	75
E5424160	T2GRS-160Z	E5416160	T2GRS-160ZF	16.0	16	25	75
E5424200	T2GRS-200Z	E5416200	T2GRS-200ZF	20.0	20	32	100

▶TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛

Nominal-Diameter in mm / Nennmaßbereich in mm					
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

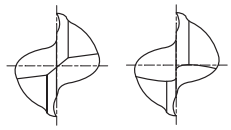
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○				

CARBIDE END MILLS

E5444 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 2 FLUTE SHORT LENGTH
VOLLHARTMETALL, 2 SCHNEIDEN KURZ



MG HM | DIN 6527 | N | 2 | 30° | DIN 6535HB

P.1113, 1114

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
FLAT	h10	h6		
E5444020	2.0	6	3	50
E5444030	3.0	6	4	50
E5444035	3.5	6	4	50
E5444040	4.0	6	5	54
E5444045	4.5	6	5	54
E5444050	5.0	6	6	54
E5444060	6.0	6	7	54
E5444070	7.0	8	8	58
E5444080	8.0	8	9	58
E5444090	9.0	10	10	66
E5444100	10.0	10	11	66
E5444120	12.0	12	12	73
E5444140	14.0	14	14	75
E5444160	16.0	16	16	82
E5444180	18.0	18	18	84
E5444200	20.0	20	20	92

▶TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛
Nominal-Diameter in ㎜ / Nennmaßbereich in ㎜

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

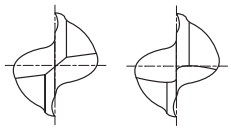
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○				

CARBIDE END MILLS

E5445 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 2 FLUTE LONG LENGTH
VOLLHARTMETALL, 2 SCHNEIDEN LANG



up to Ø2mm over Ø2mm

MG HM | DIN 6527 | N | 2 | ≈30° | DIN 6535HB

P.1113, 1114

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
FLAT	h10	h6		
E5445901	2.0	● 3	6	38
E5445028	2.8	6	7	57
E5445030	3.0	6	7	57
E5445035	3.5	6	7	57
E5445038	3.8	6	8	57
E5445040	4.0	6	8	57
E5445045	4.5	6	8	57
E5445048	4.8	6	10	57
E5445050	5.0	6	10	57
E5445957	5.75	6	10	57
E5445060	6.0	6	10	57
E5445967	6.75	8	13	63
E5445070	7.0	8	13	63
E5445977	7.75	8	16	63
E5445080	8.0	8	16	63
E5445087	8.7	10	16	72
E5445090	9.0	10	16	72
E5445097	9.7	10	19	72
E5445100	10.0	10	19	72
E5445117	11.7	12	22	83
E5445120	12.0	12	22	83
E5445137	13.7	14	22	83
E5445140	14.0	14	22	83
E5445157	15.7	16	26	92
E5445160	16.0	16	26	92
E5445177	17.7	18	26	92
E5445180	18.0	18	26	92
E5445197	19.7	20	32	104
E5445200	20.0	20	32	104

● with plain shank
▶ TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛					
Nominal-Diameter in mm / Nennmaßbereich in mm					
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

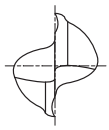
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○				

CARBIDE END MILLS

E5527 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE LONG LENGTH
VOLLHARTMETALL, 2 SCHNEIDEN LANG



MG HM | DIN 6528 | N | 2 | 30° | DIN 6535HA

P.1113, 1114

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	h10	h6		
E5527035	3.5	3.5	7	50
E5527040	4.0	4	8	50
E5527045	4.5	4.5	8	50
E5527050	5.0	5	10	50
E5527055	5.5	5.5	10	57
E5527060	6.0	6	10	57
E5527065	6.5	6.5	13	60
E5527070	7.0	7	13	60
E5527075	7.5	7.5	16	63
E5527080	8.0	8	16	63
E5527085	8.5	8.5	16	67
E5527090	9.0	9	16	67
E5527095	9.5	9.5	19	72
E5527100	10.0	10	19	72
E5527110	11.0	11	22	83
E5527120	12.0	12	22	83
E5527130	13.0	13	22	83
E5527140	14.0	14	22	83
E5527150	15.0	15	26	92
E5527160	16.0	16	26	92
E5527180	18.0	18	26	92
E5527200	20.0	20	32	104

▶TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛					
Nominal-Diameter in ㎜ / Nennmaßbereich in ㎜					
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

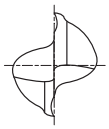
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○				

CARBIDE END MILLS

E5452 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE EXTRA LONG LENGTH
VOLLHARTMETALL, 2 SCHNEIDEN EXTRA LANG



MG HM | YG STD | N | 2 | 30° | DIN 6535HA

P.1113, 1114

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	h10	h6		
E5452030	3.0	3	30	75
E5452040	4.0	4	30	75
E5452050	5.0	5	40	100
E5452060	6.0	6	50	150
E5452080	8.0	8	50	150
E5452100	10.0	10	60	150
E5452120	12.0	12	75	150
E5452140	14.0	14	65	150
E5452160	16.0	16	65	150
E5452180	18.0	18	65	150
E5452200	20.0	20	65	150

▶TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in µm / Toleranzwerte in µm Nominal-Diameter in mm / Nennmaßbereich in mm					
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

◎ : Excellent ○ : Good

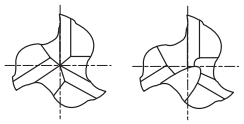
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○				

CARBIDE END MILLS

E5553 SERIES PLAIN SHANK GLATTER ZYLINDERSCHAFT

E5410 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 3 FLUTE SHORT LENGTH THROW AWAY
VOLLHARTMETALL, 3 SCHNEIDEN KURZ EINWEG



under Ø2mm from Ø2mm

MG HM | YG STD | N | 3 | 30° | PLAIN | FLAT

P.1115, 1116, 1117, 1118

Unit : mm

EDP No.	ITEM No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN / FLAT	PLAIN / FLAT	h10	h6		
E5553005	T3FSC-005KS	0.5	● 3	1.5	38
E5553006	T3FSC-006KS	0.6	● 3	1.5	38
E5553008	T3FSC-008KS	0.8	● 3	2	38
E5553010	T3FSC-010KS	1.0	● 3	2	38
E5553012	T3FSC-012KS	1.2	● 3	2	38
E5553015	T3FSC-015KS	1.5	● 3	2	38
E5553018	T3FSC-018KS	1.8	● 3	2	38
E5410020	T3FSC-020AF	2.0	6	4	35
E5410025	T3FSC-025AF	2.5	6	5	36
E5410030	T3FSC-030AF	3.0	6	5	36
E5410035	T3FSC-035AF	3.5	6	6	37
E5410040	T3FSC-040AF	4.0	6	7	38
E5410045	T3FSC-045AF	4.5	6	8	38
E5410050	T3FSC-050AF	5.0	6	8	39
E5410055	T3FSC-055AF	5.5	6	8	39
E5410957	T3FSC-0575AF	5.75	6	8	39
E5410060	T3FSC-060AF	6.0	6	8	39
E5410967	T3FSC-0675BF	6.75	8	10	42
E5410070	T3FSC-070BF	7.0	8	10	42
E5410977	T3FSC-0775BF	7.75	8	10	42
E5410080	T3FSC-080BF	8.0	8	11	43

● with plain shank

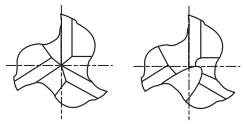
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○				

CARBIDE END MILLS

E5410 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 3 FLUTE SHORT LENGTH THROW AWAY
VOLLHARTMETALL, 3 SCHNEIDEN KURZ EINWEG



under Ø2mm from Ø2mm

MG HM | YG STD | N | 3 | 30° | DIN 6535HB

P.1115, 1116, 1117, 1118

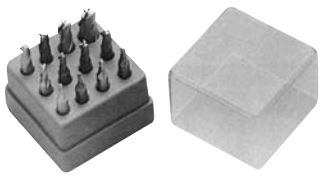
Unit : mm

EDP No.	ITEM No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
FLAT	FLAT	h10	h6		
E5410087	T3FSC-087TF	8.7	10	11	48
E5410090	T3FSC-090TF	9.0	10	11	48
E5410097	T3FSC-097TF	9.7	10	11	48
E5410100	T3FSC-100TF	10.0	10	13	50
E5410120	T3FSC-120DF	12.0	12	15	55
E5410140	T3FSC-140ZF	14.0	14	15	58
E5410160	T3FSC-160EF	16.0	16	18	62
E5410180	T3FSC-180ZF	18.0	18	20	70
E5410200	T3FSC-200FF	20.0	20	22	75

▶TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛					
Nominal-Diameter in mm / Nennmaßbereich in mm					
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13



SET ORDERING No.: E5SET410
* 12PCS. SET
  - 2PCS. OF EACH SIZE
    2, 3, 4, 5, 6mm (T3FSC)
  - 1PC. OF EACH SIZE
    8, 10mm (T3FSC)
* 1 Tooth Over Center

◎ : Excellent ○ : Good

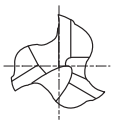
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○				

CARBIDE END MILLS

E5425 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

E5417 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 3 FLUTE SHORT LENGTH
VOLLHARTMETALL, 3 SCHNEIDEN KURZ



MG HM | YG STD | N | 3 | 30° | DIN 6535HA | DIN 6535HB

P.1115, 1116, 1117, 1118

Unit : mm

EDP No. PLAIN	ITEM No. PLAIN	EDP No. FLAT	ITEM No. FLAT	Mill Diameter h10	Shank Diameter h6	Length of Cut	Overall Length
E5425020	T3GRC-020Z	—	—	2.0	2	8	32
E5425025	T3GRC-025Z	—	—	2.5	2.5	8	32
E5425030	T3GRC-030Z	—	—	3.0	3	12	32
E5425035	T3GRC-035Z	—	—	3.5	3.5	12	32
E5425040	T3GRC-040Z	—	—	4.0	4	12	40
E5425045	T3GRC-045Z	—	—	4.5	4.5	14	50
E5425050	T3GRC-050Z	—	—	5.0	5	14	50
E5425055	T3GRC-055Z	—	—	5.5	5.5	16	50
E5425060	T3GRC-060Z	E5417060	T3GRC-060ZF	6.0	6	16	50
E5425070	T3GRC-070Z	—	—	7.0	7	20	60
E5425080	T3GRC-080Z	E5417080	T3GRC-080ZF	8.0	8	20	60
E5425090	T3GRC-090Z	—	—	9.0	9	20	60
E5425100	T3GRC-100Z	E5417100	T3GRC-100ZF	10.0	10	22	70
E5425120	T3GRC-120Z	E5417120	T3GRC-120ZF	12.0	12	22	70
E5425140	T3GRC-140Z	E5417140	T3GRC-140ZF	14.0	14	25	75
E5425160	T3GRC-160Z	E5417160	T3GRC-160ZF	16.0	16	25	75
E5425200	T3GRC-200Z	E5417200	T3GRC-200ZF	20.0	20	32	100

▶TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm

Nominal-Diameter in mm / Nennmaßbereich in mm

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

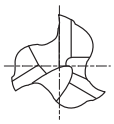
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○				

CARBIDE END MILLS

E5439 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 3 FLUTE SHORT LENGTH
VOLLHARTMETALL, 3 SCHNEIDEN KURZ



MG HM | DIN 6527 | N | 3 | 30° | DIN 6535HB

P.1115, 1116, 1117, 1118

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
FLAT	h10	h6		
E5439020	2.0	6	3	50
E5439030	3.0	6	4	50
E5439035	3.5	6	4	50
E5439040	4.0	6	5	54
E5439045	4.5	6	5	54
E5439050	5.0	6	6	54
E5439060	6.0	6	7	54
E5439070	7.0	8	8	58
E5439080	8.0	8	9	58
E5439090	9.0	10	10	66
E5439100	10.0	10	11	66
E5439120	12.0	12	12	73
E5439140	14.0	14	14	75
E5439160	16.0	16	16	82
E5439180	18.0	18	18	84
E5439200	20.0	20	20	92

▶TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛
Nominal-Diameter in ㎜ / Nennmaßbereich in ㎜

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

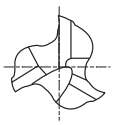
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○				

CARBIDE END MILLS

E5433 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 3 FLUTE LONG LENGTH
VOLLHARTMETALL, 3 SCHNEIDEN LANG



MG HM | DIN 6527 | N | 3 | 30° | DIN 6535HB

P.1115, 1116, 1117, 1118

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
FLAT	h10	h6		
E5433030	3.0	6	7	57
E5433040	4.0	6	8	57
E5433050	5.0	6	10	57
E5433060	6.0	6	10	57
E5433080	8.0	8	16	63
E5433100	10.0	10	19	72
E5433120	12.0	12	22	83
E5433140	14.0	14	22	83
E5433160	16.0	16	26	92
E5433180	18.0	18	26	92
E5433200	20.0	20	32	104

▶TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛
Nominal-Diameter in ㎜ / Nennmaßbereich in ㎜

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

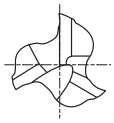
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○				

CARBIDE END MILLS

E5528 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 3 FLUTE LONG LENGTH
VOLLHARTMETALL, 3 SCHNEIDEN LANG



MG HM | DIN 6528 | N | 3 | 30° | DIN 6535HA

P.1115, 1116, 1117, 1118

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	h10	h6		
E5528035	**3.5**	3.5	7	50
E5528040	**4.0**	4	8	50
E5528045	**4.5**	4.5	8	50
E5528050	**5.0**	5	10	50
E5528055	**5.5**	5.5	10	57
E5528060	**6.0**	6	10	57
E5528065	**6.5**	6.5	13	60
E5528070	**7.0**	7	13	60
E5528075	**7.5**	7.5	16	63
E5528080	**8.0**	8	16	63
E5528085	**8.5**	8.5	16	67
E5528090	**9.0**	9	16	67
E5528095	**9.5**	9.5	19	72
E5528100	**10.0**	10	19	72
E5528110	**11.0**	11	22	83
E5528120	**12.0**	12	22	83
E5528130	**13.0**	13	22	83
E5528140	**14.0**	14	22	83
E5528150	**15.0**	15	26	92
E5528160	**16.0**	16	26	92
E5528180	**18.0**	18	26	92
E5528200	**20.0**	20	32	104

▶TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛					
Nominal-Diameter in mm / Nennmaßbereich in mm					
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○				

CARBIDE END MILLS

E5882 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 3 FLUTE 35° HELIX CORNER RADIUS
VOLLHARTMETALL, 3 SCHNEIDEN 35° RECHTSSPIRALE ECKENRADIUS

for STAINLESS STEELS
für EDELSTÄHLE

MG HM | DIN 6527 | N | 3 | 35° | DIN 6535HA

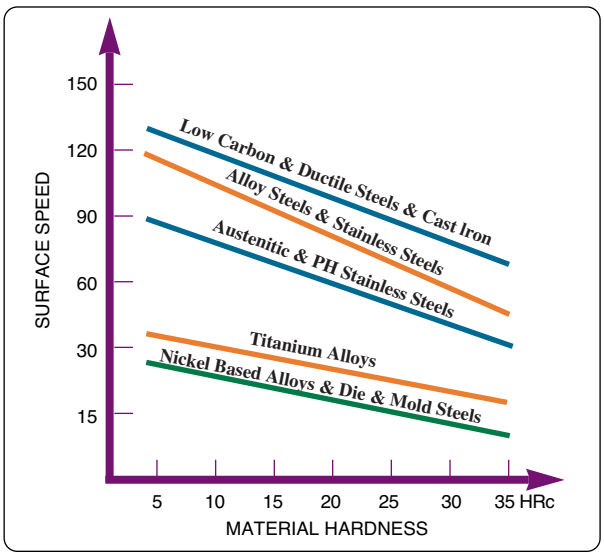
Unit : mm

EDP No.	CORNER RADIUS	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	R	h10	h6		
E5882030	0.20~0.25	3.0	3	4	38
E5882040	0.20~0.25	4.0	6	5	54
E5882050	0.20~0.25	5.0	6	6	54
E5882060	0.40~0.50	6.0	6	7	54
E5882080	0.40~0.50	8.0	8	9	58
E5882100	0.40~0.50	10.0	10	11	66
E5882120	0.75~0.85	12.0	12	12	73
E5882160	0.75~0.85	16.0	16	16	82
E5882200	0.75~0.85	20.0	20	20	92

▶TiN, TiCN-COATING & TiAlN-COATING are available on your request.

FEED CHART

MILL DIAMETER(mm)	3	5	6	8	10	12	16	20
FEED(mm)/TOOTH	0.008 ~ 0.015	0.010 ~ 0.050	0.025 ~ 0.065	0.040 ~ 0.075	0.040 ~ 0.090	0.050 ~ 0.100	0.065 ~ 0.130	0.075 ~ 0.150



Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛
Nominal-Diameter in ㎜ / Nennmaßbereich in ㎜

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

◎ : Excellent ○ : Good

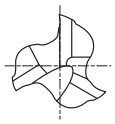
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	◎				

CARBIDE END MILLS

E5423 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

E5415 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 3 FLUTE 45° HELIX SHORT LENGTH
VOLLHARTMETALL, 3 SCHNEIDEN 45° RECHTSSPIRALE KURZ



MG HM | YG STD | N | 3 | 45° | DIN 6535HA | DIN 6535HB

P.1119, 1120, 1121, 1122

Unit : mm

EDP No. PLAIN	ITEM No. PLAIN	EDP No. FLAT	ITEM No. FLAT	Mill Diameter h10	Shank Diameter h6	Length of Cut	Overall Length
E5423030	T3ERS-030A	E5415030	T3ERS-030AF	3.0	6	8	45
E5423040	T3ERS-040A	E5415040	T3ERS-040AF	4.0	6	11	45
E5423050	T3ERS-050A	E5415050	T3ERS-050AF	5.0	6	13	50
E5423060	T3ERS-060Z	E5415060	T3ERS-060ZF	6.0	6	13	50
E5423080	T3ERS-080Z	E5415080	T3ERS-080ZF	8.0	8	19	60
E5423100	T3ERS-100Z	E5415100	T3ERS-100ZF	10.0	10	22	70
E5423120	T3ERS-120Z	E5415120	T3ERS-120ZF	12.0	12	26	75
E5423140	T3ERS-140Z	E5415140	T3ERS-140ZF	14.0	14	26	75
E5423160	T3ERS-160Z	E5415160	T3ERS-160ZF	16.0	16	25	75
E5423200	T3ERS-200Z	E5415200	T3ERS-200ZF	20.0	20	32	100

▶TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛					
Nominal-Diameter in mm / Nennmaßbereich in mm					
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

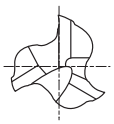
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				◎		○	◎					

CARBIDE END MILLS

E5446 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 3 FLUTE 45° HELIX SHORT LENGTH
VOLLHARTMETALL, 3 SCHNEIDEN 45° RECHTSSPIRALE KURZ



MG HM | DIN 6527 | N | 3 | 45° | DIN 6535HB

P.1119, 1120, 1121, 1122

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
FLAT	h10	h6		
E5446015	1.5	● 3	3	38
E5446020	2.0	6	3	50
E5446030	3.0	6	4	50
E5446035	3.5	6	4	50
E5446040	4.0	6	5	54
E5446045	4.5	6	5	54
E5446050	5.0	6	6	54
E5446060	6.0	6	7	54
E5446070	7.0	8	8	58
E5446080	8.0	8	9	58
E5446090	9.0	10	10	66
E5446100	10.0	10	11	66
E5446120	12.0	12	12	73
E5446140	14.0	14	14	75
E5446160	16.0	16	16	82
E5446180	18.0	18	18	84
E5446200	20.0	20	20	92

● with plain shank
▶ TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛
Nominal-Diameter in ㎜ / Nennmaßbereich in ㎜

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

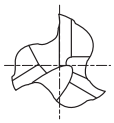
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				◎		○	◎					

CARBIDE END MILLS

E5447 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 3 FLUTE 45° HELIX LONG LENGTH
VOLLHARTMETALL, 3 SCHNEIDEN 45° RECHTSSPIRALE LANG



MG HM | DIN 6527 | N | 3 | 45° | DIN 6535HB

P.1119, 1120, 1121, 1122

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
FLAT	h10	h6		
E5447030	3.0	6	7	57
E5447035	3.5	6	7	57
E5447040	4.0	6	8	57
E5447045	4.5	6	8	57
E5447050	5.0	6	10	57
E5447060	6.0	6	10	57
E5447070	7.0	8	13	63
E5447080	8.0	8	16	63
E5447090	9.0	10	16	72
E5447100	10.0	10	19	72
E5447120	12.0	12	22	83
E5447140	14.0	14	22	83
E5447160	16.0	16	26	92
E5447180	18.0	18	26	92
E5447200	20.0	20	32	104

▶TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛					
Nominal-Diameter in ㎜ / Nennmaßbereich in ㎜					
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				◎		○	◎					

CARBIDE END MILLS

E5432 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

E5595 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 4 FLUTE SHORT LENGTH
VOLLHARTMETALL, 4 SCHNEIDEN KURZ

MG HM | YG STD | N | 4 | 30° | DIN 6535HA | DIN 6535HB

P.1123, 1124

Unit : mm

EDP No. PLAIN	ITEM No. PLAIN	EDP No. FLAT	ITEM No. FLAT	Mill Diameter h10	Shank Diameter h6	Length of Cut	Overall Length
E5432020	T4GRC-020Z	—	—	2.0	2	8	32
E5432025	T4GRC-025Z	—	—	2.5	2.5	8	32
E5432030	T4GRC-030Z	—	—	3.0	3	12	32
E5432035	T4GRC-035Z	—	—	3.5	3.5	12	32
E5432040	T4GRC-040Z	—	—	4.0	4	12	40
E5432045	T4GRC-045Z	—	—	4.5	4.5	14	50
E5432050	T4GRC-050Z	—	—	5.0	5	14	50
E5432055	T4GRC-055Z	—	—	5.5	5.5	16	50
E5432060	T4GRC-060Z	E5595060	T4GRC-060ZF	6.0	6	16	50
E5432070	T4GRC-070Z	—	—	7.0	7	20	60
E5432080	T4GRC-080Z	E5595080	T4GRC-080ZF	8.0	8	20	60
E5432090	T4GRC-090Z	—	—	9.0	9	20	60
E5432100	T4GRC-100Z	E5595100	T4GRC-100ZF	10.0	10	22	70
E5432120	T4GRC-120Z	E5595120	T4GRC-120ZF	12.0	12	22	70
E5432140	T4GRC-140Z	E5595140	T4GRC-140ZF	14.0	14	25	75
E5432160	T4GRC-160Z	E5595160	T4GRC-160ZF	16.0	16	25	75
E5432200	T4GRC-200Z	E5595200	T4GRC-200ZF	20.0	20	32	100

▶TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm					
Nominal-Diameter in mm / Nennmaßbereich in mm					
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○				

CARBIDE END MILLS

E5448 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 4 FLUTE SHORT LENGTH
VOLLHARTMETALL, 4 SCHNEIDEN KURZ

MG HM | DIN 6527 | N | 4 | 30° | DIN 6535HB

P.1123, 1124

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
FLAT	h10	h6		
E5448020	2.0	6	4	50
E5448025	2.5	6	4	50
E5448030	3.0	6	5	50
E5448035	3.5	6	6	50
E5448040	4.0	6	8	54
E5448045	4.5	6	8	54
E5448050	5.0	6	9	54
E5448060	6.0	6	10	54
E5448070	7.0	8	11	58
E5448080	8.0	8	12	58
E5448090	9.0	10	13	66
E5448100	10.0	10	14	66
E5448120	12.0	12	16	73
E5448140	14.0	14	18	75
E5448160	16.0	16	22	82
E5448180	18.0	18	24	84
E5448200	20.0	20	26	92

▶TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛					
Nominal-Diameter in ㎜ / Nennmaßbereich in ㎜					
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

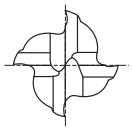
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○				

CARBIDE END MILLS

E5449 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 4 FLUTE LONG LENGTH
VOLLHARTMETALL, 4 SCHNEIDEN LANG



MG HM | DIN 6527 | N | 4 | 30° | DIN 6535HB

P.1123, 1124

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
FLAT	h10	h6		
E5449901	2.0	● 3	7	38
E5449030	3.0	6	8	57
E5449035	3.5	6	10	57
E5449040	4.0	6	11	57
E5449045	4.5	6	11	57
E5449050	5.0	6	13	57
E5449060	6.0	6	13	57
E5449070	7.0	8	16	63
E5449080	8.0	8	19	63
E5449090	9.0	10	19	72
E5449100	10.0	10	22	72
E5449120	12.0	12	26	83
E5449140	14.0	14	26	83
E5449160	16.0	16	32	92
E5449180	18.0	18	32	92
E5449200	20.0	20	38	104

● with plain shank
▶TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛					
Nominal-Diameter in ㎜ / Nennmaßbereich in ㎜					
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○				

CARBIDE END MILLS

E5540 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE LONG LENGTH
VOLLHARTMETALL, 4 SCHNEIDEN LANG

MG HM | DIN 6528 | N | 4 | 30° | DIN 6535HA

P.1123, 1124

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	h10	h6		
E5540035	**3.5**	3.5	10	50
E5540040	**4.0**	4	11	50
E5540045	**4.5**	4.5	11	50
E5540050	**5.0**	5	13	50
E5540055	**5.5**	5.5	13	57
E5540060	**6.0**	6	13	57
E5540065	**6.5**	6.5	16	60
E5540070	**7.0**	7	16	60
E5540075	**7.5**	7.5	19	63
E5540080	**8.0**	8	19	63
E5540085	**8.5**	8.5	19	67
E5540090	**9.0**	9	19	67
E5540095	**9.5**	9.5	22	72
E5540100	**10.0**	10	22	72
E5540110	**11.0**	11	26	83
E5540120	**12.0**	12	26	83
E5540130	**13.0**	13	26	83
E5540140	**14.0**	14	26	83
E5540150	**15.0**	15	32	92
E5540160	**16.0**	16	32	92
E5540180	**18.0**	18	32	92
E5540200	**20.0**	20	38	104

▶TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛					
Nominal-Diameter in mm / Nennmaßbereich in mm					
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

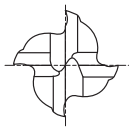
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○				

CARBIDE END MILLS

E5453 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 4 FLUTE EXTRA LONG LENGTH
VOLLHARTMETALL, 4 SCHNEIDEN EXTRA LANG



MG HM | YG STD | N | 4 | 30° | DIN 6535HA

P.1123, 1124

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	h10	h6		
E5453030	3.0	3	30	75
E5453040	4.0	4	30	75
E5453050	5.0	5	40	100
E5453060	6.0	6	50	150
E5453080	8.0	8	50	150
E5453100	10.0	10	60	150
E5453120	12.0	12	75	150
E5453140	14.0	14	65	150
E5453160	16.0	16	65	150
E5453180	18.0	18	65	150
E5453200	20.0	20	65	150

▶TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛					
Nominal-Diameter in ㎜ / Nennmaßbereich in ㎜					
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○		○	○	○				

CARBIDE END MILLS

E5624 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

E5650 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 2 FULTE SHORT LENGTH BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN KURZ STIRNRADIUS

MG HM | YG STD | N | 2 | 30° | R ±0.02 | DIN 6535HA | DIN 6535HB

P.1125

Unit : mm

EDP No. PLAIN	ITEM No. PLAIN	EDP No. FLAT	ITEM No. FLAT	Radius of Ball Nose R (±0.02)	Mill Diameter h10	Shank Diameter h6	Length of Cut	Overall Length
E5624020	T2GRB-020A	E5650020	T2GOB-020AF	R1.0	**2.0**	6	4	48
E5624025	T2GRB-025A	E5650025	T2GOB-025AF	R1.25	**2.5**	6	4	48
E5624030	T2GRB-030A	E5650030	T2GOB-030AF	R1.5	**3.0**	6	4	48
E5624040	T2GRB-040A	E5650040	T2GOB-040AF	R2.0	**4.0**	6	6	50
E5624901	T2GRB-040Z	—	—	R2.0	**4.0**	4	12	40
E5624050	T2GRB-050A	E5650050	T2GOB-050AF	R2.5	**5.0**	6	7	51
E5624902	T2GRB-050Z	—	—	R2.5	**5.0**	5	14	50
E5624060	T2GRB-060Z	E5650060	T2GOB-060ZF	R3.0	**6.0**	6	7	51
E5624080	T2GRB-080Z	E5650080	T2GOB-080ZF	R4.0	**8.0**	8	9	59
E5624100	T2GRB-100Z	E5650100	T2GOB-100ZF	R5.0	**10.0**	10	10	60
E5624120	T2GRB-120Z	E5650120	T2GOB-120ZF	R6.0	**12.0**	12	14	71
E5624140	T2GRB-140Z	E5650140	T2GOB-140ZF	R7.0	**14.0**	14	14	71
E5624160	T2GRB-160Z	E5650160	T2GOB-160ZF	R8.0	**16.0**	16	16	76
E5624180	T2GRB-180Z	E5650180	T2GOB-180ZF	R9.0	**18.0**	18	18	76
E5624200	T2GRB-200Z	E5650200	T2GOB-200ZF	R10.0	**20.0**	20	20	82

▶TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm Nominal-Diameter in mm / Nennmaßbereich in mm					
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○					○	○					

CARBIDE END MILLS

E5437 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 2 FLUTE SHORT LENGTH BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN KURZ STIRNRADIUS

MG HM | DIN 6527 | N | 2 | ≈30° | R ±0.02 | DIN 6535HB

P.1125

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
FLAT	R (±0.02)	h10	h6		
E5437020	R1.0	**2.0**	6	3	50
E5437030	R1.5	**3.0**	6	4	50
E5437040	R2.0	**4.0**	6	5	54
E5437050	R2.5	**5.0**	6	6	54
E5437060	R3.0	**6.0**	6	7	54
E5437080	R4.0	**8.0**	8	9	58
E5437100	R5.0	**10.0**	10	11	66
E5437120	R6.0	**12.0**	12	12	73
E5437140	R7.0	**14.0**	14	14	75
E5437180	R9.0	**18.0**	18	18	84
E5437200	R10.0	**20.0**	20	20	92

▶TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm Nominal-Diameter in mm / Nennmaßbereich in mm					
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○					○	○					

CARBIDE END MILLS

E5438 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN LANG STIRNRADIUS

MG HM | DIN 6527 | N | 2 | 30° | R ±0.02 | DIN 6535HB P.1125

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
FLAT	R (±0.02)	h10	h6		
E5438020	R1.0	2.0	● 3	6	38
E5438030	R1.5	3.0	6	7	57
E5438040	R2.0	4.0	6	8	57
E5438050	R2.5	5.0	6	10	57
E5438060	R3.0	6.0	6	10	57
E5438080	R4.0	8.0	8	16	63
E5438100	R5.0	10.0	10	19	72
E5438120	R6.0	12.0	12	22	83
E5438140	R7.0	14.0	14	22	83
E5438160	R8.0	16.0	16	26	92
E5438180	R9.0	18.0	18	26	92
E5438200	R10.0	20.0	20	32	104

● with plain shank
▶TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm					
Nominal-Diameter in mm / Nennmaßbereich in mm					
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○					○	○					

CARBIDE END MILLS

E5454 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE LONG REACH BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN GROßE REICHWEITE STIRNRADIUS

MG HM | YG STD | N | 2 | 30° | R ±0.02 | DIN 6535HA

P.1125

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	R (±0.02)	h10	h6		
E5454030	R1.5	**3.0**	3	5	75
E5454040	R2.0	**4.0**	4	8	75
E5454050	R2.5	**5.0**	5	9	75
E5454060	R3.0	**6.0**	6	10	100
E5454080	R4.0	**8.0**	8	12	100
E5454100	R5.0	**10.0**	10	14	100
E5454120	R6.0	**12.0**	12	16	100
E5454140	R7.0	**14.0**	14	18	100
E5454160	R8.0	**16.0**	16	22	150
E5454200	R10.0	**20.0**	20	26	150

▶TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm					
Nominal-Diameter in mm / Nennmaßbereich in mm					
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

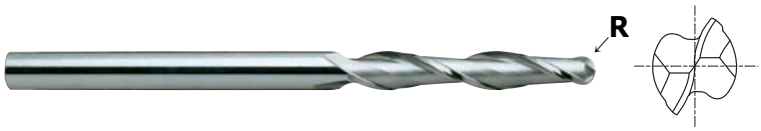
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○					○	○					

CARBIDE END MILLS

E5455 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE EXTRA LONG LENGTH BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN EXTRA LANG STIRNRADIUS



MG HM | YG STD | N | 2 | 30° | R ±0.02 | DIN 6535HA P.1125

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	R (±0.02)	h10	h6		
E5455030	R1.5	3.0	3	30	75
E5455040	R2.0	4.0	4	30	75
E5455050	R2.5	5.0	5	40	100
E5455060	R3.0	6.0	6	50	150
E5455080	R4.0	8.0	8	50	150
E5455100	R5.0	10.0	10	60	150
E5455120	R6.0	12.0	12	75	150
E5455140	R7.0	14.0	14	75	150
E5455160	R8.0	16.0	16	75	150
E5455180	R9.0	18.0	18	75	150
E5455200	R10.0	20.0	20	75	150

▶TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm					
Nominal-Diameter in mm / Nennmaßbereich in mm					
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○					○	○					

CARBIDE END MILLS

E5634 SERIES PLAIN SHANK GLATTER ZYLINDERSCHAFT

E5524 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

CARBIDE, 4 FLUTE SHORT LENGTH BALL NOSE
VOLLHARTMETALL, 4 SCHNEIDEN KURZ STIRNRADIUS

P.1126

Unit : mm

EDP No. PLAIN	ITEM No. PLAIN	EDP No. FLAT	ITEM No. FLAT	Radius of Ball Nose R (±0.02)	Mill Diameter h10	Shank Diameter h6	Length of Cut	Overall Length
E5634020	T4GRB-020A	E5524020	T4GRB-020AF	R1.0	**2.0**	6	4	48
E5634030	T4GRB-030A	E5524030	T4GRB-030AF	R1.5	**3.0**	6	4	48
E5634040	T4GRB-040A	E5524040	T4GRB-040AF	R2.0	**4.0**	6	6	50
E5634050	T4GRB-050A	E5524050	T4GRB-050AF	R2.5	**5.0**	6	7	51
E5634060	T4GRB-060Z	E5524060	T4GRB-060ZF	R3.0	**6.0**	6	7	51
E5634080	T4GRB-080Z	E5524080	T4GRB-080ZF	R4.0	**8.0**	8	9	59
E5634100	T4GRB-100Z	E5524100	T4GRB-100ZF	R5.0	**10.0**	10	10	60
E5634120	T4GRB-120Z	E5524120	T4GRB-120ZF	R6.0	**12.0**	12	14	71
E5634140	T4GRB-140Z	E5524140	T4GRB-140ZF	R7.0	**14.0**	14	14	71
E5634160	T4GRB-160Z	E5524160	T4GRB-160ZF	R8.0	**16.0**	16	16	76
E5634180	T4GRB-180Z	E5524180	T4GRB-180ZF	R9.0	**18.0**	18	18	76
E5634200	T4GRB-200Z	E5524200	T4GRB-200ZF	R10.0	**20.0**	20	20	82

▶TiN, TiCN-COATING & TiAlN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm Nominal-Diameter in mm / Nennmaßbereich in mm					
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○					○	○					

CARBIDE END MILLS

E5400 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

CARBIDE, 2 FLUTE DRILL MILLS
VOLLHARTMETALL, 2 SCHNEIDEN BOHRNUTEN FRÄSER

MG HM | YG STD | N | 2 | 30° | DIN 6535HA

P.1127, 1128, 1129, 1130, 1131, 1132

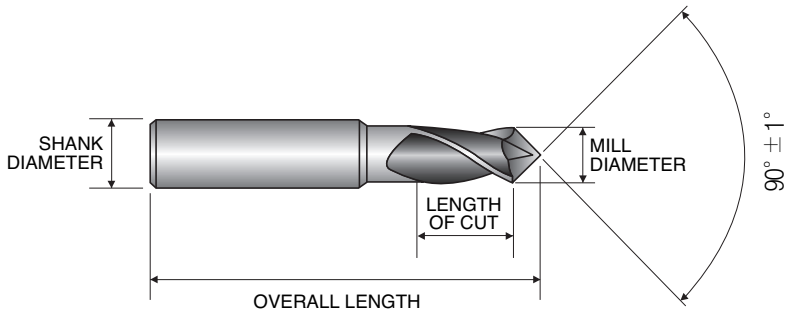
Unit : mm

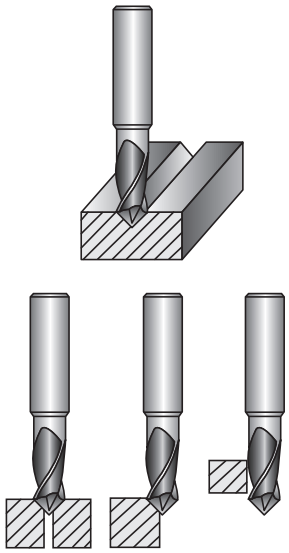
EDP No. PLAIN	Mill Diameter	Shank Diameter h6	Length of Cut	Overall Length
E5400030	3.0	4	6	50
E5400040	4.0	5	8	50
E5400050	5.0	6	10	50
E5400060	6.0	8	12	60
E5400080	8.0	10	16	70
E5400100	10.0	12	18	70
E5400120	12.0	12	20	70
E5540140	14.0	14	24	80
E5400160	16.0	16	26	80
E5400200	20.0	20	32	100

▶TiN, TiCN-COATING & TiAlN-COATING are available on your request.

●Performs many drilling and milling operations are not presently done with the standard end mill.

●Among the many vertical milling machine operations, the Drill Mill performs are : Drilling, Slotting, NC Milling Drilling & Slotting, Profile Milling, Chamfering.





Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
Ø3 ~ Ø10=h9 Ø12 ~ Ø20=d9	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎						○	○	○				

CARBIDE END MILLS

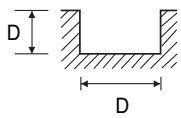
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE - SLOTTING
VOLLHARTMETALL, 2 SCHNEIDEN - NUTENFRÄSEN

E5424, E5416, E5444, E5527, E5445, E5452 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS TITANIUM ALLOYS			
HARDNESS	~ HRc 20				HRc 20 ~ HRc 30				HRc 30 ~ HRc 40							
STRENGTH	500 ~ 800N/mm²				800 ~ 1000N/mm²				1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	5500	80	35	0.007	4800	70	30	0.007	4000	55	25	0.007	8000	65	50	0.004
3.0	3700	90	35	0.012	3200	80	30	0.013	2600	60	25	0.012	5300	65	50	0.006
4.0	2800	90	35	0.016	2400	80	30	0.017	2000	60	25	0.015	4000	65	50	0.008
5.0	2200	90	35	0.020	1900	80	30	0.021	1600	60	25	0.019	3200	65	50	0.010
6.0	1800	90	35	0.025	1600	80	30	0.025	1300	60	25	0.023	2600	65	50	0.013
8.0	1400	90	35	0.032	1200	80	30	0.033	1000	60	25	0.030	2000	65	50	0.016
10.0	1100	90	35	0.041	950	80	30	0.042	800	60	25	0.038	1600	65	50	0.020
12.0	900	90	35	0.050	800	80	30	0.050	660	60	25	0.045	1300	65	50	0.025
14.0	800	90	35	0.056	700	80	30	0.057	570	60	25	0.053	1100	65	50	0.030
16.0	700	100	35	0.071	600	85	30	0.071	500	75	25	0.075	1000	75	50	0.038
20.0	550	100	35	0.091	480	85	30	0.089	400	75	25	0.094	800	80	50	0.050

MATERIAL	CAST IRON				ALUMINUM ALLOYS				COPPER. BRASS NON-FERROUS METALS			
HARDNESS												
STRENGTH												
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	6500	150	40	0.012	16000	320	100	0.010	12000	240	75	0.010
3.0	4200	150	40	0.018	11000	320	105	0.015	8000	240	75	0.015
4.0	3200	150	40	0.023	8000	320	100	0.020	6000	240	75	0.020
5.0	2500	150	40	0.030	6400	320	100	0.025	4800	240	75	0.025
6.0	2100	180	40	0.043	5300	340	100	0.032	4000	260	75	0.033
8.0	1600	190	40	0.059	4000	340	100	0.043	3000	260	75	0.043
10.0	1300	200	40	0.077	3200	340	100	0.053	2400	260	75	0.054
12.0	1000	210	40	0.105	2600	340	100	0.065	2000	260	75	0.065
14.0	900	220	40	0.122	2300	340	100	0.074	1700	260	75	0.076
16.0	800	225	40	0.141	2000	340	100	0.085	1500	260	75	0.087
20.0	640	240	40	0.188	1600	340	100	0.106	1200	260	75	0.108



※The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE END MILLS

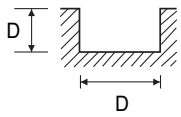
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE TiAlN-COATED - SLOTTING
VOLLHARTMETALL, 2 SCHNEIDEN TiAlN-BESCHICHTET - NUTENFRÄSEN

E5424, E5416, E5444, E5527, E5445, E5452 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS TITANIUM ALLOYS			
HARDNESS	~ HRc 20				HRc 20 ~ HRc 30				HRc 30 ~ HRc 40							
STRENGTH	500 ~ 800N/mm²				800 ~ 1000N/mm²				1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	7700	110	50	0.007	6720	100	40	0.007	5600	75	35	0.007	11200	90	70	0.004
3.0	5180	125	50	0.012	4480	110	40	0.012	3640	85	35	0.012	7420	90	70	0.006
4.0	3920	125	50	0.016	3360	110	40	0.016	2800	85	35	0.015	5600	90	70	0.008
5.0	3080	125	50	0.020	2660	110	40	0.021	2240	85	35	0.019	4480	90	70	0.010
6.0	2520	125	50	0.025	2240	110	40	0.025	1820	85	35	0.023	3640	90	70	0.012
8.0	1960	125	50	0.032	1680	110	40	0.033	1400	85	35	0.030	2800	90	70	0.016
10.0	1540	125	50	0.041	1330	110	40	0.041	1120	85	35	0.038	2240	90	70	0.020
12.0	1260	125	50	0.050	1120	110	40	0.049	924	85	35	0.046	1820	90	70	0.025
14.0	1120	125	50	0.056	980	110	40	0.056	798	85	35	0.053	1540	90	70	0.029
16.0	980	140	50	0.071	840	120	40	0.071	700	105	35	0.075	1400	105	70	0.038
20.0	770	140	50	0.091	672	120	40	0.089	560	105	35	0.094	1120	110	70	0.049

MATERIAL	CAST IRON				ALUMINUM ALLOYS				COPPER. BRASS NON-FERROUS METALS			
HARDNESS												
STRENGTH												
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	9100	210	55	0.012	22400	450	140	0.010	16800	335	105	0.010
3.0	5880	210	55	0.018	15400	450	145	0.015	11200	335	105	0.015
4.0	4480	210	55	0.023	11200	450	140	0.020	8400	335	105	0.020
5.0	3500	210	55	0.030	8960	450	140	0.025	6720	335	105	0.025
6.0	2940	250	55	0.043	7420	475	140	0.032	5600	365	105	0.033
8.0	2240	265	55	0.059	5600	475	140	0.042	4200	365	105	0.043
10.0	1820	280	55	0.077	4480	475	140	0.053	3360	365	105	0.054
12.0	1400	295	55	0.105	3640	475	135	0.065	2800	365	105	0.065
14.0	1260	310	55	0.123	3220	475	140	0.074	2380	365	105	0.077
16.0	1120	315	55	0.141	2800	475	140	0.085	2100	365	105	0.087
20.0	900	335	55	0.186	2240	475	140	0.106	1680	365	105	0.109



※The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE END MILLS

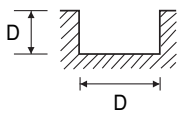
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 3 FLUTE - SLOTTING
VOLLHARTMETALL, 3 SCHNEIDEN - NUTENFRÄSEN

E5553, E5410, E5425, E5417, E5439, E5433, E5528 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS TITANIUM ALLOYS			
HARDNESS	~ HRc 20				HRc 20 ~ HRc 30				HRc 30 ~ HRc 40							
STRENGTH	500 ~ 800N/mm²				800 ~ 1000N/mm²				1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	5500	70	35	0.004	4800	60	30	0.004	4000	50	25	0.004	8000	55	50	0.002
3.0	3700	80	35	0.007	3200	75	30	0.008	2600	55	25	0.007	5300	55	50	0.003
4.0	2800	80	35	0.010	2400	75	30	0.010	2000	55	25	0.009	4000	55	50	0.005
5.0	2200	80	35	0.012	1900	70	30	0.012	1600	55	25	0.011	3200	55	50	0.006
6.0	1800	80	35	0.015	1600	70	30	0.015	1300	55	25	0.014	2600	60	50	0.008
8.0	1400	80	35	0.019	1200	70	30	0.019	1000	55	25	0.018	2000	60	50	0.010
10.0	1100	80	35	0.024	950	70	30	0.025	800	55	25	0.023	1600	60	50	0.013
12.0	900	80	35	0.030	800	70	30	0.029	660	55	25	0.028	1300	60	50	0.015
14.0	800	80	35	0.033	700	70	30	0.033	570	55	25	0.032	1100	60	50	0.018
16.0	700	90	35	0.043	600	75	30	0.042	500	65	25	0.043	1000	70	50	0.023
20.0	550	90	35	0.055	480	75	30	0.052	400	65	25	0.054	800	70	50	0.029

MATERIAL	CAST IRON				ALUMINUM ALLOYS				COPPER. BRASS NON-FERROUS METALS			
HARDNESS												
STRENGTH												
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	6500	140	40	0.007	16000	290	100	0.006	12000	220	75	0.006
3.0	4200	140	40	0.011	11000	300	105	0.009	8000	220	75	0.009
4.0	3200	130	40	0.014	8000	290	100	0.012	6000	220	75	0.012
5.0	2500	135	40	0.018	6400	290	100	0.015	4800	220	75	0.015
6.0	2100	160	40	0.025	5300	305	100	0.019	4000	240	75	0.020
8.0	1600	170	40	0.035	4000	310	100	0.026	3000	230	75	0.026
10.0	1300	180	40	0.046	3200	305	100	0.032	2400	230	75	0.032
12.0	1000	190	40	0.063	2600	300	100	0.038	2000	230	75	0.038
14.0	900	200	40	0.074	2300	300	100	0.043	1700	230	75	0.045
16.0	800	200	40	0.083	2000	300	100	0.050	1500	230	75	0.051
20.0	640	215	40	0.112	1600	300	100	0.063	1200	230	75	0.064



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RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE END MILLS

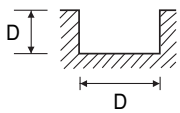
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 3 FLUTE TiAlN-COATED - SLOTTING
VOLLHARTMETALL, 3 SCHNEIDEN TiAlN-BESCHICHTET - NUTENFRÄSEN

E5553, E5410, E5425, E5417, E5439, E5433, E5528 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS TITANIUM ALLOYS			
HARDNESS	~ HRc 20				HRc 20 ~ HRc 30				HRc 30 ~ HRc 40							
STRENGTH	500 ~ 800N/mm²				800 ~ 1000N/mm²				1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	7700	100	50	0.004	6720	85	40	0.004	5600	70	35	0.004	11200	75	70	0.002
3.0	5180	110	50	0.007	4480	105	40	0.008	3640	75	35	0.007	7420	75	70	0.003
4.0	3920	110	50	0.009	3360	105	40	0.010	2800	75	35	0.009	5600	75	70	0.004
5.0	3080	110	50	0.012	2660	100	40	0.013	2240	75	35	0.011	4480	75	70	0.006
6.0	2520	110	50	0.015	2240	100	40	0.015	1820	75	35	0.014	3640	85	70	0.008
8.0	1960	110	50	0.019	1680	100	40	0.020	1400	75	35	0.018	2800	85	70	0.010
10.0	1540	110	50	0.024	1330	100	40	0.025	1120	75	35	0.022	2240	85	70	0.013
12.0	1260	110	50	0.029	1120	100	40	0.030	920	75	35	0.027	1820	85	70	0.016
14.0	1120	110	50	0.033	980	100	45	0.034	800	75	35	0.031	1540	85	70	0.018
16.0	980	125	50	0.043	840	105	40	0.042	700	90	35	0.043	1400	100	70	0.024
20.0	770	125	50	0.054	670	105	40	0.052	560	90	35	0.054	1120	100	70	0.030

MATERIAL	CAST IRON				ALUMINUM ALLOYS				COPPER. BRASS NON-FERROUS METALS			
HARDNESS												
STRENGTH												
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	9100	195	55	0.007	22400	405	140	0.006	16800	310	105	0.006
3.0	5880	195	55	0.011	15400	420	145	0.009	11200	310	105	0.009
4.0	4480	180	55	0.013	11200	405	140	0.012	8400	310	105	0.012
5.0	3500	190	55	0.018	8960	405	140	0.015	6720	310	105	0.015
6.0	2940	225	55	0.026	7420	425	140	0.019	5600	335	105	0.020
8.0	2240	240	55	0.036	5600	435	140	0.026	4200	320	105	0.025
10.0	1820	250	55	0.046	4480	425	140	0.032	3360	320	105	0.032
12.0	1400	265	55	0.063	3640	420	135	0.038	2800	320	105	0.038
14.0	1260	280	55	0.074	3220	420	140	0.043	2380	320	105	0.045
16.0	1120	280	55	0.083	2800	420	140	0.050	2100	320	105	0.051
20.0	900	300	55	0.111	2240	420	140	0.063	1680	320	105	0.063



※The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE END MILLS

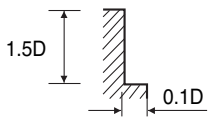
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 3 FLUTE - SIDE CUTTING
VOLLHARTMETALL, 3 SCHNEIDEN - SEITENFRÄSEN

E5553, E5410, E5425, E5417, E5439, E5433, E5528 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS TITANIUM ALLOYS			
HARDNESS	~ HRc 20				HRc 20 ~ HRc 30				HRc 30 ~ HRc 40							
STRENGTH	500 ~ 800N/mm²				800 ~ 1000N/mm²				1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	5500	180	35	0.011	4800	160	30	0.011	4000	120	25	0.010	8000	140	50	0.006
3.0	3700	200	35	0.018	3200	170	30	0.018	2600	130	25	0.017	5300	140	50	0.009
4.0	2800	200	35	0.024	2400	180	30	0.025	2000	130	25	0.022	4000	140	50	0.012
5.0	2200	200	35	0.030	1900	180	30	0.032	1600	130	25	0.027	3200	140	50	0.015
6.0	1800	200	35	0.037	1600	180	30	0.038	1300	130	25	0.033	2600	150	50	0.019
8.0	1400	200	35	0.048	1200	180	30	0.050	1000	130	25	0.043	2000	150	50	0.025
10.0	1100	200	35	0.061	950	180	30	0.063	800	130	25	0.054	1600	150	50	0.031
12.0	900	200	35	0.074	800	180	30	0.075	660	130	25	0.066	1300	150	50	0.038
14.0	800	200	35	0.083	700	180	30	0.086	570	130	25	0.076	1100	150	50	0.045
16.0	700	220	35	0.105	600	190	30	0.106	500	160	25	0.107	1000	170	50	0.057
20.0	550	220	35	0.133	480	190	30	0.132	400	160	25	0.133	800	180	50	0.075

MATERIAL	CAST IRON				ALUMINUM ALLOYS				COPPER. BRASS NON-FERROUS METALS			
HARDNESS												
STRENGTH												
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	6500	330	40	0.017	16000	720	100	0.015	12000	540	75	0.015
3.0	4200	330	40	0.026	11000	690	105	0.021	8000	530	75	0.022
4.0	3200	340	40	0.035	8000	720	100	0.030	6000	540	75	0.030
5.0	2500	340	40	0.045	6400	710	100	0.037	4800	530	75	0.037
6.0	2100	400	40	0.063	5300	760	100	0.048	4000	580	75	0.048
8.0	1600	430	40	0.090	4000	760	100	0.063	3000	580	75	0.064
10.0	1300	450	40	0.115	3200	760	100	0.079	2400	580	75	0.081
12.0	1000	470	40	0.157	2600	760	100	0.097	2000	580	75	0.097
14.0	900	490	40	0.181	2300	760	100	0.110	1700	580	75	0.114
16.0	800	510	40	0.213	2000	760	100	0.127	1500	580	75	0.129
20.0	640	540	40	0.281	1600	760	100	0.158	1200	580	75	0.161



※The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE END MILLS

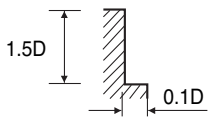
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 3 FLUTE TiAlN-COATED - SIDE CUTTING
VOLLHARTMETALL, 3 SCHNEIDEN TiAlN-BESCHICHTET - SEITENFRÄSEN

E5553, E5410, E5425, E5417, E5439, E5433, E5528 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS TITANIUM ALLOYS			
HARDNESS	~ HRc 20				HRc 20 ~ HRc 30				HRc 30 ~ HRc 40							
STRENGTH	500 ~ 800N/mm²				800 ~ 1000N/mm²				1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	7700	250	50	0.016	6720	225	40	0.011	5600	170	35	0.010	11200	195	70	0.006
3.0	5180	280	50	0.027	4480	240	40	0.018	3640	180	35	0.016	7420	195	70	0.009
4.0	3920	280	50	0.036	3360	250	40	0.025	2800	180	35	0.021	5600	195	70	0.012
5.0	3080	280	50	0.045	2660	250	40	0.031	2240	180	35	0.027	4480	195	70	0.015
6.0	2520	280	50	0.056	2240	250	40	0.037	1820	180	35	0.033	3640	210	70	0.019
8.0	1960	280	50	0.071	1680	250	40	0.050	1400	180	35	0.043	2800	210	70	0.025
10.0	1540	280	50	0.091	1330	250	40	0.063	1120	180	35	0.054	2240	210	70	0.031
12.0	1260	280	50	0.111	1120	250	40	0.074	920	180	35	0.065	1820	210	70	0.038
14.0	1120	280	50	0.125	980	250	45	0.085	800	180	35	0.075	1540	210	70	0.045
16.0	980	310	50	0.158	840	265	40	0.105	700	225	35	0.107	1400	240	70	0.057
20.0	770	310	50	0.201	670	265	40	0.132	560	225	35	0.134	1120	250	70	0.074

MATERIAL	CAST IRON				ALUMINUM ALLOYS				COPPER. BRASS NON-FERROUS METALS			
HARDNESS												
STRENGTH												
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	9100	460	55	0.017	22400	1010	140	0.015	16800	755	105	0.015
3.0	5880	460	55	0.026	15400	965	145	0.021	11200	740	105	0.022
4.0	4480	475	55	0.035	11200	1010	140	0.030	8400	755	105	0.030
5.0	3500	475	55	0.045	8960	995	140	0.037	6720	740	105	0.037
6.0	2940	560	55	0.063	7420	1065	140	0.048	5600	810	105	0.048
8.0	2240	600	55	0.089	5600	1065	140	0.063	4200	810	105	0.064
10.0	1820	630	55	0.115	4480	1065	140	0.079	3360	810	105	0.080
12.0	1400	660	55	0.157	3640	1065	135	0.098	2800	810	105	0.096
14.0	1260	685	55	0.181	3220	1065	140	0.110	2380	810	105	0.113
16.0	1120	715	55	0.213	2800	1065	140	0.127	2100	810	105	0.129
20.0	900	755	55	0.280	2240	1065	140	0.158	1680	810	105	0.161



※The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE END MILLS

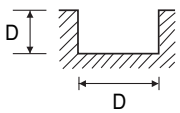
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 3 FLUTE 45° HELIX - SLOTTING
VOLLHARTMETALL, 3 SCHNEIDEN 45° RECHTSSPIRALE - NUTENFRÄSEN

E5423, E5415, E5446, E5447 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CAST IRON			
HARDNESS	~ HRc30				HRc30 ~ HRc40							
STRENGTH	~ 1000N/mm²				1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	1600	95	30	0.020	1300	65	25	0.017	2100	220	40	0.035
8.0	1200	95	30	0.026	1000	65	25	0.022	1600	230	40	0.048
10.0	950	95	30	0.033	800	65	25	0.027	1300	240	40	0.062
12.0	800	95	30	0.040	660	65	25	0.033	1000	250	40	0.083
14.0	700	95	30	0.045	570	65	25	0.038	900	260	40	0.096
16.0	600	100	30	0.056	500	80	25	0.053	800	270	40	0.113
20.0	480	100	30	0.069	400	80	25	0.067	640	290	40	0.151

MATERIAL	ALUMINUM ALLOYS				COPPER. BRASS NON-FERROUS METALS			
HARDNESS								
STRENGTH								
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	5300	410	100	0.026	4000	310	75	0.026
8.0	4000	410	100	0.034	3000	310	75	0.034
10.0	3200	410	100	0.043	2400	310	75	0.043
12.0	2600	410	100	0.053	2000	310	75	0.052
14.0	2300	410	100	0.059	1700	310	75	0.061
16.0	2000	410	100	0.068	1500	310	75	0.069
20.0	1600	410	100	0.085	1200	310	75	0.086



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RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE END MILLS

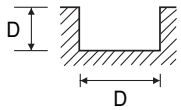
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 3 FLUTE 45° HELIX TiAlN-COATED - SLOTTING
VOLLHARTMETALL, 3 SCHNEIDEN 45° RECHTSSPIRALE TiAlN-BESCHICHTET - NUTENFRÄSEN

E5423, E5415, E5446, E5447 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CAST IRON			
HARDNESS	~ HRc30				HRc30 ~ HRc40							
STRENGTH	~ 1000N/mm²				1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	2240	135	40	0.020	1820	90	35	0.016	2940	310	55	0.035
8.0	1680	135	40	0.027	1400	90	35	0.021	2240	320	55	0.048
10.0	1330	135	40	0.034	1120	90	35	0.027	1820	335	55	0.061
12.0	1120	135	40	0.040	925	90	35	0.032	1400	350	55	0.083
14.0	980	135	45	0.046	800	90	35	0.038	1260	365	55	0.097
16.0	840	140	40	0.056	700	110	35	0.052	1120	380	55	0.113
20.0	670	140	40	0.070	560	110	35	0.065	895	405	55	0.151

MATERIAL	ALUMINUM ALLOYS				COPPER. BRASS NON-FERROUS METALS			
HARDNESS								
STRENGTH								
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	7420	575	140	0.026	5600	435	105	0.026
8.0	5600	575	140	0.034	4200	435	105	0.035
10.0	4480	575	140	0.043	3360	435	105	0.043
12.0	3640	575	135	0.053	2800	435	105	0.052
14.0	3220	575	140	0.060	2380	435	105	0.061
16.0	2800	575	140	0.068	2100	435	105	0.069
20.0	2240	575	140	0.086	1680	435	105	0.086



※The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE END MILLS

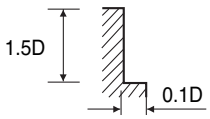
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 3 FLUTE 45° HELIX - SIDE CUTTING
VOLLHARTMETALL, 3 SCHNEIDEN 45° RECHTSSPIRALE - SEITENFRÄSEN

E5423, E5415, E5446, E5447 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CAST IRON			
HARDNESS	~ HRc30				HRc30 ~ HRc40							
STRENGTH	~ 1000N/mm²				1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	1600	190	30	0.040	1300	130	25	0.033	2100	440	40	0.070
8.0	1200	190	30	0.053	1000	130	25	0.043	1600	460	40	0.096
10.0	950	190	30	0.067	800	130	25	0.054	1300	480	40	0.123
12.0	800	190	30	0.079	660	130	25	0.066	1000	500	40	0.167
14.0	700	190	30	0.090	570	130	25	0.076	900	520	40	0.193
16.0	600	200	30	0.111	500	160	25	0.107	800	540	40	0.225
20.0	480	200	30	0.139	400	160	25	0.133	640	580	40	0.302

MATERIAL	ALUMINUM ALLOYS				COPPER. BRASS NON-FERROUS METALS			
HARDNESS								
STRENGTH								
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	5300	820	100	0.052	4000	620	75	0.052
8.0	4000	820	100	0.068	3000	620	75	0.069
10.0	3200	820	100	0.085	2400	620	75	0.086
12.0	2600	820	100	0.105	2000	620	75	0.103
14.0	2300	820	100	0.119	1700	620	75	0.122
16.0	2000	820	100	0.137	1500	620	75	0.138
20.0	1600	820	100	0.171	1200	620	75	0.172



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RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE END MILLS

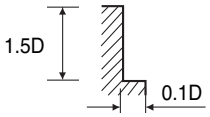
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 3 FLUTE 45° HELIX TiAlN-COATED - SIDE CUTTING
VOLLHARTMETALL, 3 SCHNEIDEN 45° RECHTSSPIRALE TiAlN-BESCHICHTET - SEITENFRÄSEN

E5423, E5415, E5446, E5447 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CAST IRON			
HARDNESS	~ HRc30				HRc30 ~ HRc40							
STRENGTH	~ 1000N/mm²				1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	2240	265	40	0.039	1820	180	35	0.033	2940	615	55	0.070
8.0	1680	265	40	0.053	1400	180	35	0.043	2240	645	55	0.096
10.0	1330	265	40	0.066	1120	180	35	0.054	1820	670	55	0.123
12.0	1120	265	40	0.079	925	180	35	0.065	1400	700	55	0.167
14.0	980	265	45	0.090	800	180	35	0.075	1260	730	55	0.193
16.0	840	280	40	0.111	700	225	35	0.107	1120	755	55	0.225
20.0	670	280	40	0.139	560	225	35	0.134	895	810	55	0.302

MATERIAL	ALUMINUM ALLOYS				COPPER. BRASS NON-FERROUS METALS			
HARDNESS								
STRENGTH								
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	7420	1150	140	0.052	5600	870	105	0.052
8.0	5600	1150	140	0.068	4200	870	105	0.069
10.0	4480	1150	140	0.086	3360	870	105	0.086
12.0	3640	1150	135	0.105	2800	870	105	0.104
14.0	3220	1150	140	0.119	2380	870	105	0.122
16.0	2800	1150	140	0.137	2100	870	105	0.138
20.0	2240	1150	140	0.171	1680	870	105	0.173



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RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE END MILLS

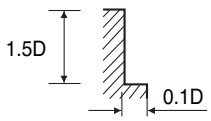
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 4 FLUTE - SIDE CUTTING
VOLLHARTMETALL, 3 SCHNEIDEN - SEITENFRÄSEN

E5432, E5595, E5448, E5449, E5540, E5453 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS TITANIUM ALLOYS			
HARDNESS	~ HRc 20				HRc 20 ~ HRc 30				HRc 30 ~ HRc 40							
STRENGTH	500 ~ 800N/mm²				800 ~ 1000N/mm²				1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	5500	240	35	0.011	4800	210	30	0.011	4000	160	25	0.010	8000	200	50	0.006
3.0	3700	270	35	0.018	3200	240	30	0.019	2600	180	25	0.017	5300	200	50	0.009
4.0	2800	270	35	0.024	2400	240	30	0.025	2000	180	25	0.023	4000	200	50	0.013
5.0	2200	270	35	0.031	1900	240	30	0.032	1600	180	25	0.028	3200	200	50	0.016
6.0	1800	270	35	0.038	1600	240	30	0.038	1300	180	25	0.035	2600	200	50	0.019
8.0	1400	270	35	0.048	1200	240	30	0.050	1000	180	25	0.045	2000	200	50	0.025
10.0	1100	270	35	0.061	950	240	30	0.063	800	180	25	0.056	1600	200	50	0.031
12.0	900	270	35	0.075	800	240	30	0.075	660	180	25	0.068	1300	200	50	0.038
14.0	800	270	35	0.084	700	240	30	0.086	570	180	25	0.079	1100	200	50	0.045
16.0	700	300	35	0.107	600	260	30	0.108	500	220	25	0.110	1000	225	50	0.056
20.0	550	300	35	0.136	480	260	30	0.135	400	220	25	0.138	800	240	50	0.075

MATERIAL	CAST IRON				ALUMINUM ALLOYS				COPPER. BRASS NON-FERROUS METALS			
HARDNESS												
STRENGTH												
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	6500	450	40	0.017	16000	960	100	0.015	12000	720	75	0.015
3.0	4200	450	40	0.027	11000	960	105	0.022	8000	720	75	0.023
4.0	3200	450	40	0.035	8000	960	100	0.030	6000	720	75	0.030
5.0	2500	450	40	0.045	6400	960	100	0.038	4800	720	75	0.038
6.0	2100	540	40	0.064	5300	1020	100	0.048	4000	780	75	0.049
8.0	1600	570	40	0.089	4000	1020	100	0.064	3000	780	75	0.065
10.0	1300	600	40	0.115	3200	1020	100	0.080	2400	780	75	0.081
12.0	1000	630	40	0.158	2600	1020	100	0.098	2000	780	75	0.098
14.0	900	660	40	0.183	2300	1020	100	0.111	1700	780	75	0.115
16.0	800	680	40	0.213	2000	1020	100	0.128	1500	780	75	0.130
20.0	640	720	40	0.281	1600	1020	100	0.159	1200	780	75	0.163



※The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE END MILLS

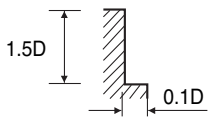
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 4 FLUTE TiAlN-COATED - SIDE CUTTING
VOLLHARTMETALL, 3 SCHNEIDEN TiAlN-BESCHICHTET - SEITENFRÄSEN

E5432, E5595, E5448, E5449, E5540, E5453 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS TITANIUM ALLOYS			
HARDNESS	~ HRc 20				HRc 20 ~ HRc 30				HRc 30 ~ HRc 40							
STRENGTH	500 ~ 800N/mm²				800 ~ 1000N/mm²				1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	7700	335	50	0.011	6720	295	40	0.011	5600	225	35	0.010	11200	280	70	0.006
3.0	5180	380	50	0.018	4480	335	40	0.019	3640	250	35	0.017	7420	280	70	0.009
4.0	3920	380	50	0.024	3360	335	40	0.025	2800	250	35	0.022	5600	280	70	0.013
5.0	3080	380	50	0.031	2660	335	40	0.031	2240	250	35	0.028	4480	280	70	0.016
6.0	2520	380	50	0.038	2240	335	40	0.037	1820	250	35	0.034	3640	280	70	0.019
8.0	1960	380	50	0.048	1680	335	40	0.050	1400	250	35	0.045	2800	280	70	0.025
10.0	1540	380	50	0.062	1330	335	40	0.063	1120	250	35	0.056	2240	280	70	0.031
12.0	1260	380	50	0.075	1120	335	40	0.075	920	250	35	0.068	1820	280	70	0.038
14.0	1120	380	50	0.085	980	335	45	0.085	800	250	35	0.078	1540	280	70	0.045
16.0	980	420	50	0.107	840	365	45	0.109	700	310	35	0.111	1400	315	70	0.056
20.0	770	420	50	0.136	670	365	45	0.136	560	310	35	0.138	1120	335	70	0.075

MATERIAL	CAST IRON				ALUMINUM ALLOYS				COPPER. BRASS NON-FERROUS METALS			
HARDNESS												
STRENGTH												
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	9100	630	55	0.017	22400	1345	140	0.015	16800	1010	105	0.015
3.0	5880	630	55	0.027	15400	1345	145	0.022	11200	1010	105	0.023
4.0	4480	630	55	0.035	11200	1345	140	0.030	8400	1010	105	0.030
5.0	3500	630	55	0.045	8960	1345	140	0.038	6720	1010	105	0.038
6.0	2940	755	55	0.064	7420	1430	140	0.048	5600	1090	105	0.049
8.0	2240	800	55	0.089	5600	1430	140	0.064	4200	1090	105	0.065
10.0	1820	840	55	0.115	4480	1430	140	0.080	3360	1090	105	0.081
12.0	1400	880	55	0.157	3640	1430	135	0.098	2800	1090	105	0.097
14.0	1260	925	55	0.184	3220	1430	140	0.111	2380	1090	105	0.114
16.0	1120	950	55	0.212	2800	1430	140	0.128	2100	1090	105	0.130
20.0	900	1010	55	0.281	2240	1430	140	0.160	1680	1090	105	0.162



※The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

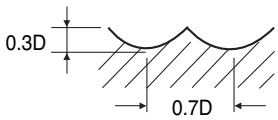
CARBIDE END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS

E5624, E5650, E5437, E5438, E5454, E5455 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CAST IRON				ALUMINUM ALLOYS			
HARDNESS	~ HRc30				HRc30 ~ HRc40											
STRENGTH	~ 1000N/mm²				1000 ~ 1300N/mm²											
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R1.0 × 2.0	5200	90	35	0.009	4400	45	30	0.005	7300	150	45	0.010	21500	280	135	0.007
R1.5 × 3.0	3500	100	35	0.014	2900	45	25	0.008	4900	160	45	0.016	14300	280	135	0.010
R2.0 × 4.0	2600	100	35	0.019	2100	45	25	0.011	3600	200	45	0.028	10900	280	135	0.013
R2.5 × 5.0	2100	105	35	0.025	1700	45	25	0.013	2900	230	45	0.040	8800	330	140	0.019
R3.0 × 6.0	1700	100	30	0.029	1430	45	25	0.016	2400	250	45	0.052	7260	330	135	0.023
R4.0 × 8.0	1270	95	30	0.037	1100	45	30	0.020	1800	320	45	0.089	5500	380	140	0.035
R5.0 × 10.0	1000	95	30	0.048	870	45	25	0.026	1430	320	45	0.112	4300	380	135	0.044
R6.0 × 12.0	870	85	35	0.049	730	45	30	0.031	1200	320	45	0.133	3600	440	135	0.061
R7.0 × 14.0	750	85	35	0.057	620	45	25	0.036	1000	325	45	0.163	3000	440	130	0.073
R8.0 × 16.0	650	85	35	0.065	540	45	25	0.042	920	325	45	0.177	2700	380	135	0.070
R9.0 × 18.0	580	85	35	0.073	480	45	25	0.047	810	325	45	0.201	2400	380	135	0.079
R10.0 × 20.0	500	85	30	0.085	430	45	25	0.052	730	290	45	0.199	2100	380	130	0.090



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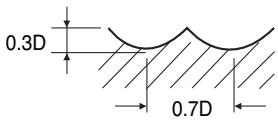
RPM = rev./min. Vc = m/min.
FEED = mm/min. fz = mm/t

CARBIDE, 2 FLUTE BALL NOSE TiAlN-COATED
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS TiAlN-BESCHICHTET

E5624, E5650, E5437, E5438, E5454, E5455 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CAST IRON				ALUMINUM ALLOYS			
HARDNESS	~ HRc30				HRc30 ~ HRc40											
STRENGTH	~ 1000N/mm²				1000 ~ 1300N/mm²											
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R1.0 × 2.0	7280	125	45	0.009	6160	65	40	0.005	10220	210	65	0.010	30100	390	190	0.006
R1.5 × 3.0	4900	140	45	0.014	4060	65	40	0.008	6860	225	65	0.016	20020	390	190	0.010
R2.0 × 4.0	3640	140	45	0.019	2940	65	35	0.011	5040	280	65	0.028	15260	390	190	0.013
R2.5 × 5.0	2940	145	45	0.025	2380	65	35	0.014	4060	320	65	0.039	12320	460	195	0.019
R3.0 × 6.0	2380	140	45	0.029	2000	65	40	0.016	3360	350	65	0.052	10165	460	190	0.023
R4.0 × 8.0	1780	135	45	0.038	1540	65	40	0.021	2520	450	65	0.089	7700	530	195	0.034
R5.0 × 10.0	1400	135	45	0.048	1220	65	40	0.027	2000	450	65	0.113	6020	530	190	0.044
R6.0 × 12.0	1220	120	45	0.049	1020	65	40	0.032	1680	450	65	0.134	5040	615	190	0.061
R7.0 × 14.0	1050	120	45	0.057	870	65	40	0.037	1400	455	60	0.163	4200	615	185	0.073
R8.0 × 16.0	910	120	45	0.066	755	65	40	0.043	1290	455	65	0.176	3780	530	190	0.070
R9.0 × 18.0	810	120	45	0.074	670	65	40	0.049	1135	455	65	0.200	3360	530	190	0.079
R10.0 × 20.0	700	120	45	0.086	600	65	40	0.054	1020	405	65	0.199	2940	530	185	0.090



※The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min. Vc = m/min.
FEED = mm/min. fz = mm/t

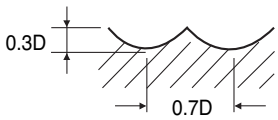
CARBIDE END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 4 FLUTE BALL NOSE
VOLLHARTMETALL, 4 SCHNEIDEN STIRNRADIUS

E5634, E5524 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CAST IRON				ALUMINUM ALLOYS			
HARDNESS	~ HRc30				HRc30 ~ HRc40											
STRENGTH	~ 1000N/mm²				1000 ~ 1300N/mm²											
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R1.0 × 2.0	5200	140	35	0.007	4400	70	30	0.004	7300	230	45	0.008	21500	420	135	0.005
R1.5 × 3.0	3500	150	35	0.011	2900	70	25	0.006	4900	240	45	0.012	14300	420	135	0.007
R2.0 × 4.0	2600	150	35	0.014	2100	70	25	0.008	3600	300	45	0.021	10900	420	135	0.010
R2.5 × 5.0	2100	160	35	0.019	1700	70	25	0.010	2900	350	45	0.030	8800	500	140	0.014
R3.0 × 6.0	1700	150	30	0.022	1430	70	25	0.012	2400	380	45	0.040	7260	500	135	0.017
R4.0 × 8.0	1270	140	30	0.028	1100	70	30	0.016	1800	480	45	0.067	5500	570	140	0.026
R5.0 × 10.0	1000	140	30	0.035	870	70	25	0.020	1430	480	45	0.084	4300	570	135	0.033
R6.0 × 12.0	870	130	35	0.037	730	70	30	0.024	1200	480	45	0.100	3600	660	135	0.046
R7.0 × 14.0	750	130	35	0.043	620	70	25	0.028	1000	490	45	0.123	3000	660	130	0.055
R8.0 × 16.0	650	130	35	0.050	540	70	25	0.032	920	490	45	0.133	2700	570	135	0.053
R9.0 × 18.0	580	130	35	0.056	480	70	25	0.036	810	490	45	0.151	2400	570	135	0.059
R10.0 × 20.0	500	130	30	0.065	430	70	25	0.041	730	440	45	0.151	2100	570	130	0.068



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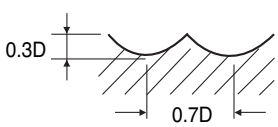
FEED = mm/min. fz = mm/t

CARBIDE, 4 FLUTE BALL NOSE TiAlN-COATED
VOLLHARTMETALL, 4 SCHNEIDEN STIRNRADIUS TiAlN-BESCHICHTET

E5634, E5524 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CAST IRON				ALUMINUM ALLOYS			
HARDNESS	~ HRc30				HRc30 ~ HRc40											
STRENGTH	~ 1000N/mm²				1000 ~ 1300N/mm²											
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R1.0 × 2.0	7280	195	45	0.007	6160	100	40	0.004	10220	320	65	0.008	30100	590	190	0.005
R1.5 × 3.0	4900	210	45	0.011	4060	100	40	0.006	6860	335	65	0.012	20020	590	190	0.007
R2.0 × 4.0	3640	210	45	0.014	2940	100	35	0.009	5040	420	65	0.021	15260	590	190	0.010
R2.5 × 5.0	2940	225	45	0.019	2380	100	35	0.011	4060	490	65	0.030	12320	700	195	0.014
R3.0 × 6.0	2380	210	45	0.022	2000	100	40	0.013	3360	530	65	0.039	10165	700	190	0.017
R4.0 × 8.0	1780	195	45	0.027	1540	100	40	0.016	2520	670	65	0.066	7700	800	195	0.026
R5.0 × 10.0	1400	195	45	0.035	1220	100	40	0.020	2000	670	65	0.084	6020	800	190	0.033
R6.0 × 12.0	1220	180	45	0.037	1020	100	40	0.025	1680	670	65	0.100	5040	925	190	0.046
R7.0 × 14.0	1050	180	45	0.043	870	100	40	0.029	1400	685	60	0.122	4200	925	185	0.055
R8.0 × 16.0	910	180	45	0.049	755	100	40	0.033	1290	685	65	0.133	3780	800	190	0.053
R9.0 × 18.0	810	180	45	0.056	670	100	40	0.037	1135	685	65	0.151	3360	800	190	0.060
R10.0 × 20.0	700	180	45	0.064	600	100	40	0.042	1020	615	65	0.151	2940	800	185	0.068



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RPM = rev./min. Vc = m/min.
FEED = mm/min. fz = mm/t

CARBIDE END MILLS

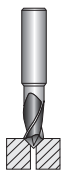
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE - CHAMFERING
VOLLHARTMETALL, 2 SCHNEIDEN - SENKEN

E5400 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS	~ HRc20				HRc20 ~ HRc30				HRc30 ~ HRc40			
STRENGTH	500 ~ 800N/mm²				800 ~ 1000N/mm²				1000 ~ 1300N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
3.0	4400	220	40	0.025	3500	160	35	0.023	3000	140	30	0.023
4.0	3600	220	45	0.031	3000	160	40	0.027	2500	140	30	0.028
5.0	2860	230	45	0.040	2400	170	40	0.035	2000	140	30	0.035
6.0	2300	240	45	0.052	2000	170	40	0.043	1600	140	30	0.044
8.0	1760	250	45	0.071	1540	180	40	0.058	1200	145	30	0.060
10.0	1500	250	45	0.083	1300	190	40	0.073	1100	145	35	0.066
12.0	1300	260	50	0.100	1100	200	40	0.091	900	150	35	0.083
10.0	1000	250	30	0.125	950	200	30	0.105	700	160	20	0.114
20.0	950	260	60	0.137	750	210	45	0.140	600	160	40	0.133

MATERIAL	STAINLESS STEELS TITANIUM ALLOYS				ALUMINUM ALLOYS			
HARDNESS								
STRENGTH								
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
3.0	2400	100	25	0.021	11000	550	105	0.025
4.0	2000	100	25	0.025	9000	580	115	0.032
5.0	1760	105	30	0.030	6900	620	110	0.045
6.0	1400	105	25	0.038	5600	640	105	0.057
8.0	1000	110	25	0.055	4400	660	110	0.075
10.0	870	110	25	0.063	4000	680	125	0.085
12.0	730	115	30	0.079	3500	700	130	0.100
10.0	550	120	15	0.109	2750	740	85	0.135
20.0	530	130	35	0.123	2200	770	140	0.175



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FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE END MILLS

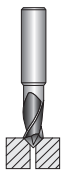
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE TiAlN-COATED - CHAMFERING
VOLLHARTMETALL, 2 SCHNEIDEN TiAlN-BESCHICHTET - SENKEN

E5400 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS	~ HRc20				HRc20 ~ HRc30				HRc30 ~ HRc40			
STRENGTH	500 ~ 800N/mm²				800 ~ 1000N/mm²				1000 ~ 1300N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
3.0	6160	310	60	0.025	4900	225	45	0.023	4200	195	40	0.023
4.0	5040	310	65	0.031	4200	225	55	0.027	3500	195	45	0.028
5.0	4005	320	65	0.040	3360	240	55	0.036	2800	195	45	0.035
6.0	3220	335	60	0.052	2800	240	55	0.043	2240	195	40	0.044
8.0	2465	350	60	0.071	2155	250	55	0.058	1680	2030	40	0.604
10.0	2100	350	65	0.083	1820	265	55	0.073	1540	2030	50	0.659
12.0	1820	365	70	0.100	1540	280	60	0.091	1260	210	50	0.083
16.0	1400	350	70	0.125	1330	280	65	0.105	980	225	50	0.115
20.0	1330	365	85	0.137	1050	295	65	0.140	840	225	55	0.134

MATERIAL	STAINLESS STEELS TITANIUM ALLOYS				ALUMINUM ALLOYS			
HARDNESS								
STRENGTH								
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
3.0	3360	140	30	0.021	15400	770	145	0.025
4.0	2800	140	35	0.025	12600	810	160	0.032
5.0	2465	145	40	0.029	9660	870	150	0.045
6.0	1960	145	35	0.037	7840	895	150	0.057
8.0	1400	155	35	0.055	6160	925	155	0.075
10.0	1220	155	40	0.064	5600	950	175	0.085
12.0	1020	160	40	0.078	4900	980	185	0.100
16.0	770	170	40	0.110	3850	1035	195	0.134
20.0	740	180	45	0.122	3080	1080	195	0.175



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RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE END MILLS

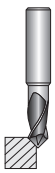
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

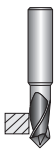
CARBIDE, 2 FLUTE - CHAMFERING & SIDE CUTTING
VOLLHARTMETALL, 2 SCHNEIDEN - SENKEN & SEITENFRÄSEN

E5400 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS	~ HRc20				HRc20 ~ HRc30				HRc30 ~ HRc40			
STRENGTH	500 ~ 800N/mm²				800 ~ 1000N/mm²				1000 ~ 1300N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
3.0	5900	95	55	0.008	3900	65	35	0.008	3300	50	30	0.008
4.0	4800	95	60	0.010	3200	65	40	0.010	2800	50	35	0.009
5.0	3800	100	60	0.013	2500	65	40	0.013	2200	55	35	0.013
6.0	3000	110	55	0.018	2000	70	40	0.018	1800	60	35	0.017
8.0	2300	115	60	0.025	1540	75	40	0.024	1300	65	35	0.025
10.0	2000	120	65	0.030	1300	80	40	0.031	1200	65	40	0.027
12.0	1760	130	65	0.037	1100	90	40	0.041	1000	70	40	0.035
16.0	1300	140	65	0.054	900	90	45	0.050	770	70	40	0.045
20.0	1100	140	70	0.064	700	90	45	0.064	600	70	40	0.058

MATERIAL	STAINLESS STEELS TITANIUM ALLOYS				ALUMINUM ALLOYS			
HARDNESS								
STRENGTH								
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
3.0	2400	40	25	0.008	14000	230	130	0.008
4.0	2000	40	25	0.010	12000	240	150	0.010
5.0	1760	45	30	0.013	9500	250	150	0.013
6.0	1400	50	25	0.018	7700	300	145	0.019
8.0	1100	55	30	0.025	5800	350	145	0.030
10.0	1000	55	30	0.028	5100	380	160	0.037
12.0	840	60	30	0.036	4400	400	165	0.045
16.0	660	60	35	0.045	3300	330	165	0.050
20.0	440	60	30	0.068	2640	340	165	0.064





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RPM = rev./min.
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Vc = m/min.
fz = mm/t

CARBIDE END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE TiAlN-COATED - CHAMFERING & SIDE CUTTING
VOLLHARTMETALL, 2 SCHNEIDEN TiAlN-BESCHICHTET - SENKEN & SEITENFRÄSEN

E5400 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS	~ HRc20				HRc20 ~ HRc30				HRc30 ~ HRc40			
STRENGTH	500 ~ 800N/mm²				800 ~ 1000N/mm²				1000 ~ 1300N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
3.0	8260	135	80	0.008	5460	90	50	0.008	4620	70	45	0.008
4.0	6720	135	85	0.010	4480	90	55	0.010	3920	70	50	0.009
5.0	5320	140	85	0.013	3500	90	55	0.013	3080	75	50	0.012
6.0	4200	155	80	0.018	2800	100	55	0.018	2520	85	50	0.017
8.0	3220	160	80	0.025	2155	105	55	0.024	1820	90	45	0.025
10.0	2800	170	90	0.030	1820	110	55	0.030	1680	90	55	0.027
12.0	2465	180	95	0.037	1540	125	60	0.041	1400	100	55	0.036
16.0	1820	195	90	0.054	1260	125	65	0.050	1080	100	55	0.046
20.0	1540	195	95	0.063	980	125	60	0.064	840	100	55	0.060

MATERIAL	STAINLESS STEELS TITANIUM ALLOYS				ALUMINUM ALLOYS			
HARDNESS								
STRENGTH								
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
3.0	3360	55	30	0.008	19600	320	185	0.008
4.0	2800	55	35	0.010	16800	335	210	0.010
5.0	2465	65	40	0.013	13300	350	210	0.013
6.0	1960	70	35	0.018	10780	420	205	0.019
8.0	1540	75	40	0.024	8120	490	205	0.030
10.0	1400	75	45	0.027	7140	530	225	0.037
12.0	1175	85	45	0.036	6160	560	230	0.045
16.0	925	85	45	0.046	4620	460	230	0.050
20.0	615	85	40	0.069	3695	475	230	0.064

※The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE END MILLS

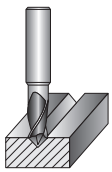
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE - V-GROOVING
VOLLHARTMETALL, 2 SCHNEIDEN - ENTGRATEN

E5400 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS	~ HRc20				HRc20 ~ HRc30				HRc30 ~ HRc40			
STRENGTH	500 ~ 800N/mm²				800 ~ 1000N/mm²				1000 ~ 1300N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
3.0	5900	60	55	0.005	4000	30	40	0.004	3300	25	30	0.004
4.0	4800	60	60	0.006	3300	30	40	0.005	2800	25	35	0.004
5.0	3800	60	60	0.008	2500	30	40	0.006	2200	25	35	0.006
6.0	3000	60	55	0.010	2000	30	40	0.008	1800	30	35	0.008
8.0	2300	65	60	0.014	1540	35	40	0.011	1300	35	35	0.013
10.0	2000	65	65	0.016	1300	35	40	0.013	1200	35	40	0.015
12.0	1760	65	65	0.018	1000	40	40	0.020	1000	35	40	0.018
16.0	1400	65	70	0.023	900	40	45	0.022	770	35	40	0.023
20.0	1100	65	70	0.030	700	40	45	0.029	600	35	40	0.029

MATERIAL	STAINLESS STEELS TITANIUM ALLOYS				ALUMINUM ALLOYS			
HARDNESS								
STRENGTH								
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
3.0	2400	20	25	0.004	14000	220	130	0.008
4.0	2000	20	25	0.005	11800	230	150	0.010
5.0	1760	20	30	0.006	9500	240	150	0.013
6.0	1400	20	25	0.007	7700	250	145	0.016
8.0	1100	20	30	0.009	5800	260	145	0.022
10.0	1000	20	30	0.010	5000	260	155	0.026
12.0	840	20	30	0.012	4400	260	165	0.030
16.0	660	25	35	0.019	3300	270	165	0.041
20.0	440	25	30	0.028	2600	270	165	0.052



※The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

CARBIDE END MILLS

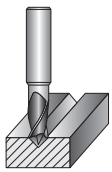
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, 2 FLUTE TiAlN-COATED - V-GROOVING
VOLLHARTMETALL, 2 SCHNEIDEN TiAlN-BESCHICHTET - ENTGRATEN

E5400 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS	~ HRc20				HRc20 ~ HRc30				HRc30 ~ HRc40			
STRENGTH	500 ~ 800N/mm²				800 ~ 1000N/mm²				1000 ~ 1300N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
3.0	8260	85	80	0.005	5600	40	55	0.004	4620	35	45	0.004
4.0	6720	85	85	0.006	4620	40	60	0.004	3920	35	50	0.004
5.0	5320	85	85	0.008	3500	40	55	0.006	3080	35	50	0.006
6.0	4200	85	80	0.010	2800	40	55	0.007	2520	40	50	0.008
8.0	3220	90	80	0.014	2155	50	55	0.012	1820	50	45	0.014
10.0	2800	90	90	0.016	1820	50	55	0.014	1680	50	55	0.015
12.0	2465	90	95	0.018	1400	55	55	0.020	1400	50	55	0.018
16.0	1960	90	100	0.023	1260	55	65	0.022	1080	50	55	0.023
20.0	1540	90	95	0.029	980	55	60	0.028	840	50	55	0.030

MATERIAL	STAINLESS STEELS TITANIUM ALLOYS				ALUMINUM ALLOYS			
HARDNESS								
STRENGTH								
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
3.0	3360	30	30	0.004	19600	310	185	0.008
4.0	2800	30	35	0.005	16520	320	210	0.010
5.0	2465	30	40	0.006	13300	335	210	0.013
6.0	1960	30	35	0.008	10780	350	205	0.016
8.0	1540	30	40	0.010	8120	365	205	0.022
10.0	1400	30	45	0.011	7000	365	220	0.026
12.0	1175	30	45	0.013	6160	365	230	0.030
16.0	925	35	45	0.019	4620	380	230	0.041
20.0	615	35	40	0.028	3640	380	230	0.052



※The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSS

YG

Being the best through innovation

TANK-POWER

TANK-POWER FRÄSER

- High Toughness, for Stainless Steels, Carbon steels, Alloy Steels For General Application, Rough & Finish
- Sehr gute Zähigkeit. Für rostfreie Stähle, Fräsen von Stahl, legiertem Stahl Allgemeinen Einsatz, Schruppen und schlichten

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
E9936 GA936		PREMIUM HSS-PM, 2 FLUTE SHORT LENGTH PREMIUM HSS-PM, 2 SCHNEIDEN KURZ	D1.0	D25.0	1136
E9A29 GAA29		PREMIUM HSS-PM, 2 FLUTE LONG LENGTH PREMIUM HSS-PM, 2 SCHNEIDEN LANG	D1.0	D25.0	1137
E9942 GA942		PREMIUM HSS-PM, 3 FLUTE STUB LENGTH PREMIUM HSS-PM, 3 SCHNEIDEN EXTRA KURZ	D1.0	D25.0	1138
E9A30 GAA30		PREMIUM HSS-PM, 3 FLUTE SHORT LENGTH PREMIUM HSS-PM, 3 SCHNEIDEN KURZ	D1.0	D25.0	1139
E9938 GA938		PREMIUM HSS-PM, 4 FLUTE SHORT LENGTH PREMIUM HSS-PM, 4 SCHNEIDEN KURZ	D1.0	D25.0	1140
E9A31 GAA31		PREMIUM HSS-PM, 4 FLUTE LONG LENGTH PREMIUM HSS-PM, 4 SCHNEIDEN LANG	D2.0	D25.0	1141
E9940 GA940		PREMIUM HSS-PM, 2 FLUTE SHORT LENGTH BALL NOSE PREMIUM HSS-PM, 2 SCHNEIDEN KURZ STIRNRADIUS	R0.5	R12.5	1142
E9A32 GAA32		PREMIUM HSS-PM, 2 FLUTE LONG LENGTH BALL NOSE PREMIUM HSS-PM, 2 SCHNEIDEN LANG STIRNRADIUS	R1.0	R12.5	1143
E9941 GA941		PREMIUM HSS-PM, MULTI FLUTE SHORT LENGTH ROUGHING - FINE PREMIUM HSS-PM, MULTI SCHNEIDEN KURZ SCHRUPFRÄSER - FEIN	D6.0	D25.0	1144
E9A35 GAA35		PREMIUM HSS-PM, MULTI FLUTE LONG LENGTH ROUGHING - FINE PREMIUM HSS-PM, MULTI SCHNEIDEN LANG SCHRUPFRÄSER - FEIN	D6.0	D25.0	1145
E9A26 GAA26		PREMIUM HSS-PM, MULTI FLUTE, 45° HELIX SHORT LENGTH ROUGHING - FINE PREMIUM HSS-PM, MULTI SCHNEIDEN 45° RECHTSSPIRALE KURZ SCHRUPFRÄSER - FEIN	D4.0	D25.0	1146
E9A33 GAA33		PREMIUM HSS-PM, MULTI FLUTE SHORT LENGTH ROUGHING - COARSE PREMIUM HSS-PM, MULTI SCHNEIDEN KURZ SCHRUPFRÄSER - GROB	D6.0	D25.0	1147
E9A34 GAA34		PREMIUM HSS-PM, MULTI FLUTE LONG LENGTH ROUGHING - COARSE PREMIUM HSS-PM, MULTI SCHNEIDEN LANG SCHRUPFRÄSER - GROB	D6.0	D25.0	1148
E9E43 GAE43		PREMIUM HSS-PM, MULTI FLUTE ROUGHING WITH NECK - COARSE PREMIUM HSS-PM, MULTI SCHNEIDEN SCHRUPFRÄSER mit ABGESETZTEM SCHAFTTETL - GROB	D10.0	D25.0	1149
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			1150

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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TANK-POWER END MILLS

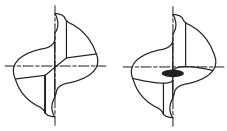
E9936 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

GA936 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

PREMIUM HSS-PM, 2 FLUTE SHORT LENGTH
PREMIUM HSS-PM, 2 SCHNEIDEN KURZ

- Designed to machine carbon steels, alloyed steels, stainless steels.
- 2 Flute design for slotting.
- Suitable for high speed cutting of difficult - to - cut materials.
- YG-1's new developed TANK-POWER Coating suitable for high speed cutting.

- Geeignet zum Fräsen von Stahl, legiertem Stahl und rostfreier Stahl.
- 2 Schneiden, Geeignet für Nutenfräsen.
- Geeignet für Hochgeschwindigkeitsfräsen von schwer zu zerspanenden Materialien.
- Neuentwickelte Beschichtung für Hochgeschwindigkeitsfräsen.



up to Ø3mm over Ø3mm

YPM | DIN 327 | 2 | 30° | DIN 1835B

P.1150, 1151

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TANK-POWER COATED	e8	h6		
E9936010	GA936010	1.0	6	2.5	47
E9936020	GA936020	2.0	6	4	48
E9936030	GA936030	3.0	6	5	49
E9936040	GA936040	4.0	6	7	51
E9936050	GA936050	5.0	6	8	52
E9936060	GA936060	6.0	6	8	52
E9936070	GA936070	7.0	10	10	60
E9936080	GA936080	8.0	10	11	61
E9936090	GA936090	9.0	10	11	61
E9936100	GA936100	10.0	10	13	63
E9936120	GA936120	12.0	12	16	73
E9936140	GA936140	14.0	12	16	73
E9936160	GA936160	16.0	16	19	79
E9936180	GA936180	18.0	16	19	79
E9936200	GA936200	20.0	20	22	88
E9936220	GA936220	22.0	20	22	88
E9936250	GA936250	25.0	25	26	102

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛

Nominal-Diameter in mm / Nennmaßbereich in mm					
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
e8	— 14 — 28	— 20 — 38	— 25 — 47	— 32 — 59	— 40 — 73
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○				○		◎		◎				

TANK-POWER END MILLS

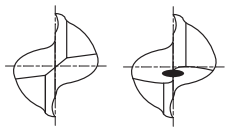
E9A29 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

GAA29 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

PREMIUM HSS-PM, 2 FLUTE LONG LENGTH
PREMIUM HSS-PM, 2 SCHNEIDEN LANG

- Designed to machine carbon steels, alloyed steels, stainless steels.
- 2 Flute design for slotting.
- Suitable for high speed cutting of difficult - to - cut materials.
- YG-1's new developed TANK-POWER Coating suitable for high speed cutting.

- Geeignet zum Fräsen von Stahl, legiertem Stahl und rostfreier Stahl.
- 2 Schneiden, Geeignet für Nutenfräsen.
- Geeignet für Hochgeschwindigkeitsfräsen von schwer zu zerspanenden Materialien.
- Neuentwickelte Beschichtung für Hochgeschwindigkeitsfräsen.



up to Ø3mm over Ø3mm

YPM | DIN 844 | 2 | 30° | DIN 1835B

P.1150, 1151

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TANK-POWER COATED	e8	h6		
E9A29010	GAA29010	1.0	6	3	47
E9A29020	GAA29020	2.0	6	7	51
E9A29030	GAA29030	3.0	6	8	52
E9A29040	GAA29040	4.0	6	11	55
E9A29050	GAA29050	5.0	6	13	57
E9A29060	GAA29060	6.0	6	13	57
E9A29070	GAA29070	7.0	10	16	66
E9A29080	GAA29080	8.0	10	19	69
E9A29090	GAA29090	9.0	10	19	69
E9A29100	GAA29100	10.0	10	22	72
E9A29120	GAA29120	12.0	12	26	83
E9A29140	GAA29140	14.0	12	26	83
E9A29160	GAA29160	16.0	16	32	92
E9A29180	GAA29180	18.0	16	32	92
E9A29200	GAA29200	20.0	20	38	104
E9A29220	GAA29220	22.0	20	38	104
E9A29250	GAA29250	25.0	25	45	121

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛

Nominal-Diameter in mm / Nennmaßbereich in mm

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
e8	— 14 — 28	— 20 — 38	— 25 — 47	— 32 — 59	— 40 — 73
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○				○		◎		◎				

TANK-POWER END MILLS

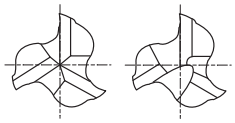
E9942 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

GA942 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

PREMIUM HSS-PM, 3 FLUTE STUB LENGTH
PREMIUM HSS-PM, 3 SCHNEIDEN EXTRA KURZ

- Designed to machine carbon steels, alloyed steels, stainless steels.
- Well balanced web design to minimize deflection and chattering.
- 3 flute design possess the advantage of 2 flute and 4 flute end mill.
- YG-1's new developed TANK-POWER Coating suitable for high speed cutting.

- Geeignet zum Fräsen von Stahl, legiertem Stahl und rostfreier Stahl.
- Verstärkter Kern zur Erhöhung der Stabilität.
- 3 Schneiden Design besitzt die Vorteile von 2-bzw 4 Schneiden Fräsern.
- Neuentwickelte Beschichtung für Hochgeschwindigkeitsfräsen.



up to Ø1mm over Ø1mm

YPM | DIN 327 | 3 | 30° | DIN 1835B

P.1152, 1153, 1154, 1155

Unit : mm

EDP No. UNCOATED	EDP No. TANK-POWER COATED	Mill Diameter e8	Shank Diameter h6	Length of Cut	Overall Length
E9942010	GA942010	1.0	6	2.5	47
E9942020	GA942020	2.0	6	4	48
E9942030	GA942030	3.0	6	5	49
E9942040	GA942040	4.0	6	7	51
E9942050	GA942050	5.0	6	8	52
E9942060	GA942060	6.0	6	8	52
E9942070	GA942070	7.0	10	10	60
E9942080	GA942080	8.0	10	11	61
E9942090	GA942090	9.0	10	11	61
E9942100	GA942100	10.0	10	13	63
E9942120	GA942120	12.0	12	16	73
E9942140	GA942140	14.0	12	16	73
E9942160	GA942160	16.0	16	19	79
E9942180	GA942180	18.0	16	19	79
E9942200	GA942200	20.0	20	22	88
E9942220	GA942220	22.0	20	22	88
E9942250	GA942250	25.0	25	26	102

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm

Nominal-Diameter in mm / Nennmaßbereich in mm

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
e8	— 14 — 28	— 20 — 38	— 25 — 47	— 32 — 59	— 40 — 73
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○				○		◎		◎				

TANK-POWER END MILLS

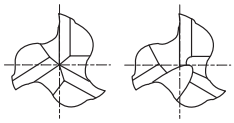
E9A30 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

GAA30 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

PREMIUM HSS-PM, 3 FLUTE SHORT LENGTH
PREMIUM HSS-PM, 3 SCHNEIDEN KURZ

- Designed to machine carbon steels, alloyed steels, stainless steels.
- Well balanced web design to minimize deflection and chattering.
- 3 flute design possess the advantage of 2 flute and 4 flute end mill.
- YG-1's new developed TANK-POWER Coating suitable for high speed cutting.

- Geeignet zum Fräsen von Stahl, legiertem Stahl und rostfreier Stahl.
- Verstärkter Kern zur Erhöhung der Stabilität.
- 3 Schneiden Design besitzt die Vorteile von 2-bzw 4 Schneiden Fräsern.
- Neuentwickelte Beschichtung für Hochgeschwindigkeitsfräsen.



up to Ø1mm over Ø1mm

YPM | DIN 844 | 3 | 30° | DIN 1835B

P.1152, 1153, 1154, 1155

Unit : mm

EDP No. UNCOATED	EDP No. TANK-POWER COATED	Mill Diameter e8	Shank Diameter h6	Length of Cut	Overall Length
E9A30010	GAA30010	1.0	6	3	47
E9A30020	GAA30020	2.0	6	7	51
E9A30030	GAA30030	3.0	6	8	52
E9A30040	GAA30040	4.0	6	11	55
E9A30050	GAA30050	5.0	6	13	57
E9A30060	GAA30060	6.0	6	13	57
E9A30070	GAA30070	7.0	10	16	66
E9A30080	GAA30080	8.0	10	19	69
E9A30090	GAA30090	9.0	10	19	69
E9A30100	GAA30100	10.0	10	22	72
E9A30120	GAA30120	12.0	12	26	83
E9A30140	GAA30140	14.0	12	26	83
E9A30160	GAA30160	16.0	16	32	92
E9A30180	GAA30180	18.0	16	32	92
E9A30200	GAA30200	20.0	20	38	104
E9A30220	GAA30220	22.0	20	38	104
E9A30250	GAA30250	25.0	25	45	121

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm

Nominal-Diameter in mm / Nennmaßbereich in mm

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30
e8	— 14 — 28	— 20 — 38	— 25 — 47	— 32 — 59	— 40 — 73
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○				○		◎		◎				

TANK-POWER END MILLS

E9938 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

GA938 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

PREMIUM HSS-PM, 4 FLUTE SHORT LENGTH
PREMIUM HSS-PM, 4 SCHNEIDEN KURZ

- Designed to machine carbon steels, alloyed steels, stainless steels.
- Recommended for pocketing, cam milling, die sinking and slotting..
- Designed for high speed cutting of difficult - to - cut materials.
- YG-1's new developed TANK-POWER Coating suitable for high speed cutting.

- Geeignet zum Fräsen von Stahl, legiertem Stahl und rostfreier Stahl.
- Empfohlen für Taschenfräsen, Nockenfräsen, Gussformen und Nutenfräsen.
- Geeignet für Hochgeschwindigkeitsfräsen von schwer zu zerspanenden Materialien.
- Neuentwickelte Beschichtung für Hochgeschwindigkeitsfräsen.

YPM | DIN 844 | 4 | 30° | DIN 1835B

P.1156, 1157

Unit : mm

EDP No. UNCOATED	EDP No. TANK-POWER COATED	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
E9938010	GA938010	1.0	6	3	49
E9938020	GA938020	2.0	6	7	51
E9938030	GA938030	3.0	6	8	52
E9938040	GA938040	4.0	6	11	55
E9938050	GA938050	5.0	6	13	57
E9938060	GA938060	6.0	6	13	57
E9938070	GA938070	7.0	10	16	66
E9938080	GA938080	8.0	10	19	69
E9938090	GA938090	9.0	10	19	69
E9938100	GA938100	10.0	10	22	72
E9938120	GA938120	12.0	12	26	83
E9938140	GA938140	14.0	12	26	83
E9938160	GA938160	16.0	16	32	92
E9938180	GA938180	18.0	16	32	92
E9938200	GA938200	20.0	20	38	104
E9938220	GA938220	22.0	20	38	104
E9938250	GA938250	25.0	25	45	121

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~+0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○				○		◎		◎				

TANK-POWER END MILLS

E9A31 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

GAA31 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

PREMIUM HSS-PM, 4 FLUTE LONG LENGTH
PREMIUM HSS-PM, 4 SCHNEIDEN LANG

- Designed to machine carbon steels, alloyed steels, stainless steels.
- Recommended for pocketing, cam milling, die sinking and slotting.
- Designed for high speed cutting of difficult - to - cut materials.
- YG-1's new developed TANK-POWER Coating suitable for high speed cutting.

- Geeignet zum Fräsen von Stahl, legiertem Stahl und rostfreier Stahl.
- Empfohlen für Taschenfräsen, Nockenfräsen, Gussformen und Nutenfräsen.
- Geeignet für Hochgeschwindigkeitsfräsen von schwer zu zerspanenden Materialien.
- Neuentwickelte Beschichtung für Hochgeschwindigkeitsfräsen.

YPM | DIN 844 | 4 | 30° | DIN 1835B

P.1156, 1157

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TANK-POWER COATED				
E9A31020	GAA31020	2.0	6	10	54
E9A31030	GAA31030	3.0	6	12	56
E9A31040	GAA31040	4.0	6	19	63
E9A31050	GAA31050	5.0	6	24	68
E9A31060	GAA31060	6.0	6	24	68
E9A31070	GAA31070	7.0	10	30	80
E9A31080	GAA31080	8.0	10	38	88
E9A31090	GAA31090	9.0	10	38	88
E9A31100	GAA31100	10.0	10	45	95
E9A31120	GAA31120	12.0	12	53	110
E9A31140	GAA31140	14.0	12	53	110
E9A31160	GAA31160	16.0	16	63	123
E9A31180	GAA31180	18.0	16	63	123
E9A31200	GAA31200	20.0	20	75	141
E9A31220	GAA31220	22.0	20	75	141
E9A31250	GAA31250	25.0	25	90	166

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~+0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○				○		◎		◎				

TANK-POWER END MILLS

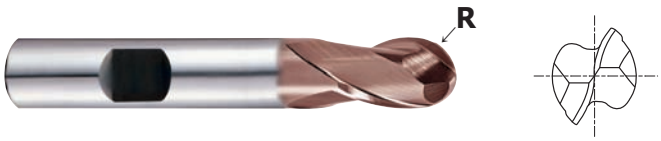
E9940 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

GA940 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

PREMIUM HSS-PM, 2 FLUTE SHORT LENGTH BALL NOSE
PREMIUM HSS-PM, 2 SCHNEIDEN STIRNRADIUS KURZ

- Designed to machine carbon steels, alloyed steels, stainless steels.
- Designed for milling of radius bottom slots, fillets and special contours.
- YG-1's new developed TANK-POWER Coating suitable for high speed cutting.

- Geeignet zum Fräsen von Stahl, legiertem Stahl und rostfreier Stahl.
- Entworfen zum Fräsen von Nuten mit Radien, Rippen und speziellen Konturen.
- Neuentwickelte Beschichtung für Hochgeschwindigkeitsfräsen.



YPM | DIN 327 | 2 | 30° | R ±0.02 | DIN 1835B

P.1158, 1159

Unit : mm

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TANK-POWER COATED	R (±0.02)				
E9940010	GA940010	R0.5	1.0	6	2.5	47
E9940020	GA940020	R1.0	2.0	6	4	48
E9940030	GA940030	R1.5	3.0	6	5	49
E9940040	GA940040	R2.0	4.0	6	7	51
E9940050	GA940050	R2.5	5.0	6	8	52
E9940060	GA940060	R3.0	6.0	6	8	52
E9940070	GA940070	R3.5	7.0	10	10	60
E9940080	GA940080	R4.0	8.0	10	11	61
E9940090	GA940090	R4.5	9.0	10	11	61
E9940100	GA940100	R5.0	10.0	10	13	63
E9940120	GA940120	R6.0	12.0	12	16	73
E9940140	GA940140	R7.0	14.0	12	16	73
E9940160	GA940160	R8.0	16.0	16	19	79
E9940180	GA940180	R9.0	18.0	16	19	79
E9940200	GA940200	R10.0	20.0	20	22	88
E9940220	GA940220	R11.0	22.0	20	22	88
E9940250	GA940250	R12.5	25.0	25	26	102

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○				○		◎		◎				

TANK-POWER END MILLS

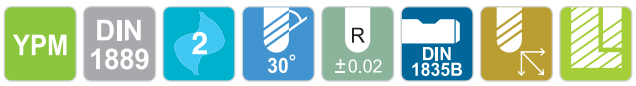
E9A32 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

GAA32 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

PREMIUM HSS-PM, 2 FLUTE LONG LENGTH BALL NOSE
PREMIUM HSS-PM, 2 SCHNEIDEN STIRNRADIUS LANG

- Designed to machine carbon steels, alloyed steels, stainless steels.
- Designed for milling of radius bottom slots, fillets and special contours.
- YG-1's new developed TANK-POWER Coating suitable for high speed cutting.

- Geeignet zum Fräsen von Stahl, legiertem Stahl und rostfreier Stahl.
- Entworfen zum Fräsen von Nuten mit Radien, Rippen und speziellen Konturen.
- Neuentwickelte Beschichtung für Hochgeschwindigkeitsfräsen.



P.1158, 1159

Unit : mm

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TANK-POWER COATED	R (±0.02)				
E9A32020	**GAA32020**	R1.0	**2.0**	6	7	54
E9A32030	**GAA32030**	R1.5	**3.0**	6	8	56
E9A32040	**GAA32040**	R2.0	**4.0**	6	11	63
E9A32050	**GAA32050**	R2.5	**5.0**	6	13	68
E9A32060	**GAA32060**	R3.0	**6.0**	6	13	68
E9A32070	**GAA32070**	R3.5	**7.0**	10	16	80
E9A32080	**GAA32080**	R4.0	**8.0**	10	19	88
E9A32090	**GAA32090**	R4.5	**9.0**	10	19	88
E9A32100	**GAA32100**	R5.0	**10.0**	10	22	95
E9A32120	**GAA32120**	R6.0	**12.0**	12	26	110
E9A32140	**GAA32140**	R7.0	**14.0**	12	26	110
E9A32160	**GAA32160**	R8.0	**16.0**	16	32	123
E9A32180	**GAA32180**	R9.0	**18.0**	16	32	123
E9A32200	**GAA32200**	R10.0	**20.0**	20	38	141
E9A32220	**GAA32220**	R11.0	**22.0**	20	38	141
E9A32250	**GAA32250**	R12.5	**25.0**	25	45	166

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○				○		◎		◎				

TANK-POWER END MILLS

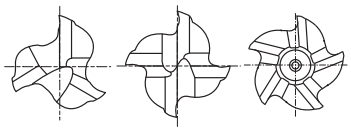
E9941 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

GA941 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

PREMIUM HSS-PM, MULTI FLUTE SHORT LENGTH ROUGHING - FINE
PREMIUM HSS-PM, MULTI SCHNEIDEN KURZ SCHRUPPFRÄSER - FEIN

- Suitable for high-feed roughing milling.
- Designed to machine carbon steels, alloyed steels, stainless steels.
- Providing excellent finished surfaces in many cases.
- YG-1's new developed TANK-POWER Coating suitable for high speed cutting.
- up to Ø20 : center cut, over Ø20 : non center cut

- Geeignet zum HSC - Schrupp - Fräsen.
- Geeignet zum Fräsen von Stahl, legiertem Stahl und rostfreier Stahl.
- Liefert in vielen Fällen exzellent bearbeitete Oberflächen.
- Neuentwickelte Beschichtung für Hochgeschwindigkeitsfräsen.
- Bis D=20mm : Mit Zentrumschneide, über D=20mm : Ohne Zentrumschneide.



up to Ø9 | Ø10 ~ Ø20 | over Ø20

YPM | DIN 844 | FINE | 3-5 | 30° | DIN 1835B | ~Ø20 | Ø22~ P.1160, 1161

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
UNCOATED	TANK-POWER COATED	js12	h6			
E9941060	GA941060	6.0	6	13	57	3
E9941070	GA941070	7.0	10	16	66	3
E9941080	GA941080	8.0	10	19	69	3
E9941090	GA941090	9.0	10	19	69	3
E9941100	GA941100	10.0	10	22	72	4
E9941120	GA941120	12.0	12	26	83	4
E9941140	GA941140	14.0	12	26	83	4
E9941160	GA941160	16.0	16	32	92	4
E9941180	GA941180	18.0	16	32	92	4
E9941200	GA941200	20.0	20	38	104	4
E9941220	GA941220	22.0	20	38	104	5
E9941250	GA941250	25.0	25	45	121	5

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm
Nominal-Diameter in mm / Nennmaßbereich in mm

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
js12	± 50	± 60	± 75	± 90	± 105	± 125
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13	0 — 16

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○				○		◎		◎				

TANK-POWER END MILLS

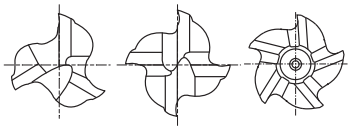
E9A35 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

GAA35 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

PREMIUM HSS-PM, MULTI FLUTE LONG LENGTH ROUGHING - FINE
PREMIUM HSS-PM, MULTI SCHNEIDEN LANG SCHRUPPFRÄSER - FEIN

- ▶ Suitable for high-feed roughing milling.
- ▶ Designed to machine carbon steels, alloyed steels, stainless steels..
- ▶ Providing excellent finished surfaces in many cases.
- ▶ YG-1's new developed TANK-POWER Coating suitable for high speed cutting.
- ▶ up to Ø20 : center cut, over Ø20 : non center cut

- ▶ Geeignet zum HSC - Schrupp - Fräsen.
- ▶ Geeignet zum Fräsen von Stahl, legiertem Stahl und rostfreier Stahl.
- ▶ Liefert in vielen FIlen exzellent bearbeitete Oberflächen.
- ▶ Neuentwickelte Beschichtung für Hochgeschwindigkeitsfräsen.
- ▶ Bis D=20mm : Mit Zentrumschneide, über D=20mm : Ohne Zentrumschneide.



up to Ø9 Ø10 ~ Ø20 over Ø20

YPM | DIN 844 | FINE | 3-5 | 30° | DIN 1835B | ~Ø20 | Ø22~

P.1160, 1161

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
UNCOATED	TANK-POWER COATED	js12	h6			
E9A35060	**GAA35060**	**6.0**	6	24	68	3
E9A35070	**GAA35070**	**7.0**	10	30	80	3
E9A35080	**GAA35080**	**8.0**	10	38	88	3
E9A35090	**GAA35090**	**9.0**	10	38	88	3
E9A35100	**GAA35100**	**10.0**	10	45	95	4
E9A35120	**GAA35120**	**12.0**	12	53	110	4
E9A35140	**GAA35140**	**14.0**	12	53	110	4
E9A35160	**GAA35160**	**16.0**	16	63	123	4
E9A35180	**GAA35180**	**18.0**	16	63	123	4
E9A35200	**GAA35200**	**20.0**	20	75	141	4
E9A35220	**GAA35220**	**22.0**	20	75	141	5
E9A35250	**GAA35250**	**25.0**	25	90	166	5

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in µm / Toleranzwerte in µm						
Nominal-Diameter in mm / Nennmaßbereich in mm						
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
js12	± 50	± 60	± 75	± 90	± 105	± 125
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13	0 — 16

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○				○		◎		◎				

TANK-POWER END MILLS

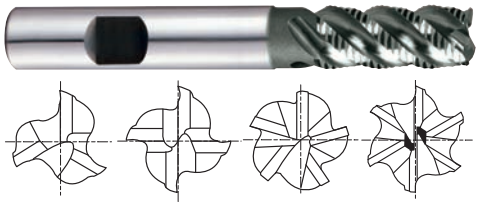
E9A26 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

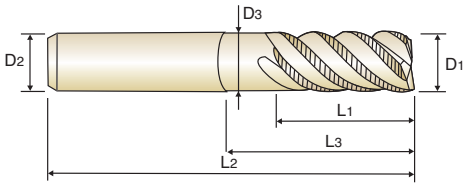
GAA26 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

PREMIUM HSS-PM, MULTI FLUTE 45° HELIX SHORT LENGTH ROUGHING - FINE
PREMIUM HSS-PM, MULTI SCHNEIDEN 45° RECHTSSPIRALE KURZ SCHRUPFRÄSER - FEIN

- High chip removal and minimizing breakages of cutting edges.
- Designed to machine carbon steels, alloyed steels, stainless steels
- YG-1's new developed TANK-POWER Coating suitable for high speed cutting

- Schnelle Spanabfuhr und Minimierung von Schneidkantenausbrüchen
- Geeignet zum Fräsen von Stahl, legiertem Stahl und rostfreier Stahl.
- Neuentwickelte Beschichtung für Hochgeschwindigkeitsfräsen.





YPM | DIN 844 | 3-6 | 45° | DIN 1835B | FINE

P.1162, 1163

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	No. of Flute
UNCOATED	TANK-POWER COATED	D1(js12)	D2(h6)	L1	L3	L2	D3	
E9A26040	GAA26040	4.0	6	11	-	57	-	3
E9A26050	GAA26050	5.0	6	13	-	57	-	4
E9A26060	GAA26060	6.0	6	13	-	57	-	4
E9A26070	GAA26070	7.0	10	16	-	66	-	4
E9A26080	GAA26080	8.0	10	19	-	69	-	4
E9A26090	GAA26090	9.0	10	19	-	69	-	4
E9A26100	GAA26100	10.0	10	22	31	72	9.5	4
E9A26120	GAA26120	12.0	12	26	37	83	11.5	4
E9A26140	GAA26140	14.0	12	26	-	83	-	5
E9A26160	GAA26160	16.0	16	32	44	92	15	5
E9A26180	GAA26180	18.0	16	32	-	92	-	6
E9A26200	GAA26200	20.0	20	38	54	104	19	6
E9A26250	GAA26250	25.0	25	45	63	121	24	6

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛
Nominal-Diameter in ㎜ / Nennmaßbereich in ㎜

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
js12	± 50	± 60	± 75	± 90	± 105	± 125
h6	0 / — 6	0 / — 8	0 / — 9	0 / — 11	0 / — 13	0 / — 16

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○				○		◎		◎				

TANK-POWER END MILLS

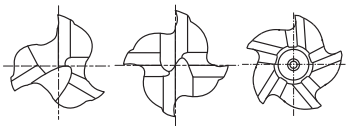
E9A33 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

GAA33 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

PREMIUM HSS-PM, MULTI FLUTE SHORT LENGTH ROUGHING - COARSE
PREMIUM HSS-PM, MULTI SCHNEIDEN KURZ SCHRUPPFRÄSER - GROB

- Suitable for high-feed roughing milling.
- Designed to machine carbon steels, alloyed steels, stainless steels.
- YG-1's new developed TANK-POWER Coating suitable for high speed cutting.
- up to Ø20 : center cut, over Ø20 : non center cut

- Geeignet zum HSC - Schrupp - Fräsen.
- Geeignet zum Fräsen von Stahl, legiertem Stahl und rostfreier Stahl.
- Neuentwickelte Beschichtung für Hochgeschwindigkeitsfräsen.
- Bis D<=20mm : mit Zentrumschnitt, über D<=20mm : Ohne Zentrumschnitt.



up to Ø9 Ø10 ~ Ø20 over Ø20

YPM | DIN 844 | COARSE | 3-5 | 30° | DIN 1835B | ~Ø20 | Ø22~

P.1160, 1161

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
UNCOATED	TANK-POWER COATED	js12	h6			
E9A33060	**GAA33060**	**6.0**	6	13	57	3
E9A33070	**GAA33070**	**7.0**	10	16	66	3
E9A33080	**GAA33080**	**8.0**	10	19	69	3
E9A33090	**GAA33090**	**9.0**	10	19	69	3
E9A33100	**GAA33100**	**10.0**	10	22	72	4
E9A33120	**GAA33120**	**12.0**	12	26	83	4
E9A33140	**GAA33140**	**14.0**	12	26	83	4
E9A33160	**GAA33160**	**16.0**	16	32	92	4
E9A33180	**GAA33180**	**18.0**	16	32	92	4
E9A33200	**GAA33200**	**20.0**	20	38	104	4
E9A33220	**GAA33220**	**22.0**	20	38	104	5
E9A33250	**GAA33250**	**25.0**	25	45	121	5

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm
Nominal-Diameter in mm / Nennmaßbereich in mm

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
js12	± 50	± 60	± 75	± 90	± 105	± 125
h6	0 / — 6	0 / — 8	0 / — 9	0 / — 11	0 / — 13	0 / — 16

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○				○		◎		◎				

TANK-POWER END MILLS

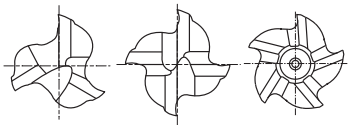
E9A34 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

GAA34 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

PREMIUM HSS-PM, MULTI FLUTE LONG LENGTH ROUGHING - COARSE
PREMIUM HSS-PM, MULTI SCHNEIDEN LANG SCHRUPPFRÄSER - GROB

- Suitable for high-feed roughing milling.
- Designed to machine carbon steels, alloyed steels, stainless steels.
- YG-1's new developed TANK-POWER Coating suitable for high speed cutting.
- up to Ø20 : center cut, over Ø20 : non center cut

- Geeignet zum HSC - Schrupp - Fräsen.
- Geeignet zum Fräsen von Stahl, legiertem Stahl und rostfreier Stahl.
- Neuentwickelte Beschichtung für Hochgeschwindigkeitsfräsen.
- Bis D<=20mm : mit Zentrumschnitt, über D<=20mm : Ohne Zentrumschnitt.



up to Ø9 | Ø10 ~ Ø20 | over Ø20

YPM | DIN 844 | COARSE | 3-5 | 30° | DIN 1835B | ~Ø20 | Ø22~

P.1160, 1161

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
UNCOATED	TANK-POWER COATED	js12	h6			
E9A34060	**GAA34060**	**6.0**	6	24	68	3
E9A34070	**GAA34070**	**7.0**	10	30	80	3
E9A34080	**GAA34080**	**8.0**	10	38	88	3
E9A34090	**GAA34090**	**9.0**	10	38	88	3
E9A34100	**GAA34100**	**10.0**	10	45	95	4
E9A34120	**GAA34120**	**12.0**	12	53	110	4
E9A34140	**GAA34140**	**14.0**	12	53	110	4
E9A34160	**GAA34160**	**16.0**	16	63	123	4
E9A34180	**GAA34180**	**18.0**	16	63	123	4
E9A34200	**GAA34200**	**20.0**	20	75	141	4
E9A34220	**GAA34220**	**22.0**	20	75	141	5
E9A34250	**GAA34250**	**25.0**	25	90	166	5

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛
Nominal-Diameter in mm / Nennmaßbereich in mm

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
js12	± 50	± 60	± 75	± 90	± 105	± 125
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13	0 — 16

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○				○		◎		◎				

TANK-POWER END MILLS

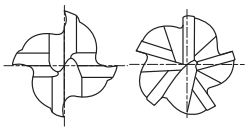
E9E43 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

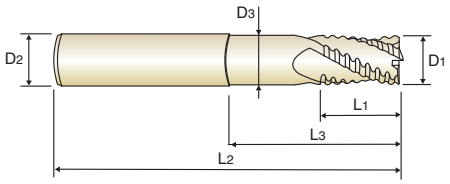
GAE43 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

PREMIUM HSS-PM, MULTI FLUTE ROUGHING WITH NECK - COARSE
PREMIUM HSS-PM, MULTI SCHNEIDEN SCHRUPPFRÄSER MIT ABGESETZTEM SCHAFTTETL - GROB

- ▶ High chip removal and minimizing breakages of cutting edges.
- ▶ Design to machine carbon steels, alloyed steels, stainless steels.
- ▶ YG-1's new developed TANK-POWER Coating suitable for high speed cutting.

- ▶ Schnelle Spanabfuhr und Minimierung von Schneidkantenausbrüchen
- ▶ Geeignet zum Fräsen von Stahl, legiertem Stahl und rostfreier Stahl.
- ▶ Neuentwickelte Beschichtung für Hochgeschwindigkeitsfräsen.





YPM | COARSE | 4&5 | 30° | DIN 1835B

P.1164, 1165

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	No. of Flute
UNCOATED	TANK-POWER COATED	D1(js12)	D2(h6)	L1	L3	L2	D3	
E9E43100	GAE43100	10.0	10	22	69	110	8.5	4
E9E43120	GAE43120	12.0	12	26	78	125	10.5	4
E9E43160	GAE43160	16.0	16	32	87	138	14	4
E9E43200	GAE43200	20.0	20	38	108	160	18	4
E9E43250	GAE43250	25.0	25	45	155	216	23	5

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm						
Nominal-Diameter in mm / Nennmaßbereich in mm						
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
js12	± 50	± 60	± 75	± 90	± 105	± 125
h6	0 / − 6	0 / − 8	0 / − 9	0 / − 11	0 / − 13	0 / − 16

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○				○		◎		◎				

TANK-POWER END MILLS

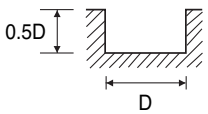
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

PREMIUM HSS-PM, 2 FLUTE - SLOTTING
PREMIUM HSS-PM, 2 SCHNEIDEN - NUTENFRÄSEN

GA936, GAA29 SERIES

MATERIAL	STRUCTURAL STEELS CARBON STEELS				STRUCTURAL STEELS CARBON STEELS CAST IRONS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	7000	115	45	0.008	5900	90	35	0.008	4900	80	30	0.008
3.0	5000	160	45	0.016	4100	135	40	0.016	3350	115	30	0.017
4.0	4300	230	55	0.027	3600	175	45	0.024	3150	160	40	0.025
5.0	3900	255	60	0.033	3250	200	50	0.031	2600	185	40	0.036
6.0	3500	265	65	0.038	2900	210	55	0.036	2300	190	45	0.041
8.0	2600	275	65	0.053	2200	240	55	0.055	1800	200	45	0.056
10.0	2100	300	65	0.071	1800	265	55	0.074	1450	230	45	0.079
12.0	1800	275	70	0.076	1450	240	55	0.083	1150	210	45	0.091
14.0	1600	265	70	0.083	1250	210	55	0.084	1000	195	45	0.098
16.0	1350	265	70	0.098	1150	195	60	0.085	890	180	45	0.101
18.0	1150	240	65	0.104	950	195	55	0.103	790	160	45	0.101
20.0	950	220	60	0.116	780	165	50	0.106	700	150	45	0.107
22.0	840	185	60	0.110	710	150	50	0.106	600	125	40	0.104
25.0	750	155	60	0.103	630	140	50	0.111	490	115	40	0.117

MATERIAL	PREHARDENED STEELS ALLOY STEELS TOOL STEELS				ALLOY STEELS TOOL STEELS AUSTENITIC STAINLESS STEELS			
HARDNESS	HRc30 ~ HRc35				HRc35 ~ HRc40			
STRENGTH	1000 ~ 1100N/mm²				1100 ~ 1300N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	3150	65	20	0.010	2000	40	15	0.010
3.0	2300	80	20	0.017	1800	62	15	0.017
4.0	2000	92	25	0.023	1600	75	20	0.023
5.0	1700	102	25	0.030	1350	75	20	0.028
6.0	1450	110	25	0.038	1150	85	20	0.037
8.0	1150	115	30	0.050	890	85	20	0.048
10.0	900	125	30	0.069	700	102	20	0.073
12.0	740	115	30	0.078	580	85	20	0.073
14.0	630	110	30	0.087	500	80	20	0.080
16.0	560	102	30	0.091	440	80	20	0.091
18.0	500	100	30	0.100	400	75	25	0.094
20.0	440	92	30	0.105	360	70	25	0.097
22.0	400	80	30	0.100	320	55	20	0.086
25.0	360	75	30	0.104	250	52	20	0.104



※ The FEED, in long & long reach types, should be reduced by around 50%

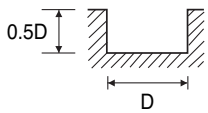
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

PREMIUM HSS-PM, 2 FLUTE - SLOTTING
PREMIUM HSS-PM, 2 SCHNEIDEN - NUTENFRÄSEN

E9936, E9A29 SERIES

MATERIAL	STRUCTURAL STEELS CARBON STEELS				STRUCTURAL STEELS CARBON STEELS CAST IRONS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	4800	70	30	0.007	4000	55	25	0.007	3300	50	20	0.008
3.0	3300	100	30	0.015	2800	85	25	0.015	2200	75	20	0.017
4.0	2900	140	35	0.024	2400	110	30	0.023	2100	100	25	0.024
5.0	2600	160	40	0.031	2200	125	35	0.028	1800	115	30	0.032
6.0	2300	160	45	0.035	2000	135	40	0.034	1600	120	30	0.038
8.0	1800	170	45	0.047	1500	150	40	0.050	1200	125	30	0.052
10.0	1400	180	45	0.064	1200	165	40	0.069	1000	140	30	0.070
12.0	1200	170	45	0.071	1000	150	40	0.075	800	130	30	0.081
14.0	1100	160	50	0.073	850	140	35	0.082	680	120	30	0.088
16.0	900	160	45	0.089	750	135	40	0.090	600	110	30	0.092
18.0	800	150	45	0.094	640	120	35	0.094	530	100	30	0.094
20.0	640	130	40	0.102	540	100	35	0.093	480	95	30	0.099
22.0	570	110	40	0.096	480	90	35	0.094	400	75	30	0.094
25.0	510	95	40	0.093	430	85	35	0.099	340	70	25	0.103

MATERIAL	PREHARDENED STEELS ALLOY STEELS TOOL STEELS				ALLOY STEELS TOOL STEELS AUSTENITIC STAINLESS STEELS			
HARDNESS	HRc30 ~ HRc35				HRc35 ~ HRc40			
STRENGTH	1000 ~ 1100N/mm²				1100 ~ 1300N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	2100	40	15	0.010	1300	25	10	0.010
3.0	1600	50	15	0.016	1200	40	10	0.017
4.0	1300	60	15	0.023	1050	45	15	0.021
5.0	1100	65	15	0.030	900	45	15	0.025
6.0	1000	65	20	0.033	750	55	15	0.037
8.0	750	70	20	0.047	600	55	15	0.046
10.0	600	80	20	0.067	480	65	15	0.068
12.0	500	70	20	0.070	400	55	15	0.069
14.0	430	65	20	0.076	340	50	15	0.074
16.0	380	65	20	0.086	300	50	15	0.083
18.0	340	55	20	0.081	270	45	15	0.083
20.0	300	55	20	0.092	240	40	15	0.083
22.0	270	50	20	0.093	210	35	15	0.083
25.0	240	45	20	0.094	175	30	15	0.086



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

TANK-POWER END MILLS

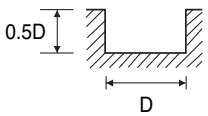
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

PREMIUM HSS-PM, 3 FLUTE - SLOTTING
PREMIUM HSS-PM, 3 SCHNEIDEN - NUTENFRÄSEN

GA942, GAA30 SERIES

MATERIAL	STRUCTURAL STEELS CARBON STEELS				STRUCTURAL STEELS CARBON STEELS CAST IRONS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	6500	70	40	0.004	5500	55	35	0.003	4800	45	30	0.003
3.0	4600	102	45	0.007	3900	85	35	0.007	3350	52	30	0.005
4.0	4300	140	55	0.011	3600	115	45	0.011	3000	80	40	0.009
5.0	3800	160	60	0.014	3200	130	50	0.014	2600	92	40	0.012
6.0	3350	230	65	0.023	2800	190	55	0.023	2300	140	45	0.020
8.0	2600	240	65	0.031	2200	210	55	0.032	1800	150	45	0.028
10.0	100	250	5	0.833	1800	210	55	0.039	1400	160	45	0.038
12.0	1800	275	70	0.051	1450	230	55	0.053	1200	170	45	0.047
14.0	1600	250	70	0.052	1350	220	60	0.054	1000	160	45	0.053
16.0	1350	240	70	0.059	1150	210	60	0.061	890	150	45	0.056
18.0	1150	240	65	0.070	890	190	50	0.071	790	150	45	0.063
20.0	950	230	60	0.081	790	190	50	0.080	700	140	45	0.067
22.0	840	230	60	0.091	730	195	50	0.089	600	150	40	0.083
25.0	750	240	60	0.107	630	210	50	0.111	490	160	40	0.109

MATERIAL	PREHARDENED STEELS ALLOY STEELS TOOL STEELS				ALLOY STEELS TOOL STEELS AUSTENITIC STAINLESS STEELS			
HARDNESS	HRc30 ~ HRc35				HRc35 ~ HRc40			
STRENGTH	1000 ~ 1100N/mm²				1100 ~ 1300N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	3000	35	20	0.004	1900	28	10	0.005
3.0	2200	45	20	0.007	1800	45	15	0.008
4.0	1900	52	25	0.009	1500	55	20	0.012
5.0	1700	62	25	0.012	1300	55	20	0.014
6.0	1450	92	25	0.021	1100	75	20	0.023
8.0	1150	102	30	0.030	890	85	20	0.032
10.0	890	115	30	0.043	680	92	20	0.045
12.0	740	115	30	0.052	580	92	20	0.053
14.0	660	110	30	0.056	500	85	20	0.057
16.0	560	102	30	0.061	440	85	20	0.064
18.0	500	95	30	0.063	400	80	25	0.067
20.0	440	92	30	0.070	360	80	25	0.074
22.0	400	95	30	0.079	315	85	20	0.090
25.0	360	102	30	0.094	250	85	20	0.113



※ The FEED, in long & long reach types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

TANK-POWER END MILLS

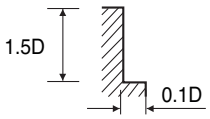
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

PREMIUM HSS-PM, 3 FLUTE - SIDE CUTTING
PREMIUM HSS-PM, 3 SCHNEIDEN - SEITENFRÄSEN

GA942, GAA30 SERIES

MATERIAL	STRUCTURAL STEELS CARBON STEELS				STRUCTURAL STEELS CARBON STEELS CAST IRONS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	8200	100	50	0.004	6800	80	45	0.004	5500	65	35	0.004
3.0	5800	145	55	0.008	4800	120	45	0.008	3800	75	35	0.007
4.0	5200	185	65	0.012	4400	155	55	0.012	3500	110	45	0.010
5.0	4700	210	75	0.015	4000	175	65	0.015	2900	125	45	0.014
6.0	4200	300	80	0.024	3600	250	70	0.023	2600	190	50	0.024
8.0	3200	330	80	0.034	2600	270	65	0.035	2000	200	50	0.033
10.0	2500	350	80	0.047	2100	290	65	0.046	1600	210	50	0.044
12.0	2100	350	80	0.056	1800	300	70	0.056	1400	230	55	0.055
14.0	1800	350	80	0.065	1500	285	65	0.063	1150	210	50	0.061
16.0	1600	330	80	0.069	1300	275	65	0.071	1000	200	50	0.067
18.0	1350	310	75	0.077	1150	265	65	0.077	890	195	50	0.073
20.0	1250	300	80	0.080	1050	255	65	0.081	780	190	50	0.081
22.0	1150	310	80	0.090	950	265	65	0.093	740	195	50	0.088
25.0	1000	330	80	0.110	840	275	65	0.109	630	210	50	0.111

MATERIAL	PREHARDENED STEELS ALLOY STEELS TOOL STEELS				ALLOY STEELS TOOL STEELS AUSTENITIC STAINLESS STEELS			
HARDNESS	HRc30 ~ HRc35				HRc35 ~ HRc40			
STRENGTH	1000 ~ 1100N/mm²				1100 ~ 1300N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	3800	50	25	0.004	2400	40	15	0.006
3.0	2700	65	25	0.008	2200	65	20	0.010
4.0	2300	75	30	0.011	1900	75	25	0.013
5.0	2000	85	30	0.014	1700	75	25	0.015
6.0	1800	125	35	0.023	1500	100	30	0.022
8.0	1300	140	35	0.036	1100	115	30	0.035
10.0	1000	150	30	0.050	890	125	30	0.047
12.0	900	150	35	0.056	740	125	30	0.056
14.0	780	140	35	0.060	630	120	30	0.063
16.0	660	140	35	0.071	550	115	30	0.070
18.0	580	130	35	0.075	500	110	30	0.073
20.0	520	125	35	0.080	440	110	30	0.083
22.0	470	130	30	0.092	400	110	30	0.092
25.0	420	135	35	0.107	360	120	30	0.111



※ The FEED, in long & long reach types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

TANK-POWER END MILLS

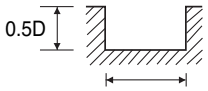
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

PREMIUM HSS-PM, 3 FLUTE - SLOTTING
PREMIUM HSS-PM, 3 SCHNEIDEN - NUTENFRÄSEN

E9942, E9A30 SERIES

MATERIAL	STRUCTURAL STEELS CARBON STEELS				STRUCTURAL STEELS CARBON STEELS CAST IRONS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	4400	45	30	0.003	3700	35	25	0.003	3300	30	20	0.003
3.0	3150	65	30	0.007	2650	55	25	0.007	3200	30	30	0.003
4.0	2900	85	35	0.010	2400	70	30	0.010	2100	50	25	0.008
5.0	2600	100	40	0.013	2150	80	35	0.012	1800	55	30	0.010
6.0	2300	145	45	0.021	1900	120	35	0.021	1600	85	30	0.018
8.0	1800	150	45	0.028	1500	130	40	0.029	1200	95	30	0.026
10.0	1400	155	45	0.037	1200	130	40	0.036	960	100	30	0.035
12.0	1200	170	45	0.047	1000	145	40	0.048	820	105	30	0.043
14.0	1070	155	45	0.048	930	135	40	0.048	680	100	30	0.049
16.0	930	150	45	0.054	780	130	40	0.056	610	95	30	0.052
18.0	780	150	45	0.064	610	120	35	0.066	530	95	30	0.060
20.0	640	145	40	0.076	530	120	35	0.075	480	85	30	0.059
22.0	570	145	40	0.085	500	120	35	0.080	410	95	30	0.077
25.0	520	150	40	0.096	430	130	35	0.101	340	100	25	0.098

MATERIAL	PREHARDENED STEELS ALLOY STEELS TOOL STEELS				ALLOY STEELS TOOL STEELS AUSTENITIC STAINLESS STEELS			
HARDNESS	HRc30 ~ HRc35				HRc35 ~ HRc40			
STRENGTH	1000 ~ 1100N/mm²				1100 ~ 1300N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	2100	20	15	0.003	1300	18	10	0.005
3.0	1500	30	15	0.007	1200	28	10	0.008
4.0	1300	35	15	0.009	1000	35	15	0.012
5.0	1100	40	15	0.012	890	35	15	0.013
6.0	1000	55	20	0.018	750	45	15	0.020
8.0	780	65	20	0.028	610	55	15	0.030
10.0	610	70	20	0.038	460	58	15	0.042
12.0	500	70	20	0.047	395	58	15	0.049
14.0	450	65	20	0.048	345	55	15	0.053
16.0	380	65	20	0.057	300	55	15	0.061
18.0	350	60	20	0.057	270	50	15	0.062
20.0	300	55	20	0.061	245	50	15	0.068
22.0	270	60	20	0.074	215	55	15	0.085
25.0	240	65	20	0.090	170	55	15	0.108



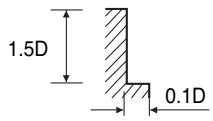
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

PREMIUM HSS-PM, 3 FLUTE - SIDE CUTTING
PREMIUM HSS-PM, 3 SCHNEIDEN - SEITENFRÄSEN

E9942, E9A30 SERIES

MATERIAL	STRUCTURAL STEELS CARBON STEELS				STRUCTURAL STEELS CARBON STEELS CAST IRONS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	5600	60	35	0.004	4600	50	30	0.004	3700	40	25	0.004
3.0	3900	90	35	0.008	3300	75	30	0.008	1600	45	15	0.009
4.0	3600	115	45	0.011	3000	95	40	0.011	2400	68	30	0.009
5.0	3200	130	50	0.014	2700	110	40	0.014	2000	80	30	0.013
6.0	2800	190	55	0.023	2400	155	45	0.022	1800	120	35	0.022
8.0	2100	210	55	0.033	1800	170	45	0.031	1350	125	35	0.031
10.0	1700	210	55	0.041	1400	180	45	0.043	1100	130	35	0.039
12.0	1400	220	55	0.052	1200	185	45	0.051	930	145	35	0.052
14.0	1200	215	55	0.060	1000	180	45	0.060	780	130	35	0.056
16.0	1100	210	55	0.064	890	170	45	0.064	680	125	35	0.061
18.0	930	195	55	0.070	790	165	45	0.070	610	120	35	0.066
20.0	860	185	55	0.072	720	155	45	0.072	540	120	35	0.074
22.0	790	195	55	0.082	650	165	45	0.085	500	120	35	0.080
25.0	680	210	55	0.103	580	170	45	0.098	430	130	35	0.101

MATERIAL	PREHARDENED STEELS ALLOY STEELS TOOL STEELS				ALLOY STEELS TOOL STEELS AUSTENITIC STAINLESS STEELS			
HARDNESS	HRc30 ~ HRc35				HRc35 ~ HRc40			
STRENGTH	1000 ~ 1100N/mm²				1100 ~ 1300N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	2600	32	15	0.004	1600	25	10	0.005
3.0	1800	40	15	0.007	1500	40	15	0.009
4.0	1600	45	20	0.009	1300	45	15	0.012
5.0	1400	55	20	0.013	1100	45	15	0.014
6.0	1200	80	25	0.022	1000	65	20	0.022
8.0	890	85	20	0.032	710	70	20	0.033
10.0	710	95	20	0.045	610	80	20	0.044
12.0	610	95	25	0.052	500	80	20	0.053
14.0	540	90	25	0.056	430	75	20	0.058
16.0	440	85	20	0.064	370	70	20	0.063
18.0	390	80	20	0.068	340	68	20	0.067
20.0	360	80	25	0.074	300	68	20	0.076
22.0	320	80	20	0.083	270	68	20	0.084
25.0	290	85	25	0.098	240	75	20	0.104



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

TANK-POWER END MILLS

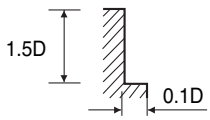
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

PREMIUM HSS-PM, 4 FLUTE - SIDE CUTTING
PREMIUM HSS-PM, 4 SCHNEIDEN - SEITENFRÄSEN

GA938, GAA31 SERIES

MATERIAL	STRUCTURAL STEELS CARBON STEELS				STRUCTURAL STEELS CARBON STEELS CAST IRONS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	9200	290	60	0.008	8400	240	55	0.007	6100	170	40	0.007
3.0	6600	410	60	0.016	6000	350	55	0.015	4400	250	40	0.014
4.0	5300	480	65	0.023	4700	400	60	0.021	3600	300	45	0.021
5.0	4400	510	70	0.029	4000	420	65	0.026	2900	320	45	0.028
6.0	3900	540	75	0.035	3600	450	70	0.031	2600	330	50	0.032
8.0	3100	570	80	0.046	2600	480	65	0.046	2000	370	50	0.046
10.0	2300	630	70	0.068	2100	530	65	0.063	1600	380	50	0.059
12.0	2000	570	75	0.071	1800	480	70	0.067	1400	370	55	0.066
14.0	1800	550	80	0.076	1600	460	70	0.072	1100	350	50	0.080
16.0	1600	510	80	0.080	1400	430	70	0.077	1000	340	50	0.085
18.0	1500	460	85	0.077	1250	400	70	0.080	890	310	50	0.087
20.0	1250	440	80	0.088	1050	370	65	0.088	780	275	50	0.088
22.0	1050	410	75	0.098	950	320	65	0.084	680	255	45	0.094
25.0	1000	370	80	0.093	840	305	65	0.091	630	230	50	0.091

MATERIAL	PREHARDENED STEELS ALLOY STEELS TOOL STEELS				ALLOY STEELS TOOL STEELS AUSTENITIC STAINLESS STEELS			
HARDNESS	HRc30 ~ HRc35				HRc35 ~ HRc40			
STRENGTH	1000 ~ 1100N/mm²				1100 ~ 1300N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	4100	125	25	0.008	3300	85	20	0.006
3.0	2700	180	25	0.017	2400	125	25	0.013
4.0	2300	200	30	0.022	2000	150	25	0.019
5.0	2000	220	30	0.028	1700	160	25	0.024
6.0	1800	230	35	0.032	1450	180	25	0.031
8.0	1400	240	35	0.043	1150	185	30	0.040
10.0	1000	265	30	0.066	890	200	30	0.056
12.0	890	240	35	0.067	720	185	25	0.064
14.0	790	230	35	0.073	630	170	30	0.067
16.0	680	220	35	0.081	550	165	30	0.075
18.0	630	195	35	0.077	500	150	30	0.075
20.0	530	175	35	0.083	440	140	30	0.080
22.0	470	160	30	0.085	400	130	30	0.081
25.0	420	150	35	0.089	360	125	30	0.087



※ The FEED, in long & long reach types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

TANK-POWER END MILLS

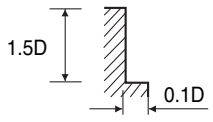
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

PREMIUM HSS-PM, 4 FLUTE - SIDE CUTTING
PREMIUM HSS-PM, 4 SCHNEIDEN - SEITENFRÄSEN

E9938, E9A31 SERIES

MATERIAL	STRUCTURAL STEELS CARBON STEELS				STRUCTURAL STEELS CARBON STEELS CAST IRONS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	6300	180	40	0.007	5700	150	35	0.007	4000	110	25	0.007
3.0	4500	260	40	0.014	4000	210	40	0.013	3000	155	30	0.013
4.0	3600	300	45	0.021	3200	250	40	0.020	2400	190	30	0.020
5.0	3000	310	45	0.026	2700	265	40	0.025	2000	195	30	0.024
6.0	2600	330	50	0.032	2400	275	45	0.029	1800	205	35	0.028
8.0	2100	360	55	0.043	1800	300	45	0.042	1400	230	35	0.041
10.0	1600	390	50	0.061	1400	330	45	0.059	1100	235	35	0.053
12.0	1300	360	50	0.069	1200	300	45	0.063	900	230	35	0.064
14.0	1200	340	55	0.071	1100	285	50	0.065	780	215	35	0.069
16.0	1100	310	55	0.070	900	265	45	0.074	680	205	35	0.075
18.0	1000	280	55	0.070	850	250	50	0.074	600	190	35	0.079
20.0	850	270	55	0.079	710	230	45	0.081	540	175	35	0.081
22.0	710	260	50	0.092	640	200	45	0.078	460	160	30	0.087
25.0	680	230	55	0.085	570	190	45	0.083	430	140	35	0.081

MATERIAL	PREHARDENED STEELS ALLOY STEELS TOOL STEELS				ALLOY STEELS TOOL STEELS AUSTENITIC STAINLESS STEELS			
HARDNESS	HRc30 ~ HRc35				HRc35 ~ HRc40			
STRENGTH	1000 ~ 1100N/mm²				1100 ~ 1300N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	2800	75	20	0.007	2300	55	15	0.006
3.0	2000	110	20	0.014	1650	80	15	0.012
4.0	1600	125	20	0.020	1350	95	15	0.018
5.0	1400	135	20	0.024	1125	100	20	0.022
6.0	1200	140	25	0.029	975	110	20	0.028
8.0	900	150	25	0.042	750	115	20	0.038
10.0	710	165	20	0.058	600	125	20	0.052
12.0	600	150	25	0.063	495	115	20	0.058
14.0	530	140	25	0.066	430	105	20	0.061
16.0	450	135	25	0.075	375	100	20	0.067
18.0	430	120	25	0.070	340	95	20	0.070
20.0	360	110	25	0.076	300	85	20	0.071
22.0	320	100	20	0.078	270	80	20	0.074
25.0	280	95	20	0.085	240	80	20	0.083



※ The FEED, in long & long reach types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

TANK-POWER END MILLS

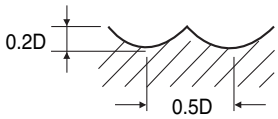
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

PREMIUM HSS-PM, 2 FLUTE BALL NOSE - PROFILING
PREMIUM HSS-PM, 2 SCHNEIDEN STIRNRADIUS - PROFILFRÄSEN

GA940, GAA32 SERIES

MATERIAL	STRUCTURAL STEELS CARBON STEELS				STRUCTURAL STEELS CARBON STEELS CAST IRONS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R1.5 × 3.0	7300	340	70	0.023	5800	230	55	0.020	3900	125	35	0.016
R2.0 × 4.0	6000	430	75	0.036	4620	290	60	0.031	3000	160	40	0.027
R3.0 × 6.0	4400	480	85	0.055	3500	320	65	0.046	2300	180	45	0.039
R4.0 × 8.0	3350	530	85	0.079	2600	350	65	0.067	1800	200	45	0.056
R5.0 × 10.0	2750	600	85	0.109	2100	400	65	0.095	1400	230	45	0.082
R6.0 × 12.0	2300	530	85	0.115	1800	350	70	0.097	1200	200	45	0.083
R8.0 × 16.0	1700	480	85	0.141	1300	320	65	0.123	890	180	45	0.101
R10.0 × 20.0	1350	420	85	0.156	1000	280	65	0.140	680	150	45	0.110
R12.5 × 25.0	950	310	75	0.163	740	210	60	0.142	470	115	35	0.122

MATERIAL	PREHARDENED STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R1.5 × 3.0	2000	55	20	0.014	2200	60	20	0.014
R2.0 × 4.0	1600	75	20	0.023	1760	80	20	0.023
R3.0 × 6.0	1200	85	25	0.035	1320	95	25	0.036
R4.0 × 8.0	890	85	20	0.048	980	95	25	0.048
R5.0 × 10.0	680	102	20	0.075	750	110	25	0.073
R6.0 × 12.0	580	85	20	0.073	640	95	25	0.074
R8.0 × 16.0	440	80	20	0.091	490	90	25	0.092
R10.0 × 20.0	360	70	25	0.097	400	80	25	0.100
R12.5 × 25.0	250	52	20	0.104	275	55	20	0.100



※ The FEED, in long & long reach types, should be reduced by around 50%

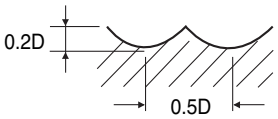
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

PREMIUM HSS-PM, 2 FLUTE BALL NOSE - PROFILING
PREMIUM HSS-PM, 2 SCHNEIDEN STIRNRADIUS - PROFILFRÄSEN

E9940, E9A32 SERIES

MATERIAL	STRUCTURAL STEELS CARBON STEELS				STRUCTURAL STEELS CARBON STEELS CAST IRONS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R1.5 × 3.0	5000	210	45	0.021	3900	140	35	0.018	2600	80	25	0.015
R2.0 × 4.0	4000	260	50	0.033	3100	180	40	0.029	2100	100	25	0.024
R3.0 × 6.0	3000	300	55	0.050	2300	200	45	0.043	1600	110	30	0.034
R4.0 × 8.0	2300	330	60	0.072	1800	220	45	0.061	1200	125	30	0.052
R5.0 × 10.0	1800	370	55	0.103	1400	250	45	0.089	1000	140	30	0.070
R6.0 × 12.0	1500	330	55	0.110	1200	220	45	0.092	820	125	30	0.076
R8.0 × 16.0	1100	300	55	0.136	900	200	45	0.111	600	110	30	0.092
R10.0 × 20.0	930	260	60	0.140	710	170	45	0.120	480	95	30	0.099
R12.5 × 25.0	640	190	50	0.148	500	130	40	0.130	340	70	25	0.103

MATERIAL	PREHARDENED STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R1.5 × 3.0	1300	35	10	0.013	1430	40	15	0.014
R2.0 × 4.0	1000	45	15	0.023	1100	55	15	0.025
R3.0 × 6.0	820	55	15	0.034	900	65	15	0.036
R4.0 × 8.0	600	55	15	0.046	660	65	15	0.049
R5.0 × 10.0	480	65	15	0.068	530	80	15	0.075
R6.0 × 12.0	400	55	15	0.069	440	65	15	0.074
R8.0 × 16.0	300	50	15	0.083	330	60	15	0.091
R10.0 × 20.0	240	45	15	0.094	265	55	15	0.104
R12.5 × 25.0	175	30	15	0.086	195	35	15	0.090



※ The FEED, in long & long reach types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

TANK-POWER END MILLS

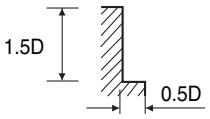
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

PREMIUM HSS-PM, MULTI FLUTE ROUGHING - SIDE CUTTING
PREMIUM HSS-PM, MULTI SCHNEIDEN SCHRUPFRÄSER - SEITENFRÄSEN

GA941, GAA35, GAA33, GAA34 SERIES

MATERIAL	STRUCTURAL STEELS CARBON STEELS				STRUCTURAL STEELS CARBON STEELS CAST IRONS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	2800	230	55	0.027	2200	180	40	0.027	1600	115	30	0.024
8.0	2400	290	60	0.040	1900	230	50	0.040	1400	160	35	0.038
10.0	1900	415	60	0.055	1500	315	45	0.053	1050	195	35	0.046
12.0	1600	415	60	0.065	1200	330	45	0.069	900	230	35	0.064
14.0	1400	415	60	0.074	1050	330	45	0.079	760	230	35	0.076
16.0	1200	415	60	0.086	950	330	50	0.087	660	230	35	0.087
18.0	1050	415	60	0.099	890	330	50	0.093	610	230	35	0.094
20.0	960	425	60	0.111	760	330	50	0.109	530	230	35	0.108
22.0	890	425	60	0.096	650	330	45	0.102	470	230	30	0.098
25.0	790	415	60	0.105	600	315	45	0.105	420	220	35	0.105

MATERIAL	PREHARDENED STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	1300	105	25	0.027	1450	110	25	0.025
8.0	1050	125	25	0.040	1200	140	30	0.039
10.0	890	160	30	0.045	950	170	30	0.045
12.0	740	180	30	0.061	800	205	30	0.064
14.0	630	180	30	0.071	690	205	30	0.074
16.0	550	180	30	0.082	600	205	30	0.085
18.0	490	180	30	0.092	550	205	30	0.093
20.0	440	180	30	0.102	480	205	30	0.107
22.0	400	180	30	0.090	430	205	30	0.095
25.0	360	180	30	0.100	390	200	30	0.103



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RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

TANK-POWER END MILLS

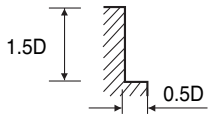
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

PREMIUM HSS-PM, MULTI FLUTE ROUGHING - SIDE CUTTING
PREMIUM HSS-PM, MULTI SCHNEIDEN SCHRUPFRÄSER - SEITENFRÄSEN

E9941, E9A35, E9A33, E9A34 SERIES

MATERIAL	STRUCTURAL STEELS CARBON STEELS				STRUCTURAL STEELS CARBON STEELS CAST IRONS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	1900	140	35	0.018	1500	110	30	0.018	1050	70	20	0.017
8.0	1600	180	40	0.028	1300	140	35	0.027	900	100	25	0.028
10.0	1300	260	40	0.050	1000	195	30	0.049	710	125	20	0.044
12.0	1100	260	40	0.059	820	205	30	0.063	600	140	25	0.058
14.0	930	260	40	0.056	710	205	30	0.058	510	140	20	0.055
16.0	820	260	40	0.063	640	205	30	0.064	450	140	25	0.062
18.0	710	260	40	0.061	610	205	35	0.056	410	140	25	0.057
20.0	660	265	40	0.067	510	205	30	0.067	360	140	25	0.065
22.0	610	265	40	0.072	440	205	30	0.078	320	140	20	0.073
25.0	540	260	40	0.080	400	195	30	0.081	280	135	20	0.080

MATERIAL	PREHARDENED STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	900	65	15	0.018	1020	80	20	0.020
8.0	740	80	20	0.027	840	100	20	0.030
10.0	600	100	20	0.042	660	120	20	0.045
12.0	500	110	20	0.055	560	145	20	0.065
14.0	430	110	20	0.051	480	145	20	0.060
16.0	370	110	20	0.059	420	145	20	0.069
18.0	330	110	20	0.056	380	145	20	0.064
20.0	300	110	20	0.061	330	145	20	0.073
22.0	270	110	20	0.068	300	145	20	0.081
25.0	240	110	20	0.076	270	140	20	0.086



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RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

TANK-POWER END MILLS

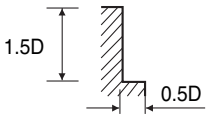
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

PREMIUM HSS-PM, MULTI FLUTE ROUGHING - SIDE CUTTING
PREMIUM HSS-PM, MULTI SCHNEIDEN SCHRUPFRÄSER - SEITENFRÄSEN

GAA26 SERIES

MATERIAL	STRUCTURAL STEELS CARBON STEELS				STRUCTURAL STEELS CARBON STEELS CAST IRONS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	2800	230	55	0.021	2200	180	40	0.020	1600	115	30	0.018
8.0	2400	290	60	0.030	1900	230	50	0.030	1400	160	35	0.029
10.0	1900	415	60	0.055	1500	315	45	0.053	1050	195	35	0.046
12.0	1600	415	60	0.065	1200	330	45	0.069	900	230	35	0.064
14.0	1400	415	60	0.059	1050	330	45	0.063	760	230	35	0.061
16.0	1200	415	60	0.069	950	330	50	0.069	660	230	35	0.070
18.0	1050	415	60	0.066	890	330	50	0.062	610	230	35	0.063
20.0	960	425	60	0.074	760	330	50	0.072	530	230	35	0.072
22.0	890	425	60	0.080	650	330	45	0.085	470	230	30	0.082
25.0	790	415	60	0.088	600	315	45	0.088	420	220	35	0.087

MATERIAL	PREHARDENED STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	1300	105	25	0.020	1450	110	25	0.019
8.0	1050	125	25	0.030	1200	140	30	0.029
10.0	890	160	30	0.045	950	170	30	0.045
12.0	740	180	30	0.061	800	205	30	0.064
14.0	630	180	30	0.057	690	205	30	0.059
16.0	550	180	30	0.065	600	205	30	0.068
18.0	490	180	30	0.061	550	205	30	0.062
20.0	440	180	30	0.068	480	205	30	0.071
22.0	400	180	30	0.075	430	205	30	0.079
25.0	360	180	30	0.083	390	200	30	0.085



※ The FEED, in long & long reach types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

TANK-POWER END MILLS

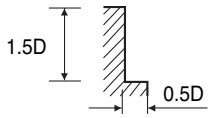
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

PREMIUM HSS-PM, MULTI FLUTE ROUGHING - SIDE CUTTING
PREMIUM HSS-PM, MULTI SCHNEIDEN SCHRUPFRÄSER - SEITENFRÄSEN

E9A26 SERIES

MATERIAL	STRUCTURAL STEELS CARBON STEELS				STRUCTURAL STEELS CARBON STEELS CAST IRONS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	1900	140	35	0.018	1500	110	30	0.018	1050	70	20	0.017
8.0	1600	180	40	0.028	1300	140	35	0.027	900	100	25	0.028
10.0	1300	260	40	0.050	1000	195	30	0.049	710	125	20	0.044
12.0	1100	260	40	0.059	820	205	30	0.063	600	140	25	0.058
14.0	930	260	40	0.056	710	205	30	0.058	510	140	20	0.055
16.0	820	260	40	0.063	640	205	30	0.064	450	140	25	0.062
18.0	710	260	40	0.061	610	205	35	0.056	410	140	25	0.057
20.0	660	265	40	0.067	510	205	30	0.067	360	140	25	0.065
22.0	610	265	40	0.072	440	205	30	0.078	320	140	20	0.073
25.0	540	260	40	0.080	400	195	30	0.081	280	135	20	0.080

MATERIAL	PREHARDENED STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	900	65	15	0.018	1020	80	20	0.020
8.0	740	80	20	0.027	840	100	20	0.030
10.0	600	100	20	0.042	660	120	20	0.045
12.0	500	110	20	0.055	560	145	20	0.065
14.0	430	110	20	0.051	480	145	20	0.060
16.0	370	110	20	0.059	420	145	20	0.069
18.0	330	110	20	0.056	380	145	20	0.064
20.0	300	110	20	0.061	330	145	20	0.073
22.0	270	110	20	0.068	300	145	20	0.081
25.0	240	110	20	0.076	270	140	20	0.086



※ The FEED, in long & long reach types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

TANK-POWER END MILLS

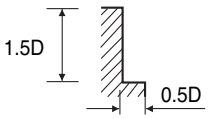
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

PREMIUM HSS-PM, MULTI FLUTE ROUGHING WITH NECK - SIDE CUTTING
PREMIUM HSS-PM, MULTI SCHNEIDEN SCHRUPFRÄSER mit ABGESETZTEM SCHAFTTETL - SEITENFRÄSEN

E9E43 SERIES

MATERIAL	STRUCTURAL STEELS CARBON STEELS				STRUCTURAL STEELS CARBON STEELS CAST IRONS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
10.0	1300	220	41	0.042	1000	165	32	0.041	710	105	23	0.037
12.0	1100	220	41	0.050	820	175	32	0.053	600	120	23	0.050
16.0	820	220	41	0.067	640	175	32	0.068	450	120	23	0.067
20.0	660	225	41	0.085	510	175	32	0.086	360	120	23	0.083
25.0	540	220	41	0.081	400	165	32	0.083	280	115	23	0.082

MATERIAL	PREHARDENED STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
10.0	600	85	19	0.035	660	100	21	0.038
12.0	500	95	19	0.048	560	125	21	0.058
16.0	370	95	19	0.064	420	125	21	0.074
20.0	300	95	19	0.079	330	125	21	0.095
25.0	240	95	19	0.079	270	120	21	0.089



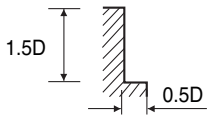
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

PREMIUM HSS-PM, MULTI FLUTE ROUGHING WITH NECK - SIDE CUTTING
PREMIUM HSS-PM, MULTI SCHNEIDEN SCHRUPFRÄSER mit ABGESETZTEM SCHAFTTETL - SEITENFRÄSEN

G9E43 SERIES

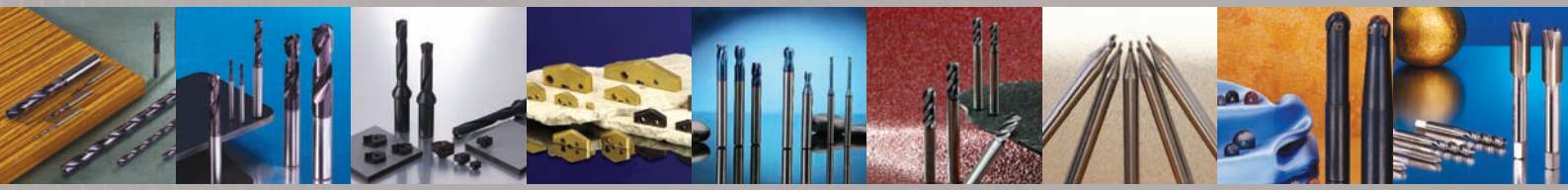
MATERIAL	STRUCTURAL STEELS CARBON STEELS				STRUCTURAL STEELS CARBON STEELS CAST IRONS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
10.0	1900	355	60	0.047	1500	270	47	0.045	1050	165	33	0.039
12.0	1600	355	60	0.055	1200	280	47	0.058	900	195	33	0.054
16.0	1200	355	60	0.074	950	280	47	0.074	660	195	33	0.074
20.0	960	360	60	0.094	760	280	47	0.092	530	195	33	0.092
25.0	790	355	60	0.090	600	270	47	0.090	420	185	33	0.088

MATERIAL	PREHARDENED STEELS ALLOY STEELS TOOL STEELS				STAINLESS STEELS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
10.0	890	135	28	0.038	950	145	30	0.038
12.0	740	155	28	0.052	800	175	30	0.055
16.0	550	155	28	0.070	600	175	30	0.073
20.0	440	155	28	0.088	480	175	30	0.091
25.0	360	155	28	0.086	390	170	30	0.087



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

Global Cutting Tool Leader **YG-1**



HSS

Being the best through innovation

HSS

HSS FRÄSER

- General Purpose, Non-coated, Any Coating Available
- Unbeschichtet für allgemeinen Einsatz. Jegliche Beschichtung möglich

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
E2570		HSSCo8, 2 FLUTE SHORT LENGTH HSSCo8, 2 SCHNEIDEN KURZ	D1.0	D40.0	1174
E2571		HSSCo8, 2 FLUTE LONG LENGTH HSSCo8, 2 SCHNEIDEN LANG	D1.5	D40.0	1177
E2510		HSSCo8, 2 FLUTE EXTRA LONG LENGTH HSSCo8, 2 SCHNEIDEN EXTRA LANG	D2.5	D40.0	1179
E2464		HSSCo8, 2 FLUTE 42° HELIX SHORT LENGTH for ALUMINUM HSSCo8, 2 SCHNEIDEN 42° RECHTSSPIRALE KURZ für ALUMINIUM	D1.0	D32.0	1180
E2509		HSSCo8, 2 FLUTE 42° HELIX LONG LENGTH for ALUMINUM HSSCo8, 2 SCHNEIDEN 42° RECHTSSPIRALE LANG für ALUMINIUM	D2.0	D20.0	1182
EL612		HSS-E, 1 FLUTE for ALUMINUM HSS-E, 1 SCHNEIDEN für ALUMINIUM	D3.0	D10.0	1183
EL623		HSS-E, 1 FLUTE HSS-E, 1 SCHNEIDEN	D3.0	D10.0	1184
E2572		HSSCo8, 3 FLUTE STUB LENGTH HSSCo8, 3 SCHNEIDEN EXTRA KURZ	D1.5	D32.0	1185
E2573		HSSCo8, 3 FLUTE SHORT LENGTH HSSCo8, 3 SCHNEIDEN KURZ	D1.0	D40.0	1186
E2516		HSSCo8, 3 FLUTE LONG LENGTH HSSCo8, 3 SCHNEIDEN LANG	D2.0	D40.0	1188
E2553		HSSCo8, 3 FLUTE SHORT LENGTH THROW AWAY HSSCo8, 3 SCHNEIDEN KURZ EINWEGFRÄSER	D1.0	D20.0	1190
E2SET553		HSSCo8, THROW AWAY SET (NON-COATED) HSSCo8, EINWEG-SCHAFTFRÄSER SET (NICHT-BESCHICHTET)	D2.0	D10.0	1191
E2554		HSSCo8, 3 FLUTE LONG LENGTH THROW AWAY HSSCo8, 3 SCHNEIDEN LANG EINWEGFRÄSER	D1.5	D10.0	1192
E2551		HSSCo8, 3 FLUTE SHORT LENGTH THROW AWAY HSSCo8, 3 SCHNEIDEN KURZ EINWEGFRÄSER	D1.0	D10.0	1193
E2552		HSSCo8, 3 FLUTE LONG LENGTH THROW AWAY HSSCo8, 3 SCHNEIDEN LANG EINWEGFRÄSER	D1.5	D10.0	1194
E2574 E2575		HSSCo8, 4&6 FLUTE SHORT LENGTH HSSCo8, 4&6 SCHNEIDEN KURZ	D2.0 D21.0	D20.0 D40.0	1195
E2576 E2577		HSSCo8, 4&6 FLUTE LONG LENGTH HSSCo8, 4&6 SCHNEIDEN LANG	D2.0 D22.0	D20.0 D40.0	1196
E2595 E2596		HSSCo8, 4&6 FLUTE SHORT LENGTH - CENTER CUTTING HSSCo8, 4&6 SCHNEIDEN KURZ	D2.0 D22.0	D25.0 D40.0	1197

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
E2597 E2598		HSSCo8, 4&6 FLUTE LONG LENGTH - CENTER CUTTING HSSCo8, 4&6 SCHNEIDEN LANG	D2.0 D22.0	D20.0 D40.0	1198
E2461 E2462 E2463		HSSCo8, MULTI FLUTE 50° HELIX SHORT LENGTH HSSCo8, MULTI SCHNEIDEN 50° RECHTSSPIRALE KURZ	D2.0 D6.0 D22.0	D5.0 D23.0 D30.0	1199
E2535		HSSCo8, 2 FLUTE SHORT LENGTH BALL NOSE HSSCo8, 2 SCHNEIDEN KURZ STIRNRADIUS	R1.0	R16.0	1200
E2492		HSSCo8, 2 FLUTE LONG LENGTH BALL NOSE HSSCo8, 2 SCHNEIDEN LANG STIRNRADIUS	R1.0	R15.0	1201
E2410		HSSCo8, 4&6 FLUTE SHORT LENGTH BALL NOSE HSSCo8, 4&6 SCHNEIDEN KURZ STIRNRADIUS	R3.0	R12.5	1202
E2429		HSSCo8, 4&6 FLUTE LONG LENGTH BALL NOSE HSSCo8, 4&6 SCHNEIDEN LANG STIRNRADIUS	R5.0	R12.5	1203
E2512		HSSCo8, 3 FLUTE SHORT LENGTH BALL NOSE THROW AWAY HSSCo8, 3 SCHNEIDEN KURZ STIRNRADIUS EINWEGFRÄSER	R1.0	R3.0	1204
E2751		HSSCo8, MULTI FLUTE SHORT LENGTH ROUGHING - COARSE HSSCo8, MULTI SCHNEIDEN KURZ SCHRUPPFRÄSER - GROB	D6.0	D50.0	1205
E2752		HSSCo8, MULTI FLUTE LONG LENGTH ROUGHING - COARSE HSSCo8, MULTI SCHNEIDEN LANG SCHRUPPFRÄSER - GROB	D6.0	D40.0	1207
E2751 E2764		HSSCo8, 3 FLUTE SHORT LENGTH ROUGHING - COARSE HSSCo8, 3 SCHNEIDEN KURZ SCHRUPPFRÄSER - GROB	D6.0 D10.0	D8.0 D40.0	1208
E2752 E2765		HSSCo8, 3 FLUTE LONG LENGTH ROUGHING - COARSE HSSCo8, 3 SCHNEIDEN LANG SCHRUPPFRÄSER - GROB	D6.0 D10.0	D8.0 D40.0	1209
E2755		HSSCo8, 3 FLUTE 37° HELIX SHORT LENGTH ROUGHING for ALUMINUM HSSCo8, 3 SCHNEIDEN 37° RECHTSSPIRALE KURZ SCHRUPPFRÄSER für ALUMINIUM	D6.0	D30.0	1210
E2756		HSSCo8, 3 FLUTE 37° HELIX LONG LENGTH ROUGHING for ALUMINUM HSSCo8, 3 SCHNEIDEN 37° RECHTSSPIRALE LANG SCHRUPPFRÄSER für ALUMINIUM	D10.0	D30.0	1211
E2757		HSSCo8, 3&4 FLUTE SHORT LENGTH ROUGHING BALL NOSE - COARSE HSSCo8, 3&4 SCHNEIDEN KURZ SCHRUPPFRÄSER STIRNRADIUS - GROB	R3.0	R20.0	1212
E2761		HSSCo8, MULTI FLUTE SHORT LENGTH ROUGHING - EXTRA FINE HSSCo8, MULTI SCHNEIDEN KURZ SCHRUPPFRÄSER - EXTRA FEIN	D6.0	D25.0	1213
E2524		HSSCo8, 3&4 FLUTE STUB LENGTH ROUGHING - FINE HSSCo8, 3&4 SCHNEIDEN EXTRA KURZ SCHRUPPFRÄSER - FEIN	D6.0	D20.0	1214
E2606		HSSCo8, 3&4 FLUTE SHORT LENGTH ROUGHING BALL NOSE - FINE HSSCo8, 3&4 SCHNEIDEN KURZ SCHRUPPFRÄSER STIRNRADIUS - FEIN	R3.0	R20.0	1215
E2753		HSSCo8, MULTI FLUTE SHORT LENGTH ROUGHING - FINE HSSCo8, MULTI SCHNEIDEN KURZ SCHRUPPFRÄSER - FEIN	D6.0	D40.0	1216

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
E2762		HSSCo8, MULTI FLUTE LONG LENGTH ROUGHING - FINE HSSCo8, MULTI SCHNEIDEN LANG SCHRUPPFRÄSER - FEIN	D6.0	D40.0	1217
E2754		HSSCo8, MULTI FLUTE SHORT LENGTH ROUGHING & FINISHING HSSCo8, MULTI SCHNEIDEN KURZ SCHRUPPSCHLICHTFRÄSER	D6.0	D40.0	1218
E2768		HSSCo8, MULTI FLUTE LONG LENGTH ROUGHING & FINISHING HSSCo8, MULTI SCHNEIDEN LANG SCHRUPPSCHLICHTFRÄSER	D6.0	D45.0	1219
E2766		HSSCo8, 3 FLUTE SHORT LENGTH ROUGHING & FINISHING HSSCo8, 3 SCHNEIDEN KURZ SCHRUPPSCHLICHTFRÄSER	D6.0	D40.0	1220
E2767		HSSCo8, 3 FLUTE LONG LENGTH ROUGHING & FINISHING HSSCo8, 3 SCHNEIDEN LANG SCHRUPPSCHLICHTFRÄSER	D6.0	D40.0	1221
E2776		HSSCo8, MULTI FLUTE SHORT LENGTH HSSCo8, MULTI SCHNEIDEN KURZ	D14.0	D50.0	1222
E2777		HSSCo8, MULTI FLUTE SHORT LENGTH ROUGHING - COARSE HSSCo8, MULTI SCHNEIDEN KURZ SCHRUPPFRÄSER - GROB	D14.0	D50.0	1223
E2778		HSSCo8, MULTI FLUTE SHORT LENGTH ROUGHING - FINE HSSCo8, MULTI SCHNEIDEN KURZ SCHRUPPFRÄSER - FEIN	D16.0	D50.0	1224
E2779		HSSCo8, MULTI FLUTE SHORT LENGTH ROUGHING & FINISHING HSSCo8, MULTI SCHNEIDEN KURZ SCHRUPPSCHLICHTFRÄSER	D16.0	D50.0	1225
E3570		HSS-PM, 2 FLUTE SHORT LENGTH HSS-PM, 2 SCHNEIDEN KURZ	D2.0	D30.0	1226
E3574 E3575		HSS-PM, 4&6 FLUTE SHORT LENGTH HSS-PM, 4&6 SCHNEIDEN KURZ	D2.0 D22.0	D20.0 D30.0	1227
E3462 E3463		HSS-PM, 3&4 FLUTE 60° HELIX SHORT LENGTH HSS-PM, 3&4 SCHNEIDEN 60° RECHTSSPIRALE KURZ	D6.0 D25.0	D20.0 D30.0	1228
E9410		PREMIUM HSS-PM, 2 FLUTE SHORT LENGTH PREMIUM HSS-PM, 2 SCHNEIDEN KURZ	D2.0	D25.0	1229
E9720		PREMIUM HSS-PM, MULTI FLUTE SHORT LENGTH ROUGHING - FINE PREMIUM HSS-PM, MULTI SCHNEIDEN SCHRUPPFRÄSER KURZ - FEIN	D6.0	D30.0	1230
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			1231

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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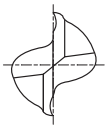
HSS END MILLS

E2570 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

EQ570 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 2 FLUTE SHORT LENGTH
HSSCo8, 2 SCHNEIDEN KURZ



HSS Co8 | DIN 327 | N | 2 | 30° | DIN 1835B

P.1231, 1232

Unit : mm

EDP No. UNCOATED	ITEM No. UNCOATED	EDP No. TiAlN	ITEM No. TiAlN	Mill Diameter e8	Shank Diameter h6	Length of Cut	Overall Length
E2570010	C2GRS-010AF	EQ570010	R2GRS-010AF	1.0	6	2.5	47
E2570015	C2GRS-015AF	EQ570015	R2GRS-015AF	1.5	6	3	47
E2570020	C2GRS-020AF	EQ570020	R2GRS-020AF	2.0	6	4	48
E2570025	C2GRS-025AF	EQ570025	R2GRS-025AF	2.5	6	5	49
E2570028	C2GRS-028AF	EQ570028	R2GRS-028AF	2.8	6	5	49
E2570030	C2GRS-030AF	EQ570030	R2GRS-030AF	3.0	6	5	49
E2570035	C2GRS-035AF	EQ570035	R2GRS-035AF	3.5	6	6	50
E2570038	C2GRS-038AF	EQ570038	R2GRS-038AF	3.8	6	7	51
E2570040	C2GRS-040AF	EQ570040	R2GRS-040AF	4.0	6	7	51
E2570045	C2GRS-045AF	EQ570045	R2GRS-045AF	4.5	6	7	51
E2570048	C2GRS-048AF	EQ570048	R2GRS-048AF	4.8	6	8	52
E2570050	C2GRS-050AF	EQ570050	R2GRS-050AF	5.0	6	8	52
E2570055	C2GRS-055AF	EQ570055	R2GRS-055AF	5.5	6	8	52
E2570957	C2GRS-0575AF	EQ570957	R2GRS-0575AF	5.75	6	8	52
E2570060	C2GRS-060AF	EQ570060	R2GRS-060AF	6.0	6	8	52
E2570065	C2GRS-065TF	EQ570065	R2GRS-065TF	6.5	10	10	60
E2570967	C2GRS-0675TF	EQ570967	R2GRS-0675TF	6.75	10	10	60
E2570070	C2GRS-070TF	EQ570070	R2GRS-070TF	7.0	10	10	60
E2570075	C2GRS-075TF	EQ570075	R2GRS-075TF	7.5	10	10	60
E2570977	C2GRS-0775TF	EQ570977	R2GRS-0775TF	7.75	10	11	61
E2570080	C2GRS-080TF	EQ570080	R2GRS-080TF	8.0	10	11	61
E2570085	C2GRS-085TF	EQ570085	R2GRS-085TF	8.5	10	11	61
E2570087	C2GRS-087TF	EQ570087	R2GRS-087TF	8.7	10	11	61
E2570090	C2GRS-090TF	EQ570090	R2GRS-090TF	9.0	10	11	61
E2570095	C2GRS-095TF	EQ570095	R2GRS-095TF	9.5	10	11	61
E2570097	C2GRS-097TF	EQ570097	R2GRS-097TF	9.7	10	13	63
E2570100	C2GRS-100TF	EQ570100	R2GRS-100TF	10.0	10	13	63

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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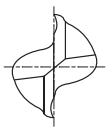
HSS END MILLS

E2570 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

EQ570 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 2 FLUTE SHORT LENGTH
HSSCo8, 2 SCHNEIDEN KURZ



HSS Co8 | DIN 327 | N | 2 | 30° | DIN 1835B

P.1231, 1232

Unit : mm

EDP No. UNCOATED	ITEM No. UNCOATED	EDP No. TiAlN	ITEM No. TiAlN	Mill Diameter e8	Shank Diameter h6	Length of Cut	Overall Length
E2570105	C2GRS-105DF	EQ570105	R2GRS-105DF	10.5	12	13	70
E2570107	C2GRS-107DF	EQ570107	R2GRS-107DF	10.7	12	13	70
E2570110	C2GRS-110DF	EQ570110	R2GRS-110DF	11.0	12	13	70
E2570115	C2GRS-115DF	EQ570115	R2GRS-115DF	11.5	12	13	70
E2570117	C2GRS-117DF	EQ570117	R2GRS-117DF	11.7	12	16	73
E2570120	C2GRS-120DF	EQ570120	R2GRS-120DF	12.0	12	16	73
E2570125	C2GRS-125DF	EQ570125	R2GRS-125DF	12.5	12	16	73
E2570127	C2GRS-127DF	EQ570127	R2GRS-127DF	12.7	12	16	73
E2570130	C2GRS-130DF	EQ570130	R2GRS-130DF	13.0	12	16	73
E2570135	C2GRS-135DF	EQ570135	R2GRS-135DF	13.5	12	16	73
E2570137	C2GRS-137DF	EQ570137	R2GRS-137DF	13.7	12	16	73
E2570140	C2GRS-140DF	EQ570140	R2GRS-140DF	14.0	12	16	73
E2570147	C2GRS-147DF	EQ570147	R2GRS-147DF	14.7	12	16	73
E2570150	C2GRS-150DF	EQ570150	R2GRS-150DF	15.0	12	16	73
E2570157	C2GRS-157EF	EQ570157	R2GRS-157EF	15.7	16	19	79
E2570160	C2GRS-160EF	EQ570160	R2GRS-160EF	16.0	16	19	79
E2570167	C2GRS-167EF	EQ570167	R2GRS-167EF	16.7	16	19	79
E2570170	C2GRS-170EF	EQ570170	R2GRS-170EF	17.0	16	19	79
E2570177	C2GRS-177EF	EQ570177	R2GRS-177EF	17.7	16	19	79
E2570180	C2GRS-180EF	EQ570180	R2GRS-180EF	18.0	16	19	79
E2570190	C2GRS-190EF	EQ570190	R2GRS-190EF	19.0	16	19	79
E2570197	C2GRS-197FF	EQ570197	R2GRS-197FF	19.7	20	22	88
E2570920	C2GRS-200EF	EQ570920	R2GRS-200EF	20.0	16	22	82
E2570200	C2GRS-200FF	EQ570200	R2GRS-200FF	20.0	20	22	88
E2570210	C2GRS-210FF	EQ570210	R2GRS-210FF	21.0	20	22	88
E2570220	C2GRS-220FF	EQ570220	R2GRS-220FF	22.0	20	22	88
E2570922	C2GRS-220GF	EQ570922	R2GRS-220GF	22.0	25	22	98

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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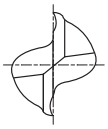
HSS END MILLS

E2570 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

EQ570 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 2 FLUTE SHORT LENGTH
HSSCo8, 2 SCHNEIDEN KURZ



HSS Co8 | DIN 327 | N | 2 | 30° | DIN 1835B

P.1231, 1232

Unit : mm

EDP No. UNCOATED	ITEM No. UNCOATED	EDP No. TiAlN	ITEM No. TiAlN	Mill Diameter e8	Shank Diameter h6	Length of Cut	Overall Length
E2570240	C2GRS-240GF	EQ570240	R2GRS-240GF	24.0	25	26	102
E2570250	C2GRS-250GF	EQ570250	R2GRS-250GF	25.0	25	26	102
E2570260	C2GRS-260GF	EQ570260	R2GRS-260GF	26.0	25	26	102
E2570270	C2GRS-270GF	EQ570270	R2GRS-270GF	27.0	25	26	102
E2570280	C2GRS-280GF	EQ570280	R2GRS-280GF	28.0	25	26	102
E2570290	C2GRS-290GF	EQ570290	R2GRS-290GF	29.0	25	26	102
E2570300	C2GRS-300GF	EQ570300	R2GRS-300GF	30.0	25	26	102
E2570320	C2GRS-320HF	EQ570320	R2GRS-320HF	32.0	32	32	112
E2570340	C2GRS-340HF	EQ570340	R2GRS-340HF	34.0	32	32	112
E2570350	C2GRS-350HF	EQ570350	R2GRS-350HF	35.0	32	32	112
E2570360	C2GRS-360HF	EQ570360	R2GRS-360HF	36.0	32	32	112
E2570380	C2GRS-380HF	EQ570380	R2GRS-380HF	38.0	32	38	118
E2570938	C2GRS-380IF	EQ570938	R2GRS-380IF	38.0	40	38	130
E2570400	C2GRS-400HF	EQ570400	R2GRS-400HF	40.0	32	38	118
E2570903	C2GRS-400IF	EQ570903	R2GRS-400IF	40.0	40	38	130

▶Other shank design on your request.
▶TiN-COATING & TiCN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm						
Nominal-Diameter in mm / Nennmaßbereich in mm						
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
e8	— 14 — 28	— 20 — 38	— 25 — 47	— 32 — 59	— 40 — 73	— 50 — 89
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13	0 — 16

◎ : Excellent ○ : Good

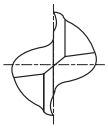
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2571 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

EQ571 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 2 FLUTE LONG LENGTH
HSSCo8, 2 SCHNEIDEN LANG



HSS Co8 | DIN 844 | N | 2 | 30° | DIN 1835B

P.1231, 1232

Unit : mm

EDP No. UNCOATED	ITEM No. UNCOATED	EDP No. TiAlN	ITEM No. TiAlN	Mill Diameter e8	Shank Diameter h6	Length of Cut	Overall Length
E2571015	C2GLS-015AF	EQ571015	R2GLS-015AF	1.5	6	7	51
E2571020	C2GLS-020AF	EQ571020	R2GLS-020AF	2.0	6	7	51
E2571025	C2GLS-025AF	EQ571025	R2GLS-025AF	2.5	6	8	52
E2571030	C2GLS-030AF	EQ571030	R2GLS-030AF	3.0	6	8	52
E2571035	C2GLS-035AF	EQ571035	R2GLS-035AF	3.5	6	10	54
E2571040	C2GLS-040AF	EQ571040	R2GLS-040AF	4.0	6	11	55
E2571045	C2GLS-045AF	EQ571045	R2GLS-045AF	4.5	6	11	55
E2571050	C2GLS-050AF	EQ571050	R2GLS-050AF	5.0	6	13	57
E2571055	C2GLS-055AF	EQ571055	R2GLS-055AF	5.5	6	13	57
E2571060	C2GLS-060AF	EQ571060	R2GLS-060AF	6.0	6	13	57
E2571065	C2GLS-065TF	EQ571065	R2GLS-065TF	6.5	10	16	66
E2571070	C2GLS-070TF	EQ571070	R2GLS-070TF	7.0	10	16	66
E2571075	C2GLS-075TF	EQ571075	R2GLS-075TF	7.5	10	16	66
E2571080	C2GLS-080TF	EQ571080	R2GLS-080TF	8.0	10	19	69
E2571085	C2GLS-085TF	EQ571085	R2GLS-085TF	8.5	10	19	69
E2571090	C2GLS-090TF	EQ571090	R2GLS-090TF	9.0	10	19	69
E2571095	C2GLS-095TF	EQ571095	R2GLS-095TF	9.5	10	19	69
E2571100	C2GLS-100TF	EQ571100	R2GLS-100TF	10.0	10	22	72
E2571110	C2GLS-110DF	EQ571110	R2GLS-110DF	11.0	12	22	79
E2571120	C2GLS-120DF	EQ571120	R2GLS-120DF	12.0	12	26	83
E2571130	C2GLS-130DF	EQ571130	R2GLS-130DF	13.0	12	26	83
E2571140	C2GLS-140DF	EQ571140	R2GLS-140DF	14.0	12	26	83
E2571150	C2GLS-150DF	EQ571150	R2GLS-150DF	15.0	12	26	83
E2571160	C2GLS-160EF	EQ571160	R2GLS-160EF	16.0	16	32	92
E2571180	C2GLS-180EF	EQ571180	R2GLS-180EF	18.0	16	32	92

◎ : Excellent ○ : Good

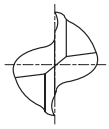
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2571 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

EQ571 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 2 FLUTE LONG LENGTH
HSSCo8, 2 SCHNEIDEN LANG



HSS Co8 | DIN 844 | N | 2 | 30° | DIN 1835B

P.1231, 1232

Unit : mm

EDP No. UNCOATED	ITEM No. UNCOATED	EDP No. TiAlN	ITEM No. TiAlN	Mill Diameter e8	Shank Diameter h6	Length of Cut	Overall Length
E2571200	C2GLS-200FF	EQ571200	R2GLS-200FF	20.0	20	38	104
E2571220	C2GLS-220FF	EQ571220	R2GLS-220FF	22.0	20	38	104
E2571240	C2GLS-240GF	EQ571240	R2GLS-240GF	24.0	25	45	121
E2571250	C2GLS-250GF	EQ571250	R2GLS-250GF	25.0	25	45	121
E2571260	C2GLS-260GF	EQ571260	R2GLS-260GF	26.0	25	45	121
E2571270	C2GLS-270GF	EQ571270	R2GLS-270GF	27.0	25	45	121
E2571280	C2GLS-280GF	EQ571280	R2GLS-280GF	28.0	25	45	121
E2571300	C2GLS-300GF	EQ571300	R2GLS-300GF	30.0	25	45	121
E2571320	C2GLS-320HF	EQ571320	R2GLS-320HF	32.0	32	53	133
E2571400	C2GLS-400IF	EQ571400	R2GLS-400IF	40.0	40	63	155

▶Other shank design on your request.
▶TiN-COATING & TiCN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛
Nominal-Diameter in ㎜ / Nennmaßbereich in ㎜

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
e8	— 14 — 28	— 20 — 38	— 25 — 47	— 32 — 59	— 40 — 73	— 50 — 89
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13	0 — 16

◎ : Excellent ○ : Good

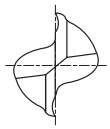
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2510 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

EQ510 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 2 FLUTE EXTRA LONG LENGTH
HSSCo8, 2 SCHNEIDEN EXTRA LANG



HSS Co8 | DIN 844 | N | 2 | 30° | DIN 1835B

P.1231, 1232

Unit : mm

EDP No. UNCOATED	ITEM No. UNCOATED	EDP No. TiAlN	ITEM No. TiAlN	Mill Diameter e8	Shank Diameter h6	Length of Cut	Overall Length
E2510025	C2GXS-025AF	EQ510025	R2GXS-025AF	2.5	6	8	56
E2510030	C2GXS-030AF	EQ510030	R2GXS-030AF	3.0	6	8	56
E2510035	C2GXS-035AF	EQ510035	R2GXS-035AF	3.5	6	10	59
E2510040	C2GXS-040AF	EQ510040	R2GXS-040AF	4.0	6	11	63
E2510045	C2GXS-045AF	EQ510045	R2GXS-045AF	4.5	6	11	63
E2510050	C2GXS-050AF	EQ510050	R2GXS-050AF	5.0	6	13	68
E2510055	C2GXS-055AF	EQ510055	R2GXS-055AF	5.5	6	13	68
E2510060	C2GXS-060AF	EQ510060	R2GXS-060AF	6.0	6	13	68
E2510065	C2GXS-065TF	EQ510065	R2GXS-065TF	6.5	10	16	80
E2510070	C2GXS-070TF	EQ510070	R2GXS-070TF	7.0	10	16	80
E2510080	C2GXS-080TF	EQ510080	R2GXS-080TF	8.0	10	19	88
E2510085	C2GXS-085TF	EQ510085	R2GXS-085TF	8.5	10	19	88
E2510090	C2GXS-090TF	EQ510090	R2GXS-090TF	9.0	10	19	88
E2510100	C2GXS-100TF	EQ510100	R2GXS-100TF	10.0	10	22	95
E2510120	C2GXS-120DF	EQ510120	R2GXS-120DF	12.0	12	26	110
E2510140	C2GXS-140DF	EQ510140	R2GXS-140DF	14.0	12	26	110
E2510160	C2GXS-160EF	EQ510160	R2GXS-160EF	16.0	16	32	123
E2510180	C2GXS-180EF	EQ510180	R2GXS-180EF	18.0	16	32	123
E2510200	C2GXS-200FF	EQ510200	R2GXS-200FF	20.0	20	38	141
E2510220	C2GXS-220FF	EQ510220	R2GXS-220FF	22.0	20	38	141
E2510240	C2GXS-240GF	EQ510240	R2GXS-240GF	24.0	25	45	166
E2510250	C2GXS-250GF	EQ510250	R2GXS-250GF	25.0	25	45	166
E2510260	C2GXS-260GF	EQ510260	R2GXS-260GF	26.0	25	45	166
E2510280	C2GXS-280GF	EQ510280	R2GXS-280GF	28.0	25	45	166
E2510300	C2GXS-300GF	EQ510300	R2GXS-300GF	30.0	25	45	166
E2510320	C2GXS-320HF	EQ510320	R2GXS-320HF	32.0	32	53	186
E2510360	C2GXS-360HF	EQ510360	R2GXS-360HF	36.0	32	53	186
E2510400	C2GXS-400HF	EQ510400	R2GXS-400HF	40.0	32	63	207
E2510940	C2GXS-400IF	EQ510940	R2GXS-400IF	40.0	40	63	217

▶Other shank design on your request.
▶TiN-COATING & TiCN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛

Nominal-Diameter in ㎜ / Nennmaßbereich in ㎜

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
e8	— 14 — 28	— 20 — 38	— 25 — 47	— 32 — 59	— 40 — 73	— 50 — 89
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13	0 — 16

◎ : Excellent ○ : Good

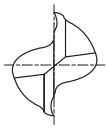
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2464 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 2 FLUTE 42° HELIX SHORT LENGTH
HSSCo8, 2 SCHNEIDEN 42° RECHTSSPIRALE KURZ

for ALUMINUM
für ALUMINIUM



HSS Co8 | DIN 844 | W | 2 | 42° | DIN 1835B

P.1233

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	e8	h6		
E2464010	1.0	6	3	49
E2464015	1.5	6	5	49
E2464020	2.0	6	7	51
E2464025	2.5	6	8	52
E2464030	3.0	6	8	52
E2464035	3.5	6	10	54
E2464040	4.0	6	11	55
E2464045	4.5	6	11	55
E2464050	5.0	6	13	57
E2464055	5.5	6	13	57
E2464060	6.0	6	13	57
E2464065	6.5	10	16	66
E2464070	7.0	10	16	66
E2464075	7.5	10	16	66
E2464080	8.0	10	19	69
E2464085	8.5	10	19	69
E2464090	9.0	10	19	69
E2464100	10.0	10	22	72
E2464110	11.0	12	22	79
E2464120	12.0	12	26	83
E2464130	13.0	12	26	83
E2464140	14.0	12	26	83
E2464150	15.0	12	26	83
E2464160	16.0	16	32	92
E2464170	17.0	16	32	92
E2464180	18.0	16	32	92
E2464190	19.0	16	32	92

◎ : Excellent ○ : Good

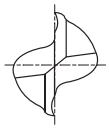
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○									◎					

HSS END MILLS

E2464 SERIES FLAT SHANK
SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 2 FLUTE 42° HELIX SHORT LENGTH
HSSCo8, 2 SCHNEIDEN 42° RECHTSSPIRALE KURZ

for ALUMINUM
für ALUMINIUM



HSS Co8 | DIN 844 | W | 2 | 42° | DIN 1835B

P.1233

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	e8	h6		
E2464200	**20.0**	20	38	104
E2464210	**21.0**	20	38	104
E2464220	**22.0**	20	38	104
E2464230	**23.0**	20	38	104
E2464240	**24.0**	25	45	121
E2464250	**25.0**	25	45	121
E2464260	**26.0**	25	45	121
E2464280	**28.0**	25	45	121
E2464300	**30.0**	25	45	121
E2464320	**32.0**	32	53	133

▶Other shank design on your request.
▶TiN-COATING & TiCN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm
Nominal-Diameter in mm / Nennmaßbereich in mm

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
e8	— 14 — 28	— 20 — 38	— 25 — 47	— 32 — 59	— 40 — 73	— 50 — 89
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13	0 — 16

◎ : Excellent ○ : Good

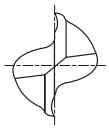
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○									◎					

HSS END MILLS

E2509 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 2 FLUTE 42° HELIX LONG LENGTH
HSSCo8, 2 SCHNEIDEN 42° RECHTSSPIRALE LANG

for ALUMINUM
für ALUMINIUM



HSS Co8 | DIN 844 | W | 2 | 42° | DIN 1835B

P.1233

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	e8	h6		
E2509020	2.0	6	10	54
E2509030	3.0	6	12	56
E2509040	4.0	6	19	63
E2509050	5.0	6	24	68
E2509060	6.0	6	24	68
E2509070	7.0	10	30	80
E2509080	8.0	10	38	88
E2509090	9.0	10	38	88
E2509100	10.0	10	45	95
E2509110	11.0	12	45	102
E2509120	12.0	12	53	110
E2509130	13.0	12	53	110
E2509140	14.0	12	53	110
E2509150	15.0	12	53	110
E2509160	16.0	16	63	123
E2509180	18.0	16	63	123
E2509200	20.0	20	75	141

▶Other shank design on your request.
▶TiN-COATING & TiCN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛

Nominal-Diameter in mm / Nennmaßbereich in mm						
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
e8	— 14 — 28	— 20 — 38	— 25 — 47	— 32 — 59	— 40 — 73	— 50 — 89
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13	0 — 16

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○									◎					

HSS END MILLS

EL612 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

HSS-E, 1 FLUTE
HSS-E, 1 SCHNEIDEN

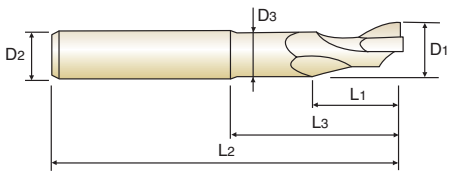
for ALUMINUM
für ALUMINIUM

HSS-E | YG STD | W | 1 | 30° | DIN 1835A

P.1267

Unit : mm

EDP No.	ITEM No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	UNCOATED	js14	h6		
EL612030	M1NRA-03001	3.0	8	12	60
EL612040	M1NRA-04001	4.0	8	12	60
EL612050	M1NRA-05001	5.0	8	14	60
EL612060	M1NRA-06001	6.0	8	14	60
EL612070	M1NRA-07001	7.0	8	14	60
EL612080	M1NRA-08001	8.0	8	14	80
EL612090	M1NRA-09001	9.0	8	14	80
EL612100	M1NRA-10001	10.0	8	14	80



Unit : mm

EDP No.	ITEM No.	Mill Diameter	Shank Diameter	Length of Cut	LENGTH BELOW SHANK	Overall Length	NECK DIAMETER
UNCOATED	UNCOATED	D1(js14)	D2(h6)	L1	L3	L2	D3
EL612904	M1NRA-05002	5.0	8	18	35	80	4.8
EL612909	M1NRA-05009	5.0	8	40	—	100	—
EL612932	M1NRA-08007	8.0	8	14	68	120	7.5

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm
Nominal-Diameter in mm / Nennmaßbereich in mm

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
js14	±125	±150	±180	±215	±260	±310
h6	0 / −6	0 / −8	0 / −9	0 / −11	0 / −13	0 / −16

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○									◎					

HSS END MILLS

EL623 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT

HSS-E, 1 FLUTE
HSS-E, 1 SCHNEIDEN

HSS-E | YG STD | N | 1 | ≈30° | DIN 1835A P.1267

Unit : mm

EDP No.	ITEM No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	UNCOATED	js14	h6		
EL623030	M1NRS-03001	3.0	8	12	60
EL623040	M1NRS-04001	4.0	8	12	60
EL623050	M1NRS-05006	5.0	8	12	60
EL623060	M1NRS-06001	6.0	8	14	60
EL623070	M1NRS-07001	7.0	8	14	60
EL623080	M1NRS-08001	8.0	8	14	80
EL623090	M1NRS-09001	9.0	8	14	80
EL623100	M1NRS-10001	10.0	8	14	80

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm						
Nominal-Diameter in mm / Nennmaßbereich in mm						
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
js14	±125	±150	±180	±215	±260	±310
h6	0 / −6	0 / −8	0 / −9	0 / −11	0 / −13	0 / −16

◎ : Excellent ○ : Good

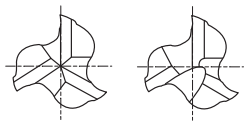
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎								○					

HSS END MILLS

E2572 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

EQ572 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 3 FLUTE STUB LENGTH
HSSCo8, 3 SCHNEIDEN EXTRA KURZ



Up to Ø2.5mm Over Ø2.5mm

HSS Co8 | DIN 327 | N | 3 | 30° | DIN 1835B

P.1234, 1235, 1236, 1237

Unit : mm

EDP No. UNCOATED	ITEM No. UNCOATED	EDP No. TiAlN	ITEM No. TiAlN	Mill Diameter e8	Shank Diameter h6	Length of Cut	Overall Length
E2572015	C3GSC-015AF	EQ572015	R3GSC-015AF	1.5	6	3	47
E2572020	C3GSC-020AF	EQ572020	R3GSC-020AF	2.0	6	4	48
E2572025	C3GSC-025AF	EQ572025	R3GSC-025AF	2.5	6	5	49
E2572030	C3GSC-030AF	EQ572030	R3GSC-030AF	3.0	6	5	49
E2572035	C3GSC-035AF	EQ572035	R3GSC-035AF	3.5	6	6	50
E2572040	C3GSC-040AF	EQ572040	R3GSC-040AF	4.0	6	7	51
E2572045	C3GSC-045AF	EQ572045	R3GSC-045AF	4.5	6	7	51
E2572050	C3GSC-050AF	EQ572050	R3GSC-050AF	5.0	6	8	52
E2572055	C3GSC-055AF	EQ572055	R3GSC-055AF	5.5	6	8	52
E2572060	C3GSC-060AF	EQ572060	R3GSC-060AF	6.0	6	8	52
E2572065	C3GSC-065TF	EQ572065	R3GSC-065TF	6.5	10	10	60
E2572070	C3GSC-070TF	EQ572070	R3GSC-070TF	7.0	10	10	60
E2572075	C3GSC-075TF	EQ572075	R3GSC-075TF	7.5	10	10	60
E2572080	C3GSC-080TF	EQ572080	R3GSC-080TF	8.0	10	11	61
E2572085	C3GSC-085TF	EQ572085	R3GSC-085TF	8.5	10	11	61
E2572100	C3GSC-100TF	EQ572100	R3GSC-100TF	10.0	10	13	63
E2572120	C3GSC-120DF	EQ572120	R3GSC-120DF	12.0	12	16	73
E2572140	C3GSC-140DF	EQ572140	R3GSC-140DF	14.0	12	16	73
E2572150	C3GSC-150DF	EQ572150	R3GSC-150DF	15.0	12	16	73
E2572160	C3GSC-160EF	EQ572160	R3GSC-160EF	16.0	16	19	79
E2572180	C3GSC-180EF	EQ572180	R3GSC-180EF	18.0	16	19	79
E2572200	C3GSC-200FF	EQ572200	R3GSC-200FF	20.0	20	22	88
E2572220	C3GSC-220FF	EQ572220	R3GSC-220FF	22.0	20	22	88
E2572240	C3GSC-240GF	EQ572240	R3GSC-240GF	24.0	25	26	102
E2572250	C3GSC-250GF	EQ572250	R3GSC-250GF	25.0	25	26	102
E2572260	C3GSC-260GF	EQ572260	R3GSC-260GF	26.0	25	26	102
E2572280	C3GSC-280GF	EQ572280	R3GSC-280GF	28.0	25	26	102
E2572300	C3GSC-300GF	EQ572300	R3GSC-300GF	30.0	25	26	102
E2572320	C3GSC-320HF	EQ572320	R3GSC-320HF	32.0	32	32	112

▶Other shank design on your request.
▶TiN-COATING & TiCN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛						
Nominal-Diameter in mm / Nennmaßbereich in mm						
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
e8	— 14 — 28	— 20 — 38	— 25 — 47	— 32 — 59	— 40 — 73	— 50 — 89
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13	0 — 16

◎ : Excellent ○ : Good

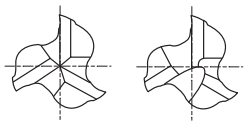
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2573 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

EQ573 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 3 FLUTE SHORT LENGTH
HSSCo8, 3 SCHNEIDEN KURZ



Up to Ø2.5mm Over Ø2.5mm

HSS Co8 | DIN 844 | N | 3 | 30° | DIN 1835B

P.1234, 1235, 1236, 1237

Unit : mm

EDP No. UNCOATED	ITEM No. UNCOATED	EDP No. TiAlN	ITEM No. TiAlN	Mill Diameter e8	Shank Diameter h6	Length of Cut	Overall Length
E2573010	C3GRC-010AF	EQ573010	R3GRC-010AF	1.0	6	3	47
E2573015	C3GRC-015AF	EQ573015	R3GRC-015AF	1.5	6	7	51
E2573020	C3GRC-020AF	EQ573020	R3GRC-020AF	2.0	6	7	51
E2573025	C3GRC-025AF	EQ573025	R3GRC-025AF	2.5	6	8	52
E2573030	C3GRC-030AF	EQ573030	R3GRC-030AF	3.0	6	8	52
E2573035	C3GRC-035AF	EQ573035	R3GRC-035AF	3.5	6	10	54
E2573040	C3GRC-040AF	EQ573040	R3GRC-040AF	4.0	6	11	55
E2573045	C3GRC-045AF	EQ573045	R3GRC-045AF	4.5	6	11	55
E2573050	C3GRC-050AF	EQ573050	R3GRC-050AF	5.0	6	13	57
E2573055	C3GRC-055AF	EQ573055	R3GRC-055AF	5.5	6	13	57
E2573060	C3GRC-060AF	EQ573060	R3GRC-060AF	6.0	6	13	57
E2573065	C3GRC-065TF	EQ573065	R3GRC-065TF	6.5	10	16	66
E2573070	C3GRC-070TF	EQ573070	R3GRC-070TF	7.0	10	16	66
E2573075	C3GRC-075TF	EQ573075	R3GRC-075TF	7.5	10	16	66
E2573080	C3GRC-080TF	EQ573080	R3GRC-080TF	8.0	10	19	69
E2573085	C3GRC-085TF	EQ573085	R3GRC-085TF	8.5	10	19	69
E2573090	C3GRC-090TF	EQ573090	R3GRC-090TF	9.0	10	19	69
E2573095	C3GRC-095TF	EQ573095	R3GRC-095TF	9.5	10	19	69
E2573100	C3GRC-100TF	EQ573100	R3GRC-100TF	10.0	10	22	72
E2573120	C3GRC-120DF	EQ573120	R3GRC-120DF	12.0	12	26	83
E2573140	C3GRC-140DF	EQ573140	R3GRC-140DF	14.0	12	26	83
E2573150	C3GRC-150DF	EQ573150	R3GRC-150DF	15.0	12	26	83
E2573160	C3GRC-160EF	EQ573160	R3GRC-160EF	16.0	16	32	92
E2573180	C3GRC-180EF	EQ573180	R3GRC-180EF	18.0	16	32	92

◎ : Excellent ○ : Good

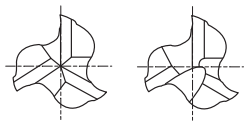
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2573 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

EQ573 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 3 FLUTE SHORT LENGTH
HSSCo8, 3 SCHNEIDEN KURZ



Up to Ø2.5mm Over Ø2.5mm

HSS Co8 | DIN 844 | N | 3 | 30° | DIN 1835B

P.1234, 1235, 1236, 1237

Unit : mm

EDP No. UNCOATED	ITEM No. UNCOATED	EDP No. TiAlN	ITEM No. TiAlN	Mill Diameter e8	Shank Diameter h6	Length of Cut	Overall Length
E2573200	C3GRC-200FF	EQ573200	R3GRC-200FF	20.0	20	38	104
E2573220	C3GRC-220FF	EQ573220	R3GRC-220FF	22.0	20	38	104
E2573240	C3GRC-240GF	EQ573240	R3GRC-240GF	24.0	25	45	121
E2573250	C3GRC-250GF	EQ573250	R3GRC-250GF	25.0	25	45	121
E2573260	C3GRC-260GF	EQ573260	R3GRC-260GF	26.0	25	45	121
E2573280	C3GRC-280GF	EQ573280	R3GRC-280GF	28.0	25	45	121
E2573300	C3GRC-300GF	EQ573300	R3GRC-300GF	30.0	25	45	121
E2573320	C3GRC-320HF	EQ573320	R3GRC-320HF	32.0	32	53	133
E2573400	C3GRC-400IF	EQ573400	R3GRC-400IF	40.0	40	63	155

▶Other shank design on your request.
▶TiN-COATING & TiCN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm

Nominal-Diameter in mm / Nennmaßbereich in mm

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
e8	— 14 — 28	— 20 — 38	— 25 — 47	— 32 — 59	— 40 — 73	— 50 — 89
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13	0 — 16

◎ : Excellent ○ : Good

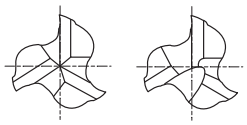
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2516 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

EQ516 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 3 FLUTE LONG LENGTH
HSSCo8, 3 SCHNEIDEN LANG



Up to Ø2.5mm Over Ø2.5mm

HSS Co8 | DIN 844 | N | 3 | 30° | DIN 1835B

P.1234, 1235, 1236, 1237

Unit : mm

EDP No. UNCOATED	ITEM No. UNCOATED	EDP No. TiAlN	ITEM No. TiAlN	Mill Diameter e8	Shank Diameter h6	Length of Cut	Overall Length
E2516020	C3GLC-020AF	EQ516020	R3GLC-020AF	2.0	6	10	54
E2516025	C3GLC-025AF	EQ516025	R3GLC-025AF	2.5	6	12	56
E2516030	C3GLC-030AF	EQ516030	R3GLC-030AF	3.0	6	12	56
E2516035	C3GLC-035AF	EQ516035	R3GLC-035AF	3.5	6	15	59
E2516040	C3GLC-040AF	EQ516040	R3GLC-040AF	4.0	6	19	63
E2516045	C3GLC-045AF	EQ516045	R3GLC-045AF	4.5	6	19	63
E2516050	C3GLC-050AF	EQ516050	R3GLC-050AF	5.0	6	24	68
E2516055	C3GLC-055AF	EQ516055	R3GLC-055AF	5.5	6	24	68
E2516060	C3GLC-060AF	EQ516060	R3GLC-060AF	6.0	6	24	68
E2516070	C3GLC-070TF	EQ516070	R3GLC-070TF	7.0	10	30	80
E2516075	C3GLC-075TF	EQ516075	R3GLC-075TF	7.5	10	30	80
E2516080	C3GLC-080TF	EQ516080	R3GLC-080TF	8.0	10	38	88
E2516090	C3GLC-090TF	EQ516090	R3GLC-090TF	9.0	10	38	88
E2516100	C3GLC-100TF	EQ516100	R3GLC-100TF	10.0	10	45	95
E2516110	C3GLC-110DF	EQ516110	R3GLC-110DF	11.0	12	45	102
E2516120	C3GLC-120DF	EQ516120	R3GLC-120DF	12.0	12	53	110
E2516130	C3GLC-130DF	EQ516130	R3GLC-130DF	13.0	12	53	110
E2516140	C3GLC-140DF	EQ516140	R3GLC-140DF	14.0	12	53	110
E2516150	C3GLC-150DF	EQ516150	R3GLC-150DF	15.0	12	53	110
E2516160	C3GLC-160EF	EQ516160	R3GLC-160EF	16.0	16	63	123
E2516170	C3GLC-170EF	EQ516170	R3GLC-170EF	17.0	16	63	123
E2516180	C3GLC-180EF	EQ516180	R3GLC-180EF	18.0	16	63	123
E2516190	C3GLC-190EF	EQ516190	R3GLC-190EF	19.0	16	63	123
E2516901	C3GLC-200EF	EQ516901	R3GLC-200EF	20.0	16	75	135
E2516200	C3GLC-200FF	EQ516200	R3GLC-200FF	20.0	20	75	141
E2516220	C3GLC-220FF	EQ516220	R3GLC-220FF	22.0	20	75	141

◎ : Excellent ○ : Good

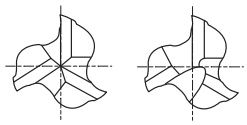
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2516 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

EQ516 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 3 FLUTE LONG LENGTH
HSSCo8, 3 SCHNEIDEN LANG



Up to Ø2.5mm Over Ø2.5mm

HSS Co8 | DIN 844 | N | 3 | 30° | DIN 1835B

P.1234, 1235, 1236, 1237

Unit : mm

EDP No. UNCOATED	ITEM No. UNCOATED	EDP No. TiAlN	ITEM No. TiAlN	Mill Diameter e8	Shank Diameter h6	Length of Cut	Overall Length
E2516240	C3GLC-240GF	EQ516240	R3GLC-240GF	24.0	25	90	166
E2516250	C3GLC-250GF	EQ516250	R3GLC-250GF	25.0	25	90	166
E2516260	C3GLC-260GF	EQ516260	R3GLC-260GF	26.0	25	90	166
E2516280	C3GLC-280GF	EQ516280	R3GLC-280GF	28.0	25	90	166
E2516300	C3GLC-300GF	EQ516300	R3GLC-300GF	30.0	25	90	166
E2516320	C3GLC-320HF	EQ516320	R3GLC-320HF	32.0	32	106	186
E2516350	C3GLC-350HF	EQ516350	R3GLC-350HF	35.0	32	106	186
E2516360	C3GLC-360HF	EQ516360	R3GLC-360HF	36.0	32	106	186
E2516400	C3GLC-400IF	EQ516400	R3GLC-400IF	40.0	40	125	217

▶Other shank design on your request.
▶TiN-COATING & TiCN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm

Nominal-Diameter in mm / Nennmaßbereich in mm

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
e8	— 14 — 28	— 20 — 38	— 25 — 47	— 32 — 59	— 40 — 73	— 50 — 89
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13	0 — 16

◎ : Excellent ○ : Good

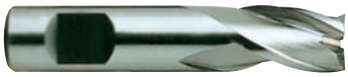
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

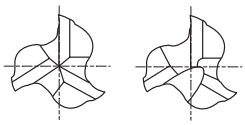
HSS END MILLS

E2553 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

EQ553 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 3 FLUTE SHORT LENGTH THROW AWAY
HSSCo8, 3 SCHNEIDEN KURZ EINWEGFRÄSER





Up to Ø10mm Over Ø10mm

HSS Co8 | YG STD | N | 3 | 30° | DIN 1835B

P.1234, 1235, 1236, 1237

Unit : mm

EDP No. UNCOATED	ITEM No. UNCOATED	EDP No. TiAlN	ITEM No. TiAlN	Mill Diameter e8	Shank Diameter h6	Length of Cut	Overall Length
E2553010	C3FSC-010AF	EQ553010	R3FSC-010AF	1.0	6	2	34
E2553013	C3FSC-013AF	EQ553013	R3FSC-013AF	1.3	6	3	34
E2553015	C3FSC-015AF	EQ553015	R3FSC-015AF	1.5	6	3	34
E2553018	C3FSC-018AF	EQ553018	R3FSC-018AF	1.8	6	3	34
E2553020	C3FSC-020AF	EQ553020	R3FSC-020AF	2.0	6	4	35
E2553023	C3FSC-023AF	EQ553023	R3FSC-023AF	2.3	6	4	35
E2553025	C3FSC-025AF	EQ553025	R3FSC-025AF	2.5	6	5	36
E2553028	C3FSC-028AF	EQ553028	R3FSC-028AF	2.8	6	5	36
E2553030	C3FSC-030AF	EQ553030	R3FSC-030AF	3.0	6	5	36
E2553033	C3FSC-033AF	EQ553033	R3FSC-033AF	3.3	6	6	37
E2553035	C3FSC-035AF	EQ553035	R3FSC-035AF	3.5	6	6	37
E2553038	C3FSC-038AF	EQ553038	R3FSC-038AF	3.8	6	7	38
E2553040	C3FSC-040AF	EQ553040	R3FSC-040AF	4.0	6	7	38
E2553043	C3FSC-043AF	EQ553043	R3FSC-043AF	4.3	6	7	38
E2553045	C3FSC-045AF	EQ553045	R3FSC-045AF	4.5	6	7	38
E2553048	C3FSC-048AF	EQ553048	R3FSC-048AF	4.8	6	8	39
E2553050	C3FSC-050AF	EQ553050	R3FSC-050AF	5.0	6	8	39
E2553053	C3FSC-053AF	EQ553053	R3FSC-053AF	5.3	6	8	39
E2553055	C3FSC-055AF	EQ553055	R3FSC-055AF	5.5	6	8	39
E2553957	C3FSC-0575AF	EQ553957	R3FSC-0575AF	5.75	6	8	39
E2553060	C3FSC-060AF	EQ553060	R3FSC-060AF	6.0	6	8	39

◎ : Excellent ○ : Good

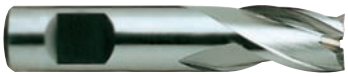
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

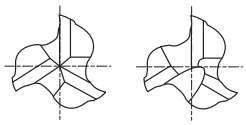
HSS END MILLS

E2553 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

EQ553 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 3 FLUTE SHORT LENGTH THROW AWAY
HSSCo8, 3 SCHNEIDEN KURZ EINWEGFRÄSER





Up to Ø10mm Over Ø10mm

HSS Co8 | YG STD | N | 3 | 30° | DIN 1835B

P.1234, 1235, 1236, 1237

Unit : mm

EDP No. UNCOATED	ITEM No. UNCOATED	EDP No. TiAlN	ITEM No. TiAlN	Mill Diameter e8	Shank Diameter h6	Length of Cut	Overall Length
E2553065	C3FSC-065BF	EQ553065	R3FSC-065BF	6.5	8	10	42
E2553070	C3FSC-070BF	EQ553070	R3FSC-070BF	7.0	8	10	42
E2553075	C3FSC-075BF	EQ553075	R3FSC-075BF	7.5	8	10	42
E2553080	C3FSC-080BF	EQ553080	R3FSC-080BF	8.0	8	11	43
E2553085	C3FSC-085TF	EQ553085	R3FSC-085TF	8.5	10	11	48
E2553090	C3FSC-090TF	EQ553090	R3FSC-090TF	9.0	10	11	48
E2553095	C3FSC-095TF	EQ553095	R3FSC-095TF	9.5	10	11	48
E2553100	C3FSC-100TF	EQ553100	R3FSC-100TF	10.0	10	13	50
E2553120	C3FSC-120DF	EQ553120	R3FSC-120DF	12.0	12	16	58
E2553160	C3FSC-160EF	EQ553160	R3FSC-160EF	16.0	16	19	64
E2553200	C3FSC-200FF	EQ553200	R3FSC-200FF	20.0	20	22	78

▶TiN-COATING & TiCN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm						
Nominal-Diameter in mm / Nennmaßbereich in mm						
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
e8	— 14 — 28	— 20 — 38	— 25 — 47	— 32 — 59	— 40 — 73	— 50 — 89
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13	0 — 16

SET ORDERING No.: E2SET553

* 12PCS. SET
  SHORT LENGTH
  - 2PCS. OF EACH SIZE
    2, 3, 4, 5, 6mm (C3FSC)
  - 1PC. OF EACH SIZE
    8, 10mm (C3FSC)

◎ : Excellent ○ : Good

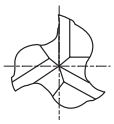
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2554 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

EQ554 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 3 FLUTE LONG LENGTH THROW AWAY
HSSCo8, 3 SCHNEIDEN LANG EINWEGFRÄSER



HSS Co8 | YG STD | N | 3 | 30° | DIN 1835B

P.1234, 1235, 1236, 1237

Unit : mm

EDP No. UNCOATED	ITEM No. UNCOATED	EDP No. TiAlN	ITEM No. TiAlN	Mill Diameter e8	Shank Diameter h6	Length of Cut	Overall Length
E2554015	C3FLC-015AF	EQ554015	R3FLC-015AF	1.5	6	4	35
E2554020	C3FLC-020AF	EQ554020	R3FLC-020AF	2.0	6	7	38
E2554025	C3FLC-025AF	EQ554025	R3FLC-025AF	2.5	6	8	39
E2554030	C3FLC-030AF	EQ554030	R3FLC-030AF	3.0	6	8	39
E2554035	C3FLC-035AF	EQ554035	R3FLC-035AF	3.5	6	10	41
E2554040	C3FLC-040AF	EQ554040	R3FLC-040AF	4.0	6	11	42
E2554045	C3FLC-045AF	EQ554045	R3FLC-045AF	4.5	6	11	42
E2554050	C3FLC-050AF	EQ554050	R3FLC-050AF	5.0	6	13	44
E2554055	C3FLC-055AF	EQ554055	R3FLC-055AF	5.5	6	13	44
E2554060	C3FLC-060AF	EQ554060	R3FLC-060AF	6.0	6	13	44
E2554065	C3FLC-065BF	EQ554065	R3FLC-065BF	6.5	8	16	48
E2554070	C3FLC-070BF	EQ554070	R3FLC-070BF	7.0	8	16	48
E2554075	C3FLC-075BF	EQ554075	R3FLC-075BF	7.5	8	16	48
E2554080	C3FLC-080BF	EQ554080	R3FLC-080BF	8.0	8	19	51
E2554085	C3FLC-085TF	EQ554085	R3FLC-085TF	8.5	10	19	56
E2554090	C3FLC-090TF	EQ554090	R3FLC-090TF	9.0	10	19	56
E2554095	C3FLC-095TF	EQ554095	R3FLC-095TF	9.5	10	19	56
E2554100	C3FLC-100TF	EQ554100	R3FLC-100TF	10.0	10	22	59

▶TiN-COATING & TiCN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛

Nominal-Diameter in ㎜ / Nennmaßbereich in ㎜

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
e8	— 14 — 28	— 20 — 38	— 25 — 47	— 32 — 59	— 40 — 73	— 50 — 89
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13	0 — 16

◎ : Excellent ○ : Good

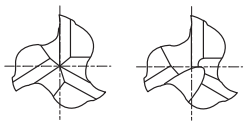
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2551 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

EQ551 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 3 FLUTE SHORT LENGTH THROW AWAY
HSSCo8, 3 SCHNEIDEN KURZ EINWEGFRÄSER



Up to Ø6mm Over Ø6mm

HSS Co8 | YG STD | N | 3 | 30° | B.S

P.1234, 1235, 1236, 1237

Unit : mm

EDP No. UNCOATED	ITEM No. UNCOATED	EDP No. TiAlN	ITEM No. TiAlN	Mill Diameter e8	Shank Diameter	Length of Cut	Overall Length
E2551010	C3CSC-010AF	EQ551010	R3CSC-010AF	1.0	6	2	24.5
E2551015	C3CSC-015AF	EQ551015	R3CSC-015AF	1.5	6	2.5	24.5
E2551020	C3CSC-020AF	EQ551020	R3CSC-020AF	2.0	6	3	25.5
E2551025	C3CSC-025AF	EQ551025	R3CSC-025AF	2.5	6	4	26
E2551028	C3CSC-028AF	EQ551028	R3CSC-028AF	2.8	6	4.5	28
E2551030	C3CSC-030AF	EQ551030	R3CSC-030AF	3.0	6	4.5	28
E2551035	C3CSC-035AF	EQ551035	R3CSC-035AF	3.5	6	5.5	30
E2551038	C3CSC-038AF	EQ551038	R3CSC-038AF	3.8	6	6.5	32.5
E2551040	C3CSC-040AF	EQ551040	R3CSC-040AF	4.0	6	6.5	32.5
E2551045	C3CSC-045AF	EQ551045	R3CSC-045AF	4.5	6	7	34.5
E2551048	C3CSC-048AF	EQ551048	R3CSC-048AF	4.8	6	7.5	36
E2551050	C3CSC-050AF	EQ551050	R3CSC-050AF	5.0	6	7.5	36
E2551055	C3CSC-055AF	EQ551055	R3CSC-055AF	5.5	6	8.5	36
E2551957	C3CSC-0575AF	EQ551957	R3CSC-0575AF	5.75	6	9.5	36
E2551060	C3CSC-060AF	EQ551060	R3CSC-060AF	6.0	6	9.5	36
E2551075	C3CSC-075TF	EQ551075	R3CSC-075TF	7.5	10	11	47.5
E2551080	C3CSC-080TF	EQ551080	R3CSC-080TF	8.0	10	11	47.5
E2551095	C3CSC-095TF	EQ551095	R3CSC-095TF	9.5	10	13	51.5
E2551100	C3CSC-100TF	EQ551100	R3CSC-100TF	10.0	10	13	51.5

▶TiN-COATING & TiCN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm

Nominal-Diameter in mm / Nennmaßbereich in mm

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
e8	— 14 — 28	— 20 — 38	— 25 — 47	— 32 — 59	— 40 — 73	— 50 — 89
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13	0 — 16

Shank Dia. Tolerance	
up to Ø6	— 0.018 — 0.025
over Ø6	h6

◎ : Excellent ○ : Good

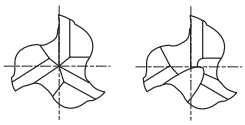
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2552 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

EQ552 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 3 FLUTE LONG LENGTH THROW AWAY
HSSCo8, 3 SCHNEIDEN LANG EINWEGFRÄSER



Up to Ø6mm Over Ø6mm

HSS Co8 | YG STD | N | 3 | 30° | B.S

P.1234, 1235, 1236, 1237

Unit : mm

EDP No. UNCOATED	ITEM No. UNCOATED	EDP No. TiAlN	ITEM No. TiAlN	Mill Diameter e8	Shank Diameter	Length of Cut	Overall Length
E2552015	C3CLC-015AF	EQ552015	R3CLC-015AF	1.5	6	4	28
E2552020	C3CLC-020AF	EQ552020	R3CLC-020AF	2.0	6	4.5	29
E2552025	C3CLC-025AF	EQ552025	R3CLC-025AF	2.5	6	6.5	32
E2552030	C3CLC-030AF	EQ552030	R3CLC-030AF	3.0	6	7.5	34
E2552035	C3CLC-035AF	EQ552035	R3CLC-035AF	3.5	6	8.5	36.5
E2552040	C3CLC-040AF	EQ552040	R3CLC-040AF	4.0	6	9.5	39
E2552045	C3CLC-045AF	EQ552045	R3CLC-045AF	4.5	6	11	42
E2552050	C3CLC-050AF	EQ552050	R3CLC-050AF	5.0	6	12.5	44.5
E2552055	C3CLC-055AF	EQ552055	R3CLC-055AF	5.5	6	14.5	46
E2552060	C3CLC-060AF	EQ552060	R3CLC-060AF	6.0	6	16	44.5
E2552080	C3CLC-080TF	EQ552080	R3CLC-080TF	8.0	10	19	55.5
E2552090	C3CLC-090TF	EQ552090	R3CLC-090TF	9.0	10	22.5	61
E2552100	C3CLC-100TF	EQ552100	R3CLC-100TF	10.0	10	22.5	61

▶TiN-COATING & TiCN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛
Nominal-Diameter in ㎜ / Nennmaßbereich in ㎜

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
e8	— 14 — 28	— 20 — 38	— 25 — 47	— 32 — 59	— 40 — 73	— 50 — 89
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13	0 — 16

Shank Dia. Tolerance	
up to Ø6	— 0.018 — 0.025
over Ø6	h6

◎ : Excellent ○ : Good

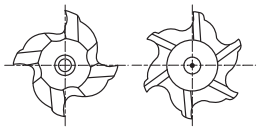
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2574 , EQ574 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

E2575 , EQ575 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 4&6 FLUTE SHORT LENGTH
HSSCo8, 4&6 SCHNEIDEN KURZ



HSS Co8 | DIN 844 | N | 4&6 | 30° | DIN 1835B

P.1238, 1239

Unit : mm

EDP No. UNCOATED	ITEM No. UNCOATED	EDP No. TiAlN	ITEM No. TiAlN	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
E2574020	C4GRS-020AF	EQ574020	R4GRS-020AF	2.0	6	7	51	4
E2574025	C4GRS-025AF	EQ574025	R4GRS-025AF	2.5	6	8	52	4
E2574030	C4GRS-030AF	EQ574030	R4GRS-030AF	3.0	6	8	52	4
E2574035	C4GRS-035AF	EQ574035	R4GRS-035AF	3.5	6	10	54	4
E2574040	C4GRS-040AF	EQ574040	R4GRS-040AF	4.0	6	11	55	4
E2574050	C4GRS-050AF	EQ574050	R4GRS-050AF	5.0	6	13	57	4
E2574060	C4GRS-060AF	EQ574060	R4GRS-060AF	6.0	6	13	57	4
E2574070	C4GRS-070TF	EQ574070	R4GRS-070TF	7.0	10	16	66	4
E2574080	C4GRS-080TF	EQ574080	R4GRS-080TF	8.0	10	19	69	4
E2574090	C4GRS-090TF	EQ574090	R4GRS-090TF	9.0	10	19	69	4
E2574100	C4GRS-100TF	EQ574100	R4GRS-100TF	10.0	10	22	72	4
E2574110	C4GRS-110DF	EQ574110	R4GRS-110DF	11.0	12	22	79	4
E2574120	C4GRS-120DF	EQ574120	R4GRS-120DF	12.0	12	26	83	4
E2574130	C4GRS-130DF	EQ574130	R4GRS-130DF	13.0	12	26	83	4
E2574140	C4GRS-140DF	EQ574140	R4GRS-140DF	14.0	12	26	83	4
E2574150	C4GRS-150DF	EQ574150	R4GRS-150DF	15.0	12	26	83	4
E2574160	C4GRS-160EF	EQ574160	R4GRS-160EF	16.0	16	32	92	4
E2574170	C4GRS-170EF	EQ574170	R4GRS-170EF	17.0	16	32	92	4
E2574180	C4GRS-180EF	EQ574180	R4GRS-180EF	18.0	16	32	92	4
E2574190	C4GRS-190EF	EQ574190	R4GRS-190EF	19.0	16	32	92	4
E2574200	C4GRS-200FF	EQ574200	R4GRS-200FF	20.0	20	38	104	4
E2575210	C6GRS-210FF	EQ575210	R6GRS-210FF	21.0	20	38	104	6
E2575220	C6GRS-220FF	EQ575220	R6GRS-220FF	22.0	20	38	104	6
E2575230	C6GRS-230FF	EQ575230	R6GRS-230FF	23.0	20	38	104	6
E2575240	C6GRS-240GF	EQ575240	R6GRS-240GF	24.0	25	45	121	6
E2575250	C6GRS-250GF	EQ575250	R6GRS-250GF	25.0	25	45	121	6
E2575260	C6GRS-260GF	EQ575260	R6GRS-260GF	26.0	25	45	121	6
E2575280	C6GRS-280GF	EQ575280	R6GRS-280GF	28.0	25	45	121	6
E2575300	C6GRS-300GF	EQ575300	R6GRS-300GF	30.0	25	45	121	6
E2575320	C6GRS-320HF	EQ575320	R6GRS-320HF	32.0	32	53	133	6
E2575340	C6GRS-340HF	EQ575340	R6GRS-340HF	34.0	32	53	133	6
E2575350	C6GRS-350HF	EQ575350	R6GRS-350HF	35.0	32	53	133	6
E2575360	C6GRS-360HF	EQ575360	R6GRS-360HF	36.0	32	53	133	6
E2575400	C6GRS-400HF	EQ575400	R6GRS-400HF	40.0	32	63	143	6

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~+0.04	h6

▶Other shank design on your reguest.
▶TiN-COATING & TiCN-COATING are available on your request.

◎ : Excellent ○ : Good

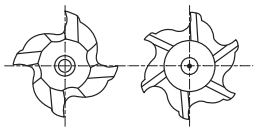
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2576 , EQ576 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

E2577 , EQ577 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 4&6 FLUTE LONG LENGTH
HSSCo8, 4&6 SCHNEIDEN LANG



HSS Co8 | DIN 844 | N | 4&6 | 30° | DIN 1835B

P.1238, 1239

Unit : mm

EDP No. UNCOATED	ITEM No. UNCOATED	EDP No. TiAlN	ITEM No. TiAlN	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
E2576020	C4GLS-020AF	EQ576020	R4GLS-020AF	2.0	6	10	54	4
E2576025	C4GLS-025AF	EQ576025	R4GLS-025AF	2.5	6	12	56	4
E2576030	C4GLS-030AF	EQ576030	R4GLS-030AF	3.0	6	12	56	4
E2576035	C4GLS-035AF	EQ576035	R4GLS-035AF	3.5	6	15	59	4
E2576040	C4GLS-040AF	EQ576040	R4GLS-040AF	4.0	6	19	63	4
E2576045	C4GLS-045AF	EQ576045	R4GLS-045AF	4.5	6	19	63	4
E2576050	C4GLS-050AF	EQ576050	R4GLS-050AF	5.0	6	24	68	4
E2576060	C4GLS-060AF	EQ576060	R4GLS-060AF	6.0	6	24	68	4
E2576070	C4GLS-070TF	EQ576070	R4GLS-070TF	7.0	10	30	80	4
E2576080	C4GLS-080TF	EQ576080	R4GLS-080TF	8.0	10	38	88	4
E2576090	C4GLS-090TF	EQ576090	R4GLS-090TF	9.0	10	38	88	4
E2576100	C4GLS-100TF	EQ576100	R4GLS-100TF	10.0	10	45	95	4
E2576110	C4GLS-110DF	EQ576110	R4GLS-110DF	11.0	12	45	102	4
E2576120	C4GLS-120DF	EQ576120	R4GLS-120DF	12.0	12	53	110	4
E2576130	C4GLS-130DF	EQ576130	R4GLS-130DF	13.0	12	53	110	4
E2576140	C4GLS-140DF	EQ576140	R4GLS-140DF	14.0	12	53	110	4
E2576150	C4GLS-150DF	EQ576150	R4GLS-150DF	15.0	12	53	110	4
E2576160	C4GLS-160EF	EQ576160	R4GLS-160EF	16.0	16	63	123	4
E2576170	C4GLS-170EF	EQ576170	R4GLS-170EF	17.0	16	63	123	4
E2576180	C4GLS-180EF	EQ576180	R4GLS-180EF	18.0	16	63	123	4
E2576190	C4GLS-190EF	EQ576190	R4GLS-190EF	19.0	16	63	123	4
E2576902	C4GLS-200EF	EQ576902	R4GLS-200EF	20.0	16	75	135	4
E2576200	C4GLS-200FF	EQ576200	R4GLS-200FF	20.0	20	75	141	4
E2577220	C6GLS-220FF	EQ577220	R6GLS-220FF	22.0	20	75	141	6
E2577240	C6GLS-240GF	EQ577240	R6GLS-240GF	24.0	25	90	166	6
E2577250	C6GLS-250GF	EQ577250	R6GLS-250GF	25.0	25	90	166	6
E2577260	C6GLS-260GF	EQ577260	R6GLS-260GF	26.0	25	90	166	6
E2577280	C6GLS-280GF	EQ577280	R6GLS-280GF	28.0	25	90	166	6
E2577300	C6GLS-300GF	EQ577300	R6GLS-300GF	30.0	25	90	166	6
E2577320	C6GLS-320HF	EQ577320	R6GLS-320HF	32.0	32	106	186	6
E2577360	C6GLS-360HF	EQ577360	R6GLS-360HF	36.0	32	106	186	6
E2577400	C6GLS-400IF	EQ577400	R6GLS-400IF	40.0	40	125	217	6

Mill Dia. Tolerance(mm)		Shank Dia. Tolerance
up to Ø6	0~+0.04	h6
over Ø6	0~+0.05	

▶Other shank design on your reguest.
▶TiN-COATING & TiCN-COATING are available on your request.

◎ : Excellent ○ : Good

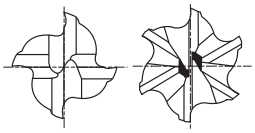
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2595 , EQ595 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

E2596 , EQ596 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 4&6 FLUTE SHORT LENGTH
HSSCo8, 4&6 SCHNEIDEN KURZ



HSS Co8 | DIN 844 | N | 4&6 | 30° | DIN 1835B

P.1240, 1241

Unit : mm

EDP No. UNCOATED	ITEM No. UNCOATED	EDP No. TiAlN	ITEM No. TiAlN	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
E2595020	C4GRC-020AF	EQ595020	R4GRC-020AF	2.0	6	7	51	4
E2595030	C4GRC-030AF	EQ595030	R4GRC-030AF	3.0	6	8	52	4
E2595040	C4GRC-040AF	EQ595040	R4GRC-040AF	4.0	6	11	55	4
E2595050	C4GRC-050AF	EQ595050	R4GRC-050AF	5.0	6	13	57	4
E2595060	C4GRC-060AF	EQ595060	R4GRC-060AF	6.0	6	13	57	4
E2595070	C4GRC-070TF	EQ595070	R4GRC-070TF	7.0	10	16	66	4
E2595080	C4GRC-080TF	EQ595080	R4GRC-080TF	8.0	10	19	69	4
E2595090	C4GRC-090TF	EQ595090	R4GRC-090TF	9.0	10	19	69	4
E2595100	C4GRC-100TF	EQ595100	R4GRC-100TF	10.0	10	22	72	4
E2595110	C4GRC-110DF	EQ595110	R4GRC-110DF	11.0	12	22	79	4
E2595120	C4GRC-120DF	EQ595120	R4GRC-120DF	12.0	12	26	83	4
E2595130	C4GRC-130DF	EQ595130	R4GRC-130DF	13.0	12	26	83	4
E2595140	C4GRC-140DF	EQ595140	R4GRC-140DF	14.0	12	26	83	4
E2595150	C4GRC-150DF	EQ595150	R4GRC-150DF	15.0	12	26	83	4
E2595160	C4GRC-160EF	EQ595160	R4GRC-160EF	16.0	16	32	92	4
E2595170	C4GRC-170EF	EQ595170	R4GRC-170EF	17.0	16	32	92	4
E2595180	C4GRC-180EF	EQ595180	R4GRC-180EF	18.0	16	32	92	4
E2595190	C4GRC-190EF	EQ595190	R4GRC-190EF	19.0	16	32	92	4
E2595920	C4GRC-200EF	EQ595920	R4GRC-200EF	20.0	16	38	98	4
E2595200	C4GRC-200FF	EQ595200	R4GRC-200FF	20.0	20	38	104	4
E2595220	C4GRC-220FF	EQ595220	R4GRC-220FF	22.0	20	38	104	4
E2595250	C4GRC-250GF	EQ595250	R4GRC-250GF	25.0	25	45	121	4
E2596220	C6GRC-220FF	EQ596220	R6GRC-220FF	22.0	20	38	104	6
E2596240	C6GRC-240GF	EQ596240	R6GRC-240GF	24.0	25	45	121	6
E2596250	C6GRC-250GF	EQ596250	R6GRC-250GF	25.0	25	45	121	6
E2596260	C6GRC-260GF	EQ596260	R6GRC-260GF	26.0	25	45	121	6
E2596280	C6GRC-280GF	EQ596280	R6GRC-280GF	28.0	25	45	121	6
E2596300	C6GRC-300GF	EQ596300	R6GRC-300GF	30.0	25	45	121	6
E2596320	C6GRC-320HF	EQ596320	R6GRC-320HF	32.0	32	53	133	6
E2596340	C6GRC-340HF	EQ596340	R6GRC-340HF	34.0	32	53	133	6
E2596350	C6GRC-350HF	EQ596350	R6GRC-350HF	35.0	32	53	133	6
E2596360	C6GRC-360HF	EQ596360	R6GRC-360HF	36.0	32	53	133	6
E2596380	C6GRC-380HF	EQ596380	R6GRC-380HF	38.0	32	63	143	6
E2596901	C6GRC-400HF	EQ596901	R6GRC-400HF	40.0	32	63	143	6
E2596400	C6GRC-400IF	EQ596400	R6GRC-400IF	40.0	40	63	155	6

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~+0.04	h6

▶Other shank design on your reguest.
▶TiN-COATING & TiCN-COATING are available on your request.

◎ : Excellent ○ : Good

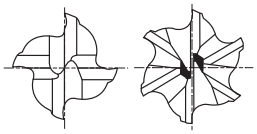
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2597 , EQ597 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

E2598 , EQ598 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 4&6 FLUTE LONG LENGTH
HSSCo8, 4&6 SCHNEIDEN LANG



HSS Co8 | DIN 844 | N | 4&6 | ≈30° | DIN 1835B

P.1238, 1239

Unit : mm

EDP No. UNCOATED	ITEM No. UNCOATED	EDP No. TiAlN	ITEM No. TiAlN	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
E2597020	C4GLC-020AF	EQ597020	R4GLC-020AF	2.0	6	10	54	4
E2597025	C4GLC-025AF	EQ597025	R4GLC-025AF	2.5	6	12	56	4
E2597030	C4GLC-030AF	EQ597030	R4GLC-030AF	3.0	6	12	56	4
E2597035	C4GLC-035AF	EQ597035	R4GLC-035AF	3.5	6	15	59	4
E2597040	C4GLC-040AF	EQ597040	R4GLC-040AF	4.0	6	19	63	4
E2597045	C4GLC-045AF	EQ597045	R4GLC-045AF	4.5	6	19	63	4
E2597050	C4GLC-050AF	EQ597050	R4GLC-050AF	5.0	6	24	68	4
E2597055	C4GLC-055AF	EQ597055	R4GLC-055AF	5.5	6	24	68	4
E2597060	C4GLC-060AF	EQ597060	R4GLC-060AF	6.0	6	24	68	4
E2597070	C4GLC-070TF	EQ597070	R4GLC-070TF	7.0	10	30	80	4
E2597080	C4GLC-080TF	EQ597080	R4GLC-080TF	8.0	10	38	88	4
E2597090	C4GLC-090TF	EQ597090	R4GLC-090TF	9.0	10	38	88	4
E2597100	C4GLC-100TF	EQ597100	R4GLC-100TF	10.0	10	45	95	4
E2597110	C4GLC-110DF	EQ597110	R4GLC-110DF	11.0	12	45	102	4
E2597120	C4GLC-120DF	EQ597120	R4GLC-120DF	12.0	12	53	110	4
E2597130	C4GLC-130DF	EQ597130	R4GLC-130DF	13.0	12	53	110	4
E2597140	C4GLC-140DF	EQ597140	R4GLC-140DF	14.0	12	53	110	4
E2597150	C4GLC-150DF	EQ597150	R4GLC-150DF	15.0	12	53	110	4
E2597160	C4GLC-160EF	EQ597160	R4GLC-160EF	16.0	16	63	123	4
E2597170	C4GLC-170EF	EQ597170	R4GLC-170EF	17.0	16	63	123	4
E2597180	C4GLC-180EF	EQ597180	R4GLC-180EF	18.0	16	63	123	4
E2597190	C4GLC-190EF	EQ597190	R4GLC-190EF	19.0	16	63	123	4
E2597200	C4GLC-200FF	EQ597200	R4GLC-200FF	20.0	20	75	141	4
E2598220	C6GLC-220FF	EQ598220	R6GLC-220FF	22.0	20	75	141	6
E2598240	C6GLC-240GF	EQ598240	R6GLC-240GF	24.0	25	90	166	6
E2598250	C6GLC-250GF	EQ598250	R6GLC-250GF	25.0	25	90	166	6
E2598260	C6GLC-260GF	EQ598260	R6GLC-260GF	26.0	25	90	166	6
E2598280	C6GLC-280GF	EQ598280	R6GLC-280GF	28.0	25	90	166	6
E2598300	C6GLC-300GF	EQ598300	R6GLC-300GF	30.0	25	90	166	6
E2598320	C6GLC-320HF	EQ598320	R6GLC-320HF	32.0	32	106	186	6
E2598360	C6GLC-360HF	EQ598360	R6GLC-360HF	36.0	32	106	186	6
E2598400	C6GLC-400IF	EQ598400	R6GLC-400IF	40.0	40	125	217	6

Mill Dia. Tolerance(mm)		Shank Dia. Tolerance
up to Ø6	0~+0.04	h6
over Ø6	0~+0.05	

▶Other shank design on your reguest.
▶TiN-COATING & TiCN-COATING are available on your request.

◎ : Excellent ○ : Good

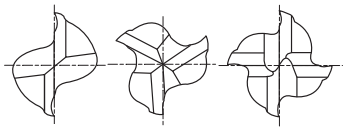
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2461, E2462, E2463 SERIES — FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

EQ461, EQ462, EQ463 SERIES — FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, MULTI FLUTE 50° HELIX SHORT LENGTH
HSSCo8, MULTI SCHNEIDEN 50° RECHTSSPIRALE KURZ



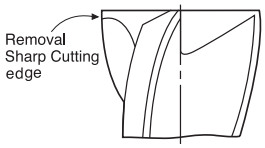
HSS Co8 | DIN 844 | N | 2-4 | 50° | DIN 1835B

P.1242, 1243

Unit : mm

EDP No. UNCOATED	ITEM No. UNCOATED	EDP No. TiAlN	ITEM No. TiAlN	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
E2461020	C2ERH-020AF	EQ461020	R2ERH-020AF	2.0	6	7	51	2
E2461030	C2ERH-030AF	EQ461030	R2ERH-030AF	3.0	6	8	52	2
E2461040	C2ERH-040AF	EQ461040	R2ERH-040AF	4.0	6	11	55	2
E2461050	C2ERH-050AF	EQ461050	R2ERH-050AF	5.0	6	13	57	2
E2462060	C3ERH-060AF	EQ462060	R3ERH-060AF	6.0	6	13	57	3
E2462070	C3ERH-070TF	EQ462070	R3ERH-070TF	7.0	10	16	66	3
E2462080	C3ERH-080TF	EQ462080	R3ERH-080TF	8.0	10	19	69	3
E2462090	C3ERH-090TF	EQ462090	R3ERH-090TF	9.0	10	19	69	3
E2462100	C3ERH-100TF	EQ462100	R3ERH-100TF	10.0	10	22	72	3
E2462110	C3ERH-110DF	EQ462110	R3ERH-110DF	11.0	12	22	79	3
E2462120	C3ERH-120DF	EQ462120	R3ERH-120DF	12.0	12	26	83	3
E2462130	C3ERH-130DF	EQ462130	R3ERH-130DF	13.0	12	26	83	3
E2462140	C3ERH-140DF	EQ462140	R3ERH-140DF	14.0	12	26	83	3
E2462150	C3ERH-150DF	EQ462150	R3ERH-150DF	15.0	12	26	83	3
E2462160	C3ERH-160EF	EQ462160	R3ERH-160EF	16.0	16	32	92	3
E2462180	C3ERH-180EF	EQ462180	R3ERH-180EF	18.0	16	32	92	3
E2462200	C3ERH-200FF	EQ462200	R3ERH-200FF	20.0	20	38	104	3
E2462230	C3ERH-230FF	EQ462230	R3ERH-230FF	23.0	20	38	104	3
E2463220	C4ERH-220GF	EQ463220	R4ERH-220GF	22.0	25	45	121	4
E2463250	C4ERH-250GF	EQ463250	R4ERH-250GF	25.0	25	45	121	4
E2463300	C4ERH-300GF	EQ463300	R4ERH-300GF	30.0	25	45	121	4

▶Other shank design on your reguest.
▶TiN-COATING & TiCN-COATING are available on your request.



Mill Dia. Tolerance(mm)		Shank Dia. Tolerance
up to Ø3	0~+0.04	h6
Ø4.0 ~ Ø6.0	0~+0.048	
Ø7.0 ~ Ø10.0	0~+0.058	
Ø10.5 ~ Ø18.0	0~+0.07	
over Ø18	0~+0.084	

◎ : Excellent ○ : Good

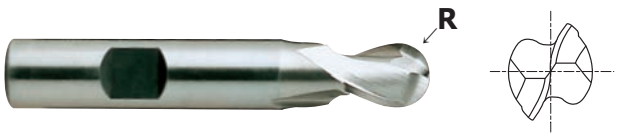
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○												

HSS END MILLS

E2535 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

EQ535 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 2 FLUTE SHORT LENGTH BALL NOSE
HSSCo8, 2 SCHNEIDEN KURZ STIRNRADIUS



HSS Co8 | DIN 327 | N | 2 | 30° | R ±0.02 | DIN 1835B

P.1244, 1245

Unit : mm

EDP No. UNCOATED	ITEM No. UNCOATED	EDP No. TiAlN	ITEM No. TiAlN	Radius of Ball Nose R (±0.02)	Mill Diameter e8	Shank Diameter h6	Length of Cut	Overall Length
E2535020	C2GRB-020AF	EQ535020	R2GRB-020AF	R1.0	2.0	6	4	48
E2535025	C2GRB-025AF	EQ535025	R2GRB-025AF	R1.25	2.5	6	5	49
E2535030	C2GRB-030AF	EQ535030	R2GRB-030AF	R1.5	3.0	6	5	49
E2535035	C2GRB-035AF	EQ535035	R2GRB-035AF	R1.75	3.5	6	6	50
E2535040	C2GRB-040AF	EQ535040	R2GRB-040AF	R2.0	4.0	6	7	51
E2535045	C2GRB-045AF	EQ535045	R2GRB-045AF	R2.25	4.5	6	7	51
E2535050	C2GRB-050AF	EQ535050	R2GRB-050AF	R2.5	5.0	6	8	52
E2535055	C2GRB-055AF	EQ535055	R2GRB-055AF	R2.75	5.5	6	8	52
E2535060	C2GRB-060AF	EQ535060	R2GRB-060AF	R3.0	6.0	6	8	52
E2535070	C2GRB-070TF	EQ535070	R2GRB-070TF	R3.5	7.0	10	10	60
E2535080	C2GRB-080TF	EQ535080	R2GRB-080TF	R4.0	8.0	10	11	61
E2535090	C2GRB-090TF	EQ535090	R2GRB-090TF	R4.5	9.0	10	11	61
E2535100	C2GRB-100TF	EQ535100	R2GRB-100TF	R5.0	10.0	10	13	63
E2535110	C2GRB-110DF	EQ535110	R2GRB-110DF	R5.5	11.0	12	13	70
E2535120	C2GRB-120DF	EQ535120	R2GRB-120DF	R6.0	12.0	12	16	73
E2535130	C2GRB-130DF	EQ535130	R2GRB-130DF	R6.5	13.0	12	16	73
E2535140	C2GRB-140DF	EQ535140	R2GRB-140DF	R7.0	14.0	12	16	73
E2535150	C2GRB-150DF	EQ535150	R2GRB-150DF	R7.5	15.0	12	16	73
E2535160	C2GRB-160EF	EQ535160	R2GRB-160EF	R8.0	16.0	16	19	79
E2535170	C2GRB-170EF	EQ535170	R2GRB-170EF	R8.5	17.0	16	19	79
E2535180	C2GRB-180EF	EQ535180	R2GRB-180EF	R9.0	18.0	16	19	79
E2535190	C2GRB-190EF	EQ535190	R2GRB-190EF	R9.5	19.0	16	19	79
E2535923	C2GRB-200EF	EQ535923	R2GRB-200EF	R10.0	20.0	16	22	82
E2535200	C2GRB-200FF	EQ535200	R2GRB-200FF	R10.0	20.0	20	22	88
E2535220	C2GRB-220FF	EQ535220	R2GRB-220FF	R11.0	22.0	20	22	88
E2535922	C2GRB-220GF	EQ535922	R2GRB-220GF	R11.0	22.0	25	22	98
E2535240	C2GRB-240GF	EQ535240	R2GRB-240GF	R12.0	24.0	25	26	102
E2535250	C2GRB-250GF	EQ535250	R2GRB-250GF	R12.5	25.0	25	26	102
E2535260	C2GRB-260GF	EQ535260	R2GRB-260GF	R13.0	26.0	25	26	102
E2535280	C2GRB-280GF	EQ535280	R2GRB-280GF	R14.0	28.0	25	26	102
E2535300	C2GRB-300GF	EQ535300	R2GRB-300GF	R15.0	30.0	25	26	102
E2535320	C2GRB-320HF	EQ535320	R2GRB-320HF	R16.0	32.0	32	32	112

▶Other shank design on your reguest.
▶TiN-COATING & TiCN-COATING are available on your request.

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2492 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

EQ492 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 2 FLUTE LONG LENGTH BALL NOSE
HSSCo8, 2 SCHNEIDEN LANG STIRNRADIUS

HSS Co8 | DIN 1889 | N | 2 | 30° | R ±0.02 | DIN 1835B

P.1244, 1245

Unit : mm

EDP No. UNCOATED	ITEM No. UNCOATED	EDP No. TiAlN	ITEM No. TiAlN	Radius of Ball Nose R (±0.02)	Mill Diameter e8	Shank Diameter h6	Length of Cut	Overall Length
E2492020	C2GLB-020AF	EQ492020	R2GLB-020AF	R1.0	**2.0**	6	7	54
E2492030	C2GLB-030AF	EQ492030	R2GLB-030AF	R1.5	**3.0**	6	8	56
E2492040	C2GLB-040AF	EQ492040	R2GLB-040AF	R2.0	**4.0**	6	11	63
E2492050	C2GLB-050AF	EQ492050	R2GLB-050AF	R2.5	**5.0**	6	13	68
E2492060	C2GLB-060AF	EQ492060	R2GLB-060AF	R3.0	**6.0**	6	13	68
E2492070	C2GLB-070TF	EQ492070	R2GLB-070TF	R3.5	**7.0**	10	16	80
E2492080	C2GLB-080TF	EQ492080	R2GLB-080TF	R4.0	**8.0**	10	19	88
E2492090	C2GLB-090TF	EQ492090	R2GLB-090TF	R4.5	**9.0**	10	19	88
E2492100	C2GLB-100TF	EQ492100	R2GLB-100TF	R5.0	**10.0**	10	22	95
E2492110	C2GLB-110DF	EQ492110	R2GLB-110DF	R5.5	**11.0**	12	22	102
E2492120	C2GLB-120DF	EQ492120	R2GLB-120DF	R6.0	**12.0**	12	26	110
E2492130	C2GLB-130DF	EQ492130	R2GLB-130DF	R6.5	**13.0**	12	26	110
E2492140	C2GLB-140DF	EQ492140	R2GLB-140DF	R7.0	**14.0**	12	26	110
E2492150	C2GLB-150DF	EQ492150	R2GLB-150DF	R7.5	**15.0**	12	26	110
E2492160	C2GLB-160EF	EQ492160	R2GLB-160EF	R8.0	**16.0**	16	32	123
E2492170	C2GLB-170EF	EQ492170	R2GLB-170EF	R8.5	**17.0**	16	32	123
E2492180	C2GLB-180EF	EQ492180	R2GLB-180EF	R9.0	**18.0**	16	32	123
E2492190	C2GLB-190EF	EQ492190	R2GLB-190EF	R9.5	**19.0**	16	32	123
E2492200	C2GLB-200FF	EQ492200	R2GLB-200FF	R10.0	**20.0**	20	38	141
E2492220	C2GLB-220FF	EQ492220	R2GLB-220FF	R11.0	**22.0**	20	38	141
E2492240	C2GLB-240GF	EQ492240	R2GLB-240GF	R12.0	**24.0**	25	45	166
E2492250	C2GLB-250GF	EQ492250	R2GLB-250GF	R12.5	**25.0**	25	45	166
E2492260	C2GLB-260GF	EQ492260	R2GLB-260GF	R13.0	**26.0**	25	45	166
E2492280	C2GLB-280GF	EQ492280	R2GLB-280GF	R14.0	**28.0**	25	45	166
E2492300	C2GLB-300GF	EQ492300	R2GLB-300GF	R15.0	**30.0**	25	45	166

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

▶Other shank design on your reguest.
▶TiN-COATING & TiCN-COATING are available on your request.

◎ : Excellent ○ : Good

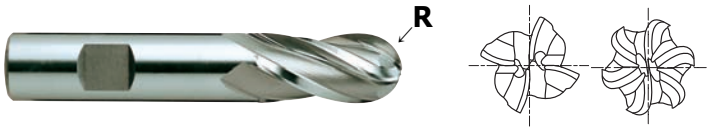
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2410 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

EQ410 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 4&6 FLUTE SHORT LENGTH BALL NOSE
HSSCo8, 4&6 SCHNEIDEN KURZ STIRNRADIUS



HSS Co8 | DIN 1889 | N | 4&6 | 30° | R ±0.02 | DIN 1835B

P.1246, 1247

Unit : mm

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
UNCOATED	TiAlN	R (±0.02)	e8	h6			
E2410060	**EQ410060**	R3.0	**6.0**	6	13	57	4
E2410080	**EQ410080**	R4.0	**8.0**	10	19	69	4
E2410100	**EQ410100**	R5.0	**10.0**	10	22	72	4
E2410120	**EQ410120**	R6.0	**12.0**	12	26	83	4
E2410160	**EQ410160**	R8.0	**16.0**	16	32	92	4
E2410200	**EQ410200**	R10.0	**20.0**	20	38	104	4
E2410250	**EQ410250**	R12.5	**25.0**	25	45	121	6

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2429 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

EQ429 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 4&6 FLUTE LONG LENGTH BALL NOSE
HSSCo8, 4&6 SCHNEIDEN LANG STIRNRADIUS

HSS Co8 | DIN 1889 | N | 4&6 | 30° | R ±0.02 | DIN 1835B

P.1246, 1247

Unit : mm

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
UNCOATED	TiAlN	R (±0.02)	e8	h6			
E2429100	**EQ429100**	R5.0	**10.0**	10	45	95	4
E2429120	**EQ429120**	R6.0	**12.0**	12	53	110	4
E2429160	**EQ429160**	R8.0	**16.0**	16	63	123	4
E2429200	**EQ429200**	R10.0	**20.0**	20	75	141	4
E2429250	**EQ429250**	R12.5	**25.0**	25	90	166	6

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2512 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

EQ512 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 3 FLUTE SHORT LENGTH BALL NOSE THROW AWAY
HSSCo8, 3 SCHNEIDEN KURZ STIRNRADIUS EINWEGFRÄSER

HSS Co8 | YG STD | N | 3 | 30° | R ±0.02 | DIN 1835B

P.1246, 1247

Unit : mm

EDP No. UNCOATED	ITEM No. UNCOATED	EDP No. TiAlN	ITEM No. TiAlN	Radius of Ball Nose R (±0.02)	Mill Diameter e8	Shank Diameter h6	Length of Cut	Overall Length
E2512020	C3FSB-020AF	EQ512020	R3FSB-020AF	R1.0	2.0	6	4	35
E2512025	C3FSB-025AF	EQ512025	R3FSB-025AF	R1.25	2.5	6	5	36
E2512030	C3FSB-030AF	EQ512030	R3FSB-030AF	R1.5	3.0	6	5	36
E2512040	C3FSB-040AF	EQ512040	R3FSB-040AF	R2.0	4.0	6	7	38
E2512050	C3FSB-050AF	EQ512050	R3FSB-050AF	R2.5	5.0	6	8	39
E2512060	C3FSB-060AF	EQ512060	R3FSB-060AF	R3.0	6.0	6	8	39

▶TiN-COATING & TiCN-COATING are available on your request.

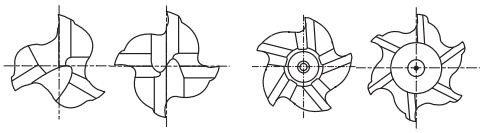
Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSSCo8, MULTI FLUTE SHORT LENGTH ROUGHING - COARSE

HSSCo8, MULTI SCHNEIDEN KURZ SCHRUPPFRÄSER - GROB



Up to Ø20mm　　Over Ø20mm

HSS Co8 | DIN 844 | NR | COARSE | 3-6 | 30° | DIN 1835B | ~Ø20 | Ø22~

P.1248, 1249

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
UNCOATED	TiAlN	js12	h6			
E2751060	EQ751060	6.0	6	13	57	3
E2751070	EQ751070	7.0	10	16	66	3
E2751080	EQ751080	8.0	10	19	69	3
E2751090	EQ751090	9.0	10	19	69	3
E2751095	EQ751095	9.5	10	19	69	3
E2751100	EQ751100	10.0	10	22	72	4
E2751110	EQ751110	11.0	12	22	79	4
E2751120	EQ751120	12.0	12	26	83	4
E2751125	EQ751125	12.5	12	26	83	4
E2751130	EQ751130	13.0	12	26	83	4
E2751140	EQ751140	14.0	12	26	83	4
E2751145	EQ751145	14.5	12	26	83	4
E2751150	EQ751150	15.0	12	26	83	4
E2751160	EQ751160	16.0	16	32	92	4
E2751170	EQ751170	17.0	16	32	92	4
E2751180	EQ751180	18.0	16	32	92	4
E2751190	EQ751190	19.0	16	32	92	4
E2751200	EQ751200	20.0	20	38	104	4
E2751901	EQ751901	20.0	16	38	98	4
E2751220	EQ751220	22.0	20	38	104	5
E2751240	EQ751240	24.0	25	45	121	5
E2751250	EQ751250	25.0	25	45	121	5
E2751260	EQ751260	26.0	25	45	121	6
E2751280	EQ751280	28.0	25	45	121	6
E2751300	EQ751300	30.0	25	45	121	6

◎ : Excellent　○ : Good

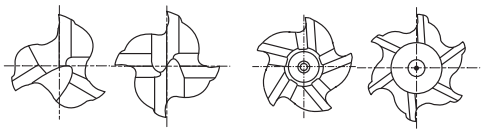
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2751 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

EQ751 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, MULTI FLUTE SHORT LENGTH ROUGHING - COARSE
HSSCo8, MULTI SCHNEIDEN KURZ SCHRUPPFRÄSER - GROB



Up to Ø20mm　　Over Ø20mm

HSS Co8 | DIN 844 | NR | COARSE | 3-6 | 30° | DIN 1835B | ~Ø20 | Ø22~

P.1248, 1249

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
UNCOATED	TiAlN	js12	h6			
E2751320	EQ751320	32.0	32	53	133	6
E2751340	EQ751340	34.0	32	53	133	6
E2751350	EQ751350	35.0	32	53	133	6
E2751360	EQ751360	36.0	32	53	133	6
E2751380	EQ751380	38.0	32	63	155	6
E2751938	EQ751938	38.0	40	63	155	6
E2751400	EQ751400	40.0	32	63	155	6
E2751940	EQ751940	40.0	40	63	155	6
E2751450	EQ751450	45.0	32	63	143	6
E2751500	EQ751500	50.0	50	75	177	6

▶Other shank design on your request.
▶TiN-COATING & TiCN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛
Nominal-Diameter in mm / Nennmaßbereich in mm

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
js12	±50	±60	±75	±90	±105	±125
h6	0 / −6	0 / −8	0 / −9	0 / −11	0 / −13	0 / −16

◎ : Excellent　○ : Good

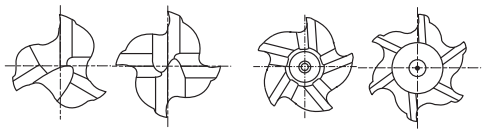
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2752 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

EQ752 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, MULTI FLUTE LONG LENGTH ROUGHING - COARSE
HSSCo8, MULTI SCHNEIDEN LANG SCHRUPPFRÄSER - GROB



Up to Ø20mm　　Over Ø20mm

HSS Co8 | DIN 844 | NR | COARSE | 3-6 | 30° | DIN 1835B | ~Ø20 | Ø22~

P.1248, 1249

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
UNCOATED	TiAlN	js12	h6			
E2752060	EQ752060	6.0	6	24	68	3
E2752070	EQ752070	7.0	10	30	80	3
E2752080	EQ752080	8.0	10	38	88	3
E2752090	EQ752090	9.0	10	38	88	3
E2752100	EQ752100	10.0	10	45	95	4
E2752110	EQ752110	11.0	12	45	102	4
E2752120	EQ752120	12.0	12	53	110	4
E2752130	EQ752130	13.0	12	53	110	4
E2752140	EQ752140	14.0	12	53	110	4
E2752150	EQ752150	15.0	12	53	110	4
E2752160	EQ752160	16.0	16	63	123	4
E2752170	EQ752170	17.0	16	63	123	4
E2752180	EQ752180	18.0	16	63	123	4
E2752190	EQ752190	19.0	16	63	123	4
E2752200	EQ752200	20.0	20	75	141	4
E2752901	EQ752901	20.0	16	75	135	4
E2752220	EQ752220	22.0	20	75	141	5
E2752902	EQ752902	22.0	25	75	151	5
E2752240	EQ752240	24.0	25	90	166	5
E2752250	EQ752250	25.0	25	90	166	5
E2752260	EQ752260	26.0	25	90	166	6
E2752280	EQ752280	28.0	25	90	166	6
E2752300	EQ752300	30.0	25	90	166	6
E2752320	EQ752320	32.0	32	106	186	6
E2752350	EQ752350	35.0	32	106	186	6
E2752360	EQ752360	36.0	32	106	186	6
E2752380	EQ752380	38.0	32	125	217	6
E2752938	EQ752938	38.0	40	125	217	6
E2752400	EQ752400	40.0	32	125	217	6
E2752940	EQ752940	40.0	40	125	217	6

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛						
Nominal-Diameter in mm / Nennmaßbereich in mm						
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
js12	±50	±60	±75	±90	±105	±125
h6	0 / −6	0 / −8	0 / −9	0 / −11	0 / −13	0 / −16

▶ Other shank design on your request.
▶ TiN-COATING & TiCN-COATING are available on your request.

◎ : Excellent　○ : Good

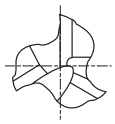
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2751, EQ751 SERIES — FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

E2764, EQ764 SERIES — FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 3 FLUTE SHORT LENGTH ROUGHING - COARSE
HSSCo8, 3 SCHNEIDEN KURZ SCHRUPPFRÄSER - GROB



HSS Co8 | DIN 844 | NR | COARSE | 3 | 30° | DIN 1835B

P.1248, 1249

Unit : mm

EDP No. UNCOATED	EDP No. TiAlN	Mill Diameter js12	Shank Diameter h6	Length of Cut	Overall Length
E2751060	EQ751060	6.0	6	13	57
E2751080	EQ751080	8.0	10	19	69
E2764100	EQ764100	10.0	10	22	72
E2764120	EQ764120	12.0	12	26	83
E2764140	EQ764140	14.0	12	26	83
E2764160	EQ764160	16.0	16	32	92
E2764180	EQ764180	18.0	16	32	92
E2764200	EQ764200	20.0	20	38	104
E2764220	EQ764220	22.0	20	38	104
E2764250	EQ764250	25.0	25	45	121
E2764280	EQ764280	28.0	25	45	121
E2764300	EQ764300	30.0	25	45	121
E2764320	EQ764320	32.0	32	53	133
E2764360	EQ764360	36.0	32	53	133
E2764400	EQ764400	40.0	32	63	155

▶Other shank design on your request.
▶TiN-COATING & TiCN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

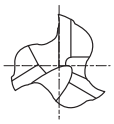
Tolerance range in μm / Toleranzwerte in μm Nominal-Diameter in mm / Nennmaßbereich in mm						
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
js12	±50	±60	±75	±90	±105	±125
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13	0 — 16

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSSCo8, 3 FLUTE LONG LENGTH ROUGHING - COARSE

HSSCo8, 3 SCHNEIDEN LANG SCHRUPPFRÄSER - GROB



HSS Co8 | DIN 844 | NR | COARSE | 3 | 30° | DIN 1835B

P.1248, 1249

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiAlN	js12	h6		
E2752060	EQ752060	6.0	6	24	68
E2752080	EQ752080	8.0	10	38	88
E2765100	EQ765100	10.0	10	45	95
E2765120	EQ765120	12.0	12	53	110
E2765140	EQ765140	14.0	12	53	110
E2765160	EQ765160	16.0	16	63	123
E2765180	EQ765180	18.0	16	63	123
E2765200	EQ765200	20.0	20	75	141
E2765220	EQ765220	22.0	20	75	141
E2765250	EQ765250	25.0	25	90	166
E2765280	EQ765280	28.0	25	90	166
E2765300	EQ765300	30.0	25	90	166
E2765360	EQ765360	36.0	32	106	186
E2765400	EQ765400	40.0	32	125	217

▶Other shank design on your request.
▶TiN-COATING & TiCN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm						
Nominal-Diameter in mm / Nennmaßbereich in mm						
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
js12	±50	±60	±75	±90	±105	±125
h6	0 / −6	0 / −8	0 / −9	0 / −11	0 / −13	0 / −16

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

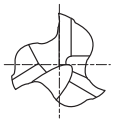
HSS END MILLS

E2755 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

EU755 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 3 FLUTE 37° HELIX SHORT LENGTH ROUGHING
HSSCo8, 3 SCHNEIDEN 37° RECHTSSPIRALE KURZ SCHRUPPFRÄSER

for ALUMINUM
für ALUMINIUM



HSS Co8 | DIN 844 | WR | ALU | 3 | 37° | DIN 1835B

P.1250, 1251

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	js12	h6		
E2755060	6.0	6	13	57
E2755080	8.0	10	19	69
E2755100	10.0	10	22	72
E2755120	12.0	12	26	83
E2755140	14.0	12	26	83
E2755160	16.0	16	32	92
E2755180	18.0	16	32	92
E2755200	20.0	20	38	104
E2755220	22.0	20	38	104
E2755250	25.0	25	45	121
E2755300	30.0	25	45	121

▶Other shank design on your request.
▶TiN-COATING & TiCN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛

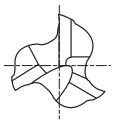
Nominal-Diameter in mm / Nennmaßbereich in mm						
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
js12	±50	±60	±75	±90	±105	±125
h6	0 / −6	0 / −8	0 / −9	0 / −11	0 / −13	0 / −16

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○								◎					

HSSCo8, 3 FLUTE 37° HELIX LONG LENGTH ROUGHING
HSSCo8, 3 SCHNEIDEN 37° RECHTSSPIRALE LANG SCHRUPPFRÄSER

for ALUMINUM
für ALUMINIUM



HSS Co8 | DIN 844 | WR | ALU | 3 | 37° | DIN 1835B

P.1250, 1251

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	js12	h6		
E2756100	**10.0**	10	45	95
E2756120	**12.0**	12	53	110
E2756140	**14.0**	12	53	110
E2756160	**16.0**	16	63	123
E2756180	**18.0**	16	63	123
E2756200	**20.0**	20	75	141
E2756220	**22.0**	20	75	141
E2756250	**25.0**	25	90	166
E2756300	**30.0**	25	90	166

▶Other shank design on your request.
▶TiN-COATING & TiCN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛
Nominal-Diameter in mm / Nennmaßbereich in mm

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
js12	±50	±60	±75	±90	±105	±125
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13	0 — 16

◎ : Excellent ○ : Good

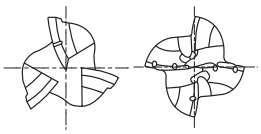
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○								◎					

HSS END MILLS

E2757 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

EQ757 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 3&4 FLUTE SHORT LENGTH ROUGHING BALL NOSE - COARSE
HSSCo8, 3&4 SCHNEIDEN KURZ SCHRUPPFRÄSER STIRNRADIUS - GROB



HSS Co8 | DIN 1889 | NR | COARSE | 3&4 | 30° | R ±0.02 | DIN 1835B

P.1254, 1255

Unit : mm

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
UNCOATED	TiAlN	R (±0.02)	js12	h6			
E2757060	**EQ757060**	R3.0	**6.0**	6	13	57	3
E2757080	**EQ757080**	R4.0	**8.0**	10	19	69	3
E2757100	**EQ757100**	R5.0	**10.0**	10	22	72	3
E2757120	**EQ757120**	R6.0	**12.0**	12	26	83	4
E2757160	**EQ757160**	R8.0	**16.0**	16	32	92	4
E2757200	**EQ757200**	R10.0	**20.0**	20	38	104	4
E2757250	**EQ757250**	R12.5	**25.0**	25	45	121	4
E2757320	**EQ757320**	R16.0	**32.0**	32	53	133	4
E2757400	**EQ757400**	R20.0	**40.0**	32	63	155	4

▶Other shank design on your request.
▶TiN-COATING & TiCN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm Nominal-Diameter in mm / Nennmaßbereich in mm						
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
js12	±50	±60	±75	±90	±105	±125
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13	0 — 16

◎ : Excellent ○ : Good

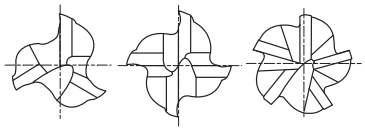
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2761 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

EQ761 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, MULTI FLUTE SHORT LENGTH ROUGHING - EXTRA FINE
HSSCo8, MULTI SCHNEIDEN KURZ SCHRUPPFRÄSER - EXTRA FEIN



HSS Co8 | DIN 844 | HR | EXTRA FINE | 3-5 | 30° | DIN 1835B

P.1248, 1249

Unit : mm

EDP No. UNCOATED	EDP No. TiAlN	Mill Diameter js12	Shank Diameter h6	Length of Cut	Overall Length	No.of Flute
E2761060	EQ761060	6.0	6	13	57	3
E2761070	EQ761070	7.0	10	16	66	3
E2761080	EQ761080	8.0	10	19	69	3
E2761090	EQ761090	9.0	10	19	69	3
E2761100	EQ761100	10.0	10	22	72	4
E2761120	EQ761120	12.0	12	26	83	4
E2761140	EQ761140	14.0	12	26	83	4
E2761160	EQ761160	16.0	16	32	92	4
E2761180	EQ761180	18.0	16	32	92	4
E2761200	EQ761200	20.0	20	38	104	4
E2761220	EQ761220	22.0	20	38	104	5
E2761250	EQ761250	25.0	25	45	121	5

▶Other shank design on your request.
▶TiN-COATING & TiCN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm						
Nominal-Diameter in mm / Nennmaßbereich in mm						
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
js12	±50	±60	±75	±90	±105	±125
h6	0 / −6	0 / −8	0 / −9	0 / −11	0 / −13	0 / −16

◎ : Excellent ○ : Good

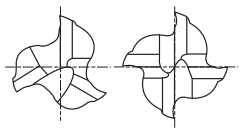
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2524 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

EQ524 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 3&4 FLUTE STUB LENGTH ROUGHING - FINE
HSSCo8, 3&4 SCHNEIDEN EXTRA KURZ SCHRUPPFRÄSER - FEIN



HSS Co8 | DIN 327 | HR | FINE | 3&4 | 30° | DIN 1835B

P.1252, 1253

Unit : mm

EDP No. UNCOATED	EDP No. TiAlN	Mill Diameter k12	Shank Diameter h6	Length of Cut	Overall Length	No.of Flute
E2524060	EQ524060	6.0	6	8	52	3
E2524080	EQ524080	8.0	10	11	61	4
E2524100	EQ524100	10.0	10	13	63	4
E2524120	EQ524120	12.0	12	16	73	4
E2524140	EQ524140	14.0	12	16	73	4
E2524160	EQ524160	16.0	16	19	79	4
E2524180	EQ524180	18.0	16	19	79	4
E2524200	EQ524200	20.0	20	22	88	4

▶Other shank design on your request.
▶TiN-COATING & TiCN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛
Nominal-Diameter in ㎜ / Nennmaßbereich in ㎜

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
k12	+90 0	+120 0	+150 0	+180 0	+210 0	+250 0
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13	0 — 16

◎ : Excellent ○ : Good

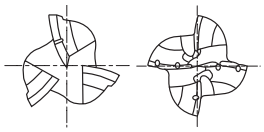
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2606 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

EQ606 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 3&4 FLUTE SHORT LENGTH ROUGHING BALL NOSE - FINE
HSSCo8, 3&4 SCHNEIDEN KURZ SCHRUPPFRÄSER STIRNRADIUS - FEIN



HSS Co8 | DIN 1889 | HR | FINE | 3&4 | 30° | R ±0.02 | DIN 1835B

P.1254, 1255

Unit : mm

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
UNCOATED	TiAlN	R (±0.02)	js12	h6			
E2606060	EQ606060	R3.0	6.0	6	13	57	3
E2606080	EQ606080	R4.0	8.0	10	19	69	3
E2606100	EQ606100	R5.0	10.0	10	22	72	3
E2606120	EQ606120	R6.0	12.0	12	26	83	4
E2606160	EQ606160	R8.0	16.0	16	32	92	4
E2606200	EQ606200	R10.0	20.0	20	38	104	4
E2606250	EQ606250	R12.5	25.0	25	45	121	4
E2606320	EQ606320	R16.0	32.0	32	53	133	4
E2606400	EQ606400	R20.0	40.0	32	63	155	4

▶Other shank design on your request.
▶TiN-COATING & TiCN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm
Nominal-Diameter in mm / Nennmaßbereich in mm

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
js12	±50	±60	±75	±90	±105	±125
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13	0 — 16

◎ : Excellent ○ : Good

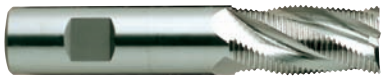
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

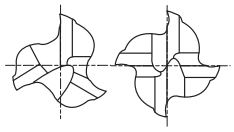
HSS END MILLS

E2753 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

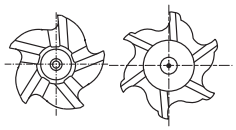
EQ753 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, MULTI FLUTE SHORT LENGTH ROUGHING - FINE
HSSCo8, MULTI SCHNEIDEN KURZ SCHRUPPFRÄSER - FEIN





Up to Ø20mm



Over Ø20mm

HSS Co8 | DIN 844 | HR | FINE | 3-6 | 30° | DIN 1835B | ~Ø20 | Ø22~

P.1248, 1249

Unit : mm

EDP No. UNCOATED	ITEM No. UNCOATED	EDP No. TiAlN	ITEM No. TiAlN	Mill Diameter js12	Shank Diameter h6	Length of Cut	Overall Length	No.of Flute
E2753060	C3426-060AF	EQ753060	R3426-060AF	6.0	6	13	57	3
E2753070	C3426-070TF	EQ753070	R3426-070TF	7.0	10	16	66	3
E2753080	C3426-080TF	EQ753080	R3426-080TF	8.0	10	19	69	3
E2753090	C3426-090TF	EQ753090	R3426-090TF	9.0	10	19	69	3
E2753100	C4426-100TF	EQ753100	R4426-100TF	10.0	10	22	72	4
E2753110	C4426-110DF	EQ753110	R4426-110DF	11.0	12	22	79	4
E2753120	C4426-120DF	EQ753120	R4426-120DF	12.0	12	26	83	4
E2753130	C4426-130DF	EQ753130	R4426-130DF	13.0	12	26	83	4
E2753140	C4426-140DF	EQ753140	R4426-140DF	14.0	12	26	83	4
E2753150	C4426-150DF	EQ753150	R4426-150DF	15.0	12	26	83	4
E2753160	C4426-160EF	EQ753160	R4426-160EF	16.0	16	32	92	4
E2753180	C4426-180EF	EQ753180	R4426-180EF	18.0	16	32	92	4
E2753200	C4426-200FF	EQ753200	R4426-200FF	20.0	20	38	104	4
E2753250	C5426-250GF	EQ753250	R5426-250GF	25.0	25	45	121	5
E2753280	C6426-280GF	EQ753280	R6426-280GF	28.0	25	45	121	6
E2753300	C6426-300GF	EQ753300	R6426-300GF	30.0	25	45	121	6
E2753320	C6426-320HF	EQ753320	R6426-320HF	32.0	32	53	133	6
E2753350	C6426-350HF	EQ753350	R6426-350HF	35.0	32	53	133	6
E2753400	C6426-400HF	EQ753400	R6426-400HF	40.0	32	63	155	6

▶Other shank design on your request.
▶TiN-COATING & TiCN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛						
Nominal-Diameter in ㎜ / Nennmaßbereich in ㎜						
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
js12	±50	±60	±75	±90	±105	±125
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13	0 — 16

◎ : Excellent ○ : Good

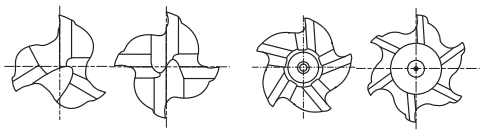
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2762 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

EQ762 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, MULTI FLUTE LONG LENGTH ROUGHING - FINE
HSSCo8, MULTI SCHNEIDEN LANG SCHRUPPFRÄSER - FEIN



Up to Ø20mm　　Over Ø20mm

HSS Co8 | DIN 844 | HR | FINE | 3-6 | 30° | DIN 1835B | ~Ø20 | Ø22~

P.1248, 1249

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
UNCOATED	TiAlN	js12	h6			
E2762060	EQ762060	6.0	6	24	68	3
E2762070	EQ762070	7.0	10	30	80	3
E2762080	EQ762080	8.0	10	38	88	3
E2762090	EQ762090	9.0	10	38	88	3
E2762100	EQ762100	10.0	10	45	95	4
E2762110	EQ762110	11.0	12	45	102	4
E2762120	EQ762120	12.0	12	53	110	4
E2762130	EQ762130	13.0	12	53	110	4
E2762140	EQ762140	14.0	12	53	110	4
E2762150	EQ762150	15.0	12	53	110	4
E2762160	EQ762160	16.0	16	63	123	4
E2762170	EQ762170	17.0	16	63	123	4
E2762180	EQ762180	18.0	16	63	123	4
E2762190	EQ762190	19.0	16	63	123	4
E2762200	EQ762200	20.0	20	75	141	4
E2762220	EQ762220	22.0	20	75	141	5
E2762240	EQ762240	24.0	25	90	166	5
E2762250	EQ762250	25.0	25	90	166	5
E2762260	EQ762260	26.0	25	90	166	6
E2762280	EQ762280	28.0	25	90	166	6
E2762300	EQ762300	30.0	25	90	166	6
E2762320	EQ762320	32.0	32	106	186	6
E2762350	EQ762350	35.0	32	106	186	6
E2762360	EQ762360	36.0	32	106	186	6
E2762380	EQ762380	38.0	32	125	217	6
E2762400	EQ762400	40.0	32	125	217	6
E2762940	EQ762940	40.0	40	125	217	6

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛						
Nominal-Diameter in ㎜ / Nennmaßbereich in ㎜						
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
js12	±50	±60	±75	±90	±105	±125
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13	0 — 16

▶ Other shank design on your request.
▶ TiN-COATING & TiCN-COATING are available on your request.

◎ : Excellent　○ : Good

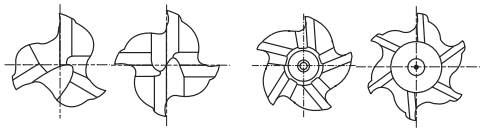
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2754 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

EQ754 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, MULTI FLUTE SHORT LENGTH ROUGHING & FINISHING
HSSCo8, MULTI SCHNEIDEN KURZ SCHRUPPSCHLICHTFRÄSER



Up to Ø20mm　　Over Ø20mm

HSS Co8 | DIN 844 | NF | ROUGHING & FINISHING | 3-6 | 30° | DIN 1835B | ~Ø20 | Ø22~

P.1256, 1257

Unit : mm

EDP No. UNCOATED	ITEM No. UNCOATED	EDP No. TiAlN	ITEM No. TiAlN	Mill Diameter k10	Shank Diameter h6	Length of Cut	Overall Length	No.of Flute
E2754060	C3428-060AF	EQ754060	R3428-060AF	6.0	6	13	57	3
E2754070	C3428-070TF	EQ754070	R3428-070TF	7.0	10	16	66	3
E2754080	C4428-080TF	EQ754080	R4428-080TF	8.0	10	19	69	4
E2754090	C4428-090TF	EQ754090	R4428-090TF	9.0	10	19	69	4
E2754100	C4428-100TF	EQ754100	R4428-100TF	10.0	10	22	72	4
E2754110	C4428-110DF	EQ754110	R4428-110DF	11.0	12	22	79	4
E2754120	C4428-120DF	EQ754120	R4428-120DF	12.0	12	26	83	4
E2754130	C4428-130DF	EQ754130	R4428-130DF	13.0	12	26	83	4
E2754140	C4428-140DF	EQ754140	R4428-140DF	14.0	12	26	83	4
E2754150	C4428-150DF	EQ754150	R4428-150DF	15.0	12	26	83	4
E2754160	C4428-160EF	EQ754160	R4428-160EF	16.0	16	32	92	4
E2754180	C4428-180EF	EQ754180	R4428-180EF	18.0	16	32	92	4
E2754200	C4428-200FF	EQ754200	R4428-200FF	20.0	20	38	104	4
E2754220	C5428-220FF	EQ754220	R5428-220FF	22.0	20	38	104	5
E2754250	C5428-250GF	EQ754250	R5428-250GF	25.0	25	45	121	5
E2754280	C5428-280GF	EQ754280	R5428-280GF	28.0	25	45	121	5
E2754300	C5428-300GF	EQ754300	R5428-300GF	30.0	25	45	121	5
E2754320	C5428-320HF	EQ754320	R5428-320HF	32.0	32	53	133	5
E2754360	C6428-360HF	EQ754360	R6428-360HF	36.0	32	53	133	6
E2754400	C6428-400HF	EQ754400	R6428-400HF	40.0	32	63	155	6

▶Other shank design on your request.
▶TiN-COATING & TiCN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛
Nominal-Diameter in mm / Nennmaßbereich in mm

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
k10	+40 0	+48 0	+58 0	+70 0	+84 0	+100 0
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13	0 — 16

◎ : Excellent　○ : Good

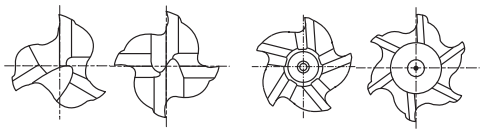
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2768 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

EQ768 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, MULTI FLUTE LONG LENGTH ROUGHING & FINISHING
HSSCo8, MULTI SCHNEIDEN LANG SCHRUPPSCHLICHTFRÄSER



Up to Ø20mm　　Over Ø20mm

HSS Co8 | DIN 844 | NF | ROUGHING & FINISHING | 3-6 | 30° | DIN 1835B | ~Ø20 | Ø22~

P.1256, 1257

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
UNCOATED	TiAlN	k10	h6			
E2768060	EQ768060	6.0	6	24	68	3
E2768080	EQ768080	8.0	10	38	88	4
E2768100	EQ768100	10.0	10	45	95	4
E2768120	EQ768120	12.0	12	53	110	4
E2768140	EQ768140	14.0	12	53	110	4
E2768160	EQ768160	16.0	16	63	123	4
E2768180	EQ768180	18.0	16	63	123	4
E2768200	EQ768200	20.0	20	75	141	4
E2768220	EQ768220	22.0	20	75	141	5
E2768250	EQ768250	25.0	25	90	166	5
E2768300	EQ768300	30.0	25	90	166	5
E2768320	EQ768320	32.0	32	106	186	5
E2768450	EQ768450	45.0	40	125	217	6

▶Other shank design on your request.
▶TiN-COATING & TiCN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛
Nominal-Diameter in mm / Nennmaßbereich in mm

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
k10	+40 0	+48 0	+58 0	+70 0	+84 0	+100 0
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13	0 — 16

◎ : Excellent　○ : Good

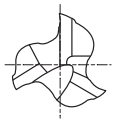
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2766 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

EQ766 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 3 FLUTE SHORT LENGTH ROUGHING & FINISHING
HSSCo8, 3 SCHNEIDEN KURZ SCHRUPPSCHLICHTFRÄSER



HSS Co8 | DIN 844 | NF | ROUGHING & FINISHING | 3 | 30° | DIN 1835B

P.1258, 1259

Unit : mm

EDP		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiAlN	k10	h6		
E2766060	EQ766060	6.0	6	13	57
E2766080	EQ766080	8.0	10	19	69
E2766100	EQ766100	10.0	10	22	72
E2766120	EQ766120	12.0	12	26	83
E2766130	EQ766130	13.0	12	26	83
E2766140	EQ766140	14.0	12	26	83
E2766160	EQ766160	16.0	16	32	92
E2766180	EQ766180	18.0	16	32	92
E2766200	EQ766200	20.0	20	38	104
E2766220	EQ766220	22.0	20	38	104
E2766250	EQ766250	25.0	25	45	121
E2766280	EQ766280	28.0	25	45	121
E2766300	EQ766300	30.0	25	45	121
E2766320	EQ766320	32.0	32	53	133
E2766360	EQ766360	36.0	32	53	133
E2766400	EQ766400	40.0	32	63	155

▶Other shank design on your request.
▶TiN-COATING & TiCN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛

Nominal-Diameter in mm / Nennmaßbereich in mm						
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
k10	+40 0	+48 0	+58 0	+70 0	+84 0	+100 0
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13	0 — 16

◎ : Excellent ○ : Good

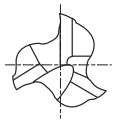
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2767 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

EQ767 SERIES FLAT SHANK SEITLICHE MITNAHMEFLÄCHEN

HSSCo8, 3 FLUTE LONG LENGTH ROUGHING & FINISHING
HSSCo8, 3 SCHNEIDEN LANG SCHRUPPSCHLICHTFRÄSER



HSS Co8 | DIN 844 | NF | ROUGHING & FINISHING | 3 | 30° | DIN 1835B

P.1258, 1259

Unit : mm

EDP		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiAlN	k10	h6		
E2767060	EQ767060	6.0	6	24	68
E2767080	EQ767080	8.0	10	38	88
E2767100	EQ767100	10.0	10	45	95
E2767120	EQ767120	12.0	12	53	110
E2767140	EQ767140	14.0	12	53	110
E2767160	EQ767160	16.0	16	63	123
E2767180	EQ767180	18.0	16	63	123
E2767200	EQ767200	20.0	20	75	141
E2767220	EQ767220	22.0	20	75	141
E2767250	EQ767250	25.0	25	90	166
E2767280	EQ767280	28.0	25	90	166
E2767300	EQ767300	30.0	25	90	166
E2767360	EQ767360	36.0	32	106	186
E2767400	EQ767400	40.0	32	125	217

▶Other shank design on your request.
▶TiN-COATING & TiCN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛

Nominal-Diameter in ㎜ / Nennmaßbereich in ㎜

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
k10	+40 0	+48 0	+58 0	+70 0	+84 0	+100 0
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13	0 — 16

◎ : Excellent ○ : Good

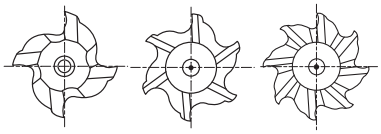
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2776 SERIES MORSE TAPER SHANK / MORSE KEGELSCHAFT

EQ776 SERIES MORSE TAPER SHANK / MORSE KEGELSCHAFT

HSSCo8, MULTI FLUTE SHORT LENGTH
HSSCo8, MULTI SCHNEIDEN KURZ



HSS Co8 | DIN 845 | N | 4-8 | 30° | DIN 228A

P.1238, 1239

Unit : mm

EDP No. UNCOATED	EDP No. TiAlN	Mill Diameter	Length of Cut	Overall Length	Morse Taper No.	No.of Flute
E2776140	EQ776140	14.0	26	111	2	4
E2776150	EQ776150	15.0	26	111	2	4
E2776160	EQ776160	16.0	32	117	2	4
E2776180	EQ776180	18.0	32	117	2	4
E2776200	EQ776200	20.0	38	123	2	4
E2776220	EQ776220	22.0	38	123	2	6
E2776240	EQ776240	24.0	45	147	3	6
E2776250	EQ776250	25.0	45	147	3	6
E2776260	EQ776260	26.0	45	147	3	6
E2776280	EQ776280	28.0	45	147	3	6
E2776300	EQ776300	30.0	45	147	3	6
E2776320	EQ776320	32.0	53	178	4	6
E2776350	EQ776350	35.0	53	178	4	6
E2776360	EQ776360	36.0	53	178	4	6
E2776380	EQ776380	38.0	63	188	4	6
E2776400	EQ776400	40.0	63	188	4	6
E2776420	EQ776420	42.0	63	188	4	6
E2776440	EQ776440	44.0	63	188	4	6
E2776450	EQ776450	45.0	63	188	4	8
E2776500	EQ776500	50.0	75	233	5	8

▶Other shank design on your request.
▶TiN-COATING & TiCN-COATING are available on your request.

Mill Dia. Tolerance(mm)
±0.120

◎ : Excellent ○ : Good

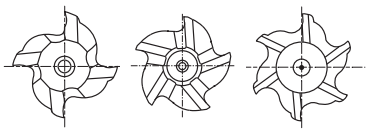
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2777 SERIES MORSE TAPER SHANK / MORSE KEGELSCHAFT

EQ777 SERIES MORSE TAPER SHANK / MORSE KEGELSCHAFT

HSSCo8, MULTI FLUTE SHORT LENGTH ROUGHING - COARSE
HSSCo8, MULTI SCHNEIDEN KURZ SCHRUPPFRÄSER - GROB



HSS Co8 | DIN 845 | NR | COARSE | 4-6 | 30° | DIN 228A

P.1248, 1249

Unit : mm

EDP No. UNCOATED	EDP No. TiAlN	Mill Diameter	Length of Cut	Overall Length	Morse Taper No.	No.of Flute
E2777140	EQ777140	14.0	26	111	2	4
E2777160	EQ777160	16.0	32	117	2	4
E2777180	EQ777180	18.0	32	117	2	4
E2777200	EQ777200	20.0	38	123	2	4
E2777220	EQ777220	22.0	38	123	2	5
E2777240	EQ777240	24.0	45	147	3	5
E2777250	EQ777250	25.0	45	147	3	5
E2777260	EQ777260	26.0	45	147	3	5
E2777270	EQ777270	27.0	45	147	3	6
E2777280	EQ777280	28.0	45	147	3	6
E2777300	EQ777300	30.0	45	147	3	6
E2777320	EQ777320	32.0	53	178	4	6
E2777350	EQ777350	35.0	53	178	4	6
E2777360	EQ777360	36.0	53	178	4	6
E2777380	EQ777380	38.0	63	188	4	6
E2777400	EQ777400	40.0	63	188	4	6
E2777450	EQ777450	45.0	63	188	4	6
E2777500	EQ777500	50.0	75	233	5	6

▶Other shank design on your request.
▶TiN-COATING & TiCN-COATING are available on your request.

Mill Dia. Tolerance(mm)
±0.120

◎ : Excellent ○ : Good

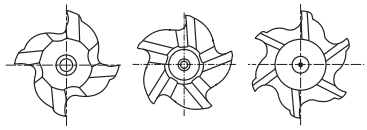
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2778 SERIES MORSE TAPER SHANK / MORSE KEGELSCHAFT

EQ778 SERIES MORSE TAPER SHANK / MORSE KEGELSCHAFT

HSSCo8, MULTI FLUTE SHORT LENGTH ROUGHING - FINE
HSSCo8, MULTI SCHNEIDEN KURZ SCHRUPPFRÄSER - FEIN



HSS Co8 | DIN 845 | HR | FINE | 4-6 | 30° | DIN 228A

P.1248, 1249

Unit : mm

EDP No. UNCOATED	EDP No. TiAlN	Mill Diameter	Length of Cut	Overall Length	Morse Taper No.	No.of Flute
E2778160	EQ778160	16.0	32	117	2	4
E2778180	EQ778180	18.0	32	117	2	4
E2778200	EQ778200	20.0	38	123	2	4
E2778220	EQ778220	22.0	38	123	2	5
E2778240	EQ778240	24.0	45	147	3	5
E2778250	EQ778250	25.0	45	147	3	5
E2778260	EQ778260	26.0	45	147	3	5
E2778280	EQ778280	28.0	45	147	3	6
E2778300	EQ778300	30.0	45	147	3	6
E2778320	EQ778320	32.0	53	178	4	6
E2778350	EQ778350	35.0	53	178	4	6
E2778360	EQ778360	36.0	53	178	4	6
E2778380	EQ778380	38.0	63	188	4	6
E2778400	EQ778400	40.0	63	188	4	6
E2778450	EQ778450	45.0	63	188	4	6
E2778500	EQ778500	50.0	75	233	5	6

▶Other shank design on your request.
▶TiN-COATING & TiCN-COATING are available on your request.

Mill Dia. Tolerance(mm)
±0.120

◎ : Excellent ○ : Good

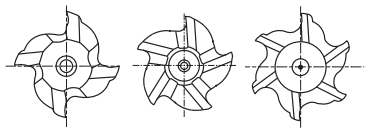
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E2779 SERIES MORSE TAPER SHANK / MORSE KEGELSCHAFT

EQ779 SERIES MORSE TAPER SHANK / MORSE KEGELSCHAFT

HSSCo8, MULTI FLUTE SHORT LENGTH ROUGHING & FINISHING
HSSCo8, MULTI SCHNEIDEN KURZ SCHRUPPSCHLICHTFRÄSER



HSS Co8 | DIN 845 | NF | ROUGHING & FINISHING | 4-6 | 30° | DIN 228A

P.1260, 1261

Unit : mm

EDP No.		Mill Diameter	Length of Cut	Overall Length	Morse Taper No.	No.of Flute
UNCOATED	TiAlN					
E2779160	EQ779160	16.0	32	117	2	4
E2779180	EQ779180	18.0	32	117	2	4
E2779200	EQ779200	20.0	38	123	2	4
E2779220	EQ779220	22.0	38	123	2	5
E2779240	EQ779240	24.0	45	147	3	5
E2779250	EQ779250	25.0	45	147	3	5
E2779260	EQ779260	26.0	45	147	3	5
E2779280	EQ779280	28.0	45	147	3	6
E2779300	EQ779300	30.0	45	147	3	6
E2779320	EQ779320	32.0	53	178	4	6
E2779350	EQ779350	35.0	53	178	4	6
E2779360	EQ779360	36.0	53	178	4	6
E2779380	EQ779380	38.0	63	188	4	6
E2779400	EQ779400	40.0	63	188	4	6
E2779450	EQ779450	45.0	63	188	4	6
E2779500	EQ779500	50.0	75	233	5	6

▶Other shank design on your request.
▶TiN-COATING & TiCN-COATING are available on your request.

Mill Dia. Tolerance(mm)
±0.120

◎ : Excellent ○ : Good

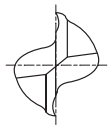
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E3570 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

ER570 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSS-PM, 2 FLUTE SHORT LENGTH
HSS-PM, 2 SCHNEIDEN KURZ



HSS PM | DIN 327 | N | 2 | ≈30° | DIN 1835B

P.1262

Unit : mm

EDP No. UNCOATED	ITEM No. UNCOATED	EDP No. TiAlN	ITEM No. TiAlN	Mill Diameter e8	Shank Diameter h6	Length of Cut	Overall Length
E3570020	P2GRS-020AF	ER570020	Z2GRS-020AF	2.0	6	4	48
E3570025	P2GRS-025AF	ER570025	Z2GRS-025AF	2.5	6	5	49
E3570030	P2GRS-030AF	ER570030	Z2GRS-030AF	3.0	6	5	49
E3570040	P2GRS-040AF	ER570040	Z2GRS-040AF	4.0	6	7	51
E3570050	P2GRS-050AF	ER570050	Z2GRS-050AF	5.0	6	8	52
E3570060	P2GRS-060AF	ER570060	Z2GRS-060AF	6.0	6	8	52
E3570070	P2GRS-070TF	ER570070	Z2GRS-070TF	7.0	10	10	60
E3570080	P2GRS-080TF	ER570080	Z2GRS-080TF	8.0	10	11	61
E3570090	P2GRS-090TF	ER570090	Z2GRS-090TF	9.0	10	11	61
E3570100	P2GRS-100TF	ER570100	Z2GRS-100TF	10.0	10	13	63
E3570110	P2GRS-110DF	ER570110	Z2GRS-110DF	11.0	12	13	70
E3570120	P2GRS-120DF	ER570120	Z2GRS-120DF	12.0	12	16	73
E3570130	P2GRS-130DF	ER570130	Z2GRS-130DF	13.0	12	16	73
E3570140	P2GRS-140DF	ER570140	Z2GRS-140DF	14.0	12	16	73
E3570150	P2GRS-150DF	ER570150	Z2GRS-150DF	15.0	12	16	73
E3570160	P2GRS-160EF	ER570160	Z2GRS-160EF	16.0	16	19	79
E3570170	P2GRS-170EF	ER570170	Z2GRS-170EF	17.0	16	19	79
E3570180	P2GRS-180EF	ER570180	Z2GRS-180EF	18.0	16	19	79
E3570190	P2GRS-190EF	ER570190	Z2GRS-190EF	19.0	16	19	79
E3570200	P2GRS-200FF	ER570200	Z2GRS-200FF	20.0	20	22	88
E3570220	P2GRS-220FF	ER570220	Z2GRS-220FF	22.0	20	22	88
E3570240	P2GRS-240GF	ER570240	Z2GRS-240GF	24.0	25	26	102
E3570250	P2GRS-250GF	ER570250	Z2GRS-250GF	25.0	25	26	102
E3570280	P2GRS-280GF	ER570280	Z2GRS-280GF	28.0	25	26	102
E3570300	P2GRS-300GF	ER570300	Z2GRS-300GF	30.0	25	26	102

▶ Other shank design on your request.
▶ TiN-COATING & TiCN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm
Nominal-Diameter in mm / Nennmaßbereich in mm

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
e8	— 14 — 28	— 20 — 38	— 25 — 47	— 32 — 59	— 40 — 73	— 50 — 89
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13	0 — 16

◎ : Excellent ○ : Good

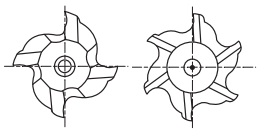
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E3574, ER574 SERIES — FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

E3575, ER575 SERIES — FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSS-PM, 4&6 FLUTE SHORT LENGTH
HSS-PM, 4&6 SCHNEIDEN KURZ



HSS PM | DIN 844 | N | 4&6 | 30° | DIN 1835B

P.1263

Unit : mm

EDP No. UNCOATED	ITEM No. UNCOATED	EDP No. TiAlN	ITEM No. TiAlN	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
E3574020	P4GRS-020AF	ER574020	Z4GRS-020AF	2.0	6	7	51	4
E3574030	P4GRS-030AF	ER574030	Z4GRS-030AF	3.0	6	8	52	4
E3574040	P4GRS-040AF	ER574040	Z4GRS-040AF	4.0	6	11	55	4
E3574050	P4GRS-050AF	ER574050	Z4GRS-050AF	5.0	6	13	57	4
E3574060	P4GRS-060AF	ER574060	Z4GRS-060AF	6.0	6	13	57	4
E3574070	P4GRS-070TF	ER574070	Z4GRS-070TF	7.0	10	16	66	4
E3574080	P4GRS-080TF	ER574080	Z4GRS-080TF	8.0	10	19	69	4
E3574090	P4GRS-090TF	ER574090	Z4GRS-090TF	9.0	10	19	69	4
E3574100	P4GRS-100TF	ER574100	Z4GRS-100TF	10.0	10	22	72	4
E3574120	P4GRS-120DF	ER574120	Z4GRS-120DF	12.0	12	26	83	4
E3574140	P4GRS-140DF	ER574140	Z4GRS-140DF	14.0	12	26	83	4
E3574160	P4GRS-160EF	ER574160	Z4GRS-160EF	16.0	16	32	92	4
E3574180	P4GRS-180EF	ER574180	Z4GRS-180EF	18.0	16	32	92	4
E3574200	P4GRS-200FF	ER574200	Z4GRS-200FF	20.0	20	38	104	4
E3575220	P6GRS-220FF	ER575220	Z6GRS-220FF	22.0	20	38	104	6
E3575240	P6GRS-240GF	ER575240	Z6GRS-240GF	24.0	25	45	121	6
E3575250	P6GRS-250GF	ER575250	Z6GRS-250GF	25.0	25	45	121	6
E3575280	P6GRS-280GF	ER575280	Z6GRS-280GF	28.0	25	45	121	6
E3575300	P6GRS-300GF	ER575300	Z6GRS-300GF	30.0	25	45	121	6

▶Other shank design on your request.
▶TiN-COATING & TiCN-COATING are available on your request.

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
+ 0.04 — 0	h6

◎ : Excellent ○ : Good

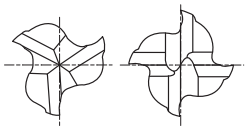
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E3462, ER462 SERIES — FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

E3463, ER463 SERIES — FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

HSS-PM, 3&4 FLUTE 60° HELIX SHORT LENGTH
HSS-PM, 3&4 SCHNEIDEN 60° RECHTSSPIRALE KURZ



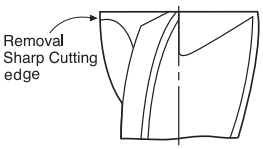
HSS PM | DIN 844 | N | 3&4 | 60° | DIN 1835B

P.1264

Unit : mm

EDP No. UNCOATED	ITEM No. UNCOATED	EDP No. TiAlN	ITEM No. TiAlN	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
E3462060	P3ERH-060AF	ER462060	Z3ERH-060AF	6.0	6	13	57	3
E3462070	P3ERH-070TF	ER462070	Z3ERH-070TF	7.0	10	16	66	3
E3462080	P3ERH-080TF	ER462080	Z3ERH-080TF	8.0	10	19	69	3
E3462090	P3ERH-090TF	ER462090	Z3ERH-090TF	9.0	10	19	69	3
E3462100	P3ERH-100TF	ER462100	Z3ERH-100TF	10.0	10	22	72	3
E3462120	P3ERH-120DF	ER462120	Z3ERH-120DF	12.0	12	26	83	3
E3462140	P3ERH-140DF	ER462140	Z3ERH-140DF	14.0	12	26	83	3
E3462150	P3ERH-150DF	ER462150	Z3ERH-150DF	15.0	12	26	83	3
E3462160	P3ERH-160EF	ER462160	Z3ERH-160EF	16.0	16	32	92	3
E3462180	P3ERH-180EF	ER462180	Z3ERH-180EF	18.0	16	32	92	3
E3462200	P3ERH-200FF	ER462200	Z3ERH-200FF	20.0	20	38	104	3
E3463250	P4ERH-250GF	ER463250	Z4ERH-250GF	25.0	25	45	121	4
E3463300	P4ERH-300GF	ER463300	Z4ERH-300GF	30.0	25	45	121	4

▶Other shank design on your request.
▶TiN-COATING & TiCN-COATING are available on your request.



Mill Dia. Tolerance(mm)		Shank Dia. Tolerance
up to Ø6.5	+ 0.048 — 0	h6
Ø7.0 ~ Ø10.0	+ 0.058 — 0	
Ø10.5 ~ Ø18.0	+ 0.070 — 0	
over Ø18.0	+ 0.084 — 0	

◎ : Excellent ○ : Good

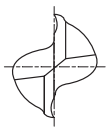
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

E9410 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

EP410 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

PREMIUM HSS-PM, 2 FLUTE SHORT LENGTH
PREMIUM HSS-PM, 2 SCHNEIDEN KURZ



YPM | DIN 327 | N | 2 | 30° | DIN 1835B

P.1265

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiAlN	e8	h6		
E9410020	EP410020	2.0	6	4	48
E9410030	EP410030	3.0	6	5	49
E9410040	EP410040	4.0	6	7	51
E9410050	EP410050	5.0	6	8	52
E9410060	EP410060	6.0	6	8	52
E9410080	EP410080	8.0	10	11	61
E9410100	EP410100	10.0	10	13	63
E9410120	EP410120	12.0	12	16	73
E9410140	EP410140	14.0	12	16	73
E9410160	EP410160	16.0	16	19	79
E9410180	EP410180	18.0	16	19	79
E9410200	EP410200	20.0	20	22	88
E9410220	EP410220	22.0	20	22	88
E9410250	EP410250	25.0	25	26	102

▶Other shank design on your request.
▶TiN-COATING & TiCN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in μm / Toleranzwerte in μm

Nominal-Diameter in mm / Nennmaßbereich in mm

	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
e8	— 14 — 28	— 20 — 38	— 25 — 47	— 32 — 59	— 40 — 73	— 50 — 89
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13	0 — 16

◎ : Excellent ○ : Good

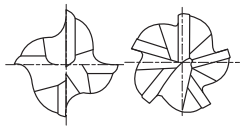
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS END MILLS

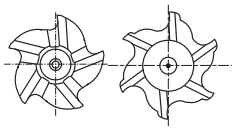
E9720 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

EP720 SERIES FLAT SHANK / SEITLICHE MITNAHMEFLÄCHEN

PREMIUM HSS-PM, MULTI FLUTE SHORT LENGTH ROUGHING - FINE
PREMIUM HSS-PM, MULTI SCHNEIDEN KURZ SCHRUPPFRÄSER - FEIN



Up to Ø20mm



Over Ø20mm

YPM | DIN 844 | HR | 4-6 | 30° | DIN 1835B | ~Ø8 | Ø9~Ø20 | Ø22~ P.1266

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
UNCOATED	TiAlN	js12	h6			
E9720060	EP720060	6.0	6	13	57	4
E9720070	EP720070	7.0	10	16	66	4
E9720080	EP720080	8.0	10	19	69	4
E9720090	EP720090	9.0	10	19	69	5
E9720100	EP720100	10.0	10	22	72	5
E9720110	EP720110	11.0	12	22	79	5
E9720120	EP720120	12.0	12	26	83	5
E9720130	EP720130	13.0	12	26	83	5
E9720140	EP720140	14.0	12	26	83	5
E9720150	EP720150	15.0	12	26	83	5
E9720160	EP720160	16.0	16	32	92	5
E9720180	EP720180	18.0	16	32	92	5
E9720200	EP720200	20.0	20	38	104	5
E9720220	EP720220	22.0	20	38	104	5
E9720250	EP720250	25.0	25	45	121	6
E9720300	EP720300	30.0	25	45	121	6

▶ Other shank design on your request.
▶ TiN-COATING & TiCN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Tolerance range in ㎛ / Toleranzwerte in ㎛						
Nominal-Diameter in mm / Nennmaßbereich in mm						
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
js12	±50	±60	±75	±90	±105	±125
h6	0 / −6	0 / −8	0 / −9	0 / −11	0 / −13	0 / −16

◎ : Excellent ○ : Good

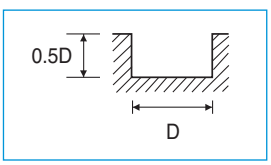
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSSCo8, 2 FLUTE - SLOTTING
HSSCo8, 2 SCHNEIDEN - NUTENFRÄSEN

E2570, E2571, E2510 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	5600	40	35	0.004	4500	30	30	0.003	4000	30	25	0.004
3.0	3500	55	35	0.008	3200	45	30	0.007	2500	40	25	0.008
4.0	2800	70	35	0.013	2200	55	30	0.013	1800	45	25	0.013
5.0	2200	90	35	0.020	1800	70	30	0.019	1600	60	25	0.019
6.0	1800	90	35	0.025	1600	80	30	0.025	1200	60	25	0.025
8.0	1400	100	35	0.036	1100	90	30	0.041	900	70	25	0.039
10.0	1100	100	35	0.045	900	90	30	0.050	800	80	25	0.050
12.0	900	110	35	0.061	800	100	30	0.063	630	80	25	0.063
14.0	800	110	35	0.069	700	90	30	0.064	560	80	25	0.071
16.0	700	110	35	0.079	560	90	30	0.080	450	70	25	0.078
18.0	630	100	35	0.079	500	90	30	0.090	400	70	25	0.088
20.0	560	100	35	0.089	450	90	30	0.100	400	70	25	0.088
22.0	500	100	35	0.100	450	90	30	0.100	350	70	25	0.100
25.0	450	90	35	0.100	400	80	30	0.100	310	60	25	0.097
28.0	400	80	35	0.100	350	70	30	0.100	280	55	25	0.098
30.0	350	70	35	0.100	310	60	30	0.097	250	50	25	0.100
32.0	350	70	35	0.100	280	55	30	0.098	220	45	20	0.102
36.0	310	60	35	0.097	250	50	30	0.100	200	40	25	0.100
40.0	280	60	35	0.107	220	50	30	0.114	180	40	25	0.111

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	2200	15	15	0.003	12000	160	75	0.007
3.0	1600	20	15	0.006	11000	250	105	0.011
4.0	1100	30	15	0.014	8000	290	100	0.018
5.0	900	35	15	0.019	6300	310	100	0.025
6.0	800	40	15	0.025	5600	310	105	0.028
8.0	560	45	15	0.040	4000	390	100	0.049
10.0	450	45	15	0.050	3100	400	95	0.065
12.0	400	50	15	0.063	2500	380	95	0.076
14.0	350	50	15	0.071	2200	350	95	0.080
16.0	280	45	15	0.080	2000	350	100	0.088
18.0	250	45	15	0.090	1800	350	100	0.097
20.0	220	45	15	0.102	1600	320	100	0.100
22.0	220	45	15	0.102	1400	300	95	0.107
25.0	180	35	15	0.097	1200	280	95	0.117
28.0	160	30	15	0.094	1100	270	95	0.123
30.0	160	30	15	0.094	1100	270	105	0.123
32.0	140	30	15	0.107	1000	240	100	0.120
36.0	120	25	15	0.104	900	220	100	0.122
40.0	110	25	15	0.114	800	200	100	0.125



※The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSS END MILLS

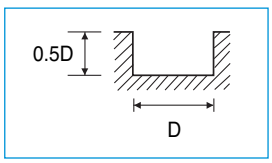
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

HSSCo8, 2 FLUTE TiAlN COATED - SLOTTING
HSSCo8, 2 SCHNEIDEN TiAlN-BESCHICHTET - NUTENFRÄSEN

E2570, E2571, E2510 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	7850	55	50	0.004	6300	40	40	0.003	5600	40	35	0.004
3.0	4900	75	45	0.008	4500	65	40	0.007	3500	55	35	0.008
4.0	3900	100	50	0.013	3100	75	40	0.012	2500	65	30	0.013
5.0	3100	125	50	0.020	2500	100	40	0.020	2250	85	35	0.019
6.0	2500	125	45	0.025	2250	110	40	0.024	1700	85	30	0.025
8.0	1950	140	50	0.036	1550	125	40	0.040	1250	100	30	0.040
10.0	1550	140	50	0.045	1250	125	40	0.050	1100	110	35	0.050
12.0	1250	155	45	0.062	1100	140	40	0.064	900	110	35	0.061
14.0	1100	155	50	0.070	1000	125	45	0.063	800	110	35	0.069
16.0	1000	155	50	0.078	800	125	40	0.078	650	100	35	0.077
18.0	900	140	50	0.078	700	125	40	0.089	550	100	30	0.091
20.0	800	140	50	0.088	650	125	40	0.096	550	100	35	0.091
22.0	700	140	50	0.100	650	125	45	0.096	500	100	35	0.100
25.0	650	125	50	0.096	550	110	45	0.100	450	85	35	0.094
28.0	550	110	50	0.100	500	100	45	0.100	400	75	35	0.094
30.0	500	100	45	0.100	450	85	40	0.094	350	70	35	0.100
32.0	500	100	50	0.100	400	75	40	0.094	300	65	30	0.108
36.0	450	85	50	0.094	350	70	40	0.100	300	55	35	0.092
40.0	400	85	50	0.106	300	70	40	0.117	250	55	30	0.110

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	3100	20	20	0.003	16800	225	105	0.007
3.0	2250	30	20	0.007	15400	350	145	0.011
4.0	1550	40	20	0.013	11200	405	140	0.018
5.0	1250	50	20	0.020	8800	435	140	0.025
6.0	1100	55	20	0.025	7850	435	150	0.028
8.0	800	65	20	0.041	5600	545	140	0.049
10.0	650	65	20	0.050	4350	560	135	0.064
12.0	550	70	20	0.064	3500	530	130	0.076
14.0	500	70	20	0.070	3100	490	135	0.079
16.0	400	65	20	0.081	2800	490	140	0.088
18.0	350	65	20	0.093	2500	490	140	0.098
20.0	300	65	20	0.108	2250	450	140	0.100
22.0	300	65	20	0.108	1950	420	135	0.108
25.0	250	50	20	0.100	1700	390	135	0.115
28.0	200	40	20	0.100	1550	380	135	0.123
30.0	200	40	20	0.100	1550	380	145	0.123
32.0	200	40	20	0.100	1400	335	140	0.120
36.0	150	35	15	0.117	1250	310	140	0.124
40.0	150	35	20	0.117	1100	280	140	0.127



※The FEED, in long & extra long types, should be reduced by around 50%

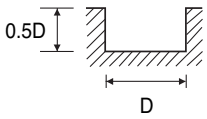
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSSCo8, 2 FLUTE 42° HELIX
HSSCo8, 2 SCHNEIDEN 42° RECHTSSPIRALE

E2464, E2509 SERIES

SLOTTING

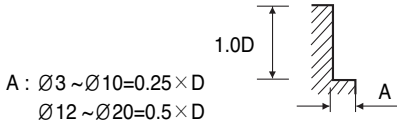
MATERIAL	ALUMINUM NONFERROUS METALS			
DIAMETER	RPM	FEED	Vc	fz
3.0	8000	560	75	0.035
6.0	7000	700	130	0.050
8.0	6000	850	150	0.071
10.0	5000	1200	155	0.120
12.0	5000	1200	190	0.120
14.0	3500	1240	155	0.177
16.0	3500	1240	175	0.177
18.0	2300	1300	130	0.283
20.0	2300	1300	145	0.283



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

SIDE CUTTING

MATERIAL	ALUMINUM NONFERROUS METALS			
DIAMETER	RPM	FEED	Vc	fz
3.0	8000	730	75	0.046
6.0	7000	900	130	0.064
8.0	6000	1100	150	0.092
10.0	5000	1500	155	0.150
12.0	5000	1500	190	0.150
14.0	3500	1600	155	0.229
16.0	3500	1600	175	0.229
18.0	2300	1700	130	0.370
20.0	2300	1700	145	0.370



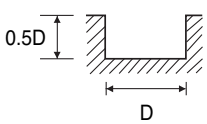
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSSCo8, 2 FLUTE 42° HELIX TiCN COATED
HSSCo8, 2 SCHNEIDEN 42° RECHTSSPIRALE TiCN-BESCHICHTET

E2464, E2509 SERIES

SLOTTING

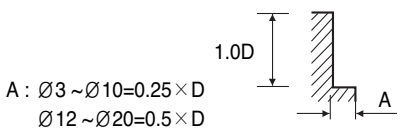
MATERIAL	ALUMINUM NONFERROUS METALS			
DIAMETER	RPM	FEED	Vc	fz
3.0	10400	730	100	0.035
6.0	9100	910	170	0.050
8.0	7800	1100	195	0.071
10.0	6500	1560	205	0.120
12.0	6500	1560	245	0.120
14.0	4500	1610	200	0.179
16.0	4500	1610	225	0.179
18.0	3000	1700	170	0.283
20.0	3000	1700	190	0.283



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

SIDE CUTTING

MATERIAL	ALUMINUM NONFERROUS METALS			
DIAMETER	RPM	FEED	Vc	fz
3.0	10400	950	100	0.046
6.0	9100	1150	170	0.063
8.0	7800	1400	195	0.090
10.0	6500	1950	205	0.150
12.0	6500	1950	245	0.150
14.0	4500	2080	200	0.231
16.0	4500	2080	225	0.231
18.0	3000	2210	170	0.368
20.0	3000	2210	190	0.368



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSS END MILLS

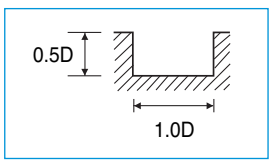
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

HSSCo8, 3 FLUTE - SLOTTING
HSSCo8, 3 SCHNEIDEN - NUTENFRÄSEN

E2572, E2573, E2516, E2553, E2554, E2551, E2552 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	5600	35	35	0.002	4500	25	30	0.002	4000	20	25	0.002
3.0	3500	50	35	0.005	3200	35	30	0.004	2500	25	25	0.003
4.0	2800	60	35	0.007	2200	45	30	0.007	1800	30	25	0.006
5.0	2200	80	35	0.012	1800	55	30	0.010	1600	40	25	0.008
6.0	1800	80	35	0.015	1600	65	30	0.014	1200	40	25	0.011
8.0	1400	90	35	0.021	1100	70	30	0.021	900	50	25	0.019
10.0	1100	90	35	0.027	900	70	30	0.026	800	55	25	0.023
12.0	900	100	35	0.037	800	80	30	0.033	630	55	25	0.029
14.0	800	100	35	0.042	700	70	30	0.033	560	55	25	0.033
16.0	700	100	35	0.048	560	70	30	0.042	450	50	25	0.037
18.0	630	90	35	0.048	500	70	30	0.047	400	50	25	0.042
20.0	560	90	35	0.054	450	70	30	0.052	400	50	25	0.042
22.0	500	90	35	0.060	450	70	30	0.052	350	50	25	0.048
25.0	450	80	35	0.059	400	65	30	0.054	310	40	25	0.043
28.0	400	70	35	0.058	350	55	30	0.052	280	35	25	0.042
30.0	350	60	35	0.057	310	50	30	0.054	250	30	25	0.040
32.0	350	60	35	0.057	280	45	30	0.054	220	30	20	0.045
35.0	320	55	35	0.057	260	40	30	0.051	210	25	25	0.040
36.0	310	55	35	0.059	250	40	30	0.053	200	25	25	0.042
40.0	280	55	35	0.065	220	40	30	0.061	180	25	25	0.046

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	2200	10	15	0.002	12000	110	75	0.003
3.0	1600	15	15	0.003	11000	170	105	0.005
4.0	1100	20	15	0.006	8000	200	100	0.008
5.0	900	20	15	0.007	6300	210	100	0.011
6.0	800	25	15	0.010	5600	210	105	0.013
8.0	560	30	15	0.018	4000	260	100	0.022
10.0	450	30	15	0.022	3100	270	95	0.029
12.0	400	35	15	0.029	2500	260	95	0.035
14.0	350	35	15	0.033	2200	240	95	0.036
16.0	280	30	15	0.036	2000	240	100	0.040
18.0	250	30	15	0.040	1800	240	100	0.044
20.0	220	30	15	0.045	1600	220	100	0.046
22.0	220	30	15	0.045	1400	200	95	0.048
25.0	180	20	15	0.037	1200	190	95	0.053
28.0	160	20	15	0.042	1100	180	95	0.055
30.0	160	20	15	0.042	1100	180	105	0.055
32.0	140	20	15	0.048	1000	160	100	0.053
35.0	130	15	15	0.038	950	150	105	0.053
36.0	120	15	15	0.042	900	150	100	0.056
40.0	110	15	15	0.045	800	130	100	0.054



※The FEED, in long & extra long types, should be reduced by around 50%

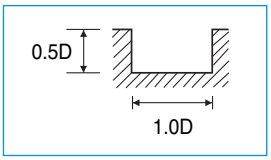
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSSCo8, 3 FLUTE TiAlN COATED - SLOTTING
HSSCo8, 3 SCHNEIDEN TiAlN-BESCHICHTET - NUTENFRÄSEN

E2572, E2573, E2516, E2553, E2554, E2551, E2552 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	7900	50	50	0.002	6300	35	40	0.002	5600	30	35	0.002
3.0	4900	70	45	0.005	4500	50	40	0.004	3500	35	35	0.003
4.0	3900	85	50	0.007	3100	60	40	0.006	2500	40	30	0.005
5.0	3100	110	50	0.012	2500	75	40	0.010	2200	55	35	0.008
6.0	2500	110	45	0.015	2200	90	40	0.014	1700	55	30	0.011
8.0	2000	125	50	0.021	1500	100	40	0.022	1300	70	35	0.018
10.0	1500	125	45	0.028	1300	110	40	0.028	1100	75	35	0.023
12.0	1300	140	50	0.036	1100	110	40	0.033	880	75	35	0.028
14.0	1100	140	50	0.042	980	100	45	0.034	780	75	35	0.032
16.0	980	140	50	0.048	780	100	40	0.043	630	70	30	0.037
18.0	880	125	50	0.047	700	100	40	0.048	560	70	30	0.042
20.0	780	125	50	0.053	630	100	40	0.053	560	70	35	0.042
22.0	700	125	50	0.060	630	100	45	0.053	490	70	35	0.048
25.0	630	110	50	0.058	560	90	45	0.054	430	55	35	0.043
28.0	560	100	50	0.060	490	75	45	0.051	390	50	35	0.043
30.0	490	85	45	0.058	430	70	40	0.054	350	40	35	0.038
32.0	490	85	50	0.058	390	65	40	0.056	310	40	30	0.043
35.0	450	80	50	0.059	360	60	40	0.056	290	35	30	0.040
36.0	430	75	50	0.058	350	55	40	0.052	280	35	30	0.042
40.0	390	75	50	0.064	310	55	40	0.059	250	35	30	0.047

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	3100	15	20	0.002	16800	150	105	0.003
3.0	2200	20	20	0.003	15400	240	145	0.005
4.0	1500	30	20	0.007	11200	280	140	0.008
5.0	1300	30	20	0.008	8800	290	140	0.011
6.0	1100	35	20	0.011	7800	290	145	0.012
8.0	780	40	20	0.017	5600	360	140	0.021
10.0	630	40	20	0.021	4300	380	135	0.029
12.0	560	50	20	0.030	3500	360	130	0.034
14.0	490	50	20	0.034	3100	340	135	0.037
16.0	390	40	20	0.034	2800	340	140	0.040
18.0	350	40	20	0.038	2500	340	140	0.045
20.0	310	40	20	0.043	2200	310	140	0.047
22.0	310	40	20	0.043	1950	280	135	0.048
25.0	250	30	20	0.040	1700	270	135	0.053
28.0	220	30	20	0.045	1500	250	130	0.056
30.0	220	30	20	0.045	1500	250	140	0.056
32.0	200	30	20	0.050	1400	225	140	0.054
35.0	180	25	20	0.046	1300	215	145	0.055
36.0	170	20	20	0.039	1250	210	140	0.056
40.0	150	20	20	0.044	1100	180	140	0.055



※The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSS END MILLS

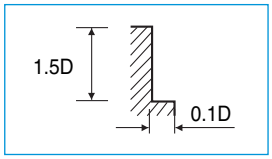
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

HSSCo8, 3 FLUTE - SIDE CUTTING
HSSCo8, 3 SCHNEIDEN - SEITENFRÄSEN

E2572, E2573, E2516, E2553, E2554, E2551, E2552 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	5600	60	35	0.004	4500	40	30	0.003	4000	35	25	0.003
3.0	3500	80	35	0.008	3200	60	30	0.006	2500	45	25	0.006
4.0	2800	105	35	0.013	2200	75	30	0.011	1800	50	25	0.009
5.0	2200	135	35	0.020	1800	95	30	0.018	1600	65	25	0.014
6.0	1800	135	35	0.025	1600	110	30	0.023	1200	65	25	0.018
8.0	1400	150	35	0.036	1100	120	30	0.036	900	80	25	0.030
10.0	1100	150	35	0.045	900	120	30	0.044	800	90	25	0.038
12.0	900	165	35	0.061	800	135	30	0.056	630	90	25	0.048
14.0	800	165	35	0.069	700	120	30	0.057	560	90	25	0.054
16.0	700	165	35	0.079	560	120	30	0.071	450	80	25	0.059
18.0	630	150	35	0.079	500	120	30	0.080	400	80	25	0.067
20.0	560	150	35	0.089	450	120	30	0.089	400	80	25	0.067
22.0	500	150	35	0.100	450	120	30	0.089	350	80	25	0.076
25.0	450	135	35	0.100	400	110	30	0.092	310	65	25	0.070
28.0	400	120	35	0.100	350	95	30	0.090	280	60	25	0.071
30.0	350	105	35	0.100	310	80	30	0.086	250	55	25	0.073
32.0	350	105	35	0.100	280	75	30	0.089	220	50	20	0.076
35.0	320	95	35	0.099	260	65	30	0.083	210	45	25	0.071
36.0	310	90	35	0.097	250	65	30	0.087	200	45	25	0.075
40.0	280	90	35	0.107	220	65	30	0.098	180	45	25	0.083

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	2200	15	15	0.002	12000	180	75	0.005
3.0	1600	20	15	0.004	11000	280	105	0.008
4.0	1100	30	15	0.009	8000	330	100	0.014
5.0	900	35	15	0.013	6300	350	100	0.019
6.0	800	45	15	0.019	5600	350	105	0.021
8.0	560	50	15	0.030	4000	440	100	0.037
10.0	450	50	15	0.037	3100	450	95	0.048
12.0	400	55	15	0.046	2500	430	95	0.057
14.0	350	55	15	0.052	2200	400	95	0.061
16.0	280	50	15	0.060	2000	400	100	0.067
18.0	250	50	15	0.067	1800	400	100	0.074
20.0	220	50	15	0.076	1600	360	100	0.075
22.0	220	50	15	0.076	1400	340	95	0.081
25.0	180	35	15	0.065	1200	320	95	0.089
28.0	160	30	15	0.063	1100	300	95	0.091
30.0	160	30	15	0.063	1100	300	105	0.091
32.0	140	30	15	0.071	1000	270	100	0.090
35.0	130	25	15	0.064	950	260	105	0.091
36.0	120	25	15	0.069	900	250	100	0.093
40.0	110	25	15	0.076	800	220	100	0.092



※The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSS END MILLS

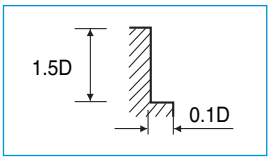
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

HSSCo8, 3 FLUTE TiAlN COATED - SIDE CUTTING
HSSCo8, 3 SCHNEIDEN TiAlN-BESCHICHTET - SEITENFRÄSEN

E2572, E2573, E2516, E2553, E2554, E2551, E2552 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	7900	85	50	0.004	6300	55	40	0.003	5600	50	35	0.003
3.0	4900	110	45	0.007	4500	85	40	0.006	3500	60	35	0.006
4.0	3900	145	50	0.012	3100	105	40	0.011	2500	70	30	0.009
5.0	3100	190	50	0.020	2500	130	40	0.017	2200	90	35	0.014
6.0	2500	190	45	0.025	2200	155	40	0.023	1700	90	30	0.018
8.0	2000	210	50	0.035	1500	170	40	0.038	1300	110	35	0.028
10.0	1500	210	45	0.047	1300	170	40	0.044	1100	125	35	0.038
12.0	1300	230	50	0.059	1100	190	40	0.058	880	125	35	0.047
14.0	1100	230	50	0.070	980	170	45	0.058	780	125	35	0.053
16.0	980	230	50	0.078	780	170	40	0.073	630	110	30	0.058
18.0	880	210	50	0.080	700	170	40	0.081	560	110	30	0.065
20.0	780	210	50	0.090	630	170	40	0.090	560	110	35	0.065
22.0	700	210	50	0.100	630	170	45	0.090	490	110	35	0.075
25.0	630	190	50	0.101	560	155	45	0.092	430	90	35	0.070
28.0	560	170	50	0.101	490	130	45	0.088	390	85	35	0.073
30.0	490	145	45	0.099	430	110	40	0.085	350	75	35	0.071
32.0	490	145	50	0.099	390	105	40	0.090	310	70	30	0.075
35.0	450	130	50	0.096	360	95	40	0.088	290	65	30	0.075
36.0	430	125	50	0.097	350	90	40	0.086	280	65	30	0.077
40.0	390	125	50	0.107	310	90	40	0.097	250	65	30	0.087

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	3100	20	20	0.002	16800	250	105	0.005
3.0	2200	30	20	0.005	15400	390	145	0.008
4.0	1500	40	20	0.009	11200	460	140	0.014
5.0	1300	50	20	0.013	8800	490	140	0.019
6.0	1100	60	20	0.018	7800	490	145	0.021
8.0	780	70	20	0.030	5600	620	140	0.037
10.0	630	70	20	0.037	4300	630	135	0.049
12.0	560	75	20	0.045	3500	600	130	0.057
14.0	490	75	20	0.051	3100	560	135	0.060
16.0	390	70	20	0.060	2800	560	140	0.067
18.0	350	70	20	0.067	2500	560	140	0.075
20.0	310	70	20	0.075	2200	500	140	0.076
22.0	310	70	20	0.075	1950	480	135	0.082
25.0	250	50	20	0.067	1700	450	135	0.088
28.0	220	40	20	0.061	1500	420	130	0.093
30.0	220	40	20	0.061	1500	420	140	0.093
32.0	200	40	20	0.067	1400	380	140	0.090
35.0	180	35	20	0.065	1300	360	145	0.092
36.0	170	35	20	0.069	1250	350	140	0.093
40.0	150	35	20	0.078	1100	310	140	0.094



※The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSS END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

HSSCo8, MULTI FLUTE - SIDE CUTTING
HSSCo8, MULTI SCHNEIDEN - SEITENFRÄSEN

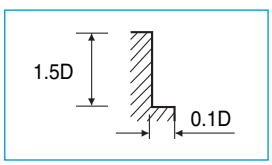
E2574, E2575, E2576, E2577, E2597, E2598, E2776 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	5600	80	35	0.004	4500	55	30	0.003	4000	45	25	0.003
3.0	3500	110	35	0.008	3200	80	30	0.006	2500	60	25	0.006
4.0	2800	140	35	0.013	2200	100	30	0.011	1800	65	25	0.009
5.0	2200	180	35	0.020	1800	125	30	0.017	1600	90	25	0.014
6.0	1800	180	35	0.025	1600	145	30	0.023	1200	90	25	0.019
8.0	1400	200	35	0.036	1100	160	30	0.036	900	105	25	0.029
10.0	1100	200	35	0.045	900	160	30	0.044	800	120	25	0.038
12.0	900	220	35	0.061	800	180	30	0.056	630	120	25	0.048
14.0	800	220	35	0.069	700	160	30	0.057	560	120	25	0.054
16.0	700	220	35	0.079	560	160	30	0.071	450	105	25	0.058
18.0	630	200	35	0.079	500	160	30	0.080	400	105	25	0.066
20.0	560	200	35	0.089	450	160	30	0.089	400	105	25	0.066
22.0	500	200	35	0.067	450	160	30	0.059	350	105	25	0.050
25.0	450	180	35	0.067	400	145	30	0.060	310	90	25	0.048
28.0	400	160	35	0.067	350	125	30	0.060	280	80	25	0.048
30.0	350	140	35	0.067	310	110	30	0.059	250	75	25	0.050
32.0	350	140	35	0.067	280	100	30	0.060	220	65	20	0.049
36.0	310	120	35	0.065	250	90	30	0.060	200	60	25	0.050
40.0	280	120	35	0.071	220	90	30	0.068	180	60	25	0.056

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	2200	20	15	0.002	12000	240	75	0.005
3.0	1600	30	15	0.005	11000	380	105	0.009
4.0	1100	45	15	0.010	8000	440	100	0.014
5.0	900	50	15	0.014	6300	470	100	0.019
6.0	800	60	15	0.019	5600	470	105	0.021
8.0	560	65	15	0.029	4000	580	100	0.036
10.0	450	65	15	0.036	3100	600	95	0.048
12.0	400	75	15	0.047	2500	570	95	0.057
14.0	350	75	15	0.054	2200	530	95	0.060
16.0	280	65	15	0.058	2000	530	100	0.066
18.0	250	65	15	0.065	1800	530	100	0.074
20.0	220	65	15	0.074	1600	480	100	0.075
22.0	220	65	15	0.049	1400	450	95	0.054
25.0	180	50	15	0.046	1200	420	95	0.058
28.0	160	45	15	0.047	1100	400	95	0.061
30.0	160	45	15	0.047	1100	400	105	0.061
32.0	140	45	15	0.054	1000	360	100	0.060
36.0	120	35	15	0.049	900	330	100	0.061
40.0	110	35	15	0.053	800	300	100	0.063

※The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t



HSS END MILLS

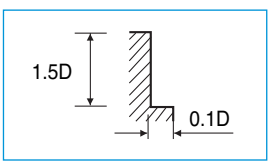
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

HSSCo8, MULTI FLUTE TiAlN COATED - SIDE CUTTING
HSSCo8, MULTI SCHNEIDEN TiAlN-BESCHICHTET - SEITENFRÄSEN

E2574, E2575, E2576, E2577, E2597, E2598, E2776 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	7850	110	50	0.004	6300	75	40	0.003	5600	65	35	0.003
3.0	4900	155	45	0.008	4500	110	40	0.006	3500	85	35	0.006
4.0	3900	195	50	0.013	3100	140	40	0.011	2500	90	30	0.009
5.0	3100	250	50	0.020	2500	175	40	0.018	2250	125	35	0.014
6.0	2500	250	45	0.025	2250	205	40	0.023	1700	125	30	0.018
8.0	1950	280	50	0.036	1550	225	40	0.036	1250	145	30	0.029
10.0	1550	280	50	0.045	1250	225	40	0.045	1100	170	35	0.039
12.0	1250	310	45	0.062	1100	250	40	0.057	900	170	35	0.047
14.0	1100	310	50	0.070	1000	225	45	0.056	800	170	35	0.053
16.0	1000	310	50	0.078	800	225	40	0.070	650	145	35	0.056
18.0	900	280	50	0.078	700	225	40	0.080	550	145	30	0.066
20.0	800	280	50	0.088	650	225	40	0.087	550	145	35	0.066
22.0	700	280	50	0.067	650	225	45	0.058	500	145	35	0.048
25.0	650	250	50	0.064	550	205	45	0.062	450	125	35	0.046
28.0	550	225	50	0.068	500	175	45	0.058	400	110	35	0.046
30.0	500	195	45	0.065	450	155	40	0.057	350	105	35	0.050
32.0	500	195	50	0.065	400	140	40	0.058	300	90	30	0.050
36.0	450	170	50	0.063	350	125	40	0.060	300	85	35	0.047
40.0	400	170	50	0.071	300	125	40	0.069	250	85	30	0.057

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	3100	30	20	0.002	16800	335	105	0.005
3.0	2250	40	20	0.004	15400	530	145	0.009
4.0	1550	65	20	0.010	11200	615	140	0.014
5.0	1250	70	20	0.014	8800	660	140	0.019
6.0	1100	85	20	0.019	7850	660	150	0.021
8.0	800	90	20	0.028	5600	810	140	0.036
10.0	650	90	20	0.035	4350	840	135	0.048
12.0	550	105	20	0.048	3500	800	130	0.057
14.0	500	105	20	0.053	3100	740	135	0.060
16.0	400	90	20	0.056	2800	740	140	0.066
18.0	350	90	20	0.064	2500	740	140	0.074
20.0	300	90	20	0.075	2250	670	140	0.074
22.0	300	90	20	0.050	1950	630	135	0.054
25.0	250	70	20	0.047	1700	590	135	0.058
28.0	200	65	20	0.054	1550	560	135	0.060
30.0	200	65	20	0.054	1550	560	145	0.060
32.0	200	65	20	0.054	1400	505	140	0.060
36.0	150	50	15	0.056	1250	460	140	0.061
40.0	150	50	20	0.056	1100	420	140	0.064



※The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSS END MILLS

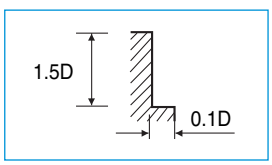
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

HSSCo8, MULTI FLUTE - SIDE CUTTING
HSSCo8, MULTI SCHNEIDEN - SEITENFRÄSEN

E2595, E2596 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	5600	80	35	0.004	4500	55	30	0.003	4000	45	25	0.003
3.0	3500	110	35	0.008	3200	80	30	0.006	2500	60	25	0.006
4.0	2800	140	35	0.013	2200	100	30	0.011	1800	65	25	0.009
5.0	2200	180	35	0.020	1800	125	30	0.017	1600	90	25	0.014
6.0	1800	180	35	0.025	1600	145	30	0.023	1200	90	25	0.019
8.0	1400	200	35	0.036	1100	160	30	0.036	900	105	25	0.029
10.0	1100	200	35	0.045	900	160	30	0.044	800	120	25	0.038
12.0	900	220	35	0.061	800	180	30	0.056	630	120	25	0.048
14.0	800	220	35	0.069	700	160	30	0.057	560	120	25	0.054
16.0	700	220	35	0.079	560	160	30	0.071	450	105	25	0.058
18.0	630	200	35	0.079	500	160	30	0.080	400	105	25	0.066
20.0	560	200	35	0.089	450	160	30	0.089	400	105	25	0.066
22.0	500	200	35	0.100	450	160	30	0.089	350	105	25	0.075
25.0	450	180	35	0.100	400	145	30	0.091	310	90	25	0.073
28.0	400	160	35	0.067	350	125	30	0.060	280	80	25	0.048
30.0	350	140	35	0.067	310	110	30	0.059	250	75	25	0.050
32.0	350	140	35	0.067	280	100	30	0.060	220	65	20	0.049
36.0	310	120	35	0.065	250	90	30	0.060	200	60	25	0.050
40.0	280	120	35	0.071	220	90	30	0.068	180	60	25	0.056

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	2200	20	15	0.002	12000	240	75	0.005
3.0	1600	30	15	0.005	11000	380	105	0.009
4.0	1100	45	15	0.010	8000	440	100	0.014
5.0	900	50	15	0.014	6300	470	100	0.019
6.0	800	60	15	0.019	5600	470	105	0.021
8.0	560	65	15	0.029	4000	580	100	0.036
10.0	450	65	15	0.036	3100	600	95	0.048
12.0	400	75	15	0.047	2500	570	95	0.057
14.0	350	75	15	0.054	2200	530	95	0.060
16.0	280	65	15	0.058	2000	530	100	0.066
18.0	250	65	15	0.065	1800	530	100	0.074
20.0	220	65	15	0.074	1600	480	100	0.075
22.0	220	65	15	0.074	1400	450	95	0.080
25.0	180	50	15	0.069	1200	420	95	0.088
28.0	160	45	15	0.047	1100	400	95	0.061
30.0	160	45	15	0.047	1100	400	105	0.061
32.0	140	45	15	0.054	1000	360	100	0.060
36.0	120	35	15	0.049	900	330	100	0.061
40.0	110	35	15	0.053	800	300	100	0.063



※The FEED, in long & extra long types, should be reduced by around 50%

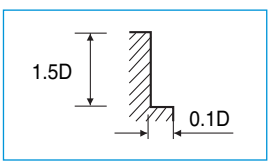
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSSCo8, MULTI FLUTE TiAlN COATED - SIDE CUTTING
HSSCo8, MULTI SCHNEIDEN TiAlN-BESCHICHTET - SEITENFRÄSEN

E2595, E2596 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	7850	110	50	0.004	6300	75	40	0.003	5600	65	35	0.003
3.0	4900	155	45	0.008	4500	110	40	0.006	3500	85	35	0.006
4.0	3900	195	50	0.013	3100	140	40	0.011	2500	90	30	0.009
5.0	3100	250	50	0.020	2500	175	40	0.018	2250	125	35	0.014
6.0	2500	250	45	0.025	2250	205	40	0.023	1700	125	30	0.018
8.0	1950	280	50	0.036	1550	225	40	0.036	1250	145	30	0.029
10.0	1550	280	50	0.045	1250	225	40	0.045	1100	170	35	0.039
12.0	1250	310	45	0.062	1100	250	40	0.057	900	170	35	0.047
14.0	1100	310	50	0.070	1000	225	45	0.056	800	170	35	0.053
16.0	1000	310	50	0.078	800	225	40	0.070	650	145	35	0.056
18.0	900	280	50	0.078	700	225	40	0.080	550	145	30	0.066
20.0	800	280	50	0.088	650	225	40	0.087	550	145	35	0.066
22.0	700	280	50	0.100	650	225	45	0.087	500	145	35	0.073
25.0	650	250	50	0.096	550	205	45	0.093	450	125	35	0.069
28.0	550	225	50	0.068	500	175	45	0.058	400	110	35	0.046
30.0	500	195	45	0.065	450	155	40	0.057	350	105	35	0.050
32.0	500	195	50	0.065	400	140	40	0.058	300	90	30	0.050
36.0	450	170	50	0.063	350	125	40	0.060	300	85	35	0.047
40.0	400	170	50	0.071	300	125	40	0.069	250	85	30	0.057

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	3100	30	20	0.002	16800	335	105	0.005
3.0	2250	40	20	0.004	15400	530	145	0.009
4.0	1550	65	20	0.010	11200	615	140	0.014
5.0	1250	70	20	0.014	8800	660	140	0.019
6.0	1100	85	20	0.019	7850	660	150	0.021
8.0	800	90	20	0.028	5600	810	140	0.036
10.0	650	90	20	0.035	4350	840	135	0.048
12.0	550	105	20	0.048	3500	800	130	0.057
14.0	500	105	20	0.053	3100	740	135	0.060
16.0	400	90	20	0.056	2800	740	140	0.066
18.0	350	90	20	0.064	2500	740	140	0.074
20.0	300	90	20	0.075	2250	670	140	0.074
22.0	300	90	20	0.075	1950	630	135	0.081
25.0	250	70	20	0.070	1700	590	135	0.087
28.0	200	65	20	0.054	1550	560	135	0.060
30.0	200	65	20	0.054	1550	560	145	0.060
32.0	200	65	20	0.054	1400	505	140	0.060
36.0	150	50	15	0.056	1250	460	140	0.061
40.0	150	50	20	0.056	1100	420	140	0.064



※The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

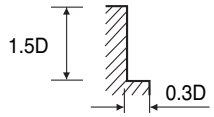
HSS END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

HSSCo8, MULTI FLUTE 50° HELIX - SIDE CUTTING
HSSCo8, MULTI SCHNEIDEN 50° RECHTSSPIRALE - SEITENFRÄSEN

E2461, E2462, E2463 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS	~ HRc20				HRc20 ~ HRc30				HRc30 ~ HRc40			
STRENGTH	500 ~ 800N/mm²				800 ~ 1000N/mm²				1000 ~ 1300N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	5000	35	30	0.004	4500	25	30	0.003	2500	10	15	0.002
3.0	3500	50	35	0.007	2800	35	30	0.006	1800	20	15	0.006
4.0	2500	60	30	0.012	2000	40	25	0.010	1200	25	15	0.010
5.0	2000	75	30	0.019	1800	55	30	0.015	1000	30	15	0.015
6.0	1800	85	35	0.016	1300	55	25	0.014	900	35	15	0.013
8.0	1200	95	30	0.026	1000	65	25	0.022	600	40	15	0.022
10.0	1000	95	30	0.032	900	70	30	0.026	500	40	15	0.027
12.0	900	110	35	0.041	700	70	25	0.033	450	45	15	0.033
14.0	800	95	35	0.040	600	70	25	0.039	400	45	20	0.038
16.0	600	95	30	0.053	500	65	25	0.043	300	40	15	0.044
18.0	550	95	30	0.058	450	65	25	0.048	280	40	15	0.048
20.0	500	95	30	0.063	450	65	30	0.048	250	40	15	0.053
22.0	500	95	35	0.048	400	65	30	0.041	250	40	15	0.040
25.0	450	85	35	0.047	350	55	25	0.039	200	30	15	0.038
28.0	400	75	35	0.047	300	50	25	0.042	180	25	15	0.035
30.0	350	65	35	0.046	280	45	25	0.040	180	25	15	0.035

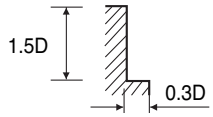


RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSSCo8, MULTI FLUTE 50° HELIX TiAlN COATED - SIDE CUTTING
HSSCo8, MULTI SCHNEIDEN 50° RECHTSSPIRALE TiAlN-BESCHICHTET - SEITENFRÄSEN

E2461, E2462, E2463 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS	~ HRc20				HRc20 ~ HRc30				HRc30 ~ HRc40			
STRENGTH	500 ~ 800N/mm²				800 ~ 1000N/mm²				1000 ~ 1300N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	7000	50	45	0.004	6300	35	40	0.003	3500	15	20	0.002
3.0	4900	70	45	0.007	3920	50	35	0.006	2520	30	25	0.006
4.0	3500	85	45	0.012	2800	55	35	0.010	1680	35	20	0.010
5.0	2800	105	45	0.019	2520	75	40	0.015	1400	40	20	0.014
6.0	2520	120	50	0.016	1820	75	35	0.014	1260	50	25	0.013
8.0	1680	135	40	0.027	1400	90	35	0.021	840	55	20	0.022
10.0	1400	135	45	0.032	1260	100	40	0.026	700	55	20	0.026
12.0	1260	155	50	0.041	980	100	35	0.034	630	65	25	0.034
14.0	1120	135	50	0.040	840	100	35	0.040	560	65	25	0.039
16.0	840	135	40	0.054	700	90	35	0.043	420	55	20	0.044
18.0	770	135	45	0.058	630	90	35	0.048	390	55	20	0.047
20.0	700	135	45	0.064	630	90	40	0.048	350	55	20	0.052
22.0	700	135	50	0.048	560	90	40	0.040	350	55	25	0.039
25.0	630	120	50	0.048	490	75	40	0.038	280	40	20	0.036
28.0	560	105	50	0.047	420	70	35	0.042	250	35	20	0.035
30.0	490	90	45	0.046	390	65	35	0.042	250	35	25	0.035



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSS END MILLS

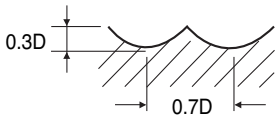
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

HSSCo8, 2 FLUTE BALL NOSE
HSSCo8, 2 SCHNEIDEN STIRNRADIUS

E2535, E2492 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R1.5 × 3.0	4500	95	40	0.011	3400	70	30	0.010	2000	30	20	0.008
R2.0 × 4.0	3200	115	40	0.018	2400	80	30	0.017	1400	35	20	0.013
R3.0 × 6.0	2200	135	40	0.031	1700	90	30	0.026	1000	45	20	0.023
R4.0 × 8.0	1600	160	40	0.050	1200	105	30	0.044	700	50	20	0.036
R5.0 × 10.0	1300	180	40	0.069	1000	120	30	0.060	560	60	20	0.054
R6.0 × 12.0	1000	170	40	0.085	800	105	30	0.066	450	55	15	0.061
R8.0 × 16.0	800	150	40	0.094	600	100	30	0.083	350	55	20	0.079
R10.0 × 20.0	600	140	40	0.117	500	85	30	0.085	300	50	20	0.083
R12.5 × 25.0	500	130	40	0.130	400	70	30	0.088	220	40	15	0.091

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R1.5 × 3.0	1400	20	15	0.007	11000	230	105	0.010
R2.0 × 4.0	1000	25	15	0.013	8000	260	100	0.016
R3.0 × 6.0	700	25	15	0.018	5600	280	105	0.025
R4.0 × 8.0	500	30	15	0.030	4000	350	100	0.044
R5.0 × 10.0	400	35	15	0.044	3200	360	100	0.056
R6.0 × 12.0	320	35	10	0.055	2500	340	95	0.068
R8.0 × 16.0	250	35	15	0.070	2000	300	100	0.075
R10.0 × 20.0	200	35	15	0.088	1600	280	100	0.088
R12.5 × 25.0	160	30	15	0.094	1300	250	100	0.096



※The FEED, in long & extra long types, should be reduced by around 50%

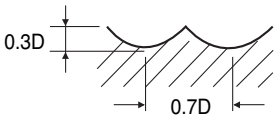
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSSCo8, 2 FLUTE BALL NOSE TiAlN COATED
HSSCo8, 2 SCHNEIDEN STIRNRADIUS TiAlN-BESCHICHTET

E2535, E2492 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R1.5 × 3.0	6300	135	60	0.011	4750	100	45	0.011	2800	40	25	0.007
R2.0 × 4.0	4500	160	55	0.018	3350	110	40	0.016	1950	50	25	0.013
R3.0 × 6.0	3100	190	60	0.031	2400	125	45	0.026	1400	65	25	0.023
R4.0 × 8.0	2250	225	55	0.050	1700	145	45	0.043	1000	70	25	0.035
R5.0 × 10.0	1800	250	55	0.069	1400	170	45	0.061	800	85	25	0.053
R6.0 × 12.0	1400	240	55	0.086	1100	145	40	0.066	650	75	25	0.058
R8.0 × 16.0	1100	210	55	0.095	850	140	45	0.082	500	75	25	0.075
R10.0 × 20.0	850	195	55	0.115	700	120	45	0.086	400	70	25	0.088
R12.5 × 25.0	700	180	55	0.129	550	100	45	0.091	300	55	25	0.092

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R1.5 × 3.0	1950	30	20	0.008	15400	320	145	0.010
R2.0 × 4.0	1400	35	20	0.013	11200	365	140	0.016
R3.0 × 6.0	1000	35	20	0.018	7850	390	150	0.025
R4.0 × 8.0	700	40	20	0.029	5600	490	140	0.044
R5.0 × 10.0	550	50	15	0.045	4500	505	140	0.056
R6.0 × 12.0	450	50	15	0.056	3500	475	130	0.068
R8.0 × 16.0	350	50	20	0.071	2800	420	140	0.075
R10.0 × 20.0	300	50	20	0.083	2250	390	140	0.087
R12.5 × 25.0	200	40	15	0.100	1800	350	140	0.097



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RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSS END MILLS

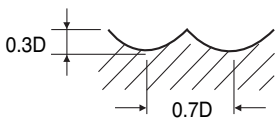
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

HSSCo8, MULTI FLUTE BALL NOSE
HSSCo8, MULTI SCHNEIDEN STIRNRADIUS

E2410, E2429, E2512 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R3.0 × 6.0	2200	200	40	0.030	1700	135	30	0.026	1000	70	20	0.023
R4.0 × 8.0	1600	240	40	0.050	1200	160	30	0.044	700	75	20	0.036
R5.0 × 10.0	1300	270	40	0.069	1000	180	30	0.060	560	90	20	0.054
R6.0 × 12.0	1000	260	40	0.087	800	160	30	0.067	450	80	15	0.059
R8.0 × 16.0	800	230	40	0.096	600	150	30	0.083	350	80	20	0.076
R10.0 × 20.0	600	210	40	0.117	500	130	30	0.087	300	75	20	0.083
R12.5 × 25.0	500	200	40	0.133	400	105	30	0.088	220	60	15	0.091

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R3.0 × 6.0	700	40	15	0.019	5600	420	105	0.025
R4.0 × 8.0	500	45	15	0.030	4000	530	100	0.044
R5.0 × 10.0	400	50	15	0.042	3200	540	100	0.056
R6.0 × 12.0	320	50	15	0.052	2500	510	95	0.068
R8.0 × 16.0	250	50	15	0.067	2000	450	100	0.075
R10.0 × 20.0	200	50	15	0.083	1600	420	100	0.088
R12.5 × 25.0	160	45	15	0.094	1300	380	100	0.097



※The FEED, in long & extra long types, should be reduced by around 50%

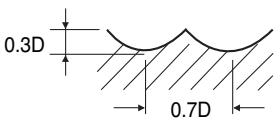
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSSCo8, MULTI FLUTE BALL NOSE TiAlN COATED
HSSCo8, MULTI SCHNEIDEN STIRNRADIUS TiAlN-BESCHICHTET

E2410, E2429, E2512 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R3.0 × 6.0	3100	280	58	0.030	2400	190	45	0.026	1400	100	26	0.024
R4.0 × 8.0	2250	335	57	0.050	1700	225	43	0.044	1000	105	25	0.035
R5.0 × 10.0	1800	380	57	0.070	1400	250	44	0.060	800	125	25	0.052
R6.0 × 12.0	1400	365	53	0.087	1100	225	41	0.068	650	110	25	0.056
R8.0 × 16.0	1100	320	55	0.097	850	210	43	0.082	500	110	25	0.073
R10.0 × 20.0	850	295	53	0.116	700	180	44	0.086	400	105	25	0.088
R12.5 × 25.0	700	280	55	0.133	550	145	43	0.088	300	85	24	0.094

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R3.0 × 6.0	1000	55	19	0.018	7850	590	148	0.025
R4.0 × 8.0	700	65	18	0.031	5600	740	141	0.044
R5.0 × 10.0	550	70	17	0.042	4500	755	141	0.056
R6.0 × 12.0	450	70	17	0.052	3500	715	132	0.068
R8.0 × 16.0	350	70	18	0.067	2800	630	141	0.075
R10.0 × 20.0	300	70	19	0.078	2250	590	141	0.087
R12.5 × 25.0	200	65	16	0.108	1800	530	141	0.098



※The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSS END MILLS

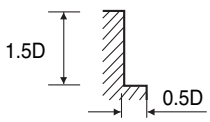
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

HSSCo8, MULTI FLUTE ROUGHING - SIDE CUTTING
HSSCo8, MULTI SCHNEIDEN SCHRUPPFRÄSER - SEITENFRÄSEN

E2751, E2752, E2764, E2765, E2761, E2753, E2762, E2777, E2778 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	1800	80	35	0.015	1600	60	30	0.013	1200	55	25	0.015
8.0	1400	105	35	0.025	1100	75	30	0.023	900	65	25	0.024
10.0	1100	150	35	0.034	900	120	30	0.033	800	110	25	0.034
12.0	900	180	35	0.050	800	140	30	0.044	630	110	25	0.044
14.0	800	180	35	0.056	700	140	30	0.050	560	110	25	0.049
16.0	700	180	35	0.064	560	140	30	0.063	450	110	25	0.061
18.0	630	180	35	0.071	500	140	30	0.070	400	110	25	0.069
20.0	560	180	35	0.080	450	140	30	0.078	400	110	25	0.069
22.0	500	220	35	0.088	450	170	30	0.076	350	140	25	0.080
25.0	450	220	35	0.098	400	170	30	0.085	310	140	25	0.090
28.0	400	210	35	0.088	350	160	30	0.076	280	130	25	0.077
30.0	350	210	35	0.100	310	160	30	0.086	250	130	25	0.087
32.0	350	210	35	0.100	280	160	30	0.095	220	130	20	0.098
36.0	310	210	35	0.113	250	160	30	0.107	200	130	25	0.108
40.0	280	200	35	0.119	220	150	30	0.114	180	120	25	0.111
50.0	220	200	35	0.152	180	170	30	0.157	160	140	25	0.146

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	800	30	15	0.013	4500	200	85	0.015
8.0	560	35	15	0.021	3100	230	80	0.025
10.0	450	60	15	0.033	2500	350	80	0.035
12.0	400	70	15	0.044	2000	400	75	0.050
14.0	350	70	15	0.050	1800	420	80	0.058
16.0	280	70	15	0.063	1600	450	80	0.070
18.0	250	70	15	0.070	1400	470	80	0.084
20.0	220	70	15	0.080	1200	500	75	0.104
22.0	220	85	15	0.077	1100	470	75	0.085
25.0	180	85	15	0.094	1000	450	80	0.090
28.0	160	85	15	0.089	900	510	80	0.094
30.0	160	85	15	0.089	900	530	85	0.098
32.0	140	85	15	0.101	800	500	80	0.104
36.0	120	85	15	0.118	700	470	80	0.112
40.0	110	80	15	0.121	630	450	80	0.119
50.0	90	80	15	0.148	500	370	80	0.123



※The FEED, in long & extra long types, should be reduced by around 50%

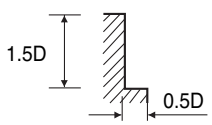
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSSCo8, MULTI FLUTE ROUGHING TiAlN COATED - SIDE CUTTING
HSSCo8, MULTI SCHNEIDEN SCHRUPPFRÄSER TiAlN-BESCHICHTET - SEITENFRÄSEN

E2751, E2752, E2764, E2765, E2761, E2753, E2762, E2777, E2778 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	2500	110	45	0.015	2250	85	40	0.013	1700	75	30	0.015
8.0	1950	145	50	0.025	1550	105	40	0.023	1250	90	30	0.024
10.0	1550	210	50	0.034	1250	170	40	0.034	1100	155	35	0.035
12.0	1250	250	45	0.050	1100	195	40	0.044	900	155	35	0.043
14.0	1100	250	50	0.057	1000	195	45	0.049	800	155	35	0.048
16.0	1000	250	50	0.063	800	195	40	0.061	650	155	35	0.060
18.0	900	250	50	0.069	700	195	40	0.070	550	155	30	0.070
20.0	800	250	50	0.078	650	195	40	0.075	550	155	35	0.070
22.0	700	310	50	0.089	650	240	45	0.074	500	195	35	0.078
25.0	650	310	50	0.095	550	240	45	0.087	450	195	35	0.087
28.0	550	295	50	0.089	500	225	45	0.075	400	180	35	0.075
30.0	500	295	45	0.098	450	225	40	0.083	350	180	35	0.086
32.0	500	295	50	0.098	400	225	40	0.094	300	180	30	0.100
36.0	450	295	50	0.109	350	225	40	0.107	300	180	35	0.100
40.0	400	280	50	0.117	300	210	40	0.117	250	170	30	0.113
50.0	300	280	45	0.156	250	240	40	0.160	220	195	35	0.148

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	1100	40	20	0.012	6300	280	120	0.015
8.0	800	50	20	0.021	4350	320	110	0.025
10.0	650	85	20	0.033	3500	490	110	0.035
12.0	550	100	20	0.045	2800	560	105	0.050
14.0	500	100	20	0.050	2500	590	110	0.059
16.0	400	100	20	0.063	2250	630	115	0.070
18.0	350	100	20	0.071	1950	660	110	0.085
20.0	300	100	20	0.083	1700	700	105	0.103
22.0	300	120	20	0.080	1550	660	105	0.085
25.0	250	120	20	0.096	1400	630	110	0.090
28.0	220	120	20	0.091	1250	715	110	0.095
30.0	220	120	20	0.091	1250	740	120	0.099
32.0	200	120	20	0.100	1100	700	110	0.106
36.0	170	120	20	0.118	1000	660	115	0.110
40.0	130	110	15	0.141	900	630	115	0.117
50.0	120	110	20	0.153	700	520	110	0.124



※The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSS END MILLS

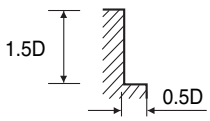
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

HSSCo8, MULTI FLUTE ROUGHING - SIDE CUTTING
HSSCo8, MULTI SCHNEIDEN SCHRUPPFRÄSER - SEITENFRÄSEN

E2755, E2756 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	1800	80	35	0.015	1600	60	30	0.013	1200	55	25	0.015
8.0	1400	105	35	0.025	1100	75	30	0.023	900	65	25	0.024
10.0	1100	150	35	0.045	900	120	30	0.044	800	110	25	0.046
12.0	900	180	35	0.067	800	140	30	0.058	630	110	25	0.058
14.0	800	180	35	0.075	700	140	30	0.067	560	110	25	0.065
16.0	700	180	35	0.086	560	140	30	0.083	450	110	25	0.081
18.0	630	180	35	0.095	500	140	30	0.093	400	110	25	0.092
20.0	560	180	35	0.107	450	140	30	0.104	400	110	25	0.092
22.0	500	220	35	0.147	450	170	30	0.126	350	140	25	0.133
25.0	450	220	35	0.163	400	170	30	0.142	310	140	25	0.151
30.0	350	210	35	0.200	310	160	30	0.172	250	130	25	0.173

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	800	30	15	0.013	4500	200	85	0.015
8.0	560	35	15	0.021	3100	230	80	0.025
10.0	450	60	15	0.044	2500	350	80	0.047
12.0	400	70	15	0.058	2000	400	75	0.067
14.0	350	70	15	0.067	1800	420	80	0.078
16.0	280	70	15	0.083	1600	450	80	0.094
18.0	250	70	15	0.093	1400	470	80	0.112
20.0	220	70	15	0.106	1200	500	75	0.139
22.0	220	85	15	0.129	1100	470	75	0.142
25.0	180	85	15	0.157	1000	450	80	0.150
30.0	160	85	15	0.177	900	530	85	0.196



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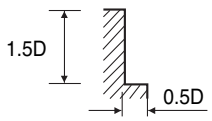
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSSCo8, MULTI FLUTE ROUGHING TiAlN COATED - SIDE CUTTING
HSSCo8, MULTI SCHNEIDEN SCHRUPPFRÄSER TiAlN-BESCHICHTET - SEITENFRÄSEN

E2755, E2756 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	2500	110	45	0.015	2250	85	40	0.013	1700	75	30	0.015
8.0	1950	145	50	0.025	1550	105	40	0.023	1250	90	30	0.024
10.0	1550	210	50	0.045	1250	170	40	0.045	1100	155	35	0.047
12.0	1250	250	45	0.067	1100	195	40	0.059	900	155	35	0.057
14.0	1100	250	50	0.076	1000	195	45	0.065	800	155	35	0.065
16.0	1000	250	50	0.083	800	195	40	0.081	650	155	35	0.079
18.0	900	250	50	0.093	700	195	40	0.093	550	155	30	0.094
20.0	800	250	50	0.104	650	195	40	0.100	550	155	35	0.094
22.0	700	310	50	0.148	650	240	45	0.123	500	195	35	0.130
25.0	650	310	50	0.159	550	240	45	0.145	450	195	35	0.144
30.0	500	295	45	0.197	450	225	40	0.167	350	180	35	0.171

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	1100	40	20	0.012	6300	280	120	0.015
8.0	800	50	20	0.021	4350	320	110	0.025
10.0	650	85	20	0.044	3500	490	110	0.047
12.0	550	100	20	0.061	2800	560	105	0.067
14.0	500	100	20	0.067	2500	590	110	0.079
16.0	400	100	20	0.083	2250	630	115	0.093
18.0	350	100	20	0.095	1950	660	110	0.113
20.0	300	100	20	0.111	1700	700	105	0.137
22.0	300	120	20	0.133	1550	660	105	0.142
25.0	250	120	20	0.160	1400	630	110	0.150
30.0	220	120	20	0.182	1250	740	120	0.197



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RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSS END MILLS

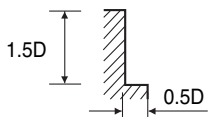
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

HSSCo8, MULTI FLUTE ROUGHING - SIDE CUTTING
HSSCo8, MULTI SCHNEIDEN SCHRUPPFRÄSER - SEITENFRÄSEN

E2524 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	1800	80	35	0.015	1600	60	30	0.013	1200	55	25	0.015
8.0	1400	105	35	0.019	1100	75	30	0.017	900	65	25	0.018
10.0	1100	150	35	0.034	900	120	30	0.033	800	110	25	0.034
12.0	900	180	35	0.050	800	140	30	0.044	630	110	25	0.044
14.0	800	180	35	0.056	700	140	30	0.050	560	110	25	0.049
16.0	700	180	35	0.064	560	140	30	0.063	450	110	25	0.061
18.0	630	180	35	0.071	500	140	30	0.070	400	110	25	0.069
20.0	560	180	35	0.080	450	140	30	0.078	400	110	25	0.069

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	800	30	15	0.013	4500	200	85	0.015
8.0	560	35	15	0.016	3100	230	80	0.019
10.0	450	60	15	0.033	2500	350	80	0.035
12.0	400	70	15	0.044	2000	400	75	0.050
14.0	350	70	15	0.050	1800	420	80	0.058
16.0	280	70	15	0.063	1600	450	80	0.070
18.0	250	70	15	0.070	1400	470	80	0.084
20.0	220	70	15	0.080	1200	500	75	0.104



※The FEED, in long & extra long types, should be reduced by around 50%

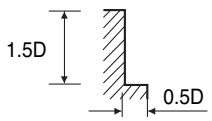
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSSCo8, MULTI FLUTE ROUGHING TiAlN COATED - SIDE CUTTING
HSSCo8, MULTI SCHNEIDEN SCHRUPPFRÄSER TiAlN-BESCHICHTET - SEITENFRÄSEN

E2524 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	2500	110	45	0.015	2250	85	40	0.013	1700	75	30	0.015
8.0	1950	145	50	0.019	1550	105	40	0.017	1250	90	30	0.018
10.0	1550	210	50	0.034	1250	170	40	0.034	1100	155	35	0.035
12.0	1250	250	45	0.050	1100	195	40	0.044	900	155	35	0.043
14.0	1100	250	50	0.057	1000	195	45	0.049	800	155	35	0.048
16.0	1000	250	50	0.063	800	195	40	0.061	650	155	35	0.060
18.0	900	250	50	0.069	700	195	40	0.070	550	155	30	0.070
20.0	800	250	50	0.078	650	195	40	0.075	550	155	35	0.070

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	1100	40	20	0.012	6300	280	120	0.015
8.0	800	50	20	0.016	4350	320	110	0.018
10.0	650	85	20	0.033	3500	490	110	0.035
12.0	550	100	20	0.045	2800	560	105	0.050
14.0	500	100	20	0.050	2500	590	110	0.059
16.0	400	100	20	0.063	2250	630	115	0.070
18.0	350	100	20	0.071	1950	660	110	0.085
20.0	300	100	20	0.083	1700	700	105	0.103



※The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSS END MILLS

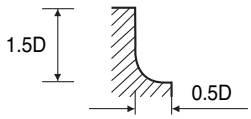
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

HSSCo8, MULTI FLUTE ROUGHING BALL NOSE - SIDE CUTTING
HSSCo8, MULTI SCHNEIDEN SCHRUPPFRÄSER STIRNRADIUS - SEITENFRÄSEN

E2757, E2606 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R4.0 × 8.0	1400	105	35	0.025	1100	75	30	0.023	900	65	25	0.024
R5.0 × 10.0	1100	150	35	0.045	900	120	30	0.044	800	110	25	0.046
R6.0 × 12.0	900	180	35	0.050	800	140	30	0.044	630	110	25	0.044
R8.0 × 16.0	700	180	35	0.064	560	140	30	0.063	450	110	25	0.061
R10.0 × 20.0	560	180	35	0.080	450	140	30	0.078	400	110	25	0.069
R12.5 × 25.0	450	220	35	0.122	400	170	30	0.106	310	140	25	0.113
R16.0 × 32.0	350	210	35	0.150	280	160	30	0.143	220	130	20	0.148
R20.0 × 40.0	280	200	35	0.179	220	150	30	0.170	180	120	25	0.167

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R4.0 × 8.0	560	35	15	0.021	3100	230	80	0.025
R5.0 × 10.0	450	60	15	0.044	2500	250	80	0.033
R6.0 × 12.0	400	70	15	0.044	2000	400	75	0.050
R8.0 × 16.0	280	70	15	0.063	1600	450	80	0.070
R10.0 × 20.0	220	70	15	0.080	1200	500	75	0.104
R12.5 × 25.0	180	85	15	0.118	1000	450	80	0.113
R16.0 × 32.0	140	85	15	0.152	800	500	80	0.156
R20.0 × 40.0	110	80	15	0.182	630	450	80	0.179



※The FEED, in long & extra long types, should be reduced by around 50%

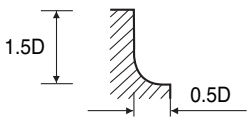
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSSCo8, MULTI FLUTE ROUGHING BALL NOSE TiAlN COATED - SIDE CUTTING
HSSCo8, MULTI SCHNEIDEN SCHRUPPFRÄSER STIRNRADIUS TiAlN-BESCHICHTET - SEITENFRÄSEN

E2757, E2606 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R4.0 × 8.0	1960	150	50	0.026	1540	105	40	0.023	1260	90	30	0.024
R5.0 × 10.0	1540	210	50	0.045	1260	170	40	0.045	1120	155	35	0.046
R6.0 × 12.0	1260	250	50	0.050	1120	195	40	0.044	880	155	35	0.044
R8.0 × 16.0	980	250	50	0.064	790	195	40	0.062	630	155	30	0.062
R10.0 × 20.0	790	250	50	0.079	630	195	40	0.077	560	155	35	0.069
R12.5 × 25.0	630	310	50	0.123	560	240	45	0.107	440	195	35	0.111
R16.0 × 32.0	490	295	50	0.151	390	225	40	0.144	310	180	30	0.145
R20.0 × 40.0	390	280	50	0.179	310	210	40	0.169	250	170	30	0.170

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
R4.0 × 8.0	790	50	20	0.021	4340	320	110	0.025
R5.0 × 10.0	630	85	20	0.045	3500	350	110	0.033
R6.0 × 12.0	560	100	20	0.045	2800	560	105	0.050
R8.0 × 16.0	390	100	20	0.064	2240	630	115	0.070
R10.0 × 20.0	310	100	20	0.081	1680	700	105	0.104
R12.5 × 25.0	250	120	20	0.120	1400	630	110	0.113
R16.0 × 32.0	200	120	20	0.150	1120	700	115	0.156
R20.0 × 40.0	160	110	20	0.172	880	630	110	0.179



※The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSS END MILLS

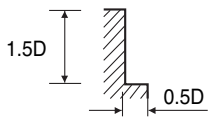
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

HSSCo8, MULTI FLUTE ROUGHING & FINISHING - SIDE CUTTING
HSSCo8, MULTI SCHNEIDEN SCHRUPPSCHLICHTFRÄSER - SEITENFRÄSEN

E2754, E2768 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	1800	65	35	0.012	1600	50	30	0.010	1200	45	25	0.013
8.0	1400	85	35	0.015	1100	60	30	0.014	900	50	25	0.014
10.0	1100	120	35	0.027	900	95	30	0.026	800	90	25	0.028
12.0	900	145	35	0.040	800	110	30	0.034	630	90	25	0.036
14.0	800	145	35	0.045	700	110	30	0.039	560	90	25	0.040
16.0	700	145	35	0.052	560	110	30	0.049	450	90	25	0.050
18.0	630	145	35	0.058	500	110	30	0.055	400	90	25	0.056
20.0	560	145	35	0.065	450	110	30	0.061	400	90	25	0.056
22.0	500	175	35	0.070	450	135	30	0.060	350	110	25	0.063
25.0	450	175	35	0.078	400	135	30	0.068	310	110	25	0.071
28.0	400	170	35	0.085	350	130	30	0.074	280	105	25	0.075
30.0	350	170	35	0.097	310	130	30	0.084	250	105	25	0.084
32.0	350	170	35	0.097	280	130	30	0.093	220	105	25	0.095
36.0	310	170	35	0.091	250	130	30	0.087	200	105	25	0.088
40.0	280	160	35	0.095	220	120	30	0.091	180	95	25	0.088

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	800	25	15	0.010	4500	160	85	0.012
8.0	560	30	15	0.013	3100	185	80	0.015
10.0	450	50	15	0.028	2500	280	80	0.028
12.0	400	55	15	0.034	2000	320	80	0.040
14.0	350	55	15	0.039	1800	340	80	0.047
16.0	280	55	15	0.049	1600	360	80	0.056
18.0	250	55	15	0.055	1400	380	80	0.068
20.0	220	55	15	0.063	1200	400	80	0.083
22.0	220	70	15	0.064	1100	380	80	0.069
25.0	180	70	15	0.078	1000	360	80	0.072
28.0	160	70	15	0.088	900	410	80	0.091
30.0	160	70	15	0.088	900	420	85	0.093
32.0	140	70	15	0.100	800	400	80	0.100
36.0	120	70	15	0.097	700	380	80	0.090
40.0	110	65	15	0.098	630	360	80	0.095



※The FEED, in long & extra long types, should be reduced by around 50%

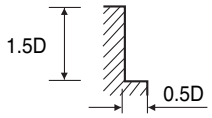
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSSCo8, MULTI FLUTE ROUGHING & FINISHING TiAlN COATED -- SIDE CUTTING
HSSCo8, MULTI SCHNEIDEN SCHRUPPSCHLICHTFRÄSER TiAlN-BESCHICHTET - SEITENFRÄSEN

E2754, E2768 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	2500	90	50	0.012	2250	70	40	0.010	1700	65	30	0.013
8.0	1950	120	50	0.015	1550	85	40	0.014	1250	70	30	0.014
10.0	1550	170	50	0.027	1250	135	40	0.027	1100	125	35	0.028
12.0	1250	205	50	0.041	1100	155	40	0.035	900	125	35	0.035
14.0	1100	205	50	0.047	1000	155	45	0.039	800	125	35	0.039
16.0	1000	205	50	0.051	800	155	40	0.048	650	125	35	0.048
18.0	900	205	50	0.057	700	155	40	0.055	550	125	30	0.057
20.0	800	205	50	0.064	650	155	40	0.060	550	125	35	0.057
22.0	700	245	50	0.070	650	190	45	0.058	500	155	35	0.062
25.0	650	245	50	0.075	550	190	45	0.069	450	155	35	0.069
28.0	550	240	50	0.087	500	180	45	0.072	400	145	35	0.073
30.0	500	240	50	0.096	450	180	40	0.080	350	145	35	0.083
32.0	500	240	50	0.096	400	180	40	0.090	300	145	30	0.097
36.0	450	240	50	0.089	350	180	40	0.086	280	145	30	0.086
40.0	400	225	50	0.094	300	170	40	0.094	250	135	30	0.090

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	1100	35	20	0.011	6300	225	120	0.012
8.0	800	40	20	0.013	4350	260	110	0.015
10.0	650	70	20	0.027	3500	390	110	0.028
12.0	550	75	20	0.034	2800	450	105	0.040
14.0	500	75	20	0.038	2500	475	110	0.048
16.0	400	75	20	0.047	2250	505	115	0.056
18.0	350	75	20	0.054	1950	530	110	0.068
20.0	300	75	20	0.063	1700	560	105	0.082
22.0	300	100	20	0.067	1550	530	105	0.068
25.0	250	100	20	0.080	1400	505	110	0.072
28.0	200	100	20	0.100	1250	575	110	0.092
30.0	200	100	20	0.100	1250	590	120	0.094
32.0	170	100	15	0.118	1100	560	110	0.102
36.0	150	100	15	0.111	1000	530	115	0.088
40.0	150	90	20	0.100	900	505	115	0.094



※The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSS END MILLS

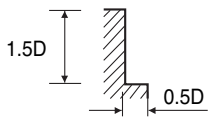
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

HSSCo8, MULTI FLUTE ROUGHING & FINISHING - SIDE CUTTING
HSSCo8, MULTI SCHNEIDEN SCHRUPPSCHLICHTFRÄSER - SEITENFRÄSEN

E2766, E2767 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	1800	65	35	0.012	1600	50	30	0.010	1200	45	25	0.013
8.0	1400	85	35	0.020	1100	60	30	0.018	900	50	25	0.019
10.0	1100	120	35	0.036	900	95	30	0.035	800	90	25	0.038
12.0	900	145	35	0.054	800	110	30	0.046	630	90	25	0.048
14.0	800	145	35	0.060	700	110	30	0.052	560	90	25	0.054
16.0	700	145	35	0.069	560	110	30	0.065	450	90	25	0.067
18.0	630	145	35	0.077	500	110	30	0.073	400	90	25	0.075
20.0	560	145	35	0.086	450	110	30	0.081	400	90	25	0.075
22.0	500	175	35	0.117	450	135	30	0.100	350	110	25	0.105
25.0	450	175	35	0.130	400	135	30	0.113	310	110	25	0.118
28.0	400	170	35	0.142	350	130	30	0.124	280	105	25	0.125
30.0	350	170	35	0.162	310	130	30	0.140	250	105	25	0.140
32.0	350	170	35	0.162	280	130	30	0.155	220	105	25	0.159
36.0	310	170	35	0.183	250	130	30	0.173	200	105	25	0.175
40.0	280	160	35	0.190	220	120	30	0.182	180	95	25	0.176

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	800	25	15	0.010	4500	160	85	0.012
8.0	560	30	15	0.018	3100	185	80	0.020
10.0	450	50	15	0.037	2500	280	80	0.037
12.0	400	55	15	0.046	2000	320	80	0.053
14.0	350	55	15	0.052	1800	340	80	0.063
16.0	280	55	15	0.065	1600	360	80	0.075
18.0	250	55	15	0.073	1400	380	80	0.090
20.0	220	55	15	0.083	1200	400	80	0.111
22.0	220	70	15	0.106	1100	380	80	0.115
25.0	180	70	15	0.130	1000	360	80	0.120
28.0	160	70	15	0.146	900	410	80	0.152
30.0	160	70	15	0.146	900	420	85	0.156
32.0	140	70	15	0.167	800	400	80	0.167
36.0	120	70	15	0.194	700	380	80	0.181
40.0	110	65	15	0.197	630	360	80	0.190



※The FEED, in long & extra long types, should be reduced by around 50%

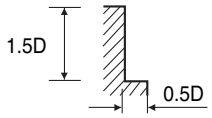
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSSCo8, MULTI FLUTE ROUGHING & FINISHING TiAlN COATED -- SIDE CUTTING
HSSCo8, MULTI SCHNEIDEN SCHRUPPSCHLICHTFRÄSER TiAlN-BESCHICHTET - SEITENFRÄSEN

E2766, E2767 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	2500	90	50	0.012	2250	70	40	0.010	1700	65	30	0.013
8.0	1950	120	50	0.021	1550	85	40	0.018	1250	70	30	0.019
10.0	1550	170	50	0.037	1250	135	40	0.036	1100	125	35	0.038
12.0	1250	205	50	0.055	1100	155	40	0.047	900	125	35	0.046
14.0	1100	205	50	0.062	1000	155	45	0.052	800	125	35	0.052
16.0	1000	205	50	0.068	800	155	40	0.065	650	125	35	0.064
18.0	900	205	50	0.076	700	155	40	0.074	550	125	30	0.076
20.0	800	205	50	0.085	650	155	40	0.079	550	125	35	0.076
22.0	700	245	50	0.117	650	190	45	0.097	500	155	35	0.103
25.0	650	245	50	0.126	550	190	45	0.115	450	155	35	0.115
28.0	550	240	50	0.145	500	180	45	0.120	400	145	35	0.121
30.0	500	240	50	0.160	450	180	40	0.133	350	145	35	0.138
32.0	500	240	50	0.160	400	180	40	0.150	300	145	30	0.161
36.0	450	240	50	0.178	350	180	40	0.171	280	145	30	0.173
40.0	400	225	50	0.188	300	170	40	0.189	250	135	30	0.180

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	1100	35	20	0.011	6300	225	120	0.012
8.0	800	40	20	0.017	4350	260	110	0.020
10.0	650	70	20	0.036	3500	390	110	0.037
12.0	550	75	20	0.045	2800	450	105	0.054
14.0	500	75	20	0.050	2500	475	110	0.063
16.0	400	75	20	0.063	2250	505	115	0.075
18.0	350	75	20	0.071	1950	530	110	0.091
20.0	300	75	20	0.083	1700	560	105	0.110
22.0	300	100	20	0.111	1550	530	105	0.114
25.0	250	100	20	0.133	1400	505	110	0.120
28.0	200	100	20	0.167	1250	575	110	0.153
30.0	200	100	20	0.167	1250	590	120	0.157
32.0	170	100	15	0.196	1100	560	110	0.170
36.0	150	100	15	0.222	1000	530	115	0.177
40.0	150	90	20	0.200	900	505	115	0.187



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RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSS END MILLS

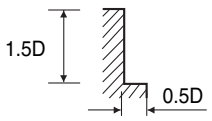
RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

HSSCo8, MULTI FLUTE ROUGHING & FINISHING - SIDE CUTTING
HSSCo8, MULTI SCHNEIDEN SCHRUPPSCHLICHTFRÄSER - SEITENFRÄSEN

E2779 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
16.0	700	145	35	0.052	560	110	30	0.049	450	90	25	0.050
18.0	630	145	35	0.058	500	110	30	0.055	400	90	25	0.056
20.0	560	145	35	0.065	450	110	30	0.061	400	90	25	0.056
22.0	500	175	35	0.070	450	135	30	0.060	350	110	25	0.063
25.0	450	175	35	0.078	400	135	30	0.068	310	110	25	0.071
28.0	400	170	35	0.071	350	130	30	0.062	280	105	25	0.063
30.0	350	170	35	0.081	310	130	30	0.070	250	105	25	0.070
32.0	350	170	35	0.081	280	130	30	0.077	220	105	25	0.080
36.0	310	170	35	0.091	250	130	30	0.087	200	105	25	0.088
40.0	280	160	35	0.095	220	120	30	0.091	180	95	25	0.088
45.0	250	150	35	0.099	210	125	30	0.099	180	95	25	0.088
50.0	220	145	35	0.110	190	120	30	0.106	160	90	25	0.094

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
16.0	280	55	15	0.049	1600	360	80	0.056
18.0	250	55	15	0.055	1400	380	80	0.068
20.0	220	55	15	0.063	1200	400	80	0.083
22.0	220	70	15	0.064	1100	380	80	0.069
25.0	180	70	15	0.078	1000	360	80	0.072
28.0	160	70	15	0.073	900	410	80	0.076
30.0	160	70	15	0.073	900	420	85	0.078
32.0	140	70	15	0.083	800	400	80	0.083
36.0	120	70	15	0.097	700	380	80	0.090
40.0	110	65	15	0.098	630	360	80	0.095
45.0	100	60	15	0.099	560	330	80	0.100
50.0	90	55	15	0.100	500	330	80	0.110



※The FEED, in long & extra long types, should be reduced by around 50%

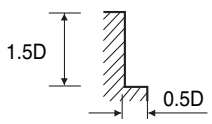
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSSCo8, MULTI FLUTE ROUGHING & FINISHING TiAlN COATED - SIDE CUTTING
HSSCo8, MULTI SCHNEIDEN SCHRUPPSCHLICHTFRÄSER TiAlN-BESCHICHTET - SEITENFRÄSEN

E2779 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
16.0	1000	205	50	0.051	800	155	40	0.048	650	125	35	0.048
18.0	900	205	50	0.057	700	155	40	0.055	550	125	30	0.057
20.0	800	205	50	0.064	650	155	40	0.060	550	125	35	0.057
22.0	700	245	50	0.070	650	190	45	0.058	500	155	35	0.062
25.0	650	245	50	0.075	550	190	45	0.069	450	155	35	0.069
28.0	550	240	50	0.073	500	180	45	0.060	400	145	35	0.060
30.0	500	240	50	0.080	450	180	40	0.067	350	145	35	0.069
32.0	500	240	50	0.080	400	180	40	0.075	300	145	30	0.081
36.0	450	240	50	0.089	350	180	40	0.086	280	145	30	0.086
40.0	400	225	50	0.094	300	170	40	0.094	250	135	30	0.090
45.0	350	205	50	0.099	280	170	40	0.102	210	115	30	0.094
50.0	310	190	50	0.104	250	165	40	0.110	190	110	30	0.099

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
16.0	400	75	20	0.047	2250	505	115	0.056
18.0	350	75	20	0.054	1950	530	110	0.068
20.0	300	75	20	0.063	1700	560	105	0.082
22.0	300	100	20	0.067	1550	530	105	0.068
25.0	250	100	20	0.080	1400	505	110	0.072
28.0	200	100	20	0.083	1250	575	110	0.077
30.0	200	100	20	0.083	1250	590	120	0.079
32.0	170	100	15	0.098	1100	560	110	0.085
36.0	150	100	15	0.111	1000	530	115	0.088
40.0	150	90	20	0.100	900	505	115	0.094
45.0	140	85	20	0.103	810	485	115	0.100
50.0	120	75	20	0.106	730	460	115	0.106



※The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

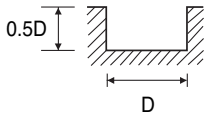
HSS END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

HSS-PM, 2 FLUTE - SLOTTING
HSS-PM, 2 SCHNEIDEN - NUTENFRÄSEN

E3570 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS	~ HRc20				HRc20 ~ HRc30				HRc30 ~ HRc40			
STRENGTH	500 ~ 800N/mm²				800 ~ 1000N/mm²				1000 ~ 1300N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	5000	35	30	0.004	4500	35	30	0.004	2400	15	15	0.003
3.0	3500	50	35	0.007	2800	45	25	0.008	1800	20	15	0.006
4.0	2500	60	30	0.012	2000	50	25	0.013	1200	35	15	0.015
5.0	2000	75	30	0.019	1800	65	30	0.018	1000	40	15	0.020
6.0	1800	90	35	0.025	1300	65	25	0.025	900	45	15	0.025
8.0	1200	100	30	0.042	1000	75	25	0.038	600	50	15	0.042
10.0	1000	100	30	0.050	900	90	30	0.050	500	50	15	0.050
12.0	900	110	35	0.061	700	90	25	0.064	450	55	15	0.061
14.0	800	100	35	0.063	600	90	25	0.075	400	55	20	0.069
16.0	600	100	30	0.083	500	75	25	0.075	300	50	15	0.083
18.0	550	100	30	0.091	450	75	25	0.083	280	50	15	0.089
20.0	500	100	30	0.100	450	75	30	0.083	250	50	15	0.100
22.0	500	100	35	0.100	400	75	30	0.094	250	50	15	0.100
25.0	450	90	35	0.100	350	65	25	0.093	200	40	15	0.100

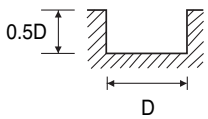


RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSS-PM, 2 FLUTE TiAlN COATED - SLOTTING
HSS-PM, 2 SCHNEIDEN TiAlN-BESCHICHTET - NUTENFRÄSEN

E3570 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS	~ HRc20				HRc20 ~ HRc30				HRc30 ~ HRc40			
STRENGTH	500 ~ 800N/mm²				800 ~ 1000N/mm²				1000 ~ 1300N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	7000	50	45	0.004	6300	50	40	0.004	3350	20	20	0.003
3.0	4900	70	45	0.007	3900	65	35	0.008	2500	30	25	0.006
4.0	3500	85	45	0.012	2800	70	35	0.013	1700	50	20	0.015
5.0	2800	105	45	0.019	2500	90	40	0.018	1400	55	20	0.020
6.0	2500	125	45	0.025	1800	90	35	0.025	1250	60	25	0.024
8.0	1700	140	45	0.041	1400	105	35	0.038	250	70	5	0.140
10.0	1400	140	45	0.050	1260	125	40	0.050	700	70	20	0.050
12.0	1250	155	45	0.062	980	125	35	0.064	600	75	25	0.063
14.0	1100	140	50	0.064	840	125	35	0.074	550	75	25	0.068
16.0	850	140	45	0.082	700	105	35	0.075	400	70	20	0.088
18.0	750	140	40	0.093	630	105	35	0.083	390	70	20	0.090
20.0	700	140	45	0.100	630	105	40	0.083	350	70	20	0.100
22.0	700	140	50	0.100	560	105	40	0.094	350	70	25	0.100
25.0	630	125	50	0.099	490	90	40	0.092	280	55	20	0.098

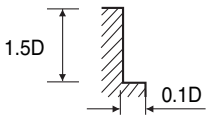


RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSS-PM, MULTI FLUTE - SIDE CUTTING
HSS-PM, MULTI SCHNEIDEN - SEITENFRÄSEN

E3574, E3575 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS	~ HRc20				HRc20 ~ HRc30				HRc30 ~ HRc40			
STRENGTH	500 ~ 800N/mm²				800 ~ 1000N/mm²				1000 ~ 1300N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	5000	60	30	0.003	4500	50	30	0.003	2400	20	15	0.002
3.0	3500	90	35	0.006	2800	65	25	0.006	1800	35	15	0.005
4.0	2500	110	30	0.011	2000	70	25	0.009	1200	50	15	0.010
5.0	2000	140	30	0.018	1800	100	30	0.014	1000	55	15	0.014
6.0	1800	160	35	0.022	1300	100	25	0.019	900	65	15	0.018
8.0	1200	180	30	0.038	1000	115	25	0.029	600	70	15	0.029
10.0	1000	180	30	0.045	900	130	30	0.036	500	70	15	0.035
12.0	900	200	35	0.056	700	130	25	0.046	450	80	15	0.044
14.0	800	180	35	0.056	600	130	25	0.054	400	80	20	0.050
16.0	600	180	30	0.075	500	115	25	0.058	300	70	15	0.058
18.0	550	180	30	0.082	450	115	25	0.064	280	70	15	0.063
20.0	500	180	30	0.090	450	115	30	0.064	250	70	15	0.070
22.0	500	180	35	0.060	400	115	30	0.048	250	70	15	0.047
25.0	450	160	35	0.059	350	100	25	0.048	200	55	15	0.046

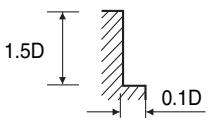


RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSS-PM, MULTI FLUTE TiAlN COATED - SIDE CUTTING
HSS-PM, MULTI SCHNEIDEN TiAlN-BESCHICHTET - SEITENFRÄSEN

E3574, E3575 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS	~ HRc20				HRc20 ~ HRc30				HRc30 ~ HRc40			
STRENGTH	500 ~ 800N/mm²				800 ~ 1000N/mm²				1000 ~ 1300N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	7000	85	45	0.003	6300	70	40	0.003	3350	30	20	0.002
3.0	4900	125	45	0.006	3900	90	35	0.006	2500	50	25	0.005
4.0	3500	155	45	0.011	2800	100	35	0.009	1700	70	20	0.010
5.0	2800	195	45	0.017	2500	140	40	0.014	1400	75	20	0.013
6.0	2500	225	45	0.023	1800	140	35	0.019	1250	90	25	0.018
8.0	1700	250	45	0.037	1400	160	35	0.029	250	100	5	0.100
10.0	1400	250	45	0.045	1260	180	40	0.036	700	100	20	0.036
12.0	1250	280	45	0.056	980	180	35	0.046	600	110	25	0.046
14.0	1100	250	50	0.057	840	180	35	0.054	550	110	25	0.050
16.0	850	250	45	0.074	700	160	35	0.057	400	95	20	0.059
18.0	750	250	40	0.083	630	160	35	0.063	390	95	20	0.061
20.0	700	250	45	0.089	630	160	40	0.063	350	95	20	0.068
22.0	700	250	50	0.060	560	160	40	0.048	350	95	25	0.045
25.0	630	225	50	0.060	490	140	40	0.048	280	75	20	0.045



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

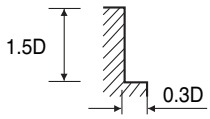
HSS END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

HSS-PM, 3&4 FLUTE 60° HELIX - SIDE CUTTING
HSS-PM, 3&4 SCHNEIDEN 60° RECHTSSPIRALE - SEITENFRÄSEN

E3462, E3463 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS	~ HRc20				HRc20 ~ HRc30				HRc30 ~ HRc40			
STRENGTH	500 ~ 800N/mm²				800 ~ 1000N/mm²				1000 ~ 1300N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	2000	100	40	0.017	1600	65	30	0.014	1200	45	25	0.013
8.0	1500	100	40	0.022	1300	80	35	0.021	1000	45	25	0.015
10.0	1300	110	40	0.028	1000	80	30	0.027	800	50	25	0.021
12.0	1000	120	40	0.040	800	80	30	0.033	600	50	25	0.028
14.0	800	130	35	0.054	650	80	30	0.041	500	55	20	0.037
16.0	660	140	35	0.071	520	110	25	0.071	400	70	20	0.058
18.0	500	180	30	0.120	400	140	25	0.117	310	100	20	0.108
20.0	400	190	25	0.158	330	160	20	0.162	250	100	15	0.133

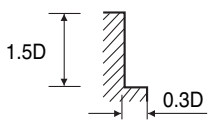


RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSS-PM, 3&4 FLUTE 60° HELIX TiAlN COATED - SIDE CUTTING
HSS-PM, 3&4 SCHNEIDEN 60° RECHTSSPIRALE TiAlN-BESCHICHTET - SEITENFRÄSEN

E3462, E3463 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS	~ HRc20				HRc20 ~ HRc30				HRc30 ~ HRc40			
STRENGTH	500 ~ 800N/mm²				800 ~ 1000N/mm²				1000 ~ 1300N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	2800	140	55	0.017	2240	90	40	0.013	1680	60	30	0.012
8.0	2100	140	55	0.022	1820	110	45	0.020	1400	60	35	0.014
10.0	1800	155	55	0.029	1400	110	45	0.026	1120	70	35	0.021
12.0	1400	170	55	0.040	1120	110	40	0.033	840	70	30	0.028
14.0	1100	180	50	0.055	910	110	40	0.040	700	75	30	0.036
16.0	920	195	45	0.071	730	155	35	0.071	560	100	30	0.060
18.0	700	250	40	0.119	560	195	30	0.116	430	140	25	0.109
20.0	560	265	35	0.158	460	225	30	0.163	350	140	20	0.133

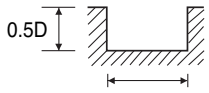


RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

PREMIUM HSS-PM, 2 FLUTE - SLOTTING
PREMIUM HSS-PM, 2 SCHNEIDEN - NUTENFRÄSEN

E9410 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS	~ HRc20				HRc20 ~ HRc30				HRc30 ~ HRc40			
STRENGTH	500 ~ 800N/mm²				800 ~ 1000N/mm²				1000 ~ 1300N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	5600	35	35	0.003	5000	35	30	0.004	2800	20	20	0.004
3.0	4000	55	40	0.007	3000	50	30	0.008	2000	25	20	0.006
4.0	2800	70	35	0.013	2200	55	30	0.013	1400	35	20	0.013
5.0	2200	85	35	0.019	2000	75	30	0.019	1100	45	15	0.020
6.0	2000	100	40	0.025	1500	75	30	0.025	1000	50	20	0.025
8.0	1400	110	35	0.039	1100	85	30	0.039	700	55	20	0.039
10.0	1100	110	35	0.050	1000	100	30	0.050	560	55	20	0.049
12.0	1000	125	40	0.063	800	100	30	0.063	500	60	20	0.060
14.0	900	110	40	0.061	700	100	30	0.071	450	60	20	0.067
16.0	700	110	35	0.079	560	85	30	0.076	350	55	20	0.079
18.0	600	110	35	0.092	500	85	30	0.085	300	55	15	0.092
20.0	560	110	35	0.098	500	85	30	0.085	280	55	20	0.098
22.0	560	110	40	0.098	450	85	30	0.094	280	55	20	0.098
25.0	500	100	40	0.100	400	75	30	0.094	230	45	20	0.098

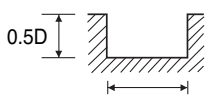


RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

PREMIUM HSS-PM, 2 FLUTE TiAlN COATED - SLOTTING
PREMIUM HSS-PM, 2 SCHNEIDEN TiAlN-BESCHICHTET - NUTENFRÄSEN

E9410 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS	~ HRc20				HRc20 ~ HRc30				HRc30 ~ HRc40			
STRENGTH	500 ~ 800N/mm²				800 ~ 1000N/mm²				1000 ~ 1300N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
2.0	7840	50	50	0.003	7000	50	45	0.004	3900	30	25	0.004
3.0	5600	80	55	0.007	4200	70	40	0.008	2800	35	25	0.006
4.0	3900	100	50	0.013	3100	75	40	0.012	1950	50	25	0.013
5.0	3100	120	50	0.019	2800	105	45	0.019	1540	60	25	0.019
6.0	2800	140	55	0.025	2100	105	40	0.025	1400	70	25	0.025
8.0	1950	155	50	0.040	1540	120	40	0.039	1000	75	25	0.038
10.0	1550	155	50	0.050	1400	150	45	0.054	800	75	25	0.047
12.0	1400	175	55	0.063	1100	150	40	0.068	700	85	25	0.061
14.0	1250	155	55	0.062	1000	150	45	0.075	600	85	25	0.071
16.0	1000	155	50	0.078	800	120	40	0.075	500	75	25	0.075
18.0	840	155	50	0.092	700	120	40	0.086	390	75	20	0.096
20.0	780	155	50	0.099	700	120	45	0.086	390	75	25	0.096
22.0	780	155	55	0.099	600	120	40	0.100	390	75	25	0.096
25.0	700	140	55	0.100	550	105	45	0.095	320	65	25	0.102



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

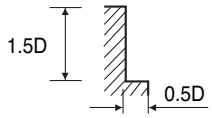
HSS END MILLS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

PREMIUM HSS-PM, MULTI FLUTE ROUGHING - SIDE CUTTING
PREMIUM HSS-PM, MULTI SCHNEIDEN SCHRUPPFRÄSER- SEITENFRÄSEN

E9720 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS	~ HRc20				HRc20 ~ HRc30				HRc30 ~ HRc40				HRc30 ~ HRc40			
STRENGTH	500 ~ 800N/mm²				800 ~ 9000N/mm²				900~ 1100N/mm²				1100 ~ 1300N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	2300	100	45	0.011	2000	75	40	0.009	1500	70	30	0.012	1000	35	20	0.009
8.0	1800	130	45	0.018	1400	95	35	0.017	1100	80	30	0.018	700	45	20	0.016
10.0	1400	190	45	0.027	1100	150	35	0.027	1000	140	30	0.028	560	75	20	0.027
12.0	1100	230	40	0.042	1000	180	40	0.036	800	140	30	0.035	500	85	20	0.034
14.0	1000	230	45	0.046	900	180	40	0.040	700	140	30	0.040	450	85	20	0.038
16.0	900	230	45	0.051	700	180	35	0.051	560	140	30	0.050	350	85	20	0.121
18.0	800	230	45	0.058	600	180	35	0.060	500	140	30	0.056	300	85	15	0.057
20.0	700	230	45	0.066	560	180	35	0.064	500	140	30	0.056	300	85	20	0.057
22.0	600	280	40	0.093	560	210	40	0.075	450	180	30	0.080	300	105	20	0.070
25.0	560	280	45	0.083	500	210	40	0.070	400	180	30	0.075	230	105	20	0.076
28.0	500	260	45	0.087	450	200	40	0.074	350	160	30	0.076	200	105	20	0.088
30.0	450	260	40	0.096	400	200	40	0.083	300	160	30	0.089	200	105	20	0.088



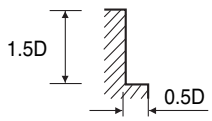
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

※The FEED, in long & extra long types, should be reduced by around 50%

PREMIUM HSS-PM, MULTI FLUTE ROUGHING TiAlN COATED - SIDE CUTTING
PREMIUM HSS-PM, MULTI SCHNEIDEN SCHRUPPFRÄSER TiAlN-BESCHICHTET - SEITENFRÄSEN

E9720 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS	~ HRc20				HRc20 ~ HRc30				HRc30 ~ HRc40				HRc30 ~ HRc40			
STRENGTH	500 ~ 800N/mm²				800 ~ 9000N/mm²				900~ 1100N/mm²				1100 ~ 1300N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
6.0	3220	140	60	0.011	2800	105	55	0.009	2100	95	40	0.011	1400	50	25	0.009
8.0	2520	180	65	0.018	1960	135	50	0.017	1540	110	40	0.018	980	60	25	0.015
10.0	1960	265	60	0.027	1540	210	50	0.027	1400	195	45	0.028	780	105	25	0.027
12.0	1540	320	60	0.042	1400	250	55	0.036	1120	195	40	0.035	700	120	25	0.034
14.0	1400	320	60	0.046	1260	250	55	0.040	980	195	45	0.040	630	120	30	0.038
16.0	1260	320	65	0.051	980	250	50	0.051	780	195	40	0.050	490	120	25	0.049
18.0	1120	320	65	0.057	840	250	50	0.060	700	195	40	0.056	420	120	25	0.057
20.0	980	320	60	0.065	780	250	50	0.064	700	195	45	0.056	420	120	25	0.057
22.0	840	390	60	0.093	780	295	55	0.076	630	250	45	0.079	420	145	30	0.069
25.0	780	390	60	0.083	700	295	55	0.070	560	250	45	0.074	320	145	25	0.076
28.0	700	365	60	0.087	630	280	55	0.074	490	225	45	0.077	280	145	25	0.086
30.0	630	365	60	0.097	560	280	55	0.083	420	225	40	0.089	280	145	25	0.086



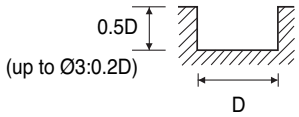
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

※The FEED, in long & extra long types, should be reduced by around 50%

HSS-E, 1 FLUTE
HSS-E, 1 SCHNEIDEN

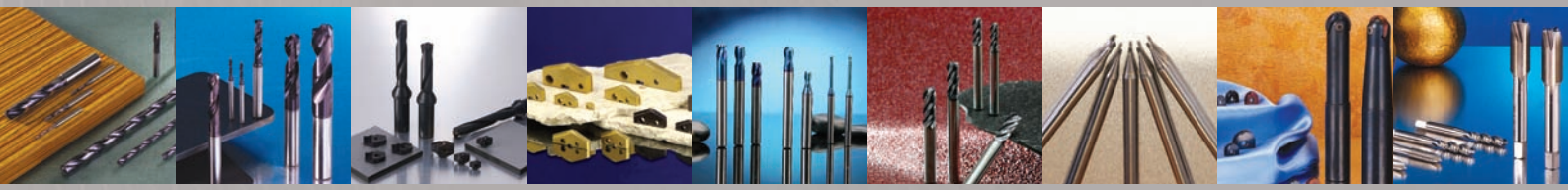
EL612, EL623 SERIES

MATERIAL	ALUMINUM ALUMINUM ALLOYS			
DIAMETER	RPM	FEED	Vc	fz
3.0	20000	1100	188	0.055
4.0	18000	950	226	0.053
5.0	14000	750	220	0.054
6.0	11000	600	207	0.055
7.0	10000	550	220	0.055
8.0	8500	450	214	0.053
10.0	7000	380	220	0.054



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

Global Cutting Tool Leader **YG-1**



HSS

YG

Being the best through innovation

MILLING CUTTER

FRÄSER

- General Works. Available Dovetail, Woodruff Keyseat, T-slot, Side Milling Cutters and HSS (8% cobalt) Corner Rounding,Shell End Mills
- Für allgemeinen Einsatz. Winkelschaftfräser, Schlitzfräser, T-Nutenfräser, Konkavfräser, Scheibenfräser und HSSE-Co8 Walzenstirnfräser

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
ML012, ML022 ML112, ML122 ML212, ML222		HSS-E, DOVETAIL CUTTERS TYPE “A”, “C”, “E” HSS-E, WINKELFRÄSER FORM “A”, “C”, “E”	D16.0	D50.0	1272
ML032, ML042 ML132, ML142 ML232, ML242		HSS-E, DOVETAIL CUTTERS TYPE “B”, “D”, “F” HSS-E, WINKELFRÄSER FORM “B”, “D”, “F”	D16.0	D38.0	1273
ML062 ML162 ML262		HSS-E, WOODRUFF KEYSEAT CUTTERS TYPE “B”, “D”, “F” HSS-E, SCHLITZFRÄSER FORM “B”, “D”, “F”	D10.5	D45.5	1274
ML072 ML172 ML272		HSS-E, T-SLOT CUTTERS TYPE “AA”, “AB”, “AD” HSS-E, SCHAFTERFRÄSER FÜR T-NUTEN FORM “AA”, “AB”, “AD”	D12.5	D40.0	1276
ML092		HSS-E, SIDE AND FACE MILLING CUTTERS with STRAIGHT TEETH HSS-E, SCHEIBENFRÄSER mit GERADEVERZAHNT	D50.0	D125.0	1277
ML102		HSS-E, SIDE AND FACE MILLING CUTTERS with STAGGERED TEETH HSS-E, SCHEIBENFRÄSER mit KREUZVERZAHNT	D50.0	D200.0	1278
E2675		HSSCo8, MULTI FLUTE SHELL END MILL HSSCo8, MULTI SCHNEIDEN WALZENSTIRNFRÄSER	D30.0	D160.0	1282
E2676		HSSCo8, MULTI FLUTE SHELL END MILL for ALUMINUM HSSCo8, MULTI SCHNEIDEN WALZENSTIRNFRÄSER für ALUMINIUM	D30.0	D100.0	1283
E2677		HSSCo8, MULTI FLUTE ROUGHING SHELL END MILL - COARSE HSSCo8, MULTI SCHNEIDEN WALZENSTIRN-SCHRUPPFRÄSER - GROBES	D40.0	D160.0	1284
E2678		HSSCo8, MULTI FLUTE ROUGHING SHELL END MILL - FINE HSSCo8, MULTI SCHNEIDEN WALZENSTIRN-SCHRUPPFRÄSER - FEINES	D40.0	D160.0	1285
E2679		HSSCo8, MULTI FLUTE ROUGHING & FINISHING SHELL END MILL HSSCo8, MULTI SCHNEIDEN WALZENSTIRN-SCHRUPPSCHLICHTFRÄSER	D40.0	D160.0	1286
E2498		HSSCo8, 4 FLUTE CORNER ROUNDING CUTTERS HSSCo8, 4 SCHNEIDEN VIERTELKREISFRÄSER	D8.0	D56.0	1287
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			1288

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					
◎	◎	○							○					
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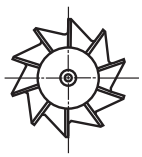
YG MILLING CUTTERS

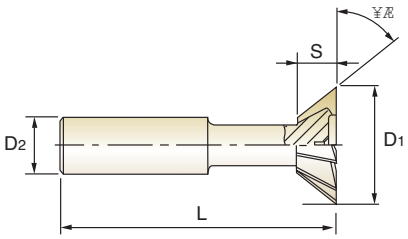
ML012, ML022 SERIES PLAIN SHANK / GLATTER ZYLINDERSCHAFT
ML112, ML122 SERIES FLAT SHANK / SEITLICHEN MITNAHMEFLÄCHEN
ML212, ML222 SERIES THREAD SHANK / ANZUGSGEWINDE

HSS-E, DOVETAIL CUTTERS TYPE "A", "C", "E"
HSS-E, WINKELFRÄSER FORM "A", "C", "E"

▶ Recommanded for use in place of arbor and threaded hole type cutters to reduce set time and facilitate handling.

▶ Empfohlen zur Nutzung anstelle von Arbor und threaded hole type Cutters um Montierzeit zu verkürzen und Handhabung zu erleichtern.





HSS-E | DIN 1833 | N | 0° | DIN 1835A | DIN 1835B | DIN 1835D

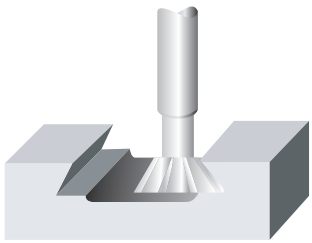
P.1288

Unit : mm

EDP No. PLAIN	EDP No. FLAT	EDP No. THREAD	Cutter Diameter D1(js16)	Width of Face S(js14)	Divergent Taper Angle α(±15′)	Shank Diameter D2(h6)	Overall Length L(js18)	No. of Teeth Z
ML01201601	ML11201601	ML21201601	16.0	4	45°	12	60	6
ML01202001	ML11202001	ML21202001	20.0	5	45°	12	63	6
ML01202201	ML11202201	ML21202201	22.0	6	45°	12	67	6
ML01202501	ML11202501	ML21202501	25.0	6.3	45°	16	67	8
ML01202801	ML11202801	ML21202801	28.0	7.5	45°	16	67	8
ML01203201	ML11203201	ML21203201	32.0	8	45°	16	71	10
ML01203801	ML11203801	ML21203801	38.0	10	45°	16	80	12
ML02201601	ML12201601	ML22201601	16.0	6.3	60°	12	60	6
ML02202001	ML12202001	ML22202001	20.0	8	60°	12	63	6
ML02202201	ML12202201	ML22202201	22.0	9	60°	12	67	6
ML02202501	ML12202501	ML22202501	25.0	10	60°	16	67	8
ML02202801	ML12202801	ML22202801	28.0	11	60°	16	67	8
ML02203201	ML12203201	ML22203201	32.0	12.5	60°	16	71	10
ML02203801	ML12203801	ML22203801	38.0	16	60°	16	80	12
ML02204001	ML12204001	ML22204001	40.0	13	60°	25	85	12
ML02205001	ML12205001	ML22205001	50.0	16	60°	25	100	16

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

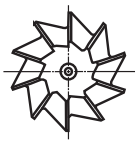
Nominal-Diameter in mm / Nennmaßbereich in mm	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50	over 50 to 80 über 50 bis 80	over 80 to 120 über 80 bis 120
Tolerance range in mm / Toleranzwerte in mm							
js16	± 0.375	± 0.45	± 0.55	± 0.65	± 0.80	± 0.95	± 1.10
js14	± 0.15	± 0.18	± 0.215	± 0.26	± 0.31	± 0.37	± 0.435
js18	± 0.90	± 1.10	± 1.35	± 1.65	± 1.95	± 2.30	± 2.70
Tolerance range in μm / Toleranzwerte in μm							
h6	0 / − 8	0 / − 9	0 / − 11	0 / − 13	0 / − 16	0 / − 19	0 / − 22

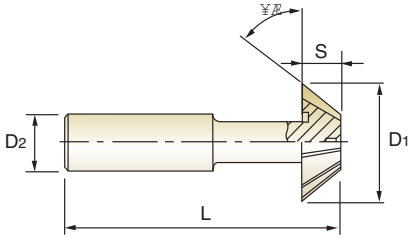


◎ : Excellent ○ : Good

Carbon Steels ~HB225	Alloy Steels HB225~325	Prehardened Steels HRc30~40	Hardened Steels HRc40~45	Hardened Steels HRc45~55	High Hardened Steels HRc55~70	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
◎	◎	○							○					

HSS-E, DOVETAIL CUTTERS TYPE “B”, “D”, “F”
HSS-E, WINKELFRÄSER FORM “B”, “D”, “F”





HSS-E | DIN 1833 | N | 0° | DIN 1835A | DIN 1835B | DIN 1835D

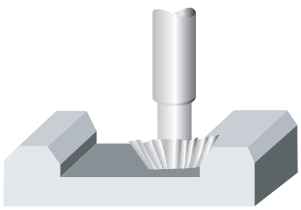
P.1288

Unit : mm

EDP No.			Cutter Diameter	Width of Face	Convergent Taper Angle	Shank Diameter	Overall Length	No. of Teeth
PLAIN	FLAT	THREAD	D1(js16)	S(js14)	α(±15′)	D2(h6)	L(js18)	Z
ML03201601	ML13201601	ML23201601	16.0	4	45°	12	60	6
ML03202001	ML13202001	ML23202001	20.0	5	45°	12	63	6
ML03202201	ML13202201	ML23202201	22.0	6	45°	12	67	6
ML03202501	ML13202501	ML23202501	25.0	6.3	45°	16	67	8
ML03202801	ML13202801	ML23202801	28.0	7.5	45°	16	67	8
ML03203201	ML13203201	ML23203201	32.0	8	45°	16	71	10
ML03203801	ML13203801	ML23203801	38.0	10	45°	16	80	12
ML04201601	ML14201601	ML24201601	16.0	6.3	60°	12	60	6
ML04202001	ML14202001	ML24202001	20.0	8	60°	12	63	6
ML04202201	ML14202201	ML24202201	22.0	9	60°	12	67	6
ML04202501	ML14202501	ML24202501	25.0	10	60°	16	67	8
ML04202801	ML14202801	ML24202801	28.0	11	60°	16	67	8
ML04203201	ML14203201	ML24203201	32.0	12.5	60°	16	71	10
ML04203801	ML14203801	ML24203801	38.0	16	60°	16	80	12

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Nominal-Diameter in mm / Nennmaßbereich in mm						
	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50	over 50 to 80 über 50 bis 80
Tolerance range in mm / Toleranzwerte in mm						
js16	± 0.375	± 0.45	± 0.55	± 0.65	± 0.80	± 0.95
js14	± 0.15	± 0.18	± 0.215	± 0.26	± 0.31	± 0.37
js18	± 0.90	± 1.10	± 1.35	± 1.65	± 1.95	± 2.30
Tolerance range in μm / Toleranzwerte in μm						
h6	0 / − 8	0 / − 9	0 / − 11	0 / − 13	0 / − 16	0 / − 19



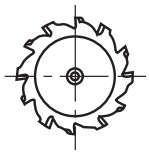
◎ : Excellent ○ : Good

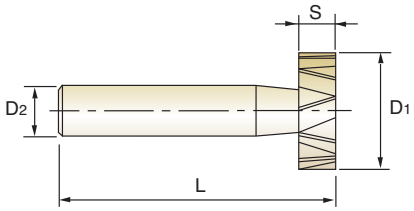
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

YG MILLING CUTTERS

ML062 SERIES PLAIN SHANK GLATTER ZYLINDERSCHAFT
ML162 SERIES FLAT SHANK SEITLICHEN MITNAHMEFLÄCHEN
ML262 SERIES THREAD SHANK ANZUGSGEWINDE

HSS-E, WOODRUFF KEYSEAT CUTTERS TYPE "B", "D", "F"
HSS-E, SCHLITZFRÄSER FORM "B", "D", "F"





HSS-E | DIN 850 | N | 10~12° | DIN 1835A | DIN 1835B | DIN 1835D P.1289

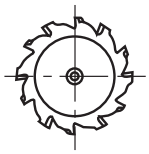
Unit : mm

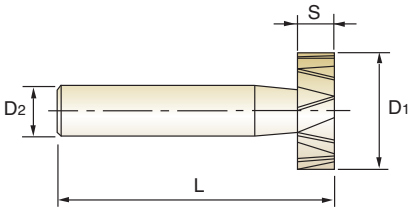
EDP No. PLAIN	EDP No. FLAT	EDP No. THREAD	Cutter Diameter D1(h11)	Width of Face S(e8)	Shank Diameter D2(h6)	Overall Length L(js18)	No. of Teeth Z
ML06210E01	ML16210E01	ML26210E01	10.5	2	6	50	8
ML06210E02	ML16210E02	ML26210E02	10.5	2.5	6	50	8
ML06210E03	ML16210E03	ML26210E03	10.5	3	6	50	8
ML06213E01	ML16213E01	ML26213E01	13.5	2	10	56	8
ML06213E02	ML16213E02	ML26213E02	13.5	2.5	10	56	8
ML06213E03	ML16213E03	ML26213E03	13.5	3	10	56	8
ML06213E04	ML16213E04	ML26213E04	13.5	4	10	56	8
ML06216E01	ML16216E01	ML26216E01	16.5	2.5	10	56	8
ML06216E02	ML16216E02	ML26216E02	16.5	3	10	56	8
ML06216E03	ML16216E03	ML26216E03	16.5	4	10	56	8
ML06216E04	ML16216E04	ML26216E04	16.5	5	10	56	8
ML06219E01	ML16219E01	ML26219E01	19.5	3	10	56	8
ML06219E02	ML16219E02	ML26219E02	19.5	4	10	63	8
ML06219E03	ML16219E03	ML26219E03	19.5	5	10	63	8
ML06219E04	ML16219E04	ML26219E04	19.5	6	10	63	8
ML06222E01	ML16222E01	ML26222E01	22.5	4	10	63	10
ML06222E02	ML16222E02	ML26222E02	22.5	5	10	63	10
ML06222E03	ML16222E03	ML26222E03	22.5	6	10	63	10
ML06222E04	ML16222E04	ML26222E04	22.5	8	10	63	10
ML06225E01	ML16225E01	ML26225E01	25.5	5	10	63	10
ML06225E02	ML16225E02	ML26225E02	25.5	6	10	63	10
ML06225E03	ML16225E03	ML26225E03	25.5	7	10	63	10
ML06225E04	ML16225E04	ML26225E04	25.5	8	10	63	10
ML06228E01	ML16228E01	ML26228E01	28.5	5	10	63	10
ML06228E02	ML16228E02	ML26228E02	28.5	6	10	63	10
ML06228E03	ML16228E03	ML26228E03	28.5	7	10	63	10
ML06228E04	ML16228E04	ML26228E04	28.5	8	10	63	10
ML06228E05	ML16228E05	ML26228E05	28.5	10	12	71	10

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS-E, WOODRUFF KEYSEAT CUTTERS TYPE “B”, “D”, “F”
HSS-E, SCHLITZFRÄSER FORM “B”, “D”, “F”





HSS-E | DIN 850 | N | 10~12° | DIN 1835A | DIN 1835B | DIN 1835D

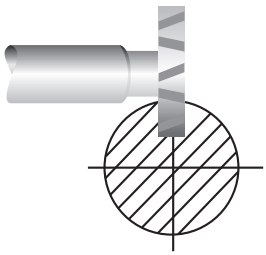
P.1289

Unit : mm

EDP No.			Cutter Diameter	Width of Face	Shank Diameter	Overall Length	No. of Teeth
PLAIN	FLAT	THREAD	D1(h11)	S(e8)	D2(h6)	L(js18)	Z
ML06232E01	ML16232E01	ML26232E01	32.5	5	12	71	12
ML06232E02	ML16232E02	ML26232E02	32.5	6	12	71	12
ML06232E03	ML16232E03	ML26232E03	32.5	7	12	71	12
ML06232E04	ML16232E04	ML26232E04	32.5	8	12	71	12
ML06232E05	ML16232E05	ML26232E05	32.5	10	12	71	12
ML06238E01	ML16238E01	ML26238E01	38.5	7	12	71	12
ML06238E02	ML16238E02	ML26238E02	38.5	8	12	71	12
ML06238E03	ML16238E03	ML26238E03	38.5	9	12	71	12
ML06238E04	ML16238E04	ML26238E04	38.5	10	12	71	12
ML06245E01	ML16245E01	ML26245E01	45.5	10	12	71	14

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Nominal-Diameter in mm / Nennmaßbereich in mm							
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50	over 50 to 80 über 50 bis 80
Tolerance range in mm / Toleranzwerte in mm							
js18	—	± 0.90	± 1.10	± 1.35	± 1.65	± 1.95	± 2.30
Tolerance range in μm / Toleranzwerte in μm							
h11	0 / − 60	0 / − 75	0 / − 90	0 / − 110	0 / − 130	0 / − 160	0 / − 190
e8	− 14 / − 28	− 20 / − 38	− 25 / − 47	− 32 / − 59	− 40 / − 73	− 50 / − 89	− 60 / − 106
h6	0 / − 6	0 / − 8	0 / − 9	0 / − 11	0 / − 13	0 / − 16	0 / − 19



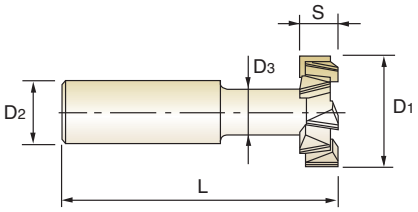
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

YG MILLING CUTTERS

ML072 SERIES PLAIN SHANK GLATTER ZYLINDERSCHAFT
ML172 SERIES FLAT SHANK SEITLICHEN MITNAHMEFLÄCHEN
ML272 SERIES THREAD SHANK ANZUGSGEWINDE

HSS-E, T-SLOT CUTTERS TYPE "AA", "AB", "AD"
HSS-E, SCHAFTERFRÄSER FÜR T-NUTEN FORM "AA", "AB", "AD"



HSS-E | DIN 851 | N | 10° | DIN 1835A | DIN 1835B | DIN 1835D

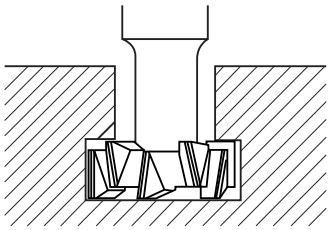
P.1289

Unit : mm

EDP No.			Cutter Diameter	Width of Face	Shank Diameter	Neck Diameter	Overall Length	No. of Teeth
PLAIN	FLAT	THREAD	D1(d11)	S(d11)	D2(h6)	D3(h12)	L(js18)	Z
ML07212E01	ML17212E01	ML27212E01	12.5	6	10	5	57	6
ML07201601	ML17201601	ML27201601	16.0	8	10	6.5	62	6
ML07201801	ML17201801	ML27201801	18.0	8	12	8	70	6
ML07201901	ML17201901	ML27201901	19.0	9	12	8	71	6
ML07202101	ML17202101	ML27202101	21.0	9	12	10	74	6
ML07202201	ML17202201	ML27202201	22.0	10	12	10	75	6
ML07202501	ML17202501	ML27202501	25.0	11	16	12	82	6
ML07202801	ML17202801	ML27202801	28.0	12	16	13	83	6
ML07203201	ML17203201	ML27203201	32.0	14	16	15	90	8
ML07203601	ML17203601	ML27203601	36.0	16	25	17	103	8
ML07204001	ML17204001	ML27204001	40.0	18	25	19	108	8

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Nominal-Diameter in mm / Nennmaßbereich in mm	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50	over 50 to 80 über 50 bis 80	over 80 to 120 über 80 bis 120
Tolerance range in mm / Toleranzwerte in mm							
h12	0 / − 0.12	0 / − 0.15	0 / − 0.18	0 / − 0.21	0 / − 0.25	0 / − 0.30	0 / − 0.35
js18	± 0.90	± 1.10	± 1.35	± 1.65	± 1.95	± 2.30	± 2.70
Tolerance range in μm / Toleranzwerte in μm							
d11	− 30 / − 105	− 40 / − 130	− 50 / − 160	− 65 / − 195	− 80 / − 240	− 100 / − 290	− 120 / − 340
h6	0 / − 8	0 / − 9	0 / − 11	0 / − 13	0 / − 16	0 / − 19	0 / − 22



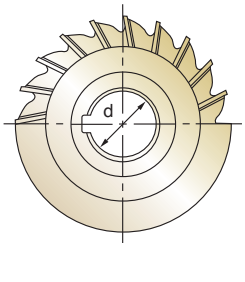
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎								○					

HSS-E, SIDE AND FACE MILLING CUTTERS with STRAIGHT TEETH
HSS-E, SCHEIBENFRÄSER mit GERADEVERZAHNT

▶ The tools are used for general purpose side and straddle milling where deep cut is not required.

▶ Diese Werkzeuge werden bei allgemeinen Seiten-und Breitfräsen eingesetzt, wo Tiefschnitte nicht vorkommen.



HSS-E | DIN 885-B | H

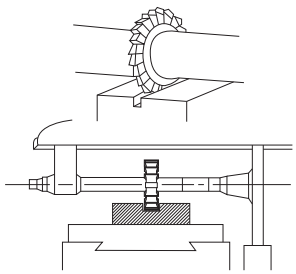
P.1290

Unit : mm

EDP No.	Cutter Diameter D(js14)	Width of Face S(k11)	Internal Diameter d(H7)	No. of Teeth Z
ML09205001	50.0	4	16	18
ML09205002	50.0	5	16	18
ML09205003	50.0	6	16	18
ML09205004	50.0	8	16	16
ML09205005	50.0	10	16	16
ML09206301	63.0	5	22	22
ML09206302	63.0	6	22	22
ML09206303	63.0	8	22	20
ML09206304	63.0	10	22	20
ML09206305	63.0	12	22	20
ML09208001	80.0	6	22	24
ML09208002	80.0	8	22	24
ML09208003	80.0	10	22	24
ML09208004	80.0	12	22	20
ML09208005	80.0	6	27	24
ML09208006	80.0	8	27	24
ML09208007	80.0	10	27	24
ML09208008	80.0	12	27	20
ML09210001	100.0	6	27	26
ML09210002	100.0	8	27	26
ML09210003	100.0	10	27	22
ML09210004	100.0	6	32	26
ML09210005	100.0	8	32	26
ML09210006	100.0	10	32	22
ML09210007	100.0	12	32	22
ML09212501	125.0	8	32	30
ML09212502	125.0	10	32	30
ML09212503	125.0	12	32	24

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

	Nominal-Diameter in mm / Nennmaßbereich in mm							
	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50	over 50 to 80 über 50 bis 80	over 80 to 120 über 80 bis 120	over 120 to 180 über 120 bis 180
	Tolerance range in mm / Toleranzwerte mm							
js14	± 0.15	± 0.18	± 0.215	± 0.26	± 0.31	± 0.37	± 0.435	± 0.50
	Tolerance range in µm / Toleranzwerte in µm							
k11	+ 75 0	+ 90 0	+ 110 0	+ 130 0	+ 160 0	+ 190 0	+ 220 0	+ 250 0
H7	+ 12 0	+ 15 0	+ 18 0	+ 21 0	+ 25 0	+ 30 0	+ 35 0	+ 40 0



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

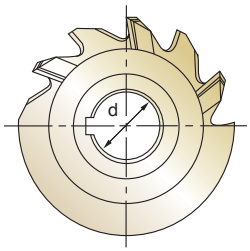
MILLING CUTTERS

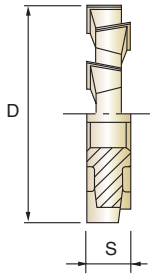
ML102 SERIES STAGGERED TEETH KREUZVERZAHNT

HSS-E, SIDE AND FACE MILLING CUTTERS with STAGGERED TEETH
HSS-E, SCHEIBENFRÄSER mit KREUZVERZAHNT

▶ The type of cutter is recommended for slotting operations.
The alternate spiral effectively counteracts all tendency to chatter.

▶ Dieser Typ ist zum Schlitzfräsen geeignet. Das alternierende Spiral wirkt allen Schnatterbewegungen entgegen.





HSS-E | DIN 885-A | H

P.1291

Unit : mm

EDP No.	Cutter Diameter D(js14)	Width of Face S(k11)	Internal Diameter d(H7)	No. of Teeth Z
ML10205001	50.0	3	16	14
ML10205002	50.0	4	16	14
ML10205003	50.0	5	16	14
ML10205004	50.0	6	16	14
ML10205005	50.0	7	16	14
ML10205006	50.0	8	16	14
ML10205007	50.0	9	16	14
ML10205008	50.0	10	16	14
ML10206301	63.0	3	22	16
ML10206302	63.0	4	22	16
ML10206303	63.0	5	22	16
ML10206304	63.0	6	22	16
ML10206305	63.0	7	22	16
ML10206306	63.0	8	22	16
ML10206307	63.0	9	22	16
ML10206308	63.0	10	22	16
ML10206309	63.0	12	22	16
ML10206310	63.0	14	22	16
ML10206311	63.0	16	22	16
ML10206312	63.0	18	22	16
ML10208001	80.0	3	22	18
ML10208002	80.0	4	22	18
ML10208003	80.0	5	22	18
ML10208004	80.0	6	22	18
ML10208005	80.0	7	22	18
ML10208006	80.0	8	22	18
ML10208007	80.0	9	22	18
ML10208008	80.0	10	22	18

◎ : Excellent ○ : Good

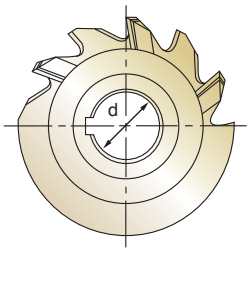
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS-E, SIDE AND FACE MILLING CUTTERS with STAGGERED TEETH

HSS-E, SCHEIBENFRÄSER mit KREUZVERZAHNT

▶ The type of cutter is recommended for slotting operations. The alternate spiral effectively counteracts all tendency to chatter.

▶ Dieser Typ ist zum Schlitzfräsen geeignet. Das alternierende Spiral wirkt allen Schnatterbewegungen entgegen.



HSS-E | DIN 885-A | H

P.1291

Unit : mm

EDP No.	Cutter Diameter D(js14)	Width of Face S(k11)	Internal Diameter d(H7)	No. of Teeth Z
ML10208009	80.0	12	22	18
ML10208010	80.0	14	22	18
ML10208011	80.0	16	22	18
ML10208012	80.0	18	22	18
ML10208013	80.0	20	22	18
ML10208014	80.0	4	27	18
ML10208015	80.0	5	27	18
ML10208016	80.0	6	27	18
ML10208017	80.0	7	27	18
ML10208018	80.0	8	27	18
ML10208019	80.0	9	27	18
ML10208020	80.0	10	27	18
ML10208021	80.0	12	27	18
ML10208022	80.0	14	27	18
ML10208023	80.0	16	27	18
ML10208024	80.0	18	27	18
ML10208025	80.0	20	27	18
ML10210001	100.0	3	27	20
ML10210002	100.0	4	27	20
ML10210003	100.0	5	27	20
ML10210004	100.0	6	27	20
ML10210005	100.0	7	27	20
ML10210006	100.0	8	27	20
ML10210007	100.0	9	27	20
ML10210008	100.0	10	27	20
ML10210009	100.0	12	27	20
ML10210010	100.0	14	27	20
ML10210011	100.0	15	27	20

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

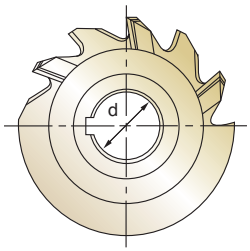
MILLING CUTTERS

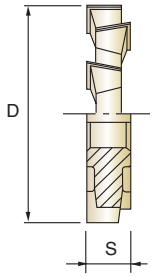
ML102 SERIES STAGGERED TEETH KREUZVERZAHNT

HSS-E, SIDE AND FACE MILLING CUTTERS with STAGGERED TEETH
HSS-E, SCHEIBENFRÄSER mit KREUZVERZAHNT

▶ The type of cutter is recommended for slotting operations.
The alternate spiral effectively counteracts all tendency to chatter.

▶ Dieser Typ ist zum Schlitzfräsen geeignet. Das alternierende Spiral wirkt allen Schnatterbewegungen entgegen.





HSS-E | DIN 885-A | H

P.1291

Unit : mm

EDP No.	Cutter Diameter D(js14)	Width of Face S(k11)	Internal Diameter d(H7)	No. of Teeth Z
ML10210012	100.0	16	27	20
ML10210013	100.0	18	27	20
ML10210014	100.0	20	27	20
ML10210015	100.0	4	32	20
ML10210016	100.0	5	32	20
ML10210017	100.0	6	32	20
ML10210018	100.0	7	32	20
ML10210019	100.0	8	32	20
ML10210020	100.0	9	32	20
ML10210021	100.0	10	32	20
ML10210022	100.0	12	32	20
ML10210023	100.0	14	32	20
ML10210024	100.0	15	32	20
ML10210025	100.0	16	32	20
ML10210026	100.0	18	32	20
ML10210027	100.0	20	32	20
ML10212501	125.0	5	32	22
ML10212502	125.0	6	32	22
ML10212503	125.0	8	32	22
ML10212504	125.0	10	32	22
ML10212505	125.0	12	32	22
ML10212506	125.0	14	32	22
ML10212507	125.0	16	32	22
ML10212508	125.0	18	32	22
ML10212509	125.0	20	32	22
ML10216001	160.0	6	32	26
ML10216002	160.0	8	32	26
ML10216003	160.0	10	32	26

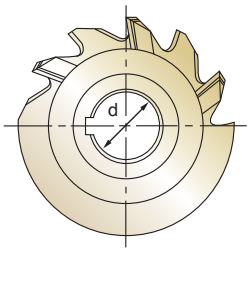
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSS-E, SIDE AND FACE MILLING CUTTERS with STAGGERED TEETH
HSS-E, SCHEIBENFRÄSER mit KREUZVERZAHNT

▶ The type of cutter is recommended for slotting operations. The alternate spiral effectively counteracts all tendency to chatter.

▶ Dieser Typ ist zum Schlitzfräsen geeignet. Das alternierende Spiral wirkt allen Schnatterbewegungen entgegen.



HSS-E | DIN 885-A | H

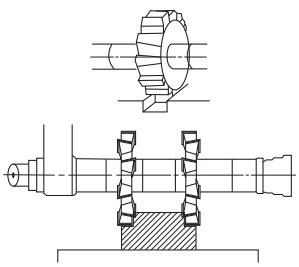
P.1291

Unit : mm

EDP No.	Cutter Diameter D(js14)	Width of Face S(k11)	Internal Diameter d(H7)	No. of Teeth Z
ML10216004	160.0	12	32	26
ML10216005	160.0	14	32	26
ML10216006	160.0	16	32	26
ML10216007	160.0	18	32	26
ML10216008	160.0	20	32	26
ML10216009	160.0	6	40	26
ML10216010	160.0	8	40	26
ML10216011	160.0	10	40	26
ML10216012	160.0	12	40	26
ML10216013	160.0	14	40	26
ML10216014	160.0	16	40	26
ML10216015	160.0	18	40	26
ML10216016	160.0	20	40	26
ML10220001	200.0	10	40	30
ML10220002	200.0	12	40	30
ML10220003	200.0	14	40	30
ML10220004	200.0	16	40	30
ML10220005	200.0	18	40	30
ML10220006	200.0	20	40	30
ML10220007	200.0	22	40	30
ML10220008	200.0	25	40	30

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

	Nominal-Diameter in mm / Nennmaßbereich in mm								
	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50	over 50 to 80 über 50 bis 80	over 80 to 120 über 80 bis 120	over 120 to 180 über 120 bis 180	over 180 to 250 über 180 bis 250
	Tolerance range in mm / Toleranzwerte in mm								
js14	± 0.15	± 0.18	± 0.215	± 0.26	± 0.31	± 0.37	± 0.435	± 0.50	± 0.575
	Tolerance range in µm / Toleranzwerte in µm								
k11	+ 75 0	+ 90 0	+ 110 0	+ 130 0	+ 160 0	+ 190 0	+ 220 0	+ 250 0	+ 290 0
H7	+ 12 0	+ 15 0	+ 18 0	+ 21 0	+ 25 0	+ 30 0	+ 35 0	+ 40 0	+ 46 0



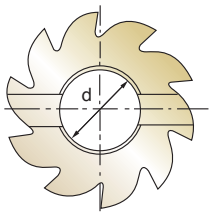
◎ : Excellent ○ : Good

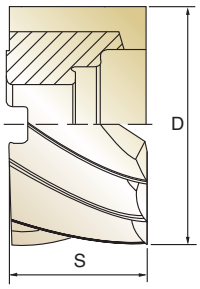
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

MILLING CUTTERS

E2675 SERIES

HSSCo8, MULTI FLUTE SHELL END MILL
HSSCo8, MULTI SCHNEIDEN WALZENSTIRNFRÄSER





HSS Co8 | DIN 841 | N | 6-10 | 30° P.1292

Unit : mm

EDP No.	Mill Diameter D	Width of Face S	Internal Diameter d	No. of Teeth Z
E2675300	30.0	30	● 13	6
E2675350	35.0	35	● 16	6
E2675400	40.0	20	● 16	8
E2675402	40.0	40	● 16	8
E2675500	50.0	25	22	8
E2675502	50.0	50	22	8
E2675600	60.0	30	27	8
E2675601	60.0	60	27	8
E2675750	75.0	35	27	10
E2675751	75.0	75	27	10
E2675900	90.0	35	27	10
E2675902	110.0	35	32	10

● Tolerance of Internal Diameter = +0.018 ~ 0
▶ TiN-COATING, TiCN-COATING & TiAlN-COATING is available on your request.

HSS Co8 | DIN 1880 | N | 8-14 | 30° P.1292

Unit : mm

EDP No.	Mill Diameter D	Width of Face S	Internal Diameter d	No. of Teeth Z
E2675401	40.0	32	● 16	8
E2675501	50.0	36	22	8
E2675630	63.0	40	27	8
E2675800	80.0	45	27	10
E2675901	100.0	50	32	10
E2675903	125.0	56	40	12
E2675904	160.0	63	50	14

Mill Dia. Tolerance(mm)	Width of Face Tolerance(mm)	Internal Dia. Tolerance(mm)
+ 0.25 − 0.15	+ 0.5 − 0	+ 0.02 − 0

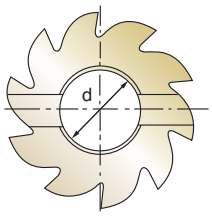
● Tolerance of Internal Diameter = +0.018 ~ 0
▶ TiN-COATING, TiCN-COATING & TiAlN-COATING is available on your request.

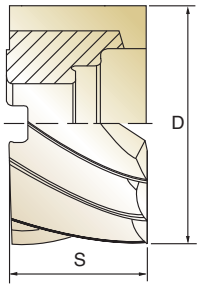
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○												

HSSCo8, MULTI FLUTE SHELL END MILL for ALUMINUM

HSSCo8, MULTI SCHNEIDEN WALZENSTIRNFRÄSER für ALUMINIUM





HSS Co8 | DIN 841 | W | 4&6 | 42° P.1292

Unit : mm

EDP No.	Mill Diameter D	Width of Face S	Internal Diameter d	No. of Teeth Z
E2676300	30.0	30	● 13	4
E2676400	40.0	20	● 16	4
E2676402	40.0	40	● 16	4
E2676500	50.0	25	22	6
E2676502	50.0	50	22	6
E2676600	60.0	30	27	6
E2676601	60.0	60	27	6
E2676750	75.0	75	27	6

● Tolerance of Internal Diameter = +0.018 ~ 0

▶ TiN-COATING, TiCN-COATING & TiAlN-COATING is available on your request.

HSS Co8 | DIN 1880 | W | 4&6 | 42° P.1292

Unit : mm

EDP No.	Mill Diameter D	Width of Face S	Internal Diameter d	No. of Teeth Z
E2676401	40.0	32	● 16	4
E2676501	50.0	36	22	6
E2676630	63.0	40	27	6
E2676800	80.0	45	27	6
E2676901	100.0	50	32	6

● Tolerance of Internal Diameter = +0.018 ~ 0

▶ TiN-COATING, TiCN-COATING & TiAlN-COATING is available on your request.

Mill Dia. Tolerance(mm)	Width of Face Tolerance(mm)	Internal Dia. Tolerance(mm)
+ 0.25 − 0.15	+ 0.5 − 0	+ 0.02 − 0

◎ : Excellent ○ : Good

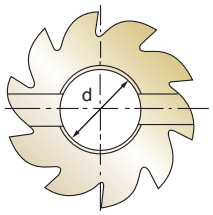
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	○								◎					

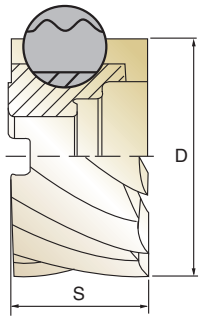
MILLING CUTTERS

E2677 SERIES

HSSCo8, MULTI FLUTE ROUGHING SHELL END MILL - COARSE

HSSCo8, MULTI SCHNEIDEN WALZENSTIRN-SCHRUPPFRÄSER - GROBES





HSS Co8 | DIN 841 | NR | COARSE | 6-12 | 30° P.1293

Unit : mm

EDP No.	Mill Diameter D	Width of Face S	Internal Diameter d	No. of Teeth Z
E2677401	40.0	40	● 16	6
E2677501	50.0	50	22	8
E2677600	60.0	30	27	8
E2677601	60.0	60	27	8
E2677750	75.0	35	27	10
E2677751	75.0	75	27	10
E2677900	90.0	35	27	10
E2677902	110.0	35	32	12

● Tolerance of Internal Diameter = +0.018 ~ 0
▶ TiN-COATING, TiCN-COATING & TiAlN-COATING is available on your request.

HSS Co8 | DIN 1880 | NR | COARSE | 6-12 | 30° P.1293

Unit : mm

EDP No.	Mill Diameter D	Width of Face S	Internal Diameter d	No. of Teeth Z
E2677400	40.0	32	● 16	6
E2677500	50.0	36	22	8
E2677630	63.0	40	27	8
E2677800	80.0	45	27	10
E2677901	100.0	50	32	10
E2677903	125.0	56	40	12
E2677904	160.0	63	50	12

● Tolerance of Internal Diameter = +0.018 ~ 0
▶ TiN-COATING, TiCN-COATING & TiAlN-COATING is available on your request.

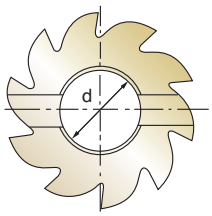
Mill Dia. Tolerance(mm)	Width of Face Tolerance(mm)	Internal Dia. Tolerance(mm)
+ 0.25 − 0.15	+ 0.5 − 0	+ 0.02 − 0

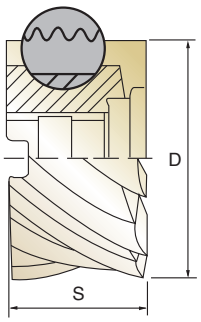
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSSCo8, MULTI FLUTE ROUGHING SHELL END MILL - FINE

HSSCo8, MULTI SCHNEIDEN WALZENSTIRN-SCHRUPPFRÄSER - FEINES





HSS Co8 | DIN 841 | HR | FINE | 6-12 | 30° P.1293

Unit : mm

EDP No.	Mill Diameter D	Width of Face S	Internal Diameter d	No. of Teeth Z
E2678401	40.0	40	● 16	6
E2678501	50.0	50	22	8
E2678600	60.0	30	27	8
E2678601	60.0	60	27	8
E2678750	75.0	35	27	10
E2678751	75.0	75	27	10
E2678900	90.0	35	27	10
E2678902	110.0	35	32	12

● Tolerance of Internal Diameter = +0.018 ~ 0

▶ TiN-COATING, TiCN-COATING & TiAlN-COATING is available on your request.

HSS Co8 | DIN 1880 | HR | FINE | 6-12 | 30° P.1293

Unit : mm

EDP No.	Mill Diameter D	Width of Face S	Internal Diameter d	No. of Teeth Z
E2678400	40.0	32	● 16	6
E2678500	50.0	36	22	8
E2678630	63.0	40	27	8
E2678800	80.0	45	27	10
E2678901	100.0	50	32	10
E2678903	125.0	56	40	12
E2678904	160.0	63	50	12

● Tolerance of Internal Diameter = +0.018 ~ 0

▶ TiN-COATING, TiCN-COATING & TiAlN-COATING is available on your request.

Mill Dia. Tolerance(mm)	Width of Face Tolerance(mm)	Internal Dia. Tolerance(mm)
+ 0.25 − 0.15	+ 0.5 − 0	+ 0.02 − 0

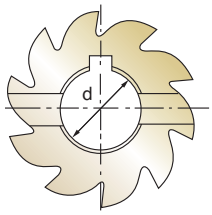
◎ : Excellent ○ : Good

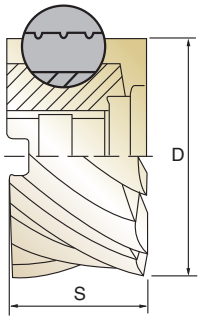
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

MILLING CUTTERS

E2679 SERIES

HSSCo8, MULTI FLUTE ROUGHING & FINISHING SHELL END MILL
HSSCo8, MULTI SCHNEIDEN WALZENSTIRN-SCHRUPPSCHLICHTFRÄSER





HSS Co8 | DIN 841 | NF | ROUGHING & FINISHING | 6-12 | 30° P.1293

Unit : mm

EDP No.	Mill Diameter D	Width of Face S	Internal Diameter d	No. of Teeth Z
E2679401	40.0	40	● 16	6
E2679501	50.0	50	22	8
E2679600	60.0	30	27	8
E2679601	60.0	60	27	8
E2679750	75.0	35	27	10
E2679751	75.0	75	27	10
E2679900	90.0	35	27	10
E2679902	110.0	35	32	12

● Tolerance of Internal Diameter = +0.018 ~ 0
▶ TiN-COATING, TiCN-COATING & TiAlN-COATING is available on your request.

HSS Co8 | DIN 1880 | NF | ROUGHING & FINISHING | 6-12 | 30° P.1293

Unit : mm

EDP No.	Mill Diameter D	Width of Face S	Internal Diameter d	No. of Teeth Z
E2679400	40.0	32	● 16	6
E2679500	50.0	36	22	8
E2679630	63.0	40	27	8
E2679800	80.0	45	27	10
E2679901	100.0	50	32	10
E2679903	125.0	56	40	12
E2679904	160.0	63	50	12

● Tolerance of Internal Diameter = +0.018 ~ 0
▶ TiN-COATING, TiCN-COATING & TiAlN-COATING is available on your request.

Mill Dia. Tolerance(mm)	Width of Face Tolerance(mm)	Internal Dia. Tolerance(mm)
+ 0.25 − 0.15	+ 0.5 − 0	+ 0.02 − 0

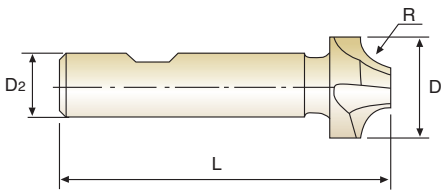
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

HSSCo8, 4 FLUTE CORNER ROUNDING CUTTERS
HSSCo8, 4 SCHNEIDEN VIERTELKREISFRÄSER

▶ These tools can be adapted for many screw machine applications as end formming tools to form a specific radius.

▶ Dieses Werkzeug kann an vielen Scrow maschine als Finishingtool für spezielle Radien montiert werden.



HSS Co8 | DIN 6518 | N | 4 | 0° | DIN 1835B

P.1294

Unit : mm

EDP No.	Radius	Outside Diameter	Shank Diameter	Overall Length
FLAT	R(H11)	D	D2(h6)	L
E2498010	R1.0	**8.0**	10	60
E2498015	R1.5	**9.0**	10	60
E2498020	R2.0	**10.0**	10	60
E2498025	R2.5	**11.0**	10	60
E2498030	R3.0	**12.0**	12	60
E2498035	R3.5	**13.0**	12	60
E2498040	R4.0	**14.0**	12	60
E2498045	R4.5	**15.0**	12	60
E2498050	R5.0	**16.0**	12	60
E2498055	R5.5	**19.0**	16	67
E2498060	R6.0	**20.0**	16	67
E2498065	R6.5	**21.0**	16	71
E2498070	R7.0	**22.0**	16	71
E2498075	R7.5	**23.0**	16	71
E2498080	R8.0	**24.0**	16	71
E2498085	R8.5	**25.0**	25	85
E2498090	R9.0	**26.0**	25	85
E2498095	R9.5	**27.0**	25	85
E2498100	R10.0	**28.0**	25	85
E2498105	R10.5	**31.0**	25	90
E2498110	R11.0	**32.0**	25	90
E2498120	R12.0	**34.0**	25	90
E2498125	R12.5	**41.0**	25	100
E2498130	R13.0	**42.0**	25	100
E2498140	R14.0	**44.0**	25	100
E2498150	R15.0	**46.0**	25	100
E2498160	R16.0	**48.0**	25	100
E2498180	R18.0	**52.0**	32	112
E2498200	R20.0	**56.0**	32	112

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Nominal-Diameter in mm / Nennmaßbereich in mm						
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18	over 18 to 30 über 18 bis 30	over 30 to 50 über 30 bis 50
Tolerance range in μm / Toleranzwerte in μm						
H11	+ 60 0	+ 75 0	+ 90 0	+ 110 0	+ 130 0	+ 160 0
h6	0 − 6	0 − 8	0 − 9	0 − 11	0 − 13	0 − 16

▶ TiN-COATING, TiCN-COATING & TiAlN-COATING is available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel	Acrylic	CFRP
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○							○					

MILLING CUTTERS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

HSS-E, DOVETAIL CUTTERS TYPE "A", "C", "E"
HSS-E, WINKELFRÄSER FORM "A", "C", "E"

ML012, ML112, ML022, ML122, ML212, ML222 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
16.0	615	110	30	0.030	305	57	15	0.031	215	40	10	0.031
20.0	500	110	30	0.037	255	55	15	0.036	180	38	10	0.035
25.0	380	80	30	0.026	190	47	15	0.031	135	30	10	0.028
32.0	300	125	30	0.042	155	64	15	0.041	100	40	10	0.040
40.0	250	130	30	0.043	125	64	15	0.043	90	45	10	0.042
50.0	190	90	30	0.030	100	42	15	0.026	75	36	10	0.030
63.0	150	75	30	0.031	80	40	15	0.031	60	32	10	0.033

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM & ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
16.0	160	20	10	0.021	1850	336	95	0.030
20.0	125	15	10	0.020	1350	324	85	0.040
25.0	100	16	10	0.020	1150	270	90	0.029
32.0	80	16	10	0.020	920	375	90	0.041
40.0	60	16	10	0.022	765	387	95	0.042
50.0	50	16	10	0.020	550	265	85	0.030
63.0	40	15	10	0.023	450	240	90	0.033

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSS-E, DOVETAIL CUTTERS TYPE "B", "D", "F"
HSS-E, WINKELFRÄSER FORM "B", "D", "F"

ML032, ML132, ML042, ML142, ML232, ML242 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
16.0	615	110	30	0.030	305	57	15	0.031	215	40	10	0.031
20.0	500	110	30	0.037	255	55	15	0.036	180	38	10	0.035
25.0	380	80	30	0.026	190	47	15	0.031	135	30	10	0.028
32.0	300	125	30	0.042	155	64	15	0.041	100	40	10	0.040

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM & ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
16.0	160	20	10	0.021	1850	336	95	0.030
20.0	125	15	10	0.020	1350	324	85	0.040
25.0	100	16	10	0.020	1150	270	90	0.029
32.0	80	16	10	0.020	920	375	90	0.041

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSS-E, WOODRUFF KEYSEAT CUTTERS TYPE "B", "D", "F"
HSS-E, SCHLITZFRÄSER FORM "B", "D", "F"

ML062, ML162, ML262 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
10.5	900	72	30	0.010	600	48	20	0.010	480	38	15	0.010
13.5	700	56	30	0.010	470	38	20	0.010	370	30	15	0.010
16.5	570	114	30	0.025	380	76	20	0.025	300	60	15	0.025
19.5	480	134	30	0.035	320	90	20	0.035	260	73	15	0.035
22.5	420	168	30	0.040	280	112	20	0.040	220	88	15	0.040
28.5	330	165	30	0.050	220	110	20	0.050	180	90	15	0.050
32.5	290	209	30	0.060	190	137	20	0.060	155	112	15	0.060
45.5	210	206	30	0.070	130	127	20	0.070	110	108	15	0.070

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM & ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
10.5	300	24	10	0.010	3000	240	100	0.010
13.5	230	18	10	0.010	2300	184	100	0.010
16.5	190	38	10	0.025	1900	380	100	0.025
19.5	160	45	10	0.035	1600	448	100	0.035
22.5	140	56	10	0.040	1400	560	100	0.040
28.5	110	55	10	0.050	1100	550	100	0.050
32.5	90	65	10	0.060	900	648	90	0.060
45.5	70	69	10	0.070	700	686	100	0.070

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSS-E, T-SLOT CUTTERS TYPE "AA", "AB", "AD"
HSS-E, SCHAFTERFRÄSER FÜR T-NUTEN FORM "AA", "AB", "AD"

ML072, ML172, ML272 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM & ALUMINUM ALLOYS			
HARDNESS					~ HRc20				HRc20 ~ HRc30							
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
12.5	770	38	30	0.008	380	16	15	0.007	270	8	10	0.005	2350	110	90	0.008
16.0	600	45	30	0.013	300	19	15	0.011	210	9	10	0.007	1830	140	90	0.013
18.0	550	47	30	0.014	270	20	15	0.012	195	12	10	0.010	1680	150	95	0.015
19.0	500	50	30	0.017	250	20	15	0.013	180	15	10	0.014	1540	160	90	0.017
21.0	470	52	30	0.018	230	22	15	0.016	160	16	10	0.017	1430	165	95	0.019
22.0	440	55	30	0.021	220	25	15	0.019	150	17	10	0.019	1330	170	90	0.021
25.0	390	65	30	0.028	190	30	15	0.026	135	18	10	0.022	1170	180	90	0.026
28.0	345	75	30	0.036	170	38	15	0.037	120	20	10	0.028	1040	210	90	0.034
32.0	310	90	30	0.036	150	42	15	0.035	100	20	10	0.025	910	250	90	0.034
50.0	270	80	40	0.037	135	40	20	0.037	90	20	15	0.028	800	230	125	0.036
63.0	240	70	50	0.036	120	38	25	0.040	85	20	15	0.029	730	210	145	0.036

RPM = rev./min. Vc = m/min.
FEED = mm/min. fz = mm/t

MILLING CUTTERS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

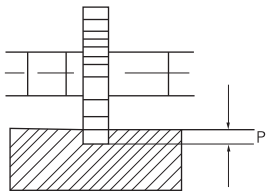
HSS-E, SIDE AND FACE MILLING CUTTERS WITH STRAIGHT TEETH
HSS-E, SCHEIBENFRÄSER mit GERADEVERZAHNT

ML092 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
50.0	160	130	25	0.045	115	82	20	0.040	95	58	15	0.034
63.0	125	160	25	0.058	90	72	20	0.036	75	51	15	0.031
80.0	100	145	25	0.060	70	69	20	0.041	60	48	15	0.033
100.0	80	130	25	0.063	60	60	20	0.038	47	41	15	0.034
125.0	63	100	25	0.066	45	54	20	0.050	38	38	15	0.042

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM & ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
50.0	76	42	10	0.031	630	200	100	0.018
63.0	60	38	10	0.029	500	250	100	0.023
80.0	47	34	10	0.030	400	250	100	0.026
100.0	38	30	10	0.030	320	200	100	0.024
125.0	30	26	10	0.036	250	200	100	0.033

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t



MILLING DEPTH P = WIDTH OF FACES

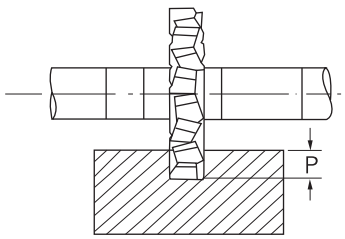
HSS-E, SIDE AND FACE MILLING CUTTERS WITH STAGGERED TEETH
HSS-E, SCHEIBENFRÄSER mit KREUZVERZAHNT

ML102 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS					~ HRc20				HRc20 ~ HRc30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
50.0	160	130	25	0.058	115	85	20	0.053	95	58	15	0.044
63.0	125	160	25	0.080	90	75	20	0.052	75	51	15	0.043
80.0	100	145	25	0.081	70	69	20	0.055	60	48	15	0.044
100.0	80	130	25	0.081	60	60	20	0.050	47	41	15	0.044
125.0	63	100	25	0.072	45	54	20	0.055	38	38	15	0.045
160.0	50	105	25	0.081	37	48	20	0.050	30	34	15	0.044
200.0	40	95	25	0.079	31	45	20	0.048	25	31	15	0.041

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				ALUMINUM & ALUMINUM ALLOYS			
HARDNESS	HRc30 ~ HRc40							
STRENGTH	1000 ~ 1300N/mm²							
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
50.0	76	42	10	0.039	630	200	100	0.023
63.0	60	38	10	0.040	500	250	100	0.031
80.0	47	34	10	0.040	400	250	100	0.035
100.0	38	30	10	0.039	320	200	100	0.031
125.0	30	26	10	0.039	250	200	100	0.036
160.0	23	24	10	0.040	200	150	100	0.029
200.0	19	22	10	0.039	160	150	100	0.031

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t



MILLING DEPTH P = WIDTH OF FACES

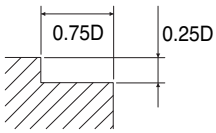
MILLING CUTTERS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

HSSCo8, MULTI FLUTE SHELL END MILL
HSSCo8, MULTI SCHNEIDEN WALZENSTIRNFRÄSER

E2675 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS	~ HRc20				HRc20 ~ HRc28				HRc28 ~ HRc35				HRc35 ~ HRc40			
STRENGTH	~ 800N/mm²				800 ~ 900N/mm²				900 ~ 1100N/mm²				1100 ~ 1300N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
40.0	240	135	30	0.070	200	120	25	0.075	140	80	20	0.071	80	50	10	0.078
50.0	200	125	30	0.078	170	105	25	0.077	120	75	20	0.078	70	45	10	0.080
63.0	150	110	30	0.092	130	95	25	0.091	90	65	20	0.090	50	40	10	0.100
80.0	120	120	30	0.100	100	100	25	0.100	80	75	20	0.094	40	40	10	0.100
100.0	100	115	30	0.115	80	95	25	0.119	60	70	20	0.117	30	35	10	0.117
125.0	80	115	30	0.120	70	95	25	0.113	50	65	20	0.108	20	35	10	0.146
160.0	60	110	30	0.131	60	100	30	0.119	40	65	20	0.116	20	35	10	0.125

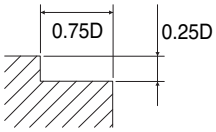


RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSSCo8, MULTI FLUTE SHELL END MILL for ALUMINUM
HSSCo8, MULTI SCHNEIDEN WALZENSTIRNFRÄSER für ALUMINIUM

E2676 SERIES

MATERIAL	ALUMINUM NONFERROUS METALS			
DIAMETER	RPM	FEED	Vc	fz
30.0	1050	210	100	0.050
40.0	840	200	105	0.060
50.0	600	250	95	0.069
60.0	500	300	95	0.100
63.0	480	330	95	0.115
75.0	450	350	105	0.130
80.0	390	300	100	0.128
100.0	320	290	100	0.151

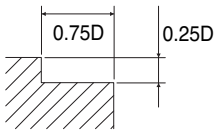


RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSSCo8, MULTI FLUTE ROUGHING SHELL END MILL
HSSCo8, MULTI SCHNEIDEN WALZENSTIRN-SCHRUPPFRÄSER

E2677, E2678 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS	~ HRc20				HRc20 ~ HRc28				HRc28 ~ HRc35				HRc35 ~ HRc40			
STRENGTH	~ 800N/mm²				800 ~ 900N/mm²				900 ~ 1100N/mm²				1100 ~ 1300N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
40.0	240	100	30	0.069	200	85	25	0.071	140	60	20	0.071	80	35	10	0.073
50.0	200	125	30	0.078	170	105	25	0.077	120	75	20	0.078	70	45	10	0.080
63.0	150	110	30	0.092	130	95	25	0.091	90	65	20	0.090	50	40	10	0.100
80.0	120	120	30	0.100	100	100	25	0.100	80	75	20	0.094	40	40	10	0.100
100.0	100	115	30	0.115	80	95	25	0.119	60	70	20	0.117	30	35	10	0.117
125.0	80	115	30	0.120	70	95	25	0.113	50	65	20	0.108	20	35	10	0.146
160.0	60	110	30	0.153	60	100	30	0.139	40	65	20	0.135	20	35	10	0.146

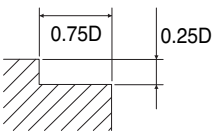


RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSSCo8, MULTI FLUTE ROUGHING & FINISHING SHELL END MILL
HSSCo8, MULTI SCHNEIDEN WALZENSTIRN-SCHRUPPSCHLICHTFRÄSER

E2679 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS	~ HRc20				HRc20 ~ HRc28				HRc28 ~ HRc35				HRc35 ~ HRc40			
STRENGTH	~ 800N/mm²				800 ~ 900N/mm²				900 ~ 1100N/mm²				1100 ~ 1300N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
40.0	240	100	30	0.069	200	85	25	0.071	140	60	20	0.071	80	35	10	0.073
50.0	200	125	30	0.078	170	105	25	0.077	120	75	20	0.078	70	45	10	0.080
63.0	150	110	30	0.092	130	95	25	0.091	90	65	20	0.090	50	40	10	0.100
80.0	120	120	30	0.100	100	100	25	0.100	80	75	20	0.094	40	40	10	0.100
100.0	100	115	30	0.115	80	95	25	0.119	60	70	20	0.117	30	35	10	0.117
125.0	80	115	30	0.120	70	95	25	0.113	50	65	20	0.108	20	35	10	0.146
160.0	60	110	30	0.153	60	100	30	0.139	40	65	20	0.135	20	35	10	0.146



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

MILLING CUTTERS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

HSSCo8, 4 FLUTE CORNER ROUNDING CUTTERS
HSSCo8, 4 SCHNEIDEN VIERTELKREISFRÄSER

E2498 SERIES

MATERIAL		ALUMINUM & ALUMINUM ALLOYS				CARBON STEELS ALLOY STEELS			
HARDNESS									
STRENGTH						~ 500N/mm²			
OUTSIDE DIAMETER	CORNER RADIUS	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
8.0	R1	3500	245	90	0.018	800	55	20	0.017
9.0	R1.5	2800	230	80	0.021	630	55	20	0.022
10.0	R2	2800	220	90	0.020	630	50	20	0.020
11.0	R2.5	2400	220	85	0.023	530	45	20	0.021
12.0	R3	2400	210	90	0.022	530	45	20	0.021
14.0	R4	2000	200	90	0.025	450	45	20	0.025
16.0	R5	1600	200	80	0.031	350	40	20	0.029
20.0	R6	1400	190	90	0.034	310	40	20	0.032
24.0	R8	1200	180	90	0.038	260	40	20	0.038
28.0	R10	950	170	85	0.045	210	35	20	0.042
34.0	R12	800	160	85	0.050	180	35	20	0.049
48.0	R16	600	140	90	0.058	130	30	20	0.058

MATERIAL		CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS			
HARDNESS		~ HRc20				HRc20 ~ HRc35			
STRENGTH		500 ~ 800N/mm²				800 ~ 1100N/mm²			
OUTSIDE DIAMETER	CORNER RADIUS	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
8.0	R1	600	35	15	0.015	480	35	10	0.018
9.0	R1.5	470	30	15	0.016	380	35	10	0.023
10.0	R2	470	30	15	0.016	380	30	10	0.020
11.0	R2.5	390	30	15	0.019	315	30	10	0.024
12.0	R3	390	30	15	0.019	315	30	10	0.024
14.0	R4	330	30	15	0.023	270	25	10	0.023
16.0	R5	260	30	15	0.029	210	25	10	0.030
20.0	R6	230	30	15	0.033	185	25	10	0.034
24.0	R8	190	30	15	0.039	155	25	10	0.040
28.0	R10	155	25	15	0.040	125	25	10	0.050
34.0	R12	130	25	15	0.048	105	20	10	0.048
48.0	R16	95	20	15	0.053	75	15	10	0.050

RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

END MILLS

YG

Being the best through innovation

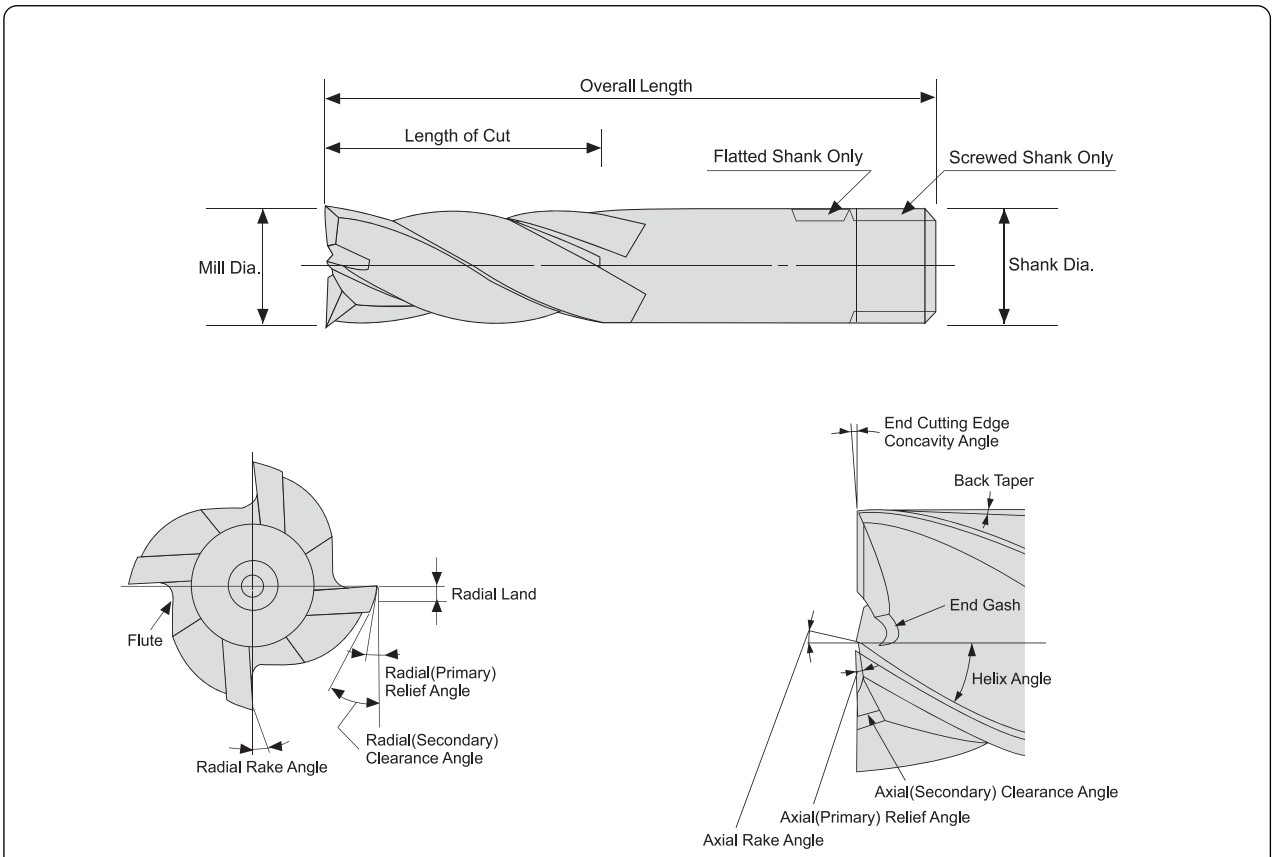
TECHNICAL DATA

TECHNISCHE DATEN

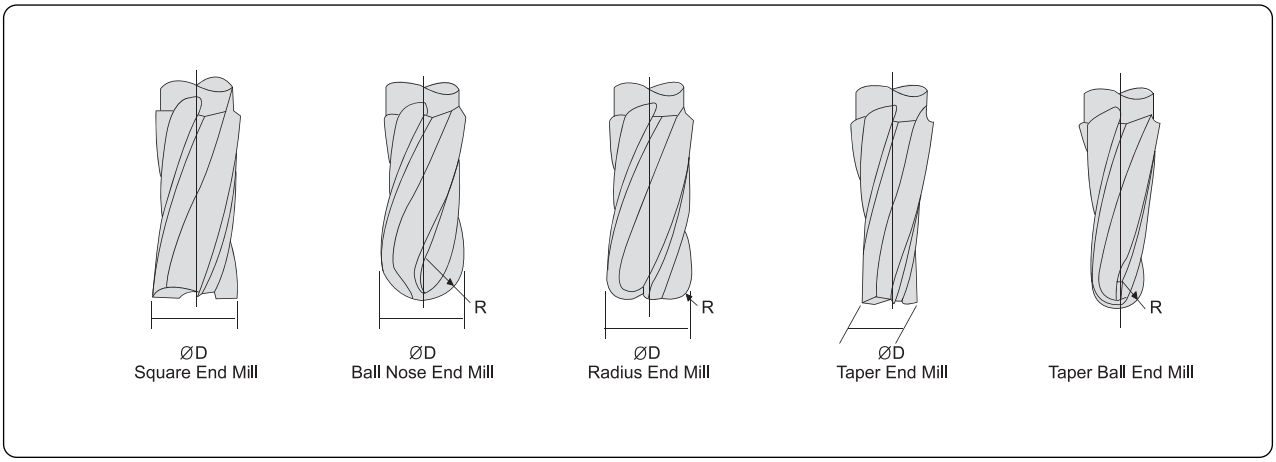
TECHNICAL DATA

SUPER CUTTING END MILLS
HOCHLEISTUNGS FRÄSER

1 Names of End Mill Parts
Erläuterung der Fräserteile

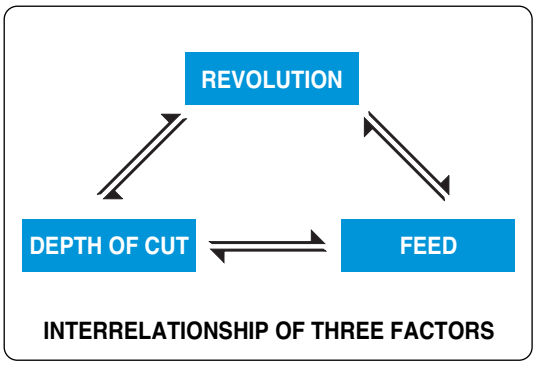


2 Type of End Mill
Fräsertypen



Speed, feed and depth of cut are the most important factors to consider for best results in milling. Improper feeds and speeds often cause low production, poor work quality and unnecessary damage to the cutter.
This section covers the basic principles of speed and feed selection for milling cutters and end mills. It will serve as a guide in setting-up new milling jobs.

Geschwindigkeit, Vorschub und Schnitttiefe sind die wichtigsten Faktoren, um das beste Fräsergebnis zu erzielen. Ungeeignete Vorschübe und Geschwindigkeiten verursachen oft niedriege Produktivität, schlechte Bearbeitungsqualität und unnötige Beschädigung des Fräsers.
Dieser Abschnitt beinhaltet die Basisprinzipien von Geschwindigkeit- und Vorschubauswahl für Fräser und Scheibenfräser. Dieser Abschnitt sollte als ein Setting up-Führer neuer Fräsaufgaben dienen.



INTERRELATIONSHIP OF THREE FACTORS

SPEEDS
Geschwindigkeit

In milling, SPEED is measured in peripheral feet per minute.(revolution per minute times cutter circumference in feet) This is frequently referred to as “peripheral speed” “cutting speed” or “surface speed”.
Beim Fräsen, Geschwindigkeit ist gemessen in Bogenlänge pro Minute. Dies wird oft als ‘peripheral speed’, ‘cutting speed’ oder ‘surface speed’ bezeichnet.

Revolutions per Minute
Umdrehung pro Minute

$$N = \frac{1000V}{\pi \times D}$$

V : Cutting Speed(m/min) / Schneidgeschwindigkeit
D : Diameter of Tool(mm) / Werkzeugdurchmesser
N : Revolution per minute(rev/min) / Umdrehung pro Minute
π : 3.1416

They will have to be tempered to suit the conditons ON THE JOB. For example:
Dies muß der jeweiligen Aufgabe angepaßt werden. Zum Beispiel:

Use Lower Speed Ranges for Niedrig Geschwindigkeitsbereiche für	Use Higher Speed Ranges for Hohe Geschwindigkeitsbereiche für
Hard materials / Hartes Material	Softer materials / Weiches Material
Tough materials / Rauhes Material	Better finishes / Bessere Oberflächengüte
Abrasive materials / Abrasives Material	Smaller diameter cutters / Kleinere Fräserdurchmesser
Heavy cuts / Heavy cut	Light cuts / Light cut
Minimum tool wear / Minimale Werkzeugabnutzung	Frail work pieces or set-ups / Zerbrechliche Stücke oder Set-up
Maximum cutter life / Maximale Standzeit	Hand feed operations / Handarbeit
	Maximum production rates / Maximale Produktivität
	Non-metallics / Nichtmetallische Werkstoffe

FEEDS
Vorschub

Feed is usually measured in milimeters per minute. It is the product of feed per tooth times revolution per minute times the number of teeth in the cutter. Due to variations in cutter sizes, numbers of teeth and revolutions per minute, all feed rates should be calculated from feed per tooth. Feed per tooth is the basis of all feed rates per minute, whether the cutters are large or small, fine or coarse tooth, and are run at high or low peripheral speed. Because feed per tooth affects chip thickness. It is a very important factor in cutter life.
Highest possible feed per tooth will usually give longer cutter life between grinds and greater production per grind. Excessive feeds may over load the cutter teeth and cause breakage or chipping of the cutting edges. The following factors should be kept in mind when using the recommended starting feed per tooth.

Vorschub wird meist in Milimeter pro Minute gemessen. Er ist das Produkt von Vorschub pro Zahn, Umdrehung pro Minute oder der Anzahl der Zähne am Werkzeug. Aufgrund der Variationen in Fräsergrößen, Anzahl der Zähne und Umdrehungen pro Minute, Vorschübe sollten mit Vorschub pro Zahn gerechnet werden. Vorschub pro Zahn ist die Basis für alle Vorschubraten pro Minute unabhängig davon, ob die Fräser groß, klein, mit Fein- oder Grobgewinde und mit hoher- oder niedriger Bogengeschwindigkeit arbeiten. Vorschub pro Zahn beeinflußt Spandicke, was für ein Werkzeug ein sehr wichtiger Faktor ist. Höchstmöglicher Vorschub pro Zahn verursacht meist längeres Werkzeugleben zwischen Abnutzung und Produktivität pro Abnutzung. Exzessiver Vorschub dagegen wird den Werkzeugzahn überbelasten und Beschädigungen oder Abbrökelungen von Schneidkanten verursachen.
Bei der Nutzung von empfohlenen Vorschüben pro Zahn sollten folgende Faktoren berücksichtigt werden.

TECHNICAL DATA

SUPER CUTTING END MILLS
HOCHLEISTUNGS FRÄSER

Feed in milimeters per Minute / Vorschub in Milimeter pro Minute

F.M = F.R. × R.P.M

F.R. : Feed per Revolutions in milimeters / Vorschub pro Umdrehungen pro Minute

R.P.M .: Revolutions per Minutes / Umdrehungen pro Minute

The following factors should be kept in mind when using the recommended stating feed per tooth.
Die folgenden Faktoren sind beim Einsatz der Vorschübe pro Zahn zu berücksichtigen.

Use Higher Feeds For Höherer Vorschub für
Heavy, roughing cuts / Heavy cut, Schruppfräsen
Rigid set-ups / Robustes Werkstück
Easy-to-machine work materials / Leicht fräsbares Material
Rugged cutters / Robuster Fräser
Slab milling cuts / Scheibenfräsen
Low tensile strength materials / Material von niedriger Zugfestigkeit
Coarse tooth cutters / Grobgewinde-Fräser
Abrasive materials / Abrasives Material

Use Lower Feeds For Niedrigerer Vorschub für
Light, and finishing cuts / Light cut, Finishing cut
Frail set-ups / Zerbrechliches Material
Hard to machine work materials / Schwer fräsbares Material
Frail and small cutters / Dünne, kleine Fräser
Deep slots / Tiefnuten
High tensile strength materials / Material von hoher Zugfestigkeit
Fine tooth cutters / Feingewinde-Fräser

SPEED AND FEED CALCULATIONS FOR MILLING CUTTERS AND OTHER ROTATING TOOLS

TO FIND	HAVING		FORMULA
Surface(or Periphery) Speed in meter Per Minute=S.P.M.	Diameter of Tool in milimeters Revolutions per Minute	=D =R.P.M.	$V=\frac{D\times 3.1416\times R.P.M.}{1000}$
Revolutions Per Minute=R.P.M.	Surface Speed in meter per Minute Diameter of Tool in milimeters	=S.P.M =D	$R.P.M.=\frac{V\times 1000}{D\times 3.1416}$
Feed per Revolution in milimeters-F.R.	Feed in milimeters per Minute Revolution per Minute	=F.M. =R.P.M.	$F.R.=\frac{F.M.}{R.P.M.}$
Feed in milimeters Per Minute-F.M.	Feed per Revolution in milimeters Revolution per Minute	=F.R. =R.P.M.	F.M.= F.R. × R.P.M.
Number of Cutting Teeth per Minute=T.M.	Number of Teeth in Tool Revolution per Minute	=T =R.P.M.	T.M=T × R.P.M.
Feed per tooth=F.T.	Number of Teeth in Tool Feed per Revolution in milimeters	=T =R.P.M.	$F.T.=\frac{F.R.}{T}$
Feed per Tooth=F.T.	Number of Teeth in Tool Feed in milimeters per Minute Speed in Revolution per Minute	=T =F.M. =R.P.M.	$F.T.=\frac{F.M.}{T\times R.P.M.}$

5 CASE OF RESHARPENING
Nachschleiffälle

When the product finish become worse, the cutting edge must get dulled, chips become smaller and the cutting sound gets louder. In such cases, a end mill must be resharpened. The following are the damages of end mills when the resharpening is required.

Wenn die Schneidkante abstumpft, verschlechtert sich die Bearbeitungsqualität, Span wird kürzer und das Fräsgeräusch wird lauter. In solchen Fällen muß der Fräser nachgeschliffen werden. Folgend sind Beschädigungen an Fräser, die das Nachschleifen nötig machen.

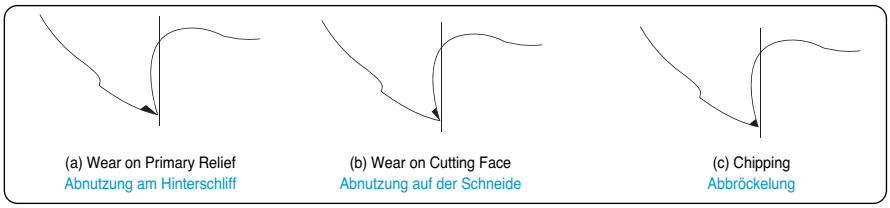


Fig. 1. Damages of Cutting Edge

6 SHARPEN AT PREDETERMINED WEAR LAND
Schleifen bei vorbestimmten Abnutzungsflächen

Cutters should be sharpened as soons as the wear land(Fig. 2.) reaches a predetermined width. This width should permit sharpening without excessive loss of tool life. it may vary from a few hunderts to some tenth of a millimeter, depending on the type of cutter and the finish required on the product. This method is used on production runs where uneven amounts of stock is removed or where the material varies in machinability. It is also used on small quantity product lots.

Fräser sollten nachgeschliffen werden, so bald die Abnutzungsfläche die vorbestimmte Breite erreicht. Diese Breite sollte ein Schleifen ohne exzessive Verlust der Werkzeuglebensdauer ermöglichen. Sie variiert, in Abhängigkeit von Werkzeugtypen und benötigtem Finish, von Hunderstel bis einigen Zehntel Millimeter. Diese Methode wird in Prozeßen angewandt, in denen variierende Mengen von Werkstoffen abgefräst oder Materialien verschiedener Fräsbarkeiten bearbeitet werden. Ebenso in Produktionen kleiner Losgrößen.

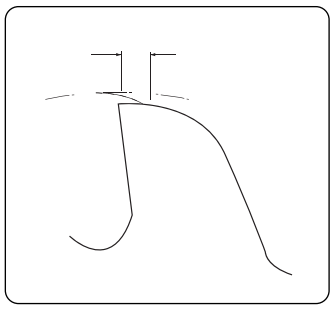


Fig. 2. Wear Land

7 RESHARPENING PERIPHERAL CUTTING EDGE
Nachschleifen von Peripher-Schneidkanten

1 RESHARPENING PERIPHERAL CUTTING EDGE
Nachschleifen von Primärschneide

The geometry of relief angle in an end mill consist of three methods as shown in Fig.3 concave, flat, and eccentric. Recently, most end mills have the eccentric relief(eccenrtic sharpening). In this method, since the relief is formed an eccentric are surface in cylindrical grinding method, the roughness of the finished surface of the relief improves and the strength of cutting edge increase at the same time.(Fig.4) As a result, the tool life is improved.

Die Geometrie von Hinterschliffwinkel in einem Fräser hat, wie in Fig. 3 gezeigt, 3 verschiedene Variationen : Konkav, Flach und Exzentrisch. In letzter Zeit, die meisten Fräser haben die exzentrische Form. In dieser Methode verbessern sich Oberflächengüte der bearbeiteten Fläche und die Stärke der Schneidkanten gleichzeitig, was eine Verlängerung der Werkzeuglebensdauer zur Folge hat.

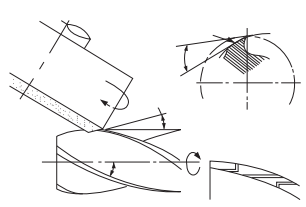
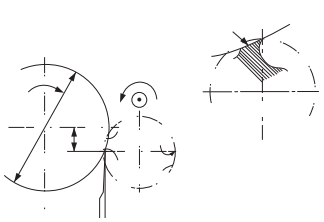
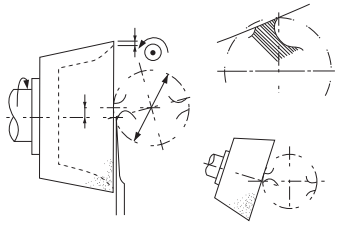
Eccentric	Concave	Flat
		

Fig. 3. Three Types of Primary Relief

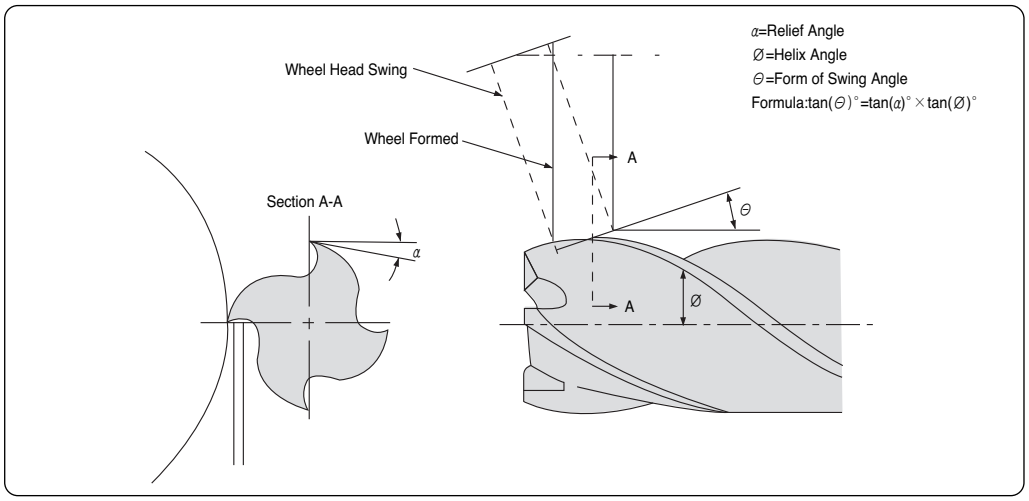


Fig. 4. Toothing of Eccentric Relief Angle

2 ANGLE OF WHEEL INCLINATION
Winkel der Radneigung.

Eccentric relief is produced with a plain wheel positioned with its axis parallel or at a slight angle with the cutter axis. The degree of relief is varied by changing the angle of wheel inclination.

Exzentrischer Hinterschliff wird mit einer, mit der eigenen Achse zur Fräsachse parallelen oder nur geringfügig geneigten Schleifscheibe produziert. Das Grad des Hinterschliffs variiert mit dem Einstellwinkel der Schleifscheiben Einstellung.

Table 1. RECOMMENDED RELIEF ON END MILLS

Mill Diameter (mm)	Eccentric relief indicator drop for relief Angles shown		Checking Distance	Wheel Angles(Deg.)Θ			Radial Relief Angles(α1)	Clearance Angles(α2)
				15° Helix	30° Helix	60° Helix		
-	Min	Max.	-	*Angle	*Angle	*Angle	*Angle	*Angle
3.0	0.100	0.130	0.40	4°24′	9°25′	26°28′	16°02′	25°
6.0	0.090	0.125	0.50	3°18′	7°05′	20°25′	12°08′	25°
12.0	0.100	0.135	0.65	2°46′	5°46′	17°23′	10°15′	25°
25.0	0.095	0.140	0.80	2°15′	4°15′	14°16′	8°21′	25°
40.0	0.085	0.125	0.80	2°01′	4°33′	12°48′	7°29′	25°
50.0	0.085	0.125	0.80	2°01′	4°33′	12°48′	7°29′	25°

The actual at the radial relief angle is normally kept within the range shown but may be varied to suit the cutter material, the work material and the operating conditions.
Die Freiwinkel sind normalerweise in den angegebenen Maßen, sie schwanken je nach Werkzeug, Werkstück†und den Einsatzbedingungen
*Angle is calculated from the basic mean at the radical angle.
Der Winkel wird von der Hauptschneide zum Radialwinkel gemessen.

8 RESHARPENING END TEETH
Nachschleifen des Endzahns

The three necessary operations and one option feature, along with setup suggestions are shown in Fig.5 A to D in each drawing, the shaded area indicates the surface being ground.

Die drei nötigen Operationen und eine Option werden, zusammen mit einem Rüstvorschlag, in Bild 5 A bis D gezeigt. Die dunklen Flächen zeigen Bereiche an, die nachgeschliffen werden.

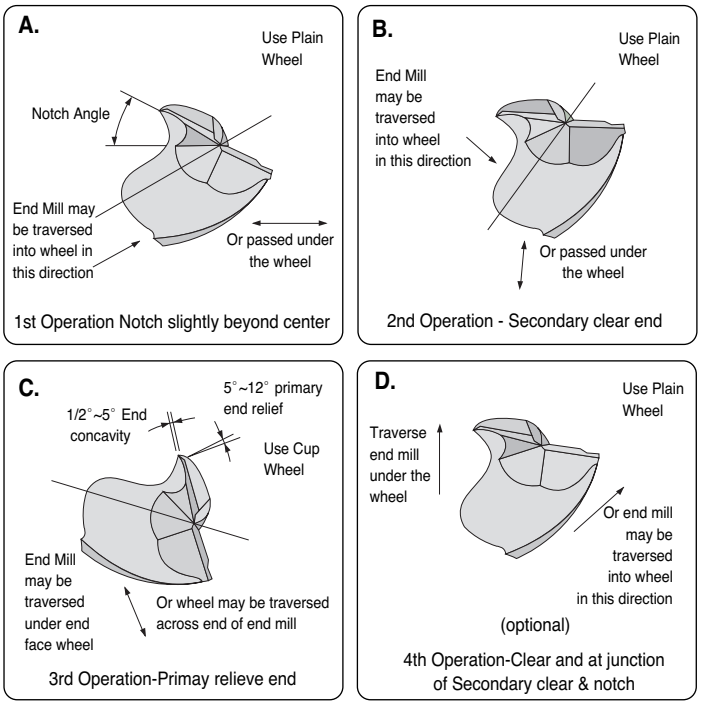


Fig 5. PROCEDURE FOR SHARPENING END OF 2 FLUTE SQUARE END MILLS

9 INSPECTION
Inspektion

The inspection is caculated by using the formula shown in Table1.
Procedure To Check Radial Relief Angles With Indicators.

1. Mount the cutter to rotate freely with no end movement.
2. Adjust the sharp pointed indicator to bear at the very tip of the cutting edge, pointing in a radial line, shown in Fig.6
3. Roll the outter the tabuleted amount gives under "checking distance" using the second indicator as control.
4. Consult chart for amount of drop for the particular diameter and relief angle.

Die Inspektion wird aufgrund der Formel aus der Tabelle 1 durchgeführt.
Prozedur, um mit Indikator radialen Hinterschliffwinkel zu messen.

1. Fräser so montieren, daß er frei rotiert ohne sich seitlich zu bewegen.
2. Indikator so justieren, daß der Stab, in radiale Richting zeigend, am äußersten Rand der Schneidkante angelegt ist (Bild 6).
3. Den Fräser um tabellierte 'Checking distance' rollen. Einen zweiten Indikator zur Kontrolle einsetzen.
4. Um den 'Drop' für den gemessenen Durchmesser und Hinterschliffwinkel zu erhalten, Chart konsultieren.

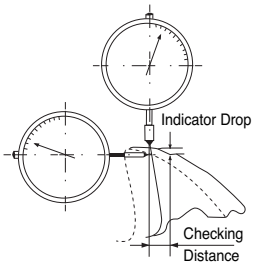
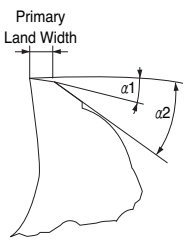
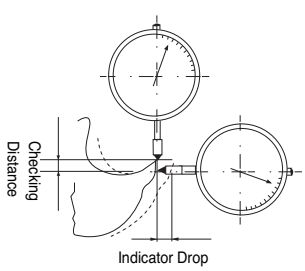
Radial Relief	Peripheral Cutting Edge	Cutting Angle
		

Fig. 6. Indicator Set-Up for Checking

10 Troubleshooting in Endmilling
Problemlösung bei Fräsen

Trouble Problem	Occurrences of trouble Auftreten des Problems	Countermeasures Gegenmaßnahmen
Breaking of tool Werkzeugbruch	· At time of engaging with work material Beim Eintritt in das Werkstück · When ending cut Beim Austritt aus dem Werkstück	1. Decrease feed rate. / Vermindern von Vorschub 2. Decrease projection amount / Schnitttiefe verringern 3. Shorten cutting edge length to required minimum limit Eingriffslänge reduzieren
	· During normal cutting Während des Fräsens	1. Decrease feed rate / Vorschub mindern 2. Control wear → replace tool early Abnutzung kontrollieren - Werkzeug frühzeitig ersetzen 3. Replace chuck or collet / Chuck oder Collet ersetzen 4. Decrease projection amount / Schnitttiefe verringer 5. Carry out honing / Nachschleifen 6. If 4 flute, reduce to 2 flute(clogging of chipping) Wenn 4 Schneiden, zu 2 Schneiden verkleinern 7. If dry cutting change to wet cutting utilize cutting fluid. In case of wet cutting flow oil supplied from the front, change to from rear angle of side top. Use ample with rate. Wenn Trockenfräsen, zu Naßfräsen wechseln. Wenn Naßfräsen mit Kühlflüssigkeitsversorgung von Vorne, zu einer Ölversorgung aus hinterem oder seitlich-oberem Winkel ändern. Ölversorgung reichlich gestalten
	· When changing direction of feed Wenn Vorschubrichtung geändert wird	1. Utilize circular interpolation(in case of NC machine) or temporarily stop feed(Dowelling) Circular interpolation benutzen(bei NC-Maschinen) oder Vorschub vorübergehend stoppen. 2. Reduce feed rate before and after change of directions Vor und nach dem Richtungswechsel den Vorschub mindern 3. Replace chuck or collect / Chuck oder Collet ersetzen,
Fracture of cutting edge Beschädigung der Schneidkante	· Fracture of corners Eckenbruch	1. Carry out chamfering or nose with hand lapper. Mit Handlapper eine Abschrägung durchführen. 2. Down cut → Up cut / Down cut → Up cut
	· Fracture at boundary of depth of cut Beschädigung an der Schneidtiefengrenze	1. Down cut → Up cut / Down cut → Up cut 2. Reduce cutting speed / Schneidgeschwindigkeit mindern
	· Chipping at center part or overall Abbröckelung an der Hauptschneide oder überall	1. Carry out honing. Or enlarge. / Nachschleifen oder erweitern 2. Change number of rotation(in case machine vibrates) Drehzahl ändern(wenn Maschine vibriert). 3. Increase cutting speed / Fräsgeschwindigkeit erhöhen. 4. In ease of squeaking noise during cutting, increase feed. Wenn quitschendes Fräsgeräusch zu vernehmen, Vorschub erhöhen. 5. It dry cutting use cutting fluid or blow air. Wenn Trockenfräsen, Kühlflüssigkeit oder Luft zuführen 6. Replace chuck or collet / Chuck oder Collet auswechseln. 7. Reduce cutting speed / Fräsgeschwindigkeit reduzieren.
	· Large fracturing of cutting edge Größere Beschädigung an Schneidkanten	1. Decrease feed rate / Vorschub mindern. 2. If 4 flute reduce to 2 flute Wenn 4 Schneiden, zu 2 Schneiden wechseln. 3. Carry out honing. Or enlarge / Nachschleifen oder erweitern. 4. Replace chuck or collet / Chuck oder Collet auswechseln. 5. Reduce cutting speed / Fräsgeschwindigkeit mindern. 6. If dry cutting, change to wet cutting. In case oil supply in wet cutting is from the front, change to rear at an angle or from side top. Use ample supply. Wenn Trockenfräsen, zu Naßfräsen wechseln. Wenn Naßfräsen mit Kühlflüssigkeitsversorgung von Vorne, zu einer Ölversorgung aus hinterem oder seitlich-oberem Winkel ändern. Ölversorgung reihlich gestalten.

SUPER CUTTING END MILLS
HOCHLEISTUNGS FRÄSER

Trouble Problem	Occurrences of trouble Auftreten des Problems	Countermeasures Gegenmaßnahmen
Rapid tool wear Zu schnelle Werkzeugabnutzung		1. Reduce cutting speed / Fräsgeschwindigkeit mindern 2. Up cut → Down cut / Up cut - Down cut 3. Increase feed / Vorschub erhöhen 4. Utilize wet cutting or air / Naßfräsen oder Kühlluft zuführen. 5. If reground tool, improve surface roughness of flank. Beim Nachschleifen, die Oberflächenrauhheit der Hauptfreiflächen verbessern.
Inferior finished surface Ungenügende Bearbeitungsoberfläche	· Surface is good but rough Oberfläche ist gut aber rauh	1. Decrease feed / Vorschub mindern 2. In case using 2 flute, increse to 4 flute Wenn 2 Schneiden, zu 4 Schneiden wechseln
	· Small chip welding Kleine Partikelverschweißung	1. Increase cutting speed / Fräsgeschwindigkeit erhöhen 2. Utilize wet cutting air blow(ample supply) Naßfräsen und Luftzufuhr (reichlich) 3. Carry out fine honing / Feinschliff durchführen 4. Up cut → Down cut / Up cut → Down cut 5. Increase feed or enlarge finish allowance Vorschub erhöhen oder Bearbeitungstoleranz erhöhen
	· With transverse streaks Mit Querstreifen	1. Carry out fine honing / Feinschliff durchführen 2. Use water insoluble cutting fluid Wasserunlösliche Kühlflüssigkeit benutzen. 3. Down cut → Up cut / Down cut → Up cut
	· Signs of excessive cutting Zeichen exzessiven Fräsens	1. Reduce finishing depth of cut / Frästiefe reduzieren. 2. Increase cutting speed / Fräsgeschwindigkeit erhöhen. 3. Reduce feed / Vorschub mindern
Poor machining accuracy Geringe Genauigkeit der Maschine	· Finish dimensions are on minus side Bearbeitungsmaße auf der Minusseite	1. Up cut → Down cut / Up cut→ Down cut 2. Reduce finishing depth of cut / Schlichttiefe verringern reduzieren. 3. Replace chuck or collet / Chuck oder Collet auswechseln. 4. Reduce projection amount / Projektionsgröße reduzieren. 5. Increase cutting speed / Fräsgeschwindigkeit reduzieren.
	· Poor perpendicufarity Ungenauer Winkel	1. Reduce finishing depth of cut / Finishing-tiefe reduzieren. 2. Replace chuck or collet / Chuck oder Collet auswechseln. 3. Reduce projection amont / ProjektionsgröBe mindern 4. Increase cutting speed / Fräsgeschwindigkeit erhöhen. 5. 2Flute → 4 Flute / 2 Schneiden → 4 Schneiden 6. Reduce feed / Vorschub mindern. 7. Check wear rate → Replace tool Verschleiß überprüfen → Werkzeug austauschen.
Chattering Rattern		1. Increase feed rate(in case over 0.05 mm/Zahn, try reducing) Vorschub erhöhen(wenn über 0.05mm/Tooth Vorschub reduzieren). 2. Change cutting speed / Fräsgeschwindigkeit ändern. 3. Replace chuck or collet / Chuck oder Collet auswechseln. 4. Reduce projection amount / Projektionsgröße reduzieren. 5. Use 2 flute cutter for rough cutting and 4 flute for finishing 2 Schneiden Fräser zum Schruppen und 4 für Finishing einsetzen. 6. Down cut → Up cut / Down cut → Up cut

Comparison Chart Scale for Hardness
Vergleichstabelle für Härteskalen

Rockwell Hardness C Scale 150kg Brale (HRc)	Diamond Pyramid Hardness Number. Vickers (HV)	Brinell Hardness Standard 10mm Ball 29.42kN (HB)	Rockwell Hardness A Scale 60kg Brale (HRA)	Shore Scleroscope Hardness Number (HS)	Approx. Tensile Strength N/mm²
68	940	-	85.6	97	-
67	900	-	85.5	95	-
66	865	-	84.5	92	-
65	832	-	83.9	91	-
64	800	-	83.4	88	-
63	772	-	82.8	87	-
62	746	-	82.3	85	-
61	720	-	81.8	83	-
60	697	-	81.2	81	-
59	674	-	80.7	80	-
58	653	-	80.1	78	-
57	633	-	79.6	76	-
56	613	-	79.0	75	-
55	595	-	78.5	74	2079
54	577	-	78.0	72	2010
53	560	-	77.4	71	1952
52	544	500	76.8	69	1883
51	528	487	76.3	68	1824
50	513	475	75.9	67	1755
49	498	464	75.2	66	1687
48	484	451	74.7	64	1639
47	471	442	74.1	63	1578
46	458	432	73.6	62	1530
45	446	421	73.1	60	1481
44	434	409	72.5	58	1432
43	423	400	72.0	57	1383
42	412	390	71.5	56	1334
41	402	381	70.9	55	1294
40	392	371	70.4	54	1245
39	382	362	69.9	52	1216
38	372	353	69.4	51	1177
37	363	344	68.9	50	1157
36	354	336	68.4	49	1118
35	345	327	67.9	48	1079
34	336	319	67.4	47	1059
33	327	311	66.8	46	1030
32	318	301	66.3	44	1000
31	310	294	65.8	43	981
30	302	286	65.3	42	952
29	294	279	64.7	41	932
28	285	271	64.3	41	912
27	279	264	63.8	40	883
26	272	258	63.3	38	863
25	266	253	62.8	38	843
24	260	247	62.4	37	824
23	254	243	62.0	36	804
22	248	237	61.5	35	785
21	243	231	61.0	35	775
20	238	226	60.5	34	755
(18)	230	219	-	33	736
(16)	222	212	-	32	706
(14)	213	203	-	31	677
(12)	204	194	-	29	647
(10)	196	187	-	28	618
(8)	188	179	-	27	598
(6)	180	171	-	26	579
(4)	173	165	-	25	549
(2)	166	158	-	24	530
(0)	160	152	-	24	520

OTHER TOOLS

CARBIDE & HSS REAMERS

HSS COUNTERSINKS

HSS-E COUNTERBORES

CARBIDE ROTARY BURRS

330mm(LENGTH) GROUND CARBIDE BARS

YG-1 CO., LTD.

Contents

OTHER TOOLS

REAMERS

COUNTERSINKS

COUNTERBORES

ROTARY BURRS

GROUND CARBIDE BARS

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Contents / OTHER TOOLS

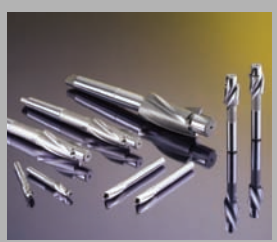
CARBIDE & HSS REAMERS
Carbide NC Machine Reamers HSS Hand Reamers HSS-E Chucking Reamers
REAMERS

HSS COUNTERSINKS
Deburring, Chamfering, Countersinking (HSS & HSS-E & 8% Cobalt)
COUNTER SINKS

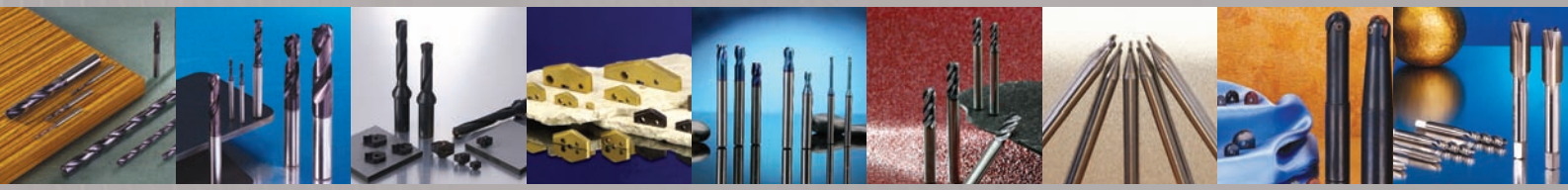
HSS-E COUNTERBORES
For General Purpose
COUNTER BORES

CARBIDE ROTARY BURRS
For General Steels and Non-ferrous Metals etc. (3mm & 6mm Shank Diameter)
ROTARY BURRS

330mm(LENGTH) GROUND CARBIDE BARS
h6(Diameter Tolerance), +6.0mm(Length Tolerance)
GROUND CARBIDE BARS



Global Cutting Tool Leader **YG-1**



CARBIDE / HSS

Being the best through innovation

REAMERS
REIBAHLEN

- Carbide NC Machine Reamers, HSS Hand Reamers, HSS-E Chucking Reamers
- VHM, NC-maschinenreibahlen, HSS Handreibahlen, HSS-E Maschinenreibahlen

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
CARBIDE					
K4101		CARBIDE, NC MACHINE REAMERS - STRAIGHT FLUTES VHM, NC-MASCHINENREIBAHLEN - GERADEGENUTET	D2.0	D20.0	1311
K4111		CARBIDE, NC MACHINE REAMERS - LH SPIRAL FLUTES VHM, NC-MASCHINENREIBAHLEN - SPIRALGENUTET mit LINKSDRALL	D2.0	D20.0	1312
HSS					
K1143		HSS, HAND REAMERS - STRAIGHT FLUTES HSS, HANDREIBAHLEN - GERADEGENUTET	D2.0	D60.0	1313
K1153		HSS, HAND REAMERS - LH SPIRAL FLUTES HSS, HANDREIBAHLEN - SPIRALGENUTET mit LINKSDRALL	D2.0	D60.0	1315
K2101		HSS-E, STRAIGHT SHANK CHUCKING REAMERS - STRAIGHT FLUTES HSS-E, MASCHINENREIBAHLE mit ZYLINDERSCHAFT - GERADEGENUTET	D2.0	D20.0	1317
K2111		HSS-E, STRAIGHT SHANK CHUCKING REAMERS - LH SPIRAL FLUTES HSS-E, MASCHINENREIBAHLE mit ZYLINDERSCHAFT - SPIRALGENUTET mit LINKSDRALL	D2.0	D20.0	1318
K2121		HSS-E, STRAIGHT SHANK CHUCKING REAMERS - LH SPIRAL FLUTES(QUICK SPIRAL) HSS-E, MASCHINEN - SCHÄLREIBAHLE mit ZYLINDERSCHAFT - SPIRALGENUTET mit LINKSDRAL	D4.0	D20.0	1319
K2102		HSS-E, MORSE TAPER SHANK CHUCKING REAMERS - STRAIGHT FLUTES HSS-E, MASCHINENREIBAHLE mit MK - GERADEGENUTET	D10.0	D50.0	1320
K2112		HSS-E, MORSE TAPER SHANK CHUCKING REAMERS - LH SPIRAL FLUTES HSS-E, MASCHINENREIBAHLE mit MK - SPIRALGENUTET mit LINKSDRALL	D10.0	D50.0	1321
K21B1		HSS-E, NC MACHINE REAMERS WITH WHOLE-NUMBER SHANK Ø HSS-E, NC-MASCHINENREIBAHLEN mit GERADZAHLIGEN SCHAFT Ø	D2.0	D20.0	1322
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			1326

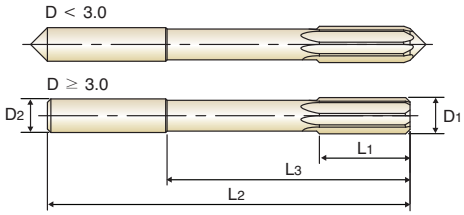
REAMERS

K4101 SERIES

CARBIDE, NC MACHINE REAMERS - STRAIGHT FLUTES
VHM, NC-MASCHINENREIBAHLEN - GERADEGENUTET

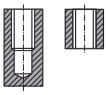
- Material - Up to Ø12.0 : Solid Carbide
  - Over Ø12.0 : Carbide Head Brazed
- Straight Flutes, Right Hand Cut
- Unequal Flute Spacing
- O.D. Tolerances : DIN 1420 for H7
- Shank : DIN 6535-HA
- Chamfer Angle - D < 3.0 : 15°
  - D ≥ 3.0 : 45°

- Material - bis Ø12,0 : VHM
  - über Ø12,0 : gelötete VHM-Köpfe
- geradegenutet, rechtsschneidend
- Ungleichteilung
- Ø Toleranzen : DIN 1420 für H7
- Schaft : DIN 6535-HA
- Anschnittwinkel - bis Ø3,75 : 15°
  - über Ø3,75 : 45°



MG | H7 | 15° (D<3.0) | 45° (D≥3.0) | P.1326

Hole type



Unit : mm

EDP No.	Nominal SIZE D1	Shank Diameter D2	Cutting Length L1	Neck Length L3	Overall Length L2	No.of Flutes
K410100200	2.0	4	11	20	50	4
K410100250	2.5	4	14	26	57	4
K410100300	3.0	4	15	31	61	6
K410100350	3.5	4	18	36	70	6
K410100400	4.0	4	19	42	75	6
K410100450	4.5	6	21	46	80	6
K410100500	5.0	6	23	51	86	6
K410100550	5.5	6	26	56	93	6
K410100600	6.0	6	26	56	93	6
K410100650	6.5	8	28	62	101	6
K410100700	7.0	8	31	68	109	6
K410100750	7.5	8	31	68	109	6
K410100800	8.0	8	33	74	117	6
K410100850	8.5	10	33	74	117	6
K410100900	9.0	10	36	80	125	6
K410100950	9.5	10	36	80	125	6
K410101000	10.0	10	38	86	133	6
K410101050	10.5	12	38	86	133	6
K410101100	11.0	12	41	95	142	6
K410101200	12.0	12	44	104	151	6
K410101300	13.0	16	44	104	151	6
K410101400	14.0	16	47	108	160	8
K410101500	15.0	16	50	110	162	8
K410101600	16.0	16	52	118	170	8
K410101700	17.0	20	54	121	175	8
K410101800	18.0	20	56	128	182	8
K410101900	19.0	20	58	129	189	8
K410102000	20.0	20	60	135	195	8

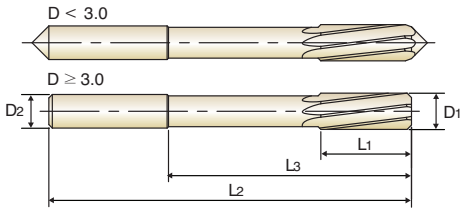
REAMERS

K4111 SERIES

CARBIDE, NC MACHINE REAMERS - LH SPIRAL FLUTES
VHM, NC-MASCHINENREIBAHLEN - SPIRALGENUTET mit LINKSDRALL

- Material - Up to Ø12.0 : Solid Carbide
  - Over Ø12.0 : Carbide Head Brazed
- Left Spiral Flutes, Right Hand Cut
- Unequal Flute Spacing
- O.D. Tolerances : DIN 1420 for H7
- Shank : DIN 6535-HA
- Chamfer Angle - D < 3.0 : 15°
  - D ≥ 3.0 : 45°

- Material - bis Ø12,0 : VHM
  - über Ø12,0 : gelötete VHM-Köpfe
- linksspiralig, rechtsschneidend
- Ungleichteilung
- Ø Toleranzen : DIN 1420 für H7
- Schaft : DIN 6535-HA
- Anschnittwinkel - bis Ø3,75 : 15°
  - über Ø3,75 : 45°



MG | H7 | LH7° | 15° (D<3.0) | 45° (D≥3.0)

P.1326

Hole type

Unit : mm

EDP No.	Nominal SIZE D1	Shank Diameter D2	Cutting Length L1	Neck Length L3	Overall Length L2	No.of Flutes
K411100200	2.0	4	11	20	50	4
K411100250	2.5	4	14	26	57	4
K411100300	3.0	4	15	31	61	6
K411100350	3.5	4	18	36	70	6
K411100400	4.0	4	19	42	75	6
K411100450	4.5	6	21	46	80	6
K411100500	5.0	6	23	51	86	6
K411100550	5.5	6	26	56	93	6
K411100600	6.0	6	26	56	93	6
K411100650	6.5	8	28	62	101	6
K411100700	7.0	8	31	68	109	6
K411100750	7.5	8	31	68	109	6
K411100800	8.0	8	33	74	117	6
K411100850	8.5	10	33	74	117	6
K411100900	9.0	10	36	80	125	6
K411100950	9.5	10	36	80	125	6
K411101000	10.0	10	38	86	133	6
K411101050	10.5	12	38	86	133	6
K411101100	11.0	12	41	95	142	6
K411101200	12.0	12	44	104	151	6
K411101300	13.0	16	44	104	151	6
K411101400	14.0	16	47	108	160	8
K411101500	15.0	16	50	110	162	8
K411101600	16.0	16	52	118	170	8
K411101700	17.0	20	54	121	175	8
K411101800	18.0	20	56	128	182	8
K411101900	19.0	20	58	129	189	8
K411102000	20.0	20	60	135	195	8

REAMERS

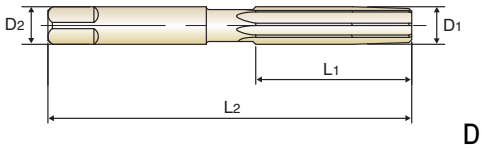
K1143 SERIES

HSS, HAND REAMERS - STRAIGHT FLUTES
HSS, HANDREIBAHLEN - GERADEGENUTET

- ▶ O.D. Tolerances : DIN 1420 for H7
- ▶ Shank Diameter ≒ Nominal Reamer Diameter
- ▶ Straight Flutes / Right Hand Cut
- ▶ Chamfer Angle - tapered
- ▶ Type of center - Up to Ø3.75 : external centers
  - Over Ø3.75 : internal centers

- ▶ Schneiden-Ø Toleranzen : DIN 1420 für H7
- ▶ Schaft-Ø = Nomineller Reibahlen-Ø
- ▶ Geradegenutet / Rechtsschneiden†
- ▶ Anschnittwinkel - Konisch
- ▶ Zentrierungsart - bis Ø3,75 mm : Zentrierungszapfen
  - über Ø3,75 mm : Zentrierung

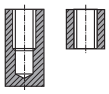
DIN 206-A



$D_1 = D_2$

HSS | DIN 206 | H7

Hole type



Unit : mm

EDP No.	Nominal SIZE D	Flute Length L1	Overall Length L2	No.of Flutes
K114300200	2.0	25	50	4
K114300220	2.2	27	54	4
K114300250	2.5	29	58	4
K114300280	2.8	31	62	4
K114300300	3.0	31	62	6
K114300320	3.2	33	66	6
K114300350	3.5	35	71	6
K114300400	4.0	38	76	6
K114300450	4.5	41	81	6
K114300500	5.0	44	87	6
K114300550	5.5	47	93	6
K114300600	6.0	47	93	6
K114300700	7.0	54	107	6
K114300800	8.0	58	115	6
K114300900	9.0	62	124	6
K114301000	10.0	66	133	6
K114301100	11.0	71	142	6
K114301200	12.0	76	152	6
K114301300	13.0	76	152	6
K114301400	14.0	81	163	8
K114301500	15.0	81	163	8
K114301600	16.0	87	175	8
K114301700	17.0	87	175	8
K114301800	18.0	93	188	8
K114301900	19.0	93	188	8
K114302000	20.0	100	201	8
K114302200	22.0	107	215	8
K114302400	24.0	115	231	8

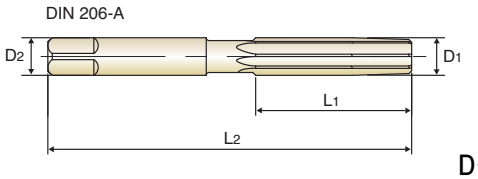
REAMERS

K1143 SERIES

HSS, HAND REAMERS - STRAIGHT FLUTES
HSS, HANDREIBAHLEN - GERADEGENUTET

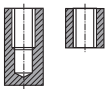
- O.D. Tolerances : DIN 1420 for H7
- Shank Diameter ≒ Nominal Reamer Diameter
- Straight Flutes / Right Hand Cut
- Chamfer Angle - tapered
- Type of center - Up to Ø3.75 : external centers
  - Over Ø3.75 : internal centers

- Schneiden-Ø Toleranzen : DIN 1420 für H7
- Schaft-Ø = Nomineller Reibahlen-Ø
- Geradegenutet / Rechtsschneiden†
- Anschnittwinkel - Konisch
- Zentrierungsart - bis Ø3,75 mm : Zentrierungszapfen
  - über Ø3,75 mm : Zentrierung



$D_1=D_2$

HSS | DIN 206 | H7

Hole type 

Unit : mm

EDP No.	Nominal SIZE D	Flute Length L1	Overall Length L2	No.of Flutes
K114302500	25.0	115	231	8
K114302600	26.0	115	231	8
K114302700	27.0	124	247	10
K114302800	28.0	124	247	10
K114302900	29.0	124	247	10
K114303000	30.0	124	247	10
K114303100	31.0	133	265	10
K114303200	32.0	133	265	10
K114303300	33.0	133	265	10
K114303400	34.0	142	284	10
K114303500	35.0	142	284	10
K114303600	36.0	142	284	10
K114303700	37.0	142	284	10
K114303800	38.0	152	305	10
K114303810	38.1	152	305	10
K114303900	39.0	152	305	10
K114304000	40.0	152	305	10
K114304100	41.0	152	305	12
K114304200	42.0	152	305	12
K114304300	43.0	163	326	12
K114304400	44.0	163	326	12
K114304500	45.0	163	326	12
K114304600	46.0	163	326	12
K114304700	47.0	163	326	12
K114304800	48.0	174	347	12
K114304900	49.0	174	347	12
K114305200	52.0	174	347	12
K114306000	60.0	184	367	12

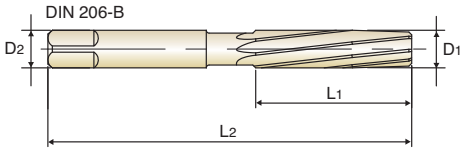
REAMERS

K1153 SERIES

HSS, HAND REAMERS - LH SPIRAL FLUTES
HSS, HANDREIBAHLEN - SPIRALGENUTET mit LINKSDRALL

- ▶O.D. Tolerances : DIN 1420, H7
- ▶Shank Diameter ≒ Nominal Reamer Diameter
- ▶LH Spiral Flutes / Right Hand Cut
- ▶Chamfer Angle - tapered
- ▶Type of center - Up to Ø3.75 : external centers
  - Over Ø3.75 : internal centers

- ▶ Schneiden-Ø Toleranzen : DIN 1420 für H7
- ▶ Schaft-Ø = Nomineller Reibahlen-Ø
- ▶ Spiralgenutet mit Linksdrall / Rechtsschneiden†
- ▶ Anschnittwinkel - Konisch
- ▶ Zentrierungsart - bis Ø3,75 mm : Zentrierungszapfen
  - über Ø3,75 mm : Zentrierung



$D_1=D_2$

HSS | DIN 206 | H7 | LH7°

Hole type

Unit : mm

EDP No.	Nominal SIZE D	Flute Length L1	Overall Length L2	No.of Flutes
K115300200	2.0	25	50	4
K115300220	2.2	27	54	4
K115300250	2.5	29	58	4
K115300280	2.8	31	62	4
K115300300	3.0	31	62	6
K115300320	3.2	33	66	6
K115300350	3.5	35	71	6
K115300400	4.0	38	76	6
K115300450	4.5	41	81	6
K115300500	5.0	44	87	6
K115300550	5.5	47	93	6
K115300600	6.0	47	93	6
K115300700	7.0	54	107	6
K115300800	8.0	58	115	6
K115300900	9.0	62	124	6
K115301000	10.0	66	133	6
K115301100	11.0	71	142	6
K115301200	12.0	76	152	6
K115301300	13.0	76	152	6
K115301400	14.0	81	163	8
K115301500	15.0	81	163	8
K115301600	16.0	87	175	8
K115301700	17.0	87	175	8
K115301800	18.0	93	188	8
K115301900	19.0	93	188	8
K115302000	20.0	100	201	8
K115302200	22.0	107	215	8
K115302400	24.0	115	231	8

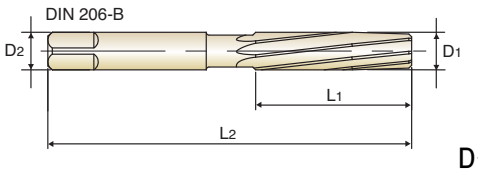
REAMERS

K1153 SERIES

HSS, HAND REAMERS - LH SPIRAL FLUTES
HSS, HANDREIBAHLEN - SPIRALGENUTET mit LINKSDRALL

- O.D. Tolerances : DIN 1420, H7
- Shank Diameter ≒ Nominal Reamer Diameter
- LH Spiral Flutes / Right Hand Cut
- Chamfer Angle - tapered
- Type of center - Up to Ø3.75 : external centers
  - Over Ø3.75 : internal centers

- Schneiden-Ø Toleranzen : DIN 1420 für H7
- Schaft-Ø = Nomineller Reibahlen-Ø
- Geradegenutet / Rechtsschneiden†
- Anschnittwinkel - Konisch
- Zentrierungsart - bis Ø3,75 mm : Zentrierungszapfen
  - über Ø3,75 mm : Zentrierung



$D_1=D_2$

HSS | DIN 206 | H7 | LH7°

Hole type

Unit : mm

EDP No.	Nominal SIZE D	Flute Length L1	Overall Length L2	No.of Flutes
K115302500	25.0	115	231	8
K115302600	26.0	115	231	8
K115302700	27.0	124	247	10
K115302800	28.0	124	247	10
K115302900	29.0	124	247	10
K115303000	30.0	124	247	10
K115303100	31.0	133	265	10
K115303200	32.0	133	265	10
K115303300	33.0	133	265	10
K115303400	34.0	142	284	10
K115303500	35.0	142	284	10
K115303600	36.0	142	284	10
K115303700	37.0	142	284	10
K115303800	38.0	152	305	10
K115303810	38.1	152	305	10
K115303900	39.0	152	305	10
K115304000	40.0	152	305	10
K115304100	41.0	152	305	12
K115304200	42.0	152	305	12
K115304300	43.0	163	326	12
K115304400	44.0	163	326	12
K115304500	45.0	163	326	12
K115304600	46.0	163	326	12
K115304700	47.0	163	326	12
K115304800	48.0	174	347	12
K115304900	49.0	174	347	12
K115305200	52.0	174	347	12
K115306000	60.0	184	367	12

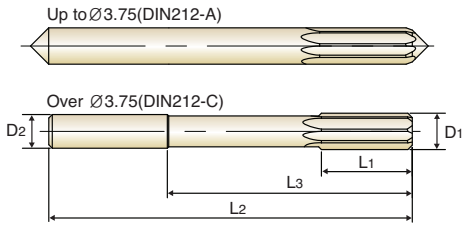
REAMERS

K2101 SERIES

HSS-E, STRAIGHT SHANK CHUCKING REAMERS - STRAIGHT FLUTES
HSS-E, MASCHINENREIBAHLE mit ZYLINDERSCHAFT - GERADEGENUTET

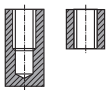
- ▶O.D. Tolerances : DIN 1420 for H7
- ▶Shank Diameter Tolerances : h8
- ▶Straight Flute / Right Hand Cut
- ▶Chamfer Angle - Up to Ø3.75 : 15°
  - Over Ø3.75 : 45°

- ▶ Schneiden-Ø Toleranzen : DIN 1420 für H7
- ▶ Schaft-Ø Toleranzen : h8
- ▶ Geradegenutet / Rechtsschneiden†
- ▶ Anschnittwinkel - bis Ø3,75 mm : 15°
  - über Ø3,75 mm : 45°



HSS-E | DIN 212 | H7 | 15° (up to Ø3.75) | 45° (over Ø3.75) | 1327

Hole type



Unit : mm

EDP No.	Nominal SIZE D1	Shank Diameter D2	Cutting Length L1	Neck Length L3	Overall Length L2	No.of Flutes
K210100200	2.0	2	11	-	49	4
K210100220	2.2	2.2	12	-	53	4
K210100250	2.5	2.5	14	-	57	4
K210100260	2.6	2.6	14	-	57	4
K210100280	2.8	2.8	15	-	61	4
K210100300	3.0	3	15	-	61	6
K210100310	3.1	3.1	16	-	65	6
K210100320	3.2	3.2	16	-	65	6
K210100350	3.5	3.5	18	-	70	6
K210100360	3.6	3.6	18	-	70	6
K210100370	3.7	3.7	18	-	70	6
K210100400	4.0	4	19	42	75	6
K210100430	4.3	4.5	21	46	80	6
K210100450	4.5	4.5	21	46	80	6
K210100460	4.6	4.5	21	46	80	6
K210100500	5.0	5	23	51	86	6
K210100550	5.5	5.6	26	56	93	6
K210100560	5.6	5.6	26	56	93	6
K210100600	6.0	5.6	26	56	93	6
K210100650	6.5	6.3	28	62	101	6
K210100700	7.0	7.1	31	68	109	6
K210100720	7.2	7.1	31	68	109	6
K210100800	8.0	8	33	74	117	6
K210100830	8.3	8	33	74	117	6
K210100850	8.5	8	33	74	117	6
K210100900	9.0	9	36	80	125	6
K210100950	9.5	9	36	80	125	6
K210101000	10.0	10	38	86	133	6
K210101050	10.5	10	38	86	133	6
K210101100	11.0	10	41	95	142	6
K210101200	12.0	10	44	104	151	6
K210101300	13.0	10	44	104	151	6
K210101400	14.0	12.5	47	108	160	8
K210101500	15.0	12.5	50	110	162	8
K210101600	16.0	12.5	52	118	170	8
K210101700	17.0	14	54	121	175	8
K210101800	18.0	14	56	128	182	8
K210101900	19.0	16	58	129	189	8
K210102000	20.0	16	60	135	195	8

YG REAMERS

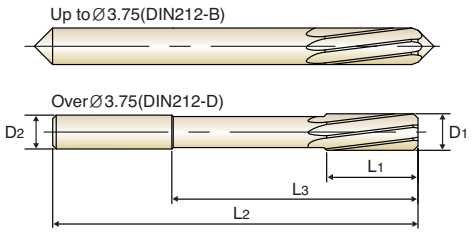
K2111 SERIES

HSS-E, STRAIGHT SHANK CHUCKING REAMERS - LH SPIRAL FLUTES

HSS-E, MASCHINENREIBAHLE mit ZYLINDERSCHAFT - SPIRALGENUTET mit LINKSDRALL

- O.D. Tolerances : DIN 1420 for H7
- Shank Diameter Tolerances : h8
- LH Spiral Flutes / Right Hand Cut
- Chamfer Angle - Up to Ø3.75 : 15°
  - Over Ø3.75 : 45°

- Schneiden-Ø Toleranzen : DIN 1420 für H7
- Schaft-Ø Toleranzen : h8
- Spiralgenutet mit Linksdrall / Rechtsschneiden†
- Anschnittwinkel - bis Ø3,75 mm : 15°
  - über Ø3,75 mm : 45°



HSS-E | DIN 212 | H7 | LH7° | 15° (up to Ø3.75) | 45° (over Ø3.75) | 1327

Hole type

Unit : mm

EDP No.	Nominal SIZE D1	Shank Diameter D2	Cutting Length L1	Neck Length L3	Overall Length L2	No.of Flutes
K211100200	2.0	2	11	-	49	4
K211100220	2.2	2.2	12	-	53	4
K211100250	2.5	2.5	14	-	57	4
K211100260	2.6	2.6	14	-	57	4
K211100280	2.8	2.8	15	-	61	4
K211100300	3.0	3	15	-	61	6
K211100310	3.1	3.1	16	-	65	6
K211100320	3.2	3.2	16	-	65	6
K211100350	3.5	3.5	18	-	70	6
K211100360	3.6	3.6	18	-	70	6
K211100370	3.7	3.7	18	-	70	6
K211100400	4.0	4	19	42	75	6
K211100430	4.3	4.5	21	46	80	6
K211100450	4.5	4.5	21	46	80	6
K211100460	4.6	4.5	21	46	80	6
K211100500	5.0	5	23	51	86	6
K211100550	5.5	5.6	26	56	93	6
K211100560	5.6	5.6	26	56	93	6
K211100600	6.0	5.6	26	56	93	6
K211100650	6.5	6.3	28	62	101	6
K211100700	7.0	7.1	31	68	109	6
K211100720	7.2	7.1	31	68	109	6
K211100800	8.0	8	33	74	117	6
K211100830	8.3	8	33	74	117	6
K211100850	8.5	8	33	74	117	6
K211100900	9.0	9	36	80	125	6
K211100950	9.5	9	36	80	125	6
K211101000	10.0	10	38	86	133	6
K211101050	10.5	10	38	86	133	6
K211101100	11.0	10	41	95	142	6
K211101200	12.0	10	44	104	151	6
K211101300	13.0	10	44	104	151	6
K211101400	14.0	12.5	47	108	160	8
K211101500	15.0	12.5	50	110	162	8
K211101600	16.0	12.5	52	118	170	8
K211101700	17.0	14	54	121	175	8
K211101800	18.0	14	56	128	182	8
K211101900	19.0	16	58	129	189	8
K211102000	20.0	16	60	135	195	8

REAMERS

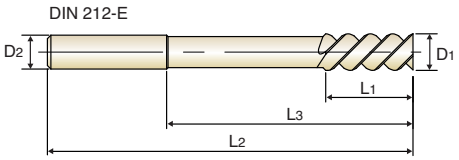
K2121 SERIES

HSS-E, STRAIGHT SHANK CHUCKING REAMERS - LH SPIRAL FLUTES(QUICK SPIRAL)

HSS-E, MASCHINEN - SCHÄLREIBAHLE mit ZYLINDERSCHAFT - SPIRALGENUTET mit LINKSDRAL

- ▶O.D. Tolerances : DIN 1420 for H7
- ▶Shank Diameter Tolerances : h8
- ▶Chamfer Angle - tapered
- ▶LH High Spiral Flutes / Right Hand Cut

- ▶ Schneiden-Ø Toleranzen : DIN 1420 für H7
- ▶ Schaft-Ø Toleranzen : h8
- ▶ Anschnittwinkel - Konisch
- ▶ Spiralgenutet mit Linksdrall / Rechtsschneiden†



HSS-E | DIN 212 | H7 | LH45° | FORM E | 1327

Hole type

Unit : mm

Unit : mm

EDP No.	Nominal SIZE D1	Shank Diameter D2	Cutting Length L1	Neck Length L3	Overall Length L2	No.of Flutes
K212100400	4.0	4	19	42	75	3
K212100450	4.5	4.5	21	46	80	3
K212100500	5.0	5	23	51	86	3
K212100550	5.5	5.6	26	56	93	3
K212100600	6.0	5.6	26	56	93	3
K212100650	6.5	6.3	28	62	101	3
K212100700	7.0	7.1	31	68	109	3
K212100800	8.0	8	33	74	117	3
K212100850	8.5	8	33	74	117	3
K212100900	9.0	9	36	80	125	3
K212100950	9.5	9	36	80	125	3
K212101000	10.0	10	38	86	133	3
K212101100	11.0	10	41	95	142	3
K212101200	12.0	10	44	104	151	3
K212101300	13.0	10	44	104	151	3
K212101400	14.0	12.5	47	108	160	4
K212101500	15.0	12.5	50	110	162	4
K212101600	16.0	12.5	52	118	170	4
K212101700	17.0	14	54	121	175	4
K212101800	18.0	14	56	128	182	4
K212101900	19.0	16	58	129	189	4
K212102000	20.0	16	60	135	195	4

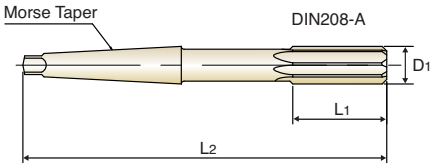
REAMERS

K2102 SERIES

HSS-E, MORSE TAPER SHANK CHUCKING REAMERS - STRAIGHT FLUTES
HSS-E, MASCHINENREIBAHLE mit MK - GERADEGENUTET

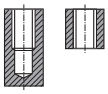
- O.D. Tolerances : DIN 1420 for H7
- Straight Flute / Right Hand Cut
- Chamfer Angle : 45°

- Schneiden-Ø Toleranzen : DIN 1420 für H7
- Geradegenutet / Rechtsschneiden†
- Anschnittwinkel : 45°



HSS-E | DIN 208 | H7 | 45° | 1327

Hole type



Unit : mm

EDP No.	Nominal SIZE D1	No. of Morse Taper	Cutting Length L1	Overall Length L2	No.of Flutes
K210201000	10.0	1	38	168	6
K210201100	11.0	1	41	175	6
K210201200	12.0	1	44	182	6
K210201300	13.0	1	44	182	6
K210201400	14.0	1	47	189	8
K210201500	15.0	2	50	204	8
K210201600	16.0	2	52	210	8
K210201700	17.0	2	54	214	8
K210201800	18.0	2	56	219	8
K210201900	19.0	2	58	223	8
K210202000	20.0	2	60	228	8
K210202100	21.0	2	62	232	8
K210202200	22.0	2	64	237	8
K210202300	23.0	2	66	241	8
K210202400	24.0	3	68	268	8
K210202500	25.0	3	68	268	8
K210202600	26.0	3	70	273	8
K210202700	27.0	3	71	277	10
K210202800	28.0	3	71	277	10
K210202900	29.0	3	73	281	10
K210203000	30.0	3	73	281	10
K210203100	31.0	3	75	285	10
K210203200	32.0	4	77	317	10
K210203400	34.0	4	78	321	10
K210203500	35.0	4	78	321	10
K210203600	36.0	4	79	325	10
K210203800	38.0	4	81	329	10
K210204000	40.0	4	81	329	10
K210204100	41.0	4	82	333	12
K210204200	42.0	4	82	333	12
K210204300	43.0	4	83	336	12
K210204400	44.0	4	83	336	12
K210204500	45.0	4	83	336	12
K210204600	46.0	4	84	340	12
K210204700	47.0	4	84	340	12
K210204800	48.0	4	86	344	12
K210205000	50.0	4	86	344	12

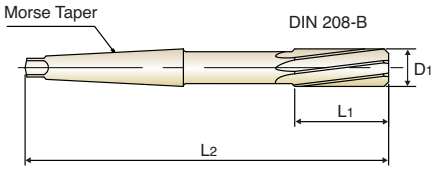
REAMERS

K2112 SERIES

HSS-E, MORSE TAPER SHANK CHUCKING REAMERS - LH SPIRAL FLUTES
HSS-E, MASCHINENREIBAHLE mit MK - SPIRALGENUTET mit LINKSDRALL

- O.D. Tolerances : DIN 1420 for H7
- LH Spiral Flutes / Right Hand Cut
- Chamfer Angle : 45°

- Schneiden-Ø Toleranzen : DIN 1420 für H7
- Spiralgenutet mit Linksdrall / Rechtsschneiden†
- Anschnittwinkel : 45°



HSS-E | DIN 208 | H7 | LH7° | 45° | 1327

Hole type

Unit : mm

EDP No.	Nominal SIZE D1	No. of Morse Taper	Cutting Length L1	Overall Length L2	No.of Flutes
K211201000	10.0	1	38	168	6
K211201100	11.0	1	41	175	6
K211201200	12.0	1	44	182	6
K211201300	13.0	1	44	182	6
K211201400	14.0	1	47	189	8
K211201500	15.0	2	50	204	8
K211201600	16.0	2	52	210	8
K211201700	17.0	2	54	214	8
K211201800	18.0	2	56	219	8
K211201900	19.0	2	58	223	8
K211202000	20.0	2	60	228	8
K211202100	21.0	2	62	232	8
K211202200	22.0	2	64	237	8
K211202300	23.0	2	66	241	8
K211202400	24.0	3	68	268	8
K211202500	25.0	3	68	268	8
K211202600	26.0	3	70	273	8
K211202700	27.0	3	71	277	10
K211202800	28.0	3	71	277	10
K211202900	29.0	3	73	281	10
K211203000	30.0	3	73	281	10
K211203100	31.0	3	75	285	10
K211203200	32.0	4	77	317	10
K211203400	34.0	4	78	321	10
K211203500	35.0	4	78	321	10
K211203600	36.0	4	79	325	10
K211203800	38.0	4	81	329	10
K211204000	40.0	4	81	329	10
K211204100	41.0	4	82	333	12
K211204200	42.0	4	82	333	12
K211204300	43.0	4	83	336	12
K211204400	44.0	4	83	336	12
K211204500	45.0	4	83	336	12
K211204600	46.0	4	84	340	12
K211204700	47.0	4	84	340	12
K211204800	48.0	4	86	344	12
K211205000	50.0	4	86	344	12

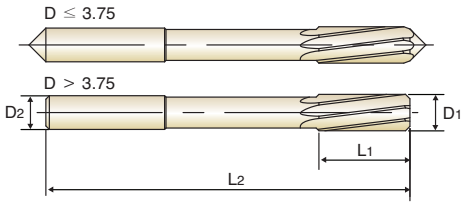
YG REAMERS

K21B1 SERIES

HSS-E, NC MACHINE REAMERS WITH WHOLE-NUMBER SHANK Ø
HSS-E, NC-MASCHINENREIBAHLEN mit GERADZAHLIGEN SCHAFT Ø

- O.D. Tolerances
  Whole-number Ø and 1/10 size : DIN 1420 for H7
  1/100 size : from Ø2.01 to Ø5.03 : +0.004/-0.000mm
  from Ø5.97 to Ø12.03 : +0.005/-0.000mm
- Shank Diameter Tolerances : h6
- LH Spiral Flutes / Right Hand Cut
- Chamfer Angle - Up to Ø3.75 : 15°
  - Over Ø3.75 : 45°

- Ø Toleranzen:
  ganzzahlige Ø und 1/10 Größen : DIN 1420 für H7
  1/100 Größen : ab Ø2,01 bis Ø5,03 : +0.004/-0.000mm
  von Ø5,97 bis Ø12,03 : +0.005/-0.000mm
- Schaft-Durchmesser Toleranzen : h6
- linksspiralig/ rechtsscheidend
- Anschnittwinkel - bis Ø3,75 : 15°
  - über Ø3,75 : 45°



HSS-E | H7 | LH7° | 15° (up to Ø3.75) | 45° (over Ø3.75) | 1327

Hole type

Unit : mm

EDP No.	Nominal SIZE D1	Shank Diameter D2	Flute Length L1	Overall Length L2
K21B100200	2.0	2	11	49
K21B100201	2.01	2	11	49
K21B100202	2.02	2	11	49
K21B100203	2.03	2	11	49
K21B100210	2.1	2	11	49
K21B100220	2.2	3	12	53
K21B100230	2.3	3	12	53
K21B100240	2.4	3	14	57
K21B100247	2.47	3	14	57
K21B100248	2.48	3	14	57
K21B100249	2.49	3	14	57
K21B100250	2.5	3	14	57
K21B100251	2.51	3	14	57
K21B100252	2.52	3	14	57
K21B100253	2.53	3	14	57
K21B100260	2.6	3	14	57
K21B100270	2.7	3	15	61
K21B100280	2.8	3	15	61
K21B100290	2.9	3	15	61
K21B100297	2.97	3	15	61
K21B100298	2.98	3	15	61
K21B100299	2.99	3	15	61
K21B100300	3.0	3	15	61
K21B100301	3.01	4	16	65
K21B100302	3.02	4	16	65
K21B100303	3.03	4	16	65
K21B100310	3.1	4	16	65
K21B100320	3.2	4	16	65
K21B100330	3.3	4	16	65
K21B100340	3.4	4	18	70
K21B100350	3.5	4	18	70
K21B100360	3.6	4	18	70
K21B100370	3.7	4	18	70
K21B100380	3.8	4	19	75
K21B100390	3.9	4	19	75
K21B100397	3.97	4	19	75
K21B100398	3.98	4	19	75

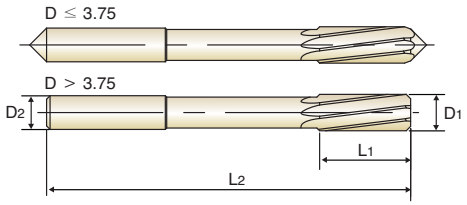
REAMERS

K21B1 SERIES

HSS-E, NC MACHINE REAMERS WITH WHOLE-NUMBER SHANK Ø
HSS-E, NC-MASCHINENREIBAHLEN mit GERADZAHLIGEN SCHAFT Ø

- O.D. Tolerances
  Whole-number Ø and 1/10 size : DIN 1420 for H7
  1/100 size : from Ø2.01 to Ø5.03 : +0.004/-0.000mm
  from Ø5.97 to Ø12.03 : +0.005/-0.000mm
- Shank Diameter Tolerances : h6
- LH Spiral Flutes / Right Hand Cut
- Chamfer Angle - Up to Ø3.75 : 15°
  - Over Ø3.75 : 45°

- Ø Toleranzen:
  ganzzahlige Ø und 1/10 Größen : DIN 1420 für H7
  1/100 Größen : ab Ø2,01 bis Ø5,03 : +0.004/-0.000mm
  von Ø5,97 bis Ø12,03 : +0.005/-0.000mm
- Schaft-Durchmesser Toleranzen : h6
- linksspiralig/ rechtsscheidend
- Anschnittwinkel - bis Ø3,75 : 15°
  - über Ø3,75 : 45°



HSS-E | H7 | LH7° | 15° (up to Ø3.75) | 45° (over Ø3.75) | 1327

Hole type

Unit : mm

EDP No.	Nominal SIZE D1	Shank Diameter D2	Flute Length L1	Overall Length L2
K21B100399	3.99	4	19	75
K21B100400	4.0	4	19	75
K21B100401	4.01	4	19	75
K21B100402	4.02	4	19	75
K21B100403	4.03	4	19	75
K21B100410	4.1	4	19	75
K21B100420	4.2	4	19	75
K21B100430	4.3	5	21	80
K21B100440	4.4	5	21	80
K21B100450	4.5	5	21	80
K21B100460	4.6	5	21	80
K21B100470	4.7	5	21	80
K21B100480	4.8	5	23	86
K21B100490	4.9	5	23	86
K21B100497	4.97	5	23	86
K21B100498	4.98	5	23	86
K21B100499	4.99	5	23	86
K21B100500	5.0	5	23	86
K21B100501	5.01	5	23	86
K21B100502	5.02	5	23	86
K21B100503	5.03	5	23	86
K21B100510	5.1	5	23	86
K21B100520	5.2	5	23	86
K21B100530	5.3	5	23	86
K21B100540	5.4	6	26	93
K21B100550	5.5	6	26	93
K21B100560	5.6	6	26	93
K21B100570	5.7	6	26	93
K21B100580	5.8	6	26	93
K21B100590	5.9	6	26	93
K21B100597	5.97	6	26	93
K21B100598	5.98	6	26	93
K21B100599	5.99	6	26	93
K21B100600	6.0	6	26	93
K21B100601	6.01	6	28	101
K21B100602	6.02	6	28	101
K21B100603	6.03	6	28	101

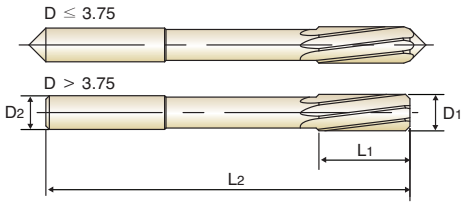
REAMERS

K21B1 SERIES

HSS-E, NC MACHINE REAMERS WITH WHOLE-NUMBER SHANK Ø
HSS-E, NC-MASCHINENREIBAHLEN mit GERADZAHLIGEN SCHAFT Ø

- O.D. Tolerances
  Whole-number Ø and 1/10 size : DIN 1420 for H7
  1/100 size : from Ø2.01 to Ø5.03 : +0.004/-0.000mm
  from Ø5.97 to Ø12.03 : +0.005/-0.000mm
- Shank Diameter Tolerances : h6
- LH Spiral Flutes / Right Hand Cut
- Chamfer Angle - Up to Ø3.75 : 15°
  - Over Ø3.75 : 45°

- Ø Toleranzen:
  ganzzahlige Ø und 1/10 Größen : DIN 1420 für H7
  1/100 Größen : ab Ø2,01 bis Ø5,03 : +0.004/-0.000mm
  von Ø5,97 bis Ø12,03 : +0.005/-0.000mm
- Schaft-Durchmesser Toleranzen : h6
- linksspiralig/ rechtsscheidend
- Anschnittwinkel - bis Ø3,75 : 15°
  - über Ø3,75 : 45°



HSS-E | H7 | LH7° | 15° (up to Ø3.75) | 45° (over Ø3.75) | 1327

Hole type

Unit : mm

EDP No.	Nominal SIZE D1	Shank Diameter D2	Flute Length L1	Overall Length L2
K21B100610	6.1	6	28	101
K21B100620	6.2	6	28	101
K21B100630	6.3	6	28	101
K21B100640	6.4	6	28	101
K21B100650	6.5	6	28	101
K21B100660	6.6	6	28	101
K21B100670	6.7	6	28	101
K21B100680	6.8	8	31	109
K21B100690	6.9	8	31	109
K21B100700	7.0	8	31	109
K21B100710	7.1	8	31	109
K21B100720	7.2	8	31	109
K21B100730	7.3	8	31	109
K21B100740	7.4	8	31	109
K21B100750	7.5	8	31	109
K21B100760	7.6	8	33	117
K21B100770	7.7	8	33	117
K21B100780	7.8	8	33	117
K21B100790	7.9	8	33	117
K21B100797	7.97	8	33	117
K21B100798	7.98	8	33	117
K21B100799	7.99	8	33	117
K21B100800	8.0	8	33	117
K21B100801	8.01	8	33	117
K21B100802	8.02	8	33	117
K21B100803	8.03	8	33	117
K21B100810	8.1	8	33	117
K21B100820	8.2	8	33	117
K21B100830	8.3	8	33	117
K21B100840	8.4	8	33	117
K21B100850	8.5	8	33	117
K21B100860	8.6	10	36	125
K21B100870	8.7	10	36	125
K21B100880	8.8	10	36	125
K21B100890	8.9	10	36	125
K21B100900	9.0	10	36	125

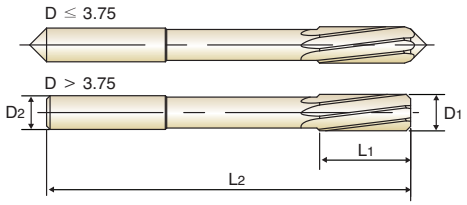
REAMERS

K21B1 SERIES

HSS-E, NC MACHINE REAMERS WITH WHOLE-NUMBER SHANK Ø
HSS-E, NC-MASCHINENREIBAHLEN mit GERADZAHLIGEN SCHAFT Ø

- O.D. Tolerances
  Whole-number Ø and 1/10 size : DIN 1420 for H7
  1/100 size : from Ø2.01 to Ø5.03 : +0.004/-0.000mm
  from Ø5.97 to Ø12.03 : +0.005/-0.000mm
- Shank Diameter Tolerances : h6
- LH Spiral Flutes / Right Hand Cut
- Chamfer Angle - Up to Ø3.75 : 15°
  - Over Ø3.75 : 45°

- Ø Toleranzen:
  ganzzahlige Ø und 1/10 Größen : DIN 1420 für H7
  1/100 Größen : ab Ø2,01 bis Ø5,03 : +0.004/-0.000mm
  von Ø5,97 bis Ø12,03 : +0.005/-0.000mm
- Schaft-Durchmesser Toleranzen : h6
- linksspiralig/ rechtsscheidend
- Anschnittwinkel - bis Ø3,75 : 15°
  - über Ø3,75 : 45°



HSS-E | H7 | LH7° | 15° (up to Ø3.75) | 45° (over Ø3.75) | 1327

Hole type

Unit : mm

EDP No.	Nominal SIZE D1	Shank Diameter D2	Flute Length L1	Overall Length L2
K21B100901	9.01	10	36	125
K21B100902	9.02	10	36	125
K21B100903	9.03	10	36	125
K21B100910	9.1	10	36	125
K21B100920	9.2	10	36	125
K21B100930	9.3	10	36	125
K21B100940	9.4	10	36	125
K21B100950	9.5	10	36	125
K21B100960	9.6	10	38	133
K21B100970	9.7	10	38	133
K21B100980	9.8	10	38	133
K21B100990	9.9	10	38	133
K21B100997	9.97	10	38	133
K21B100998	9.98	10	38	133
K21B100999	9.99	10	38	133
K21B101000	10.0	10	38	133
K21B101001	10.01	10	38	133
K21B101002	10.02	10	38	133
K21B101003	10.03	10	38	133
K21B101100	11.0	10	41	142
K21B101197	11.97	10	41	151
K21B101198	11.98	10	41	151
K21B101199	11.99	10	41	151
K21B101200	12.0	10	44	151
K21B101201	12.01	10	44	151
K21B101202	12.02	10	44	151
K21B101203	12.03	10	44	151
K21B101300	13.0	10	44	151
K21B101400	14.0	14	47	160
K21B101500	15.0	14	50	162
K21B101600	16.0	14	52	170
K21B101700	17.0	14	54	175
K21B101800	18.0	14	56	182
K21B101900	19.0	16	58	189
K21B102000	20.0	16	60	195

REAMERS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

CARBIDE, NC MACHINE REAMER
VHM, NC-MASCHINENREIBAHLEN

Material		Cutting Speed	Feed(mm/rev.)				
		(m/min.)	Up to Ø4	Ø4 ~ Ø8	Ø8 ~ Ø12	Ø12 ~ Ø16	Ø16 ~ Ø20
Structural and Low carbon steel		15~18	0.10~0.12	0.12~0.20	0.20~0.25	0.25~0.30	0.30~0.40
Carbon Steels	< 500N/mm²	15~18	0.10~0.12	0.12~0.20	0.20~0.25	0.25~0.30	0.30~0.40
Alloy Steels	500-1000N/mm²	12~14	0.08~0.10	0.10~0.16	0.16~0.20	0.20~0.25	0.25~0.30
Hardened Steels	~ HRc40	10~12	0.08~0.10	0.10~0.16	0.16~0.20	0.20~0.25	0.25~0.30
Cast Iron	< 200HB	15~20	0.10~0.12	0.12~0.20	0.20~0.25	0.25~0.30	0.30~0.40
	> 200HB	12~15	0.10~0.12	0.12~0.20	0.20~0.25	0.25~0.30	0.30~0.40
Aluminium and Al-alloys		20~30	0.12~0.16	0.16~0.25	0.25~0.30	0.30~0.40	0.40~0.50
Magnesium alloys		20~30	0.10~0.12	0.12~0.20	0.20~0.25	0.25~0.30	0.30~0.40
Copper, Brass		20~25	0.10~0.12	0.12~0.20	0.20~0.25	0.25~0.30	0.30~0.40
Stainless Steels		6~8	0.08~0.10	0.10~0.16	0.16~0.20	0.20~0.25	0.25~0.30
Plastics		15~20	0.12~0.16	0.16~0.25	0.25~0.30	0.30~0.40	0.40~0.50

REAMERS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

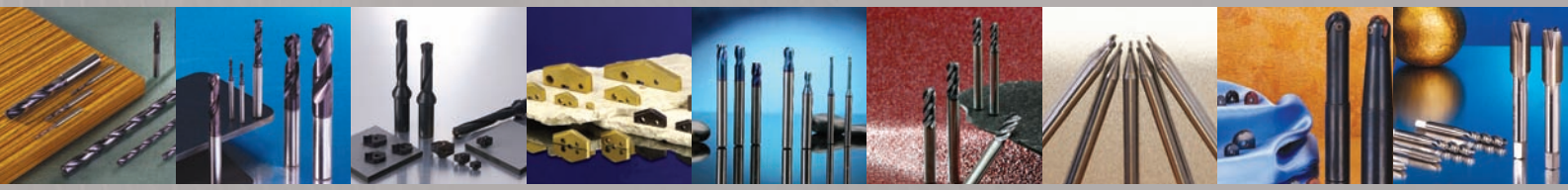
HSS-E, STRAIGHT & LH SPIRAL FLUTE CHUCKING REAMER, NC MACHINE REAMER
HSS-E, GERADEGENUTETE MASCHINENREIBAHLEN, SPIRALGENUTETE MASCHINENREIBAHLEN

Material	Cutting Speed	Feed(mm/rev.)					
	(m/min.)	Ø2 ~ Ø4	Ø4 ~ Ø8	Ø8 ~ Ø13	Ø13 ~ Ø20	Ø20 ~ Ø30	> Ø30
Steels < 500N/mm²	12 ~ 16	0.05~0.15	0.10~0.20	0.15~0.25	0.20~0.30	0.25~0.40	0.35~0.50
Steels 500-700N/mm²	10 ~ 12	0.05~0.15	0.10~0.20	0.15~0.25	0.20~0.30	0.25~0.40	0.35~0.50
Steels 700-800N/mm²	6 ~ 8	0.05~0.10	0.08~0.16	0.10~0.20	0.15~0.25	0.20~0.30	0.30~0.40
Alloy Steel or Carbon Steel castings < 500N/mm²	6 ~ 10	0.05~0.10	0.08~0.16	0.10~0.20	0.15~0.25	0.20~0.30	0.30~0.40
Alloy Steel or Carbon Steel castings > 500N/mm²	4 ~ 6	0.05~0.10	0.08~0.16	0.10~0.20	0.15~0.25	0.20~0.30	0.30~0.40
Alloy Steel or Carbon Steel forgings	4 ~ 6	0.03~0.08	0.06~0.10	0.08~0.15	0.10~0.20	0.15~0.25	0.20~0.30
Cast Iron < 200HB	12 ~ 14	0.05~0.15	0.10~0.20	0.15~0.25	0.20~0.30	0.25~0.40	0.35~0.50
Cast Iron > 200HB	10 ~ 12	0.05~0.10	0.08~0.16	0.10~0.20	0.15~0.25	0.20~0.30	0.30~0.40
Aluminum or Aluminum Alloy	16 ~ 20	0.10~0.20	0.15~0.25	0.20~0.30	0.25~0.40	0.35~0.50	0.40~0.60
Magnesium or Magnesium Alloy	10 ~ 16	0.10~0.20	0.15~0.25	0.20~0.30	0.25~0.40	0.35~0.50	0.40~0.60
Copper, Brass	16 ~ 18	0.10~0.20	0.15~0.25	0.20~0.30	0.25~0.40	0.35~0.50	0.40~0.60
Stainless Steels	4 ~ 6	0.03~0.08	0.06~0.10	0.08~0.15	0.10~0.20	0.15~0.25	0.20~0.30
Plastics	8 ~ 12	0.10~0.20	0.20~0.30	0.30~0.40	0.40~0.50	0.50~0.60	0.60~0.80

HSS-E, CHUCKING REAMER-QUICK SPIRAL
HSS-E, MASCHINEN - SCHÄLREIBAHLEN

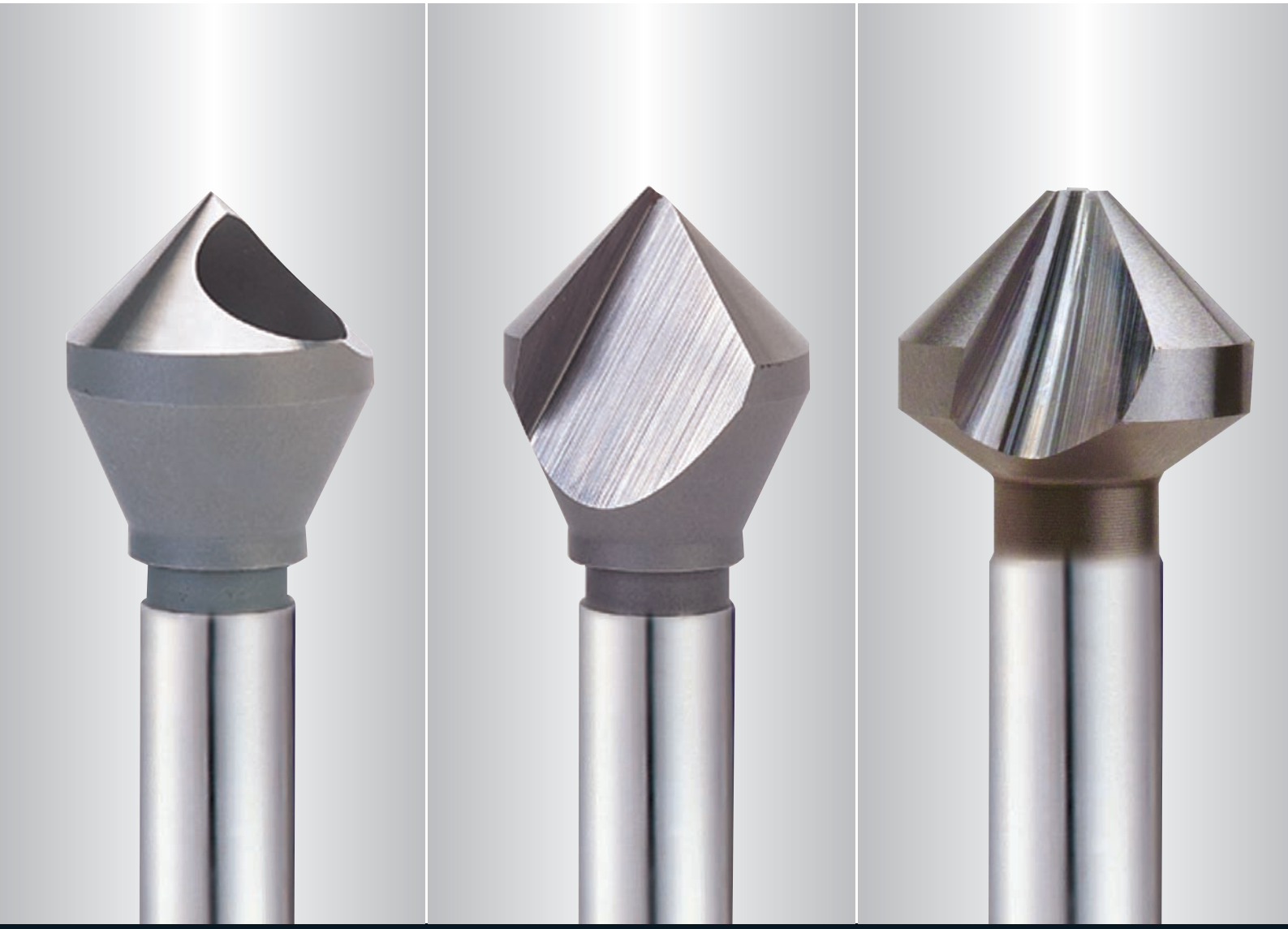
Material	Cutting Speed	Feed(mm/rev.)			
	(m/min.)	Ø2 ~ Ø4	Ø4 ~ Ø8	Ø8 ~ Ø13	Ø13 ~ Ø20
Steels < 500N/mm²	16 ~ 18	0.08~0.16	0.16~0.25	0.20~0.30	0.30~0.40
Steels 500-700N/mm²	14 ~ 16	0.08~0.16	0.16~0.25	0.20~0.30	0.30~0.40
Aluminum or Aluminum Alloy	18 ~ 22	0.10~0.20	0.20~0.30	0.30~0.40	0.40~0.60
Magnesium or Magnesium Alloy	10 ~ 16	0.08~0.16	0.16~0.25	0.20~0.30	0.30~0.40
Copper, Brass	16 ~ 20	0.08~0.16	0.16~0.25	0.20~0.30	0.30~0.40
Plastics	12 ~ 14	0.10~0.20	0.20~0.30	0.30~0.40	0.40~0.60

Global Cutting Tool Leader **YG-1**



HSS

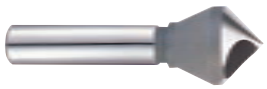
Being the best through innovation



COUNTERSINK
SENKER

- Deburring, Chamfering, Countersinking, HSS & 8% Cobalt
- Entgraten und anfasen. HSS und HSSE-Co8

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
C1109 C3109		HSS, DEBURRING TOOL with HOLE HSS, QUERLOCHSENKER	D10.0	D50.0	1331
C1119 C3119		HSS, SINGLE FLUTE CHAMFERING CUTTERS HSS, EINSCHNEIDEN KEGELSENKER	D10.0	D50.0	1332
C1136 C3136		HSS, THREE FLUTE COUNTERSINKS (60˚) HSS, DREISCHNEIDEN KEGELSENKER (60˚)	D6.3	D25.0	1333
C1139 C3139		HSS, THREE FLUTE COUNTERSINKS (90˚) HSS, DREISCHNEIDEN KEGELSENKER (90˚)	D4.3	D31.0	1334
C1132 C3132		HSS, THREE FLUTE COUNTERSINKS (120˚) HSS, DREISCHNEIDEN KEGELSENKER (120˚)	D8.0	D25.0	1335
		RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDKONDITIONEN			1336

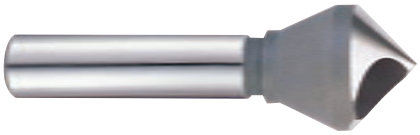
COUNTERSINKS

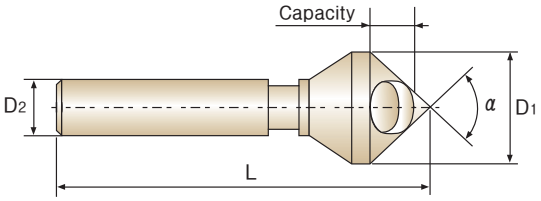
C1109 SERIES
C3109 SERIES

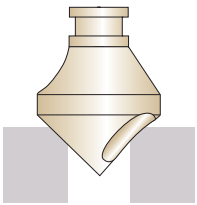
HSS, DEBURRING TOOL with HOLE
HSS, QUERLOCHSENKER

- For light metals and plastics.
- For deburring and small chamfers.
- Best surface finish.
- Works without vibrations.

- Für Leichtmetall und Plastik
- Zum Entgraten und Abfasen
- Bestes Oberflächenfinish
- Arbeitet ohne Vibration







Unit : mm

EDP No. (uncoating)		Angle	Nominal Diameter	Shank Diameter	Overall Length	Capacity
HSSCo8	HSS	α (-1°)	D1	D2	L(±1)	min/max
C1109100	C3109100	90°	10.0	6	45	2 - 5
C1109150	C3109150	90°	15.0	8	55	6 - 14
C1109200	C3109200	90°	20.0	10	65	8 - 18
C1109250	C3109250	90°	25.0	12	78	10 - 23
C1109300	C3109300	90°	30.0	12	88	12 - 28
C1109350	C3109350	90°	35.0	16	110	14 - 33
C1109400	C3109400	90°	40.0	16	115	16 - 38
C1109450	C3109450	90°	45.0	16	120	18 - 43
C1109500	C3109500	90°	50.0	16	130	20 - 48

▷TiN & TiCN coating are available on your request.

Nominal Dia. Tolerance(mm)	Shank Dia. Tolerance(mm)
+0.3	h9

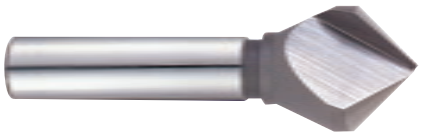
COUNTERSINKS

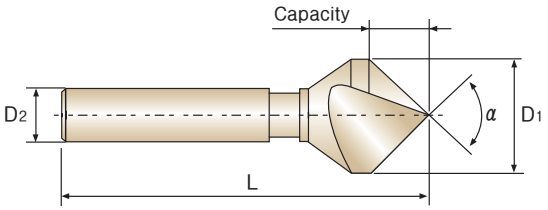
C1119 SERIES
C3119 SERIES

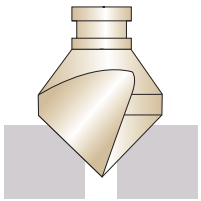
HSS, SINGLE FLUTE CHAMFERING CUTTERS
HSS, EINSCHNEIDEN KEGELSENKER

- For wood and hard plastics.
- Can drill in sheet materials.
- Easy to resharp.
- Works without vibrations.

- Für Holz und Hartplastik
- Kann in Bleche bohren
- Leicht nachzuschärfen
- Arbeitet ohne Vibration







Unit : mm

EDP No. (uncoating)		Angle	Nominal Diameter	Shank Diameter	Overall Length	Capacity
HSSCo8	HSS	α (-1°)	D_1	D_2	L(±1)	min/max
C1119100	C3119100	90°	10.0	6	45	1 - 10
C1119150	C3119150	90°	15.0	8	55	2 - 15
C1119200	C3119200	90°	20.0	10	65	2 - 20
C1119250	C3119250	90°	25.0	12	78	3 - 25
C1119300	C3119300	90°	30.0	12	88	3 - 30
C1119350	C3119350	90°	35.0	16	110	4 - 35
C1119400	C3119400	90°	40.0	16	115	5 - 40
C1119450	C3119450	90°	45.0	16	120	10 - 45
C1119500	C3119500	90°	50.0	16	130	12 - 50

▷ TiN & TiCN coating are available on your request.

Nominal Dia Tolerance(mm)	Shank Dia. Tolerance(mm)
+0.3	h9

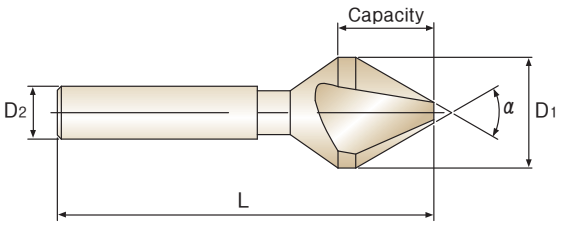
COUNTERSINKS

C1136 SERIES
C3136 SERIES

HSS, THREE FLUTE COUNTERSINKS (60°)
HSS, DREISCHNEIDEN KEGELSENKER (60°)

- ▶ Self-centering(3 flutes)
- ▶ For deburring, chamfering and countersinking
- ▶ Hand using
- ▶ Longitudinal chamfers and contouring
- ▶ Works without vibrations

- ▶ Selbstzentrierend
- ▶ Zum Entgraten, Abfasen und Senkkopfschrauben
- ▶ Manueller Einsatz möglich
- ▶ Zum Entgraten von Längs- und Profilkanten
- ▶ Arbeitet ohne Vibration



DIN 334C

Unit : mm

EDP No. (uncoating)		Angle	Nominal Diameter	Shank Diameter	Overall Length	Capacity
HSSCo8	HSS	α (-1°)	D1	D2	L(±1)	min/max
C1136063	C3136063	60°	6.3	5	45	1.6~6.3
C1136080	C3136080	60°	8	6	50	2.0~8.0
C1136100	C3136100	60°	10	6	50	2.5~10.0
C1136125	C3136125	60°	12.5	8	56	3.2~12.5
C1136160	C3136160	60°	16	10	63	4.0~16.0
C1136200	C3136200	60°	20	10	67	5.0~20.0
C1136250	C3136250	60°	25	10	71	6.3~25.0

▷TiN & TiCN coating are available on your request.

Nominal Dia Tolerance(mm)	Shank Dia. Tolerance(mm)
±0.05	h9

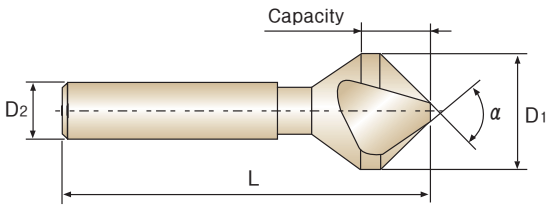
COUNTERSINKS

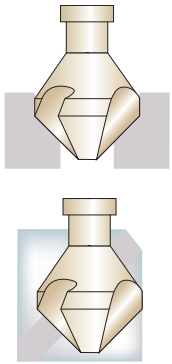
C1139 SERIES
C3139 SERIES

HSS, THREE FLUTE COUNTERSINKS (90°)
HSS, DREISCHNEIDEN KEGELSENKER (90°)

- Self-centering(3 flutes).
- Designed for 90' capscrews countersinking.
- Hand using.
- Longitudinal chamfers and contouring.
- Works without vibrations

- Selbstzentrierend
- Besonders geeignet zum 90° Ansenken für Senkkopfschrauben
- Manueller Einsatz möglich
- Zum Entgraten von Längs- und Profilkanten
- Arbeitet ohne Vibration





DIN 335C

Unit : mm

EDP No. (uncoating)		Angle	Nominal Diameter	Shank Diameter	Overall Length	Capacity
HSSCo8	HSS	α (-1°)	D_1	D_2	L(±1)	min/max
C1139043	C3139043	90°	4.3	4	40	1.3 - 4.3
C1139050	C3139050	90°	5.0	4	40	1.5 - 5
C1139060	C3139060	90°	6.0	5	45	1.5 - 6
C1139063	C3139063	90°	6.3	5	45	1.5 - 6.3
C1139070	C3139070	90°	7.0	6	50	1.8 - 7
C1139080	C3139080	90°	8.0	6	50	2 - 8
C1139083	C3139083	90°	8.3	6	50	2 - 8.3
C1139100	C3139100	90°	10.0	6	50	2.5 - 10
C1139104	C3139104	90°	10.4	6	50	2.5 - 10.4
C1139115	C3139115	90°	11.5	8	56	2.8 - 11.5
C1139124	C3139124	90°	12.4	8	56	2.8 - 12.4
C1139150	C3139150	90°	15.0	10	60	3.2 - 15
C1139165	C3139165	90°	16.5	10	60	3.2 - 16.5
C1139190	C3139190	90°	19.0	10	63	3.5 - 19
C1139205	C3139205	90°	20.5	10	63	3.5 - 20.5
C1139230	C3139230	90°	23.0	10	67	3.8 - 23
C1139250	C3139250	90°	25.0	10	67	3.8 - 25
C1139300	C3139300	90°	30.0	12	71	4.2 - 30
C1139310	C3139310	90°	31.0	12	71	4.2 - 31

▷TiN & TiCN coating are available on your request.

Nominal Dia. Tolerance(mm)	Shank Dia. Tolerance(mm)
±0.05	h9

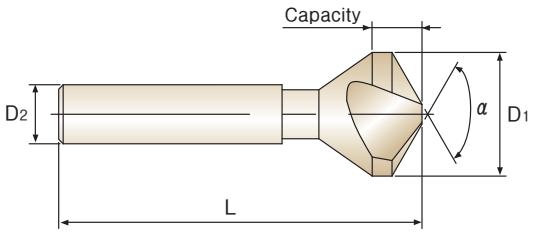
COUNTERSINKS

C1132 SERIES
C3132 SERIES

HSS, THREE FLUTE COUNTERSINKS (120°)
HSS, DREISCHNEIDEN KEGELSENKER (120°)

- ▶ Self-centering(3 flutes)
- ▶ For deburring, chamfering and countersinking
- ▶ Hand using
- ▶ Longitudinal chamfers and contouring
- ▶ Works without vibrations

- ▶ Selbstzentrierend
- ▶ Zum Entgraten, Abfasen und Senkkopfschrauben
- ▶ Manueller Einsatz möglich
- ▶ Zum Entgraten von Längs- und Profilkanten
- ▶ Arbeitet ohne Vibration



Unit : mm

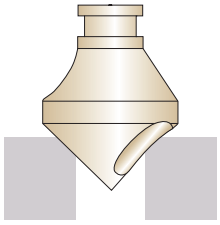
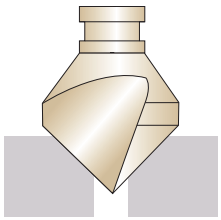
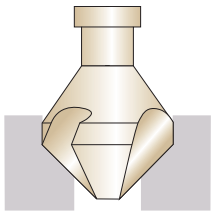
EDP No. (uncoating)		Angle	Nominal Diameter	Shank Diameter	Overall Length	Capacity
HSSCo8	HSS	α (-1°)	D1	D2	L(±1)	min/max
C1132080	C3132080	120°	8	6	49	2.0~8.0
C1132125	C3132125	120°	12.5	8	54	2.8~12.5
C1132160	C3132160	120°	16	10	57	3.2~16.0
C1132200	C3132200	120°	20	10	59	3.5~20.0
C1132250	C3132250	120°	25	10	65	3.8~25.0

▷TiN & TiCN coating are available on your request.

Nominal Dia Tolerance(mm)	Shank Dia. Tolerance(mm)
±0.05	h9

COUNTERSINKS

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

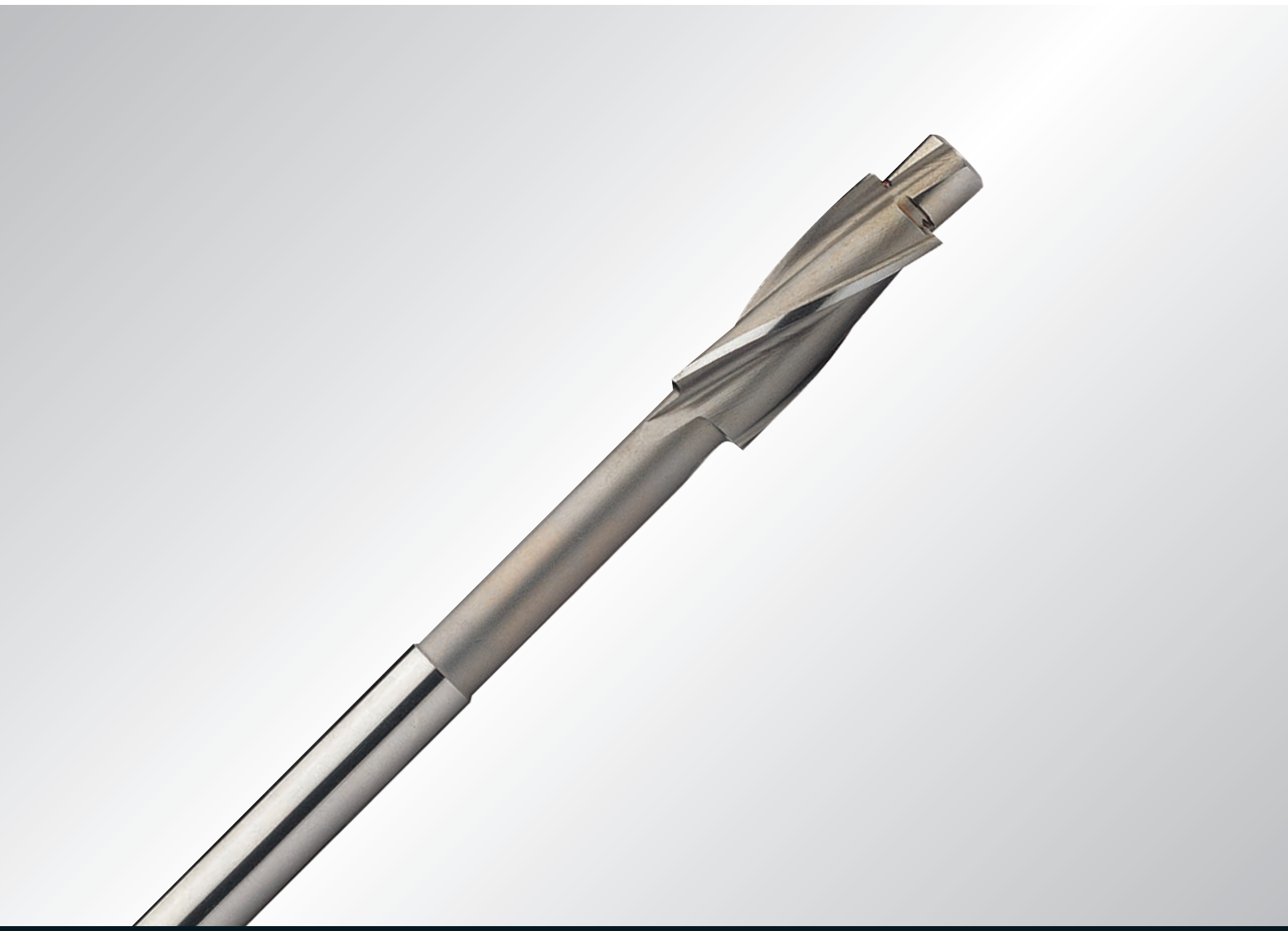




Material	V	S			V	S			V	S		
		Ø≤ 10	Ø≤ 20	Ø≤ 30		Ø≤ 10	Ø≤ 20	Ø≤ 30		Ø≤ 10	Ø≤ 20	Ø≤ 30
STEELS ≤ 500N/mm²	35-45	0.20	0.22	0.24	35-45	0.20	0.22	0.24	17-22	0.30	0.32	0.36
STEELS 500~800N/mm²	20-30	0.14	0.17	0.20	20-30	0.14	0.17	0.20	10-15	0.28	0.30	0.31
STEELS 800~1000N/mm²	15-20	0.11	0.12	0.14	15-20	0.11	0.12	0.14	8-12	0.24	0.26	0.28
STEELS-STAINLESS STEEL 1000~1300N/mm²	12-15	0.10	0.12	0.15	12-15	0.10	0.12	0.15	6-8	0.20	0.20	0.22
STAINLESS STEELS	6-8	0.07	0.08	0.09	6-8	0.07	0.08	0.09	4-6	0.08	0.09	0.10
CAST IRON	20-40	0.15	0.24	0.28	20-40	0.15	0.24	0.28	15-25	0.13	0.19	0.24
ALUMINUM	50-60	0.22	0.25	0.27	50-60	0.22	0.25	0.27	35-45	0.27	0.30	0.35
BRASS-BRONZE	30-40	0.23	0.25	0.28	30-40	0.23	0.25	0.28	20-30	0.30	0.30	0.31
COPPER	20-30	0.22	0.25	0.27	20-30	0.22	0.25	0.27	10-15	0.29	0.30	0.31
PLASTICS	50-100	0.50	0.60	0.65	50-100	0.50	0.60	0.65	35-70	0.40	0.45	0.50

V : Cutting Speed(mm/min)
S : Feed per Revolution(mm/rev)

HSS

Being the best through innovation



COUNTERBORES
FLACHSENKER

- General Purpose
- Für allgemeinen Einsatz

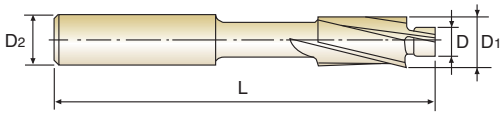
COUNTERBORES

EL950 SERIES PLAIN SHANK
GLATTER ZYLINDERSCHAFT

HSS-E, 3 FLUTE COUNTERBORES for 180° CAPSCREW
HSS-E, 3 SCHNEIDEN FLACHSENKER MIT FESTEM FÜHRUNGSZAPFEN

▶ The counterbores with solid pilot are designed for machining as fillister screw caps or ejector caps in molds.

▶ Die Flachsenker mit festem Führungszapfen dienen dem 180° Ansenken für Zylinderkopfschrauben und Auswerferstiften in Formen



HSS-E | DIN 373 | 3 | PLAIN | P1339

MEDIUM

Unit : mm

EDP No.	ITEM No.	Screw Size	Pilot Diameter	Cutter Diameter	Shank Diameter	Overall Length
PLAIN	PLAIN		D(e8)	D1(z9)	D2(h9)	L
EL950003	YG54M3-M	M3	3.4	6.0	5	71
EL950035	YG54M3.5-M	M3.5	3.9	6.5	5	71
EL950004	YG54M4-M	M4	4.5	8.0	5	71
EL950005	YG54M5-M	M5	5.5	10.0	8	80
EL950006	YG54M6-M	M6	6.6	11.0	8	80
EL950008	YG54M8-M	M8	9.0	15.0	12.5	100
EL950010	YG54M10-M	M10	11.0	18.0	12.5	100
EL950012	YG54M12-M	M12	14.0	20.0	12.5	100

FINE

Unit : mm

EDP No.	ITEM No.	Screw Size	Pilot Diameter	Cutter Diameter	Shank Diameter	Overall Length
PLAIN	PLAIN		D(e8)	D1(z9)	D2(h9)	L
EL950901	YG54M3-F	M3	3.2	6.0	5	71
EL950902	YG54M3.5-F	M3.5	3.7	6.5	5	71
EL950903	YG54M4-F	M4	4.3	8.0	5	71
EL950904	YG54M5-F	M5	5.3	10.0	8	80
EL950905	YG54M6-F	M6	6.4	11.0	8	80
EL950906	YG54M8-F	M8	8.4	15.0	12.5	100
EL950907	YG54M10-F	M10	10.5	18.0	12.5	100
EL950908	YG54M12-F	M12	13.0	20.0	12.5	100

BEFORE THREADING

Unit : mm

EDP No.	ITEM No.	Screw Size	Pilot Diameter	Cutter Diameter	Shank Diameter	Overall Length
PLAIN	PLAIN		D(e8)	D1(z9)	D2(h9)	L
EL950909	YG54M3-T	M3	2.5	6.0	5	71
EL950910	YG54M3.5-T	M3.5	2.9	6.5	5	71
EL950911	YG54M4-T	M4	3.3	8.0	5	71
EL950912	YG54M5-T	M5	4.2	10.0	8	80
EL950913	YG54M6-T	M6	5.0	11.0	8	80
EL950914	YG54M8-T	M8	6.8	15.0	12.5	100
EL950915	YG54M10-T	M10	8.5	18.0	12.5	100
EL950916	YG54M12-T	M12	10.2	20.0	12.5	100

Tolerances according to DIN 7160 & 7161
Toleranzen nach DIN 7160 & 7161

Nominal-Diameter in mm / Nennmaßbereich in mm				
	from 1 to 3 von 1 bis 3	over 3 to 6 über 3 bis 6	over 6 to 10 über 6 bis 10	over 10 to 18 über 10 bis 18
Tolerance range in µm / Toleranzwerte in µm				
e8	− 14 − 28	− 20 − 38	− 25 − 47	− 32 − 59
h9	0 − 25	0 − 30	0 − 36	0 − 43

Nominal-Diameter in mm / Nennmaßbereich in mm				
	from 6 to 10 von 6 bis 10	over 10 to 14 über 10 bis 14	over 14 to 18 über 14 bis 18	over 18 to 24 über 18 bis 24
Tolerance range in µm / Toleranzwerte in µm				
z9	+ 78 + 42	+ 93 + 50	+ 103 + 60	+ 125 + 73

COUNTERBORES

RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN

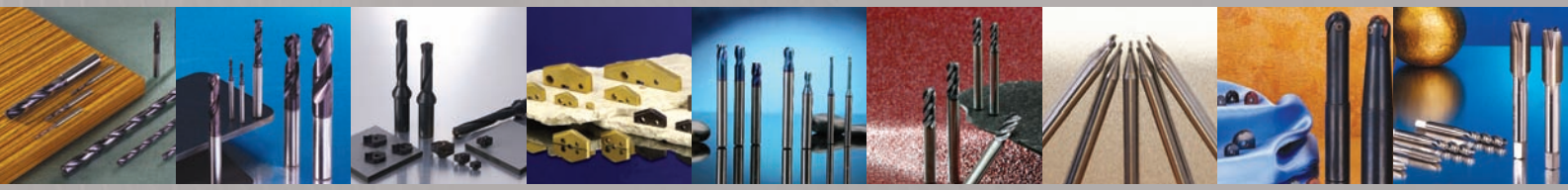
HSS-E, 3 FLUTE COUNTERBORES for 180° CAPSCREW
HSS-E, 3 SCHNEIDEN FLACHSENKER mit FESTEM FÜHRUNGSZAPFEN

EL950 SERIES

MATERIAL	ALUMINUM & ALUMINUM ALLOYS	CARBON STEELS ALLOY STEELS	CARBON STEELS ALLOY STEELS TOOL STEELS	CARBON STEELS ALLOY STEELS TOOL STEELS	CARBON STEELS ALLOY STEELS TOOL STEELS
HARDNESS			~ HRc20	HRc20 ~ HRc35	HRc35 ~ HRc40
STRENGTH		~ 500N/mm²	500 ~ 800N/mm²	800 ~ 1100N/mm²	1100 ~ 1300N/mm²
CUTTER DIAMETER	RPM	RPM	RPM	RPM	RPM
6.0	2100	590	480	380	320
6.5	2100	590	480	380	320
8.0	1700	470	380	300	250
10.0	1200	380	320	260	170
11.0	1100	300	240	190	160
15.0	840	240	195	155	130
18.0	670	190	160	120	80
20.0	550	160	125	95	70

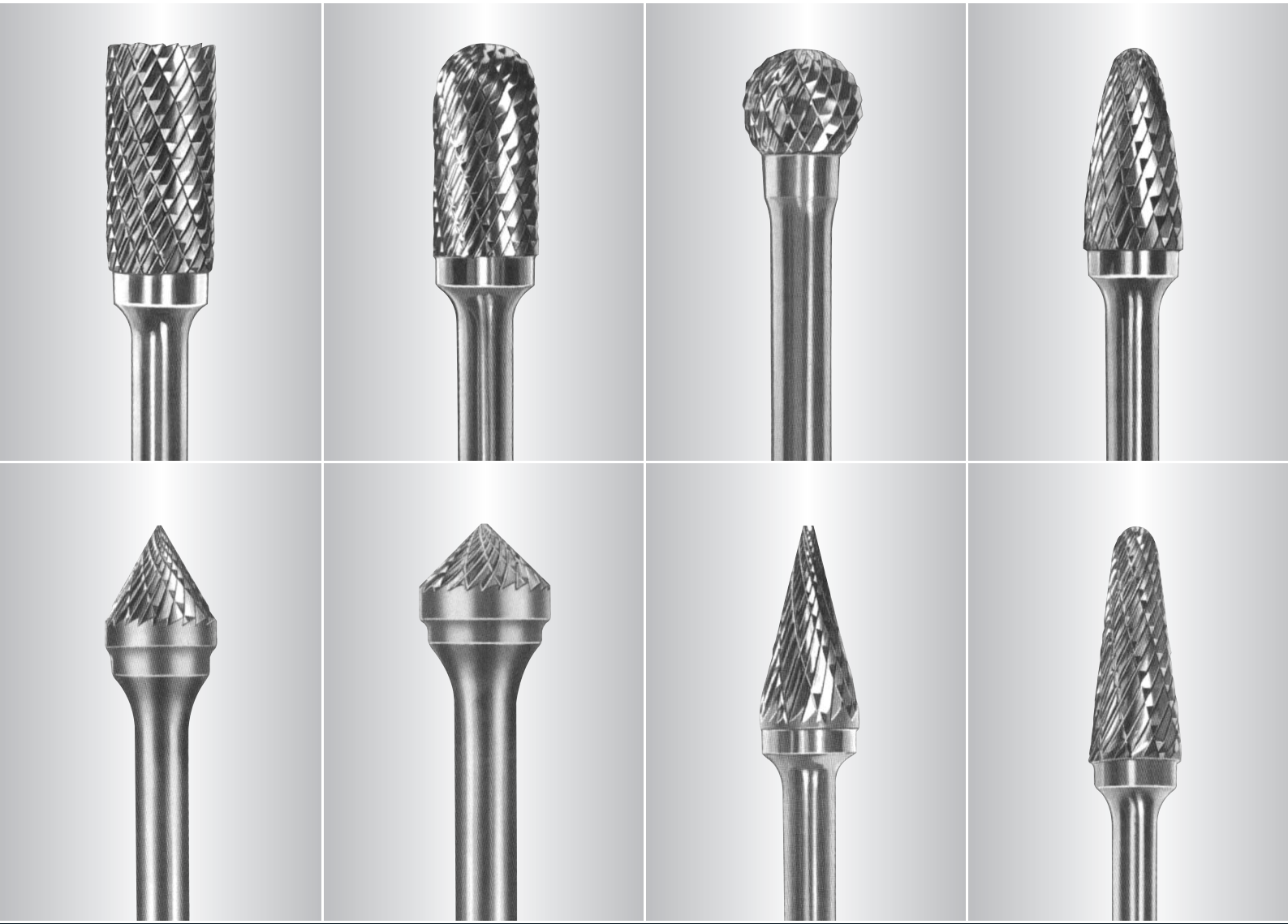
RPM = rev./min.

Global Cutting Tool Leader **YG-1**



CARBIDE

Being the best through innovation



CARBIDE ROTARY BURRS

FRÄSSTIFTE AUS HARTMETALL

- For General Steels and Non-ferrous Metals etc.
  (3mm & 6mm Shank Diameter)
- F r normale St hle und Nichteisenmetalle usw. (3 u. 6mm Schaft-Ø)

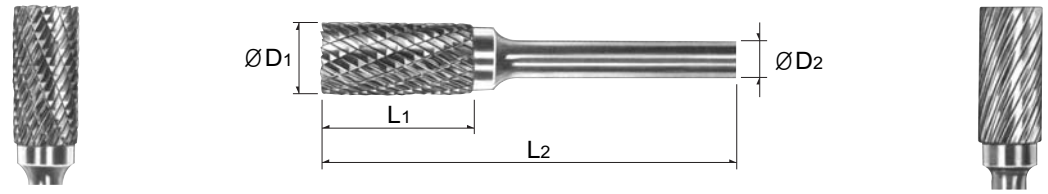
CARBIDE ROTARY BURRS

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
SA	R1101 R1201 R1301		CYLINDER SHAPE TYPE SA(Form A) ZYLINDER – FORM TYP SA (Form A)	D1.5	D25.0	1343
SB	R1102 R1202 R1302		CYLINDER SHAPE WITH END CUT TYPE SB(Form B) ZYLINDER – FORM MIT STIRNVERZAHNUNG TYP SB (Form B)	D1.5	D25.0	1344
SC	R1103 R1203 R1303		CYLINDER SHAPE WITH RADIUS END TYPE SC(Form C) WALZENRUND – FORM TYP SC (Form C)	D2.5	D25.0	1345
SD	R1104 R1204 R1304		BALL SHAPE TYPE SD(Form D) KUGEL – FORM TYP SD (Form D)	D2.5	D25.0	1346
SE	R1105 R1205 R1305		OVAL SHAPE TYPE SE(Form E) TROPFEN – FORM TYP SE (Form E)	D3.0	D19.0	1347
SF	R1106 R1206 R1306		TREE SHAPE WITH RADIUS END TYPE SF(Form F) RUNDBOGEN – FORM TYP SF (Form F)	D3.0	D19.0	1348
SG	R1107 R1207		TREE SHAPE WITH POINTED END TYPE SG(Form G) SPITZBOGEN – FORM TYP SG (Form G)	D3.0	D19.0	1349
SH	R1108 R1208		FLAME SHAPE TYPE SH(Form H) FLAMMEN – FORM TYP SH (Form H)	D3.0	D19.0	1350
SJ	R1109 R1209		60° CONE SHAPE TYPE SJ(Form J) 60° KEGELSENK – FORM TYP SJ (Form J)	D3.0	D25.0	1351
SK	R1110 R1210		90° CONE SHAPE TYPE SK(Form K) 90° KEGELSENK – FORM TYP SK (Form K)	D3.0	D25.0	1352
SL	R1111 R1211 R1311		TAPER WITH RADIUS END TYPE SL(Form L) RUNDKEGEL – FORM TYP SL (Form L)	D3.0	D19.0	1353
SM	R1112 R1212		CONE SHAPE TYPE SM(Form M) SPITZKEGEL – FORM TYP SM (Form M)	D3.0	D16.0	1354
SN	R1113 R1213		INVERTED CONE SHAPE TYPE SN(Form N) WINKEL – FORM TYP SN (Form N)	D2.5	D19.0	1355
			TECHNICAL INFORMATION FOR CARBIDE BURRS TECHNISCHE INFORMATION ZU HARTMETALL FRÄSSTIFTEN			1356
			BURR APPLICATION INFORMATION & SPEED RECOMMENDATION EINSATZ EMPFEHLUNGEN & SCHNITTGESCHWINDIGKEITS EMPFEHLUNGEN			1357

ROTARY BURRS

SA R1101, R1201, R1301

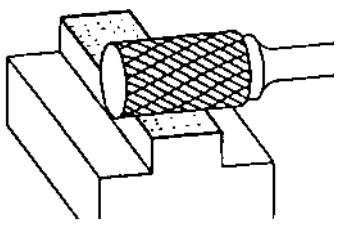
CYLINDER SHAPE TYPE SA(FORM A)
ZYLINDER – FORM TYP SA(FORM A)



Unit : mm

DOUBLE CUT		D1	D2	L1	L2	PLAIN CUT	
EDP No.	ITEM No.					EDP No.	ITEM No.
R1101001	SA-41M	1.5	3	6	38	R1201001	SA-41MP
R1101002	SA-41ML2	1.5	3	6	50	R1201002	SA-41ML2P
R1101003	SA-41ML3	1.5	3	6	75	R1201003	SA-41ML3P
R1101004	SA-42M	2.5	3	11	38	R1201004	SA-42MP
R1101005	SA-42ML2	2.5	3	11	50	R1201005	SA-42ML2P
R1101006	SA-42ML3	2.5	3	11	75	R1201006	SA-42ML3P
R1101007	SA-43M	3.0	3	14	38	R1201007	SA-43MP
R1101008	SA-43ML2	3.0	3	14	50	R1201008	SA-43ML2P
R1101009	SA-43ML3	3.0	3	14	75	R1201009	SA-43ML3P
R1101010	SA-11M	3.0	6	12	56	R1201010	SA-11MP
R1101011	SA-12M	3.0	6	12.7	60	R1201011	SA-12MP
R1101012	SA-52M	4.0	3	12.7	38	R1201012	SA-52MP
R1101013	SA-13M	4.0	6	16	50	R1201013	SA-13MP
R1101014	SA-53M	5.0	3	12.7	38	R1201014	SA-53MP
R1101015	SA-14M	5.0	6	16	50	R1201015	SA-14MP
R1101017	SA-1ML	6.0	6	25	50	R1201017	SA-1MLP
R1101019	SA-1M	6.0	6	16	50	R1201019	SA-1MP
R1101020	SA-51M	6.3	3	12.7	50	R1201020	SA-51MP
R1101021	SA-2M	8.0	6	19	63	R1201021	SA-2MP
R1101022	SA-3M	9.5	6	19	63	R1201022	SA-3MP
R1101025	SA-3ML	9.5	6	25	69	R1201025	SA-3MLP
R1101027	SA-4M	11.0	6	25	69	R1201027	SA-4MP
R1101029	SA-5M	12.7	6	25	69	R1201029	SA-5MP
R1101032	SA-6M	16.0	6	25	69	R1201032	SA-6MP
R1101034	SA-7M	19.0	6	25	69	R1201034	SA-7MP
R1101037	SA-9M	25.0	6	25	69	R1201037	SA-9MP

ALUMA CUT		D1	D2	L1	L2
EDP No.	ITEM No.				
R1301018	SA-1MNF	6.0	6	19	50
R1301024	SA-3MNF	9.5	6	19	63
R1301030	SA-5MNF	12.7	6	25	69
R1301033	SA-6MNF	16.0	6	25	69
R1301035	SA-7MNF	19.0	6	25	69

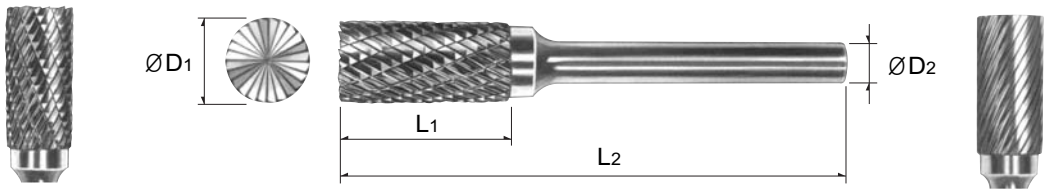


▶ Chip Breaker Type or Diamond Cut Type is available on your request.

ROTARY BURRS

SB R1102, R1202, R1302

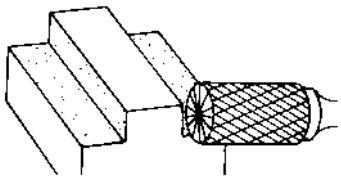
CYLINDER SHAPE WITH END CUT TYPE SB(FORM B)
ZYLINDER – FORM MIT STIRNVERZAHNUNG TYP SB(FORM B)



Unit : mm

DOUBLE CUT		D1	D2	L1	L2	PLAIN CUT	
EDP No.	ITEM No.					EDP No.	ITEM No.
R1102001	SB-41M	1.5	3	6	38	R1202001	SB-41MP
R1102002	SB-41ML2	1.5	3	6	50	R1202002	SB-41ML2P
R1102003	SB-41ML3	1.5	3	6	75	R1202003	SB-41ML3P
R1102004	SB-42M	2.5	3	11	38	R1202004	SB-42MP
R1102005	SB-42ML2	2.5	3	11	50	R1202005	SB-42ML2P
R1102006	SB-42ML3	2.5	3	11	75	R1202006	SB-42ML3P
R1102007	SB-ECOM	3.0	3	-	38	-	-
R1102008	SB-43M	3.0	3	14	38	R1202008	SB-43MP
R1102026	SB-43ML2	3.0	3	14	50	R1202026	SB-43ML2P
R1102027	SB-43ML3	3.0	3	14	75	R1202027	SB-43ML3P
R1102009	SB-11M	3.0	6	12	56	R1202009	SB-11MP
R1102010	SB-12M	3.0	6	12.7	60	R1202010	SB-12MP
R1102011	SB-13M	4.0	6	16	50	R1202011	SB-13MP
R1102012	SB-14M	5.0	6	16	50	R1202012	SB-14MP
R1102013	SB-1M	6.0	6	16	50	R1202013	SB-1MP
R1102014	SB-1ML	6.0	6	25	50	R1202014	SB-1MLP
R1102015	SB-51M	6.3	3	4.7	43	R1202015	SB-51MP
R1102016	SB-2M	8.0	6	19	63	R1202016	SB-2MP
R1102017	SB-3M	9.5	6	19	63	R1202017	SB-3MP
R1102018	SB-3ML	9.5	6	25	69	R1202018	SB-3MLP
R1102020	SB-4M	11.0	6	25	69	R1202020	SB-4MP
R1102022	SB-5M	12.7	6	25	69	R1202022	SB-5MP
R1102023	SB-6M	16.0	6	25	69	R1202023	SB-6MP
R1102024	SB-7M	19.0	6	25	69	R1202024	SB-7MP
R1102025	SB-9M	25.0	6	25	69	R1202025	SB-9MP

ALUMA CUT		D1	D2	L1	L2
EDP No.	ITEM No.				
R1302018	SB-1MNF	6.0	6	19	50
R1302024	SB-3MNF	9.5	6	19	63
R1302030	SB-5MNF	12.7	6	25	69
R1302033	SB-6MNF	16.0	6	25	69
R1302035	SB-7MNF	19.0	6	25	69

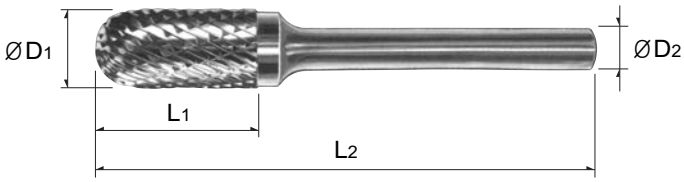


▶ Chip Breaker Type or Diamond Cut Type is available on your request.

ROTARY BURRS

SC R1103, R1203, R1303

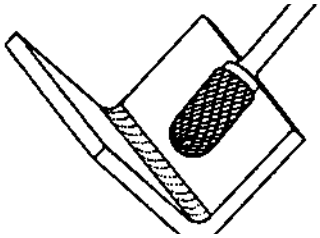
CYLINDER SHAPE WITH RADIUS END TYPE SC(FORM C)
WALZENRUND – FORM TYP SC(FORM C)



Unit : mm

DOUBLE CUT		D1	D2	L1	L2	PLAIN CUT	
EDP No.	ITEM No.					EDP No.	ITEM No.
R1103001	SC-41M	2.5	3	11	38	R1203001	SC-41MP
R1103002	SC-42M	3.0	3	14	38	R1203002	SC-42MP
R1103003	SC-42ML2	3.0	3	14	50	R1203003	SC-42ML2P
R1103004	SC-42ML3	3.0	3	14	75	R1203004	SC-42ML3P
R1103005	SC-11M	3.0	6	12	56	R1203005	SC-11MP
R1103006	SC-12M	3.0	6	16	60	R1203006	SC-12MP
R1103007	SC-52M	4.0	3	12.7	38	R1203007	SC-52MP
R1103008	SC-13M	4.0	6	16	50	R1203008	SC-13MP
R1103009	SC-53M	5.0	3	12.7	38	R1203009	SC-53MP
R1103010	SC-14M	5.0	6	16	50	R1203010	SC-14MP
R1103011	SC-1M	6.0	6	16	50	R1203011	SC-1MP
R1103014	SC-1ML	6.0	6	25	50	R1203014	SC-1MLP
R1103015	SC-51M	6.3	3	12.7	50	R1203015	SC-51MP
R1103016	SC-2M	8.0	6	19	63	R1203016	SC-2MP
R1103017	SC-3M	9.5	6	19	63	R1203017	SC-3MP
R1103020	SC-3ML	9.5	6	25	69	R1203020	SC-3MLP
R1103022	SC-4M	11.0	6	25	69	R1203022	SC-4MP
R1103024	SC-5M	12.7	6	25	69	R1203024	SC-5MP
R1103027	SC-6M	16.0	6	25	69	R1203027	SC-6MP
R1103028	SC-7M	19.0	6	25	69	R1203028	SC-7MP
R1103031	SC-9M	25.0	6	25	69	R1203031	SC-9MP

ALUMA CUT		D1	D2	L1	L2
EDP No.	ITEM No.				
R1303013	SC-1MNF	6.0	6	19	50
R1303019	SC-3MNF	9.5	6	19	63
R1303026	SC-5MNF	12.7	6	25	69
R1303029	SC-7MNF	19.0	6	25	69

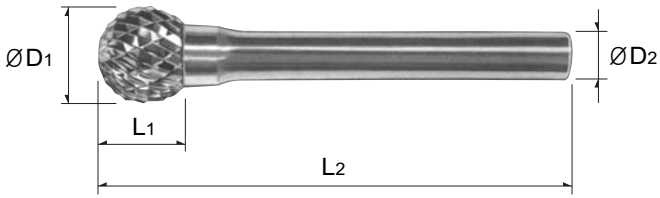


▶ Chip Breaker Type or Diamond Cut Type is available on your request.

ROTARY BURRS

SD R1104, R1204, R1304

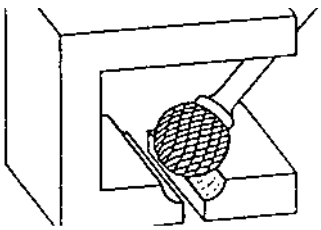
BALL SHAPE TYPE SD(FORM D)
KUGEL – FORM TYP SD(FORM D)



Unit : mm

DOUBLE CUT		D1	D2	L1	L2	PLAIN CUT	
EDP No.	ITEM No.					EDP No.	ITEM No.
R1104001	SD-41M	2.5	3	2.3	38	R1204001	SD-41MP
R1104002	SD-42M	3.0	3	2.8	38	R1204002	SD-42MP
R1104003	SD-42ML2	3.0	3	2.8	50	R1204003	SD-42ML2P
R1104004	SD-42ML3	3.0	3	2.8	75	R1204004	SD-42ML3P
R1104005	SD-11M	3.0	6	2.8	50	R1204005	SD-11MP
R1104007	SD-53M	5.0	3	4	38	R1204007	SD-53MP
R1104008	SD-14M	5.0	6	4	50	R1204008	SD-14MP
R1104010	SD-1M	6.0	6	5	50	R1204010	SD-1MP
R1104012	SD-51M	6.3	3	5	44	R1204012	SD-51MP
R1104013	SD-2M	8.0	6	6.4	50	R1204013	SD-2MP
R1104014	SD-3M	9.5	6	8	52	R1204014	SD-3MP
R1104018	SD-4M	11.0	6	9.5	54	R1204018	SD-4MP
R1104020	SD-5M	12.7	6	11	55	R1204020	SD-5MP
R1104023	SD-6M	16.0	6	14	58	R1204023	SD-6MP
R1104025	SD-7M	19.0	6	16	62	R1204025	SD-7MP
R1104028	SD-9M	25.0	6	23	68	R1204028	SD-9MP

ALUMA CUT		D1	D2	L1	L2
EDP No.	ITEM No.				
R1304011	SD-1MNF	6.0	6	5	50
R1304015	SD-3MNF	9.5	6	8	52
R1304021	SD-5MNF	12.7	6	11	55
R1304024	SD-6MNF	16.0	6	14	58
R1304026	SD-7MNF	19.0	6	16	62

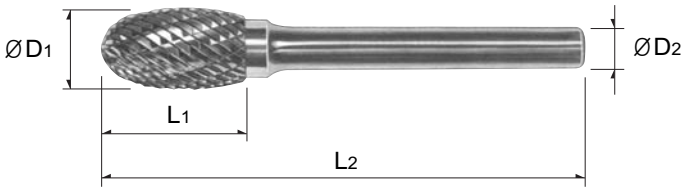


▶ Chip Breaker Type or Diamond Cut Type is available on your request.

ROTARY BURRS

SE R1105, R1205, R1305

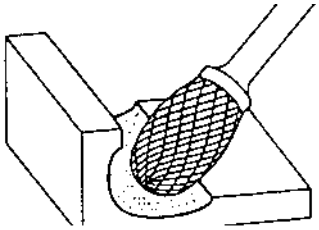
OVAL SHAPE TYPE SE(FORM E)
TROPFEN – FORM TYP SE(FORM E)



Unit : mm

DOUBLE CUT		D1	D2	L1	L2	PLAIN CUT	
EDP No.	ITEM No.					EDP No.	ITEM No.
R1105001	SE-41M	3.0	3	5.5	38	R1205001	SE-41MP
R1105002	SE-41ML2	3.0	3	5.5	50	R1205002	SE-41ML2P
R1105003	SE-41ML3	3.0	3	5.5	75	R1205003	SE-41ML3P
R1105004	SE-53M	5.0	3	7.1	38	R1205004	SE-53MP
R1105005	SE-1M	6.0	6	9.5	50	R1205005	SE-1MP
R1105007	SE-51M	6.3	3	9.5	47	R1205007	SE-51MP
R1105008	SE-3M	9.5	6	16	60	R1205008	SE-3MP
R1105011	SE-5M	12.7	6	22	66	R1205011	SE-5MP
R1105014	SE-6M	16.0	6	25	69	R1205014	SE-6MP
R1105016	SE-7M	19.0	6	25	69	R1205016	SE-7MP

ALUMA CUT		D1	D2	L1	L2
EDP No.	ITEM No.				
R1305010	SE-3MNF	9.5	6	16	60
R1305013	SE-5MNF	12.7	6	22	66
R1305015	SE-6MNF	16.0	6	25	69
R1305017	SE-7MNF	19.0	6	25	69

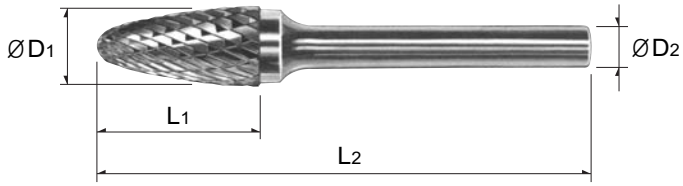


▶ Chip Breaker Type or Diamond Cut Type is available on your request.

ROTARY BURRS

SF R1106, R1206, R1306

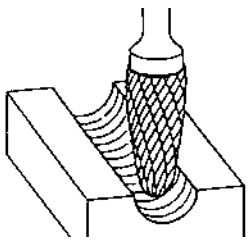
TREE SHAPE WITH RADIUS END TYPE SF(FORM F)
RUNDBOGEN – FORM TYP SF(FORM F)



Unit : mm

DOUBLE CUT		D1	D2	L1	L2	PLAIN CUT	
EDP No.	ITEM No.					EDP No.	ITEM No.
R1106001	SF-41M	3.0	3	6	38	R1206001	SF-41MP
R1106002	SF-42M	3.0	3	12.7	38	R1206002	SF-42MP
R1106003	SF-11M	3.0	6	12.7	56	R1206003	SF-11MP
R1106004	SF-42ML2	3.0	3	12.7	50	R1206004	SF-42ML2P
R1106005	SF-42ML3	3.0	3	12.7	75	R1206005	SF-42ML3P
R1106006	SF-53M	5.0	3	12.7	38	R1206006	SF-53MP
R1106008	SF-1M	6.0	6	16	50	R1206008	SF-1MP
R1106010	SF-51M	6.3	3	12.7	50	R1206010	SF-51MP
R1106011	SF-3M	9.5	6	19	63	R1206011	SF-3MP
R1106014	SF-4M	11.0	6	25	69	R1206014	SF-4MP
R1106016	SF-13M	12.7	6	19	63	R1206016	SF-13MP
R1106017	SF-5M	12.7	6	25	69	R1206017	SF-5MP
R1106020	SF-6M	16.0	6	25	69	R1206020	SF-6MP
R1106022	SF-7M	19.0	6	25	69	R1206022	SF-7MP
R1106023	SF-14M	19.0	6	32	76	R1206023	SF-14MP
R1106026	SF-15M	19.0	6	38	82	R1206026	SF-15MP

ALUMA CUT		D1	D2	L1	L2
EDP No.	ITEM No.				
R1306009	SF-1MNF	6.0	6	19	50
R1306013	SF-3MNF	9.5	6	19	63
R1306019	SF-5MNF	12.7	6	25	69
R1306021	SF-6MNF	16.0	6	25	69
R1306024	SF-14MNF	19.0	6	32	76

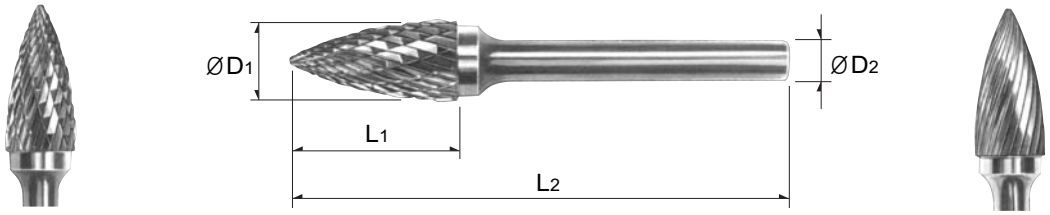


▶ Chip Breaker Type or Diamond Cut Type is available on your request.

ROTARY BURRS

SG R1107, R1207

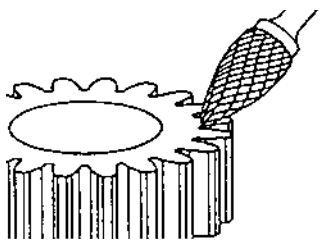
TREE SHAPE WITH POINTED END TYPE SG(FORM G)
SPITZBOGEN – FORM TYP SG(FORM G)



Unit : mm

DOUBLE CUT		D1	D2	L1	L2	PLAIN CUT	
EDP No.	ITEM No.					EDP No.	ITEM No.
R1107001	SG-41M	3.0	3	6	38	R1207001	SG-41MP
R1107002	SG-43M	3.0	3	9.5	38	R1207002	SG-43MP
R1107003	SG-44M	3.0	3	12.7	38	R1207003	SG-44MP
R1107004	SG-44ML2	3.0	3	12.7	50	R1207004	SG-44ML2P
R1107005	SG-44ML3	3.0	3	12.7	75	R1207005	SG-44ML3P
R1107006	SG-53M	5.0	3	12.7	38	R1207006	SG-53MP
R1107008	SG-1M	6.0	6	16	50	R1207008	SG-1MP
R1107009	SG-51M	6.3	3	12.7	50	R1207009	SG-51MP
R1107010	SG-2M	8.0	6	19	63	R1207010	SG-2MP
R1107011	SG-3M	9.5	6	19	63	R1207011	SG-3MP
R1107015	SG-13M	12.7	6	19	63	R1207015	SG-13MP
R1107016	SG-5M	12.7	6	25	69	R1207016	SG-5MP
R1107018	SG-6M	16.0	6	25	69	R1207018	SG-6MP
R1107019	SG-7M	19.0	6	25	69	R1207019	SG-7MP
R1107020	SG-15M	19.0	6	38	82	R1207020	SG-15MP

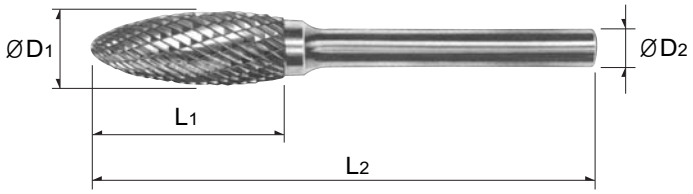
▶ Chip Breaker Type or Diamond Cut Type is available on your request.



ROTARY BURRS

SH R1108, R1208

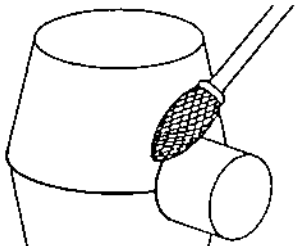
FLAME SHAPE TYPE SH(FORM H)
FLAMMEN – FORM TYP SH(FORM H)



Unit : mm

DOUBLE CUT		D1	D2	L1	L2	PLAIN CUT	
EDP No.	ITEM No.					EDP No.	ITEM No.
R1108001	SH-41M	3.0	3	6.3	38	R1208001	SH-41MP
R1108002	SH-41ML2	3.0	3	6.3	50	R1208002	SH-41ML2P
R1108003	SH-41ML3	3.0	3	6.3	75	R1208003	SH-41ML3P
R1108004	SH-53M	5.0	3	9.5	38	R1208004	SH-53MP
R1108005	SH-2M	8.0	6	19	63	R1208005	SH-2MP
R1108007	SH-5M	12.7	6	32	76	R1208007	SH-5MP
R1108009	SH-6M	16.0	6	36	80	R1208009	SH-6MP
R1108010	SH-7M	19.0	6	41	85	R1208010	SH-7MP

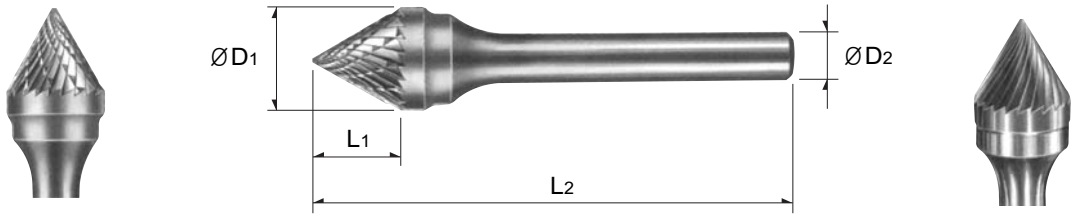
▶ Chip Breaker Type or Diamond Cut Type is available on your request.



ROTARY BURRS

SJ R1109, R1209

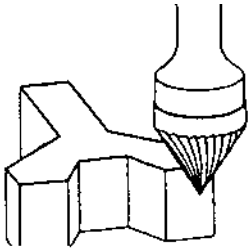
60° CONE SHAPE TYPE SJ(FORM J)
60° KEGELSENK – FORM TYP SJ(FORM J)



Unit : mm

DOUBLE CUT		D1	D2	L1	L2	PLAIN CUT	
EDP No.	ITEM No.					EDP No.	ITEM No.
R1109001	SJ-42M	3.0	3	2.5	38	R1209001	SJ-42MP
R1109002	SJ-1M	6.0	6	4	50	R1209002	SJ-1MP
R1109003	SJ-3M	9.5	6	8	55	R1209003	SJ-3MP
R1109004	SJ-5M	12.7	6	11	58	R1209004	SJ-5MP
R1109005	SJ-6M	16.0	6	13.5	61	R1209005	SJ-6MP
R1109006	SJ-7M	19.0	6	16.5	65	R1209006	SJ-7MP
R1109007	SJ-9M	25.0	6	21.5	68	R1209007	SJ-9MP

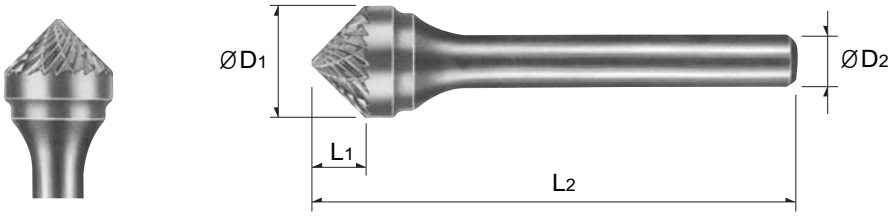
▶ Chip Breaker Type or Diamond Cut Type is available on your request.



ROTARY BURRS

SK R1110, R1210

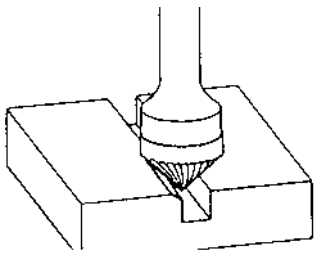
90° CONE SHAPE TYPE SK(FORM K)
90° KEGELSENK – FORM TYP SK(FORM K)



Unit : mm

DOUBLE CUT		D1	D2	L1	L2	PLAIN CUT	
EDP No.	ITEM No.					EDP No.	ITEM No.
R1110001	SK-42M	3.0	3	1.5	38	R1210001	SK-42MP
R1110002	SK-1M	6.0	6	3	50	R1210002	SK-1MP
R1110003	SK-3M	9.5	6	4.7	52	R1210003	SK-3MP
R1110004	SK-5M	12.7	6	6.3	54	R1210004	SK-5MP
R1110005	SK-6M	16.0	6	8	57	R1210005	SK-6MP
R1110006	SK-7M	19.0	6	9.5	58	R1210006	SK-7MP
R1110007	SK-9M	25.0	6	12.7	60	R1210007	SK-9MP

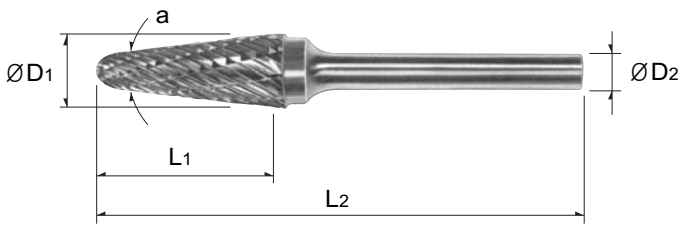
▶ Chip Breaker Type or Diamond Cut Type is available on your request.



ROTARY BURRS

SL R1111, R1211, R1311

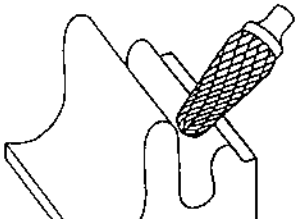
TAPER WITH RADIUS END TYPE SL(FORM L)
RUNDKEGEL – FORM TYP SL(FORM L)



Unit : mm

DOUBLE CUT		D1	D2	L1	L2	a	PLAIN CUT	
EDP No.	ITEM No.						EDP No.	ITEM No.
R1111001	SL-41M	3.0	3	9.5	38	8°	R1211001	SL-41MP
R1111002	SL-42M	3.0	3	12.7	38	8°	R1211002	SL-42MP
R1111003	SL-42ML2	3.0	3	12.7	50	8°	R1211003	SL-42ML2P
R1111004	SL-42ML3	3.0	3	12.7	75	8°	R1211004	SL-42ML3P
R1111005	SL-53M	5.0	3	12.7	38	14°	R1211005	SL-53MP
R1111006	SL-1M	6.0	6	16	50	14°	R1211006	SL-1MP
R1111008	SL-2M	8.0	6	22	69	14°	R1211008	SL-2MP
R1111009	SL-3M	9.5	6	27	74	14°	R1211009	SL-3MP
R1111012	SL-4M	12.7	6	28	76	14°	R1211012	SL-4MP
R1111015	SL-5M	16.0	6	30	77	14°	R1211015	SL-5MP
R1111017	SL-7M	19.0	6	38	85	14°	R1211017	SL-7MP

ALUMA CUT		D1	D2	L1	L2	a
EDP No.	ITEM No.					
R1311010	SL-3MNF	9.5	6	27	74	14°
R1311013	SL-4MNF	12.7	6	28	76	14°
R1311016	SL-5MNF	16.0	6	30	77	14°
R1311018	SL-7MNF	19.0	6	38	85	14°

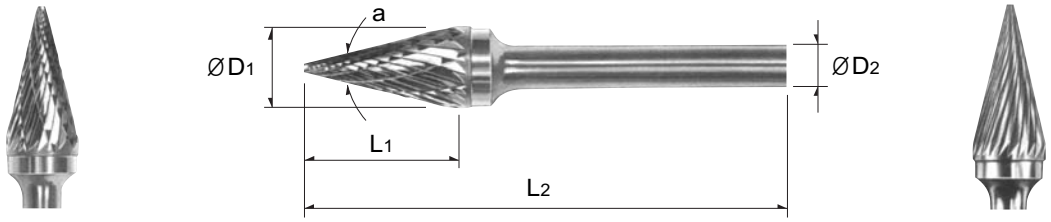


▶ Chip Breaker Type or Diamond Cut Type is available on your request.

ROTARY BURRS

SM R1112, R1212

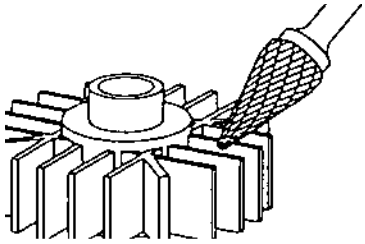
CONE SHAPE TYPE SM(FORM M)
SPITZKEGEL – FORM TYP SM(FORM M)



Unit : mm

DOUBLE CUT		D1	D2	L1	L2	a	PLAIN CUT	
EDP No.	ITEM No.						EDP No.	ITEM No.
R1112001	SM-41M	3.0	3	8.9	38	12°	R1212001	SM-41MP
R1112002	SM-42M	3.0	3	11	38	14°	R1212002	SM-42MP
R1112003	SM-42ML2	3.0	3	11	50	14°	R1212003	SM-42ML2P
R1112004	SM-42ML3	3.0	3	11	75	14°	R1212004	SM-42ML3P
R1112005	SM-43M	3.0	3	16	38	7°	R1212005	SM-43MP
R1112006	SM-53M	5.0	3	12.7	38	16°	R1212006	SM-53MP
R1112007	SM-1M	6.0	6	12.7	50	22°	R1212007	SM-1MP
R1112008	SM-2M	6.0	6	19	50	14°	R1212008	SM-2MP
R1112009	SM-3M	6.0	6	25	50	10°	R1212009	SM-3MP
R1112010	SM-51M	6.3	3	12.7	53	22°	R1212010	SM-51MP
R1112011	SM-4M	9.5	6	16	63	28°	R1212011	SM-4MP
R1112012	SM-5M	12.7	6	22	69	28°	R1212012	SM-5MP
R1112013	SM-6M	16.0	6	25	73	31°	R1212013	SM-6MP

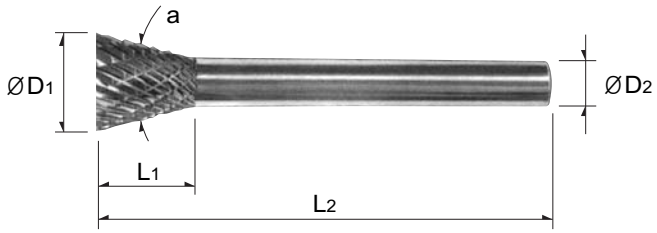
▶ Chip Breaker Type or Diamond Cut Type is available on your request.



ROTARY BURRS

SN R1113, R1213

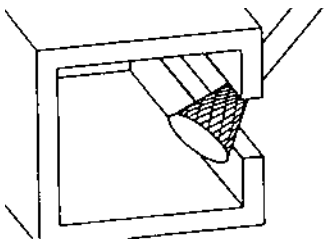
INVERTED CONE SHAPE TYPE SN(FORM N)
WINKEL – FORM TYP SN(FORM N)



Unit : mm

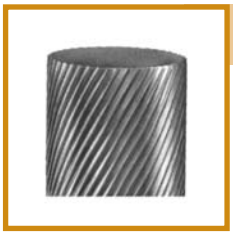
DOUBLE CUT		D1	D2	L1	L2	a	PLAIN CUT	
EDP No.	ITEM No.						EDP No.	ITEM No.
R1113001	SN-41M	2.5	3	3	38	10°	R1213001	SN-41MP
R1113002	SN-42M	3.0	3	4	38	10°	R1213002	SN-42MP
R1113003	SN-53M	5.0	3	6.3	38	10°	R1213003	SN-53MP
R1113004	SN-1M	6.0	6	8	50	10°	R1213004	SN-1MP
R1113005	SN-51M	6.3	3	6	44	10°	R1213005	SN-51MP
R1113006	SN-2M	9.5	6	9.5	53	13°	R1213006	SN-2MP
R1113007	SN-4M	12.7	6	12.7	57	28°	R1213007	SN-4MP
R1113008	SN-6M	16.0	6	19	63	18°	R1213008	SN-6MP
R1113009	SN-7M	19.0	6	16	60	30°	R1213009	SN-7MP

▶ Chip Breaker Type or Diamond Cut Type is available on your request.



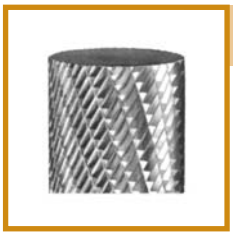
ROTARY BURRS

TECHNICAL INFORMATION FOR CARBIDE BURRS
TECHNISCHE INFORMATION ZU HARTMETALL FRÄSSTIFTEN



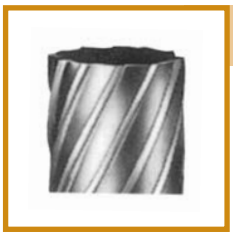
Plain Cut Schlichtzahnung

- The general use of "Plain Cut" is on steels, steel alloys, cast iron, copper and brass.
- Designed for rapid stock removal and good workpiece finishes.
- Produces long chips.
- Zum gewöhnlichen Einsatz in Stahl, legiertem Stahl, Guss, Kupfer und Messing.
- Entwickelt für schnellen Spanabtrag und gute Oberflächenqualität.
- Macht lange Späne



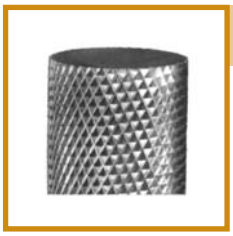
Double Cut Spanbrecher

- The double cut burr allows rapid stock removal in the harder materials.
- Designed for creating a small chip and excellent workpiece finishes.
- The small chip helps to eliminate loading of the flutes.
- Exceedingly convenient application by user.
- Erlaubt schnellen Spanabtrag von härteren Werkstoffen.
- Macht kurze Späne und ausgezeichnete Oberflächengüte.
- Der kurze Span hilft, das zusetzen der Nuten zu verhindern.
- Meistverwendete Zahnform.



Aluma Cut Alu–Zahnung

- Designed to have wider chip space with relief angle.
- More suitable application to non-ferrous metals.
- Größerer Spanraum und mit Spanwinkel.
- Überwiegend für Nichteisen-Metalle entwickelt



Diamond Cut Diamant–Zahnung

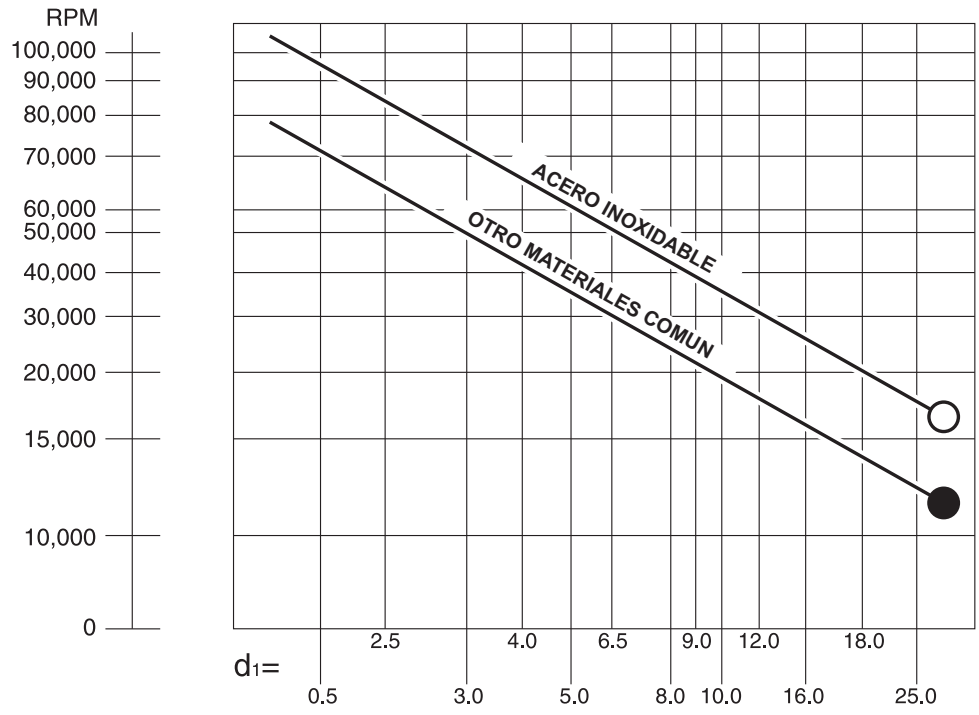
- Designed for creating extremely small chips as powder-like chip.
- Excellent operator control on heat treated and tough alloy steels.
- Excellent finishes.
- Macht extrem kleine Späne, pulverähnliche Späne.
- Gute Führungskontrolle bei gehärteten und zähen legierten Stählen.
- Ausgezeichnete Oberfläche.

ROTARY BURRS

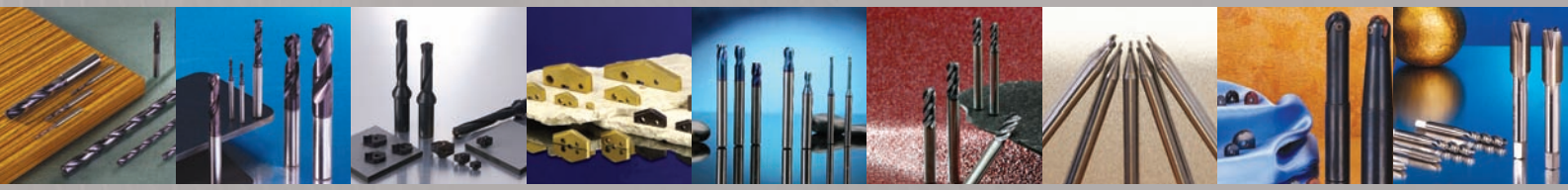
BURR APPLICATION INFORMATION
EINSATZ EMPFEHLUNGEN

MATERIALS	PLAIN CUT	DOUBLE CUT	ALUMA CUT	DIAMOND CUT	CHIP BREAKER
ALUMINUM			●		
BRASS,BRONZE,COPPER	●	●			●
FIBER GLASS				●	
CAST IRON	●	●			●
PLASTICS			●		
STEEL, HRc 40~55	●	●		●	●
STEEL, HRc 55~60	●	●		●	●
STEEL, CARBON	●	●			●
STEEL, NICKEL CHROME	●	●		●	●
STEEL, WELDMENTS	●	●			●
TITANIUM	●	●			●
ZINC			●		

BURR SPEED RECOMMENDATIONS
SCHNITTGESCHWINDIGKEITS EMPFEHLUNGEN



Global Cutting Tool Leader **YG-1**



CARBIDE

Being the best through innovation

GROUND CARBIDE BARS

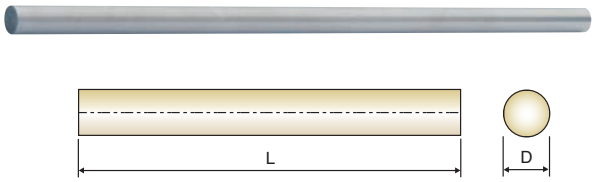
GESCHLIFFENE VHM - RUNDSTÄBE

- 330mm(LENGTH) GROUND CARBIDE BARS
  h6(Diameter Tolerance), +6.0mm(Length Tolerance)
- GESCHLIFFENE VHM - RUNDSTÄBE (330mm Gesamtlänge)
  h6 Ø-Tol. +6.0mm GL-Tol.

GROUND CARBIDE BARS

B6321 SERIES

GROUND CARBIDE BARS
GESCHLIFFENE VHM - RUNDSTÄBE



Unit : mm

EDP No.	Diameter D(h6)	Length L
B6321030	3.0	330
B6321040	4.0	330
B6321050	5.0	330
B6321060	6.0	330
B6321070	7.0	330
B6321080	8.0	330
B6321090	9.0	330
B6321100	10.0	330
B6321110	11.0	330
B6321120	12.0	330
B6321130	13.0	330
B6321140	14.0	330
B6321150	15.0	330
B6321160	16.0	330
B6321170	17.0	330
B6321180	18.0	330
B6321190	19.0	330
B6321200	20.0	330

Diameter Tolerance(mm)	Length Tolerance(mm)
h6	0~6.0

SPECIAL CUTTING TOOLS

Step drills(HSS & Carbide, Multi-diameter Drills)

HSS Sub-land (Step) Drills

Carbide Burnishing Drills

HSS Drill Taps

Acme Thread Taps & Trapezoidal thread taps

Carbide step Reamers

Bridge Reamers

Aircraft drills

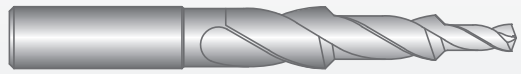
Pine tree cutter

Stop Countersink

YG-1 CO., LTD.

SPECIAL CUTTING TOOLS

STEP DRILLS(HSS & CARBIDE, MULTI-DIAMETER DRILLS)
STUFENBOHRER(HSS UND VHM, MULTI-DURCHMESSER-BOHRER)



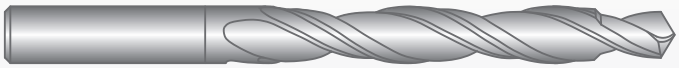
These tools can produce all type of multi-diameters hole.

avaliable 2 step, 3 step & 4 step drill etc.

Diese Bohrer können beliebige Multi-Durchmesser-Bohrungen machen.

Lieferbar mit 2 Stufen, 3 Stufen, 4 Stufen, usw.

HSS SUB-LAND (STEP) DRILLS
HSS MEHRFASEN-STUFENBOHRER



The subland (step) drill performs the same function as the step drill though its construction is somewhat different.

The advantage of the subland drill is that the two diameters may be maintained constant throughout the life of drill because in resharpening the cutting edges of the large diameter it is unnecessary to touch the margins of the small diameter.

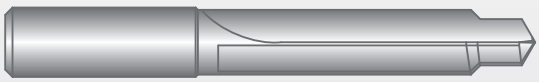
It is somewhat more expensive to manufacture than the step drill, but the convenience and economy in resharpening often outweigh the difference in first cost.

Der Mehrfasen-Stufenbohrer arbeitet wie der einfache Stufenbohrer, unterscheidet sich aber in der Konstruktion.

Der Vorteil des Mehrfasen-Stufenbohrers ist, dass die zwei Durchmesser über die gesamte Lebensdauer des Bohrers gleich bleiben, weil beim Nachschleifen der Schneiden des großen Durchmessers die Rundlauffase des kleineren Durchmessers unberührt bleiben kann.

Seine Herstellung ist teurer als ein Stufenbohrer, aber die Vorteile und Wirtschaftlichkeit beim Nachschärfen überwiegen meist die höheren Einstandskosten.

CARBIDE BURNISHING DRILLS
VHM- BOHRER ZUM GLÄTTEN



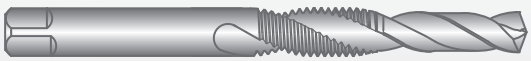
The burnishing drill has four margins which stabilize it as it is drilling.

The two extra "Burnishing" margins also help to smooth the hole after the "Cutting" margin has cut, giving the hole a better finish than a conventional drill.

Der Glättbohrer hat vier Rundlauffasen, die ihn beim Bohren stabilisieren.

Die zwei zusätzlichen "Glättfasen" dienen auch dazu, die Bohrungswand nach dem Bohren zu glätten und der Bohrung ein besseres Finish zu geben als herkömmliche Spiralbohrer.

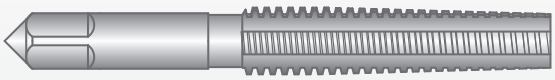
HSS DRILL TAPS
HSS KOMBI-GEWINDEBOHRER



These tools are used for drilling & threading in one operation.

Dieses Werkzeug vereint das Bohren und Gewinden in einem Arbeitsgang.

ACME THREAD TAPS & TRAPEZOIDAL THREAD TAPS
ACMEGEWINDEBOHRER UND ACMETRAPEZGEWINDEBOHRER



Acme threads(29˚) and trapezoidal threads(30˚) are used for purpose of producing traversing motion on machine tools and similar machines.
These taps are used for making internal threads of screw for traversing motion.

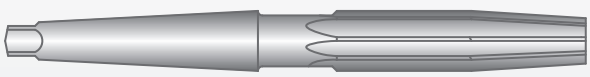
Die (amerikanischen) Acmegewinde (29˚) und Acmetrapezgewinde (30˚) werden dazu benutzt um Schwenkvorrichtungen in Werkzeugmaschinen und ähnlichen Maschinen herzustellen.
Diese Gewindebohrer werden benutzt um Innengewinde von Schwenkvorrichtungen herzustellen.

CARBIDE STEP REAMERS
VHM STUFENREIBAHLEN

Using carbide substrates, longer tool life and better finish than HSS reamers can be achieved .
Two or more step diameters or chamfers can be machined in one operation.

Durch den Einsatz von Hartmetall werden längere Standzeiten und besseres Finish erreicht, als mit HSS-Reibahlen.
Zwei oder mehr Stufendurchmesser oder Anfasungen können in einem Arbeitsgang erledigt werden.

BRIDGE REAMERS
NIETLOCHREIBAHLEN



Bridge reamers, made of high speed steels, are especially designed for severe service and are particularly adapted for use in structural iron and steel, bridge erection, and ship construction, where extreme precision not required.

HSS - Nietlochreibahlen sind für rauhe Einsatzbedingungen gemacht und besonders für die Bearbeitung von Eisen und Baustahl im Brücken- und Schiffbau, wo keine große Präzision benötigt wird.

SPECIAL CUTTING TOOLS

AIRCRAFT DRILLS.
STANGENBOHRER FÜR DIE LUFTFAHRTINDUSTRIE

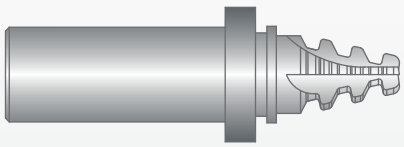
- Aircraft Extension Drills(6" & 12" O.A.L.)

- Treaded Shank Aircraft Drills

1) Aircraft Extension Drills(6" & 12" OAL)
2) Threaded Shank Aircraft Drills.
Used for drilling aircraft materials and made to NAS 907 specification.

1) Lange Stangenbohrer (6" und 12" GL)
2) Stangenbohrer mit Gewindeschaft
Zum Einsatz in Werkstoffen für die Luftfahrtindustrie; gefertigt nach NAS 907 Norm.

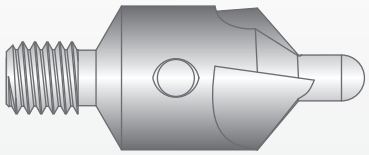
PINE TREE CUTTER
TANNENBAUM-FRÄSER



Pine tree cutters are used for machining the root form & root slot of turbine blade and vane. These are special tools for Aerospace and Power-generation industry.

Tannenbaum-Fräser werden zur Bearbeitung der Grundformen & Steckplätze von Turbinenschaufeln und –Flügel verwendet. Dies sind spezielle Werkzeuge für die Aerospace- und Energieerzeugungs-Industrie.

STOP COUNTERSINK
STOPP-KEGELSENKER



Stop Countersink may be used in micro-stop countersinking units utilizing a threaded shank drive.
For easier adjustment of the countersink depth.

Stopp-Kegelsenker können in allen gängigen, einstellbaren Mirco-Stopp Versenk-Einheiten mittels des Gewindeschafts verwendet werden.

Für eine einfachere Anpassung des Senktiefe

Step drills(HSS & Carbide, Multi-diameter Drills)
HSS Sub-land (Step) Drills
Carbide Burnishing Drills
HSS Drill Taps
Acme Thread Taps & Trapezoidal thread taps
Carbide step Reamers
Bridge Reamers
Aircraft drills.
Pine tree cutter
Stop Countersink

TOOL HOLDERS

HYDRAULIC CHUCK

SHRINK FIT HOLDER

MILLING CHUCK

SK SLIM CHUCK

ER COLLET CHUCK

NC DRILL CHUCK

MORSE TAPER ARBOR

TAPPING ER CHUCK

TAP CHUCK

END MILL HOLDER & SIDE LOCK ARBOR

FACE MILL SYSTEM

FACE MILL SYSTEM

SHELL MILL ARBOR & COMBI SMA

BORING SYSTEM

YG-1 CO., LTD.

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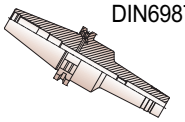
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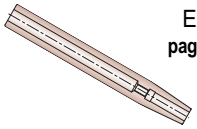
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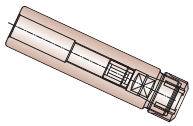
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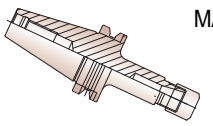
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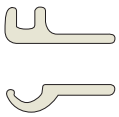
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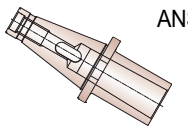
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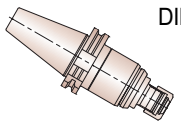
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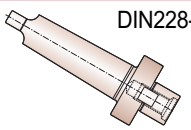
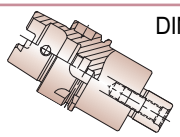

DIN228-MTA (FMA)
page : 1451

MAS403-BT (FMB)
page : 1452

MAS403-BT (FMC)
page : 1453


DIN69893-HSK
page : 1454

SHELL MILL ARBOR & COMBI SMA

MAS403-BT
page : 1455

DIN69893-HSK
page : 1456

DIN69871-SK
page : 1457

MAS403-BT (SCA)
page : 1459

DIN69893-HSK (CMA)
page : 1460

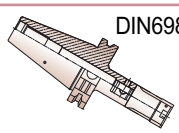
DIN69871-SK (CMA)
page : 1461

MAS403-BT (CMA)
page : 1462

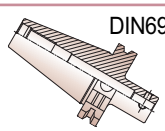
DIN2080-ISO (CMA)
page : 1463

BORING SYSTEM

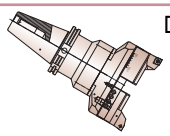
MAS403-BT (TBH)
page : 1465


DIN69871-SK (TBH)
page : 1466

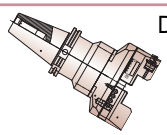
MAS403-BT (SAS)
page : 1467


DIN69871-SK (SAS)
page : 1468

MAS403-BT
(TBH)
page : 1471


DIN69871-SK
(TBH)
page : 1472

MAS403-BT
(FBH)
page : 1473


DIN69871-SK
(FBH)
page : 1474

MAS403-BT (SAS)
page : 1171
DIN69871-SK
(page : 1475)

MAS403-BT (BCA)
page : 1477~1478

ST
page : 1479

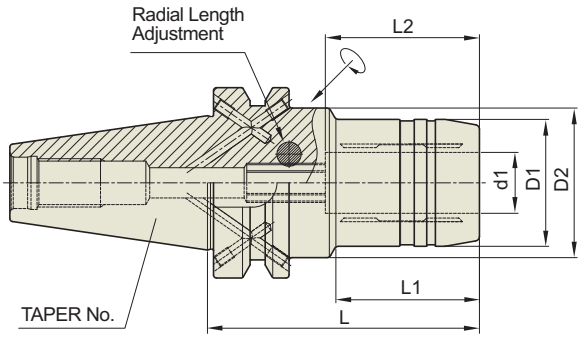
MAS403-BT (BSA)
page : 1483
(BSB)
page : 1484

TOOL HOLDERS

HCR

HYDRAULIC CHUCK (Radial tool length pre-setting type)
HYDRAULIK SPANNFUTTER (Radiale Werkzeuglängen Voreinstellung)

MAS403-BT FORM AD/B



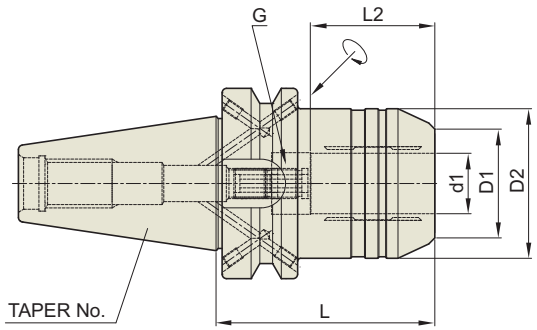
MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	20,000	AD/B

TAPER No.	CODE No.	d1	D1	D2	L	L1	L 2	Weight (kg)
30	BT30AD/B-HCR12-85	12	32	44.5	85	40	37	0.90
	BT30AD/B-HCR20-85	20	44	44	85	-	42	1.00
40	BT40AD/B-HCR12-90	12	32	44.5	90	44.5	37	1.50
	BT40AD/B-HCR20-90	20	42	49.5	90	47.5	42	1.60
	BT40AD/B-HCR32-105	32	60	60	105	-	55	2.20
50	BT50AD/B-HCR12-95	12	32	44.5	95	34	37	3.90
	BT50AD/B-HCR20-95	20	42	44.5	95	34	42	4.00
	BT50AD/B-HCR32-115	32	60	60	115	-	55	4.10

▶In case of BT50, balancing grade shall be guaranteed up to G2.5/15,000rpm.
▶Higher balancing grade product up to G2.5/40,000(G6.3/100,000rpm) could be supplied by customer's request.

HYDRAULIC CHUCK (SHORT & HEAVY)
HYDRAULIK SPANNFUTTER (KURZ und SCHWER)

MAS403-BT FORM AD/B



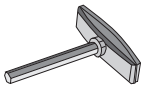
MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	20,000	AD/B

TAPER No.	CODE No.	d1	D1	D2	L	L 2	G	Weight (kg)
30	**BT30AD/B-HC20S-85**	20	41	44	85	42	M10×1.0	0.93
40	**BT40AD/B-HC20S-72.5**	20	37	49.5	72.5	42	M16×1.0	1.40
50	**BT50AD/B-HC20S-90**	20	37	49.5	90	42	M16×1.0	3.85
	BT50AD/B-HC32S-90	32	55	72	90	55	M16×1.0	4.53

▶ In case of BT50, balancing grade shall be guaranteed up to G2.5/15,000rpm.
▶ Higher balancing grade product up to G2.5/40,000(G6.3/100,000rpm) could be supplied by customer's request.

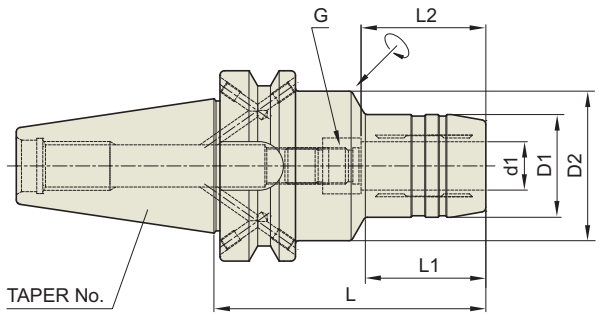
HYDRAULIC CHUCK COLLET (REDUCTION SLEEVE)

HK COLLET	CODE No.	
	HK12	Ø3 ~ Ø8
	HK20	Ø3 ~ Ø16
	HK32	Ø3 ~ Ø25

T-WRENCH	CODE No.
	T-4 T-5

HYDRAULIC CHUCK (SLIM)
HYDRAULIK SPANNFUTTER (SCHLANK)

MAS403-BT FORM AD/B



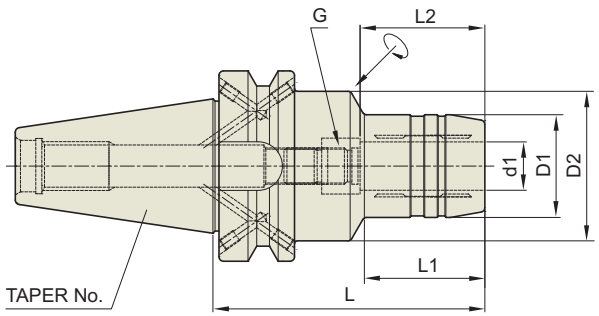
MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	20,000	AD/B

TAPER No.	CODE No.	d1	D1	D2	L	L1	L 2	G	Weight (kg)
30	BT30AD/B-HC6-70	6	26	44.5	70	29.5	27	M5×0.8	0.65
	BT30AD/B-HC8-70	8	28	44.5	70	30	27	M6×1.0	0.65
	BT30AD/B-HC10-75	10	30	44.5	75	31	32	M8×1.0	0.73
	BT30AD/B-HC12-85	12	32	44.5	85	40	37	M10×1.0	0.80
	BT30AD/B-HC14-85	14	34	44.5	85	40	37	M10×1.0	0.80
	BT30AD/B-HC16-90	16	38	44.5	90	46	42	M12×1.0	0.90
	BT30AD/B-HC18-90	18	40	44.5	90	46	42	M12×1.0	0.90
	BT30AD/B-HC20-90	20	42	44.5	90	48	42	M16×1.0	0.90
40	BT40AD/B-HC6-90	6	26	49.5	90	30	27	M5×0.8	1.30
	BT40AD/B-HC8-90	8	28	49.5	90	30	27	M6×1.0	1.30
	BT40AD/B-HC10-90	10	30	49.5	90	32	32	M8×1.0	1.35
	BT40AD/B-HC12-90	12	32	49.5	90	35	37	M10×1.0	1.35
	BT40AD/B-HC14-90	14	24	49.5	90	35	37	M10×1.0	1.35
	BT40AD/B-HC16-90	16	38	49.5	90	40	42	M12×1.0	1.40
	BT40AD/B-HC18-90	18	40	49.5	90	40	42	M12×1.0	1.45
	BT40AD/B-HC20-90	20	42	49.5	90	40	42	M16×1.0	1.50
	BT40AD/B-HC25-100	25	50	60	100	45	48	M16×1.0	1.70
	BT40AD/B-HC32-105	32	60	60	105	50	55	M16×1.0	2.10

▶ Higher balancing grade product up to G2.5/40,000(G6.3/100,000rpm) could be supplied by customer's request.

HYDRAULIC CHUCK (SLIM)
HYDRAULIK SPANNFUTTER (SCHLANK)

MAS403-BT FORM AD/B



MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	15,000	AD/B

TAPER No.	CODE No.	d1	D1	D2	L	L1	L 2	G	Weight (kg)
50	BT50AD/B-HC6-90	6	26	44.5	90	43	27	M5×0.8	3.75
	BT50AD/B-HC6-120	6	26	44.5	120	43	27	M5×0.8	4.10
	BT50AD/B-HC6-150	6	26	44.5	150	43	27	M5×0.8	4.70
	BT50AD/B-HC8-90	8	28	44.5	90	44.5	27	M6×1.0	3.75
	BT50AD/B-HC8-120	8	28	44.5	120	44.5	27	M6×1.0	4.10
	BT50AD/B-HC8-150	8	28	44.5	150	44.5	27	M6×1.0	4.10
	BT50AD/B-HC10-90	10	30	44.5	90	44.5	32	M8×1.0	3.90
	BT50AD/B-HC10-120	10	30	44.5	120	44.5	32	M8×1.0	4.30
	BT50AD/B-HC10-150	10	30	44.5	150	44.5	32	M8×1.0	4.90
	BT50AD/B-HC12-90	12	32	44.5	90	44.5	37	M10×1.0	3.90
	BT50AD/B-HC12-120	12	32	44.5	120	44.5	37	M10×1.0	4.30
	BT50AD/B-HC12-150	12	32	44.5	150	44.5	37	M10×1.0	4.90
	BT50AD/B-HC14-90	14	34	44.5	90	44.5	37	M10×1.0	3.90
	BT50AD/B-HC14-120	14	34	44.5	120	44.5	37	M10×1.0	4.30
	BT50AD/B-HC14-150	14	34	44.5	150	44.5	37	M10×1.0	4.90
	BT50AD/B-HC16-90	16	38	44.5	90	44.5	42	M12×1.0	4.00
	BT50AD/B-HC16-120	16	38	44.5	120	44.5	42	M12×1.0	4.40
	BT50AD/B-HC16-150	16	38	44.5	150	44.5	42	M12×1.0	5.00
	BT50AD/B-HC18-90	18	40	44.5	90	44.5	42	M12×1.0	4.00
	BT50AD/B-HC18-120	18	40	44.5	120	44.5	42	M12×1.0	4.40
	BT50AD/B-HC18-150	18	40	44.5	150	44.5	42	M12×1.0	5.00
	BT50AD/B-HC20-90	20	42	44.5	90	44.5	42	M16×1.0	4.00
	BT50AD/B-HC20-120	20	42	44.5	120	44.5	42	M16×1.0	4.40
	BT50AD/B-HC20-150	20	42	44.5	150	44.5	42	M16×1.0	5.00
	BT50AD/B-HC25-105	25	50	60	105	47.5	42	M16×1.0	4.40
	BT50AD/B-HC25-150	25	50	60	150	47.5	42	M16×1.0	5.60
	BT50AD/B-HC32-115	32	60	60	115	-	42	M16×1.0	4.70
	BT50AD/B-HC32-150	32	60	60	150	-	42	M16×1.0	6.00

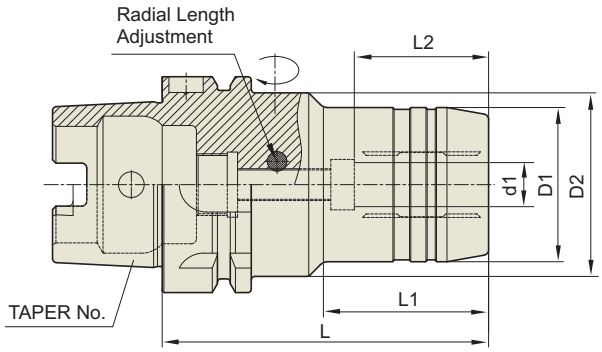
▶In case of Hydraulic Chuck with Ø12, Ø20 and Ø32 ID, various cutting tools with different dia. can be used together with Hydraulic Chuck collet(reduction sleeve).

TOOL HOLDERS

HCR

HYDRAULIC CHUCK (Radial tool length pre-setting type)
HYDRAULIK SPANNFUTTER (Radiale Werkzeuglängen Voreinstellung)

DIN69893-HSK FORM A



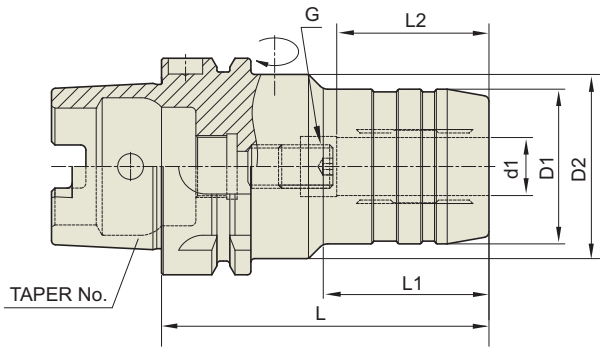
DIN69893 - HSK	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	20,000	

TAPER No.	CODE No.	d1	D1	D2	L	L1	L 2	Weight (kg)
40A	HSK40A-HCR6-80	6	26	34	80	36	27	0.55
	HSK40A-HCR8-80	8	28	34	80	36	27	0.55
	HSK40A-HCR10-85	10	30	34	85	43	32	0.65
	HSK40A-HCR12-90	12	32	34	90	48	37	0.70
50A	HSK50A-HCR6-80	6	26	50	80	35	27	0.70
	HSK50A-HCR8-80	8	28	50	80	35	27	0.70
	HSK50A-HCR10-85	10	30	50	85	38	32	0.73
	HSK50A-HCR12-90	12	32	50	90	40	37	0.80
	HSK50A-HCR14-90	14	34	50	90	40	37	0.80
	HSK50A-HCR16-95	16	38	53	95	34	42	1.00
	HSK50A-HCR18-95	18	40	57	95	34	42	1.00
	HSK50A-HCR20-100	20	42	60	100	34	42	1.10
63A	HSK63A-HCR6-80	6	26	50	80	33	27	0.96
	HSK63A-HCR8-80	8	28	50	80	33	27	0.98
	HSK63A-HCR10-85	10	30	50	85	38	32	1.04
	HSK63A-HCR12-90	12	32	50	90	40	37	1.06
	HSK63A-HCR14-90	14	34	50	90	46	37	1.08
	HSK63A-HCR16-95	16	38	50	95	51	42	1.18
	HSK63A-HCR18-95	18	40	50	95	52	42	1.20
	HSK63A-HCR20-100	20	42	50	100	51	42	1.22
	HSK63A-HCR25-120	25	57	63	120	54.5	48	2.20
	HSK63A-HCR32-125	32	64	75	125	57.5	55	2.60
100A	HSK100A-HCR6-85	6	26	63	85	33	27	3.60
	HSK100A-HCR8-85	8	28	63	85	33	27	3.60
	HSK100A-HCR10-90	10	30	63	90	36	32	3.80
	HSK100A-HCR12-95	12	32	63	95	40	37	3.80
	HSK100A-HCR14-95	14	34	63	95	41	37	3.80
	HSK100A-HCR16-100	16	38	63	100	46	42	3.90
	HSK100A-HCR18-100	18	40	63	100	46	42	3.90
	HSK100A-HCR20-105	20	42	75	105	51	42	4.20
	HSK100A-HCR25-115	25	57	75	115	55.5	48	4.40
	HSK100A-HCR32-120	32	64	75	120	63.5	55	4.60

▶In case of HSK100A, balancing grade shall be guaranteed up to G2.5/15,000rpm.
▶Higher balancing grade product up to G2.5/40,000(G6.3/100,000rpm) could be supplied by customer's request.

HYDRAULIC CHUCK
HYDRAULIK SPANNFUTTER

DIN69893-HSK FORM A



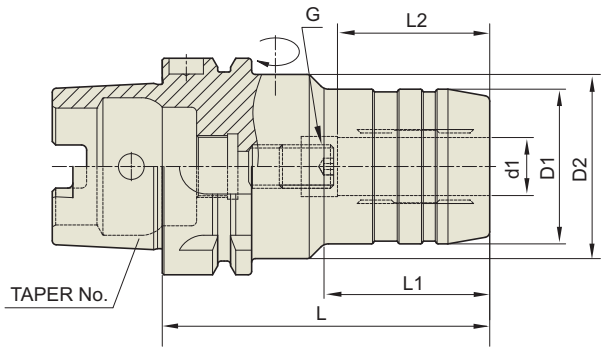
DIN69893 - HSK	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	20,000	

TAPER No.	CODE No.	d1	D1	D2	L	L1	L 2	G	Weight (kg)
40A	HSK40A-HC6-70	6	26	34	70	36	27	M5×0.8	0.50
	HSK40A-HC8-70	8	28	34	70	36	27	M6×1.0	0.50
	HSK40A-HC10-75	10	30	34	75	42	32	M6×1.0	0.60
	HSK40A-HC12-80	12	32	34	80	48	37	M6×1.0	0.65
50A	HSK50A-HC6-70	6	26	50	70	28	27	M5×0.8	0.65
	HSK50A-HC8-70	8	28	50	70	28	27	M6×1.0	0.65
	HSK50A-HC10-75	10	30	50	75	34	32	M8×1.0	0.70
	HSK50A-HC12-85	12	32	50	85	44	37	M10×1.0	0.75
	HSK50A-HC14-85	14	34	50	85	44	37	M10×1.0	0.75
	HSK50A-HC16-90	16	38	53	90	30	42	M12×1.0	0.90
	HSK50A-HC18-90	18	40	57	90	30	42	M12×1.0	0.90
	HSK50A-HC20-90	20	42	60	90	34	42	M16×1.0	1.00
63A	HSK63A-HC6-70	6	26	50	70	24	27	M5×0.8	0.53
	HSK63A-HC8-70	8	28	50	70	24	27	M6×1.0	0.55
	HSK63A-HC10-80	10	30	50	80	35	32	M8×1.0	1.00
	HSK63A-HC12-85	12	32	50	85	40	37	M10×1.0	1.03
	HSK63A-HC14-85	14	34	50	85	40	37	M10×1.0	1.05
	HSK63A-HC16-90	16	38	50	90	46	42	M12×1.0	1.15
	HSK63A-HC18-90	18	40	50	90	46	42	M12×1.0	1.15
	HSK63A-HC20-90	20	42	50	90	48	42	M16×1.0	1.20
	HSK63A-HC25-120	25	57	63	120	59	48	M16×1.0	2.20
	HSK63A-HC32-125	32	64	75	125	63	55	M16×1.0	2.40

▶Higher balancing grade product up to G2.5/40,000(G6.3/100,000rpm) could be supplied by customer's request.

HYDRAULIC CHUCK
HYDRAULIK SPANNFUTTER

DIN69893-HSK FORM A

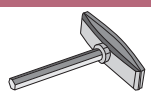


DIN69893 - HSK	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	15,000	

TAPER No.	CODE No.	d1	D1	D2	L	L1	L 2	G	Weight (kg)
100A	HSK100A-HC6-75	6	26	50	75	24	27	M5×0.8	3.20
	HSK100A-HC8-75	8	28	50	75	24	27	M6×1.0	3.20
	HSK100A-HC10-90	10	30	50	90	35	32	M8×1.0	3.40
	HSK100A-HC12-95	12	32	50	95	40	37	M10×1.0	3.40
	HSK100A-HC14-95	14	34	50	95	40	37	M10×1.0	3.40
	HSK100A-HC16-100	16	38	50	100	46	42	M12×1.0	3.50
	HSK100A-HC18-100	18	40	50	100	46	42	M12×1.0	3.60
	HSK100A-HC20-105	20	42	50	105	48	42	M16×1.0	4.00
	HSK100A-HC25-110	25	57	63	110	59	48	M16×1.0	4.20
	HSK100A-HC32-110	32	64	75	110	63	55	M16×1.0	4.30

▶In case of Hydraulic Chuck with Ø12, Ø20 and Ø32 ID, various cutting tools with different dia. can be used together with Hydraulic Chuck collet(reduction sleeve).

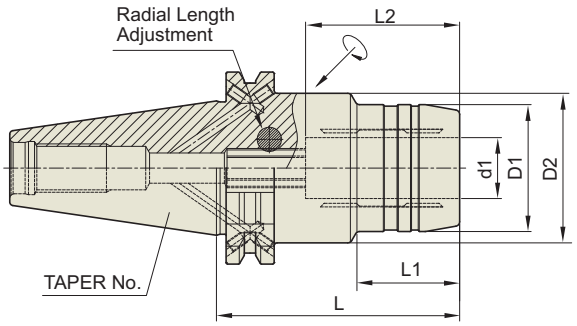
HYDRAULIC CHUCK COLLET (REDUCTION SLEEVE)

HK COLLET	CODE No.		T-WRENCH	CODE No.
	HK12	Ø3 ~ Ø8		T-4 T-5
	HK20	Ø3 ~ Ø16		
	HK32	Ø3 ~ Ø25		

HYDRAULIC CHUCK (Radial tool length pre-setting type)

HYDRAULIK SPANNFUTTER (Radiale Werkzeuglängen Voreinstellung)

DIN 69871-SK FORM AD/B



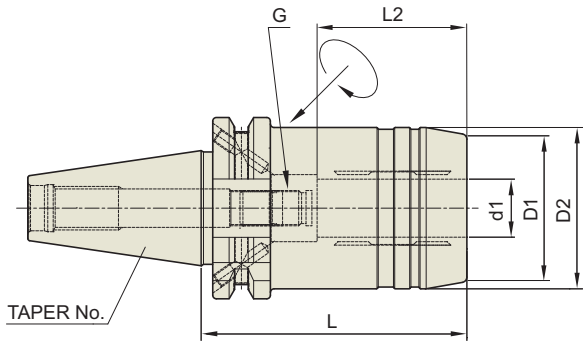
DIN 69871 - SK	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	20,000	AD/B

TAPER No.	CODE No.	d1	D1	D2	L	L1	L 2	Weight (kg)
30	SK30AD/B-HCR12-85	12	32	44.5	85	40	37	0.90
	SK30AD/B-HCR20-85	20	44	44	85	-	42	1.00
40	SK40AD/B-HCR12-80.5	12	32	49.5	80.5	31.5	37	1.50
	SK40AD/B-HCR20-80.5	20	42	49.5	80.5	34	42	1.60
	SK40AD/B-HCR32-110	32	63	80	110	50	55	2.20
50	SK50AD/B-HCR12-80.5	12	32	49.5	80.5	31.5	37	3.90
	SK50AD/B-HCR20-80.5	20	42	49.5	80.5	34	42	4.00
	SK50AD/B-HCR32-100	32	60	60	100	-	55	4.70

▶In case of SK50, balancing grade shall be guaranteed up to G2.5/15,000rpm.
▶Higher balancing grade product up to G2.5/40,000(G6.3/100,000rpm) could be supplied by customer's request.

HYDRAULIC CHUCK (SHORT & HEAVY)
HYDRAULIK SPANNFUTTER (KURZ und SCHWER)

DIN 69871-SK FORM AD/B



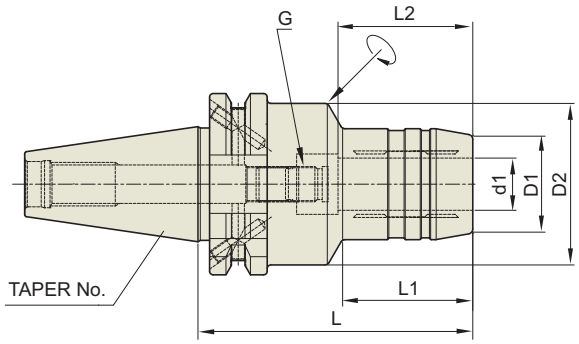
DIN 69871 - SK	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	20,000	AD/B

TAPER No.	CODE No.	d1	D1	D2	L	L 2	G	Weight (kg)
30	**SK30AD/B-HC20S-85**	20	41	44	85	42	M10×1.0	0.53
40	**SK40AD/B-HC20S-64.5**	20	37	49.5	64.5	42	M16×1.0	1.26
50	**SK50AD/B-HC20S-81**	20	37	49.5	81	42	M16×1.0	3.65
	SK50AD/B-HC32S-81	32	55	72	81	55	M16×1.0	3.87

▶In case of SK50, balancing grade shall be guaranteed up to G2.5/15,000rpm.
▶Higher balancing grade product up to G2.5/40,000(G6.3/100,000rpm) could be supplied by customer's request.

HYDRAULIC CHUCK (SLIM)
HYDRAULIK SPANNFUTTER (SCHLANK)

DIN 69871-SK FORM AD/B



DIN 69871 - SK	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	20,000	AD/B

TAPER No.	CODE No.	d1	D1	D2	L	L1	L 2	G	Weight (kg)
30	SK30AD/B-HC6-70	6	26	44.5	70	29.5	27	M5×0.8	0.65
	SK30AD/B-HC8-70	8	28	44.5	70	30	27	M6×1.0	0.65
	SK30AD/B-HC10-75	10	30	44.5	75	31	32	M8×1.0	0.73
	SK30AD/B-HC12-85	12	32	44.5	85	40	37	M10×1.0	0.80
	SK30AD/B-HC14-85	14	34	44.5	85	40	37	M10×1.0	0.80
	SK30AD/B-HC16-90	16	38	44.5	90	46	42	M12×1.0	0.90
	SK30AD/B-HC18-90	18	40	44.5	90	46	42	M12×1.0	0.90
	SK30AD/B-HC20-90	20	42	44.5	90	48	42	M16×1.0	0.90
40	SK40AD/B-HC6-80.5	6	22	26	80.5	30	27	M5×0.8	1.31
	SK40AD/B-HC6-110	6	22	26	110	30	27	M5×0.8	1.76
	SK40AD/B-HC8-80.5	8	24	28	80.5	30	27	M12×1.0	1.34
	SK40AD/B-HC8-110	8	24	28	110	30	27	M6×1.0	1.76
	SK40AD/B-HC10-80.5	10	26	30	80.5	32	32	M8×1.0	1.34
	SK40AD/B-HC10-110	10	26	30	110	32	32	M8×1.0	1.76
	SK40AD/B-HC12-80.5	12	28	32	80.5	35	37	M10×1.0	1.34
	SK40AD/B-HC12-110	12	28	32	110	35	37	M10×1.0	1.76
	SK40AD/B-HC16-80.5	16	34	38	80.5	40	42	M12×1.0	1.34
	SK40AD/B-HC16-110	16	34	38	110	40	42	M12×1.0	1.76
	SK40AD/B-HC20-80.5	20	38	42	80.5	40	42	M16×1.0	1.35
	SK40AD/B-HC20-110	20	38	42	110	40	42	M16×1.0	1.78
	SK40AD/B-HC25-80.5	25	46	50	80.5	45	48	M16×1.0	1.75
	SK40AD/B-HC32-110	32	56	60	110	50	55	M16×1.0	2.60
50	SK50AD/B-HC6-80.5	6	22	26	80.5	30	27	M5×0.8	3.00
	SK50AD/B-HC8-80.5	8	24	28	80.5	30	27	M6×1.0	3.00
	SK50AD/B-HC10-80.5	10	26	30	80.5	32	32	M8×1.0	3.00
	SK50AD/B-HC12-80.5	12	28	32	80.5	35	37	M10×1.0	3.05
	SK50AD/B-HC16-80.5	16	34	38	80.5	40	42	M12×1.0	3.10
	SK50AD/B-HC20-80.5	20	38	42	80.5	40	42	M16×1.0	3.15

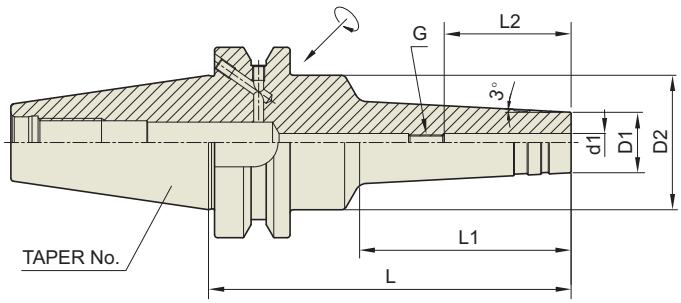
▶In case of SK50, balancing grade shall be guaranteed up to G2.5/15,000rpm.
▶Higher balancing grade product up to G2.5/40,000(G6.3/100,000rpm) could be supplied by customer's request.

TOOL HOLDERS

HMC

HYDRAULIC MOLD CHUCK
HYDRAULIK SPANNFUTTER FÜR DEN FORMENBAU

MAS403-BT FORM AD/B



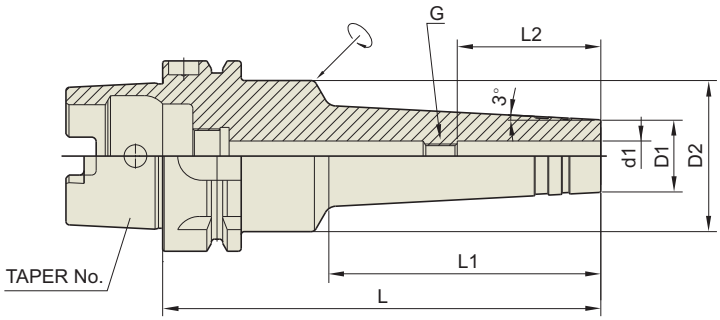
MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	20,000	AD/B

TAPER No.	CODE No.	d1	D1	D2	L	L1	L 2	G	Weight (kg)
40	BT40AD/B-HMC6-120	6	20	44.5	120	70	27	M5×0.8	1.40
	BT40AD/B-HMC6-150	6	20	44.5	150	100	27	M5×0.8	1.65
	BT40AD/B-HMC8-120	8	22	44.5	120	70	27	M6×1.0	1.40
	BT40AD/B-HMC8-150	8	22	44.5	150	100	27	M6×1.0	1.65
	BT40AD/B-HMC10-120	10	24	44.5	120	70	32	M8×1.0	1.40
	BT40AD/B-HMC10-150	10	24	44.5	150	100	32	M8×1.0	1.65
	BT40AD/B-HMC12-120	12	25	44.5	120	70	37	M10×1.0	1.40
	BT40AD/B-HMC12-150	12	25	44.5	150	100	37	M10×1.0	1.65
	BT40AD/B-HMC16-120	16	32	44.5	120	70	42	M12×1.0	1.45
	BT40AD/B-HMC16-150	16	32	44.5	150	100	42	M12×1.0	1.70
	BT40AD/B-HMC20-120	20	34	44	120	-	42	M16×1.0	1.50
	BT40AD/B-HMC20-150	20	34	47	150	-	42	M16×1.0	1.80
50	BT50AD/B-HMC6-150	6	20	50	150	90	27	M5×0.8	4.70
	BT50AD/B-HMC8-150	8	22	50	150	90	27	M6×1.0	4.70
	BT50AD/B-HMC10-150	10	24	50	150	90	32	M8×1.0	4.70
	BT50AD/B-HMC12-150	12	25	37	150	-	37	M10×1.0	4.70
	BT50AD/B-HMC16-150	16	32	44	150	-	42	M12×1.0	4.90
	BT50AD/B-HMC20-150	20	34	46	150	-	42	M16×1.0	5.00

▶In case of BT50, balancing grade shall be guaranteed up to G2.5/15,000rpm.
▶Higher balancing grade product up to G2.5/40,000(G6.3/100,000rpm) could be supplied by customer's request.

HYDRAULIC MOLD CHUCK
HYDRAULIK SPANNFUTTER FÜR DEN FORMENBAU

DIN69893-HSK FORM A



DIN69893 - HSK	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	20,000	

TAPER No.	CODE No.	d1	D1	D2	L	L1	L 2	G	Weight (kg)
63A	HSK63A-HMC6-145	6	20	50	145	90	27	M5×0.8	1.40
	HSK63A-HMC8-145	8	22	50	145	90	27	M6×1.0	1.40
	HSK63A-HMC10-145	10	24	50	145	90	32	M8×1.0	1.40
	HSK63A-HMC12-145	12	25	50	145	90	37	M10×1.0	1.40
	HSK63A-HMC16-145	16	32	50	145	90	42	M12×1.0	1.45
	HSK63A-HMC20-145	20	34	50	145	90	42	M16×1.0	1.50
100A	HSK100A-HMC6-150	6	20	50	150	90	27	M5×0.8	4.50
	HSK100A-HMC8-150	8	22	50	150	90	27	M6×1.0	4.50
	HSK100A-HMC10-150	10	24	50	150	90	32	M8×1.0	4.50
	HSK100A-HMC12-150	12	25	50	150	90	37	M10×1.0	4.50
	HSK100A-HMC16-150	16	32	50	150	90	42	M12×1.0	4.70
	HSK100A-HMC20-150	20	34	50	150	90	42	M16×1.0	5.00

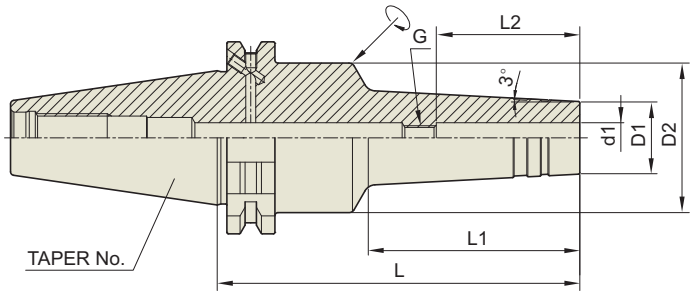
▶In case of HSK100A, balancing grade shall be guaranteed up to G2.5/15,000rpm.
▶Higher balancing grade product up to G2.5/40,000(G6.3/100,000rpm) could be supplied by customer's request.

TOOL HOLDERS

HMC

HYDRAULIC MOLD CHUCK
HYDRAULIK SPANNFUTTER FÜR DEN FORMENBAU

DIN 69871-SK FORM AD/B



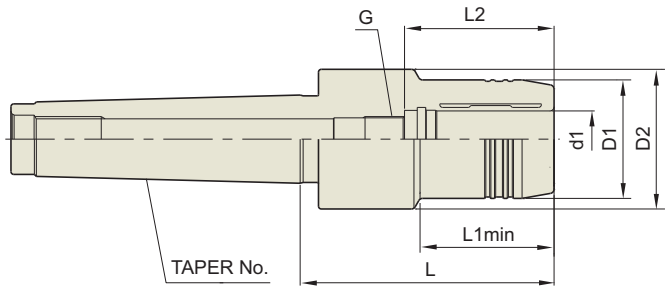
DIN 69871 - SK	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	20,000	AD/B

TAPER No.	CODE No.	d1	D1	D2	L	L1	L 2	G	Weight (kg)
40	SK40AD/B-HMC6-120	6	20	49.5	120	70	27	M5×0.8	1.40
	SK40AD/B-HMC6-150	6	20	49.5	150	100	27	M5×0.8	1.65
	SK40AD/B-HMC8-120	8	22	49.5	120	70	27	M6×1.0	1.40
	SK40AD/B-HMC8-150	8	22	49.5	150	100	27	M6×1.0	1.65
	SK40AD/B-HMC10-120	10	24	49.5	120	70	32	M8×1.0	1.40
	SK40AD/B-HMC10-150	10	24	49.5	150	100	32	M8×1.0	1.65
	SK40AD/B-HMC12-120	12	25	49.5	120	70	37	M10×1.0	1.40
	SK40AD/B-HMC12-150	12	25	49.5	150	100	37	M10×1.0	1.65
	SK40AD/B-HMC16-120	16	32	49.5	120	70	42	M12×1.0	1.45
	SK40AD/B-HMC16-150	16	32	49.5	150	100	42	M12×1.0	1.70
	SK40AD/B-HMC20-120	20	34	49.5	120	70	42	M16×1.0	1.50
	SK40AD/B-HMC20-150	20	34	49.5	150	100	42	M16×1.0	1.70
50	SK50AD/B-HMC6-150	6	20	49.5	150	90	27	M5×0.8	4.50
	SK50AD/B-HMC8-150	8	22	49.5	150	90	27	M6×1.0	4.50
	SK50AD/B-HMC10-150	10	24	49.5	150	90	32	M8×1.0	4.50
	SK50AD/B-HMC12-150	12	25	49.5	150	90	37	M10×1.0	4.50
	SK50AD/B-HMC16-150	16	32	49.5	150	90	42	M12×1.0	4.70
	SK50AD/B-HMC20-150	20	34	49.5	150	90	42	M16×1.0	5.00

▶In case of SK50, balancing grade shall be guaranteed up to G2.5/15,000rpm.
▶Higher balancing grade product up to G2.5/40,000(G6.3/100,000rpm) could be supplied by customer's request.

HYDRAULIC CHUCK (Exclusive use for grinder)
HYDRAULIK SPANNFUTTER (für Schleifmaschine)

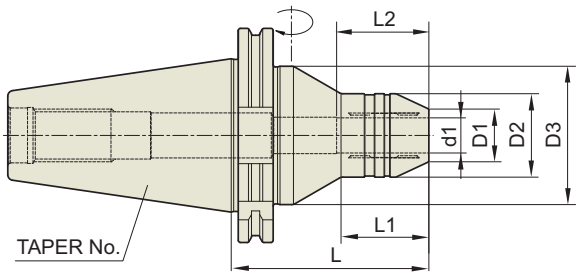
MTB



MTB	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

TAPER No.	CODE No.	d1	D1	D2	L	L1	L 2	G	Weight (kg)
MT4	**MTB4-HC20-90**	20	42	49.5	90	47.5	53	M6×1.0	1.30
	MTB4-HC32S-90	32	72	72	90	-	75	-	1.40
MT5	**MTB5-HC20-90**	20	42	49.5	90	47.5	53	-	2.20
	MTB5-HC32S-90	32	72	72	90	-	100	-	2.40

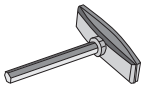
DIN 69871 - SK FORM A



DIN 69871 - SK	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	15,000	

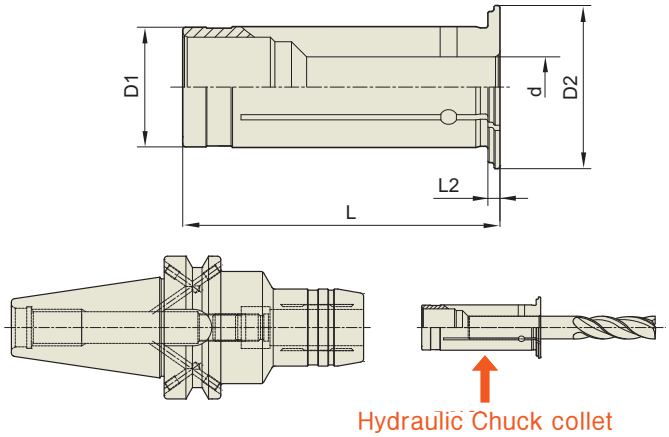
TAPER No.	CODE No.	d1	D1	D2	D3	L	L1	L 2	Weight (kg)
50	**SK50-HC6G-90**	6	14	30	63	90	30	27	3.00
	SK50-HC8G-90	8	16	30	63	90	30	27	3.00
	SK50-HC10G-90	10	18	30	63	90	30	32	3.00
	SK50-HC12G-90	12	21	33	63	90	35	37	3.05
	SK50-HC14G-90	14	22	35	63	90	35	37	3.10
	SK50-HC16G-90	16	24	38	63	90	40	42	3.10
	SK50-HC18G-90	18	26	40	63	90	40	42	3.10
	SK50-HC20G-110	20	29	42	63	110	40	42	3.30
	SK50-HC25G-110	25	34	50	70	110	45	48	3.60
	SK50-HC32G-110	32	42	56	80	110	50	55	4.20

HYDRAULIC CHUCK COLLET (REDUCTION SLEEVE)

HK COLLET	CODE No.		T-WRENCH	CODE No.
	HK12	Ø3 ~ Ø8		T-4 T-5
	HK20	Ø3 ~ Ø16		
	HK32	Ø3 ~ Ø25		

HYDRAULIC CHUCK COLLET (REDUCTION SLEEVE)

HYDRAULIK SPANNFUTTER SPANNZANGE (Geschlitzte Zwischenbuchse)



CODE No.		d	D1	D2	L	L2
HK12	3	3	12	19	47	2
	4	4	12	19	47	2
	5	5	12	19	47	2
	6	6	12	19	47	2
	7	7	12	19	47	2
	8	8	12	19	47	2
HK20	3	3	20	24	50.5	2
	4	4	20	24	50.5	2
	5	5	20	24	50.5	2
	6	6	20	24	50.5	2
	7	7	20	24	50.5	2
	8	8	20	24	50.5	2
	9	9	20	24	50.5	2
	10	10	20	24	50.5	2
	11	11	20	24	50.5	2
	12	12	20	24	50.5	2
	13	13	20	24	50.5	2
	14	14	20	24	50.5	2
	15	15	20	24	50.5	2
	16	16	20	24	50.5	2
	17	17	20	24	50.5	2
HK32	6	6	32	36	60.5	3
	8	8	32	36	60.5	3
	10	10	32	36	60.5	3
	12	12	32	36	60.5	3
	14	14	32	36	60.5	3
	16	16	32	36	60.5	3
	18	18	32	36	60.5	3
	20	20	32	36	60.5	3
	25	25	32	36	60.5	3

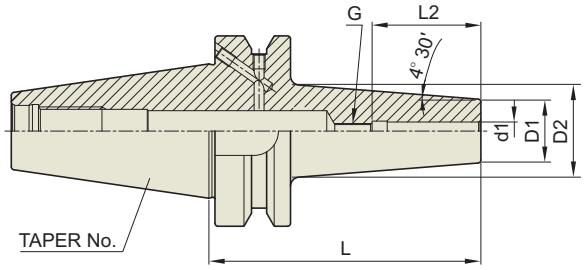
▶Other special sizes of Hydraulic Chuck collets could be produced and supplied .

▶ FEATURE : Hydraulic Chuck collet(reduction sleeve) is divided into trisection by high precision wire cutting, which guarantees high precision ID.

▶ CHUCKING METHOD : Please assemble cutting tool with collet firstly, and then insert collet into Hydraulic Chuck.

SHRINK FIT HOLDER
SCHRUMPFFUTTER

MAS403-BT FORM AD/B



MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	20,000	AD/B

TAPER No.	CODE No.	d1	D1	D2	L	L 2	G	Weight (kg)
30	BT30AD/B-SFH3-60	3	11	17	60	19	-	0.40
	BT30AD/B-SFH4-60	4	11	17	60	22	-	0.40
	BT30AD/B-SFH5-60	5	13	19	60	28	-	0.40
	BT30AD/B-SFH6-60	6	21	27	60	36	M5×0.8	0.40
	BT30AD/B-SFH8-60	8	21	27	60	36	M6×1.0	0.40
	BT30AD/B-SFH10-80	10	24	33	80	42	M8×1.0	0.40
	BT30AD/B-SFH12-80	12	24	33	80	47	M10×1.0	0.42
	BT30AD/B-SFH16-80	16	27	36	80	50	M12×1.0	0.42
	BT30AD/B-SFH20-90	20	33	44	90	52	M16×1.0	0.44
40	BT40AD/B-SFH3-90	3	11	21	90	19	-	1.00
	BT40AD/B-SFH4-90	4	11	21	90	22	-	1.00
	BT40AD/B-SFH5-90	5	13	23	90	28	-	1.00
	BT40AD/B-SFH6-90	6	21	31	90	36	M5×0.8	1.10
	BT40AD/B-SFH6-160	6	21	31	160	36	M5×0.8	1.15
	BT40AD/B-SFH8-90	8	21	31	90	36	M6×1.0	1.11
	BT40AD/B-SFH8-160	8	21	31	160	36	M6×1.0	1.15
	BT40AD/B-SFH10-90	10	24	34	90	42	M8×1.0	1.10
	BT40AD/B-SFH10-160	10	24	34	160	42	M8×1.0	1.15
	BT40AD/B-SFH12-90	12	24	34	90	47	M10×1.0	1.10
	BT40AD/B-SFH12-160	12	24	34	160	47	M10×1.0	1.15
	BT40AD/B-SFH14-90	14	27	37	90	47	M10×1.0	1.20
	BT40AD/B-SFH14-160	14	27	37	160	47	M10×1.0	1.50
	BT40AD/B-SFH16-90	16	27	37	90	50	M12×1.0	1.20
	BT40AD/B-SFH16-160	16	27	37	160	50	M12×1.0	1.50
	BT40AD/B-SFH18-90	18	33	43	90	50	M12×1.0	1.30
	BT40AD/B-SFH18-160	18	33	43	160	50	M12×1.0	1.60
	BT40AD/B-SFH20-90	20	33	43	90	52	M16×1.0	1.40
	BT40AD/B-SFH20-160	20	33	43	160	52	M16×1.0	1.70
	BT40AD/B-SFH25-100	25	44	55	100	58	M16×1.0	1.70
	BT40AD/B-SFH25-160	25	44	57	160	58	M16×1.0	2.00

▶ Higher balancing grade product up to G2.5/40,000(G6.3/100,000rpm) could be supplied by customer's request.

TOOL HOLDERS

SFH

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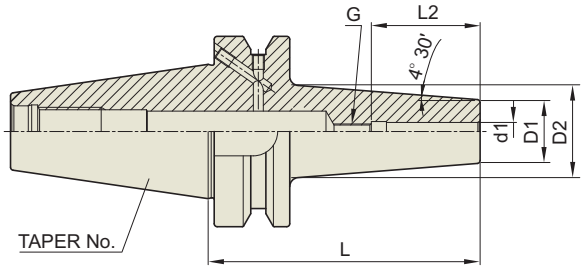
MAS403-BT FORM AD/B



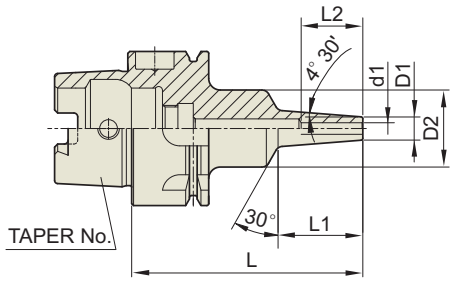
MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	20,000	AD/B

TAPER No.	CODE No.	d1	D1	D2	L	L 2	G	Weight (kg)
50	BT50AD/B-SFH3-100	3	11	21	100	19	-	1.50
	BT50AD/B-SFH4-100	4	11	21	100	22	-	1.50
	BT50AD/B-SFH5-100	5	13	23	100	28	-	1.50
	BT50AD/B-SFH6-100	6	21	31	100	36	M5×0.8	1.50
	BT50AD/B-SFH6-160	6	21	31	160	36	M5×0.8	2.00
	BT50AD/B-SFH8-100	8	21	31	100	36	M6×1.0	1.50
	BT50AD/B-SFH8-160	8	21	31	160	36	M6×1.0	2.00
	BT50AD/B-SFH10-100	10	24	34	100	42	M8×1.0	1.50
	BT50AD/B-SFH10-160	10	24	34	160	42	M8×1.0	2.00
	BT50AD/B-SFH12-100	12	24	34	100	47	M10×1.0	1.50
	BT50AD/B-SFH12-160	12	24	34	160	47	M10×1.0	2.00
	BT50AD/B-SFH14-100	14	27	37	100	47	M10×1.0	1.60
	BT50AD/B-SFH14-160	14	27	37	160	47	M10×1.0	2.10
	BT50AD/B-SFH16-100	16	27	37	100	50	M12×1.0	1.60
	BT50AD/B-SFH16-160	16	27	37	160	50	M12×1.0	2.10
	BT50AD/B-SFH18-100	18	33	43	100	50	M12×1.0	1.60
	BT50AD/B-SFH18-160	18	33	43	160	50	M12×1.0	2.00
	BT50AD/B-SFH20-100	20	33	43	100	52	M16×1.0	1.80
	BT50AD/B-SFH20-160	20	33	43	160	52	M16×1.0	2.20
	BT50AD/B-SFH25-100	25	44	54	100	58	M16×1.0	2.00
	BT50AD/B-SFH25-160	25	44	57	160	58	M16×1.0	2.40

▶ Higher balancing grade product up to G2.5/40,000(G6.3/100,000rpm) could be supplied by customer's request.

SHRINK FIT HOLDER
SCHRUMPFFUTTER

DIN69893-HSK FORM A

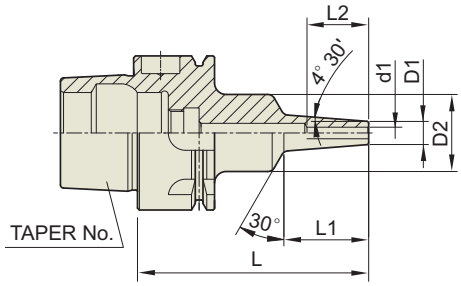


DIN69893 - HSK	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	20,000	

TAPER No.	CODE No.	d1	D1	D2	L	L1	L 2	Weight (kg)
40A	HSK40A-SFH3-60	3	11	17	60	22	16	0.30
	HSK40A-SFH3-80	3	11	17	80	42	16	0.40
	HSK40A-SFH4-60	4	11	17	60	22	16.5	0.30
	HSK40A-SFH4-80	4	11	17	80	42	16.5	0.40
	HSK40A-SFH5-60	5	13	19	60	22	17	0.30
	HSK40A-SFH5-80	5	13	19	80	42	17	0.40
	HSK40A-SFH6-60	6	21	27	60	22	24	0.40
	HSK40A-SFH6-80	6	21	27	80	42	24	0.50
	HSK40A-SFH8-70	8	21	27	70	22	25	0.40
	HSK40A-SFH8-90	8	21	27	90	42	25	0.50
	HSK40A-SFH10-70	10	24	33	70	22	32	0.50
	HSK40A-SFH10-90	10	24	33	90	42	32	0.60

▶ Higher balancing grade product up to G2.5/40,000(G6.3/100,000rpm) could be supplied by customer's request.

DIN69893-HSK FORM E



TAPER No.	CODE No.	d1	D1	D2	L	L1	L 2	Weight (kg)
40E	HSK40E-SFH3-50	3	11	17	50	22	16	0.30
	HSK40E-SFH3-70	3	11	17	70	42	16	0.40
	HSK40E-SFH4-50	4	11	17	50	22	16.5	0.30
	HSK40E-SFH4-70	4	11	17	70	42	16.5	0.40
	HSK40E-SFH5-50	5	13	19	50	22	17	0.30
	HSK40E-SFH5-70	5	13	19	70	42	17	0.40
	HSK40E-SFH6-50	6	21	27	50	22	24	0.40
	HSK40E-SFH6-70	6	21	27	70	42	24	0.50
	HSK40E-SFH8-60	8	21	27	60	22	25	0.40
	HSK40E-SFH8-80	8	21	27	80	42	25	0.50
	HSK40E-SFH10-60	10	24	33	60	22	32	0.50
	HSK40E-SFH10-80	10	24	33	80	42	32	0.60

▶ Higher balancing grade product up to G2.5/40,000(G6.3/100,000rpm) could be supplied by customer's request.

TOOL HOLDERS

SFH

SHRINK FIT HOLDER
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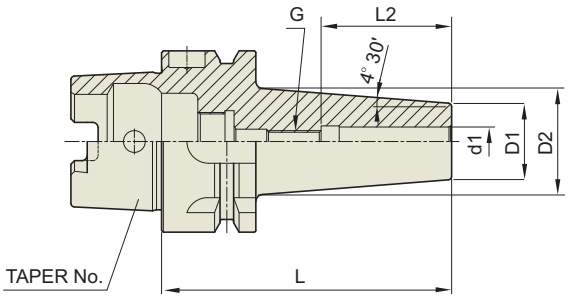
DIN69893-HSK FORM A



DIN69893 - HSK	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	20,000	

TAPER No.	CODE No.	d1	D1	D2	L	L 2	G	Weight (kg)
50A	HSK50A-SFH3-80	3	11	19.5	80	19	-	0.54
	HSK50A-SFH4-80	4	11	19.5	80	22	-	0.55
	HSK50A-SFH5-80	5	13	21.5	80	28	-	0.56
	HSK50A-SFH6-80	6	21	29.5	80	36	M5×0.8	0.57
	HSK50A-SFH8-80	8	21	29.5	80	36	M6×1.0	0.58
	HSK50A-SFH10-85	10	24	33	85	42	M8×1.0	0.65
	HSK50A-SFH12-90	12	24	34	90	47	M10×1.0	0.67
	HSK50A-SFH14-90	14	27	37	90	47	M10×1.0	0.72
	HSK50A-SFH16-95	16	27	38	95	50	M12×1.0	0.73
	HSK50A-SFH18-95	18	33	44	95	50	M12×1.0	0.90
	HSK50A-SFH20-100	20	33	45	100	52	M16×1.0	0.92
63A	HSK63A-SFH3-80	3	11	19.5	80	19	-	0.70
	HSK63A-SFH4-80	4	11	19.5	80	22	-	0.70
	HSK63A-SFH5-80	5	13	21.5	80	28	-	0.70
	HSK63A-SFH6-80	6	21	29.5	80	36	M5×0.8	0.83
	HSK63A-SFH6-160	6	21	32	160	36	M5×0.8	1.00
	HSK63A-SFH8-80	8	21	29.5	80	36	M6×1.0	0.83
	HSK63A-SFH8-160	8	21	32	160	36	M6×1.0	0.00
	HSK63A-SFH10-85	10	24	33	85	42	M8×1.0	0.83
	HSK63A-SFH10-160	10	24	34	160	42	M8×1.0	0.00
	HSK63A-SFH12-90	12	24	34	90	47	M10×1.0	0.83
	HSK63A-SFH12-160	12	24	34	160	47	M10×1.0	0.00
	HSK63A-SFH14-90	14	27	37	90	47	M10×1.0	0.91
	HSK63A-SFH14-160	14	27	38	160	47	M10×1.0	1.30
	HSK63A-SFH16-95	16	27	38	95	50	M12×1.0	0.98
	HSK63A-SFH16-160	16	27	38	160	50	M12×1.0	1.40
	HSK63A-SFH18-95	18	33	44	95	50	M12×1.0	0.98
	HSK63A-SFH18-160	18	33	45	160	50	M12×1.0	1.40
	HSK63A-SFH20-100	20	33	45	100	52	M16×1.0	1.00
	HSK63A-SFH20-160	20	33	45	160	52	M16×1.0	1.40
	HSK63A-SFH25-115	25	44	58	115	58	M16×1.0	1.40
	HSK63A-SFH25-160	25	44	58	160	58	M16×1.0	1.80

▶ Higher balancing grade product up to G2.5/40,000(G6.3/100,000rpm) could be supplied by customer's request.

SHRINK FIT HOLDER
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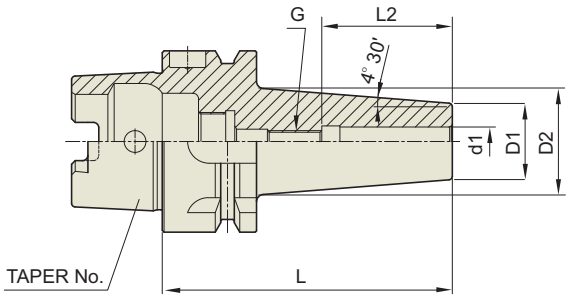
DIN69893-HSK FORM A



DIN69893 - HSK	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	20,000	

TAPER No.	CODE No.	d1	D1	D2	L	L 2	G	Weight (kg)
100A	HSK100A-SFH3-85	3	11	20	85	19	-	1.30
	HSK100A-SFH4-85	4	11	20	85	22	-	1.30
	HSK100A-SFH5-85	5	13	22	85	28	-	1.30
	HSK100A-SFH6-85	6	21	30	85	36	M5×0.8	1.30
	HSK100A-SFH6-160	6	21	32	160	36	M5×0.8	1.80
	HSK100A-SFH8-85	8	21	30	85	36	M6×1.0	1.30
	HSK100A-SFH8-160	8	21	32	160	36	M6×1.0	1.80
	HSK100A-SFH10-90	10	24	34	90	42	M8×1.0	1.30
	HSK100A-SFH10-160	10	24	35	160	42	M8×1.0	1.80
	HSK100A-SFH12-95	12	24	34	95	47	M10×1.0	1.30
	HSK100A-SFH12-160	12	24	35	160	47	M10×1.0	1.80
	HSK100A-SFH14-95	14	27	37	95	47	M10×1.0	1.40
	HSK100A-SFH14-160	14	27	39	160	47	M10×1.0	1.90
	HSK100A-SFH16-100	16	27	38	100	50	M12×1.0	1.40
	HSK100A-SFH16-160	16	27	39	160	50	M12×1.0	1.90
	HSK100A-SFH18-100	18	33	44	100	50	M12×1.0	1.50
	HSK100A-SFH18-160	18	33	45	160	50	M12×1.0	2.00
	HSK100A-SFH20-100	20	33	44	100	52	M16×1.0	1.50
	HSK100A-SFH20-160	20	33	45	160	52	M16×1.0	2.00
	HSK100A-SFH25-115	25	44	53	115	58	M16×1.0	1.80
	HSK100A-SFH25-160	25	44	53	160	58	M16×1.0	2.30

TOOL HOLDERS

SFH

SHRINK FIT HOLDER
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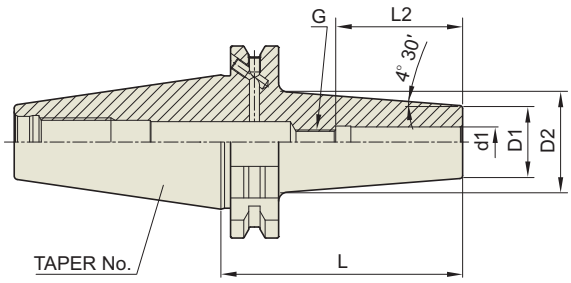
DIN69871-SK FORM AD/B



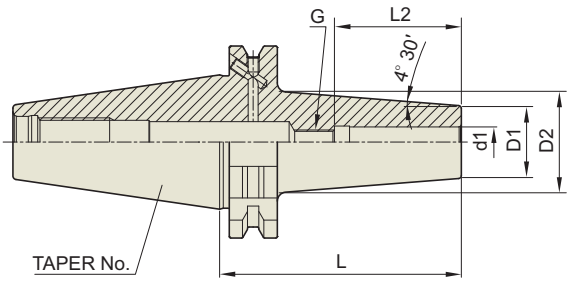
DIN69871 - SK	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	20,000	AD/B

TAPER No.	CODE No.	d1	D1	D2	L	L 2	G	Weight (kg)
30	SK30AD/B-SFH3-60	3	11	17	60	19	-	0.40
	SK30AD/B-SFH4-60	4	11	17	60	22	-	0.40
	SK30AD/B-SFH5-60	5	13	19	60	28	-	0.40
	SK30AD/B-SFH6-60	6	21	27	60	36	M5×0.8	0.40
	SK30AD/B-SFH8-60	8	21	27	60	36	M6×1.0	0.40
	SK30AD/B-SFH10-80	10	24	34	80	42	M8×1.0	0.40
	SK30AD/B-SFH12-80	12	24	34	80	47	M10×1.0	0.42
	SK30AD/B-SFH16-80	16	27	37	80	50	M12×1.0	0.42
	SK30AD/B-SFH20-90	20	33	44	90	52	M16×1.0	0.44
40	SK40AD/B-SFH3-80	3	11	21	80	19	-	1.00
	SK40AD/B-SFH4-80	4	11	21	80	22	-	1.00
	SK40AD/B-SFH5-80	5	13	23	80	28	-	1.00
	SK40AD/B-SFH6-80	6	21	31	80	36	M5×0.8	1.10
	SK40AD/B-SFH6-160	6	21	32	160	36	M5×0.8	1.15
	SK40AD/B-SFH8-80	8	21	31	80	36	M6×1.0	1.11
	SK40AD/B-SFH8-160	8	21	32	160	36	M6×1.0	1.15
	SK40AD/B-SFH10-80	10	24	34	80	42	M8×1.0	1.10
	SK40AD/B-SFH10-160	10	24	34	160	42	M8×1.0	1.15
	SK40AD/B-SFH12-80	12	24	34	80	47	M10×1.0	1.10
	SK40AD/B-SFH12-160	12	24	34	160	47	M10×1.0	1.15
	SK40AD/B-SFH14-80	14	27	37	80	47	M10×1.0	1.20
	SK40AD/B-SFH14-160	14	27	36	160	47	M10×1.0	1.50
	SK40AD/B-SFH16-80	16	27	37	80	50	M12×1.0	1.20
	SK40AD/B-SFH16-160	16	27	36	160	50	M12×1.0	1.50
	SK40AD/B-SFH18-80	18	33	43	80	50	M12×1.0	1.30
	SK40AD/B-SFH18-160	18	33	44	160	50	M12×1.0	1.60
	SK40AD/B-SFH20-80	20	33	43	80	52	M16×1.0	1.40
	SK40AD/B-SFH20-160	20	33	44	160	52	M16×1.0	1.70
	SK40AD/B-SFH25-90	25	44	55	90	58	M16×1.0	1.70
	SK40AD/B-SFH25-160	25	44	53	160	58	M16×1.0	2.00

▶ Higher balancing grade product up to G2.5/40,000(G6.3/100,000rpm) could be supplied by customer's request.

SHRINK FIT HOLDER
SCHRUMPFFUTTER

DIN69871-SK FORM AD/B



DIN69871 - SK	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	20,000	AD/B

TAPER No.	CODE No.	d1	D1	D2	L	L 2	G	Weight (kg)
50	SK50AD/B-SFH3-80	3	11	21	80	19	-	1.50
	SK50AD/B-SFH4-80	4	11	21	80	22	-	1.50
	SK50AD/B-SFH5-80	5	13	23	80	28	-	1.50
	SK50AD/B-SFH6-80	6	21	31	80	36	M5×0.8	1.50
	SK50AD/B-SFH6-160	6	21	32	160	36	M5×0.8	2.00
	SK50AD/B-SFH8-80	8	21	31	80	36	M6×1.0	1.50
	SK50AD/B-SFH8-160	8	21	32	160	36	M6×1.0	2.00
	SK50AD/B-SFH10-80	10	24	34	80	42	M8×1.0	1.50
	SK50AD/B-SFH10-160	10	24	34	160	42	M8×1.0	2.00
	SK50AD/B-SFH12-80	12	24	34	80	47	M10×1.0	1.50
	SK50AD/B-SFH12-160	12	24	34	160	47	M10×1.0	2.00
	SK50AD/B-SFH14-80	14	27	37	80	47	M10×1.0	1.60
	SK50AD/B-SFH14-160	14	27	36	160	47	M10×1.0	2.10
	SK50AD/B-SFH16-80	16	27	37	80	50	M12×1.0	1.60
	SK50AD/B-SFH16-160	16	27	36	160	50	M12×1.0	2.10
	SK50AD/B-SFH18-80	18	33	43	80	50	M12×1.0	1.60
	SK50AD/B-SFH18-160	18	33	44	160	50	M12×1.0	2.00
	SK50AD/B-SFH20-80	20	33	43	80	52	M16×1.0	1.80
	SK50AD/B-SFH20-160	20	33	44	160	52	M16×1.0	2.20
	SK50AD/B-SFH25-90	25	44	53	90	58	M16×1.0	2.00
	SK50AD/B-SFH25-160	25	44	53	160	58	M16×1.0	2.40

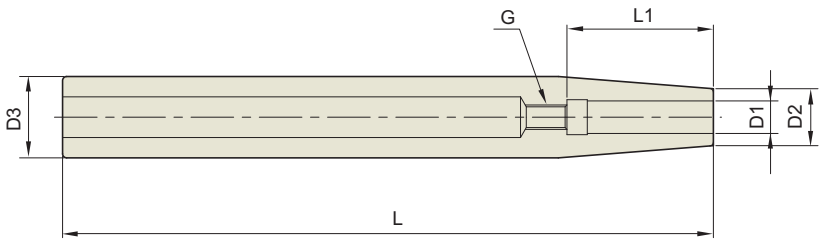
▶ Higher balancing grade product up to G2.5/40,000(G6.3/100,000rpm) could be supplied by customer's request.

TOOL HOLDERS

SFH

SHRINK FIT HOLDER
SCHRUMPFFUTTER

EXTENSION (VERLÄNGERUNG)



EXT. | Taper Accuracy: AT3 | G Value | RPM | Coolant System

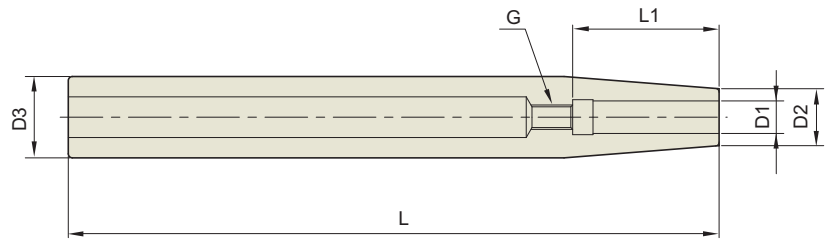
■ STANDARD

TAPER No.	CODE No.	D1	D2	D3	L	L 1	G	Weight (kg)
12	ST12-SFH3-120	3	8	12	120	19	-	
	ST12-SFH4-120	4	8	12	120	22	-	
	ST12-SFH5-120	5	10	12	120	28	-	
	ST12-SFH6-120	6	10	12	120	36	M5×0.8	
16	ST16-SFH3-120	3	10	16	120	19	-	
	ST16-SFH4-120	4	10	16	120	22	-	
	ST16-SFH5-120	5	10	16	120	28	-	
	ST16-SFH6-120	6	10	16	120	36	M5×0.8	
	ST16-SFH8-120	8	12	16	120	36	M6×1.0	
20	ST20-SFH3-120	3	10	20	120	19	-	
	ST20-SFH4-120	4	10	20	120	22	-	
	ST20-SFH5-120	5	10	20	120	28	-	
	ST20-SFH6-120	6	10	20	120	36	M5×0.8	
	ST20-SFH8-120	8	12	20	120	36	M6×1.0	
	ST20-SFH10-120	10	14	20	120	42	M8×1.0	
	ST20-SFH12-120	12	16	20	120	47	M10×1.0	

▶Notice when ordering – Please inform us whether it is for shrink fit holder or for ordinary holder.

SHRINK FIT HOLDER
SCHRUMPFFUTTER

EXTENSION (VERLÄNGERUNG)



EXT. | Taper Accuracy: AT3 | G Value | RPM | Coolant System

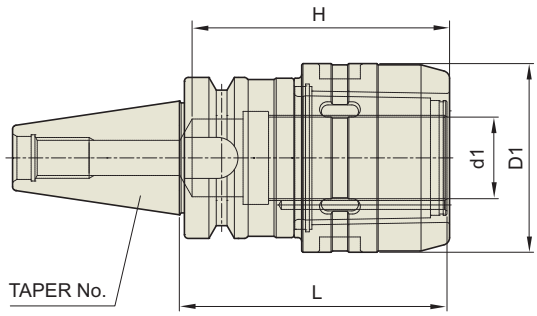
■ EXTENDED

TAPER No.	CODE No.	D1	D2	D3	L	L 1	G	Weight (kg)
12	ST12-SFH3-160	3	8	12	160	19	-	
	ST12-SFH4-160	4	8	12	160	22	-	
	ST12-SFH5-160	5	10	12	160	28	-	
	ST12-SFH6-160	6	10	12	160	36	M5×0.8	
16	ST16-SFH3-160	3	10	16	160	19	-	
	ST16-SFH4-160	4	10	16	160	22	-	
	ST16-SFH5-160	5	10	16	160	28	-	
	ST16-SFH6-160	6	10	16	160	36	M5×0.8	
	ST16-SFH8-160	8	12	16	160	36	M6×1.0	
20	ST20-SFH3-160	3	10	20	160	19	-	
	ST20-SFH4-160	4	10	20	160	22	-	
	ST20-SFH5-160	5	10	20	160	28	-	
	ST20-SFH6-160	6	10	20	160	36	M5×0.8	
	ST20-SFH8-160	8	12	20	160	36	M6×1.0	
	ST20-SFH10-160	10	14	20	160	42	M8×1.0	
	ST20-SFH12-160	12	16	20	160	47	M10×1.0	
25	ST25-SFH3-160	3	10	25	160	19	-	
	ST25-SFH4-160	4	10	25	160	22	-	
	ST25-SFH5-160	5	15	25	160	28	-	
	ST25-SFH6-160	6	20	25	160	36	M5×0.8	
	ST25-SFH8-160	8	20	25	160	36	M6×1.0	
	ST25-SFH10-160	10	20	25	160	42	M8×1.0	
	ST25-SFH12-160	12	20	25	160	47	M10×1.0	
	ST25-SFH14-160	14	20	25	160	47	M10×1.0	
	ST25-SFH16-160	16	22	25	160	50	M12×1.0	
32	ST32-SFH6-160	6	20	32	160	36	M5×0.8	
	ST32-SFH8-160	8	20	32	160	36	M6×1.0	
	ST32-SFH10-160	10	24	32	160	42	M8×1.0	
	ST32-SFH12-160	12	24	32	160	47	M10×1.0	
	ST32-SFH14-160	14	27	32	160	47	M10×1.0	
	ST32-SFH16-160	16	27	32	160	50	M12×1.0	
	ST32-SFH18-160	18	27	32	160	50	M12×1.0	
	ST32-SFH20-160	20	27	32	160	52	M16×1.0	

▶Notice when ordering – Please inform us whether it is for shrink fit holder or for ordinary holder.

HIGH SPEED MILLING CHUCK
HOCHGESCHWINDIGKEITS FRÄSERFUTTER

MAS403-BT FORM AD

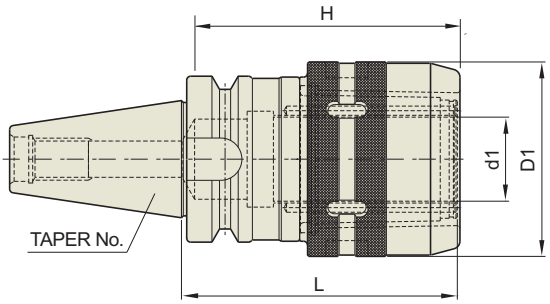


MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	20,000	

TAPER No.	CODE No.	d1	D1	L	H	Weight (kg)
30	**BT30-C20-75HS**	20	54	75	70	1.50
	BT30-C25-80HS	25	62.5	80	80	2.00
40	**BT40-C20-80HS**	20	54	80	70	2.00
	BT40-C20-105HS	20	54	105	70	2.10
	BT40-C25-105HS	25	62.5	105	80	2.50
	BT40-C32-90HS	32	74	90	100	3.00
	BT40-C32-105HS	32	74	105	100	3.10
	BT40-C32-135HS	32	74	135	100	3.30
50	**BT50-C20-105HS**	20	54	105	70	4.50
	BT50-C20-135HS	20	54	135	70	4.90
	BT50-C20-165HS	20	54	165	70	5.40
	BT50-C25-105HS	25	62.5	105	80	5.20
	BT50-C25-135HS	25	62.5	135	80	5.80
	BT50-C25-165HS	25	62.5	165	80	6.20
	BT50-C32-105HS	32	74	105	100	6.00
	BT50-C32-135HS	32	74	135	100	6.70
	BT50-C32-165HS	32	74	165	100	7.40
	BT50-C42-115HS	42	92	115	110	6.70
	BT50-C42-135HS	42	92	135	110	7.60
	BT50-C42-165HS	42	92	165	110	8.30

MILLING CHUCK
FRÄSERSPANNFUTTER

MAS403-BT



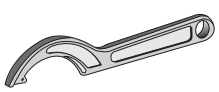
MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

TAPER No.	CODE No.	d1	D1	L	H	Applicable collet	Weight (kg)
30	**BT30-C20- 75**	20	54	75	70	K20, CK20	1.5
	BT30-C25- 80	25	62.5	80	80	K25, CK25	2.0
40	**BT40-C20- 80**	20	54	80	70	K20, CK20	2.0
	BT40-C20-105	20	54	105	70	K20, CK20	2.1
	BT40-C25-105	25	62.5	105	80	K25, CK25	2.5
	BT40-C32- 90	32	72	90	100	K32, CK32	3
	BT40-C32-105	32	72	105	100	K32, CK32	3.1
	BT40-C32-135	32	72	135	100	K32, CK32	3.3
50	**BT50-C20-105**	20	54	105	70	K20, CK20	4.5
	BT50-C20-135	20	54	135	70	K20, CK20	4.9
	BT50-C20-165	20	54	165	70	K20, CK20	5.4
	BT50-C25-105	25	62.5	105	80	K25, CK25	5.2
	BT50-C25-135	25	62.5	135	80	K25, CK25	5.8
	BT50-C25-165	25	62.5	165	80	K25, CK25	6.2
	BT50-C32-105	32	72	105	100	K32, CK32	6
	BT50-C32-115	32	72	115	100	K32, CK32	6.2
	BT50-C32-135	32	72	135	100	K32, CK32	6.7
	BT50-C32-165	32	72	165	100	K32, CK32	7.4
	BT50-C42-115	42	92	115	110	K42, CK42	6.7
	BT50-C42-135	42	92	135	110	K42, CK42	7.6
	BT50-C42-165	42	92	165	110	K42, CK42	8.3

SPARE PARTS

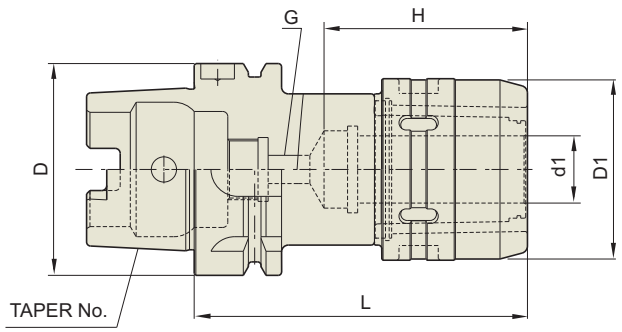
END MILL COLLET	CODE No.	SET
	K20 - 6, 8, 10, 12, 16	5PCS
	K25 - 6, 8, 10, 12, 16, 20	6PCS
	K32 - 6, 8, 10, 12, 16, 20, 25	7PCS
	K42 - 6, 8, 10, 12, 16, 20, 25, 32	8PCS

END MILL COLLET	CODE No.	SET
	CK20 - 6, 8, 10, 12, 16	5PCS
	CK25 - 6, 8, 10, 12, 16, 20	6PCS
	CK32 - 6, 8, 10, 12, 16, 20, 25	7PCS
	CK42 - 6, 8, 10, 12, 16, 20, 25, 32	8PCS

SPANNER	CODE No.
	C20 SP
	C25 SP
	C32 SP
	C42 SP

HIGH SPEED MILLING CHUCK
HOCHGESCHWINDIGKEITS FRÄSERFUTTER

DIN69893-HSK FORM A

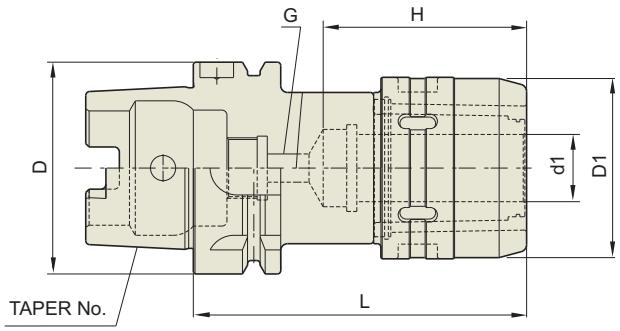


DIN69893 - HSK	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	20,000	

TAPER No.	CODE No.	d1	D1	L	H	Weight (kg)
50A	**HSK50A-C20-100HS**	20	54	100	70	1.30
63A	**HSK63A-C20-105HS**	20	54	105	70	1.50
	HSK63A-C25-120HS	25	62.5	120	80	2.20
	HSK63A-C32-130HS	32	74	130	100	2.70
100A	**HSK100A-C20-110HS**	20	54	110	70	3.50
	HSK100A-C25-130HS	25	62.5	130	80	3.80
	HSK100A-C32-135HS	32	74	135	100	4.20
	HSK100A-C42-135HS	42	74	135	100	5.30

MILLING CHUCK
FRÄSERSPANNFUTTER

HSK FORM A



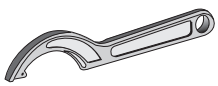
DIN69893 - HSK | Taper Accuracy: AT3 | G Value | RPM | Coolant System

TAPER No.	CODE No.	D	d1	D1	L	H	G	Weight (kg)
50A	**HSK 50A-C20-100**	50	20	54	100	70	M12	1.30
63A	**HSK 63A-C20-105**	63	20	54	105	70	M12	1.50
	HSK 63A-C32-130	63	32	72	130	100	M12	2.70
100A	**HSK100A-C20-110**	100	20	54	110	70	M12	3.50
	HSK100A-C32-135	100	32	72	135	100	M12	4.20
	HSK100A-C42-135	100	42	92	135	100	M12	5.30

SPARE PARTS

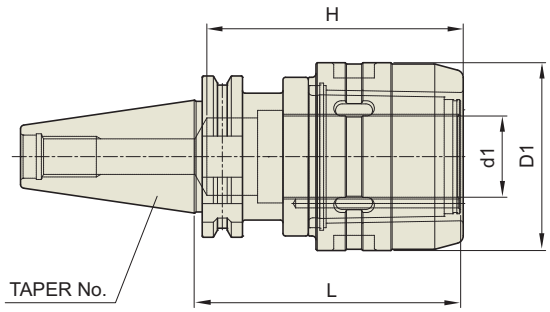
END MILL COLLET	CODE No.	SET
	K20 - 6, 8, 10, 12, 16	5PCS
	K32 - 6, 8, 10, 12, 16, 20, 25	7PCS
	K42 - 6, 8, 10, 12, 16, 20, 25, 32	8PCS

END MILL COLLET	CODE No.	SET
	CK20 - 6, 8, 10, 12, 16	5PCS
	CK25 - 6, 8, 10, 12, 16, 20	6PCS
	CK32 - 6, 8, 10, 12, 16, 20, 25	7PCS
	CK42 - 6, 8, 10, 12, 16, 20, 25, 32	8PCS

SPANNER	CODE No.
	C20 SP
	C25 SP
	C32 SP
	C42 SP

HIGH SPEED MILLING CHUCK
HOCHGESCHWINDIGKEITS FRÄSERFUTTER

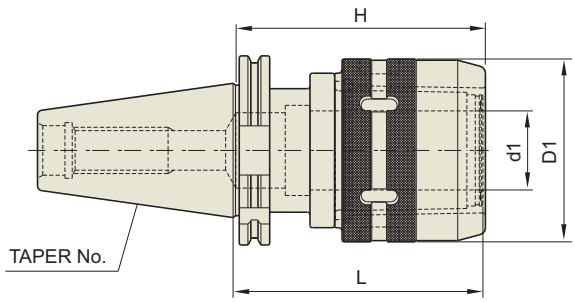
DIN 69871-SK FORM AD



DIN69871 - SK	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	20,000	

TAPER No.	CODE No.	d1	D1	L	H	Weight (kg)
30	**SK30-C20-80HS**	20	54	80	70	1.15
	SK30-C25-80HS	25	62.5	80	80	1.48
40	**SK40-C20-105HS**	20	54	105	70	1.77
	SK40-C25-105HS	25	62.5	105	80	2.10
	SK40-C32-105HS	32	74	105	100	2.40
	SK40-C32-135HS	32	74	135	100	3.10
50	**SK50-C20-105HS**	20	54	105	70	3.40
	SK50-C25-105HS	25	62.5	105	80	3.80
	SK50-C32-105HS	32	74	105	100	4.30
	SK50-C32-135HS	32	74	135	100	4.90
	SK50-C32-165HS	32	74	165	100	5.60
	SK50-C42-115HS	42	92	115	110	4.60
	SK50-C42-135HS	42	92	135	110	5.60
	SK50-C42-165HS	42	92	165	110	6.10

MILLING CHUCK
FRÄSERSPANNFUTTER



DIN69871 - SK | Taper Accuracy: AT3 | G Value | RPM | Coolant System

■ STUB

TAPER No.	CODE No.	d1	D1	L	H	Weight (kg)
30	SK30-C20-80	20	54	80	70	1.15
	SK30-C25-80	25	62.5	80	80	1.48
40	SK40-C20-90	20	54	90	70	1.60
	SK40-C32-90	32	72	90	100	2.00
50	SK50-C20-80	20	54	80	70	3.22
	SK50-C25-90	25	62.5	90	80	3.61
	SK50-C32-90	32	72	90	100	3.87

■ STANDARD

TAPER No.	CODE No.	d1	D1	L	H	Weight (kg)
40	SK40-C20-105	\20	54	105	70	1.77
	SK40-C25-105	25	62.5	105	80	2.01
	SK40-C32-105	32	72	105	100	2.42
50	SK50-C20-105	20	54	105	70	3.39
	SK50-C25-105	25	62.5	105	80	3.78
	SK50-C32-105	32	72	105	100	4.31
	SK50-C42-115	42	92	115	110	4.53

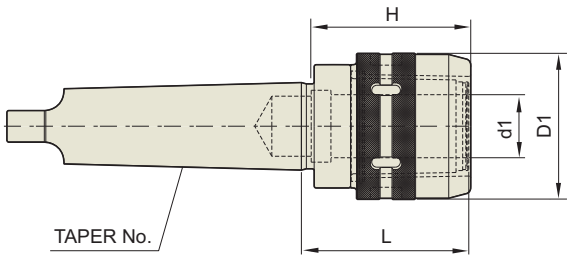
■ EXTENDED

TAPER No.	CODE No.	d1	D1	L	H	Weight (kg)
40	SK40-C32-135	32	72	135	100	3.11
50	SK50-C32-135	32	72	135	100	4.94
	SK50-C42-135	42	92	135	110	5.62

■ EXTRA EXTENDED

TAPER No.	CODE No.	d1	D1	L	H	Weight (kg)
50	SK50-C32-165	32	72	165	100	5.59
	SK50-C42-165	42	92	165	110	6.10

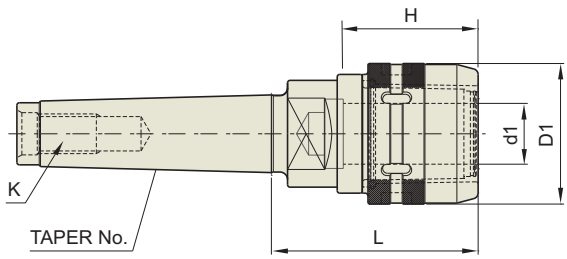
MILLING CHUCK
FRÄSERSPANNFUTTER



DIN 228 - MTA	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

TAPER No.	CODE No.	d1	D1	L	H	Applicable collet	Weight (kg)
MT4	**MTA4-C32**	32	72	98	100	K32, CK32	2.57
MT5	**MTA5-C32**	32	72	85	100	K32, CK32	3.06
	MTA5-C42	42	92	114	110	K42, CK42	3.45
MT6	**MTA6-C42**	42	92	99	110	K42, CK42	4.14

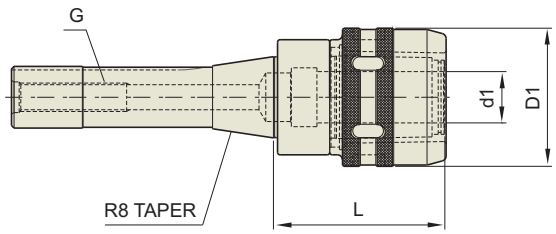
▶ In case of MT16 ,please inform us of machine model number and company name for selection of cutter groove.



DIN 228 - MTB	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

TAPER No.	CODE No.	d1	D1	L	H	K	Applicable collet	Weight (kg)
MT3	**MTB3-C20**	20	54	74	70	M12	K20, CK20	2.10
MT4	**MTB4-C32**	32	72	98	100	M16	K32, CK32	2.57
	MTB5-C32	32	72	85	100	M20	K32, CK32	3.06
MT5	**MTB5-C42**	42	92	114	110	M20	K42, CK42	3.45

MILLING CHUCK
FRÄSERSPANNFUTTER



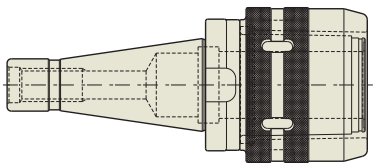
R8	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

TAPER No.	CODE No.	d1	D1	L	G	Applicable collet	Weight (kg)
R8	**R8-C20**	20	54	69	U7/16-20	K20, CK20	1.40

TOOL HOLDERS

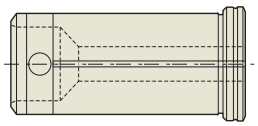
MILLING CHUCK STANDARD SET
GEGENSTUCK FUR FRASERSPANNFUTTER

MACHINE SPINDLE TAPER	STANDARD SET CODE No.	MILLING CHUCK	END MILL COLLET	MORSE TAPER COLLET	DRILL CHUCK BAR
R8	**SR8-C20**	R8-C20	K20-(6-16)(5PCS)	K20-MT1,2	K20-JTA6
NT30	**SNT30-20**	NT30-C20	K20-(6-16)(5PCS)	K20-MT1,2	K20-JTA6
NT40	**SNT40-32A**	NT40-C32	K32-(6-25)(7PCS)	–	–
	SNT40-32	NT40-C32	K32-(6-25)(7PCS)	K32-MT1,2,3	K32-JTA6
NT50	**SNT50-32A**	NT50-C32	K32-(6-25)(7PCS)	–	K32-JTA6
	SNT50-32	NT50-C32	K32-(6-25)(7PCS)	K32-MT1,2,3	K32-JTA6
	SNT50-42A	NT50-C42	K42-(6-32)(8PCS)	–	–
	SNT50-42	NT50-C42	K42-(6-32)(8PCS)	K42-MT1,2,3,4	K42-JTA6



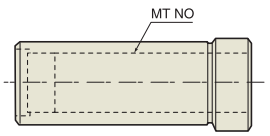
MILLING CHUCK

CODE No.
NT30 - C20
NT40 - C32
NT50 - C32
NT50 - C42



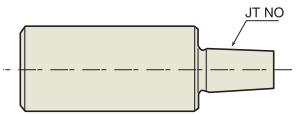
END MILL COLLET

CODE No.	SET
K20 - 6, 8, 10, 12, 16	5PCS
K25 - 6, 8, 10, 12, 16, 20	6PCS
K32 - 6, 8, 10, 12, 16, 20, 25	7PCS
K42 - 6, 8, 10, 12, 16, 20, 25, 32	8PCS



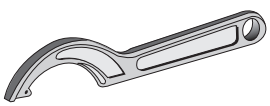
MT COLLET

CODE No.
K20 - MT1, 2
K25 - MT1, 2, 3
K32 - MT1, 2, 3
K42 - MT1, 2, 3, 4



DRILL CHUCK ARBOR

CODE No.
K20 - JTA6
K25 - JTA6
K32 - JTA6
K42 - JTA6

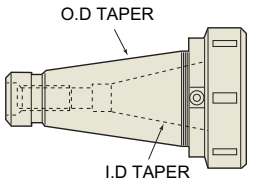


SPANNER

CODE No.
C20 SP
C25 SP
C32 SP
C42 SP

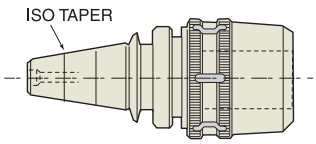
Q.C MILLING CHUCK SET
SCHNELLWECHSEL GEGENSTUCK FUR FRASERSPANNFUTTER

MACHINE SPINDLE TAPER	Q.C MILLING HOLDER SET CODE No.	Q.C MASTER HOLDER	Q.C MILLING CHUCK	END MILL COLLETS	Q.C FACE MILL ARBOR	Q.C DRILL CHUCK BAR	DRILL CHUCK ARBOR	Q.C TAPER SLEEVE
NT40	**SMH40-T35-32 A**	MH40-T35	QT35-32	K32-(6-25)(7PCS)	QT35-4R	–	K32-J6	–
	SMH40-T35-32 B	MH40-T35	QT35-32	K32-(6-25)(7PCS)	QT35-4R	QT35-J6	–	QT35-MT2,3,4
NT50	**SMH50-T45-32 A**	MH50-T45	QT45-32	K32-(6-25)(7PCS)	QT45-5R	–	K32-J6	–
	SMH50-T45-32 B	MH50-T45	QT45-32	K32-(6-25)(7PCS)	QT45-5R	QT45-J6	–	QT45-MT2,3,4
	SMH50-T45-42 A	MH50-T45	QT45-42	K42-(6-32)(8PCS)	QT45-5R	–	K42-J6	–
	SMH50-T45-42 B	MH50-T45	QT45-42	K42-(6-32)(8PCS)	QT45-5R	QT45-J6	–	QT45-MT2,3,4



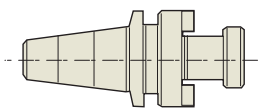
Q.C MASTER HOLDER

CODE No.	O.D TAPER	I.D TAPER	DRAW THREADS
MH40-T35	NT40	NT35	U5/8-11(M16-2)
MH50-T45	NT50	NT45	U1-8(M24-3)



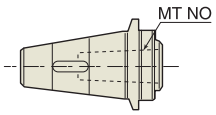
Q.C MILLING CHUCK

CODE No.	Q.C MASTER HOLDER
QT35-C32	MH40
QT45-C32	MH50
QT45-C42	MH50



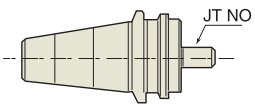
Q.C FACE MILL ARBOR

CODE No.	Q.C MASTER HOLDER
QT35-3,4,5R	MH40
QT45-3,4,5,6R	MH50



Q.C TAPER SLEEVE

CODE No.	Q.C MASTER HOLDER
QT35 - MT1, 2, 3	MH40
QT45 - MT1, 2, 3, 4	MH50



Q.C DRILL CHUCK ARBOR

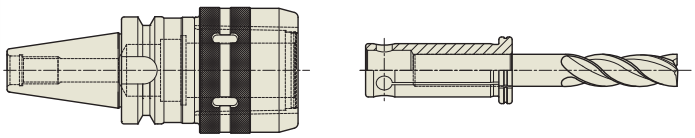
CODE No.	Q.C MASTER HOLDER	DRILLØ
QT35-J6	MH40	1-13mm
QT45-J6	MH50	1-13mm

TOOL HOLDERS

COLLET & SPANNER
SPANNZANGE UND MAULSCHLÜSSEL

END MILL COLLET (K TYPE)
SPANNZANGEN

CODE No.	SET
K20-6,8,10,12,16	5pcs
K25-6,8,10,12,16,20	6pcs
K32-6,8,10,12,16,20,25	7pcs
K42-6,8,10,12,16,20,25,32	8pcs



END MILL COLLET (CK TYPE)
SPANNZANGEN MIT VERSTELLSCHRAUBE

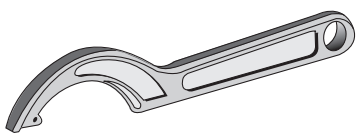
CODE No.	SET
CK20-6,8,10,12,16	5pcs
CK25-6,8,10,12,16,20	6pcs
CK32-6,8,10,12,16,20,25	7pcs
CK42-6,8,10,12,16,20,25,32	8pcs

MT COLLET

CODE No.
K20-MT1,2
K25-MT1,2
K32-MT1,2,3
K42-MT1,2,3,4

DRILL CHUCK ARBOR

CODE No.
K20-JTA6
K25-JTA6
K32-JTA6
K42-JTA6



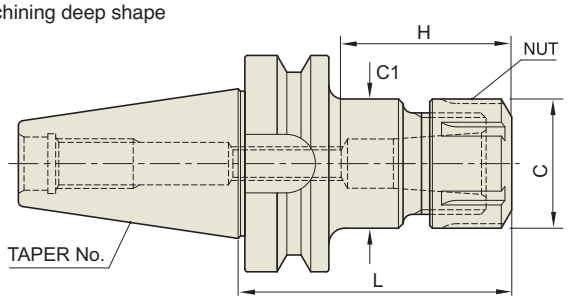
SPANNER
MAULSCHLÜSSEL

CODE No.
C20 SP
C25 SP
C32 SP
C42 SP

SK SLIM CHUCK
SK SCHLANKE FUTTER

MAS403-BT

- Realizing highest precision .
- Applicable to various tools such as end mill, drill, reamer, tap, and etc.
- Usable for long hours with use of nut produced by Switzerland manufacturer
- Creating maximum effect with slim type when machining deep shape



MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	12,000	

TAPER No.	CODE No.	RANGE	L	C	C1	H		COLLET	Weight (kg)
						Min	Max		
30	BT30-SKA06-60	0.9-6.0	60	20	19.5	21	35	SKC6	0.7
	BT30-SKA06-90	0.9-6.0	90	20	19.5	21	35	SKC6	0.8
	BT30-SKA10-60	1.75-10.0	60	28	27.5	30	50	SKC10	0.9
	BT30-SKA10-90	1.75-10.0	90	28	27.5	30	50	SKC10	1
	BT30-SKA13-60	2.75-13.0	60	33	33	31	65	SKC13	1
	BT30-SKA13-90	2.75-13.0	90	33	33	31	65	SKC13	1.1
	BT30-SKA16-60	2.75-16.0	60	40	40	45	60	SKC16	1.1
	BT30-SKA16-90	2.75-16.0	90	40	40	45	60	SKC16	1.2
	BT30-SKA20-60	4.0-20.0	60	48.5	48.5	65	75	SKC20	1.3
	BT30-SKA20-90	4.0-20.0	90	48.5	48.5	65	75	SKC20	1.4
	BT30-SKA25-90	16.0-25.4	90	55	55	55	75	SKC25	1.5
40	BT40-SKA06-90	0.9-6.0	90	20	19.5	21	35	SKC6	1.1
	BT40-SKA06-120	0.9-6.0	120	20	19.5	21	35	SKC6	1.4
	BT40-SKA06-150	0.9-6.0	150	20	19.5	21	35	SKC6	1.5
	BT40-SKA10-90	1.75-10.0	90	28	27.5	30	50	SKC10	1.2
	BT40-SKA10-120	1.75-10.0	120	28	27.5	30	50	SKC10	1.4
	BT40-SKA10-150	1.75-10.0	150	28	27.5	30	50	SKC10	1.6
	BT40-SKA13-90	2.75-13.0	90	33	33	31	65	SKC13	1.4
	BT40-SKA13-120	2.75-13.0	120	33	33	31	65	SKC13	1.6
	BT40-SKA13-150	2.75-13.0	150	33	40	31	65	SKC13	1.8
	BT40-SKA16-90	2.75-16.0	90	40	40	45	70	SKC16	1.5
	BT40-SKA16-120	2.75-16.0	120	40	40	45	70	SKC16	1.7
	BT40-SKA16-150	2.75-16.0	150	40	40	45	70	SKC16	1.9
	BT40-SKA20-90	4.0-20.0	90	48.5	48.5	47	80	SKC20	1.6
	BT40-SKA20-120	4.0-20.0	120	48.5	48.5	47	80	SKC20	2
	BT40-SKA20-150	4.0-20.0	150	48.5	48.5	47	80	SKC20	2.4
	BT40-SKA25-90	16.0-25.4	90	55	55	55	85	SKC25	1.8
	BT40-SKA25-120	16.0-25.4	120	55	55	55	85	SKC25	2
	BT40-SKA25-150	16.0-25.4	150	55	55	55	85	SKC25	2.3

- For usable SK collet, please refer to page 1407 and 1408.
- Higher balancing grade product could be supplied by customer's request.

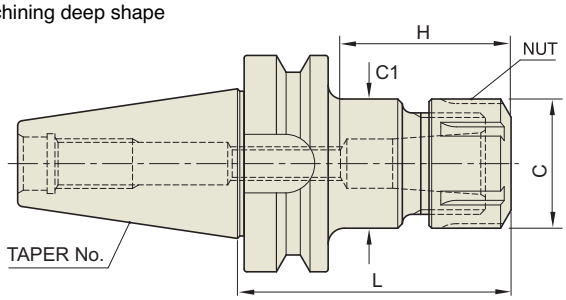
TOOL HOLDERS

SKA

SK SLIM CHUCK
SK SCHLANKE FUTTER

MAS403-BT

- Realizing highest precision .
- Applicable to various tools such as end mill, drill, reamer, tap, and etc.
- Usable for long hours with use of nut produced by Switzerland manufacturer
- Creating maximum effect with slim type when machining deep shape



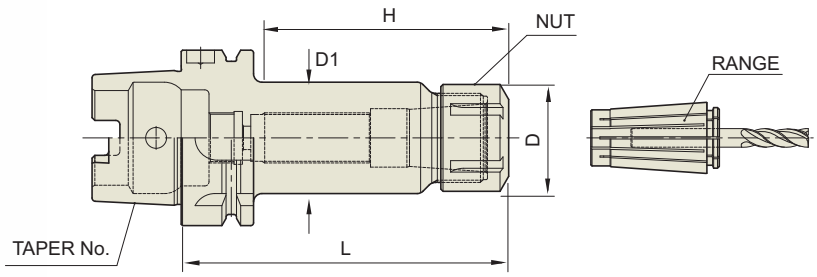
MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	12,000	

TAPER No.	CODE No.	RANGE	L	C	C1	H		COLLET	Weight (kg)
						Min	Max		
50	BT50-SKA06-105	0.9-6.0	105	20	19.5	21	35	SKC6	3.8
	BT50-SKA06-135	0.9-6.0	135	20	19.5	21	35	SKC6	3.9
	BT50-SKA06-165	0.9-6.0	165	20	32.5	21	35	SKC6	4
	BT50-SKA06-195	0.9-6.0	195	20	32.5	21	35	SKC6	4.2
	BT50-SKA10-105	1.75-10.0	105	28	27.5	30	50	SKC10	4.2
	BT50-SKA10-135	1.75-10.0	135	28	27.5	30	50	SKC10	4.4
	BT50-SKA10-165	1.75-10.0	165	28	37.4	30	50	SKC10	4.6
	BT50-SKA10-195	1.75-10.0	195	28	37.4	30	50	SKC10	4.8
	BT50-SKA13-105	2.75-13.0	105	33	33	31	65	SKC13	4.5
	BT50-SKA13-135	2.75-13.0	135	33	33	31	65	SKC13	4.7
	BT50-SKA13-165	2.75-13.0	165	33	45	31	65	SKC13	4.9
	BT50-SKA13-195	2.75-13.0	195	33	45	31	65	SKC13	5.2
	BT50-SKA16-105	2.75-16.0	105	40	40	45	70	SKC16	4.7
	BT50-SKA16-135	2.75-16.0	135	40	40	45	70	SKC16	4.9
	BT50-SKA16-165	2.75-16.0	165	40	40	45	70	SKC16	5.1
	BT50-SKA16-195	2.75-16.0	195	40	40	45	70	SKC16	5.5
	BT50-SKA20-105	4.0-20.0	105	48.5	48.5	47	80	SKC20	4.3
	BT50-SKA20-135	4.0-20.0	135	48.5	48.5	47	80	SKC20	4.6
	BT50-SKA20-165	4.0-20.0	165	48.5	48.5	47	80	SKC20	5
	BT50-SKA20-195	4.0-20.0	195	48.5	48.5	47	80	SKC20	5.4
	BT50-SKA25-105	16.0-25.4	105	55	55	55	85	SKC25	5.2
	BT50-SKA25-135	16.0-25.4	135	55	55	55	85	SKC25	5.4
	BT50-SKA25-165	16.0-25.4	165	55	55	55	85	SKC25	5.6
	BT50-SKA25-195	16.0-25.4	195	55	55	55	85	SKC25	6

- For usable SK collet, please refer to page 1407 and 1408.
- Higher balancing grade product could be supplied by customer's request.

SK SLIM CHUCK
SK SCHLANKE FUTTER

DIN 69893-HSK FORM A



DIN69893 - HSK	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	12,000	

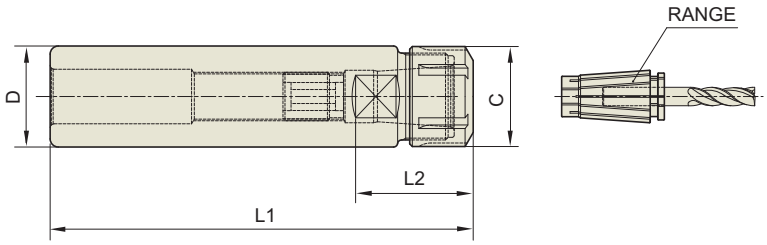
TAPER No.	CODE No.	RANGE	D	D1	L	H		COLLET	Weight (kg)
						Min	Max		
HSK 50	**HSK50A-SKA06-80**	0.75 - 6.0	20	19.5	80	21	35	SKC06	0.9
	HSK50A-SKA10-100	1.75 - 10.0	28	27.5	100	30	50	SKC10	1.1
	HSK50A-SKA13-100	2.75-13.0	33	33	100	31	65	SKC13	1.2
HSK 63	**HSK63A-SKA06-100**	0.75 - 6.0	20	19.5	100	21	35	SKC06	1.4
	HSK63A-SKA10-100	1.75 - 10.0	28	27.5	100	30	50	SKC10	1.6
	HSK63A-SKA13-100	2.75-13.0	33	33	100	31	65	SKC13	1.7
	HSK63A-SKA16-120	2.75 - 16.0	40	40	120	45	70	SKC16	1.7
	HSK63A-SKA20-120	4.0-20.0	48.5	48.5	120	65	75	SKC20	2.1
	HSK63A-SKA25-150	16.0 - 25.4	55	55	150	55	85	SKC25	2.4
HSK 100	**HSK100A-SKA06-120**	0.75 - 6.0	20	19.5	120	21	35	SKC06	4
	HSK100A-SKA10-150	1.75 - 10.0	28	27.5	150	30	50	SKC10	4.5
	HSK100A-SKA13-150	2.75-13.0	33	40	150	31	65	SKC13	4.6
	HSK100A-SKA16-150	2.75 - 16.0	40	40	150	45	70	SKC16	5.1
	HSK100A-SKA20-150	4.0-20.0	48.5	48.5	150	65	75	SKC20	5.4
	HSK100A-SKA25-160	16.0 - 25.4	55	55	160	55	85	SKC25	5.5

▶ For usable SK collet, please refer to page 1407 and 1408.
▶ Higher balancing grade product could be supplied by customer's request.

TOOL HOLDERS

SKA

SK SLIM CHUCK - STRAIGHT SHANK
SK SCHLANKE FUTTER -- GERADEAUS SCHAFT



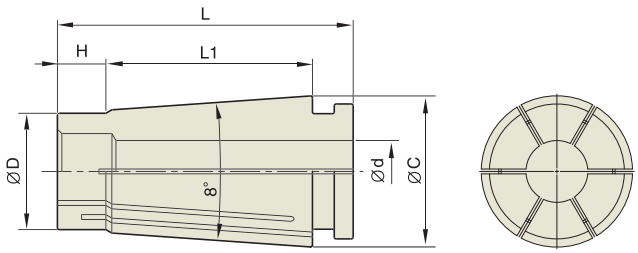
K	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

TAPER No.	CODE No.	RANGE	D	C	L1	L2	COLLET	Weight (kg)
K20	K20-SKA06-100	0.75 - 6.0	20	28	100	21 - 35	SKC06	0.2
	K20-SKA06-140	0.75 - 6.0	20	28	140	21 - 35	SKC06	0.3
	K20-SKA10-100	1.75 - 10.0	28	28	100	30 - 50	SKC10	0.2
	K20-SKA10-140	1.75 - 10.0	28	28	140	30 - 50	SKC10	0.3
K25	K25-SKA06-100	0.75 - 6.0	20	28	100	21 - 35	SKC06	0.3
	K25-SKA06-140	0.75 - 6.0	20	28	140	21 - 35	SKC06	0.5
	K25-SKA10-100	1.75 - 10.0	28	28	100	30 - 50	SKC10	0.3
	K25-SKA10-150	1.75 - 10.0	28	28	150	30 - 50	SKC10	0.5
	K25-SKA13-100	2.75-13.0	33	37	100	31 - 65	SKC13	0.4
	K25-SKA13-150	2.75-13.0	33	37	150	31 - 65	SKC13	0.6
K32	K32-SKA10-100	1.75 - 10.0	28	28	100	30 - 50	SKC10	0.5
	K32-SKA10-150	1.75 - 10.0	28	28	150	30 - 50	SKC10	0.7
	K32-SKA13-100	2.75-13.0	33	37	100	31 - 65	SKC13	1
	K32-SKA13-150	2.75-13.0	33	37	150	31 - 65	SKC13	1.2
	K32-SKA16-100	2.75 - 16.0	40	47	100	40 - 70	SKC16	1
	K32-SKA16-150	2.75 - 16.0	40	47	150	40 - 70	SKC16	1.2
	K32-SKA20-100	4.0-20.0	48.5	47	100	47 - 80	SKC20	1.1
	K32-SKA20-150	4.0-20.0	48.5	47	150	47 - 80	SKC20	1.3
	K32-SKA25-150	16.0 - 25.4	55	47	150	50 - 85	SKC25	1.3

▶ For usable SK collet, please refer to page 1407 and 14 08.

SK SLIM CHUCK COLLET
SK SCHLANKE FUTTER SPANNZANGE

- ▶ Ensuring strong chucking power of 8° Taper and high precision
- ▶ Able to use various tools ranging from 0.9 to 25.4mm dia.
- ▶ Applicable to various tools such as end mill, drill, tap, reamer
- ▶ Collet of 3㎛ or 5㎛ T.I.R at 3D available by customer' s request



Style	Code No.	Chucking (d)
SKC 6	SKC 6 - 1	0.9 - 1.0
	SKC 6 - 1.5	1.3 - 1.5
	SKC 6 - 2	1.8 - 2.0
	SKC 6 - 2.5	2.3 - 2.5
	SKC 6 - 3	2.8 - 3.0
	SKC 6 - 3.5	3.0 - 3.5
	SKC 6 - 4	3.5 - 4.0
	SKC 6 - 4.5	4.0 - 4.5
	SKC 6 - 5	4.5 - 5.0
	SKC 6 - 5.5	5.0 - 5.5
	SKC 6 - 6	5.5 - 6.0

Style	Code No.	Chucking (d)
SKC 10	SKC10 - 2	1.75 - 2.0
	SKC10 - 2.5	2.25 - 2.5
	SKC10 - 3	2.75 - 3.0
	SKC10 - 3.5	3.0 - 3.5
	SKC10 - 4	3.5 - 4.0
	SKC10 - 4.5	4.0 - 4.5
	SKC10 - 5	4.5 - 5.0
	SKC10 - 5.5	5.0 - 5.5
	SKC10 - 6	5.5 - 6.0
	SKC10 - 6.5	6.0 - 6.5
	SKC10 - 7	6.5 - 7.0
	SKC10 - 7.5	7.0 - 7.5
	SKC10 - 8	7.5 - 8.0
	SKC10 - 8.5	8.0 - 8.5
	SKC10 - 9	8.5 - 9.0
	SKC10 - 9.5	9.0 - 9.5
	SKC10 - 10	9.5 - 10.0

Style	Code No.	Chucking (d)
SKC 13	SKC 13 - 3	2.75 - 3.0
	SKC 13 - 3.5	3.0 - 3.5
	SKC 13 - 4	3.5 - 4.0
	SKC 13 - 4.5	4.0 - 4.5
	SKC 13 - 5	4.5 - 5.0
	SKC 13 - 5.5	5.0 - 5.5
	SKC 13 - 6	5.5 - 6.0
	SKC 13 - 6.5	6.0 - 6.5
	SKC 13 - 7	6.5 - 7.0
	SKC 13 - 7.5	7.0 - 7.5
	SKC 13 - 8	7.5 - 8.0
	SKC 13 - 8.5	8.0 - 8.5
	SKC 13 - 9	8.5 - 9.0
	SKC 13 - 9.5	9.0 - 9.5
	SKC 13 - 10	9.5 - 10.0
	SKC 13 - 10.5	10.0 - 10.5
	SKC 13 - 11	10.5 - 11.0
	SKC 13 - 11.5	11.0 - 11.5
	SKC 13 - 12	11.5 - 12.0
	SKC 13 - 12.5	12.0 - 12.5
	SKC 13 - 13	12.5 - 13.0

■ SKC COLLET DIMENSION

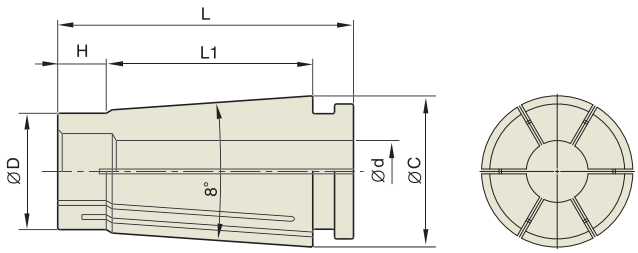
STYLE	D	L	L1	H	C	Weight (kg)
SKC 6	7.5	25.7	17.6	3.8	10	0.03
SKC 10	12	32	21.3	5	15	0.04
SKC 13	15.4	39	28.3	5.5	20	
SKC 16	18.8	46	32	8	24	0.06
SKC 20	22.5	54.2	41	8	29	
SKC 25	28.9	58.2	43	8.5	35	0.10

TOOL HOLDERS

SKC

SK SLIM CHUCK COLLET
SK SCHLANKE FUTTER SPANNZANGE

- ▶ Ensuring strong chucking power of 8° Taper and high precision
- ▶ Able to use various tools ranging from 0.9 to 25.4mm dia.
- ▶ Applicable to various tools such as end mill, drill, tap, reamer
- ▶ Collet of 3㎛ or 5㎛ T.I.R at 3D available by customer's request



Style	Code No.	Chucking (d)
SKC 16	SKC16 - 3	2.75 - 3.0
	SKC16 - 3.5	3.0 - 3.5
	SKC16 - 4	3.5 - 4.0
	SKC16 - 4.5	4.0 - 4.5
	SKC16 - 5	4.5 - 5.0
	SKC16 - 5.5	5.0 - 5.5
	SKC16 - 6	5.5 - 6.0
	SKC16 - 6.5	6.0 - 6.5
	SKC16 - 7	6.5 - 7.0
	SKC16 - 7.5	7.0 - 7.5
	SKC16 - 8	7.5 - 8.0
	SKC16 - 8.5	8.0 - 8.5
	SKC16 - 9	8.5 - 9.0
	SKC16 - 9.5	9.0 - 9.5
	SKC16 - 10	9.5 - 10.0
	SKC16 - 10.5	10.0 - 10.5
	SKC16 - 11	10.5 - 11.0
	SKC16 - 11.5	10.0 - 11.5
	SKC16 - 12	11.5 - 12.0
	SKC16 - 12.5	12.0 - 12.5
	SKC16 - 13	12.5 - 13.0
	SKC16 - 13.5	13.0 - 13.5
	SKC16 - 14	13.5 - 14.0
	SKC16 - 14.5	14.0 - 14.5
	SKC16 - 15	14.5 - 15.0
	SKC16 - 15.5	15.0 - 15.5
	SKC16 - 16	15.5 - 16.0

Style	Code No.	Chucking (d)
SKC 20	SKC 20 - 4	3.5 - 4.0
	SKC 20 - 4.5	4.0 - 4.5
	SKC 20 - 5	4.5 - 5.0
	SKC 20 - 5.5	5.0 - 5.5
	SKC 20 - 6	5.5 - 6.0
	SKC 20 - 6.5	6.0 - 6.5
	SKC 20 - 7	6.5 - 7.0
	SKC 20 - 7.5	7.0 - 7.5
	SKC 20 - 8	7.5 - 8.0
	SKC 20 - 8.5	8.0 - 8.5
	SKC 20 - 9	8.5 - 9.0
	SKC 20 - 9.5	9.0 - 9.5
	SKC 20 - 10	9.5 - 10.0
	SKC 20 - 10.5	10.0 - 10.5
	SKC 20 - 11	10.5 - 11.0
	SKC 20 - 11.5	11.0 - 11.5
	SKC 20 - 12	11.5 - 12.0
	SKC 20 - 12.5	12.0 - 12.5
	SKC 20 - 13	12.5 - 13.0
	SKC 20 - 13.5	13.0 - 13.5
	SKC 20 - 14	13.5 - 14.0
	SKC 20 - 14.5	14.0 - 14.5
	SKC 20 - 15	14.5 - 15.0
	SKC 20 - 15.5	15.0 - 15.5
	SKC 20 - 16	15.5 - 16.0
	SKC 20 - 16.5	16.0 - 16.5
	SKC 20 - 17	16.5 - 17.0
	SKC 20 - 17.5	17.0 - 17.5
	SKC 20 - 18	17.5 - 18.0
	SKC 20 - 18.5	18.0 - 18.5
	SKC 20 - 19	18.5 - 19.0
	SKC 20 - 19.5	19.0 - 19.5
	SKC 20 - 20.0	19.5 - 20.0

Style	Code No.	Chucking (d)
SKC 25	SKC25 - 16.5	16.0 - 16.5
	SKC25 - 17	16.5 - 17.0
	SKC25 - 17.5	17.0 - 17.5
	SKC25 - 18	17.5 - 18.0
	SKC25 - 18.5	18.0 - 18.5
	SKC25 - 19	18.5 - 19.0
	SKC25 - 19.5	19.0 - 19.5
	SKC25 - 20	19.5 - 20.0
	SKC25 - 20.5	20.0 - 20.5
	SKC25 - 21	20.5 - 21.0
	SKC25 - 21.5	21.0 - 21.5
	SKC25 - 22	21.5 - 22.0
	SKC25 - 22.5	22.0 - 22.5
	SKC25 - 23	22.5 - 23.0
	SKC25 - 23.5	23.0 - 23.5
	SKC25 - 24	23.5 - 24.0
	SKC25 - 24.5	24.0 - 24.5
	SKC25 - 25	24.5 - 25.0
	SKC25 - 25.4	25.0 - 25.4

SKN NUT
SKN NUSS

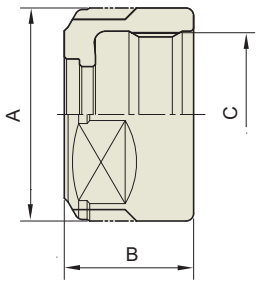


FIG 1

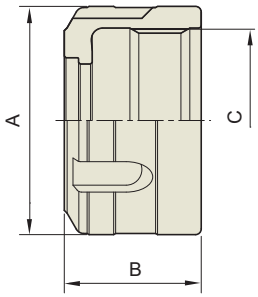


FIG 2

TYPE	FIG	A	B	C	Weight (kg)
SKN 06	1	20	15	M15.5X1.0	0.02
SKN 10	1	28	17	M21.5X1.0	0.04
SKN 13	2	33	21	M27X1.0	0.05
SKN 16	2	40	24	M32X1.5	0.06
SKN 20	2	48.5	24	M40X1.0	0.08
SKN 25	2	55	30	M42X1.5	0.10

ER COLLET CHUCK
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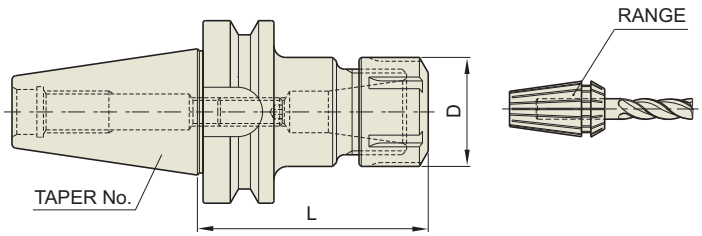
MAS403-BT



MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	12,000	

■ STANDARD TYPE

TAPER No.	CODE No.	RANGE	D	L	M	NUT	COLLET	Weight (kg)
30	BT30-ER11- 70	0.5~7.0	19	70	M6	ER11	ER11+ET1-12	0.5
	BT30-ER11-100	0.5~7.0	19	100	M6	ER11	ER11+ET1-12	0.5
	BT30-ER16- 70	0.5~10.0	28	70	M10	ER16	ER16+ET1-16	1.0
	BT30-ER16-100	0.5~10.0	28	100	M10	ER16	ER16+ET1-16	1.1
	BT30-ER20- 80	1.0~13.0	34	80	M12	ER20	ER20+ET1-20	1.2
	BT30-ER20-100	1.0~13.0	34	100	M12	ER20	ER20+ET1-20	1.3
	BT30-ER25- 70	1.0~16.0	42	70	M12	ER25	ER25+ET1-25	1.2
	BT30-ER25-100	1.0~16.0	42	100	M12	ER25	ER25+ET1-25	1.3
	BT30-ER32- 60	2.0~20.0	50	60	M12	ER32	ER32+ET1-32	1.4
	BT30-ER32- 90	2.0~20.0	50	90	M12	ER32	ER32+ET1-32	1.9
40	BT40-ER11- 75	0.5~7.0	19	75	M6	ER11	ER11+ET1-12	1.0
	BT40-ER11-100	0.5~7.0	19	100	M6	ER11	ER11+ET1-12	1.1
	BT40-ER16- 75	0.5~10.0	28	75	M10	ER16	ER16+ET1-16	1.1
	BT40-ER16-100	0.5~10.0	28	100	M10	ER16	ER16+ET1-16	1.2
	BT40-ER16-120	0.5~10.0	28	120	M10	ER16	ER16+ET1-16	1.4
	BT40-ER20- 75	1.0~13.0	34	75	M12	ER20	ER20+ET1-20	1.4
	BT40-ER20-100	1.0~13.0	34	100	M12	ER20	ER20+ET1-20	1.8
	BT40-ER20-135	1.0~13.0	34	135	M12	ER20	ER20+ET1-20	2.2
	BT40-ER25- 75	1.0~16.0	42	75	M12	ER25	ER25+ET1-25	1.4
	BT40-ER25-100	1.0~16.0	42	100	M12	ER25	ER25+ET1-25	1.8
	BT40-ER25-135	1.0~16.0	42	135	M12	ER25	ER25+ET1-25	2.2
	BT40-ER25-150	1.0~16.0	42	150	M12	ER25	ER25+ET1-25	2.4
	BT40-ER32- 60	2.0~20.0	50	60	M12	ER32	ER32+ET1-32	1.8
	BT40-ER32-100	2.0~20.0	50	100	M12	ER32	ER32+ET1-32	2.2
	BT40-ER32-120	2.0~20.0	50	120	M12	ER32	ER32+ET1-32	2.4
	BT40-ER32-150	2.0~20.0	50	150	M12	ER32	ER32+ET1-32	2.6
	BT40-ER40- 80	3.0~30.0	63	80	M12	ER40	ER40+ET1-40	1.5

▶ For usable collet, please refer to page 1422 and 1423
▶ Higher balancing grade product could be supplied by customer's request.

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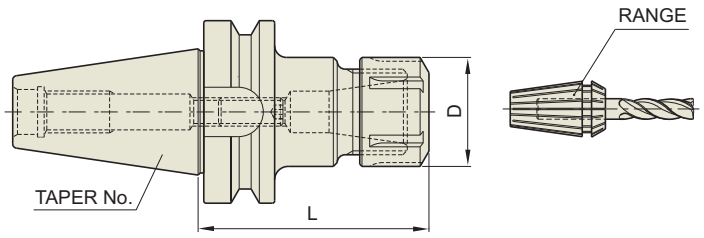
MAS403-BT



MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	12,000	

■ STANDARD TYPE

TAPER No.	CODE No.	RANGE	D	L	M	NUT	COLLET	Weight (kg)
50	**BT50-ER16-100**	0.5~10.0	28	100	M10	ER16	ER16+ET1-16	4.2
	BT50-ER16-120	0.5~10.0	28	120	M10	ER16	ER16+ET1-16	4.4
	BT50-ER16-165	0.5~10.0	28	165	M10	ER16	ER16+ET1-16	4.6
	BT50-ER20-100	1.0~13.0	34	100	M12	ER20	ER20+ET1-20	4.6
	BT50-ER20-135	1.0~13.0	34	135	M12	ER20	ER20+ET1-20	4.8
	BT50-ER20-165	1.0~13.0	34	165	M12	ER20	ER20+ET1-20	5.0
	BT50-ER25-100	1.0~16.0	42	100	M12	ER25	ER25+ET1-25	4.7
	BT50-ER25-135	1.0~16.0	42	135	M12	ER25	ER25+ET1-25	4.8
	BT50-ER25-165	1.0~16.0	42	165	M12	ER25	ER25+ET1-25	5.0
	BT50-ER32-100	2.0~20.0	50	100	M12	ER32	ER32+ET1-32	5.2
	BT50-ER32-135	2.0~20.0	50	135	M12	ER32	ER32+ET1-32	5.7
	BT50-ER32-165	2.0~20.0	50	165	M12	ER32	ER32+ET1-32	5.8
	BT50-ER40-100	3.0~30.0	63	100	M12	ER40	ER40+ET1-40	5.6
	BT50-ER40-150	3.0~30.0	63	150	M12	ER40	ER40+ET1-40	6.1
	BT50-ER50-100	12.0~34.0	78	100	M12	ER50	ER40+ET1-40	5.8
	BT50-ER50-150	12.0~34.0	78	150	M12	ER50	ER40+ET1-40	6.3

▶ For usable collet, please refer to page 1422 and 1423
▶ Higher balancing grade product could be supplied by customer's request.

TOOL HOLDERS

ER

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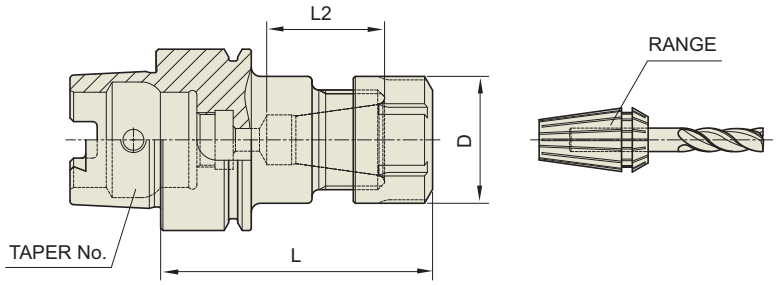
DIN69893-HSK FORM A



DIN69893 - HSK	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	12,000	

■ STANDARD TYPE

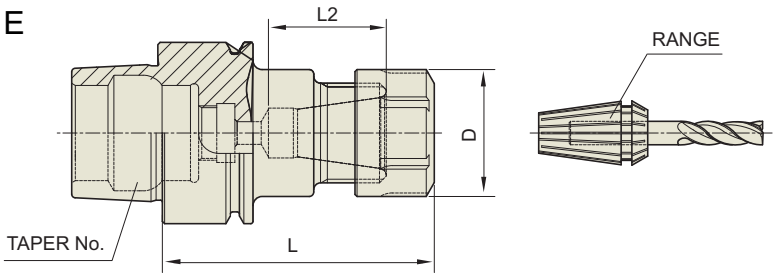
TAPER No.	CODE No.	RANGE	D	L	L2	NUT	Weight (kg)
40A	HSK40A-ER11-60	0.5 ~ 7.0	19	60	22	ER 11	0.40
	HSK40A-ER16-60	0.5 ~ 10.0	28	60	26	ER 16	0.50
	HSK40A-ER20-70	1.0 ~ 13.0	34	70	33	ER 20	0.80

■ SLIM TYPE

TAPER No.	CODE No.	RANGE	D	L	L2	NUT	Weight (kg)
40A	HSK40A-ER11M-75	0.5 ~ 7.0	16	75	22	ER11M	0.40
	HSK40A-ER16M-80	0.5 ~ 10.0	22	80	26	ER16M	0.50
	HSK40A-ER20M-80	1.0 ~ 13.0	28	80	33	ER20M	0.70
	HSK40A-ER25M-80	1.0 ~ 16.0	35	80	40	ER25M	0.80

▶ Higher balancing grade product could be supplied by customer's request.

DIN69893-HSK FORM E



■ STANDARD TYPE

TAPER No.	CODE No.	RANGE	D	L	L2	NUT	Weight (kg)
40E	HSK40E-ER11-60	0.5 ~ 7.0	19	60	22	ER 11	0.40
	HSK40E-ER16-60	0.5 ~ 10.0	28	60	26	ER 16	0.50
	HSK40E-ER20-70	1.0 ~ 13.0	34	70	33	ER 20	0.80

■ SLIM TYPE

TAPER No.	CODE No.	RANGE	D	L	L2	NUT	Weight (kg)
40E	HSK40E-ER11M-75	0.5 ~ 7.0	16	75	22	ER11M	0.40
	HSK40E-ER16M-80	0.5 ~ 10.0	22	80	26	ER16M	0.50
	HSK40E-ER20M-80	1.0 ~ 13.0	28	80	33	ER20M	0.70
	HSK40E-ER25M-80	1.0 ~ 16.0	35	80	40	ER25M	0.80

▶ Higher balancing grade product could be supplied by customer's request.

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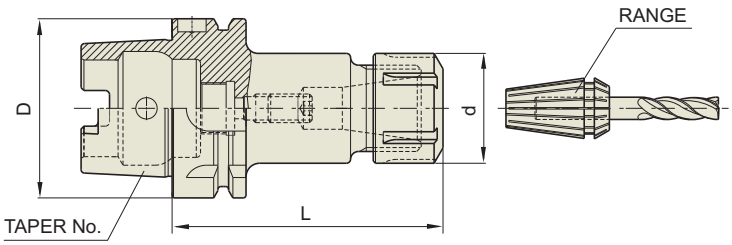
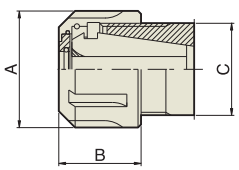
DIN69893-HSK FORM A



DIN69893 - HSK	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	12,000	

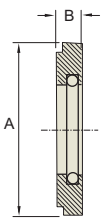
TAPER No.	CODE No.	RANGE	d	D	L	Weight (kg)
50A	HSK 50A-ER16-100	0.5-10	28	50	100	0.70
	HSK 50A-ER20-100	1-13	35	50	100	0.90
	HSK 50A-ER25-100	1-16	42	50	100	1.20
	HSK 50A-ER32-100	2-20	50	50	100	1.50
63A	HSK 63A-ER16-100	0.5-10	28	63	100	1.20
	HSK 63A-ER20-100	1-13	35	63	100	1.50
	HSK 63A-ER25-100	1-16	42	63	100	1.80
	HSK 63A-ER32-100	2-20	50	63	100	2.00
	HSK 63A-ER40-120	3-26	63	63	120	2.30
100A	HSK100A-ER16-100	0.5-10	28	100	100	2.60
	HSK100A-ER20-100	1-13	35	100	100	2.70
	HSK100A-ER25-100	1-16	42	100	100	2.90
	HSK100A-ER32-100	2-20	50	100	100	3.10
	HSK100A-ER40-120	3-26	63	100	120	3.30

▶ Higher balancing grade product could be supplied by customer's request.
▶ Internal oil supply mode is applicable when using ERC nut.



ERC NUT

TYPE
HI-Q/ERC16
HI-Q/ERC20
HI-Q/ERC25
HI-Q/ERC32
HI-Q/ERC40



SEALING DISK

TYPE
DS/ER16
DS/ER20
DS/ER25
DS/ER32
DS/ER40

TOOL HOLDERS

ER

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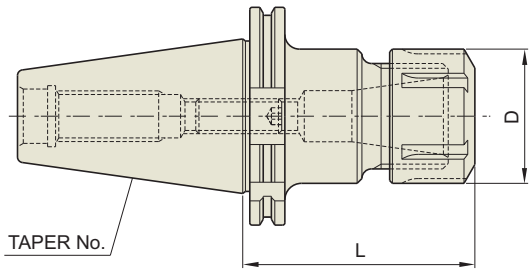
DIN69871-SK



DIN69871 - SK	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	12,000	

■ STANDARD

TAPER No.	CODE No.	RANGE	D	L	NUT	Weight (kg)
30	SK30-ER11-55	0.5~7.0	19	55	ER11	
	SK30-ER16-55	0.5~10.0	28	55	ER16	
	SK30-ER20-55	1.0~13.0	34	55	ER20	
	SK30-ER25-55	1.0~16.0	42	55	ER25	
	SK30-ER32-60	2.0~20.0	50	60	ER32	
40	SK40-ER11-70	0.5~7.0	19	70	ER11	
	SK40-ER16-70	0.5~10.0	28	70	ER16	
	SK40-ER20-70	1.0~13.0	34	70	ER20	
	SK40-ER25-70	1.0~16.0	42	70	ER25	
	SK40-ER32-70	2.0~20.0	50	70	ER32	
	SK40-ER40-80	3.0~30.0	63	80	ER40	
50	SK50-ER16-70	0.5~10.0	28	70	ER16	
	SK50-ER20-70	1.0~13.0	34	70	ER20	
	SK50-ER25-70	1.0~16.0	42	70	ER25	
	SK50-ER32-70	2.0~20.0	50	70	ER32	
	SK50-ER40-80	3.0~30.0	63	80	ER40	

■ EXTENDED

TAPER No.	CODE No.	RANGE	D	L	NUT	Weight (kg)
40	SK40-ER16-100	0.5~10.0	28	100	ER16	
	SK40-ER20-100	1.0~13.0	34	100	ER20	
	SK40-ER25-100	1.0~16.0	42	100	ER25	
	SK40-ER32-100	2.0~20.0	50	100	ER32	
50	SK50-ER16-100	0.5~10.0	28	100	ER16	
	SK50-ER20-100	1.0~13.0	34	100	ER20	
	SK50-ER25-100	1.0~16.0	42	100	ER25	
	SK50-ER32-100	2.0~20.0	50	100	ER32	
	SK50-ER40-100	3.0~30.0	63	100	ER40	

▶ For usable collet, please refer to page 1422 and 1423
▶ Higher balancing grade product could be supplied by customer's request.

ER COLLET CHUCK
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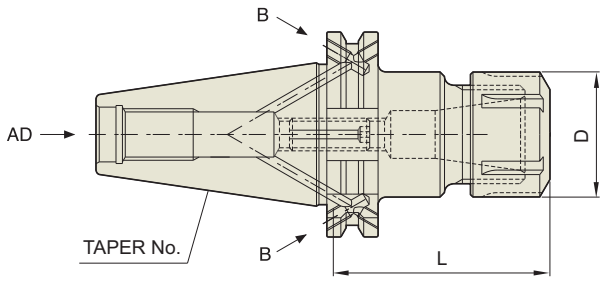
DIN69871-SK(AD/B)



DIN69871 - SK	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	12,000	

■ STANDARD

TAPER No.	CODE No.	RANGE	D	L	NUT	Weight (kg)
40	SK40AD/B-ER11-70	0.5~7.0	19	70	ER11	0.80
	SK40AD/B-ER16-70	0.5~10.0	28	70	ER16	0.90
	SK40AD/B-ER20-70	1.0~13.0	34	70	ER20	1.20
	SK40AD/B-ER25-70	1.0~16.0	42	70	ER25	1.30
	SK40AD/B-ER32-70	2.0~20.0	50	70	ER32	1.50
	SK40AD/B-ER40-80	3.0~30.0	63	80	ER40	1.70
50	SK50AD/B-ER16-70	0.5~10.0	28	70	ER16	2.80
	SK50AD/B-ER20-70	1.0~13.0	34	70	ER20	2.90
	SK50AD/B-ER25-70	1.0~16.0	42	70	ER25	3.10
	SK50AD/B-ER32-70	2.0~20.0	50	70	ER32	3.30
	SK50AD/B-ER40-80	3.0~30.0	63	80	ER40	3.50

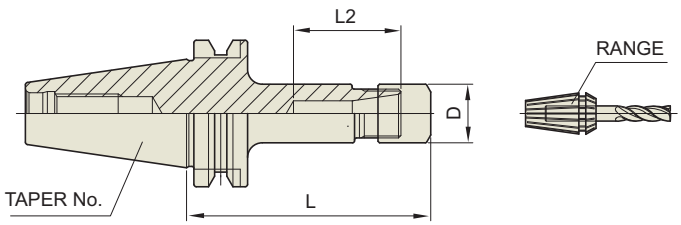
■ EXTENDED

TAPER No.	CODE No.	RANGE	D	L	NUT	Weight (kg)
40	SK40AD/B-ER16-100	0.5~10.0	28	100	ER16	1.05
	SK40AD/B-ER20-100	1.0~13.0	34	100	ER20	1.13
	SK40AD/B-ER25-100	1.0~16.0	42	100	ER25	1.35
	SK40AD/B-ER32-100	2.0~20.0	50	100	ER32	1.43
50	SK50AD/B-ER16-100	0.5~10.0	28	100	ER16	2.90
	SK50AD/B-ER20-100	1.0~13.0	34	100	ER20	3.10
	SK50AD/B-ER25-100	1.0~16.0	42	100	ER25	3.30
	SK50AD/B-ER32-100	2.0~20.0	50	100	ER32	3.50
	SK50AD/B-ER40-100	3.0~26.0	63	100	ER40	3.80

▶ For usable collet, please refer to page 1422 and 1423
▶ Higher balancing grade product could be supplied by customer's request.

ER COLLET CHUCK
FRÄSERSPANNFUTTE

MAS403-BT

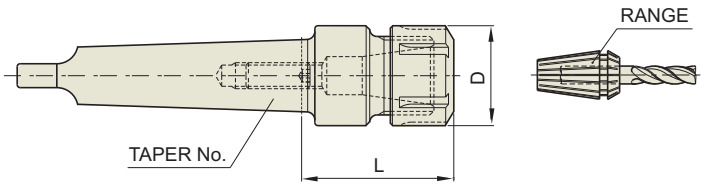


MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

TAPER No.	CODE No.	RANGE	D	L	L2	Weight (kg)
BT20	**BT20-ER8M-50**	0.5 ~ 5.0	12	50	22	
	BT20-ER11M-50	0.5 ~ 7.0	16	50	22	
	BT20-ER16M-50	0.5 ~ 10.0	22	50	26	
	BT20-ER11-50	0.5 ~ 7.0	19	50	22	
	BT20-ER16-50	0.5 ~ 10.0	28	50	26	
BT25	**BT25-ER8M-50**	0.5 ~ 5.0	12	50	22	
	BT25-ER11M-50	0.5 ~ 7.0	16	50	22	
	BT25-ER16M-50	0.5 ~ 10.0	22	50	26	
	BT25-ER11-50	0.5 ~ 7.0	19	50	22	
	BT25-ER16-50	0.5 ~ 10.0	28	50	26	

ER COLLET CHUCK
FRÄSERSPANNFUTTE

MTA



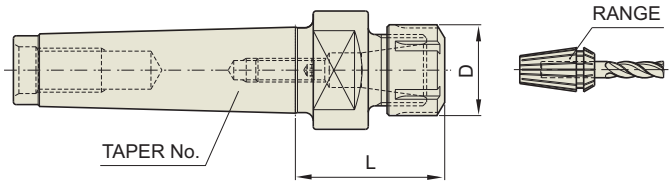
DIN228 - MTA | Taper Accuracy: AT3 | G Value | RPM | Coolant System

■ STANDARD TYPE

TAPER No.	CODE No.	RANGE	D	L	NUT	COLLET	Weight (kg)
1	**MTA1-ER11**	0.5-7.0	19	35	ER11	ER11	0.30
	MTA1-ER16	0.5-10	28	40	ER16	ER16	0.35
2	**MTA2-ER20**	1-13	34	50	ER20	ER20	0.50
	MTA2-ER25	1-16	42	50	ER25	ER25	0.60
3	**MTA3-ER25**	1-16	42	60	ER25	ER25	0.60
	MTA3-ER32	2-20	50	70	ER32	ER32	0.65
4	**MTA4-ER20**	1-13	34	60	ER20	ER20	1.00
	MTA4-ER25	1-16	42	60	ER25	ER25	1.10
	MTA4-ER32	2-20	50	65	ER32	ER32	1.30
	MTA4-ER40	3-30	63	80	ER40	ER40	1.50
5	**MTA5-ER32**	2-20	50	70	ER32	ER32	2.20
	MTA5-ER40	3-30	63	80	ER40	ER40	2.40
	MTA5-ER50	6-34	78	80	ER50	ER50	2.80

ER COLLET CHUCK
FRÄSERSPANNFUTTE

MTB



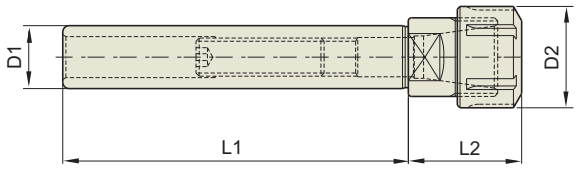
DIN228 - MTB	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

■ STANDARD TYPE

TAPER No.	CODE No.	RANGE	D	L	NUT	COLLET	Weight (kg)
1	**MTB1-ER16**	1-10	28	40	ER16	ER16	0.35
2	**MTB2-ER20**	1-13	34	50	ER20	ER20	0.50
	MTB2-ER25	1-16	42	50	ER25	ER25	0.60
3	**MTB3-ER25**	1-16	42	60	ER25	ER25	0.60
	MTB3-ER32	2-20	50	70	ER32	ER32	0.65
4	**MTB4-ER32**	2-20	50	70	ER32	ER32	1.10
	MTB4-ER40	3-30	63	80	ER40	ER40	1.30
5	**MTB5-ER32**	2-20	50	70	ER32	ER32	2.00
	MTB5-ER40	3-30	63	80	ER40	ER40	2.20
	MTB5-ER50	6-34	78	80	ER50	ER50	2.60

ER CHUCK
FRASERSPANNFUTTER

K

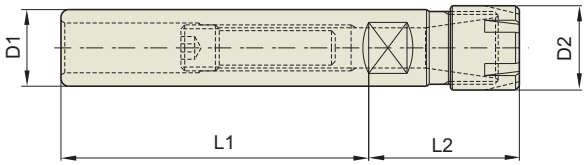


K	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

■ STANDARD TYPE

TAPER No.	CODE No.	RANGE	D1	D2	L1	L2	NUT	COLLET	Weight (kg)
16	**K16-ER11-100**	0.5-7.0	16	19	100	32	ER11	ER11	0.15
	K16-ER16-100	0.5-10.0	16	28	100	36	ER16	ER16	0.18
20	**K20-ER16-100**	0.5-10.0	20	28	100	36	ER16	ER16	0.25
	K20-ER20-100	1.0-13.0	20	34	100	40	ER20	ER20	0.29
	K20-ER25-100	1.0-16.0	20	42	100	50	ER25	ER25	0.35
25	**K25-ER20-100**	1.0-13.0	25	34	100	40	ER20	ER20	0.40
	K25-ER25-100	1.0-16.0	25	42	100	50	ER25	ER25	0.45
32	**K32-ER16-100**	0.5-10.0	32	28	100	36	ER16	ER16	0.50
	K32-ER20-100	1.0-13.0	32	34	100	40	ER20	ER20	0.66
	K32-ER25-100	1.0-16.0	32	42	100	50	ER25	ER25	0.75
	K32-ER32-100	2.0-20.0	32	50	100	58	ER32	ER32	1.00

EXTENSION ER COLLET CHUCK - SLIM TYPE
VERLÄNGERUNG FRÄSERSPANNFUTTER -SCHLANKER TYP

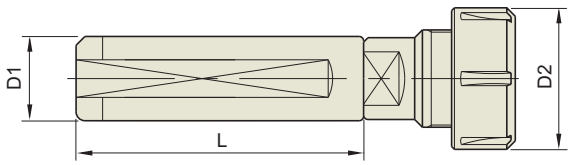


K	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

TAPER No.	CODE No.	RANGE	D1	D2	L1	L2	NUT	Weight (kg)
12	**K12-ER8M-70**	0.5-5.0	12	12	70	25	ERM 8	0.10
16	**K16-ER11M-140**	0.5-7.0	16	16	140	32	ERM11	0.22
20	**K20-ER16M-140**	0.5-10.0	20	22	140	41	ERM16	0.32
	K20-ER20M-140	1.0-13.0	20	28	140	41	ERM20	0.35
25	**K25-ER16M-140**	0.5-10.0	25	22	140	41	ERM16	0.45
	K25-ER20M-140	1.0-13.0	25	28	140	41	ERM20	0.52
	K25-ER25M-140	1.0-16.0	25	35	140	45	ERM25	0.55

ERT

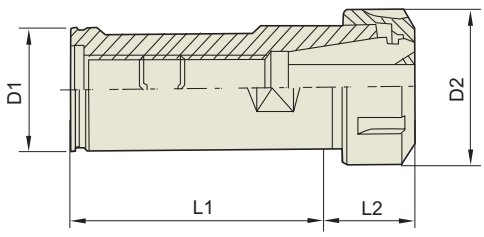
TENSION ER CHUCK - Exclusive use for tapping
SPANNUNG FRÄSERSPANNFUTTER - für GEWINDESCHNEID



K	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

TAPER No.	CODE No.	RANGE	D1	D2	L	NUT	Weight (kg)
20	**K20-ERT16-70**	0.5-10.0	20	28	70	ER16	0.4
25	**K25-ERT16-70**	0.5-10.0	25	28	70	ER16	0.45
	K25-ERT20-80	1.0-13.0	25	34	80	ER20	0.50
32	**K32-ERT16-70**	0.5-10.0	32	28	70	ER16	0.70
	K32-ERT20-80	1.0-13.0	32	34	80	ER20	0.80
	K32-ERT25-80	1.0-16.0	32	42	80	ER25	1.00
	K32-ERT32-80	2.0-20.0	32	50	80	ER32	1.20

ER COLLET CHUCK for CNC LATHE - NC
FRÄSERSPANNFUTTER FÜR CNC DREHBANK

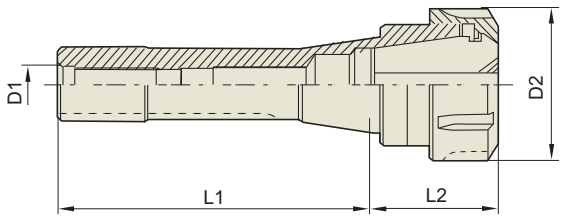


NC	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

■ STANDARD TYPE

TAPER No.	CODE No.	RANGE	D1	D2	L1	L2	NUT	COLLET	Weight (kg)
25	**NC25-ER11**	0.5-7.0	25	19	65	32	ER11	ER11	0.30
	NC25-ER16	0.5-10.0	25	28	65	32	ER16	ER16	0.45
	NC25-ER20	1.0-13.0	25	34	65	32	ER20	ER20	0.50
	NC25-ER25	1.0-16.0	25	42	65	32	ER25	ER25	0.55
32	**NC32-ER20**	1.0-13.0	32	34	70	32	ER20	ER20	0.60
	NC32-ER25	1.0-16.0	32	42	70	38	ER25	ER25	0.70
	NC32-ER32	2.0-20.0	32	50	60	38	ER32	ER32	0.75
40	**NC40-ER32**	2.0-20.0	40	50	75	53	ER32	ER32	1.25
	NC40-ER40	3.0-30.0	40	63	75	53	ER40	ER40	1.30

ER COLLET CHUCK for BRIDGEPORT - R8
FRÄSERSPANNFUTTER für R8



TAPER No.	CODE No.	RANGE	D1	D2	L1	L2	NUT	COLLET	Weight (kg)
R8	**R8-ER32**	2-20.0	U7/16	50	101.5	50	ER32	ER32	1.00
	R8-ER40	3-30.0	U7/16	63	101.5	75	ER40	ER40	1.20

TOOL HOLDERS

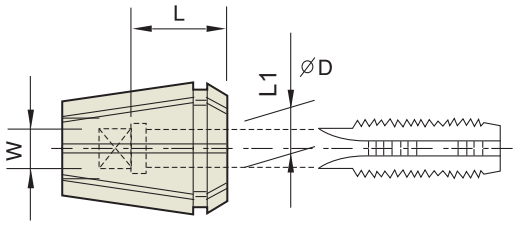
ER COLLET - UF
ER SPANNZANGE -UF

TYPE ER 8		TYPE ER11		TYPE ER16		TYPE ER20	
CLAMPING CAPACITY	ITEM No.	CLAMPING CAPACITY	ITEM No.	CLAMPING CAPACITY	ITEM No.	CLAMPING CAPACITY	ITEM No.
1.0-0.5	**208010**	1.0-0.5	**211010**	1.0-0.5	**216010**	2-1	**220020**
1.5-1.0	**208015**	1.5-1.0	**211015**	2.0-1.0	**216020**	3-2	**220030**
2.0-1.5	**208020**	2.0-1.5	**211020**	3.0-2.0	**216030**	4-3	**220040**
2.5-2.0	**208025**	2.5-2.0	**211025**	4.0-3.0	**216040**	5-4	**220050**
3.0-2.5	**208030**	3.0-2.5	**211030**	5.0-4.0	**216050**	6-5	**220060**
3.5-3.0	**208035**	3.5-3.0	**211035**	6.0-5.0	**216060**	7-6	**220070**
4.0-3.5	**208040**	4.0-3.5	**211040**	7.0-6.0	**216070**	8-7	**220080**
4.5-4.0	**208045**	4.5-4.0	**211045**	8.0-7.0	**216080**	9-8	**220090**
5.0-4.5	**208050**	5.0-4.5	**211050**	9.0-8.0	**216090**	10-9	**220100**
		5.5-5.0	**211055**	10.0-9.0	**216100**	11-10	**220120**
		6.0-5.5	**211060**	1.5-1.0	**216015**	12-11	**220130**
		6.5-6.0	**211065**	2.5-2.0	**216025**	13-12	**220140**
		7.0-6.5	**211070**			1.0-0.5	**220010**
						1.5-1.0	**220015**
						2.5-2.0	**220025**
STANDARD SET	**208000**	STANDARD SET	**211000**	STANDARD SET	**216000**	STANDARD SET	**220000**
Ø 1.0-5.0mm 9PCS		Ø 1.0-7.0mm 13PCS		Ø 1.0-10.0mm 10PCS		Ø 2.0-13.0mm 12PCS	
WOODEN TRAY ZWT 8	**108110**	WOODEN TRAY ZWT 11	**011110**	WOODEN TRAY ZWT 16	**016110**	WOODEN TRAY ZWT 20	**020110**

ER COLLET - UF
ER SPANNZANGE -UF

TYPE ER25		TYPE ER32		TYPE ER40		TYPE ER50	
CLAMPING CAPACITY	ITEM No.	CLAMPING CAPACITY	ITEM No.	CLAMPING CAPACITY	ITEM No.	CLAMPING CAPACITY	ITEM No.
2-1	225020	3-2	232030	4-3	240040	12-10	250120
3-2	225030	4-3	232040	5-4	240050	14-12	250140
4-3	225040	5-4	232050	6-5	240060	16-14	250160
5-4	225050	6-5	232060	7-6	240070	18-16	250180
6-5	225060	7-6	232070	8-7	240080	20-18	250200
7-6	225070	8-7	232080	9-8	240090	22-20	250220
8-7	225080	9-8	232090	10-9	240100	24-22	250240
9-8	225090	10-9	232100	11-10	240110	26-24	250260
10-9	225100	11-10	232110	12-11	240120	28-26	250280
11-10	225110	12-11	232120	13-12	240130	30-28	250300
12-11	225120	13-12	232130	14-13	240140	32-30	250320
13-12	225130	14-13	232140	15-14	240150	34-32	250340
14-13	225140	15-14	232150	16-15	240160	6-4	250060
15-14	225150	16-15	232160	17-16	240170	8-6	250080
16-15	225160	17-16	232170	18-17	240180	10-8	250100
1.0-1.5	225010	18-17	232180	19-18	240190	25-23	250250
1.5-1.0	225015	19-18	232190	20-19	240200		
2.5-2.0	225025	20-19	232200	21-20	240210		
		2.0-1.0	232020	22-21	240220		
		2.5-2.0	232025	23-22	240230		
				24-23	240240		
				25-24	240250		
				26-25	240260		
				3-2	240030		
				27-26	240270		
				28-27	240280		
				29-28	240290		
				30-29	240300		
STANDARD SET	225000	STANDARD SET	232000	STANDARD SET	240000	STANDARD SET	250000
Ø 2.0-16.0mm		Ø 3.0-20.0mm		Ø 4.0-26.0mm		Ø 12.0-34.0mm	
15PCS		18PCS		23PCS		12PCS	
WOODEN TRAY ZWT 25	025110	WOODEN TRAY ZWT 32	032110	WOODEN TRAY ZWT 40	040110	WOODEN TRAY ZWT50	050110

ER COLLET FOR EXCLUSIVE USE FOR TAP
ER SPANNZANGE FÜR GEWINDESCHNEID



RDT 16				RDT 20				RDT 25				RDT 32				RDT 40			
TAP	Ø	W	L	TAP	Ø	W	L	TAP	Ø	W	L	TAP	Ø	W	L	TAP	Ø	W	L
M2	3.0	2.5	15																
M3	4.0	3.2	15	M3	4.0	3.2	15	M3	4.0	3.2	15								
M4	5.0	4.0	15	M4	5.0	4.0	15	M4	5.0	4.0	15	M4	5.0	4.0	15				
M5	5.5	4.5	15	M5	5.5	4.5	15	M5	5.5	4.5	15	M5	5.5	4.5	15				
M6	6.0	4.5	15	M6	6.0	4.5	15	M6	6.0	4.5	15	M6	6.0	4.5	15				
M8	6.2	5.0	15	M8	6.2	5.0	20	M8	6.2	5.0	20	M8	6.2	5.0	20	M8	6.2	5.0	20
				M10	7.0	5.5	20	M10	7.0	5.5	20	M10	7.0	5.5	20	M10	7.0	5.5	20
								M12	8.5	6.5	20	M12	8.5	6.5	20	M12	8.5	6.5	25
								M14	10.5	8.0	20	M14	10.5	8.0	20	M14	10.5	8.0	25
												M16	12.5	10.0	20	M16	12.5	10.0	25
												M18	14.0	11.0	20	M18	14.0	11.0	25
																M20	15.0	12.0	28
																M22	17.0	13.0	28
																M24	19.0	15.0	28

▶These ER collets are for exclusive use for tap.
▶Various sizes of taps ranging from M2 to M24 can be used.

ER SPANNER / WRENCH
ER MAULSCHLÜSSEL

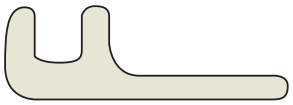


FIG. 1

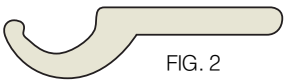


FIG. 2

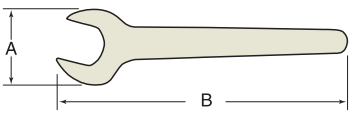
SPANNER FOR ER/SKN NUT

TYPE	ITEM No.	A	B	APPLICABLE NUT
ER16 SP	916 181	50	160	ER16, SKN10 (FIG 1.)
ER20 SP	920 181	55	180	ER20 (FIG 1.)
ER25 SP	925 180	65	210	ER25, SKN16 (FIG 2.)
ER32 SP	932 180	75	250	ER32 (FIG 2.)
ER40 SP	940 180	90	290	ER40 (FIG 2.)
ER50 SP	950 180	110	350	ER50 (FIG 2.)

SPANNER FOR EM NUT

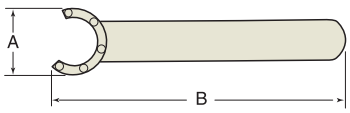
TYPE	ITEM No.	A	B	APPLICABLE NUT
E 8M	908 160	12.4	70	HI-Q/ERM 8
E 11M	911 160	16.8	90	HI-Q/ERM 11
E 16M	916 160	22.5	110	HI-Q/ERM 16
E 20M	920 160	29.0	120	HI-Q/ERM 20
E 25M	925 160	36.0	130	HI-Q/ERM 25

SPANNER FOR GS NUT



TYPE	ITEM No.	A	B	APPLICABLE NUT
GS17	911 180	32.0	95	HI-Q/ER11
GS25	916 180	44.0	144	HI-Q/ER16
GS30	920 180	52.5	172	HI-Q/ER20

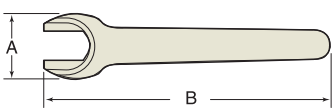
EM NUT (FOR FLOATING CHUCK)



Type EAX

TYPE	ITEM No.	A	B	APPLICABLE NUT
E 11AX	711 170	16.5	108	ER 11-AXC
E 16AX	716 170	22.5	131	ER 16-AXC
E 20AX	720 170	26	148	ER 20-AXC
E 25AX	725 170	29.5	162	ER 25-AXC
E 32AX	732 170	37.5	196	ER 32-AXC

SPANNER FOR EM NUT



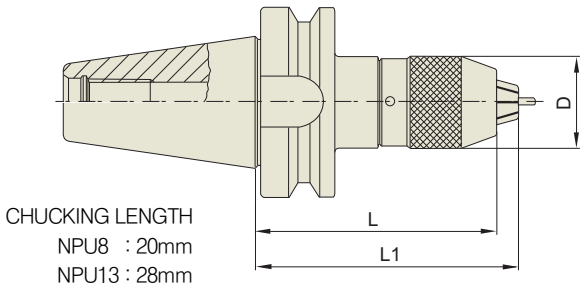
TYPE	ITEM No.	A	B	APPLICABLE NUT
E 8MS	908 161	19.2	76	ER 8-MS
E 11MS	911 161	22.0	100	ER 11-MS
E 16MS	916 161	33.0	130	ER 16-MS
E 20MS	920 161	42.0	140	ER 20-MS

TOOL HOLDERS

NPU

NC DRILL CHUCK
NC - BOHRFUTTER

MAS403-BT

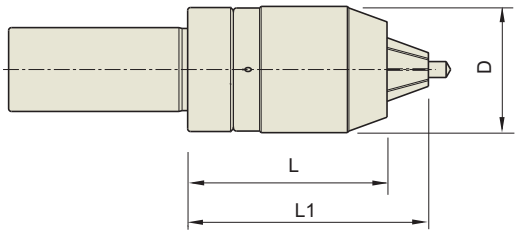


CHUCKING LENGTH
NPU8 : 20mm
NPU13 : 28mm

MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

TAPER No.	CODE No.	CAPACITY	D	L(MIN)	L1(MAX)	Weight (kg)
30	BT30-NPU 8- 70	0.3~8	36.5	70	75.7	0.80
	BT30-NPU13-100	1~13	50.4	100	110	1.80
40	BT40-NPU 8- 70	0.3~8	36.5	70	75.7	1.50
	BT40-NPU 8-110	0.3~8	36.5	110	115.7	1.80
	BT40-NPU 8-150	0.3~8	36.5	150	155.7	2.60
	BT40-NPU13- 90	1~13	50.4	90	95.7	2.10
	BT40-NPU13-130	1~13	50.4	130	140	2.70
	BT40-NPU13-150	1~13	50.4	150	160	3.40
50	BT50-NPU 8- 90	0.3~8	36.5	90	95.7	4.20
	BT50-NPU 8-110	0.3~8	36.5	110	115.7	4.50
	BT50-NPU 8-170	0.3~8	36.5	170	180.7	5.20
	BT50-NPU13-100	1~13	50.4	100	110	4.80
	BT50-NPU13-130	1~13	50.4	130	140	5.20
	BT50-NPU13-150	1~13	50.4	150	160	5.50
	BT50-NPU13-190	1~13	50.4	190	200	5.90

NC DRILL CHUCK - K
NC - BOHRFUTTER - K



K	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

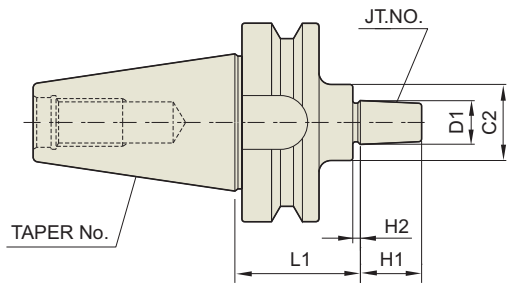
TAPER No.	CODE No.	CAPACITY	D	L(MIN)	L1(MAX)	d	Weight (kg)
32	K32-NPU 8- 70	0.3~8	36.5	70	75.7	32	0.70
	K32-NPU13-100	1~13	50.4	100	110	32	1.50
42	K42-NPU 8- 70	0.3~8	36.5	70	75.7	42	0.80
	K42-NPU13-100	1~13	50.4	100	110	42	1.60

TOOL HOLDERS

JTA

JACOBS TAPER ADAPTER
JACOBS KEGELZAPFEN ADAPTER

MAS403-BT

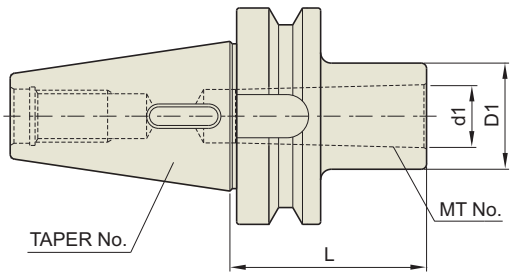


MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

TAPER No.	CODE No.	JT. No.	D1	L1	H1	H2	C1	Weight (kg)
30	BT30-JTA 1-45	1	9.754	45	14	3	30	0.9
	BT30-JTA 2-45	2	14.199	45	20	4	30	1.0
	BT30-JTA 6-45	6	17.17	45	24	4	30	1.0
40	BT40-JTA 1-45	1	9.754	45	14	3	30	1.1
	BT40-JTA 1-90	1	9.754	90	14	3	30	1.1
	BT40-JTA2S-45	2Shot	13.94	45	18	3	30	1.4
	BT40-JTA2S-90	2Shot	13.94	90	18	3	30	1.4
	BT40-JTA 2-45	2	14.199	45	20	4	30	1.1
	BT40-JTA 2-90	2	14.199	90	20	4	30	1.4
	BT40-JTA33-45	33	15.85	45	24	4	30	1.1
	BT40-JTA33-90	33	15.85	90	24	4	30	1.4
	BT40-JTA 6-45	6	17.17	45	24	4	30	1.1
	BT40-JTA 6-90	6	17.17	90	24	4	30	1.4
	BT40-JTA 3-45	3	20.599	45	28	5	35	1.2
	BT40-JTA 3-90	3	20.599	90	28	5	35	1.5
50	BT50-JTA 1-45	1	9.754	45	14	3	30	4.0
	BT50-JTA 1-105	1	9.754	105	14	3	30	4.4
	BT50-JTA2S-45	2Shot	13.94	45	18	3	30	4.0
	BT50-JTA2S-105	2Shot	13.94	105	18	3	30	4.4
	BT50-JTA 2-45	2	14.199	45	20	4	30	4.0
	BT50-JTA 2-105	2	14.199	105	20	4	30	4.4
	BT50-JTA33-45	33	15.85	45	24	4	30	4.0
	BT50-JTA33-105	33	15.85	105	24	4	30	4.4
	BT50-JTA 6-45	6	17.17	45	24	4	30	4.0
	BT50-JTA 6-105	6	17.17	105	24	4	30	4.4
	BT50-JTA 3-45	3	20.599	45	28	5	35	4.0
	BT50-JTA 3-105	3	20.599	105	28	5	35	4.6

MORSE TAPER ADAPTER
EINSATZHÜLSEN FÜR MORSEKEGEL

MAS403-BT



MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

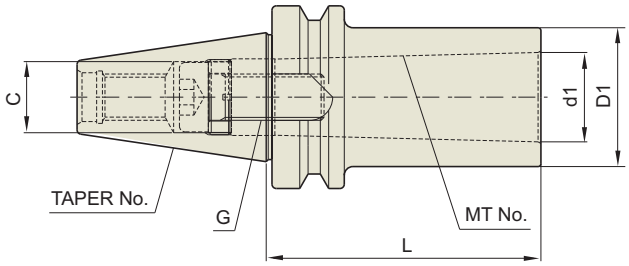
TAPER No.	CODE No.	MT No.	L	d1	D1	Weight (kg)
30	BT30-MTA1- 45	1	45	12.065	25	0.4
	BT30-MTA2- 60	2	60	17.780	32	0.5
	BT30-MTA2- 120	2	120	17.780	32	0.6
	BT30-MTA3- 75	3	75	23.825	40	0.7
40	BT40-MTA1- 45	1	45	12.065	25	1.0
	BT40-MTA1-120	1	120	12.065	25	1.3
	BT40-MTA2- 60	2	60	17.780	32	1.0
	BT40-MTA2-120	2	120	17.780	32	1.4
	BT40-MTA3- 75	3	75	23.825	40	1.2
	BT40-MTA3-135	3	135	23.825	40	1.8
	BT40-MTA4- 95	4	95	31.267	50	1.1
	BT40-MTA4-165	4	165	31.267	50	2.4
50	BT50-MTA1- 45	1	45	12.065	25	4.0
	BT50-MTA1-120	1	120	12.065	25	4.3
	BT50-MTA1-180	1	180	12.065	25	4.3
	BT50-MTA2- 45	2	45	17.780	32	4.0
	BT50-MTA2-135	2	135	17.780	32	4.4
	BT50-MTA2-180	2	180	17.780	32	4.6
	BT50-MTA3- 45	3	45	23.825	40	3.9
	BT50-MTA3-150	3	150	23.825	40	4.7
	BT50-MTA3-180	3	180	23.825	40	4.9
	BT50-MTA4- 75	4	75	31.267	50	4.0
	BT50-MTA4-105	4	105	31.267	50	4.5
	BT50-MTA4-180	4	180	31.267	50	5.4
	BT50-MTA5-105	5	105	44.399	65	4.5
	BT50-MTA5-210	5	210	44.399	65	7.2
	BT50-MTA5-270	5	270	44.399	65	7.5

TOOL HOLDERS

MTB

MORSE TAPER ADAPTER
EINSATZHÜLSEN FÜR MORSEKEGEL

MAS403-BT

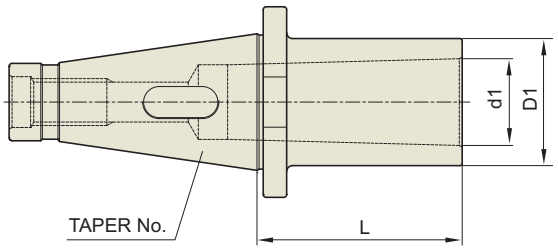


MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

TAPER No.	CODE No.	MT No.	L	d1	D1	C	G	Weight (kg)
30	**BT30-MTB1-45**	1	45	12.065	25	10	M6×1.0	0.8
	BT30-MTB2-45	2	45	17.780	32	–	M10×1.5	0.8
40	**BT40-MTB1-45**	1	45	12.065	25	10	M6×1.0	1.0
	BT40-MTB2-45	2	45	17.780	32	13.5	M10×1.5	1.1
	BT40-MTB3-60	3	60	23.825	40	–	M12×1.75	1.1
	BT40-MTB4-85	4	85	31.267	50	–	M16×2.0	1.3
50	**BT50-MTB1-45**	1	45	12.065	25	10	M6×1.0	3.9
	BT50-MTB2-45	2	45	17.780	32	16	M10×1.5	3.9
	BT50-MTB3-60	3	60	23.825	40	18	M12×1.75	3.9
	BT50-MTB4-75	4	75	31.267	50	20.5	M16×2.0	3.9

MORSE TAPER ADAPTER
EINSATZHÜLSEN FÜR MORSEKEGEL

NT



Taper Accuracy	G Value	RPM	Coolant System
AT3			

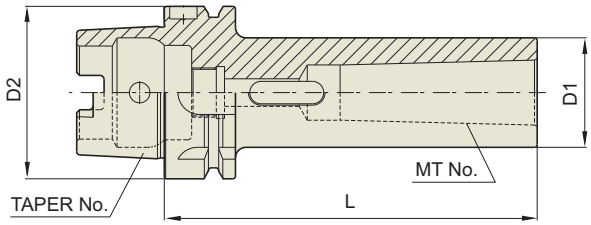
TAPER No.	CODE No.	MT No.	Range of drill		D1	L	DRAW THREAD	Weight (kg)
			MIN	MAX				
40	**NT40-MTA1-30**	1	2.0	14.0	25	30	U 5/8-11(M16×2)	0.90
	NT40-MTA2-30	2	14.1	23.0	32	30	U 5/8-11(M16×2)	1.00
	NT40-MTA3-35	3	23.1	32.0	40	45	U 5/8-11(M16×2)	1.00
	NT40-MTA4-90	4	32.1	50.0	50	90	U 5/8-11(M16×2)	1.20
50	**NT50-MTA1-30**	1	2.0	14.0	25	30	U 1-8(M24×3)	3.50
	NT50-MTA2-30	2	14.1	23.0	32	30	U 1-8(M24×3)	3.50
	NT50-MTA3-30	3	23.1	32.0	40	30	U 1-8(M24×3)	3.50
	NT50-MTA4-45	4	32.1	50.0	50	45	U 1-8(M24×3)	3.50
	NT50-MTA5-105	5	50.1	75.0	60	105	U 1-8(M24×3)	4.00

TOOL HOLDERS

MTA

MORSE TAPER ADAPTER
EINSATZHÜLSEN FÜR MORSEKEGEL

DIN69893-HSK FORM A

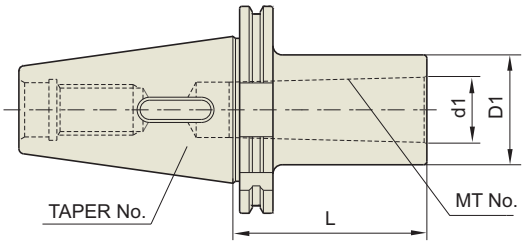


DIN69893 - HSK | Taper Accuracy: AT3 | G Value | RPM | Coolant System

TAPER No.	CODE No.	MT No.	D1	D2	L	Weight (kg)
50A	HSK 50A-MTA1-100	1	25	50	100	0.67
	HSK 50A-MTA2-120	2	32	50	120	0.78
	HSK 50A-MTA3-140	3	40	50	140	0.91
63A	HSK 63A-MTA1-100	1	25	63	100	0.87
	HSK 63A-MTA2-120	2	32	63	120	1.28
	HSK 63A-MTA3-140	3	40	63	140	1.44
	HSK 63A-MTA4-160	4	48	63	160	1.86
100A	HSK100A-MTA1-110	1	25	100	110	2.12
	HSK100A-MTA2-120	2	32	100	120	2.41
	HSK100A-MTA3-150	3	40	100	150	2.82
	HSK100A-MTA4-170	4	48	100	170	3.63
	HSK100A-MTA5-200	5	63	100	200	4.80

MORSE TAPER ADAPTER
EINSATZHÜLSEN FÜR MORSEKEGEL

DIN69871-SK



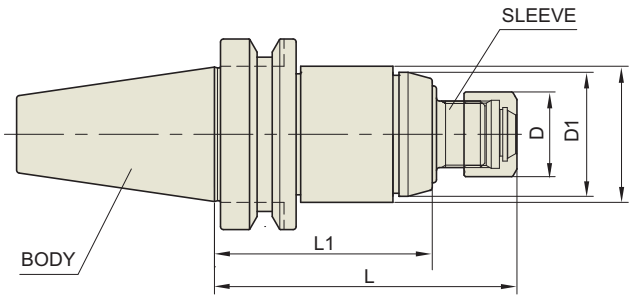
DIN69871 -SK | Taper Accuracy: AT3 | G Value | RPM | Coolant System

■ STANDARD

TAPER No.	CODE No.	MT No.	d1	D1	L	Weight (kg)
30	SK30-MTA1-50	1	12.065	25	50	0.72
	SK30-MTA2-60	2	17.78	32	60	0.87
	SK30-MTA3-80	3	23.825	40	80	1.02
40	SK40-MTA1-50	1	12.065	25	50	1.49
	SK40-MTA2-50	2	17.78	32	50	1.62
	SK40-MTA3-70	3	23.825	40	70	1.65
	SK40-MTA4-95	4	31.267	48	95	1.90
50	SK50-MTA1-45	1	12.065	25	45	2.60
	SK50-MTA2-60	2	17.78	32	60	2.66
	SK50-MTA3-65	3	23.825	40	65	2.75
	SK50-MTA4-95	4	31.267	48	95	3.00
	SK50-MTA5-105	5	44.399	63	105	3.30

TAPPING ER CHUCK
ER - GEWINDESCHNEIDFUTTER

MAS403-BT



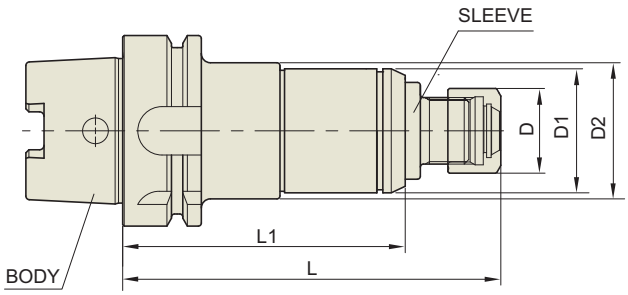
MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

TAPER No.	CODE No.	D	D1	D2	L	L1	NUT	Weight (kg)
40	**BT40-TER16-100**	28	41	45	100	68.4	ER16	1.45
	BT40-TER16-150	28	41	45	150	118.4	ER16	2.00
	BT40-TER32-110	50	58	63	110	72	ER32	2.20
	BT40-TER32-150	50	58	63	150	112	ER32	2.70
50	**BT50-TER16-115**	28	41	45	115	79.4	ER16	3.95
	BT50-TER16-150	28	41	45	150	114.4	ER16	4.35
	BT50-TER32-120	50	58	63	120	83	ER32	4.70
	BT50-TER32-150	50	58	63	150	113	ER32	5.20

▶ ER collet of page 1422 and 1423, and Tap ER collet of page 1424 are usable.

TAPPING ER CHUCK
ER - GEWINDESCHNEIDFUTTER

DIN69893-HSK



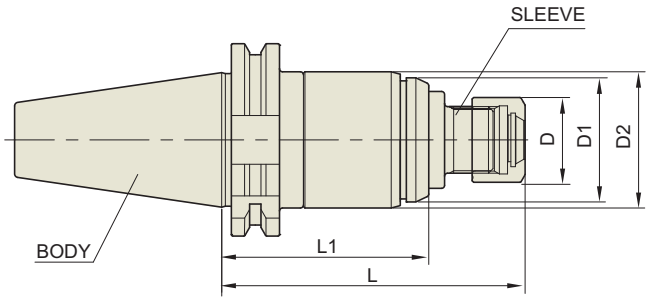
DIN69893 - HSK	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

TAPER No.	CODE No.	D	D1	D2	L	L1	NUT	Weight (kg)
50	**HSK50A-TER16-125**	28	41	45	125	93.4	ER16	1.20
	HSK50A-TER16-150	28	41	45	150	118.4	ER16	1.30
63	**HSK63A-TER16-125**	28	41	45	125	93.4	ER16	1.70
	HSK63A-TER16-150	28	41	45	150	118.4	ER16	1.85
	HSK63A-TER32-150	50	58	63	150	112	ER32	2.10
	HSK63A-TER32-180	50	58	63	180	142	ER32	2.30
100	**HSK100A-TER16-130**	28	41	45	130	98.4	ER16	4.00
	HSK100A-TER16-150	28	41	45	150	118.4	ER16	4.20
	HSK100A-TER32-150	50	58	63	150	112	ER32	4.40
	HSK100A-TER32-180	50	58	63	180	142	ER32	4.60

▶ ER collet of page 1422 and 1423, and Tap ER collet of page 1424 are usable.

TAPPING ER CHUCK
ER - GEWINDESCHNEIDFUTTER

DIN69871-SK



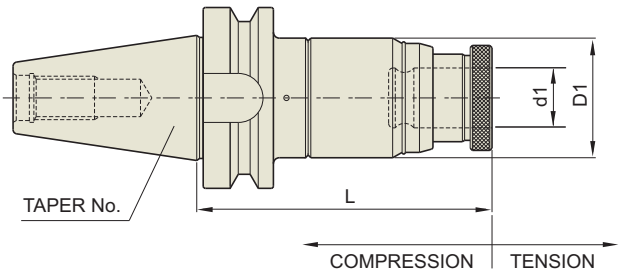
DIN69871 - SK	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

TAPER No.	CODE No.	D	D1	D2	L	L1	NUT	Weight (kg)
40	**SK40-TER16-100**	28	41	45	100	68.4	ER16	1.65
	SK40-TER16-150	28	41	45	150	118.4	ER16	1.85
	SK40-TER32-130	50	58	63	130	92	ER32	2.10
	SK40-TER32-150	50	58	63	150	112	ER32	2.30
50	**SK50-TER16-115**	28	41	45	115	79.4	ER16	4.30
	SK50-TER16-150	28	41	45	150	114.4	ER16	4.50
	SK50-TER32-120	50	58	63	120	83	ER32	4.65
	SK50-TER32-150	50	58	63	150	113	ER32	4.85

▶ ER collet of page 1422 and 1423, and Tap ER collet of page 1424 are usable.

TAP CHUCK
GEWINDESCHNEID-SCHNELLWECHSELFUTTER

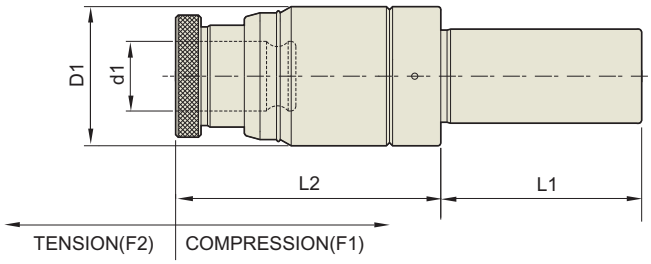
MAS403-BT



MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

TAPER No.	CODE No.	TAP SIZE	LENGTH COMPENSATION		d1	D1	L	TAP ADAPTER CODE	Weight (kg)
			COMP.	TEN.					
30	**BT30-TC12-100**	M3~M12	5	15	19	45	100	TCS12	1.0
40	**BT40-TC12- 90**	M3~M12	5	15	19	45	90	TCS12	1.5
	BT40-TC12-130	M3~M12	5	15	19	45	130	TCS12	1.6
	BT40-TC24-100	M6~M24	5	20	31	63	100	TCS24	2.1
	BT40-TC24-142	M6~M24	5	20	31	63	142	TCS24	2.9
50	**BT50-TC12-130**	M3~M12	5	15	19	45	130	TCS12	4.2
	BT50-TC12-175	M3~M12	5	15	19	45	175	TCS12	4.8
	BT50-TC12-220	M3~M12	5	15	19	45	220	TCS12	5.1
	BT50-TC24-142	M6~M24	5	20	31	63	142	TCS24	5.8
	BT50-TC24-187	M6~M24	5	20	31	63	187	TCS24	6.0
	BT50-TC38-175	M18~M38	10	25	48	98	175	TCS38	8.3

TAP CHUCK - STRAIGHT SHANK
GEWINDESCHNEID-SCHNELLWECHSELFUTTER - GERADEAUS SCHAFT

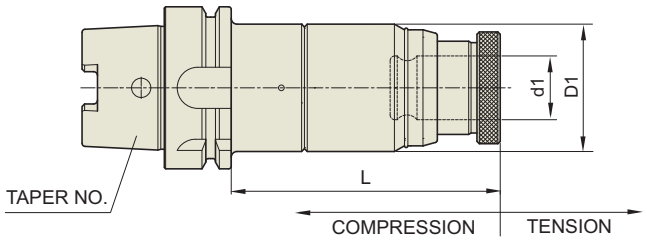


K	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

TAPER No.	CODE No.	TAP SIZE	LENGTH COMPENSATION		d1	D1	L1	L2	TAP ADAPTER CODE	Weight (kg)
			COMP.	TEN.						
32	**K32-TC12-100**	M3-M12	15	5	32	45	60	100	TCS12	0.90
	K32-TC24-120	M6-M24	20	5	32	63	60	120	TCS24	1.40
42	**K42-TC12-100**	M3-M12	15	5	42	45	70	100	TCS12	1.10
	K42-TC24-120	M6-M24	20	5	42	63	70	120	TCS24	1.60

TAP CHUCK
GEWINDESCHNEID-SCHNELLWECHSELFUTTER

DIN69893-HSK

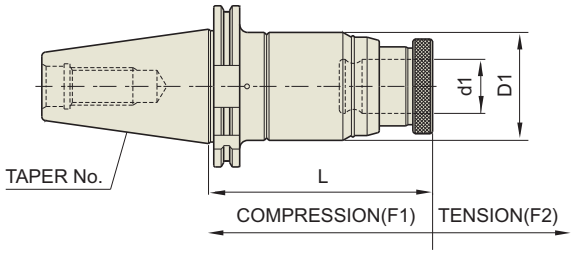


DIN69893 - HSK	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

TAPER No.	CODE No.	TAP SIZE	LENGTH COMPENSATION		d1	D1	L	TAP ADAPTER CODE	Weight (kg)
			COMP.	TEN.					
63A	**HSK63A-TC12-120**	M3 ~ M12	5	15	19	45	120	TCS12	1.00
	HSK63A-TC12-150	M3 ~ M12	5	15	19	45	150	TCS12	1.70
	HSK63A-TC24-142	M6 ~ M24	5	20	31	63	142	TCS24	2.40
	HSK63A-TC24-172	M6 ~ M24	5	20	31	63	172	TCS24	2.70
100A	**HSK100A-TC12-130**	M3 ~ M12	5	15	19	45	130	TCS12	4.30
	HSK100A-TC12-175	M3 ~ M12	5	15	19	45	175	TCS12	4.80
	HSK100A-TC12-220	M3 ~ M12	5	15	19	45	220	TCS12	5.30
	HSK100A-TC24-142	M6 ~ M24	5	20	31	63	142	TCS24	5.20
	HSK100A-TC24-187	M6 ~ M24	5	20	31	63	187	TCS24	6.60
	HSK100A-TC38-200	M18 ~ M38	10	25	48	98	200	TCS38	8.00

TAP CHUCK
GEWINDESCHNEID-SCHNELLWECHSELFUTTER

DIN69871-SK

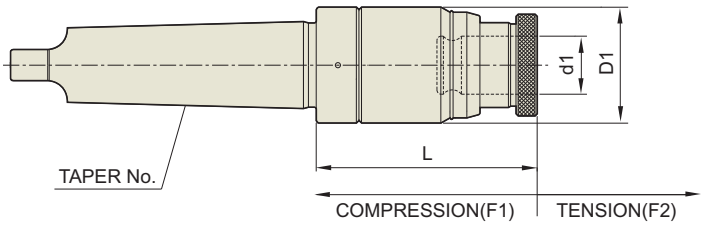


DIN69871 - SK	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

■ STANDARD

TAPER No.	CODE No.	TAP SIZE	d1	D1	L	F1	F2	Weight (kg)
40	**SK40-TC12-90**	M3-M12	19	45	90	5	15	1.30
	SK40-TC12-130	M3-M12	19	45	130	5	15	1.80
	SK40-TC24-120	M6-M24	31	63	120	5	20	2.50
	SK40-TC24-142	M6-M24	31	63	142	5	20	2.80
50	**SK50-TC12-130**	M3-M12	19	45	130	5	15	4.30
	SK50-TC12-175	M3-M12	19	45	175	5	15	5.50
	SK50-TC24-142	M6-M24	31	63	142	5	20	5.30
	SK50-TC24-187	M6-M24	31	63	187	5	20	7.80
	SK50-TC38-175	M18-M38	48	98	175	10	25	7.50

MTA

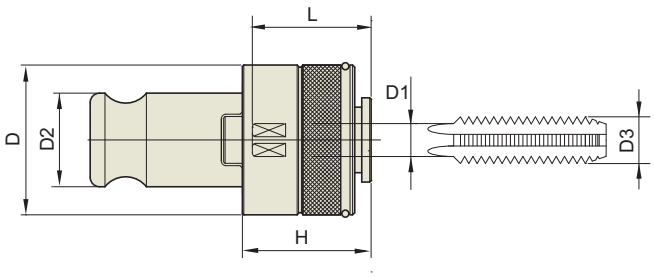


DIN228 - MTA	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

TAPER No.	CODE No.	TAP SIZE	LENGTH COMPENSATION		d1	D1	L	TAP ADAPTER CODE	Weight (kg)
			COMP.	TEN.					
3	**MTA3-TC12- 90**	M3-M12	5	15	19	45	90	TCS12	1.00
	MTA3-TC24-115	M6-M24	5	20	31	63	115	TCS24	2.00
4	**MTA4-TC12-105**	M3-M12	5	15	19	45	105	TCS12	1.20
	MTA4-TC24-115	M6-M24	5	20	31	63	115	TCS24	2.20
5	**MTA5-TC12-145**	M3-M12	5	15	19	45	145	TCS12	1.50
	MTA5-TC24-175	M6-M24	5	20	31	63	175	TCS24	2.60

TAP ADAPTER
SCHNELLWECHSEL-EINSATZ

JIS



TAPER No.	CODE No.	D	D1	D2	D3	H	W	L	Weight (kg)
TCS12	TCS12-M3	32	4	19	3	25	3.2	24	0.18
	TCS12-M4	32	5	19	4	25	4.	24	0.18
	TCS12-M5	32	5.5	19	5	25	4.5	24	0.18
	TCS12-M6, U1/4	32	6	19	6	25	4.5	24	0.18
	TCS12-M8	32	6.2	19	8	25	5	25	0.18
	TCS12-M10, U3/8	32	7	19	10	25	5.5	25	0.18
	TCS12-M12	32	8.5	19	12	25	6.5	26	0.18
TCS24	TCS24-M6	52	6	31	6	33	4.5	38	0.60
	TCS24-M8	52	6.2	31	8	33	5	38	0.60
	TCS24-M10	52	7	31	10	33	5.5	38	0.60
	TCS24-M12	52	8.5	31	12	33	6.5	39	0.60
	TCS24-M14, U3/4	52	10.5	31	14	33	8	41	0.60
	TCS24-M16	52	12.5	31	16	33	10	43	0.60
	TCS24-M18, P3/8	52	14	31	18	33	11	43	0.60
	TCS24-M20	52	15	31	20	33	12	43.5	0.60
	TCS24-M22, U7/8	52	17	31	22	33	13	46	0.60
	TCS24-M24, PF5/8	52	19	31	24	33	15	46	0.60
TCS38	TCS38-M18	72	14	48	18	45	11	43	1.80
	TCS38-M20	72	15	48	20	45	12	43.5	1.80
	TCS38-M22	72	17	48	22	45	13	45	1.80
	TCS38-M24	72	19	48	24	45	15	45	1.80
	TCS38-M27, U1″	72	20	48	27	45	15	62	1.80
	TCS38-M30, PT3/4	72	23	48	30	45	17	64	1.80
	TCS38-M33	72	25	48	33	45	19	66	1.80
	TCS38-M36	72	28	48	36	45	19	68	1.80
	TCS38-M38	72	28	48	38	45	21	68	1.80

FEATURES

1. Type of built-in torque safety device with rapid exchange mode
2. Tap size(Ø x □) and range designation are needed.

TOOL HOLDERS

EMH

END MILL HOLDER
FRÄSERFUTTER

DIN69871-SK

FIG.1

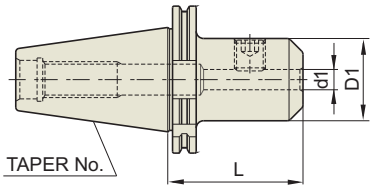
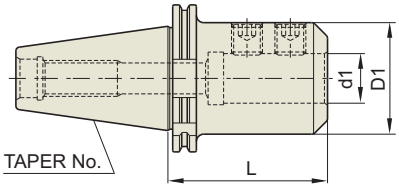


FIG.2



DIN69871 - SK	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	12,000	

■ STUB

TAPER No.	CODE No.	d1	D1	L	FIG.	Weight (kg)
40	SK40-EMH16-35	16	44	35	1	0.86
	SK40-EMH20-35	20	44	35	1	0.91
	SK40-EMH25-60	25	50	60	1	0.97

■ STANDARD

TAPER No.	CODE No.	d1	D1	L	FIG.	Weight (kg)
30	SK30-EMH6-50	6	25	50	1	0.73
	SK30-EMH8-50	8	28	50	1	0.83
	SK30-EMH10-50	10	35	50	1	0.90
	SK30-EMH12-50	12	42	50	1	0.90
	SK30-EMH16-63	16	48	63	1	1.10
40	SK40-EMH6-50	6	25	50	1	0.86
	SK40-EMH8-50	8	28	50	1	0.89
	SK40-EMH10-50	10	35	50	1	0.95
	SK40-EMH12-50	12	42	50	1	1.03
	SK40-EMH16-63	16	48	63	1	1.26
	SK40-EMH20-63	20	52	63	1	1.28
	SK40-EMH25-100	25	65	100	2	2.28
	SK40-EMH32-100	32	72	100	2	2.50
50	SK50-EMH6-63	6	25	63	1	2.70
	SK50-EMH8-63	8	28	63	1	2.70
	SK50-EMH10-63	10	35	63	1	2.90
	SK50-EMH12-63	12	42	63	1	2.90
	SK50-EMH16-63	16	48	63	1	3.00
	SK50-EMH20-63	20	52	63	1	3.05
	SK50-EMH25-80	25	65	80	2	3.73
	SK50-EMH32-100	32	72	100	2	4.53
	SK50-EMH40-100	40	80	100	2	4.77
	SK50-EMH50-100	50	98	120	2	7.03

▶ Higher balancing grade product could be supplied by customer's request.

END MILL HOLDER
FRÄSERFUTTER

DIN69871-SK FORM AD/B

FIG.1

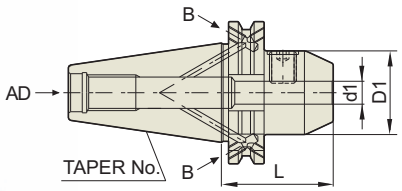
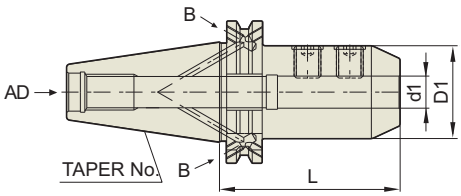


FIG.2



DIN69871 - SK	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	12,000	AD/B

■ STANDARD

TAPER No.	CODE No.	d1	D1	L	FIG.	Weight (kg)
40	SK40AD/B-EMH6-50	6	25	50	1	0.86
	SK40AD/B-EMH8-50	8	28	50	1	0.89
	SK40AD/B-EMH10-50	10	35	50	1	0.95
	SK40AD/B-EMH12-50	12	42	50	1	1.03
	SK40AD/B-EMH16-63	16	48	63	1	1.26
	SK40AD/B-EMH20-63	20	52	63	1	1.28
	SK40AD/B-EMH25-100	25	65	100	2	2.29
	SK40AD/B-EMH32-100	32	72	100	2	2.50
50	SK50AD/B-EMH6-63	6	25	63	1	2.70
	SK50AD/B-EMH8-63	8	28	63	1	2.70
	SK50AD/B-EMH10-63	10	35	63	1	2.90
	SK50AD/B-EMH12-63	12	42	63	1	2.90
	SK50AD/B-EMH16-63	16	48	63	1	3.00
	SK50AD/B-EMH20-63	20	52	63	1	3.05
	SK50AD/B-EMH25-80	25	65	80	1	3.73
	SK50AD/B-EMH32-100	32	72	100	1	4.53
	SK50AD/B-EMH40-100	40	80	100	1	4.77
	SK50AD/B-EMH50-100	50	98	100	1	7.03

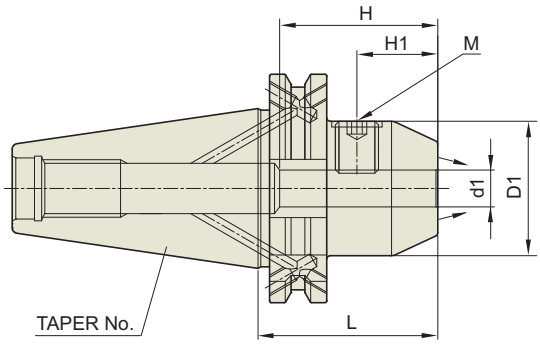
▶ Higher balancing grade product could be supplied by customer's request.

TOOL HOLDERS

EMH

END MILL HOLDER (SPRAY NOZZLE)
FRÄSERFUTTER (SPRAYDÜSE)

DIN 69871 - SK FORM AD/B



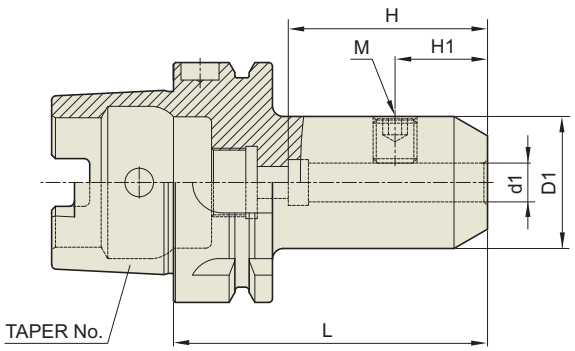
DIN69871 - SK	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	12,000	AD/B

TAPER No.	CODE No.	d1	D1	L	H	H1	M	Weight (kg)
40	SK40AD/B-EMH6C-50	6	25	50	35	18	M6	0.86
	SK40AD/B-EMH8C-50	8	28	50	35	18	M8	0.89
	SK40AD/B-EMH10C-50	10	35	50	35.5	20	M10	0.95
	SK40AD/B-EMH12C-50	12	42	50	36	22.5	M12	1.03
	SK40AD/B-EMH14C-50	14	44	50	36	22.5	M12	1.26
	SK40AD/B-EMH16C-63	16	48	63	46	24	M14	1.28
	SK40AD/B-EMH18C-63	18	50	63	46	24	M14	1.35
	SK40AD/B-EMH20C-63	20	52	63	48	25	M16	1.40
	SK40AD/B-EMH25C-100	25	65	100	55	25	M18	2.29
	SK40AD/B-EMH32C-100	32	72	100	57	28	M20	2.50
50	SK50AD/B-EMH6C-63	6	25	63	35	18	M6	2.70
	SK50AD/B-EMH8C-63	8	28	63	35	18	M8	2.70
	SK50AD/B-EMH10C-63	10	35	63	35.5	20	M10	2.90
	SK50AD/B-EMH12C-63	12	42	63	36	22.5	M12	2.90
	SK50AD/B-EMH14C-63	14	44	63	36	22.5	M12	3.00
	SK50AD/B-EMH16C-63	16	48	63	46	24	M14	3.00
	SK50AD/B-EMH18C-63	18	50	63	46	24	M14	3.00
	SK50AD/B-EMH20C-63	20	52	63	48	25	M16	3.05
	SK50AD/B-EMH25C-80	25	65	80	55	25	M18	3.73
	SK50AD/B-EMH32C-100	32	72	100	57	28	M20	4.53
	SK50AD/B-EMH40C-120	40	90	120	68	32	M20	4.80

▶ Higher balancing grade product could be supplied by customer's request.

END MILL HOLDER
FRÄSERFUTTER

DIN69893-HSK FORM A



DIN69893 - HSK	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	12,000	

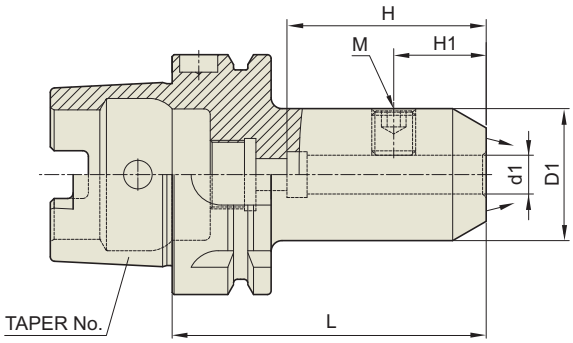
TAPER No.	CODE No.	d1	D1	L	H	H1	M	Weight (kg)
40A	HSK40A-EMH6-60	6	25	60	35	18	M6	0.30
	HSK40A-EMH8-60	8	28	60	35	18	M8	0.30
	HSK40A-EMH10-60	10	35	60	35.5	20	M10	0.30
	HSK40A-EMH12-70	12	42	70	36	22.5	M12	0.40
	HSK40A-EMH14-70	14	44	70	36	22.5	M12	0.40
	HSK40A-EMH16-80	16	48	80	46	24	M14	0.60
50A	HSK50A-EMH6-65	6	25	65	35	18	M6	0.70
	HSK50A-EMH8-65	8	28	65	35	18	M8	0.80
	HSK50A-EMH10-65	10	35	65	35.5	20	M10	0.80
	HSK50A-EMH12-80	12	42	80	36	22.5	M12	1.20
	HSK50A-EMH14-80	14	44	80	36	22.5	M12	1.30
	HSK50A-EMH16-80	16	48	80	46	24	M14	1.30
	HSK50A-EMH18-80	18	50	80	46	24	M14	1.40
	HSK50A-EMH20-80	20	52	80	48	25	M16	1.50
63A	HSK63A-EMH6-65	6	25	65	35	18	M6	0.80
	HSK63A-EMH8-65	8	28	65	35	18	M8	0.80
	HSK63A-EMH10-65	10	35	65	35.5	20	M10	0.90
	HSK63A-EMH12-80	12	42	80	36	22.5	M12	1.10
	HSK63A-EMH14-80	14	44	80	36	22.5	M12	1.20
	HSK63A-EMH16-80	16	48	80	46	24	M14	1.30
	HSK63A-EMH18-80	18	50	80	46	24	M14	1.40
	HSK63A-EMH20-80	20	52	80	48	25	M16	1.50
	HSK63A-EMH25-110	25	65	110	55	25	M18	2.30
	HSK63A-EMH32-110	32	72	110	57	28	M20	2.60
100A	HSK100A-EMH6-80	6	25	80	35	18	M6	2.15
	HSK100A-EMH8-80	8	28	80	35	18	M8	2.20
	HSK100A-EMH10-80	10	35	80	35.5	20	M10	2.35
	HSK100A-EMH12-80	12	42	80	36	22.5	M12	2.45
	HSK100A-EMH14-80	14	44	80	36	22.5	M12	2.65
	HSK100A-EMH16-100	16	48	100	46	24	M14	2.85
	HSK100A-EMH18-100	18	50	100	46	24	M14	2.90
	HSK100A-EMH20-100	20	52	100	48	25	M16	2.95
	HSK100A-EMH25-100	25	65	100	55	25	M18	3.45
	HSK100A-EMH32-100	32	72	100	57	28	M20	3.65
	HSK100A-EMH40-120	40	90	120	68	32	M20	5.50

TOOL HOLDERS

EMH

END MILL HOLDER (SPRAY NOZZLE)
FRÄSERFUTTER (SPRAYDÜSE)

DIN69893-HSK FORM A

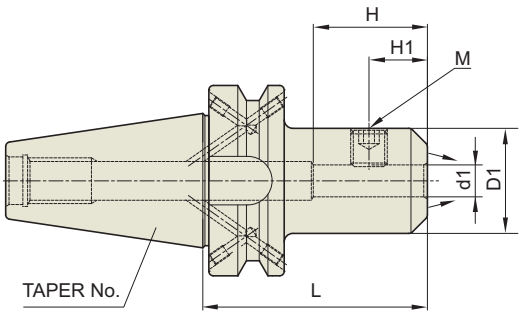


DIN69893 - HSK	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	12,000	

TAPER No.	CODE No.	d1	D1	L	H	H1	M	Weight (kg)
40A	HSK40A-EMH6C-60	6	25	60	35	18	M6	0.30
	HSK40A-EMH8C-60	8	28	60	35	18	M8	0.30
	HSK40A-EMH10C-60	10	35	60	35.5	20	M10	0.30
	HSK40A-EMH12C-70	12	42	70	36	22.5	M12	0.40
	HSK40A-EMH14C-70	14	44	70	36	22.5	M12	0.40
	HSK40A-EMH16C-80	16	48	80	46	24	M14	0.60
50A	HSK50A-EMH6C-65	6	25	65	35	18	M6	0.70
	HSK50A-EMH8C-65	8	28	65	35	18	M8	0.80
	HSK50A-EMH10C-65	10	35	65	35.5	20	M10	0.80
	HSK50A-EMH12C-80	12	42	80	36	22.5	M12	1.20
	HSK50A-EMH14C-80	14	44	80	36	22.5	M12	1.30
	HSK50A-EMH16C-80	16	48	80	46	24	M14	1.30
	HSK50A-EMH18C-80	18	50	80	46	24	M14	1.40
	HSK50A-EMH20C-80	20	52	80	48	25	M16	1.50
63A	HSK63A-EMH6C-65	6	25	65	35	18	M6	0.80
	HSK63A-EMH8C-65	8	28	65	35	18	M8	0.80
	HSK63A-EMH10C-65	10	35	65	35.5	20	M10	0.90
	HSK63A-EMH12C-80	12	42	80	36	22.5	M12	1.10
	HSK63A-EMH14C-80	14	44	80	36	22.5	M12	1.20
	HSK63A-EMH16C-80	16	48	80	46	24	M14	1.30
	HSK63A-EMH18C-80	18	50	80	46	24	M14	1.40
	HSK63A-EMH20C-80	20	52	80	48	25	M16	1.50
	HSK63A-EMH25C-110	25	65	110	55	25	M18	2.30
	HSK63A-EMH32C-110	32	72	110	57	28	M20	2.60
100A	HSK100A-EMH6C-80	6	25	80	35	18	M6	2.15
	HSK100A-EMH8C-80	8	28	80	35	18	M8	2.20
	HSK100A-EMH10C-80	10	35	80	35.5	20	M10	2.35
	HSK100A-EMH12C-80	12	42	80	36	22.5	M12	2.45
	HSK100A-EMH14C-80	14	44	80	36	22.5	M12	2.65
	HSK100A-EMH16C-100	16	48	100	46	24	M14	2.85
	HSK100A-EMH18C-100	18	50	100	46	24	M14	2.90
	HSK100A-EMH20C-100	20	52	100	48	25	M16	2.95
	HSK100A-EMH25C-100	25	65	100	55	25	M18	3.45
	HSK100A-EMH32C-100	32	72	100	57	28	M20	3.65
	HSK100A-EMH40C-120	40	90	120	68	32	M20	5.50

END MILL HOLDER (SPRAY NOZZLE)
FRÄSERFUTTER (SPRAYDÜSE)

MAS403-BT FORM AD/B



MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	12,000	

TAPER No.	CODE No.	d1	D1	L	H	H1	M	Weight (kg)
40	BT40-EMH6C-50	6	25	50	35	18	M6	1.00
	BT40-EMH8C-50	8	28	50	35	18	M8	1.00
	BT40-EMH10C-63	10	35	63	35.5	20	M10	1.10
	BT40-EMH12C-63	12	42	63	36	22.5	M12	1.30
	BT40-EMH14C-63	14	44	63	36	22.5	M12	1.40
	BT40-EMH16C-63	16	48	63	46	24	M14	1.70
	BT40-EMH18C-63	18	50	63	46	24	M14	1.70
	BT40-EMH20C-63	20	52	63	48	25	M16	1.80
	BT40-EMH25C-90	25	65	90	55	25	M18	1.80
	BT40-EMH32C-100	32	72	100	57	28	M20	2.00
50	BT50-EMH6C-63	6	25	63	35	18	M6	3.30
	BT50-EMH8C-63	8	28	63	35	18	M8	3.60
	BT50-EMH10C-65	10	35	65	35.5	20	M10	3.80
	BT50-EMH12C-80	12	42	80	36	22.5	M12	3.80
	BT50-EMH14C-80	14	44	80	36	22.5	M12	4.00
	BT50-EMH16C-80	16	48	80	46	24	M14	4.00
	BT50-EMH18C-80	18	50	80	46	24	M14	4.20
	BT50-EMH20C-80	20	52	80	48	25	M16	4.20
	BT50-EMH25C-100	25	65	100	55	25	M18	4.60
	BT50-EMH32C-105	32	72	105	57	28	M20	4.70
	BT50-EMH40C-120	40	90	120	68	32	M20	4.90

▶ Higher balancing grade product could be supplied by customer's request.

TOOL HOLDERS

SLA

SIDE LOCK ARBOR
FLÄCHENSPANNFUTTER

MAS403-BT

FIG.1

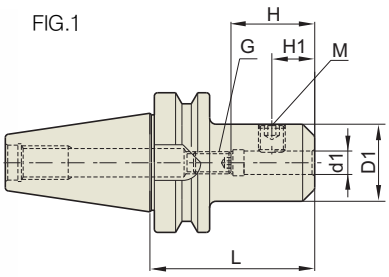
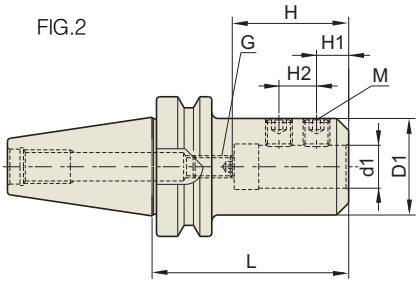


FIG.2

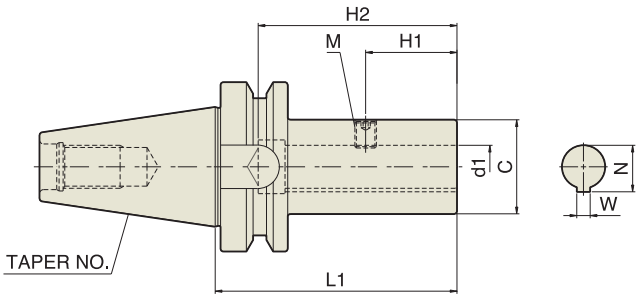


MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	12,000	

TAPER No.	CODE No.	d1	L	D1	H		H1	H2	M	G	Weight (kg)
					MIN	MAX					
30	BT30-SLA 6-60	6	60	25	20	35	18	–	M5	M5	0.7
	BT30-SLA 8-60	8	60	28	20	35	18	–	M6	M6	0.8
	BT30-SLA10-60	10	60	35	35	50	14	13	M8	M8	0.9
	BT30-SLA12-60	12	60	40	35	50	14	13	M10	M10	1.1
	BT30-SLA14-60	14	60	40	35	50	14	13	M10	M10	1.2
	BT30-SLA16-75	16	75	40	55	70	25	20	M12	M12	1.3
	BT30-SLA20-75	20	75	50	55	70	25	20	M12	M12	1.4
	BT30-SLA25-75	25	75	50	55	70	25	20	M14	M12	1.5
	BT30-SLA32-105	32	105	60	65	80	30	20	M16	M12	1.6
40	BT40-SLA 6-60	6	60	25	20	35	18	–	M5	M5	1.1
	BT40-SLA 8-60	8	60	28	20	35	18	–	M6	M6	1.1
	BT40-SLA10-60	10	60	35	35	50	14	13	M8	M8	1.2
	BT40-SLA12-60	12	60	40	35	50	14	13	M10	M10	1.4
	BT40-SLA16-90	16	90	40	55	70	25	20	M12	M12	1.5
	BT40-SLA20-90	20	90	50	55	70	25	20	M12	M12	1.8
	BT40-SLA25-90	25	90	50	55	70	25	20	M14	M12	1.7
	BT40-SLA32-90	32	90	60	65	80	30	20	M16	M12	1.9
	BT40-SLA40-90	40	90	70	65	80	30	20	M16	M12	1.8
	BT40-SLA42-90	42	90	70	65	80	30	20	M16	M12	1.8
50	BT50-SLA 6-90	6	90	25	25	40	18	–	M5	M5	3.7
	BT50-SLA 8-90	8	90	28	25	40	18	–	M6	M6	3.9
	BT50-SLA10-90	10	90	35	35	50	15	15	M8	M8	4.1
	BT50-SLA12-90	12	90	40	40	55	15	15	M10	M10	4.3
	BT50-SLA14-90	14	90	40	40	55	15	15	M10	M10	4.3
	BT50-SLA16-105	16	105	40	55	70	25	20	M12	M12	4.4
	BT50-SLA20-105	20	105	50	55	70	25	20	M12	M12	4.8
	BT50-SLA25-105	25	105	50	55	70	25	20	M14	M12	4.7
	BT50-SLA32-105	32	105	60	65	80	25	25	M16	M12	4.0
	BT50-SLA40-105	40	105	70	65	80	25	25	M16	M12	4.5
	BT50-SLA42-105	42	105	70	65	80	25	25	M16	M12	4.7
	BT50-SLA50.8-121	50.8	121	95	–	87	34	36	M20	–	5.0

SIDE LOCK ARBOR
FLÄCHENSPANNFUTTER

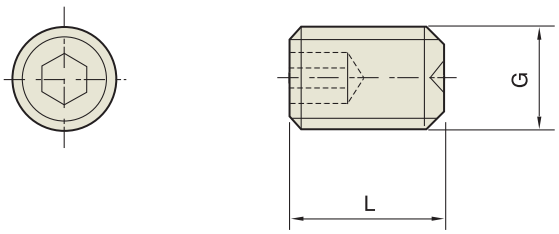
MAS403-BT



MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

TAPER No.	CODE No.	d1	D1	L1	H1	H2	M	W	N	Weight (kg)
40	BT40-SLB26-105	26	50	105	40	85	M10	5	28.2	1.3
	BT40-SLB35-135	35	60	135	55	105	M10	6	37.6	2.2
	BT40-SLB35T-135	35	60	135	55	105	M10	7	38.2	2.2
50	BT50-SLB26-105	26	50	105	40	85	M10	5	28.2	4.4
	BT50-SLB35-135	35	60	135	55	106	M10	6	37.6	4.7
	BT50-SLB35T-135	35	60	135	55	106	M10	7	38.2	4.7
	BT50-SLB48-165	48	80	165	65	129	M10	8	51.0	6.5

SCREW FOR SIDE LOCK ARBOR



Taper Accuracy	G Value	RPM	Coolant System
AT3			

CODE No.	G	L	HOLDER SIZE	Weight (kg)
M5×08 SL	M5×0.8	8	SLA6	
M6×10 SL	M6×1.0	10	SLA8	
M8×10 SL	M8×1.25	10	SLA10	
M10×12 SL	M10×1.5	12	SLA12/SLA14	
M12×16 SL	M12×1.75	16	SLA16/SLA20	
M14×16 SL	M14×2.0	16	SLA25	
M16×16 SL	M16×2.0	16	SLA32/SLA40/SLA42	
M20×25 SL	M20×2.5	25	SLA50.8	

TOOL HOLDERS

FMA

FACE MILL ARBOR
AUFNAHMEDORN FÜR MESSERKÖPFE

MAS403-BT

FIG.1

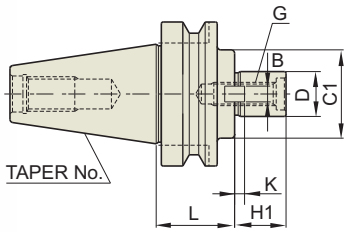
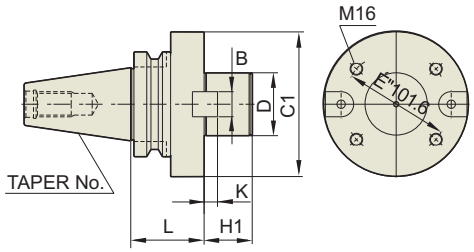


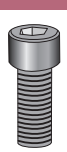
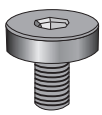
FIG.2



MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

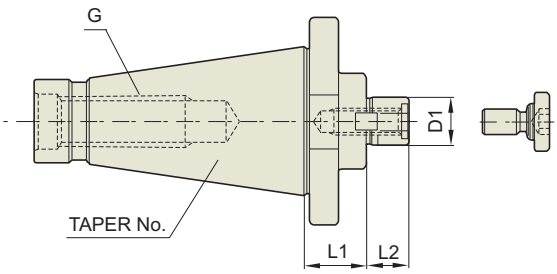
TAPER No.	CODE No.	D	L1	C1	H1	B	K	G	FIG.	Weight (kg)
30	BT30-FMA25.4 -45	25.4	45	50	22	9.5	5	M12	1	1.1
	BT30-FMA31.75-45	31.75	45	60	30	12.7	7	M16	1	1.2
40	BT40-FMA25.4 -45	25.4	45	50	22	9.5	5	M12	1	1.5
	BT40-FMA25.4 -90	25.4	90	50	22	9.5	5	M12	1	3.1
	BT40-FMA31.75-45	31.75	45	60	30	12.7	7	M16	1	1.9
	BT40-FMA31.75-75	31.75	75	60	30	12.7	7	M16	1	2.7
	BT40-FMA38.1 -60	38.1	60	80	34	15.9	9	M20	1	2.9
50	BT50-FMA25.4 -45	25.4	45	50	22	9.5	5	M12	1	3.7
	BT50-FMA25.4 -90	25.4	90	50	22	9.5	5	M12	1	4.6
	BT50-FMA25.4 -150	25.4	150	50	22	9.5	5	M12	1	5.5
	BT50-FMA31.75-45	31.75	45	60	30	12.7	7	M16	1	4.5
	BT50-FMA31.75-75	31.75	75	60	30	12.7	7	M16	1	5.3
	BT50-FMA31.75-105	31.75	105	60	30	12.7	7	M16	1	5.8
	BT50-FMA31.75-150	31.75	150	60	30	12.7	7	M16	1	6.3
	BT50-FMA38.1 -45	38.1	45	80	34	15.9	9	M20	1	4.3
	BT50-FMA38.1 -75	38.1	75	80	34	15.9	9	M20	1	5.6
	BT50-FMA38.1 -105	38.1	105	80	34	15.9	9	M20	1	6.0
	BT50-FMA38.1 -150	38.1	150	80	34	15.9	9	M20	1	6.5
	BT50-FMA50.8 -45	50.8	45	100	36	19.05	10	M24	1	4.9
	BT50-FMA50.8 -75	50.8	75	100	36	19.05	10	M24	1	6.8
	BT50-FMA47.625-75	47.625	75	128.57	38	25.4	12.5	–	2	7.7

SPARE PARTS

TYPE	KEY		KEY BOLT		MOUNTING BOLT	
3R(FMA 25.4)		W9.52		M4×10		MB12
4R(FMA 31.75)		W12.7		M5×12		MB16
5R(FMA 38.1)		W15.87		M6×16		MB20
6R(FMA 50.8)		W19		M6×18		MB24
8R(FMA 47.625)		-		-		-

FACE MILL ARBOR
AUFNAHMEDORN FÜR MESSERKÖPFE

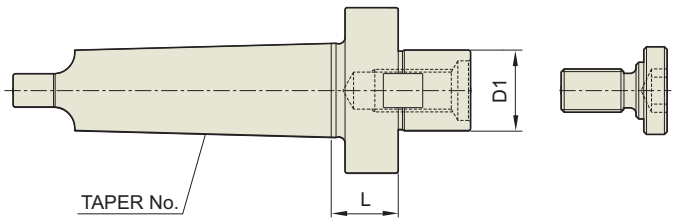
DIN 2080-NT



DIN2080 - NT	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

TAPER No.	CODE No.	CUTTERØ	D1	L1	L2	DRAW THREAD	Old Code No.	Weight (kg)
40	NT40-FMA25.4	3″(75Ø)	25.4	30	22	U5/8-11(M16×2)	NT40-3R	1.45
	NT40-FMA31.75	4″(100Ø)	31.75	30	30	U5/8-11(M16×2)	NT40-4R	1.75
	NT40-FMA38.1	5″(125Ø)	38.1	30	34	U5/8-11(M16×2)	NT40-5R	1.93
	NT40-FMA50.8	6″(150Ø)	50.8	30	36	U5/8-11(M16×2)	NT40-6R	2.55
50	NT50-FMA25.4	3″(75Ø)	25.4	30	22	U1-8(M24×3)	NT50-3R	3.30
	NT50-FMA31.75	4″(100Ø)	31.75	30	30	U1-8(M24×3)	NT50-4R	3.40
	NT50-FMA38.1	5″(125Ø)	38.1	30	34	U1-8(M24×3)	NT50-5R	3.60
	NT50-FMA50.8	6″(150Ø)	50.8	30	36	U1-8(M24×3)	NT50-6R	3.90
	NT50-FMA47.625	8″(200Ø)	47.625	45	38	U1-8(M24×3)	NT50-8R	4.90

MT



DIN228 - MTA	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

TAPER No.	CODE No.	CUTTERØ	D1	L	Weight (kg)
5	MT5-FMA25.4	3″(75Ø)	40	22	1.60
	MT5-FMA31.75	4″(100Ø)	41.5	30	1.90
	MT5-FMA38.1	5″(125Ø)	45	34	2.20
6	MT6-FMA25.4	3″(75Ø)	45	22	3.50
	MT6-FMA31.75	4″(100Ø)	45	30	3.80
	MT6-FMA38.1	5″(125Ø)	45	34	4.10
	MT6-FMA50.8	6″(150Ø)	45	36	4.60
	MT6-FMA47.625	8″(200Ø)	48	38	5.40

TOOL HOLDERS

FMB

FACE MILL ARBOR
AUFNAHMEDORN FÜR MESSERKÖPFE

MAS403-BT

FIG.1

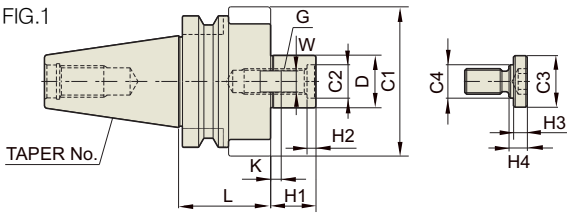


FIG.2

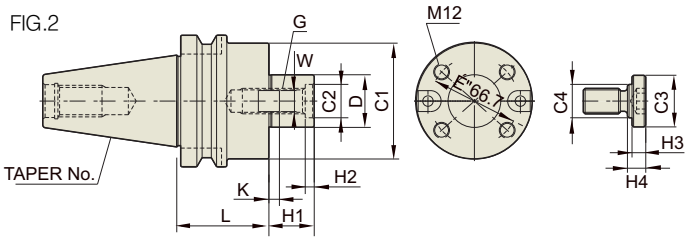


FIG.3

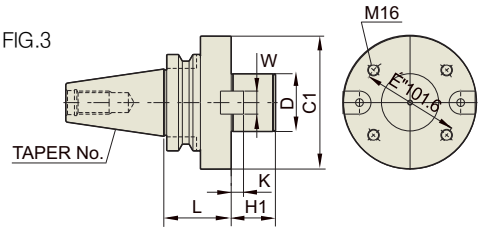
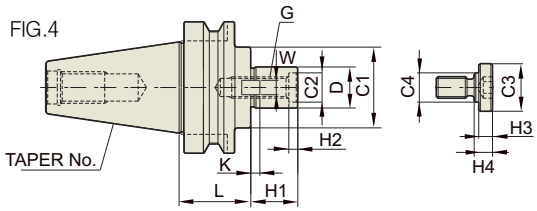


FIG.4



MAS403-BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

■ METRIC TYPE

TAPER No.	CODE No.	FIG.	D	L	C1	C2	H1	H2	W	K	G	C3	C4	H3	H4	Weight (kg)
30	BT30-FMB27- 40	4	27	40	80	–	26	–	12	6	M12	33	23	10	10	2.1
40	BT40-FMB27- 60	4	27	60	80	–	26	–	12	6	M12	33	23	10	10	2.5
	BT40-FMB27- 90	4	27	90	80	–	26	–	12	6	M12	33	23	10	10	4.7
	BT40-FMB40- 60	4	40	60	85	28	26	6	16	8.5	M20	50	27	14	20	7.4
50	BT50-FMB27- 45	1	27	45	80	–	26	–	12	6	M12	33	23	10	12	4.0
	BT50-FMB27- 90	1	27	90	80	–	26	–	12	6	M12	33	23	10	12	5.8
	BT50-FMB27-150	1	27	150	80	–	26	–	12	6	M12	33	23	10	12	8.2
	BT50-FMB40- 45	1	40	45	85	28	26	6	16	8.5	M20	50	27	14	20	4.7
	BT50-FMB40- 75	1	40	75	85	28	26	6	16	8.5	M20	50	27	14	20	6.1
	BT50-FMB40- 105	1	40	105	85	28	26	6	16	8.5	M20	50	27	14	20	8.1
	BT50-FMB40F-75	2	40	75	110	28	26	6	16	8.5	M20	50	27	14	20	6.6
	BT50-FMB60- 75	3	60	75	140	–	25	–	25.4	12.5	–	–	–	–	–	7.9

■ INCH TYPE

TAPER No.	CODE No.	FIG.	D	L	C1	C2	H1	H2	W	K	G	C3	C4	H3	H4	Weight (kg)
30	BT30-FMB25.4-40	4	25.4	40	80	–	26	–	9.5	5	M12	33	23	10	12	2.1
40	BT40-FMB25.4-60	4	25.4	60	80	–	26	–	9.5	5	M12	33	23	10	12	2.5
	BT40-FMB25.4-90	4	25.4	90	80	–	26	–	9.5	5	M12	33	23	10	12	4.7
	BT40-FMB38.1-60	4	38.1	60	85	28	26	6	15.9	9	M20	60	27	14	20	7.4
50	BT50-FMB25.4-45	1	25.4	45	80	–	26	–	9.5	5	M12	33	23	10	12	4.0
	BT50-FMB25.4-90	1	25.4	90	80	–	26	–	9.5	5	M12	33	23	10	12	5.8
	BT50-FMB25.4-150	1	25.4	150	80	–	26	–	9.5	5	M12	33	23	10	12	8.2
	BT50-FMB38.1-45	1	38.1	45	85	28	26	6	15.9	9	M20	50	27	14	20	4.7
	BT50-FMB38.1-75	1	38.1	75	85	28	26	6	15.9	9	M20	50	27	14	20	6.1
	BT50-FMB38.1-105	1	38.1	105	85	28	26	6	15.9	9	M20	50	27	14	20	8.7
	BT50-FMB38.1F-75	2	38.1	75	110	28	26	6	15.9	9	M20	50	27	14	20	6.6

FACE MILL ARBOR
AUFNAHMEDORN FÜR MESSERKÖPFE

MAS403-BT

FIG.1

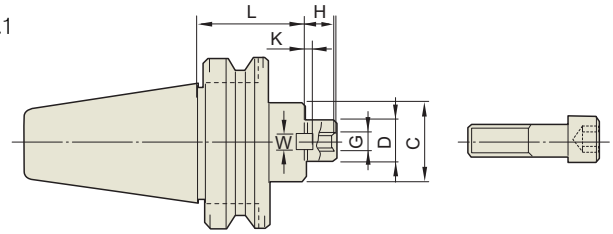
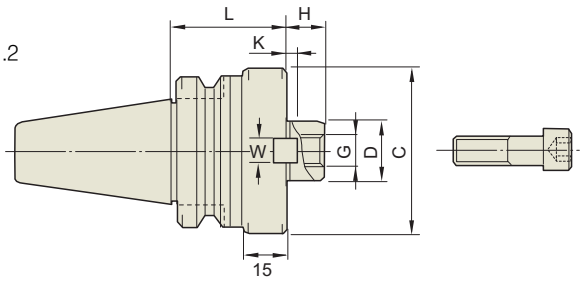


FIG.2



MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

■ METRIC TYPE

TAPER No.	CODE No.	D	L	C	H	W	K	G	FIG.	Weight (kg)
30	BT30-FMC22- 45	22	45	45	18	10	5	M10	2	0.8
40	BT40-FMC22- 45	22	45	45	18	10	5	M10	1	1.3
	BT40-FMC27- 60	27	60	70	20	12	6	M12	2	1.5
	BT40-FMC32- 60	32	60	85	22	14	7	M16	2	2.3
50	BT50-FMC22- 60	22	60	45	18	10	5	M10	1	4.2
	BT50-FMC22-105	22	105	45	18	10	5	M10	1	4.7
	BT50-FMC22-150	22	150	45	18	10	5	M10	1	5.3
	BT50-FMC27- 45	27	45	70	20	12	6	M12	1	4.1
	BT50-FMC27- 90	27	90	70	20	12	6	M12	1	5.5
	BT50-FMC27-150	27	150	70	20	12	6	M12	1	7.3
	BT50-FMC32- 60	32	60	85	22	14	7	M16	1	4.2
	BT50-FMC32-105	32	105	85	22	14	7	M16	1	5.5
	BT50-FMC32-150	32	150	85	22	14	7	M16	1	7.0

■ INCH TYPE

TAPER No.	CODE No.	D	L	C	H	W	K	G	FIG.	Weight (kg)
30	BT30-FMC25.4- 45	25.4	45	70	20	9.5	6	M12	2	1.1
40	BT40-FMC25.4- 60	25.4	60	70	20	9.5	6	M12	2	1.5
	BT40-FMC25.4- 90	25.4	90	70	20	9.5	6	M12	2	2.2
	BT40-FMC38.1- 60	38.1	60	85	22	15.9	7	M16	2	2.3
	BT40-FMC38.1- 75	38.1	75	85	22	15.9	7	M16	2	2.6
50	BT50-FMC25.4- 45	25.4	45	70	20	9.5	6	M12	1	4.1
	BT50-FMC25.4- 90	25.4	90	70	20	9.5	6	M12	1	5.5
	BT50-FMC25.4-150	25.4	150	70	20	9.5	6	M12	1	7.3
	BT50-FMC38.1- 45	38.1	45	85	22	15.9	7	M16	1	4.2
	BT50-FMC38.1- 75	38.1	75	85	22	15.9	7	M16	1	5.5
	BT50-FMC38.1-105	38.1	105	85	22	15.9	7	M16	1	7.0

SPARE PARTS

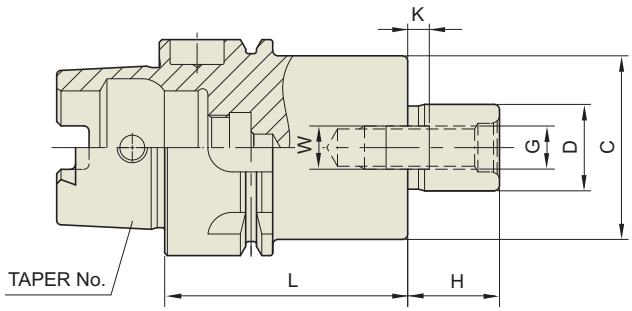
TYPE	KEY		KEY BOLT		CLAMP BOLT	
FMC 22		W10		M4×10		M10
FMC 27		W12		M5×12		M12
FMC 32		W14		M6×16		M16

TOOL HOLDERS

FMC

FACE MILL ARBOR
AUFNAHMEDORN FÜR MESSERKÖPFE

DIN69893-HSK FORM A



DIN69893 - HSK	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

TAPER No.	CODE No.	D	C	L	H	W	K	G	Weight (kg)
40A	**HSK40A-FMC16-45**	16	34	45	17	8	4	M8	0.40
	HSK40A-FMC22-50	22	45	50	18	10	5	M10	0.50
	HSK40A-FMC27-60	27	68	60	20	12	7	M12	0.70

SHELL MILL ARBOR
AUFNAHMEDORN FÜR FRÄSER MIT BOHRUNG

MAS403-BT

FIG.1

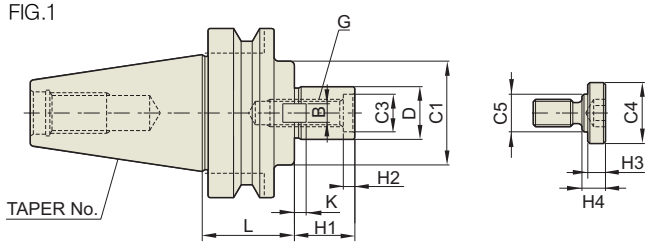
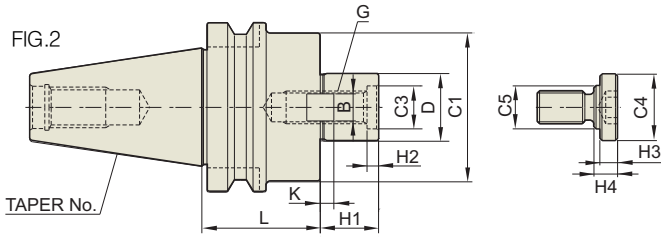


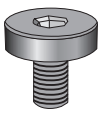
FIG.2



MAS403-BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	12,000	

TAPER No.	CODE No.	FIG.	D	L	C1	C2	C3	H1	H2	B	K	G	C4	C5	H3	H4	Weight (kg)
30	BT30-SMA16-30	1	16	30	38	–	–	17	–	8	3	M8	20	15	7	9	0.9
	BT30-SMA22-30	1	22	30	42	–	–	27	–	8	3.5	M10	28	18	9	11	1.0
40	BT40-SMA16-60	1	16	60	38	–	–	17	–	8	3	M8	20	15	7	9	1.3
	BT40-SMA16-120	1	16	120	38	–	–	17	–	8	3	M8	20	15	7	9	1.7
	BT40-SMA22-60	1	22	60	42	–	–	27	–	8	3.5	M10	28	18	9	11	1.4
	BT40-SMA22-120	1	22	120	42	–	–	27	–	8	3.5	M10	28	18	9	11	2.1
	BT40-SMA27-45	2	27	45	50	–	–	36	–	10	4	M12	33	23	10	12	1.4
	BT40-SMA27-105	2	27	105	50	–	–	36	–	10	4	M12	33	23	10	12	2.3
	BT40-SMA32-45	2	32	45	60	–	–	38	–	10	4.5	M16	40	23	10	16	1.6
	BT40-SMA32-75	2	32	75	60	–	–	38	–	10	4.5	M16	40	23	10	16	2.3
	BT40-SMA40-60	2	40	60	80	–	28	38	6	12	5	M20	50	27	14	20	2.0
50	BT50-SMA16-75	1	16	75	38	–	–	17	–	8	3	M8	20	15	7	9	4.2
	BT50-SMA16-120	1	16	120	38	–	–	17	–	8	3	M8	20	15	7	9	5.8
	BT50-SMA22-75	1	22	75	42	–	–	27	–	8	3.5	M10	28	18	9	11	4.3
	BT50-SMA22-120	1	22	120	42	–	–	27	–	8	3.5	M10	28	18	9	11	4.8
	BT50-SMA22-180	1	22	180	42	–	–	27	–	8	3.5	M10	28	18	9	11	5.5
	BT50-SMA27-60	2	27	60	50	–	–	36	–	10	4	M12	33	23	10	12	4.3
	BT50-SMA27-105	2	27	105	50	60	–	36	–	10	4	M12	33	23	10	12	5.2
	BT50-SMA27-150	2	27	150	50	60	–	36	–	10	4	M12	33	23	10	12	5.8
	BT50-SMA32-45	2	32	45	60	–	24	38	6	10	4.5	M16	40	23	10	16	4.2
	BT50-SMA32-75	2	32	75	60	70	24	38	6	10	4.5	M16	40	23	10	16	5.2
	BT50-SMA32-105	2	32	105	60	70	24	38	6	10	4.5	M16	40	23	10	16	6.2
	BT50-SMA40-45	2	40	45	80	–	28	38	6	12	5	M20	50	27	14	20	4.3
	BT50-SMA40-75	2	40	75	80	–	28	38	6	12	5	M20	50	27	14	20	5.5

SPARE PARTS

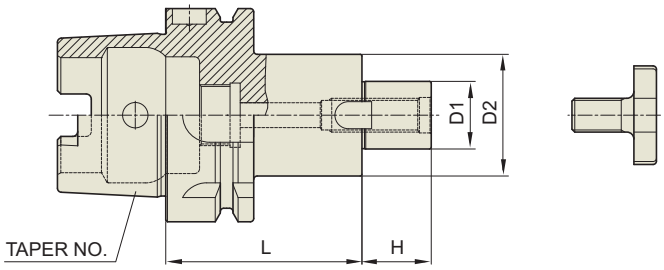
TYPE	KEY		KEY BOLT		MOUNTING BOLT	
SMA 16		W8		M3× 8		MB 8
SMA 22		W10		M4×10		MB10
SMA 27		W12		M5×12		MB12
SMA 32		W14		M6×16		MB16
SMA 40		W16		M6×16		MB20

TOOL HOLDERS

SMA

SHELL MILL ARBOR
AUFNAHMEDORN FÜR FRÄSER MIT BOHRUNG

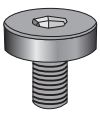
DIN69893-HSK FORM A



DIN69893 - HSK	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	12,000	

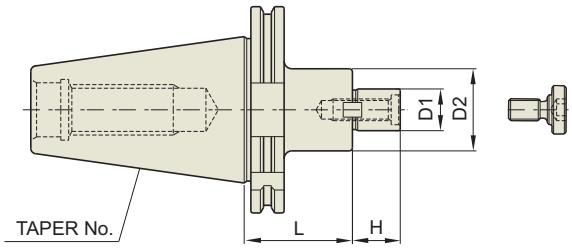
TAPER No.	CODE No.	D1	D2	L	H	Weight (kg)
40A	HSK40A-SMA16-50	16	32	50	17	0.40
	HSK40A-SMA22-50	22	40	50	19	0.50
	HSK40A-SMA27-60	27	48	60	21	0.60
50A	HSK 50A-SMA16-50	16	38	50	17	0.50
	HSK 50A-SMA22-60	22	48	60	19	0.57
	HSK 50A-SMA27-60	27	58	60	21	0.75
	HSK 50A-SMA32-60	32	63	60	24	0.90
63A	HSK 63A-SMA16-50	16	38	50	17	0.81
	HSK 63A-SMA22-50	22	48	50	19	0.93
	HSK 63A-SMA27-60	27	58	60	21	1.22
	HSK 63A-SMA32-60	32	78	60	24	1.46
	HSK 63A-SMA40-60	40	88	60	27	1.80
100A	HSK100A-SMA16-50	16	38	50	17	2.14
	HSK100A-SMA22-50	22	48	50	19	2.25
	HSK100A-SMA27-50	27	58	50	21	2.40
	HSK100A-SMA32-50	32	78	50	24	2.60
	HSK100A-SMA40-60	40	88	60	27	3.25
	HSK100A-SMA50-70	50	129	70	30	5.40

SPARE PARTS

TYPE	KEY		KEY BOLT		MOUNTING BOLT	
SMA 16		W8		M3× 8		MB 8
SMA 22		W10		M4×10		MB10
SMA 27		W12		M5×12		MB12
SMA 32		W14		M6×16		MB16
SMA 40		W16		M6×16		MB20

SHELL MILL ARBOR
AUFNAHMEDORN FÜR FRÄSER MIT BOHRUNG

DIN69871-SK



DIN69871 - SK	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	12,000	

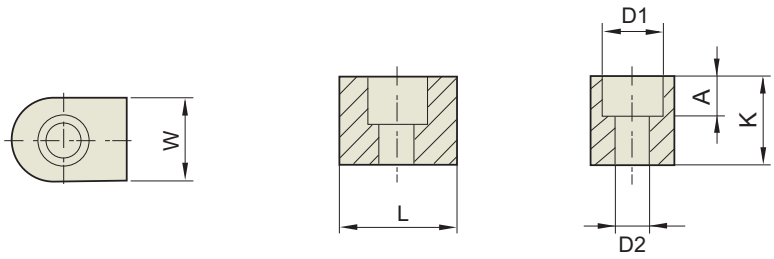
■ STANDARD

TAPER No.	CODE No.	D1	D2	L	H	Weight (kg)
30	SK30-SMA16-50	16	32	50	17	0.85
	SK30-SMA22-50	22	40	50	19	0.90
	SK30-SMA27-50	27	48	50	21	1.03
40	SK40-SMA16-60	16	32	60	17	0.35
	SK40-SMA22-60	22	40	60	19	1.45
	SK40-SMA27-60	27	48	60	21	1.70
	SK40-SMA32-60	32	58	60	24	1.80
	SK40-SMA40-60	40	70	60	27	3.10
50	SK50-SMA16-75	16	32	75	17	2.80
	SK50-SMA22-75	22	40	75	19	3.10
	SK50-SMA27-75	27	48	75	21	3.40
	SK50-SMA32-75	32	58	75	24	3.80
	SK50-SMA40-75	40	70	75	27	4.50
	SK50-SMA50-75	50	90	75	30	5.90

■ EXTENDED

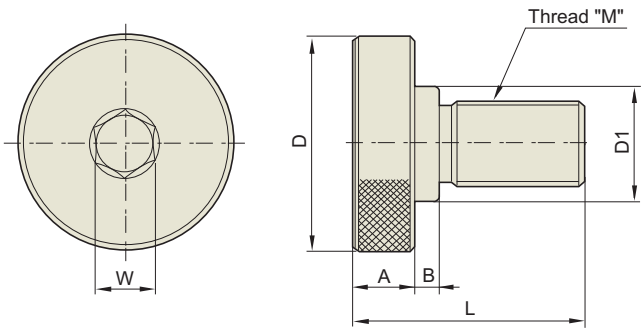
TAPER No.	CODE No.	D1	D2	L	H	Weight (kg)
40	SK40-SMA16-120	16	32	120	17	1.70
	SK40-SMA22-120	22	40	120	19	1.80
	SK40-SMA27-120	27	48	120	21	2.40
	SK40-SMA32-120	32	58	120	24	3.70
50	SK50-SMA16-120	16	32	120	17	3.90
	SK50-SMA22-120	22	40	120	19	4.40
	SK50-SMA27-120	27	48	120	21	4.70
	SK50-SMA32-120	32	58	120	24	5.00
	SK50-SMA40-120	40	70	120	27	6.05

KEY FOR FACE MILL ARBOR



Size	W	K	L	D1	D2	A	Applicable arbor
8×7×12.8	8	7	12.8	5.8	3.2	3.2	SMA16
10×7.8×15.5	10	7.8	15.5	7.5	4.2	4.3	SMA22
9.52×9.52×10.2	9.52	9.52	10.2	7.5	4.5	5.2	FMA25.4 / FMB25.4
9.5×12×11	9.5	12	11	7.5	4.2	5	FMC25.4
12×9×18.5	12	9	18.5	9	5.3	5.5	SMA27
10×10×11	10	10	11	7.5	4.2	5	FMC22
14×11.5×20.5	14	11.5	20.5	10.5	6.5	6.5	SMA32
12×13×18	12	13	18	9	5.3	8	FMB27 / FMC27
16×13.5×23.5	16	13.5	23.5	10.5	6.5	6.5	SMA40
12.7×12.7×12.7	12.7	12.7	12.7	7.5	4.5	5.2	FMA31.75
15.87×15.87×18.5	15.87	15.87	18.5	10.3	6.6	7.5	FMA38.1 / FMB40 / FMB40F
14×15×20	14	15	20	10.5	6.3	8	FMC32
18×18×28.5	18	18	28.5	10.5	6.5	10	SMA50
19×18×22	19	18	22	10.5	6.3	7	FMA50.8

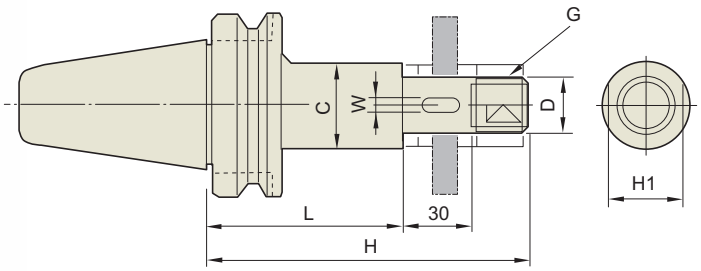
MOUNTING BOLT-MB



Size	M	D	D1	L	A	B	W	Applicable arbor
MB8	8X1.25	20	15	23	7	2	6	SMA16
MB10	10X1.5	28	18	29	9	2	8	SMA22
MB12	12×1.75	33	23	32	10	2	10	SMA27 / FMB27 / FMA25.4
MB16	16×2.0	40	23	42	10	6	12	SMA32 / FMA3.1.75
MB20	20×2.5	50	27	54	14	6	14	SMA40 / FMA38.1 / FMB40 / FMB40F
MB24	24×3.0	65	37	62	14	10	17	FMA50.8

SIDE CUTTER ARBOR
SEITENSCHNEIDER LAUBE

MAS403-BT



MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

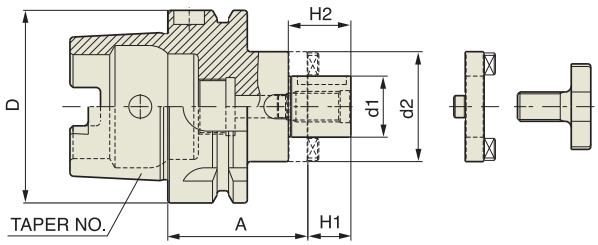
TAPER No.	CODE No.	H	H1	C	W	G	D	L	Weight (kg)
30	BT30-SCA12.7-60	105	17	20	–	M12	12.7	60	1.0
	BT30-SCA15.875-60	106	23	26	3.18	M14	15.875	60	1.1
	BT30-SCA22.225-60	110	29	34	3.18	M20	22.225	60	1.2
	BT30-SCA25.4-60	115	32	40	6.35	M24	25.4	60	1.3
40	BT40-SCA12.7-75	120	17	20	–	M12	12.7	75	1.2
	BT40-SCA12.7-105	150	17	20	–	M12	12.7	105	1.3
	BT40-SCA15.875-75	121	23	26	3.18	M14	15.875	75	1.4
	BT40-SCA15.875-120	151	23	26	3.18	M14	15.875	120	1.5
	BT40-SCA22.225-75	126	29	34	3.18	M20	22.225	75	1.7
	BT40-SCA22.225-120	171	29	34	3.18	M20	22.225	120	2.0
	BT40-SCA25.4-75	130	32	40	6.35	M24	25.4	75	2.0
	BT40-SCA25.4-120	175	32	40	6.35	M24	25.4	120	2.4
	BT40-SCA31.75-90	150	41	46	7.92	M30	31.75	90	2.6
50	BT50-SCA12.7-75	120	17	20	–	M12	12.7	75	4.1
	BT50-SCA12.7-105	150	17	20	–	M12	12.7	105	4.2
	BT50-SCA15.875-90	136	23	26	3.18	M14	15.875	90	4.2
	BT50-SCA15.875-120	166	23	26	3.18	M14	15.875	120	4.2
	BT50-SCA22.225-90	144	29	34	3.18	M20	22.225	90	4.4
	BT50-SCA22.225-135	186	29	34	3.18	M20	22.225	135	4.7
	BT50-SCA25.4-90	145	32	40	6.35	M24	25.4	90	4.5
	BT50-SCA25.4-135	190	32	40	6.35	M24	25.4	135	4.9
	BT50-SCA31.75-90	150	41	46	7.92	M30	31.75	90	4.7
	BT50-SCA31.75-135	195	41	46	7.92	M30	31.75	135	5.2
	BT50-SCA38.1-90	156	46	55	9.52	M36	38.1	90	4.9
	BT50-SCA38.1-135	201	46	55	9.52	M36	38.1	135	5.9

TOOL HOLDERS

CMA

COMBI-SHELL MILL ARBOR
KOMBI-AUFNAHMEDORN FÜR FRÄSER MIT BOHRUNG

DIN69893-HSK FORM A



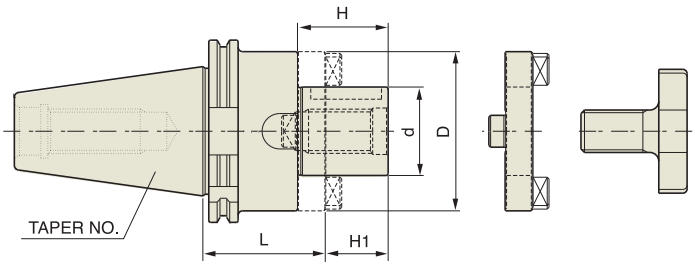
DIN69893 -HSK	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	12,000	

TAPER No.	CODE No.	D	d1	d2	A	H1	H2	PART No.	Weight (kg)
50A	HSK50A - CMA16 - 50	50	16	32	50	17	27	27,33,39	
	HSK50A - CMA22 - 50	50	22	40	50	19	31	28,34,40	
	HSK50A - CMA27 - 65	50	27	48	65	21	33	29,35,41	
	HSK50A - CMA32 - 65	50	32	58	65	24	38	30,36,42	
63A	HSK63A - CMA16 - 60	63	16	32	60	17	27	27,33,39	
	HSK63A - CMA22 - 60	63	22	40	60	19	31	28,34,40	
	HSK63A - CMA27 - 60	63	27	48	60	21	33	29,35,41	
	HSK63A - CMA32 - 60	63	32	58	60	24	38	30,36,42	
	HSK63A - CMA40 - 70	63	40	70	70	27	41	31,37,43	
100A	HSK100A - CMA16 - 60	100	16	32	60	17	27	27,33,39	
	HSK100A - CMA22 - 60	100	22	40	60	19	31	28,34,40	
	HSK100A - CMA27 - 60	100	27	48	60	21	33	29,35,41	
	HSK100A - CMA32 - 60	100	32	58	60	24	38	30,36,42	
	HSK100A - CMA40 - 70	100	40	70	70	27	41	31,37,43	
	HSK100A - CMA50 - 80	100	50	90	80	30	46	32,38,44	

▶High Balanced combi–shell mill arbor are available on request
▶Clutch drive ring, Collar bolt & key for CMA – part on page 1464

COMBI-SHELL MILL ARBOR
KOMBI-AUFNAHMEDORN FÜR FRÄSER MIT BOHRUNG

DIN 69871-SK FORM A



DIN 69871 -SK	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	12,000	

■ STANDARD

TAPER No.	CODE No.	d	L	D	H1	H	PART No.	Weight (kg)
30	SK30 - CMA16 - 50	16	50	32	17	27	27,33,39	
	SK30 - CMA22 - 50	22	50	40	19	31	28,34,40	
	SK30 - CMA27 - 55	27	55	48	21	33	29,35,41	
40	SK40 - CMA16 - 55	16	55	32	17	27	27,33,39	
	SK40 - CMA22 - 55	22	55	40	19	31	28,34,40	
	SK40 - CMA27 - 55	27	55	48	21	33	29,35,41	
	SK40 - CMA32 - 60	32	60	58	24	38	30,36,42	
	SK40 - CMA40 - 60	40	60	70	27	41	31.37.43	
50	SK50 - CMA16 - 55	16	55	32	17	27	27,33,39	
	SK50 - CMA22 - 55	22	55	40	19	31	28,34,40	
	SK50 - CMA27 - 55	27	55	48	21	33	29,35,41	
	SK50 - CMA32 - 55	32	55	58	24	38	30,36,42	
	SK50 - CMA40 - 55	40	55	70	27	41	31,37,43	
	SK50 - CMA50 - 70	50	70	90	30	46	32,38,44	

■ EXTENDED

TAPER No.	CODE No.	d	L	D	H1	H	PART No.	Weight (kg)
40	SK40 - CMA16 - 100	16	100	32	17	27	27,33,39	
	SK40 - CMA22 - 100	22	100	40	19	31	28,34,40	
	SK40 - CMA27 - 100	27	100	48	21	33	29,35,41	
	SK40 - CMA32 - 100	32	100	58	24	38	30,36,42	
50	SK50 - CMA16 - 100	16	100	32	17	27	27,33,39	
	SK50 - CMA22 - 100	22	100	40	19	31	28,34,40	
	SK50 - CMA27 - 100	27	100	48	21	33	29,35,41	
	SK50 - CMA32 - 100	32	100	58	24	38	30,36,42	
	SK50 - CMA40 - 100	40	100	70	27	41	31,37,43	

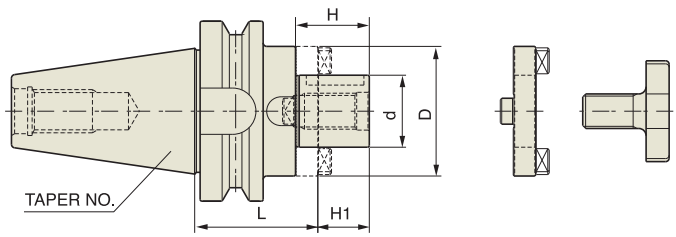
▶High Balanced combi–shell mill arbor are available on request
▶Clutch drive ring, Collar bolt & key for CMA – part on page 1464

TOOL HOLDERS

CMA

COMBI-SHELL MILL ARBOR
KOMBI-AUFNAHMEDORN FÜR FRÄSER MIT BOHRUNG

MAS403-BT



MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	12,000	

■ STANDARD

TAPER No.	CODE No.	d	L	D	H1	H	PART No.	Weight (kg)
30	**BT30 - CMA16 - 50**	16	50	32	17	27	27,33,39	
	BT30 - CMA22 - 50	22	50	40	19	31	28,34,40	
	BT30 - CMA27 - 55	27	55	48	21	33	29,35,41	
40	**BT40 - CMA16 - 55**	16	55	32	17	27	27,33,39	
	BT40 - CMA22 - 55	22	55	40	19	31	28,34,40	
	BT40 - CMA27 - 55	27	55	48	21	33	29,35,41	
	BT40 - CMA32 - 60	32	60	58	24	38	30,36,42	
	BT40 - CMA40 - 60	40	60	70	27	41	31,37,43	
50	**BT50 - CMA16 - 70**	16	70	32	17	27	27,33,39	
	BT50 - CMA22 - 70	22	70	40	19	31	28,34,40	
	BT50 - CMA27 - 70	27	70	48	21	33	29,35,41	
	BT50 - CMA32 - 70	32	70	58	24	38	30,36,42	
	BT50 - CMA40 - 70	40	70	70	27	41	31,37,43	
	BT50 - CMA50 - 70	50	70	90	30	46	32,38,44	

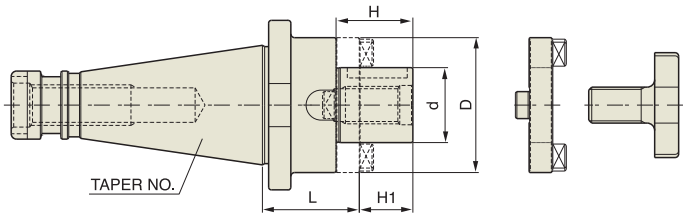
■ EXTENDED

TAPER No.	CODE No.	d	L	D	H1	H	PART No.	Weight (kg)
40	BT40 - CMA16 - 100	16	100	32	17	27	27,33,39	
	BT40 - CMA22 - 100	22	100	40	19	31	28,34,40	
	BT40 - CMA27 - 100	27	100	48	21	33	29,35,41	
	BT40 - CMA32 - 100	32	100	58	24	38	30,36,42	
50	BT50 - CMA16 - 100	16	100	32	17	27	27,33,39	
	BT50 - CMA22 - 100	22	100	40	19	31	28,34,40	
	BT50 - CMA27 - 100	27	100	48	21	33	29,35,41	
	BT50 - CMA32 - 100	32	100	58	24	38	30,36,42	
	BT50 - CMA40 - 100	40	100	70	27	41	31,37,43	

▶High Balanced combi-shell mill arbor are available on request
▶Clutch drive ring, Collar bolt & key for CMA – part on page 1464

COMBI-SHELL MILL ARBOR
KOMBI-AUFNAHMEDORN FÜR FRÄSER MIT BOHRUNG

DIN2080-ISO



DIN2080 - ISO	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	12,000	

■ STANDARD

TAPER No.	CODE No.	d	L	D	H1	H	PART No.	Weight (kg)
30	ISO30 - CMA16 - 35	16	35	32	17	27	27,33,39	
	ISO30 - CMA22 - 35	22	35	40	19	31	28,34,40	
	ISO30 - CMA27 - 35	27	35	48	21	33	29,35,41	
40	ISO40 - CMA16 - 52	16	52	32	17	27	27,33,39	
	ISO40 - CMA22 - 52	22	52	40	19	31	28,34,40	
	ISO40 - CMA27 - 52	27	52	48	21	33	29,35,41	
	ISO40 - CMA32 - 52	32	52	58	24	38	30,36,42	
	ISO40 - CMA40 - 52	40	52	70	27	41	31,37,43	
50	ISO50 - CMA16 - 55	16	55	32	17	27	27,33,39	
	ISO50 - CMA22 - 55	22	55	40	19	31	28,34,40	
	ISO50 - CMA27 - 55	27	55	48	21	33	29,35,41	
	ISO50 - CMA32 - 55	32	55	58	24	38	30,36,42	
	ISO50 - CMA40 - 55	40	55	70	27	41	31,37,43	
	ISO50 - CMA50 - 55	50	55	90	30	46	32,38,44	

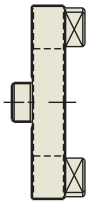
■ EXTENDED

TAPER No.	CODE No.	d	L	D	H1	H	PART No.	Weight (kg)
40	ISO40 - CMA16 - 125	16	125	32	17	27	27,33,39	
	ISO40 - CMA22 - 125	22	125	40	19	31	28,34,40	
	ISO40 - CMA27 - 125	27	125	48	21	33	29,35,41	
	ISO40 - CMA32 - 125	32	125	58	24	38	30,36,42	
50	ISO50 - CMA16 - 125	16	125	32	17	27	27,33,39	
	ISO50 - CMA22 - 125	22	125	40	19	31	28,34,40	
	ISO50 - CMA27 - 125	27	125	48	21	33	29,35,41	
	ISO50 - CMA32 - 125	32	125	58	24	38	30,36,42	
	ISO50 - CMA40 - 125	40	125	70	27	41	31,37,43	

▶Clutch drive ring, Collar bolt & key for CMA – part on page 1464

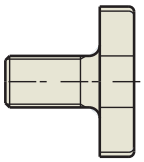
CMA - PART

CLUTCH DRIVE RING



N0.	CLUTCH DRIVE RING	Q' TY
27	#16	1
28	#22	1
29	#27	1
30	#32	1
31	#40	1
32	#50	1

COLLAR BOLT



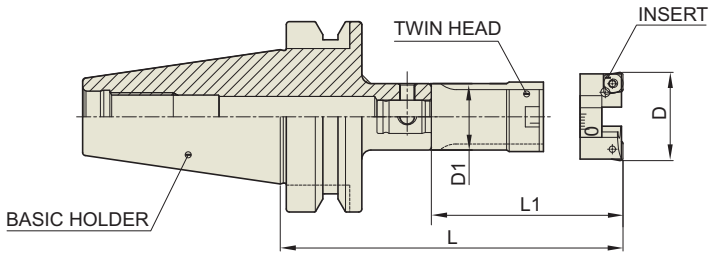
N0.	COLLAR BOLT	Q' TY
33	M8×1.25	1
34	M10×1.5	1
35	M12×1.75	1
36	M16×2.0	1
37	M20×2.5	1
38	M24×3.0	1

KEY

N0.	KEY	Q' TY	CMA DIA.
39	4×4×20	1	16
40	6×6×25	1	22
41	7×7×25	1	27
42	8×7×28	1	32
43	10×8×32	1	40
44	12×8×36	1	50

TWIN EDGE BORING BAR SET (Small Bore)
DOPPELSCHNEIDER - BOHRSTANGE

MAS403-BT



MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

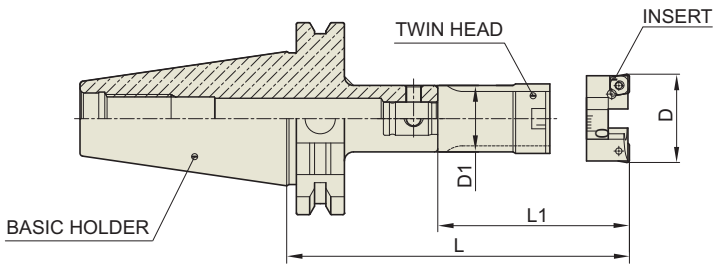
CODE No.	D Min - Max	L	BASIC HOLDER	TWIN HEAD	D1	L1	INSERT
BT30-TBH25-90	Ø25 - Ø34	90	BT30-SAS22-40	SAS22-TBH25-50	22	50	CCMT060200
BT30-TBH25-140	Ø25 - Ø34	140	BT30-SAS22-90	SAS22-TBH25-50	22	50	CCMT060200
BT30-TBH34-110	Ø34 - Ø50	110	BT30-SAS31-50	SAS31-TBH34-60	31	60	CCMT060200
BT30-TBH34-150	Ø34 - Ø50	150	BT30-SAS31-90	SAS31-TBH34-60	31	60	CCMT060200
BT40-TBH25-100	Ø25 - Ø34	100	BT40-SAS22-50	SAS22-TBH25-50	22	50	CCMT060200
BT40-TBH25-140	Ø25 - Ø34	140	BT40-SAS22-90	SAS22-TBH25-50	22	50	CCMT060200
BT40-TBH25-155	Ø25 - Ø34	155	BT40-SAS22-105	SAS22-TBH25-50	22	50	CCMT060200
BT40-TBH34-120	Ø34 - Ø50	120	BT40-SAS31-60	SAS31-TBH34-60	31	60	CCMT060200
BT40-TBH34-160	Ø34 - Ø50	160	BT40-SAS31-100	SAS31-TBH34-60	31	60	CCMT060200
BT40-TBH34-180	Ø34 - Ø50	180	BT40-SAS31-120	SAS31-TBH34-60	31	60	CCMT060200
BT40-TBH50-140	Ø50 - Ø76	140	BT40-SAS42-60	SAS42-TBH50-80	42	80	CCMT09T300
BT40-TBH50-185	Ø50 - Ø76	185	BT40-SAS42-105	SAS42-TBH50-80	42	80	CCMT09T300
BT40-TBH50-200	Ø50 - Ø76	200	BT40-SAS42-120	SAS42-TBH50-80	42	80	CCMT09T300
BT40-TBH76-180	Ø76 - Ø116	180	BT40-SAS65-70	SAS65-TBH76-110	65	110	CCMT120400
BT40-TBH76-200	Ø76 - Ø116	200	BT40-SAS65-90	SAS65-TBH76-110	65	110	CCMT120400
BT40-TBH76-220	Ø76 - Ø116	220	BT40-SAS65-110	SAS65-TBH76-110	65	110	CCMT120400
BT40-TBH76-240	Ø76 - Ø116	240	BT40-SAS65-130	SAS65-TBH76-110	65	110	CCMT120400
BT50-TBH25-110	Ø25 - Ø34	110	BT50-SAS22-60	SAS22-TBH25-50	22	50	CCMT060200
BT50-TBH25-130	Ø25 - Ø34	130	BT50-SAS22-80	SAS22-TBH25-50	22	50	CCMT060200
BT50-TBH25-150	Ø25 - Ø34	150	BT50-SAS22-100	SAS22-TBH25-50	22	50	CCMT060200
BT50-TBH34-130	Ø34 - Ø50	130	BT50-SAS31-70	SAS31-TBH34-60	31	60	CCMT060200
BT50-TBH34-160	Ø34 - Ø50	160	BT50-SAS31-100	SAS31-TBH34-60	31	60	CCMT060200
BT50-TBH34-190	Ø34 - Ø50	190	BT50-SAS31-130	SAS31-TBH34-60	31	60	CCMT060200
BT50-TBH50-150	Ø50 - Ø76	150	BT50-SAS42-70	SAS42-TBH50-80	42	80	CCMT09T300
BT50-TBH50-190	Ø50 - Ø76	190	BT50-SAS42-110	SAS42-TBH50-80	42	80	CCMT09T300
BT50-TBH50-240	Ø50 - Ø76	240	BT50-SAS42-150	SAS42-TBH50-80	42	80	CCMT09T300
BT50-TBH76-200	Ø76 - Ø116	200	BT50-SAS65-90	SAS65-TBH76-110	65	110	CCMT120400
BT50-TBH76-240	Ø76 - Ø116	240	BT50-SAS65-130	SAS65-TBH76-110	65	110	CCMT120400
BT50-TBH76-280	Ø76 - Ø116	280	BT50-SAS65-170	SAS65-TBH76-110	65	110	CCMT120400
BT50-TBH116-225	Ø116- Ø156	225	BT50-SAS84-80	SAS84-TBH116-145	84	145	CCMT120400
BT50-TBH116-275	Ø116- Ø156	275	BT50-SAS84-130	SAS84-TBH116-145	84	145	CCMT120400
BT50-TBH116-325	Ø116- Ø156	325	BT50-SAS84-180	SAS84-TBH116-145	84	145	CCMT120400

TOOL HOLDERS

TBH

TWIN EDGE BORING BAR SET (Small Bore)
DOPPELSCHNEIDER - BOHRSTANGE

DIN69871-SK

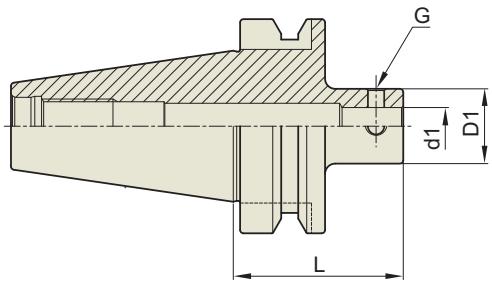


DIN69871 - SK	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

CODE No.	D Min - Max	L	BASIC HOLDER	TWIN HEAD	D1	L1	INSERT
SK30-TBH25-90	Ø25 - Ø34	90	SK30-SAS22-40	SAS22-TBH25-50	22	50	CCMT060200
SK30-TBH25-140	Ø25 - Ø34	140	SK30-SAS22-90	SAS22-TBH25-50	22	50	CCMT060200
SK30-TBH34-110	Ø34 - Ø50	110	SK30-SAS31-50	SAS31-TBH34-60	31	60	CCMT060200
SK30-TBH34-150	Ø34 - Ø50	150	SK30-SAS31-90	SAS31-TBH34-60	31	60	CCMT060200
SK40-TBH25-100	Ø25 - Ø34	100	SK40-SAS22-50	SAS22-TBH25-50	22	50	CCMT060200
SK40-TBH25-140	Ø25 - Ø34	140	SK40-SAS22-90	SAS22-TBH25-50	22	50	CCMT060200
SK40-TBH25-155	Ø25 - Ø34	155	SK40-SAS22-105	SAS22-TBH25-50	22	50	CCMT060200
SK40-TBH34-120	Ø34 - Ø50	120	SK40-SAS31-60	SAS31-TBH34-60	31	60	CCMT060200
SK40-TBH34-160	Ø34 - Ø50	160	SK40-SAS31-100	SAS31-TBH34-60	31	60	CCMT060200
SK40-TBH34-180	Ø34 - Ø50	180	SK40-SAS31-120	SAS31-TBH34-60	31	60	CCMT060200
SK40-TBH50-140	Ø50 - Ø76	140	SK40-SAS42-60	SAS42-TBH50-80	42	80	CCMT09T300
SK40-TBH50-185	Ø50 - Ø76	185	SK40-SAS42-105	SAS42-TBH50-80	42	80	CCMT09T300
SK40-TBH50-200	Ø50 - Ø76	200	SK40-SAS42-120	SAS42-TBH50-80	42	80	CCMT09T300
SK40-TBH76-180	Ø76 - Ø116	180	SK40-SAS65-70	SAS65-TBH76-110	65	110	CCMT120400
SK40-TBH76-200	Ø76 - Ø116	200	SK40-SAS65-90	SAS65-TBH76-110	65	110	CCMT120400
SK40-TBH76-220	Ø76 - Ø116	220	SK40-SAS65-110	SAS65-TBH76-110	65	110	CCMT120400
SK40-TBH76-240	Ø76 - Ø116	240	SK40-SAS65-130	SAS65-TBH76-110	65	110	CCMT120400
SK50-TBH25-110	Ø25 - Ø34	110	SK50-SAS22-60	SAS22-TBH25-50	22	50	CCMT060200
SK50-TBH25-130	Ø25 - Ø34	130	SK50-SAS22-80	SAS22-TBH25-50	22	50	CCMT060200
SK50-TBH25-150	Ø25 - Ø34	150	SK50-SAS22-100	SAS22-TBH25-50	22	50	CCMT060200
SK50-TBH34-130	Ø34 - Ø50	130	SK50-SAS31-70	SAS31-TBH34-60	31	60	CCMT060200
SK50-TBH34-160	Ø34 - Ø50	160	SK50-SAS31-100	SAS31-TBH34-60	31	60	CCMT060200
SK50-TBH34-190	Ø34 - Ø50	190	SK50-SAS31-130	SAS31-TBH34-60	31	60	CCMT060200
SK50-TBH50-150	Ø50 - Ø76	150	SK50-SAS42-70	SAS42-TBH50-80	42	80	CCMT09T300
SK50-TBH50-190	Ø50 - Ø76	190	SK50-SAS42-110	SAS42-TBH50-80	42	80	CCMT09T300
SK50-TBH50-240	Ø50 - Ø76	240	SK50-SAS42-150	SAS42-TBH50-80	42	80	CCMT09T300
SK50-TBH76-200	Ø76 - Ø116	200	SK50-SAS65-90	SAS65-TBH76-110	65	110	CCMT120400
SK50-TBH76-240	Ø76 - Ø116	240	SK50-SAS65-130	SAS65-TBH76-110	65	110	CCMT120400
SK50-TBH76-280	Ø76 - Ø116	280	SK50-SAS65-170	SAS65-TBH76-110	65	110	CCMT120400
SK50-TBH116-225	Ø116- Ø156	225	SK50-SAS84-80	SAS84-TBH116-145	84	145	CCMT120400
SK50-TBH116-275	Ø116- Ø156	275	SK50-SAS84-130	SAS84-TBH116-145	84	145	CCMT120400
SK50-TBH116-325	Ø116- Ø156	325	SK50-SAS84-180	SAS84-TBH116-145	84	145	CCMT120400

BASIC HOLDER

MAS403-BT



MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

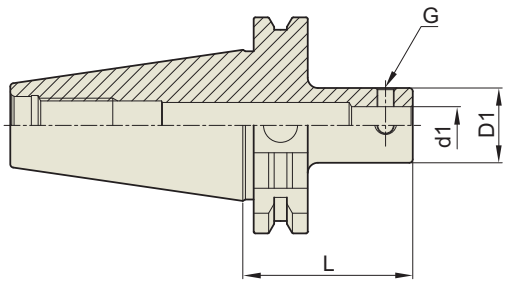
TAPER No.	CODE No.	d1	Dq	L	G	Weight (kg)
30	BT30-SAS22-40	Ø11	Ø22	40	M5	0.30
	BT30-SAS22-90	Ø11	Ø22	90	M5	0.40
	BT30-SAS31-50	Ø18	Ø31	50	M8	0.40
	BT30-SAS31-90	Ø18	Ø31	90	M8	0.50
40	BT40-SAS22-50	Ø11	Ø22	50	M5	1.70
	BT40-SAS22-90	Ø11	Ø22	90	M5	1.90
	BT40-SAS22-105	Ø11	Ø22	105	M5	1.90
	BT40-SAS31-60	Ø18	Ø31	60	M8	1.90
	BT40-SAS31-100	Ø18	Ø31	100	M8	2.30
	BT40-SAS31-120	Ø18	Ø31	120	M8	2.40
	BT40-SAS42-60	Ø24	Ø42	60	M10	2.70
	BT40-SAS42-105	Ø24	Ø42	105	M10	2.90
	BT40-SAS42-120	Ø24	Ø42	120	M10	3.10
	BT40-SAS65-70	Ø34	Ø65	70	M16	3.30
	BT40-SAS65-90	Ø34	Ø65	90	M16	3.60
	BT40-SAS65-110	Ø34	Ø65	110	M16	4.60
	BT40-SAS65-130	Ø34	Ø65	130	M16	4.70
50	BT50-SAS22-60	Ø11	Ø22	60	M5	4.30
	BT50-SAS22-80	Ø11	Ø22	80	M5	4.50
	BT50-SAS22-100	Ø11	Ø22	100	M5	4.70
	BT50-SAS31-70	Ø18	Ø31	70	M8	4.50
	BT50-SAS31-100	Ø18	Ø31	100	M8	5.10
	BT50-SAS31-130	Ø18	Ø31	130	M8	5.40
	BT50-SAS42-70	Ø24	Ø42	70	M10	5.00
	BT50-SAS42-110	Ø24	Ø42	110	M10	5.20
	BT50-SAS42-150	Ø24	Ø42	150	M10	5.50
	BT50-SAS65-90	Ø34	Ø65	90	M16	6.80
	BT50-SAS65-130	Ø34	Ø65	130	M16	7.50
	BT50-SAS65-170	Ø34	Ø65	170	M16	8.00
	BT50-SAS84-80	Ø46	Ø84	80	M16	9.00
	BT50-SAS84-130	Ø46	Ø84	130	M16	9.70
	BT50-SAS84-180	Ø46	Ø84	180	M16	9.90

TOOL HOLDERS

SAS

BASIC HOLDER

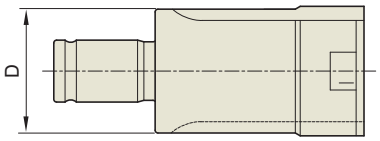
DIN69871-SK



DIN69871 - SK | Taper Accuracy | G Value | RPM | Coolant System

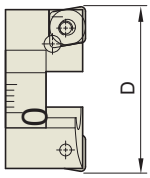
TAPER No.	CODE No.	d1	Dq	L	G	Weight (kg)
30	SK30-SAS22-40	Ø11	Ø22	40	M5	0.30
	SK30-SAS22-90	Ø11	Ø22	90	M5	0.40
	SK30-SAS31-50	Ø18	Ø31	50	M8	0.40
	SK30-SAS31-90	Ø18	Ø31	90	M8	0.50
40	SK40-SAS22-50	Ø11	Ø22	50	M5	1.70
	SK40-SAS22-90	Ø11	Ø22	90	M5	1.90
	SK40-SAS22-105	Ø11	Ø22	105	M5	1.90
	SK40-SAS31-60	Ø18	Ø31	60	M8	1.90
	SK40-SAS31-100	Ø18	Ø31	100	M8	2.30
	SK40-SAS31-120	Ø18	Ø31	120	M8	2.40
	SK40-SAS42-60	Ø24	Ø42	60	M10	2.70
	SK40-SAS42-105	Ø24	Ø42	105	M10	2.90
	SK40-SAS42-120	Ø24	Ø42	120	M10	3.10
	SK40-SAS65-70	Ø34	Ø65	70	M16	3.30
	SK40-SAS65-90	Ø34	Ø65	90	M16	3.60
	SK40-SAS65-110	Ø34	Ø65	110	M16	4.60
	SK40-SAS65-130	Ø34	Ø65	130	M16	4.70
50	SK50-SAS22-60	Ø11	Ø22	60	M5	4.30
	SK50-SAS22-80	Ø11	Ø22	80	M5	4.50
	SK50-SAS22-100	Ø11	Ø22	100	M5	4.70
	SK50-SAS31-70	Ø18	Ø31	70	M8	4.50
	SK50-SAS31-100	Ø18	Ø31	100	M8	5.10
	SK50-SAS31-130	Ø18	Ø31	130	M8	5.40
	SK50-SAS42-70	Ø24	Ø42	70	M10	5.00
	SK50-SAS42-110	Ø24	Ø42	110	M10	5.20
	SK50-SAS42-150	Ø24	Ø42	150	M10	5.50
	SK50-SAS65-90	Ø34	Ø65	90	M16	6.80
	SK50-SAS65-130	Ø34	Ø65	130	M16	7.50
	SK50-SAS65-170	Ø34	Ø65	170	M16	8.00
	SK50-SAS84-80	Ø46	Ø84	80	M16	9.00
	SK50-SAS84-130	Ø46	Ø84	130	M16	9.70
	SK50-SAS84-180	Ø46	Ø84	180	M16	9.90

TWIN HEAD



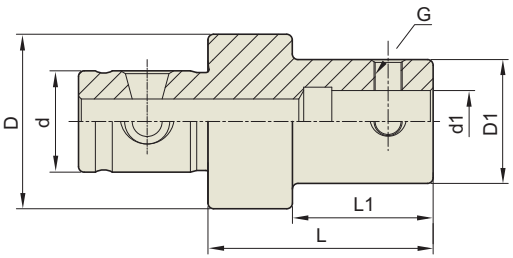
TWIN HEAD	D
SAS22-TBH25-50	22
SAS31-TBH34-60	31
SAS42-TBH50-80	42
SAS65-TBH76-110	65
SAS84-TBH116-145	84

INSERT HOLDER (CARTRIDGE)



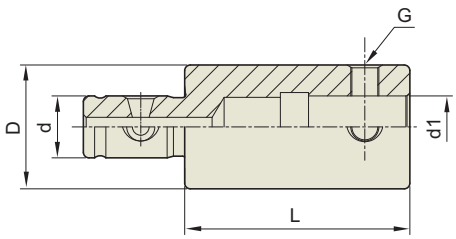
INSERT HOLDER	D	
	MIN	MAZ
TBH25-CC06	Ø25	- Ø34
TBH34-CC06	Ø34	- Ø50
TBH50-CC09	Ø50	- Ø76
TBH76-CC12	Ø76	- Ø116
TBH116-CC12	Ø116	- Ø156

REDUCTION BAR



TWIN HEAD	d	d1	D	D1	L	L1	G
R-SAS31-22-40	Ø18	Ø11	Ø31	Ø22	40	25	M5
R-SAS42-22-45	Ø24	Ø11	Ø42	Ø22	45	25	M5
R-SAS42-31-50	Ø24	Ø18	Ø42	Ø31	50	30	M8
R-SAS65-22-50	Ø34	Ø11	Ø65	Ø22	50	25	M5
R-SAS65-31-55	Ø34	Ø18	Ø65	Ø31	55	30	M8
R-SAS65-42-65	Ø34	Ø24	Ø65	Ø42	65	40	M10
R-SAS84-22-55	Ø46	Ø11	Ø84	Ø22	55	25	M5
R-SAS84-31-60	Ø46	Ø18	Ø84	Ø31	60	30	M8
R-SAS84-42-65	Ø46	Ø24	Ø84	Ø42	65	40	M10
R-SAS84-65-70	Ø46	Ø34	Ø84	Ø65	70	40	M16

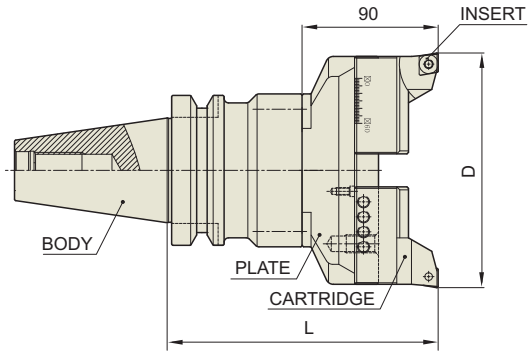
EXTENSION BAR



TWIN HEAD	d	d1	D	L	G
E-SAS22-40	Ø11	Ø11	Ø22	40	M5
E-SAS22-60	Ø11	Ø11	Ø22	60	M5
E-SAS31-50	Ø18	Ø18	Ø31	50	M8
E-SAS31-80	Ø18	Ø18	Ø31	80	M8
E-SAS42-60	Ø24	Ø24	Ø42	60	M10
E-SAS42-90	Ø24	Ø24	Ø42	90	M10
E-SAS65-70	Ø34	Ø34	Ø65	70	M16
E-SAS65-100	Ø34	Ø34	Ø65	100	M16
E-SAS84-90	Ø46	Ø46	Ø84	90	M16
E-SAS84-100	Ø46	Ø46	Ø84	100	M16

TWIN EDGE BORING BAR SET (Big Bore - For Rough Cutting)
DOPPELSCHNEIDER - BOHRSTANGE

MAS403-BT



MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

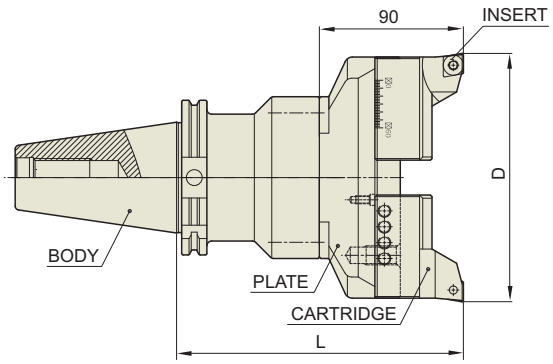
CODE No.	D Min - Max	L	BODY	PLATE	INSERT
BT50-TBH156-180	Ø156 - Ø216	180	BT50-SAS102-90	PLA156	CCMT120400
BT50-TBH156-230	Ø156 - Ø216	230	BT50-SAS102-140	PLA156	CCMT120400
BT50-TBH156-280	Ø156 - Ø216	280	BT50-SAS102-190	PLA156	CCMT120400
BT50-TBH216-180	Ø216 - Ø276	180	BT50-SAS102-90	PLA216	CCMT120400
BT50-TBH216-230	Ø216 - Ø276	230	BT50-SAS102-140	PLA216	CCMT120400
BT50-TBH216-280	Ø216 - Ø276	280	BT50-SAS102-190	PLA216	CCMT120400
BT50-TBH276-180	Ø276 - Ø336	180	BT50-SAS102-90	PLA276	CCMT120400
BT50-TBH276-230	Ø276 - Ø336	230	BT50-SAS102-140	PLA276	CCMT120400
BT50-TBH276-280	Ø276 - Ø336	280	BT50-SAS102-190	PLA276	CCMT120400
BT50-TBH336-180	Ø336 - Ø396	180	BT50-SAS102-90	PLA336	CCMT120400
BT50-TBH336-230	Ø336 - Ø396	230	BT50-SAS102-140	PLA336	CCMT120400
BT50-TBH336-280	Ø336 - Ø396	280	BT50-SAS102-190	PLA336	CCMT120400
BT50-TBH396-180	Ø396 - Ø456	180	BT50-SAS102-90	PLA396	CCMT120400
BT50-TBH396-230	Ø396 - Ø456	230	BT50-SAS102-140	PLA396	CCMT120400
BT50-TBH396-280	Ø396 - Ø456	280	BT50-SAS102-190	PLA396	CCMT120400
BT50-TBH456-180	Ø456 - Ø516	180	BT50-SAS102-90	PLA456	CCMT120400
BT50-TBH456-230	Ø456 - Ø516	230	BT50-SAS102-140	PLA456	CCMT120400
BT50-TBH456-280	Ø456 - Ø516	280	BT50-SAS102-190	PLA456	CCMT120400
BT50-TBH516-180	Ø516 - Ø576	180	BT50-SAS102-90	PLA516	CCMT120400
BT50-TBH516-230	Ø516 - Ø576	230	BT50-SAS102-140	PLA516	CCMT120400
BT50-TBH516-280	Ø516 - Ø576	280	BT50-SAS102-190	PLA516	CCMT120400

TOOL HOLDERS

TBH

TWIN EDGE BORING BAR SET (Big Bore - For Rough Cutting)
DOPPELSCHNEIDER - BOHRSTANGE

DIN69871-SK

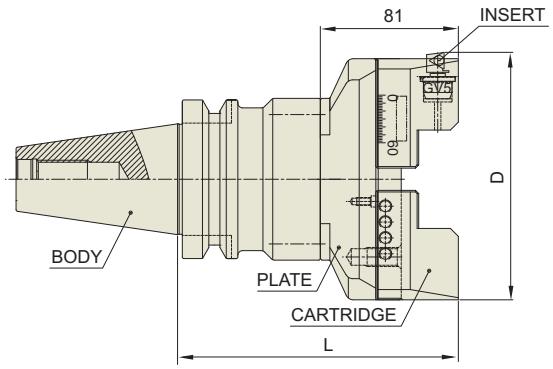


DIN69871 - SK	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

CODE No.	D Min - Max	L	BODY	PLATE	INSERT
SK50-TBH156-180	Ø156 - Ø216	180	SK50-SAS102-90	PLA156	CCMT120400
SK50-TBH156-230	Ø156 - Ø216	230	SK50-SAS102-140	PLA156	CCMT120400
SK50-TBH156-280	Ø156 - Ø216	280	SK50-SAS102-190	PLA156	CCMT120400
SK50-TBH216-180	Ø216 - Ø276	180	SK50-SAS102-90	PLA216	CCMT120400
SK50-TBH216-230	Ø216 - Ø276	230	SK50-SAS102-140	PLA216	CCMT120400
SK50-TBH216-280	Ø216 - Ø276	280	SK50-SAS102-190	PLA216	CCMT120400
SK50-TBH276-180	Ø276 - Ø336	180	SK50-SAS102-90	PLA276	CCMT120400
SK50-TBH276-230	Ø276 - Ø336	230	SK50-SAS102-140	PLA276	CCMT120400
SK50-TBH276-280	Ø276 - Ø336	280	SK50-SAS102-190	PLA276	CCMT120400
SK50-TBH336-180	Ø336 - Ø396	180	SK50-SAS102-90	PLA336	CCMT120400
SK50-TBH336-230	Ø336 - Ø396	230	SK50-SAS102-140	PLA336	CCMT120400
SK50-TBH336-280	Ø336 - Ø396	280	SK50-SAS102-190	PLA336	CCMT120400
SK50-TBH396-180	Ø396 - Ø456	180	SK50-SAS102-90	PLA396	CCMT120400
SK50-TBH396-230	Ø396 - Ø456	230	SK50-SAS102-140	PLA396	CCMT120400
SK50-TBH396-280	Ø396 - Ø456	280	SK50-SAS102-190	PLA396	CCMT120400
SK50-TBH456-180	Ø456 - Ø516	180	SK50-SAS102-90	PLA456	CCMT120400
SK50-TBH456-230	Ø456 - Ø516	230	SK50-SAS102-140	PLA456	CCMT120400
SK50-TBH456-280	Ø456 - Ø516	280	SK50-SAS102-190	PLA456	CCMT120400
SK50-TBH516-180	Ø516 - Ø576	180	SK50-SAS102-90	PLA516	CCMT120400
SK50-TBH516-230	Ø516 - Ø576	230	SK50-SAS102-140	PLA516	CCMT120400
SK50-TBH516-280	Ø516 - Ø576	280	SK50-SAS102-190	PLA516	CCMT120400

TWIN EDGE BORING BAR (Big Bore - For Finishing)
DOPPELSCHNEIDER - BOHRSTANGE

MAS403-BT



MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

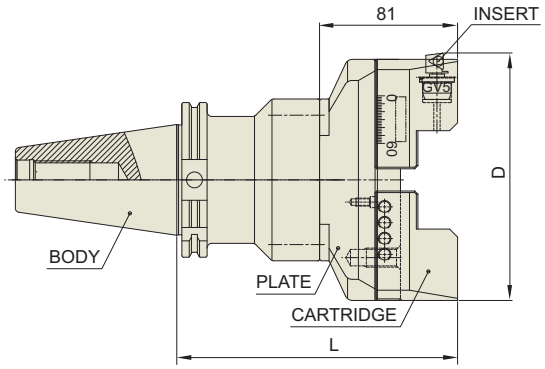
CODE No.	D Min - Max	L	BODY	PLATE	INSERT
BT50-FBH156-171	Ø156 - Ø216	171	BT50-SAS102-90	PLA156	TPGT110400
BT50-FBH156-221	Ø156 - Ø216	221	BT50-SAS102-140	PLA156	TPGT110400
BT50-FBH156-271	Ø156 - Ø216	271	BT50-SAS102-190	PLA156	TPGT110400
BT50-FBH216-171	Ø216 - Ø276	171	BT50-SAS102-90	PLA216	TPGT110400
BT50-FBH216-221	Ø216 - Ø276	221	BT50-SAS102-140	PLA216	TPGT110400
BT50-FBH216-271	Ø216 - Ø276	271	BT50-SAS102-190	PLA216	TPGT110400
BT50-FBH276-171	Ø276 - Ø336	171	BT50-SAS102-90	PLA276	TPGT110400
BT50-FBH276-221	Ø276 - Ø336	221	BT50-SAS102-140	PLA276	TPGT110400
BT50-FBH276-271	Ø276 - Ø336	271	BT50-SAS102-190	PLA276	TPGT110400
BT50-FBH336-171	Ø336 - Ø396	171	BT50-SAS102-90	PLA336	TPGT110400
BT50-FBH336-221	Ø336 - Ø396	221	BT50-SAS102-140	PLA336	TPGT110400
BT50-FBH336-271	Ø336 - Ø396	271	BT50-SAS102-190	PLA336	TPGT110400
BT50-FBH396-171	Ø396 - Ø456	171	BT50-SAS102-90	PLA396	TPGT110400
BT50-FBH396-221	Ø396 - Ø456	221	BT50-SAS102-140	PLA396	TPGT110400
BT50-FBH396-271	Ø396 - Ø456	271	BT50-SAS102-190	PLA396	TPGT110400
BT50-FBH456-171	Ø456 - Ø516	171	BT50-SAS102-90	PLA456	TPGT110400
BT50-FBH456-221	Ø456 - Ø516	221	BT50-SAS102-140	PLA456	TPGT110400
BT50-FBH456-271	Ø456 - Ø516	271	BT50-SAS102-190	PLA456	TPGT110400
BT50-FBH516-171	Ø516 - Ø576	171	BT50-SAS102-90	PLA516	TPGT110400
BT50-FBH516-221	Ø516 - Ø576	221	BT50-SAS102-140	PLA516	TPGT110400
BT50-FBH516-271	Ø516 - Ø576	271	BT50-SAS102-190	PLA516	TPGT110400

TOOL HOLDERS

FBH

TWIN EDGE BORING BAR (Big Bore - For Finishing)
DOPPELSCHNEIDER - BOHRSTANGE

DIN69871-SK

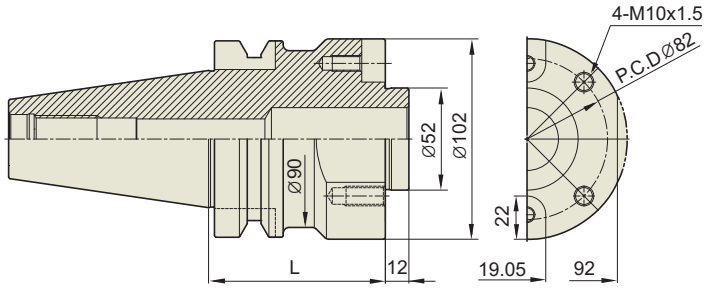


DIN69871 - SK	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

CODE No.	D Min - Max	L	BODY	PLATE	INSERT
SK50-FBH156-171	Ø156 - Ø216	171	SK50-SAS102-90	PLA156	TPGT110400
SK50-FBH156-221	Ø156 - Ø216	221	SK50-SAS102-140	PLA156	TPGT110400
SK50-FBH156-271	Ø156 - Ø216	271	SK50-SAS102-190	PLA156	TPGT110400
SK50-FBH216-171	Ø216 - Ø276	171	SK50-SAS102-90	PLA216	TPGT110400
SK50-FBH216-221	Ø216 - Ø276	221	SK50-SAS102-140	PLA216	TPGT110400
SK50-FBH216-271	Ø216 - Ø276	271	SK50-SAS102-190	PLA216	TPGT110400
SK50-FBH276-171	Ø276 - Ø336	171	SK50-SAS102-90	PLA276	TPGT110400
SK50-FBH276-221	Ø276 - Ø336	221	SK50-SAS102-140	PLA276	TPGT110400
SK50-FBH276-271	Ø276 - Ø336	271	SK50-SAS102-190	PLA276	TPGT110400
SK50-FBH336-171	Ø336 - Ø396	171	SK50-SAS102-90	PLA336	TPGT110400
SK50-FBH336-221	Ø336 - Ø396	221	SK50-SAS102-140	PLA336	TPGT110400
SK50-FBH336-271	Ø336 - Ø396	271	SK50-SAS102-190	PLA336	TPGT110400
SK50-FBH396-171	Ø396 - Ø456	171	SK50-SAS102-90	PLA396	TPGT110400
SK50-FBH396-221	Ø396 - Ø456	221	SK50-SAS102-140	PLA396	TPGT110400
SK50-FBH396-271	Ø396 - Ø456	271	SK50-SAS102-190	PLA396	TPGT110400
SK50-FBH456-171	Ø456 - Ø516	171	SK50-SAS102-90	PLA456	TPGT110400
SK50-FBH456-221	Ø456 - Ø516	221	SK50-SAS102-140	PLA456	TPGT110400
SK50-FBH456-271	Ø456 - Ø516	271	SK50-SAS102-190	PLA456	TPGT110400
SK50-FBH516-171	Ø516 - Ø576	171	SK50-SAS102-90	PLA516	TPGT110400
SK50-FBH516-221	Ø516 - Ø576	221	SK50-SAS102-140	PLA516	TPGT110400
SK50-FBH516-271	Ø516 - Ø576	271	SK50-SAS102-190	PLA516	TPGT110400

BASIC HOLDER (Big Bore)

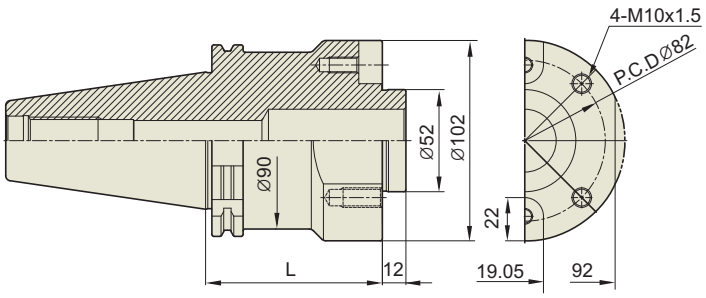
MAS403-BT



MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

CODE No.	L
BT50-SAS102-90	90
BT50-SAS102-140	140
BT50-SAS102-190	190

DIN69871-SK

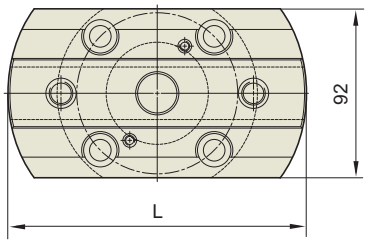


DIN69871 - SK	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

CODE No.	L
SK50-SAS102-90	90
SK50-SAS102-140	140
SK50-SAS102-190	190

TOOL HOLDERS

PLATE

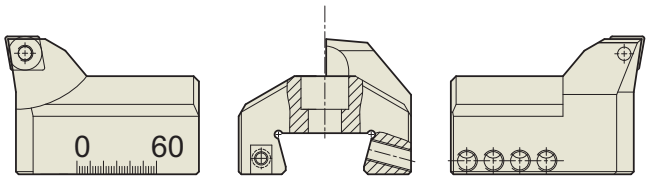


Taper Accuracy	G Value	RPM	Coolant System
AT3			

PLATE	L
PLA156	152
PLA216	212
PLA276	272
PLA336	332
PLA396	392
PLA456	452
PLA516	512

CARTRIDGE

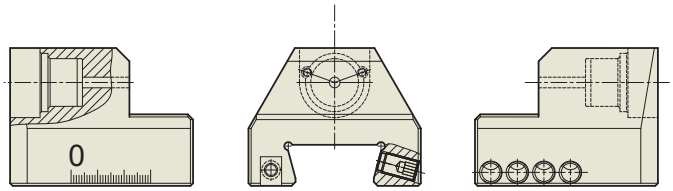
FOR ROUGH CUTTING



Taper Accuracy	G Value	RPM	Coolant System
AT3			

CARTRIDGE (For Rough Cutting)
CN120

FOR FINISHING



Taper Accuracy	G Value	RPM	Coolant System
AT3			

CARTRIDGE (For Finishing)
FBH-GV5

MICRO BORING BAR
MIKRO - BOHRSTANGE

MAS403-BT

FIG.1

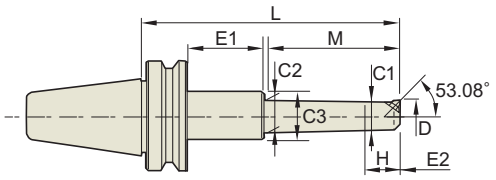
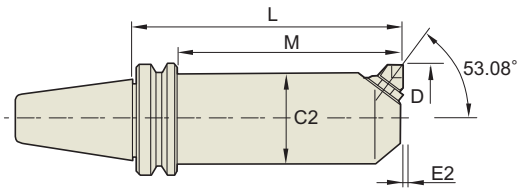


FIG.2



MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

TAPER No.	CODE No.	FIG.	D		L	M	C1	C2	C3	H	E1	E2	UNIT	INSERT	Weight (kg)
			Min	Max											
30	BT30-BCA13.5-105	1	13.5	16	105	68	12	13.0	44	15	5	0.2	M1B2 E/F	BRAZED TYPE	
	BT30-BCA14.5-105	1	14.5	17	105	68	13	14.0	44	15	5	0.2	M1B2 E/F	BRAZED TYPE	
	BT30-BCA16-105	3	16	22.5	105	73	14	15	–	18	–	0.2	M1A2 E/F	BRAZED TYPE	
	BT30-BCA19-120	1	19	23	120	85	16	18	44	23	3	0.2	M2B 2XC	CCGT0401	0.70
	BT30-BCA23-135	3	23	29	135	105	19	22	–	24	–	0.2	M3B 2XT	TBGT0601	0.70
	BT30-BCA29-150	1	29	41	150	115	25	28	44	30	8	0.2	M3A 2XT	TBGT0601	0.90
	BT30-BCA29-195	1	29	41	195	115	25	28	44	30	53	0.2	M3A 2XT	TBGT0601	
	BT30-BCA38-150	1	38	49	150	115	33	35	55	41	8	0.2	M5B 2XT	TCMT1102	1.40
	BT30-BCA38-210	1	38	49	210	175	33	37	55	41	8	0.2	M5B 2XT	TCMT1102	
	BT30-BCA46-150	1	46	66	150	115	38	41	55	45	8	0.2	M5A 2XT	TCMT1102	2.10
	BT30-BCA46-210	1	46	66	210	175	38	45	55	45	8	0.2	M5A 2XT	TCMT1102	
	BT30-BCA62-165	2	62	87	165	135	51	–	–	–	–	0.2	M7A 2XT	TCMT16T3	
40	BT40-BCA13.5-105	1	13.5	16	105	68	12	13.0	44	15	5	0.2	M1B2 E/F	BRAZED TYPE	
	BT40-BCA14.5-105	1	14.5	17	105	68	13	14.0	44	15	5	0.2	M1B2 E/F	BRAZED TYPE	
	BT40-BCA16-105	3	16	22.5	105	73	14	15	–	18	–	0.2	M1A2 E/F	BRAZED TYPE	
	BT40-BCA19-120	1	19	23	120	85	16	18	44	23	3	0.2	M2B2XC	CCGT0401	1.50
	BT40-BCA23-135	3	23	29	135	105	19	22	–	24	–	0.2	M3B2XT	TBGT0601	1.50
	BT40-BCA29-150	1	29	41	150	115	25	28	44	30	8	0.2	M3A2XT	TBGT0601	1.50
	BT40-BCA29-195	1	29	41	195	115	25	28	44	30	53	0.2	M3A2XT	TBGT0601	2.00
	BT40-BCA38-150	1	38	49	150	115	33	35	55	41	8	0.2	M5B2XT	TCMT1102	1.80
	BT40-BCA38-210	1	38	49	210	175	33	37	55	41	8	0.2	M5B2XT	TCMT1102	2.20
	BT40-BCA46-150	1	46	66	150	115	38	41	55	45	8	0.2	M5A2XT	TCMT1102	2.10
	BT40-BCA46-210	1	46	66	210	175	38	45	55	45	8	0.2	M5A2XT	TCMT1102	2.30
	BT40-BCA62-165	2	62	87	165	135	51	–	–	–	–	0.2	M7A2XT	TCMT16T3	2.90
	BT40-BCA62-210	2	62	87	210	180	51	–	–	–	–	0.2	M7A2XT	TCMT16T3	3.60
	BT40-BCA83-150	2	83	108	150	120	63	–	–	–	–	0.2	M7A2XT	TCMT16T3	
	BT40-BCA83-210	2	83	108	210	180	63	–	–	–	–	0.2	M7A2XT	TCMT16T3	
	BT40-BCA98-150	4	98	142	150	120	83	–	–	85	–	0.2	M10A2XT	TCMT16T3	

TOOL HOLDERS

BCA

MICRO BORING BAR
MIKRO - BOHRSTANGE

MAS403-BT

FIG.1

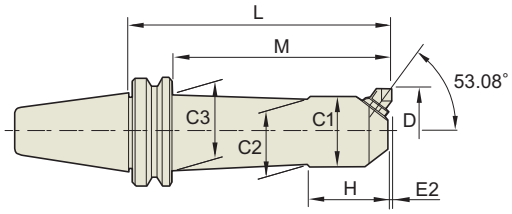
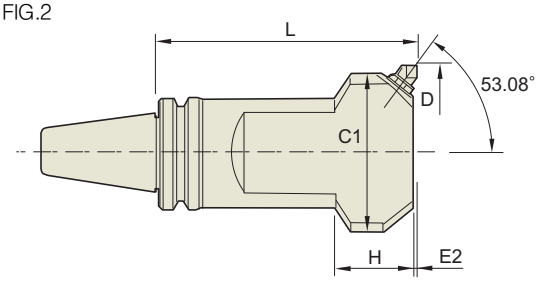


FIG.2



MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

TAPER No.	CODE No.	FIG.	D		L	M	C1	C2	C3	H	E1	E2	UNIT	INSERT	Weight (kg)
			Min	Max											
50	BT50-BCA13.5-120	1	13.5	16	120	67	12	13	44	15	10	0.2	M1B2 E/F	–	
	BT50-BCA13.5-195	1	13.5	16	195	67	12	13	44	15	85	0.2	M1B2 E/F	–	
	BT50-BCA14.5-120	1	14.5	17	120	67	13	14	44	15	10	0.2	M1B2 E/F	–	
	BT50-BCA14.5-195	1	14.5	17	195	67	13	14	44	15	85	0.2	M1B2 E/F	–	
	BT50-BCA16-120	1	16	22.5	120	73	14	15	44	18	4	0.2	M1A2 E/F	–	
	BT50-BCA16-195	1	16	22.5	195	73	14	15	44	18	79	0.2	M1A2 E/F	–	
	BT50-BCA19-135	1	19	23	135	86	16	18	44	23	6	0.2	M2B2XC	CCGT0401	3.80
	BT50-BCA19-210	1	19	23	210	86	16	18	44	23	81	0.2	M2B2XC	CCGT0401	
	BT50-BCA23-150	1	23	29	150	105	19	22	44	24	2	0.2	M3B2XT	TBGT0601	3.90
	BT50-BCA23-225	1	23	29	225	105	19	22	44	24	77	0.2	M3B2XT	TBGT0601	
	BT50-BCA29-165	1	29	41	165	115	25	28	44	30	7	0.2	M3A2XT	TBGT0601	4.50
	BT50-BCA29-225	1	29	41	225	115	25	28	44	30	67	0.2	M3A2XT	TBGT0601	
	BT50-BCA38-165	1	38	49	165	115	33	35	55	41	7	0.2	M5B2XT	TCMT1102	
	BT50-BCA38-225	1	38	49	225	172	33	37	55	41	10	0.2	M5B2XT	TCMT1102	5.00
	BT50-BCA46-165	1	46	66	165	115	38	41	55	45	7	0.2	M5A2XT	TCMT1102	5.20
	BT50-BCA46-225	3	46	66	225	182	38	–	–	45	–	0.2	M5A2XT	TCMT1102	
	BT50-BCA46-255	1	46	66	255	206	38	–	55	45	6	0.2	M5A2XT	TCMT1102	5.70
	BT50-BCA62-180	2	62	87	180	137	51	–	–	–	–	0.2	M7A2XT	TCMT16T3	7.00
	BT50-BCA62-240	1	62	87	240	184	51	57	70	60	13	0.2	M7A2XT	TCMT16T3	7.60
	BT50-BCA62-330	1	62	87	330	280	51	60	70	60	7	0.2	M7A2XT	TCMT16T3	9.50
	BT50-BCA83-165	2	83	108	165	122	63	–	–	–	–	0.2	M7A2XT	TCMT16T3	
	BT50-BCA83-240	1	83	108	240	190	63	62	90	95	7	0.2	M7A2XT	TCMT16T3	
	BT50-BCA83-345	1	83	108	345	295	63	62	90	95	7	0.2	M7A2XT	TCMT16T3	
	BT50-BCA98-165	2	98	142	165	122	83	–	–	–	–	0.2	M10A2XT	TCMT16T3	
	BT50-BCA98-240	2	98	142	240	197	83	–	–	–	–	0.2	M10A2XT	TCMT16T3	
	BT50-BCA98-345	3	98	142	345	302	83	92	–	85	–	0.2	M10A2XT	TCMT16T3	
	BT50-BCA132-210	4	132	176	210	–	108	–	–	65	–	0.2	M10A2XT	TCMT16T3	
	BT50-BCA132-315	4	132	176	315	–	108	–	–	65	–	0.2	M10A2XT	TCMT16T3	
	BT50-BCA166-225	4	166	210	225	–	142	–	–	70	–	0.2	M10A2XT	TCMT16T3	
	BT50-BCA166-315	4	166	210	315	–	142	–	–	70	–	0.2	M10A2XT	TCMT16T3	
	BT50-BCA200-210	4	200	244	210	–	176	–	–	75	–	0.2	M10A2XT	TCMT16T3	

MICRO BORING BAR
MIKRO - BOHRSTANGE

ST

FIG.1

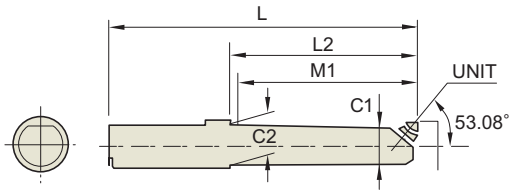
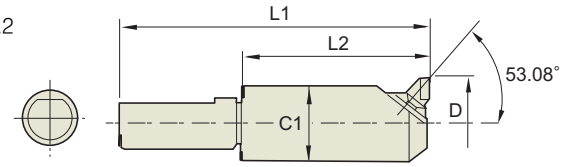


FIG.2

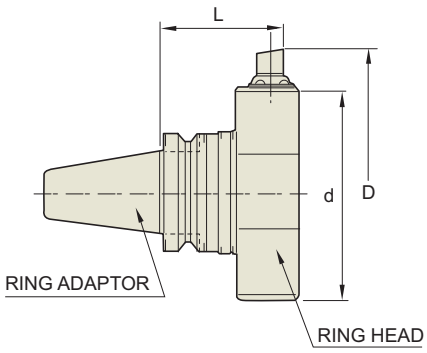


K	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

STYLE	CODE No.	FIG.	D		L1	L2	M1	C1	C2	MICRO UNIT	Weight (kg)
			Min	Max							
32	ST32-BCA13.5-75	1	13.5	16	135	75	67	12	13	M1B2E/F	0.5
	ST32-BCA14.5-75	1	14.5	17	145	75	67	12	14	M1B2E/F	0.5
	ST32-BCA16-90	1	16	22.5	160	90	82	14	15	M1A2E/F	0.5
	ST32-BCA19-90	1	19	23.0	160	90	82	16	18	M2B-2XC	0.5
	ST32-BCA23-120	1	23	29.0	190	120	110	19	22	M3B-2XT	1
	ST32-BCA29-120	1	29	41.0	190	120	110	25	28	M3A-2XT	1
	ST32-BCA38-120	2	38	49.0	190	120	115	33	35	M5B-2XT	1.5
	ST32-BCA46-120	2	46	66	190	120	115	38	–	M5A-2XT	1.5
	ST32-BCA62-120	2	62	87.0	190	120	115	51	–	M7A-2XT	2.5
42	ST42-BCA13.5-85	1	13.5	16	165	85	67	12	13	M1B2E or F	1.0
	ST42-BCA14.5-85	1	14.5	17	165	85	67	12	14	M1B2E or F	1.0
	ST42-BCA16-100	1	16	22.5	180	100	82	14	15	M1A2E or F	1.0
	ST42-BCA19-100	1	19	23.0	180	100	82	16	18	M2B2E or F	1.0
	ST42-BCA23-120	1	23	29.0	200	120	110	19	22	M3B-2XT	1.5
	ST42-BCA29-120	1	29	41.0	200	120	110	25	28	M3A-2XT	1.5
	ST42-BCA38-130	1	38	49.0	210	130	125	33	35	M5B-2XT	1.5
	ST42-BCA46-135	1	46	66.0	215	135	130	38	44	M5A-2XT	1.5
	ST42-BCA62-135	2	62	87.0	215	135	130	51	–	M7A-2XT	2.5
	ST42-BCA83-150	2	83	108	230	150	145	63	–	M7A-2XT	3.0

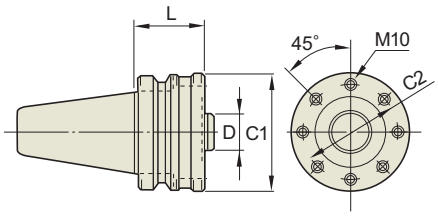
LARGE SIZE MICRO CUT BORING BAR(BRA)

MAS403-BT



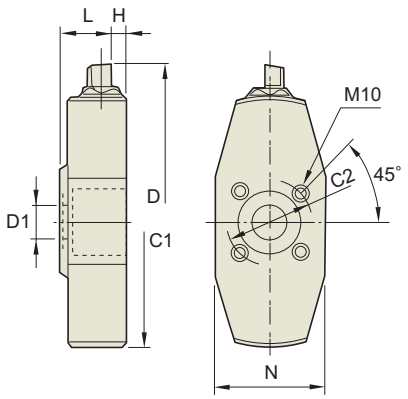
■ BORING RING HOLDER

CODE NO.	d	D	L
BT50-BRA140-105	140	197	105
BT50-BRA140-165	140	197	165
BT50-BRA191-105	191	248	105
BT50-BRA191-165	191	248	165
BT50-BRA242-105	242	299	105
BT50-BRA242-165	242	299	165
BT50-BRA293-105	293	350	105
BT50-BRA293-165	293	350	165
BT50-BRA344-105	344	401	105
BT50-BRA344-165	344	401	165
BT50-BRA395-105	395	452	105
BT50-BRA395-165	395	452	165



■ RING ADAPTER

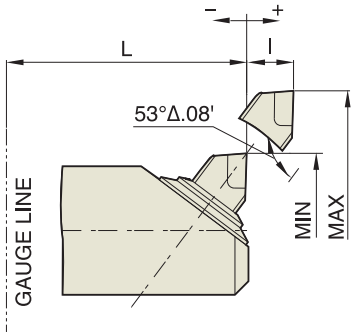
CODE NO.	D(h6)	L	C1	C2
BT50-RAA32- 60	32	60	102	82
BT50-RAA32-120	32	120	102	82

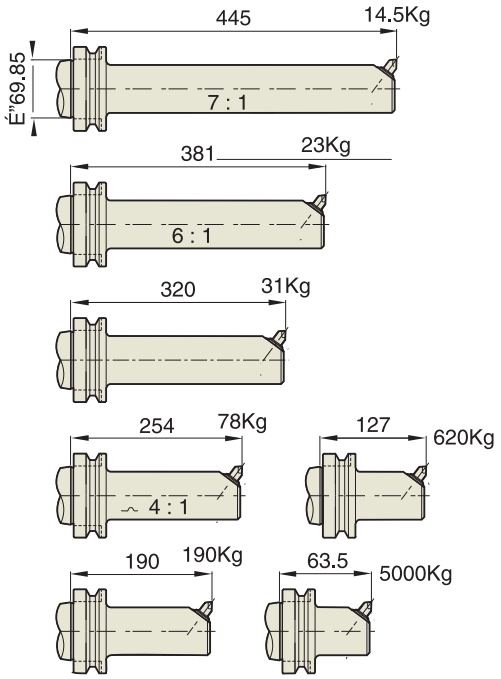


■ RING HEAD

CODE No.	D1(H7)	D		L	C1	C2	H	N	MICRO UNIT
		Min	Max						
RH32-BCA140	32	140	197	45	102	82	14	–	M10A2XT
RH32-BCA191	32	191	248	45	136	82	14	–	M10A2XT
RH32-BCA242	32	242	299	45	184	82	14	103	M10A2XT
RH32-BCA293	32	293	350	45	234	82	14	103	M10A2XT
RH32-BCA344	32	344	401	45	284	82	14	103	M10A2XT
RH32-BCA395	32	395	452	45	36	82	14	103	M10A2XT

STRENGTH OF BORING BAR AND COMPARISON TABLE OF MICRO UNITS

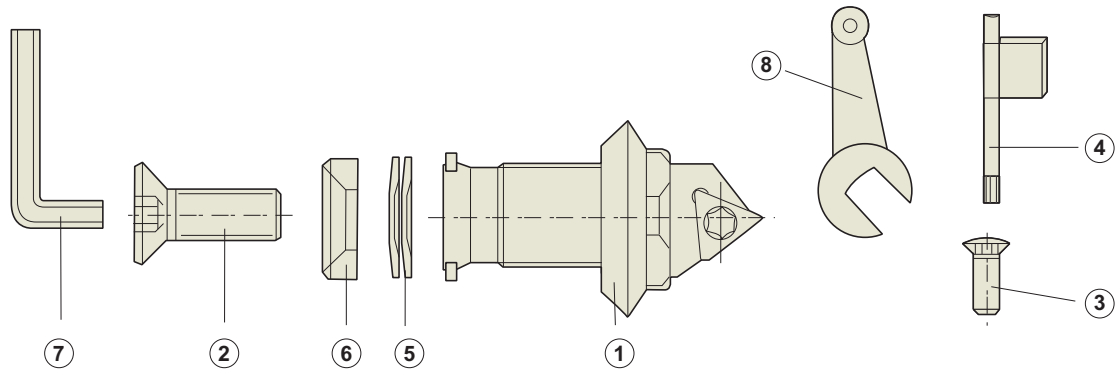




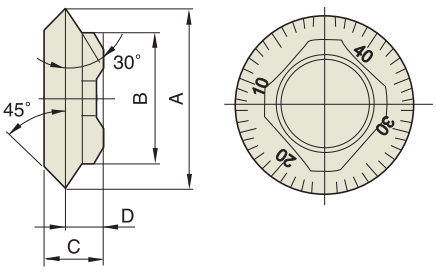
BORING BAR CODE NO.	BRAZED TYPE B EF		SCREW ON TYPE			Insert Spec
	MIN	MAX	MIN	MAX	⊿L	
BCA 19	M2B2	M2B2				CCGT0401
	19	23			-1.9	CCGT0401
BCA 23	M3B2	M3B2	M3B2XT	M3B2XT	M3B2XT	TBGT 060102
	23	29	24.9	30.9	-1.9	TBGT 060102
BCA 29	M3A2	M3A2	M3A2XT	M3A2XT	M3A2XT	TBGT 060102
	29	41.8	30.9	43.8	-1.9	TBGT 060102
BCA 38	M5B2	M5B2	M5B2XT	M5B2XT	M5B2XT	TCMT 110204
	38	49.2	40.9	52.1	-1.9	TCMT 110204
BCA 46	M5A2	M5A2	M5A2XT	M5A2XT	M5A2XT	TCMT 110204
	46	66.6	48.9	69.5	-1.9	TCMT 110204
BCA 62	M7A2	M7A2	M7A2XT	M7A2XT	M7A2XT	TCMT 16T304
	62	87.4	62	87.4	0	TCMT 16T304
BCA 83	M7A2	M7A2	M7A2XT	M7A2XT	M7A2XT	TCMT 16T304
	83	108.4	83	108.4	0	TCMT 16T304
BCA 98	M10A2	M10A2	M10A2XT	M10A2XT	M10A2XT	TCMT 16T304
	98	142.4	98	142.4	0	TCMT 16T304
BCA 132	M10A2	M10A2	M10A2XT	M10A2XT	M10A2XT	TCMT 16T304
	132	176.4	132	176.4	0	TCMT 16T304
BCA 166	M10A2	M10A2	M10A2XT	M10A2XT	M10A2XT	TCMT 16T304
	166	210.4	166	210.4	0	TCMT 16T304
BCA 200	M10A2	M10A2	M10A2XT	M10A2XT	M10A2XT	TCMT 16T304
	200	244.4	200	244.4	0	TCMT 16T304

TOOL HOLDERS

MICRO UNIT SPARE PART

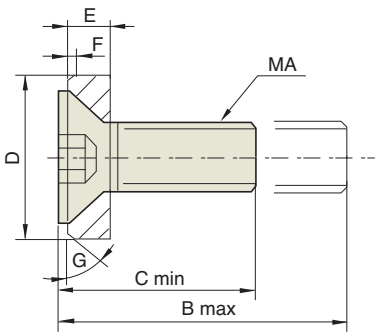


PART NAME / ORDER NO.			M1A-B	M2A-B	M3A-B	M5A-B	M5A-B	M7A-B	M10A-B
1	DIAL NUT	Slant Angle	1-40	2-40	3-40	5-40	5-40	7-80	10-80
		Right Angle	1-50	2-50	3-50	5-50	5-50	7-100	10-100
2	CARTRIDGE BOLT	M-A	F-M3-0.5-8	F-M3-0.5-12	F-M4-0.7-15	F-M6-1.0-25	F-M6-1.0-25	F-M10-1.5-30	M12-1,75-50
		M-B	M-M3-0.5-6	M-M3-0.5-10	M-M4-0.7-12	M-M6-1.0-20	M-M6-1.0-20	M-M10-1.5-25	M12-1,75-35
3	INSERT SCREW		S1845L5	S1845L5	S2045L6	S2555L6	S2555L6	S4095L6	S4095L6
4	T-WRENCH		T6	T6	T6	T8	T8	T15	T15
5	SPRING WASHER			CB-2	CB-3	CB-5	CB-5	CB-7	CB-10
6	MOUNTING WASHER			2306	3306	5306	5306	7306	10306
7	L-WRENCH		WR-2	WR-2	WR-2.5	WR-4	WR-4	WR-6	WR-8
8	SPANNER		GS12	GS12	GS35	GS35	GS35	GS710	GS710



GRADUATED DIAL UNIT

SIZE	A	B	C	D
M1	9.53	6.99	4.45	2.54
M2	12.7	9.53	5.08	3.30
M3	15.88	11.3	5.59	3.56
M5	25.4	19.05	8.76	4.83
M7	34.93	25.40	11.68	7.11
M10	44.45	34.93	13.84	7.49



LOCK SCREW AND WASHER

SIZE	A	B	C	D	E	F	G
M1	M3	8	6	-	-	-	-
M2	M3	12	10	7.82	1.83	0.5	45°
M3	M4	15	12	10.9	2.46	1.0	45°
M5	M6	25	20	15.7	4.32	0.8	37°
M7	M10	30	25	23.7	6.35	1.30	37°
M10	M12	50	35	31.6	7.92	2.5	37°

SQUARE BORING BAR (45˚)
VIERKANT - BOHRSTANGE (45˚)

MAS403-BT

FIG.1

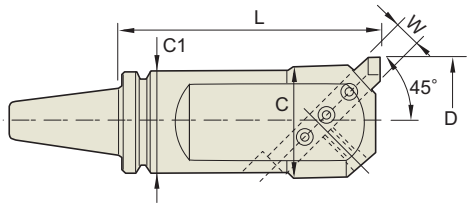
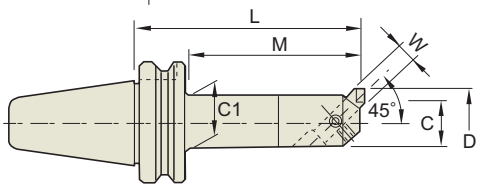


FIG.2



MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

TAPER No.	CODE No.	D		L	C	C1	W	M	Weight (kg)
		Min	Max						
30	BT30-BSA25-120	25	38	120	20	22	8	90	1.0
	BT30-BSA30-135	30	42	135	24	26	8	105	1.1
	BT30-BSA38-150	38	52	150	30	33	10	120	1.4
	BT30-BSA42-150	42	56	150	34	37	10	125	1.6
	BT30-BSA50-150	50	65	150	40	44	13	125	1.8
40	BT40-BSA25-135	25	38	135	20	22	8	108	1.3
	BT40-BSA30-165	30	42	165	24	26	8	138	1.5
	BT40-BSA38-180	38	52	180	30	33	10	153	1.8
	BT40-BSA42-210	42	56	210	34	37	10	183	2.3
	BT40-BSA50-180	50	65	180	40	44	13	153	2.4
	BT40-BSA50-225	50	65	225	40	44	13	198	2.9
	BT40-BSA62-180	62	90	180	50	54	16	153	3.2
	BT40-BSA62-240	62	90	240	50	54	16	213	4.2
	BT40-BSA72-180	72	110	180	60	63	19	153	4.4
	BT40-BSA72-240	72	110	240	60	63	19	213	5.7
	BT40-BSA90-180	90	125	180	75	63	19	153	5.4
50	BT50-BSA25-135	25	38	135	20	22	8	95	4.4
	BT50-BSA30-165	30	42	165	24	26	8	125	4.6
	BT50-BSA38-180	38	52	180	30	33	10	140	4.8
	BT50-BSA42-210	42	56	210	34	37	10	170	5.0
	BT50-BSA50-180	50	65	180	40	44	13	140	5.4
	BT50-BSA50-240	50	65	240	40	44	13	200	5.7
	BT50-BSA62-195	62	90	195	50	54	16	155	6.1
	BT50-BSA62-270	62	90	270	50	54	16	230	7.5
	BT50-BSA72-195	72	110	195	60	66	19	155	6.9
	BT50-BSA72-285	72	110	285	60	66	19	245	9.3
	BT50-BSA90-210	90	125	210	75	80	19	170	9.2
	BT50-BSA90-300	90	125	300	75	80	19	260	12.3
	BT50-BSA105-195	105	160	195	90	90	25	157	10.5
	BT50-BSA105-285	105	160	285	90	90	25	247	14.8

TOOL HOLDERS

BSB

SQUARE BORING BAR (90°)
VIERKANT - BOHRSTANGE (90°)

MAS403-BT

FIG.1

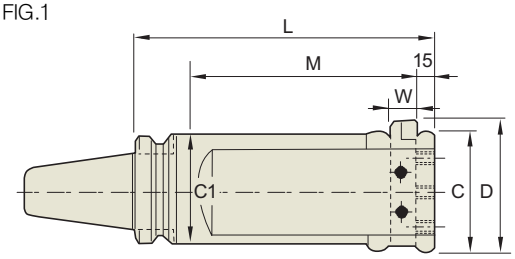
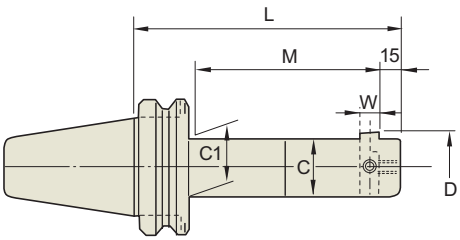


FIG.2

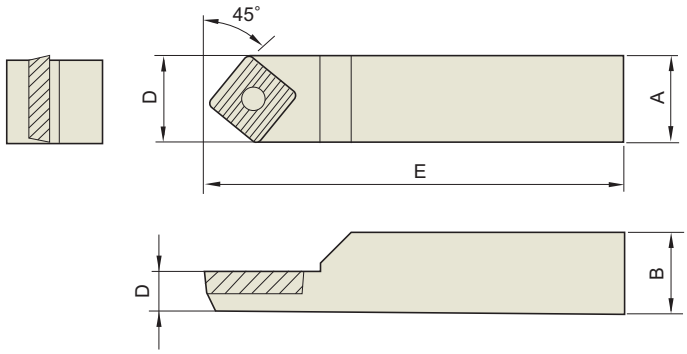


MAS403 -BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3			

TAPER No.	CODE No.	D		L	C	C1	W	M	Weight (kg)
		Min	Max						
30	BT30-BSB25-120	25	50	120	20	22	8	90	1.1
	BT30-BSB38-150	38	70	150	30	33	10	120	1.5
	BT30-BSB50-150	50	90	150	40	44	13	125	2.2
40	BT40-BSB25-135	25	50	135	20	22	8	108	1.3
	BT40-BSB38-180	38	70	180	30	33	10	153	1.9
	BT40-BSB50-180	50	90	180	40	44	13	153	2.6
	BT40-BSB50-225	50	90	225	40	44	13	198	3.1
	BT40-BSB62-180	62	115	180	50	56	16	153	3.4
	BT40-BSB62-225	62	115	225	50	56	16	198	4.1
	BT40-BSB72-180	72	135	180	60	66	19	153	4.7
	BT40-BSB72-225	72	135	225	60	66	19	198	5.6
	BT40-BSB90-180	90	150	180	75	80	19	153	5.7
	BT40-BSB90-225	90	150	225	75	80	19	198	6.6
50	BT50-BSB25-135	25	50	135	20	22	8	95	4.1
	BT50-BSB38-180	38	70	180	30	33	10	140	4.8
	BT50-BSB50-180	50	90	180	40	44	13	140	5.5
	BT50-BSB50-240	50	50	240	40	44	13	200	5.7
	BT50-BSB62-195	62	115	195	50	56	16	155	6.4
	BT50-BSB62-270	62	115	270	50	56	16	230	7.9
	BT50-BSB72-195	72	135	195	60	66	19	155	7.3
	BT50-BSB72-285	72	135	285	60	66	19	245	9.6
	BT50-BSB90-210	90	150	210	75	80	19	170	9.6
	BT50-BSB90-300	90	150	300	75	80	19	260	12.6
	BT50-BSB105-195	105	190	195	90	–	25	155	11.1
	BT50-BSB105-285	105	190	285	90	94	25	245	15.4

BSA

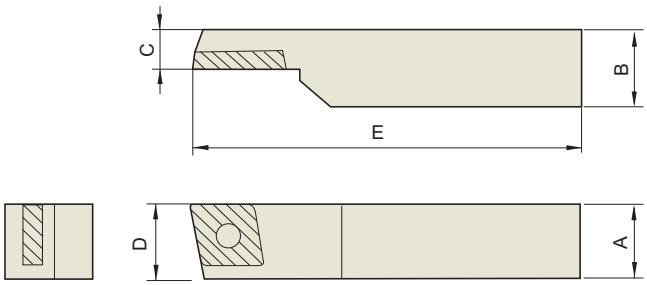
SQUARE BITE



Size \ classification	A	B	C	D	E	SCREW	WRENCH	INSERT
SBC08-45	08	08	6.3	8.39	70	SSB-2506	T7	CCMT0602
SBC10-45	10	10	7	10.39	70	SSB-2506	T7	CCMT0602
SBC13-45	13	13	10	13.6	80	SSB-4009	T15	CCMT09T3
SBC16-45	16	16	11	16.68	100	SSB-5012	T15	CCMT1204
SBC19-45	19	19	11	19.68	100	SSB-5012	T15	CCMT1204
SBC25-45	25	25	12.5	25.68	120	SSB-5012	T15	CCMT1204

BSB

SQUARE BITE

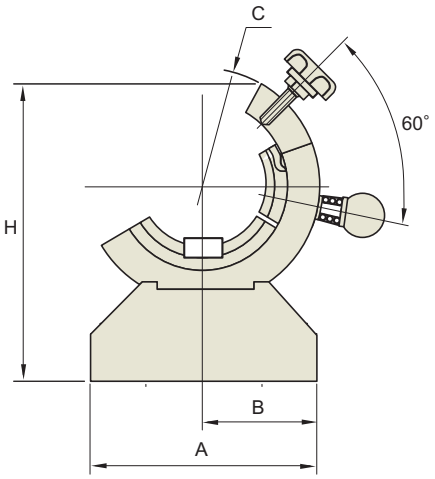


Size \ classification	A	B	C	D	E	SCREW	WRENCH	INSERT
SBC08-90	08	08	6.3	8.4	70	SSB-2506	T7	CCMT0602
SBC10-90	10	10	7	10.4	70	SSB-2506	T7	CCMT0602
SBC13-90	13	13	10	13.6	80	SSB-4009	T15	CCMT09T3
SBC16-90	16	16	11	16.7	100	SSB-5012	T15	CCMT1204
SBC19-90	19	19	11	19.7	100	SSB-5012	T15	CCMT1204
SBC25-90	25	25	12.5	25.7	120	SSB-5012	T15	CCMT1204

TOOL HOLDERS

TCP

TOOL CLAMPER
MONTAGEVORRICHTUNGEN

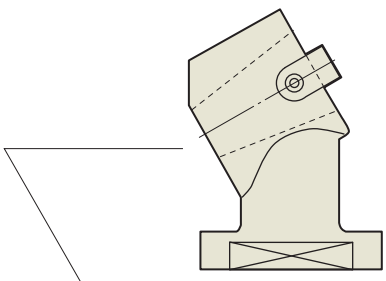


Flange Clamping	Taper Clamping
YES	NO

TAPER No.	CODE No.	A	B	C	H	Weight (kg)
BT30	**TCP30**	125	65	108	135	3.0
BT40	**TCP40**	160	80	138	180	7.6
BT50	**TCP50**	180	90	165	205	8.6
SK30	**TSK30**	125	65	108	135	3.0
SK40	**TSK40**	160	80	138	180	7.6
SK50	**TSK50**	180	90	165	205	8.6

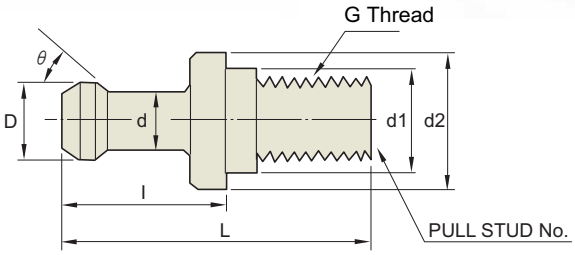
■ FEATURES

1. No surface damage such as abrasion and scratch around taper shank closely associated with tool runout
2. Easy to assemble and disassemble pull stud bolt
3. Convenient and safe when using spanner wrench with milling chuck or
   ER collet chuck



Severe damage to taper shank due to foreign substances inside sleeve

PULL STUD BOLT
ANZUGBOLZEN



CODE No.	D	d2	d1	d	L	l	G	θ	TYPE
PS-1	15	23	17	10	60	35	M16	45°	BT40- I standard type
PS-2	15	23	17	10	60	35	M16	60°	BT40- II standard type
PS-5	23	38	25	17	85	45	M24	45°	BT50- I standard type
PS-6	23	38	25	17	85	45	M24	60°	BT50- II standard type
PS-16	11	16.5	12.5	7	43	23	M12	45°	BT30- I standard type
PS-17	11	16.5	12.5	7	43	23	M12	60°	BT30- II standard type
PS-0	23	38	25	17	85	45	M24	90°	For BT50 OKK
PS-08	15	23	17	10	60	35	M16	90°	For BT40 OKK
PS-P	24	36	25	18	71	31	M24	90°	For BT50 MITISUI SEIKI
PS-P5	15	23	17	10	50	25	M16	90°	For BT40 MITISUI SEIKI
PS-G41	29	37	25	21	65.2	25.2	M24	45°	For BT50 MASAK
PS-G51	18.8	22	17	12	44.1	19.1	M16	45°	For BT40 MASAK
PS-S2	25	39	25	18	95	55	M24	60°	For SHIN NIPPON KOKI
PS-F1	23	39	25	18	104	64	M24	45°	For MITSUBISHI
PS-B1	22	38	25	16	112	72	M24	60°	For OKUMA
PSS-1	19	23	17	14	54	26	M16	75°	For SK40
PSS-5	28	36	25	21	74	34	M24	75°	For SK50

▶ Other special sizes of hydraulic chucks will be manufactured.
▶ Through hole type ("H" type) is available upon request .

COMPARISON TABLE OF PULL STUD

MACHINE MANUFACTURER	PS / BOLT	PS / BOLT	PS / BOLT
DOOSAN	ACE-TC400	BT30	PS-16
	ACE-TC320D	BT30	PS-16
	Mynx NM410	BT40	PS-1
	Mynx 410	BT40	PS-5
	Mynx 500	BT50	PS-5
	Mynx 650	BT50	PS-5
	Mynx 750	BT50	PS-1
	ACE-VM5410/510	BT40	PS-1
	ACE-VM710	BT50	PS-5
	ACE-VM900/950	BT50	PS-1
	ACE-V430	BT40	PS-1
	ACE-VC500	BT40	PS-1
	ACE-VMD450	BT40	PS-1
	ACE-VMD600	BT40	PS-1

MACHINE MANUFACTURER	PS / BOLT	PS / BOLT	PS / BOLT
DOOSAN	NR 510M	BT50	PS-5
	NR 700	BT50	PS-5
	VM560/50	BT50	PS-5
	VM 70(H)	BT50	PS-5
	VM 84	BT50	PS-5
	VM 925L	BT50	PS-5
	NX 5000	BT50	PS-5
	ACE-HC400/500	BT40	PS-1
	ACE-HM500/630/800	BT50	PS-5
	ACE-H100	BT50	PS-5
	ACE-HP4000/5100	BT40	PS-1
	ACE-HP400	BT40	PS-1
	ACE-HP500/630	BT50	PS-5

PULL STUD BOLT

COMPARISON TABLE OF PULL STUD

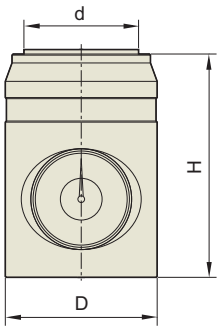
MACHINE MANUFACTURER	PS / BOLT	PS / BOLT	PS / BOLT
WIA	VX380T/420T	BT30	PS-16
	MX380/420	BT30	PS-16
	VX400/460	BT40	PS-1
	KV45/45P	BT40	PS-1
	VX500	BT40	PS-1
	VX510M/660M	BT40	PS-1
	VX700/40	BT40	PS-1
	VX700/50	BT50	PS-5
	VX750	BT50	PS-5
	VX500/50	BT50	PS-6
	KV60N/90	BT50	PS-5
SEMC	Any Mill LCV30A/B	BT30	PS-17
	Any Mill LCV55S	BT50	PS-6
	Any Mill LCV650S	BT50	PS-5
	Any Mill ICV66	BT50	PS-5
	Any Mill ICV80	BT50	PS-5
	DMC-3000	BT50	PS-0
	PCH40	BT40	PS-1
	PCH50	BT50	PS-5
HWACHEON	SIRIUS-1	BT30	PS-16
	SIRIUS-550	BT40	PS-1
	SIRIUS-UL/ULG	BT40	PS-1
	SIRIUS-7040	BT50	PS-0

MACHINE MANUFACTURER	PS / BOLT	PS / BOLT	PS / BOLT
HWACHEON	SIRIUS-650/650N	BT50	PS-0
	SIRIUS-850/850N	BT50	PS-0
	SIRIUS-700	BT50	PS-0
	SIRIUS-12580	BT50	PS-0
S&T	TCH-45	BT40	PS-1
	TCH-50	BT50	PS-6
	TCH-80	BT50	PS-6
	TCH-80TS	BT50	PS-6
	FX-500H	BT40	PS-2
	TNV-40A	BT40	PS-1
	TNV-80A	BT40	PS-1
	TNV-650V	BT50	PS-6
HASS	TM-1/2	BT40	PS-1
	VF-4SS/3SS/2SS	BT40	PS-1
	VF-2TR	BT40	PS-1
	VF-5/50TR	BT50	PS-5
	VF-9/50	BT50	PS-5
	VF-8/50	BT50	PS-5
MAZAK		BT40	PS-G51
		BT50	PS-G41
MORI SEKI		BT40	PS-08
		BT50	PS-51

MHP-100/HP-100

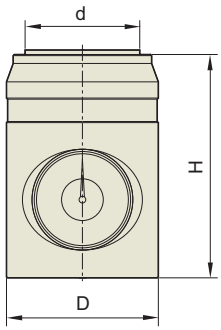
HEIGHT PRESETTER

· Magnetic Height Pesetter



* Both vertical and horizontal type usable
* Slim design

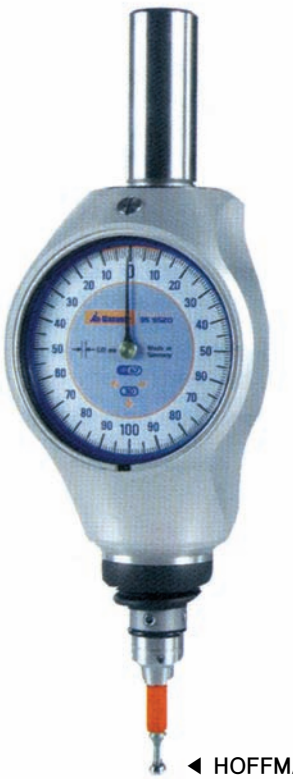
· Height Presetter



* Exclusively for vertical

CODE NO.	D	H	d	DIAL
MHP-100 (magnetic)	98	100	62	0.01
HP-100	68	100 ± 0.01	62	0.01

3D TESTER



◀ HOFFMANN (GERMANY)

1. Measurement of inner diameter and outer diameter in all 3 axes(X,Y,Z) with analogue values indicated by scale hand and quick zero setting. When measuring edge in all 3 axes(X,Y,Z) with scale hand indicating 12H, spindle axis is exactly situated at zero point of material to be cut. Calculation is not needed and there is no trial and error.
2. Wide common use : Such as functioning as calipers with single tool (Determining length, height, diameter and center)
3. Various use and quick exchange by 3 kinds of styluses : Special tool is not needed and screw doesn't need unfastening. So it is convenient and accurate plug-in fixed mechanism. (Readjustment is not needed when exchanging same styluses)
4. Max 0.01mm center is pre-adjusted before supplying.

TECHNICAL DETAILS

Display accuracy	Tolerance	0.01
Measuring accuracy	measured tolerance	0.01
Displacement travel x,y,z respectively	measurement range	7
Overall length (body and contact point)	Overall length	134
Display	Outer diameter size	50
Clamping shank	T8	16

ZERO MASTER

▲ HAIMER(GERMANY)

▶ QUICK ZERO SETTING FOR ALL MACHINES AND EDM

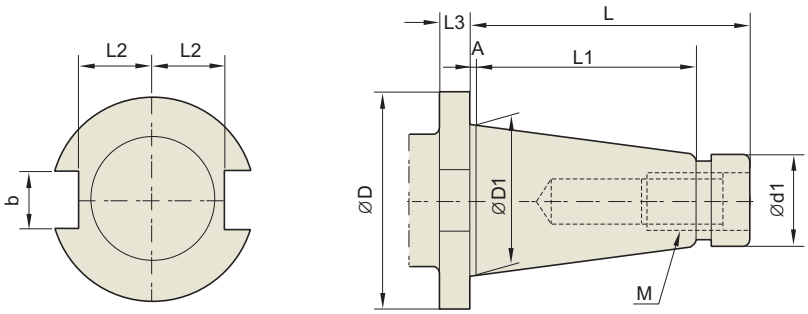
- -Easy to read and no detection error by special digital specifications
- -Measurement of inner and outer diameters in all 3 axes(X,Y,Z) and quick zero setting
- -Functioning as calipers with single tool (Determining length, height, diameter and center)
- -Reducing damage by 2 kinds of styluses with wide operation range
- -Reducing damage by 2 kinds of styluses with wide operation range

TECHNICAL DETAILS

ACCURACY	0.01mm
SIZE	30×13mm
NOTCH	0.01mm
CLAMPING SHANK	Ø12
RANGE	100mm
BATTERY DURATION	3.00/hr

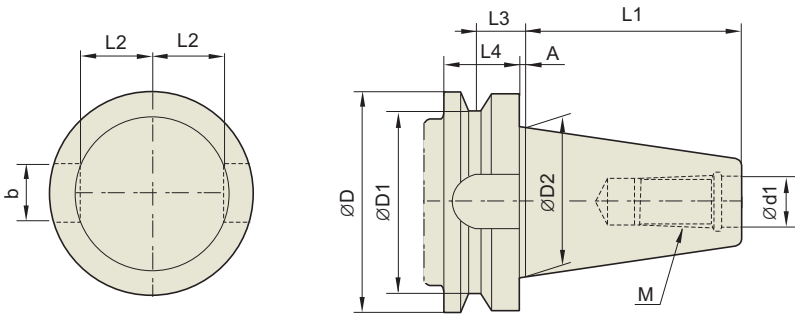
TOOL HOLDERS

DIN 2080 - NT



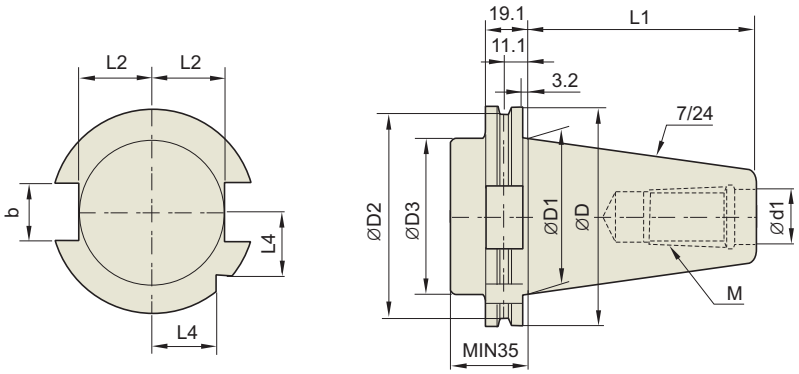
TAPER No.	ØD	ØD1	ØD2	L	L1	L2	L3	A	b	M
NT30	46	31.75	17.4	68.4	48.4	16.2	10	1.6	16.1	1/2-13UNC
NT40	63	44.45	25.3	93.4	65.4	22.5	10	1.6	16.1	UNC 5/8-11
NT50	100	69.85	39.6	126.8	101.8	35.3	12	3.2	25.7	UNC 1-8
NT60	155	107.95	60.2	206.8	161.8	60	15	3.2	25.7	UNC 1,1/4-7

MAS 403-BT Bottle Grip Taper



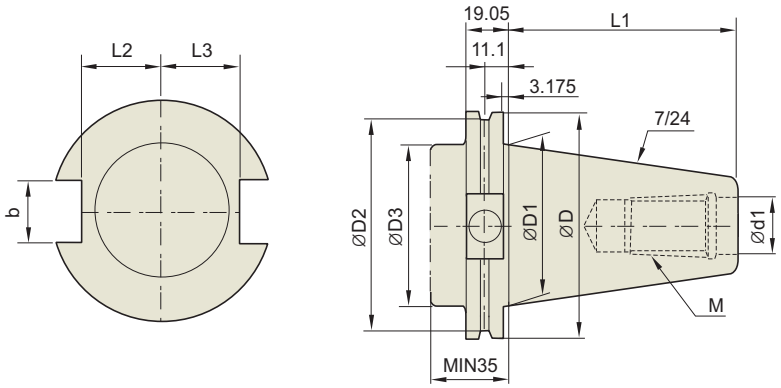
TAPER No.	ØD	ØD1	ØD2	Ød1	L1	L2	L3	L4	A	b	M
BT30	46	31.75	38	12.5	48.4	16.3	13.6	20	2	16.1	M12×1.75
BT40	63	44.45	53	17	65.4	22.6	16.6	25	2	16.1	M16×2
BT50	100	69.85	85	25	101.8	35.4	23.2	35	3	25.7	M24×3
BT60	155	107.95	135	31	161.8	60.1	28.2	45	3	25.7	M30×3.5

DIN 69871 - SK



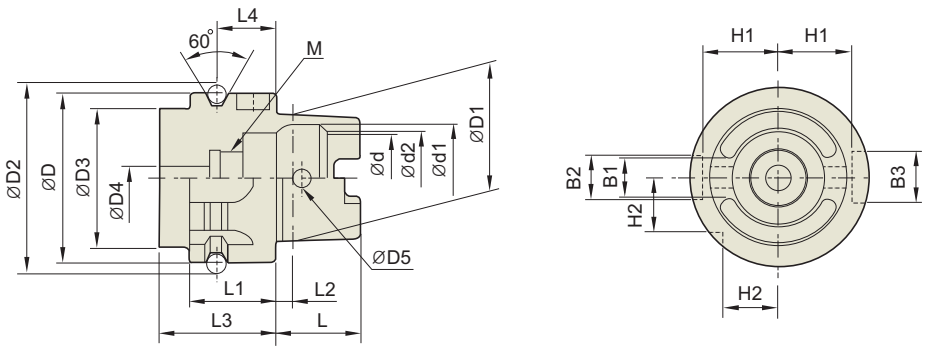
TAPER No.	ØD	ØD1	ØD2	ØD3	Ød1	L1	L2	L3	L4	b	M
SK30	50	31.75	44.3	45	13	47.8	16.4	19	15	16.1	M12×1.75
SK40	63.55	44.45	56.25	50	17	68.4	22.8	25	18.5	16.1	M16×2.0
SK50	97.5	69.85	91.25	80	25	101.75	35.5	37.7	30	25.7	M24×3.0

CAT SHANK ANSI B5.50 CH



TAPER No.	ØD	ØD1	ØD2	ØD3	Ød1	L1	L2	L3	b	M
CAT30	50	31.75	44.3	31.75	13	47.625	16.25	18.67	16.1	UNC1/2-13
CAT40	63.55	44.45	56.25	44.45	17	68.25	22.60	25	16.1	UNC5/8-11
CAT50	97.5	69.85	91.25	70.1	25	101.6	35.3	37.7	25.7	UNC1-18
CAT60	155	107.95	132.56	108	32	161.93	54	59.3	25.7	UNC1,1/4-7

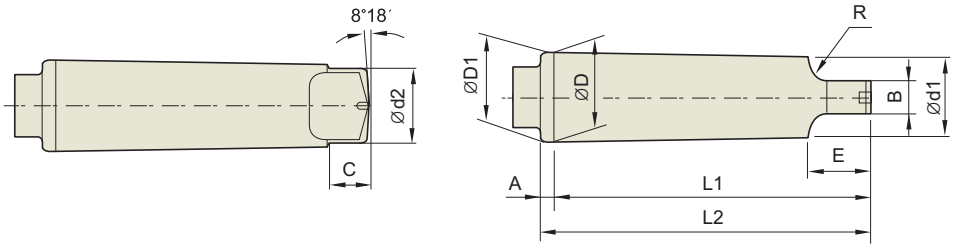
DIN69893 - HSK



TAPER No.	ØD	ØD1	ØD2	ØD3	ØD4	ØD5	L	L1	L2	L3	L4
HSK 40A	40	30	45.00	34	5.0	4.6	20	20	4.0	35	16
HSK 50A	50	38	59.30	42	6.8	6.0	25	26	5.0	42	18
HSK 63A	63	48	72.30	53	8.4	7.5	32	26	6.3	42	18
HSK100A	100	75	109.75	85	12.0	12.0	50	29	10.0	45	20

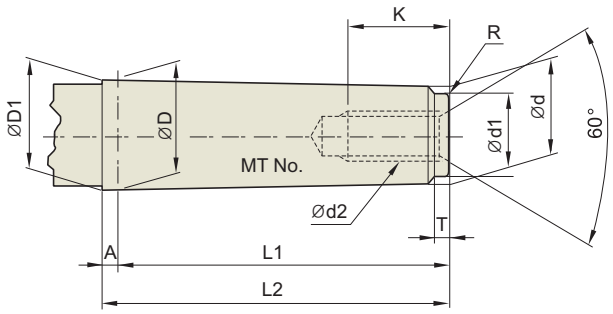
TAPER No.	Ød	Ød1	Ød2	B1	B2	B3	H1	H2	M
HSK 40A	21	25.5	23	8.05	11	9	17.0	12.0	M12×1.0
HSK 50A	26	32.0	29	10.54	14	12	21.0	15.5	M16×1.0
HSK 63A	34	40.0	37	12.54	18	16	26.5	20.0	M18×1.0
HSK100A	53	63.0	58	20.02	22	20	44.0	31.5	M24×1.5

MORSE TAPER - TANG TYPE



TAPER	TAPER	TAPER ANGLE(α)	ØD	A	ØD1	Ød1	L1	L2	Ød2	B	C	E	R
MT0	1/19.212	1°29′ 27″	9.045	3	9.201	6.104	56.5	59.5	6.0	3.9	6.5	10.5	4
MT1	1/20.047	1°25′ 43″	12.065	3.5	12.240	8.972	62.0	65.5	8.7	5.2	8.5	13.5	5
MT2	1/20.020	1°25′ 50″	17.780	5	18.030	14.034	75.0	80.0	13.5	6.3	10	16	6
MT3	1/19.922	1°26′ 16″	23.825	5	24.076	19.107	94.0	99.0	18.5	7.9	13	20	7
MT4	1/19.254	1°29′ 15″	31.267	6.5	31.605	25.164	117.5	124.0	24.5	11.9	16	24	8
MT5	1/19.002	1°30′ 26″	44.399	6.5	44.741	36.531	149.5	156.0	35.7	15.9	19	29	10
MT6	1/19.180	1°29′ 36″	63.348	8	63.765	52.399	210.0	218.0	51.0	19.0	27	40	13
MT7	1/19.231	1°29′ 22″	83.058	10	83.578	68.186	286.0	296.0	66.8	28.6	35	54	19

MORSE TAPER - SCREW TYPE



TAPER	TAPER	TAPER ANGLE(α)	ØD	A	ØD1	d	L1	L2	Ød1	d2	K	T	R
MT0	1/19.212	1°29′ 27″	9.045	3	9.201	6.442	50	53	6.4	-	-	4	0.2
MT1	1/20.047	1°25′ 43″	12.065	3.5	12.230	9.396	53.5	57	9.4	M6	16	5	0.2
MT2	1/20.020	1°25′ 50″	17.780	5	18.030	14.583	64	69	14.6	M10	24	5	0.2
MT3	1/19.922	1°26′ 16″	23.825	5	24.076	19.759	81	86	19.8	M12	28	7	0.6
MT4	1/19.254	1°29′ 15″	31.267	6.5	31.605	25.943	102.5	109	25.9	M16	32	9	1
MT5	1/19.002	1°30′ 26″	44.399	6.5	44.741	37.584	129.5	136	37.6	M20	40	9	2.5
MT6	1/19.180	1°29′ 36″	63.348	8	63.765	53.859	182	190	53.9	M24	50	12	4
MT7	1/19.231	1°29′ 22″	83.058	10	83.578	70.058	250	260	70.0	M33	80	18.5	5

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