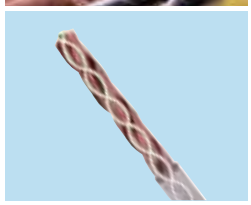
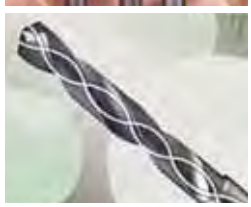
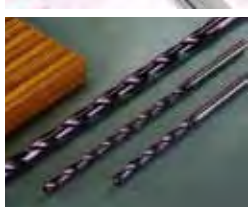
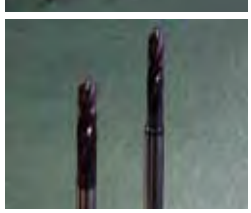
YG

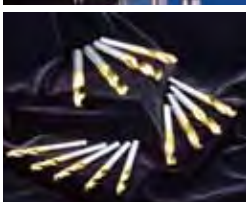
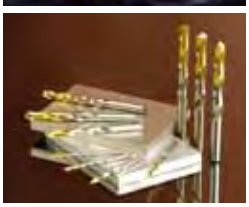
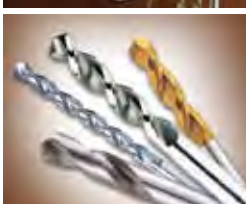
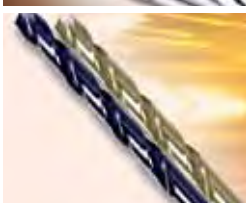
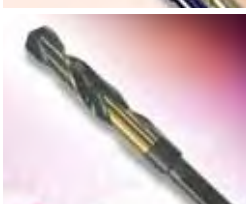
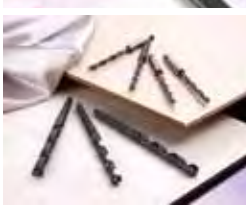
CUTTING TOOLS



DRILLING

	PRODUCTS	DESCRIPTION	PAGE
	**i-DREAM DRILLS CARBIDE INSERTS**	- For Steels and Stainless Steel Alloys	**41**
	**SOLID CARBIDE DREAM DRILLS - GENERAL**	- With & without Coolant Holes General Purpose HRc30 to HRc50	**55**
	**SOLID CARBIDE DREAM DRILLS - HIGH FEED**	- 1.5 to 2 times faster feeding speed than 2 Flute drills	**83**
	**SOLID CARBIDE DREAM DRILLS - INOX (with Coolant Holes)**	- With Coolant Holes for Stainless Steels, Nickel Alloys and Titanium up to HRc35	**93**
	**SOLID CARBIDE DREAM DRILLS - ALU (with Coolant Holes)**	- With Coolant Holes for Aluminum & Aluminum Alloys	**109**
	**SOLID CARBIDE DREAM DRILLS - CFRP**	- For Composite Materials including CFRP, GFRP	**117**
	**SOLID CARBIDE DREAM DRILLS - MQL TYPE (with Coolant Holes)**	- With Coolant Holes - Minimum Quantity Lubrication - For Drilling Deep Holes 10D, 15D & 20D	**123**
	**SOLID CARBIDE DREAM DRILLS - For HIGH HARDENED STEELS**	- For High Hardened Steels, HRc50~HRc70	**131**
	**STANDARD CARBIDE DRILLS**	- General Purpose - 118° Point	**139**

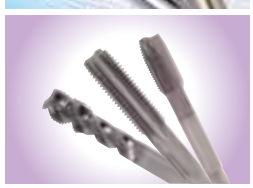
DRILLING

	PRODUCTS	DESCRIPTION	PAGE
	**HSS-PM MULTI-1 DRILLS**	- Multi Purpose Drilling. Particularly for Stainless Steels, Titanium	**147**
	**HPD DRILLS**	- For Stainless Steels	**155**
	**HSS GOLD-P DRILLS**	- Gold-P Coating	**165**
	**HSS STRAIGHT SHANK DRILLS**	- General Purpose	**185**
	**AIRCRAFT DRILLS**	- 6 and 12 inch Length Drills	**207**
	**SILVER & DEMING DRILLS**	- 118° Split Point 3 Flats Black and Gold	**217**
	**HSS MORSE TAPER SHANK DRILLS**	- General Purpose Standard Length	**223**
	**HSS (8% Cobalt) NC-SPOTTING DRILLS**	- HSS(8% Cobalt) Centering and Chamfering of Holes	**229**
	**HSS COMBINATION DRILL & COUNTER SINK / CENTER DRILL**	- Regular and Long Length	**235**

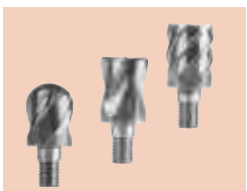
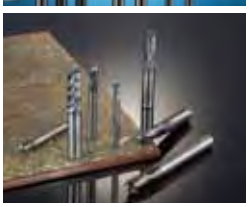
DRILLING

	PRODUCTS	DESCRIPTION	PAGE
	**CARBIDE & HSS-PM SPADE DRILLS**	- Carbide for Long Tool Life, and HSS-PM for General Machines and Large Diameters Higher Productivity than Other Drilling Tools	**239**
	TECHNICAL DATA		**283**

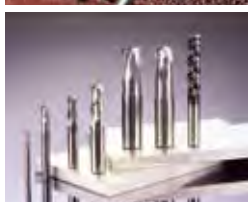
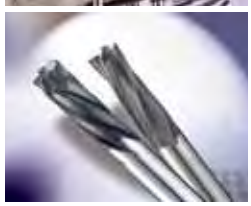
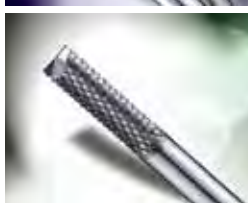
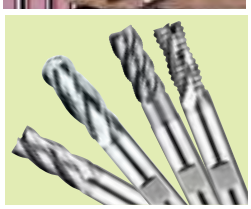
THREADING

	PRODUCTS	DESCRIPTION	PAGE
	**SOLID CARBIDE THREAD MILLS**	- For blind holes and through holes with one single tool - Higher cutting speed and feed than taps	**325**
	**COMBO TAPS**	- Multi Purpose tapping - YG-1's Patent - Super HSS & HSS-E for Prevention of Oversized Threads	**333**
	**SPIRAL FLUTE TAPS**	- Tapping Bling Holes - Super HSS, HSS-E, HSS-PM, HSS-V & HSS	**359**
	**SPIRAL POINT TAPS**	- Tapping Through Holes - Super HSS, HSS-E, HSS-PM, HSS-V & HSS	**397**
	**STRAIGHT FLUTE TAPS**	- Tapping Through & Blind Holes - Carbide, Super HSS & HSS	**439**
	**FORMING TAPS**	- Tapping by Forming Soft Materials (No Chips)	**459**
	**SCREW THREAD INSERT TAPS**	- Tapping STI Threads of Soft Materials (HSS-E)	**469**
	**PIPE TAPS**	- Tapping NPT, NPTF, NPS & NPSF threads	**479**
	TECHNIAL DATA		**489**

MILLING

	PRODUCTS	DESCRIPTION	
	**CBN END MILLS**	- Cubic Boron Nitride - For High Hardened Steels up to HRc70 - Mirror Finish	**557**
	**i-Xmill, CARBIDE INSERT END MILLS**	- For General Steels(~HRc50), Hardened Steels(up to HRc65) and Graphite	**563**
	**i-Smart MODULAR TYPE END MILLS**	- Exchangeable Modular Head for Semi-finishing and finishing - Pre-Hardened Steels up to HRc55	**581**
	**X5070 NANO SOLID CARBIDE END MILLS**	- For High Hardened Steels HRc45 to HRc70 - High Speed Machining - Dry Cutting	**595**
	**4G MILLS SOLID CARBIDE END MILLS**	- High Speed Cutting for Pre-Hardened Steels up to HRc55	**629**
	**X-POWER SOLID CARBIDE END MILLS**	- For Medium Steels and High Hardened Steels up to HRc70	**815**
	**JET-POWER SOLID CARBIDE & HSS-PM END MILLS**	- For Exotic Materials such as Stainless Steels, Nickel alloys and Titanium	**903**
	**TitaNox-POWER SOLID CARBIDE END MILLS**	- Silent Cutting for Stainless Steels up to HRc40 - Designed with Variable Leads - YG-1's Patent	**925**
	**V7 PLUS A SOLID CARBIDE END MILLS**	- Silent Cutting of Steels up to HRc40 Designed as Unequal Leads	**947**

MILLING

	PRODUCTS	DESCRIPTION	PAGE
	**V7 MILL INOX SOLID CARBIDE END MILLS**	- Silent Cutting for Stainless Steels up to HRc40 - Designed with Variable Leads - YG-1's Patent	**985**
	**ALU-POWER SOLID CARBIDE & HSS-PM END MILLS**	- For Aluminium Alloys with Silent Cutting - Mirror Surface	**1003**
	**D-POWER GRAPHITE SOLID CARBIDE END MILLS**	- Diamond Coated Carbide End Mills for Graphite	**1047**
	**D-POWER CFRP SOLID CARBIDE END MILLS**	- For Composite Materials including CFRP, GFRP	**1063**
	**CARBIDE ROUTERS**	- For Composite Materials including CFRP, GFRP	**1069**
	**STANDARD SOLID CARBIDE END MILLS**	- General Purpose	**1075**
	**ONLY ONE COATED PM60 END MILLS**	- Perfect solution to protect carbide chipping problems under vibrations	**1127**
	**SINE-POWER HSS END MILLS**	- High performance HSS Rougher for Titanium and Titanium Alloys	**1143**
	**TANK-POWER HSS-PM END MILLS**	- Next Generation of Powdered Metal End Mills - Higher Edge Strength & Feed Rates	**1149**

MILLING

	PRODUCTS	DESCRIPTION	PAGE
	**COBALT & HSS END MILLS**	- General Purpose, Non-coated, Any Coating Available	**1167**
	TECHNICAL DATA		**1251**

OTHER TOOLS

	PRODUCTS	DESCRIPTION	PAGE
	**TOOL HOLDERS**	- According to CAT + BT Standards	**1261**

i-DREAM DRILL - GENERAL

TOOL

HOLDER	ZB0302
INSERT	Y03B07

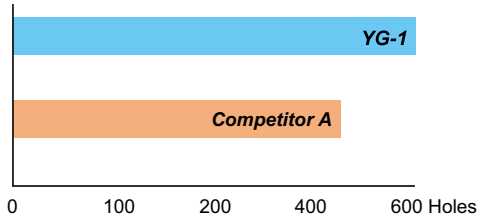
WORKPIECE - Structural Steels

ASTM	A36
DIN	St37-2
JIS	SS400

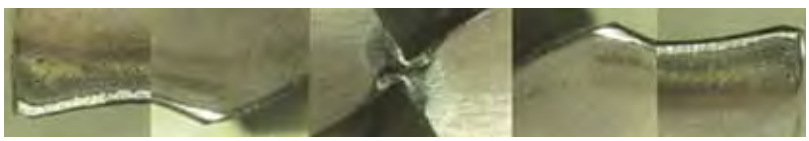
CONDITIONS

Cutting Speed	262 ft/min.
Feed	.0094 inch/rev.
Feedrate	16.59 inch/min.
RPM	1756 rev./min.
Drilling	1.89″
Coolant	Internal
Machine type	Vertical Machining Center

RESULT



YG-1 (Total Drilling 600 Holes)



Competitor A (Total Drilling 470 Holes)



i-DREAM DRILL - INOX

TOOL

HOLDER	ZB0301
INSERT	YI3B01

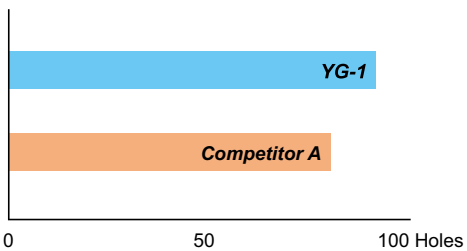
WORKPIECE - Stainless Steels

AISI	304
DIN	X5CrNi189
JIS	SUS304

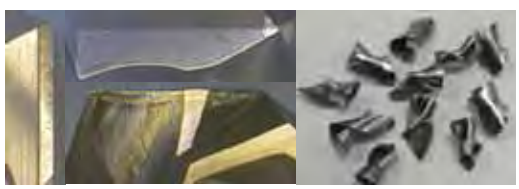
CONDITIONS

Cutting Speed	180 ft/min.
Feed	.0059 inch/rev.
Feedrate	7.402 inch/min.
RPM	1250 rev./min.
Drilling	1.97″
Coolant	Internal
Machine type	Vertical Machining Center

RESULT



YG-1 (Total Drilling 100 Holes)



Competitor A (Total Drilling 80 Holes)



FEATURES OF DREAM DRILLS-HIGH FEED

Dream Drills-High Feed offers 1.5 to 2 times higher feeding speed compared to conventional 2-flute drills. The unique flute design and exceptional surface finish promises extraordinary chip evacuation.

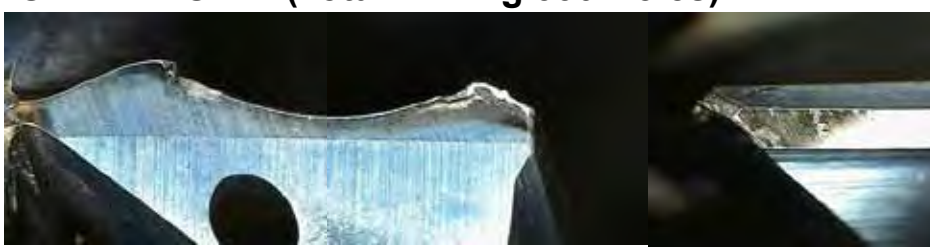
YG-1 (Total Drilling 330 Holes)



COMPETITOR A (Total Drilling 330 Holes)



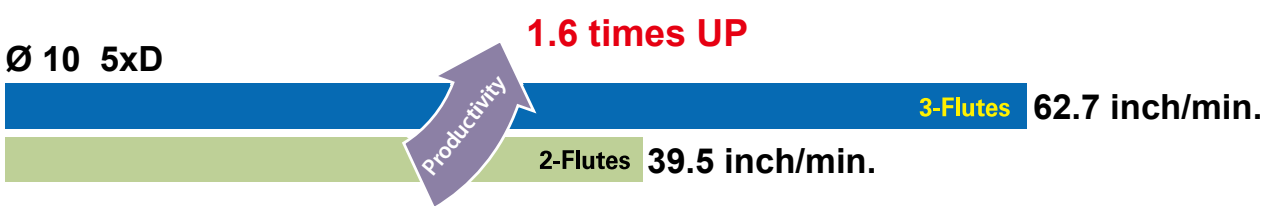
COMPETITOR B (Total Drilling 330 Holes)



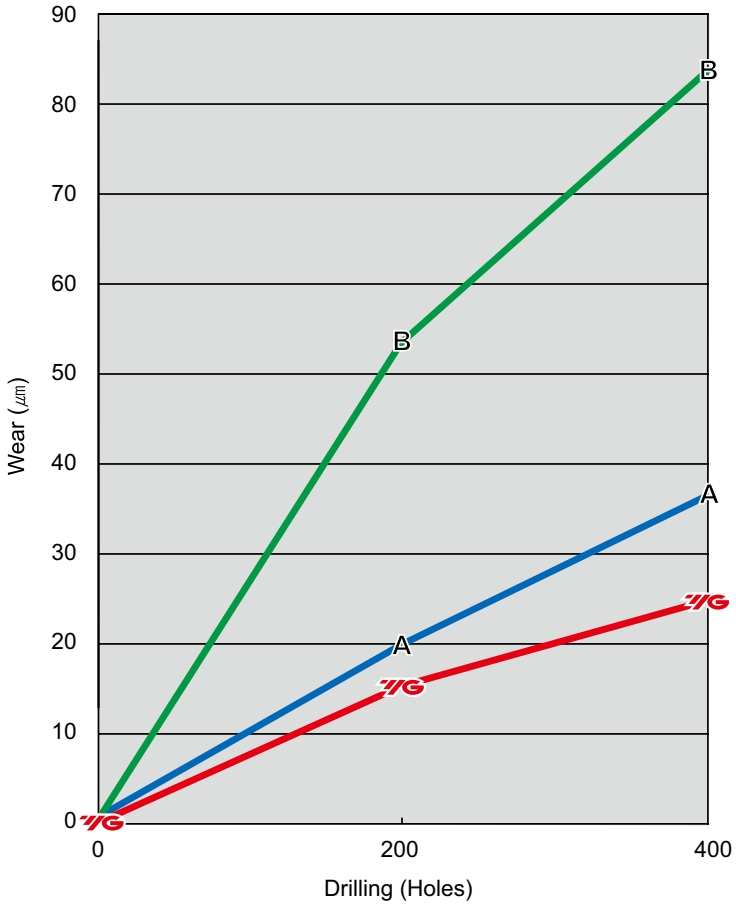
Cutting Condition

Tools : DGR495100
(Dream Drills High Feed)
Size : Ø10 x 10 x 61 x 103
Work Material : • AISI : 1045
• JIS : S45C (HRc20)
• DIN : C45
R.P.M : 3,200 rev./min.
Feed : .0197 inch/rev.
Drilling Depth : 1.97″ (5xD)
Drilling Method : Blind Hole
Coolant : Wet Cut
Machine : Machining Center

Productivity (Carbon Steel)



CASE STUDY ◆ DREAM DRILLS-INOX (Reference page : p.93 ~ p108)



CUTTING CONDITION

Tools : DREAM DRILLS-INOX
Size : ∅6 x ∅6 x 44 x 82
Work Material : • AISI : 304
• JIS : SUS304
• DIN : X5CrNi1810
(X4CrNi18-10)
R.P.M : 3,700 rev./min.
SFM : 229 ft/min.
Feed : .0028 inch/rev.
Drilling Depth : .94″
Coolant : Wet Cut

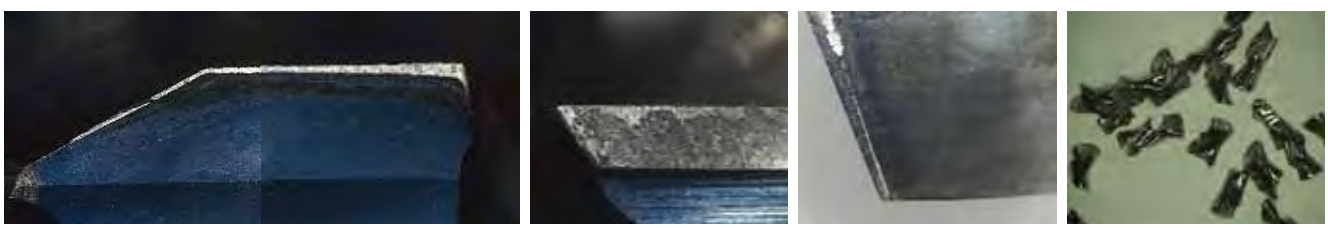
YG-1 (Total Drilling 400 Holes)



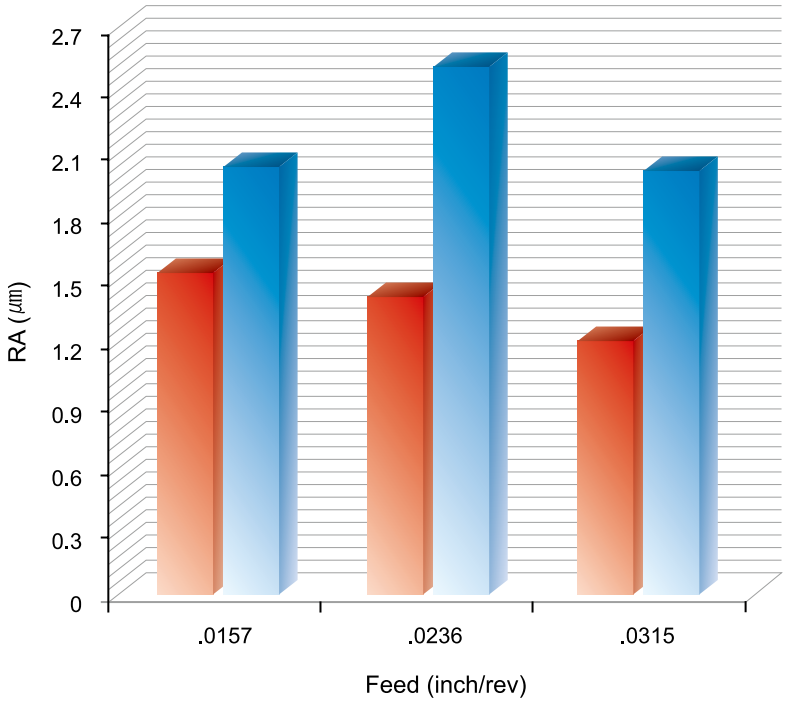
COMPETITOR A (Total Drilling 400 Holes)



COMPETITOR B (Total Drilling 400 Holes)



Surface Roughness of Work Piece



CUTTING CONDITION

Tools : DREAM DRILLS-ALU
Size : ∅10
Work Material : • AISI : 6061
• JIS : A6061
• DIN : AlMgSiCu
R.P.M : 6,367 rev./min.
SFM : 656 ft/min.
Feed : .0157 ~ .0315 inch/rev.
Drilling Depth : 1.77″
Coolant : Wet cut

YG-1 (Total Drilling 820 Holes)





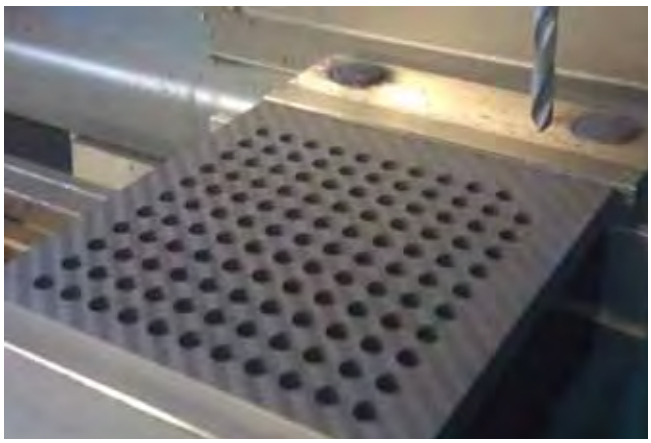
COMPETITOR (Total Drilling 820 Holes)





Solid Carbide Drill for Composite Material

Drilling Test of Composite Material(CFRP)



Working condition

- Tools : DI473060 (DREAM DRILLS - CFRP)
- Size : ∅6×6×44×82
- Work Material : CFRP
- R.P.M : 6,366 rev./min.
- Feed : 10 inch/min.
- Drilling Depth : .24″, Through Hole
- Coolant : Dry Cut

YG-1











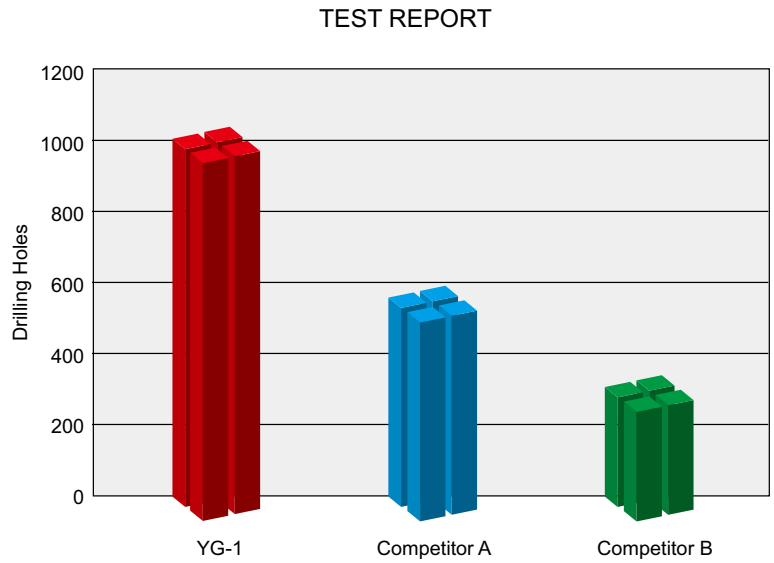




FEATURES OF DREAM DRILLS-MQL TYPE

- 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



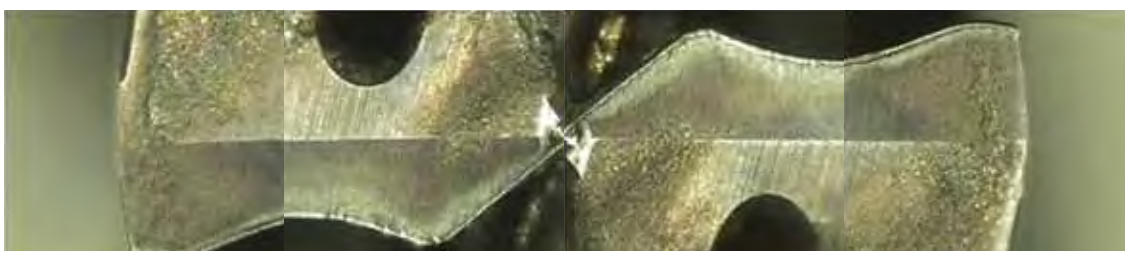
CUTTING CONDITION

- **Tools** : DREAM DRILLS-MQL TYPE (20×D)
- **Size** : Ø6×Ø6×138×193
- **Work Material** : • AISI : 1045
  • JIS : S45C(HRc25)
  • DIN : C45
- **R.P.M** : 3,528 rev./min.
- **SFM** : 218 ft/min.
- **Feed** : .0075 inch/rev.
- **Drilling Depth** : 3.15″
- **Coolant** : Oil Mist (MQL Techniques)

YG-1 (After Drilling 1,000 Holes)



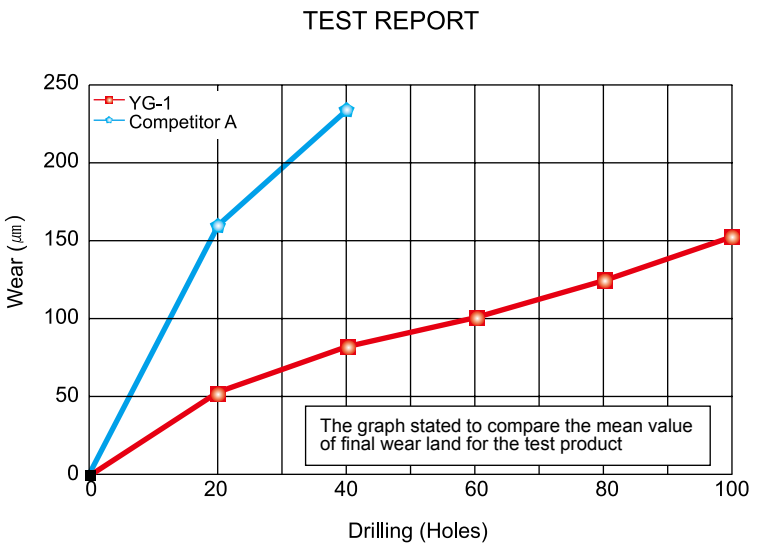
COMPETITOR A (After Drilling 546 Holes)



FEATURES OF DREAM DRILLS FOR HIGH 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 Drills for High Hardened Steels
- **Size** : Ø10×Ø10×63×111
- **Work Material** : • AISI : H13
  • JIS : SKD11(HRc60)
  • DIN : X155CrV-Mo12-1
- **R.P.M** :380 rev./min.
- **SFM** : 39 ft/min.
- **Feed** : .0016 inch/rev.
- **Drilling Depth** : .98″ (2.5D)
- **Coolent** : Wet Cut

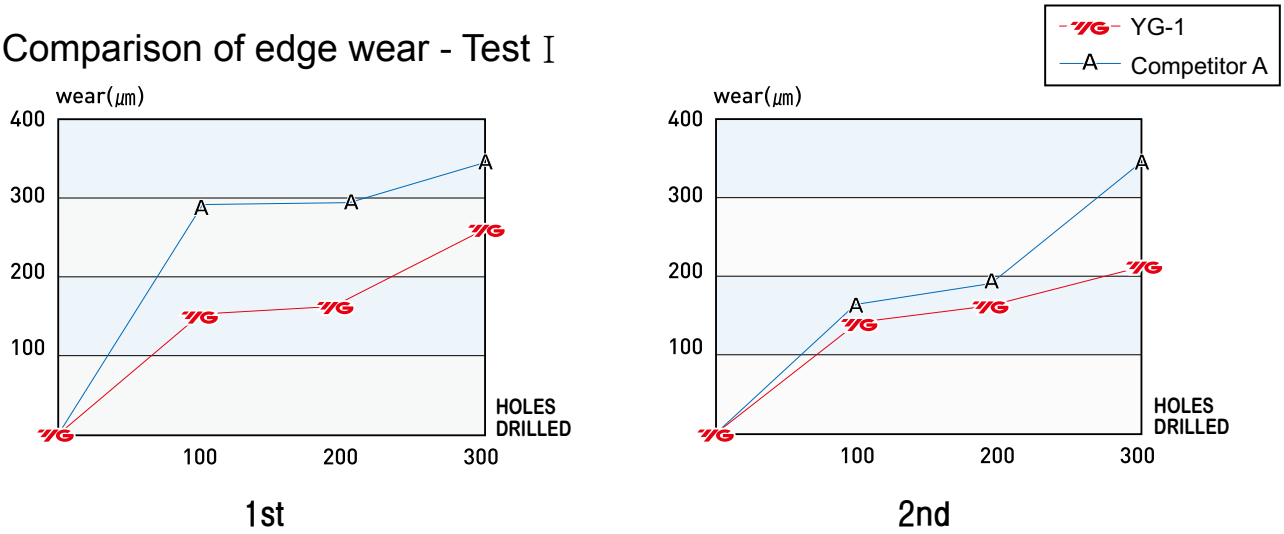
YG-1 (After Drilling 100 Holes)



COMPETITOR A (After Drilling 40 Holes)



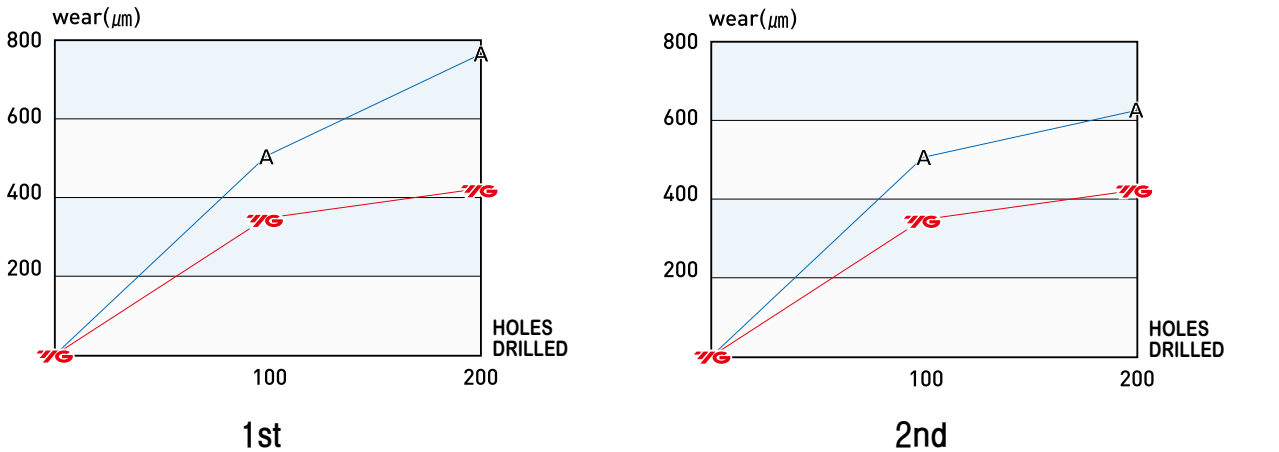
Comparison of edge wear - Test Ⅰ



CUTTING CONDITION

- **Work material** : • AISI : 316
  • JIS : SUS316
  • DIN : X3CrNiMo17-13-3
- **Drilling Depth** : .94″
- **Total Drilling(hole)** : 300 Holes
- **R.P.M** : 600 rev./min.
- **Feed** : 4.3307 inch/min.

Comparison of edge wear - Test Ⅱ



CUTTING CONDITION

- **Work material** : • AISI : D2
  • JIS : SKD11
  • DIN : X155CrVMo12-1
- **Drilling Depth** : .94″
- **Total Drilling(hole)** : 200 Holes
- **R.P.M** : 600 rev./min.
- **Feed** : 4.3307 inch/min.

YG-1



COMPETITOR A



COMBO - SPIRAL FLUTE

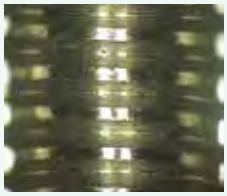
Cutting Condition

- **Tools** : Combo Spiral Flute Tap
- **Size** : M8×1.25
- Work Material : • AISI : 1045
  • JIS : S45C(HRc35)
  • DIN : C45
- Tapping Depth: .79″
- Coolant : Water Soluble Oil
- SFM (Tapping Speed) : 33 ft/min.

YG-1(Total Tapping 204 Holes)

Surface Roughness of Work Piece

204 Holes ▶



COMPETITOR A (Total Tapping 159 Holes)

Surface Roughness of Work Piece

159 Holes ▶



COMPETITOR B (Total Tapping 204 Holes)

Surface Roughness of Work Piece

204 Holes ▶

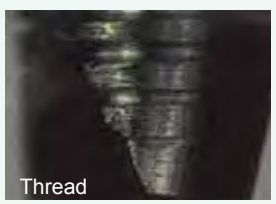


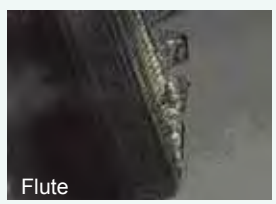
COMBO - SPIRAL POINT

Cutting Condition

- **Tools** : Combo Spiral Point Tap
- **Size** : M2×0.4
- Work Material : • AISI : 1045
  • JIS : S45C(HRc35)
  • DIN : C45
- Tapping Depth : .24″
- Coolant : Tapping Oil
- SFM (Tapping Speed) : 33 ft/min.

YG-1(Total Tapping 450 Holes)





COMPETITOR A (Total Tapping 318 Holes)

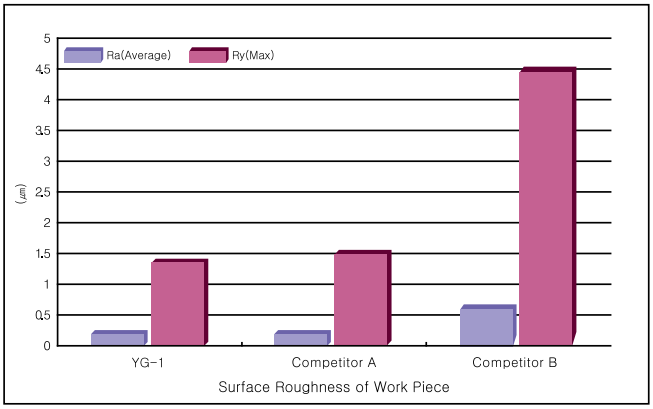
Tool was broken after tapping 318 holes

COMPETITOR B (Total Tapping 103 Holes)

Tool was broken after tapping 103 holes

TEST I (Total Milling Length : 787 ft)

▶ Surface Roughness of Work Piece

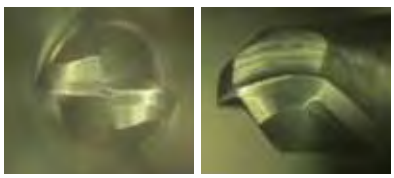


CUTTING CONDITION (∅1mm)

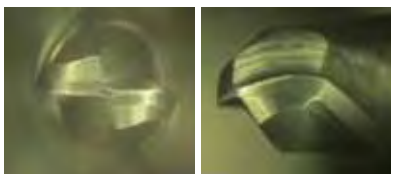
Tools : 2Flute, CBN Ball Nose End mill
Size : ∅1 × ∅4 × 0.6 × 50
Work Material : • JIS : SKD11(HRc60)
• DIN : X155CrV-Mo12-1
• AISI : H13
Cutting Speed :**309** ft/min.
R.P.M : 30,000 rev./min.
Feed : 59.06 inch/min.
Milling Depth : .0004″
Coolant : Oil Mist
Machine : Machining Center

▶ Maximum Wear (㎛)

YG-1 (19.611㎛)



COMPETITOR A (32.249㎛)

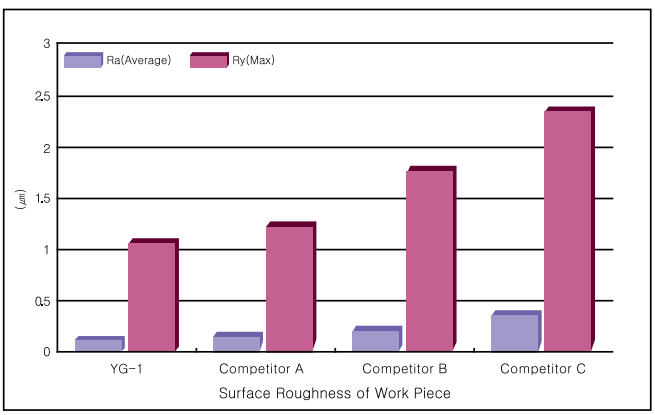


COMPETITOR B

Tool was broken after milling 100 meters

TEST II (Total Milling Length : 2,460 ft)

▶ Surface Roughness of Work Piece



CUTTING CONDITION (∅2mm)

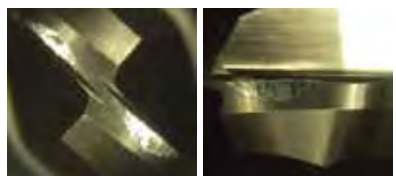
Tools : 2Flute, CBN Ball Nose End mill
Size : ∅2 × ∅4 × 1.8 × 50
Work Material : • JIS : SKD11(HRc60)
• DIN : X155CrV-Mo12-1
• AISI : H13
Cutting Speed : 618 ft/min.
R.P.M : 30,000 rev./min.
Feed : 78.74 inch/min.
Milling Depth : .0004″
Coolant : Oil Mist
Machine : Machining Center

▶ Maximum Wear (㎛)

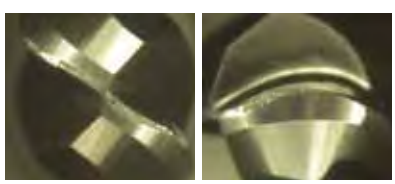
YG-1 (57.630㎛)



COMPETITOR A (100.314㎛)



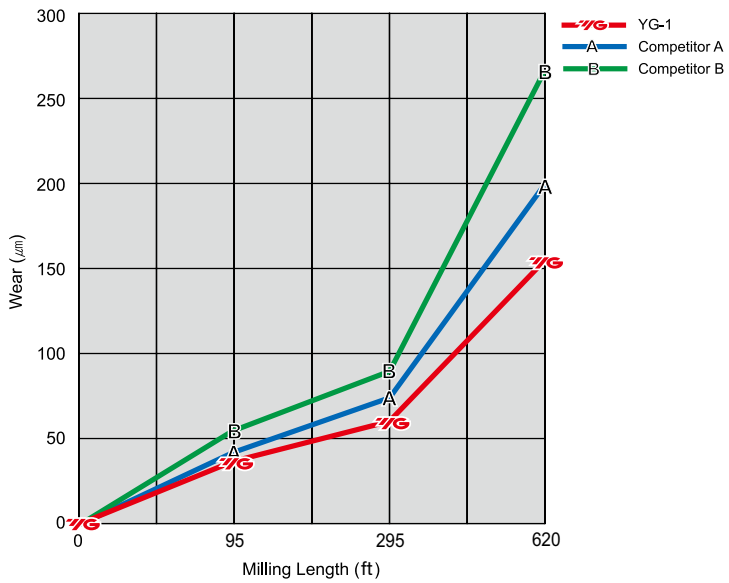
COMPETITOR B (71.471㎛)



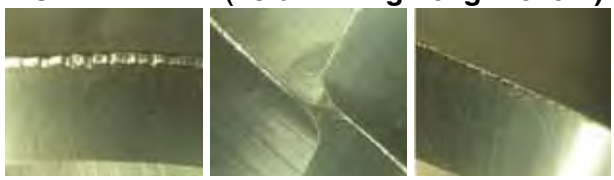
COMPETITOR C (170.200㎛)



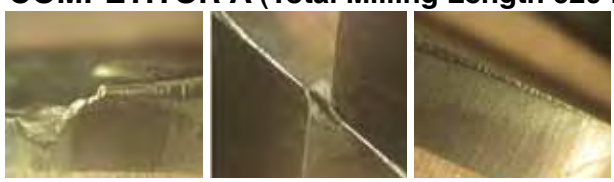
i-Xmill - BALL



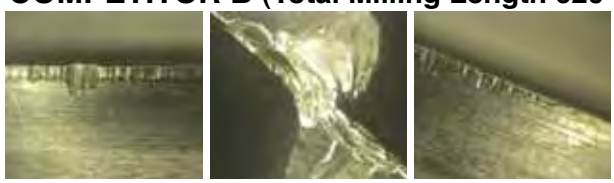
YG-1 i-Xmill (Total Milling Length 620 ft)



COMPETITOR A (Total Milling Length 620 ft)



COMPETITOR B (Total Milling Length 620 ft)



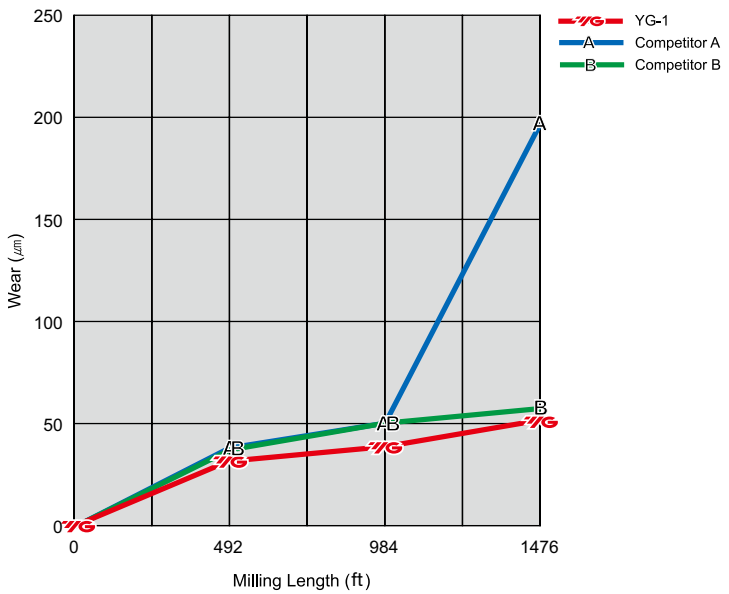
CUTTING CONDITION

Tools : i -Xmill Ball
Size : ∅16×R8.0
Work Material : JIS : SKD61 (HRc50),
DIN : X40GrMoV51(1.2344)
AISI : H13

Cutting Speed : 264 ft/min.
R.P.M : 1,600 rev./min.
Feed : 15.35 inch/min.
Feed per tooth : .0047 inch/tooth
Milling Method : Side Cutting

Milling Depth : Axial : .0315″
Radial : .0630″
Coolant : Oil Mist
Overhang : YG-1, Competitor B : 1.89″
Competitor A : 2.20″
Machine : Machining Center

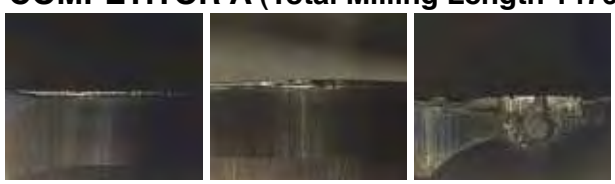
i-Xmill - CORNER RADIUS



YG-1 i-Xmill (Total Milling Length 1476 ft)



COMPETITOR A (Total Milling Length 1476 ft)



COMPETITOR B (Total Milling Length 1476 ft)



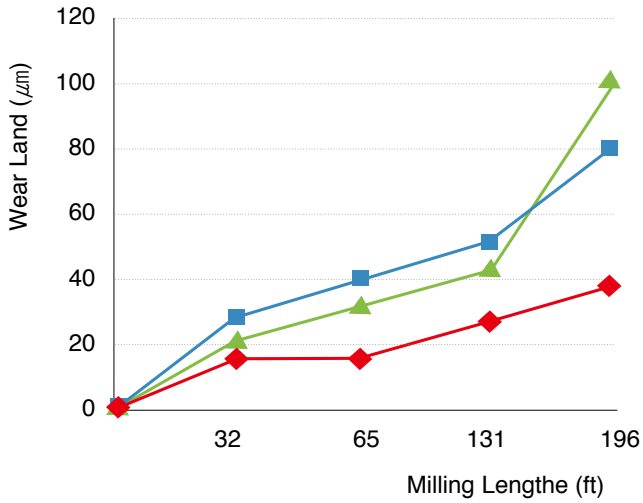
CUTTING CONDITION

Tools : i-Xmill Corner Radius
Size : ∅16 x R2.0
Work Material : KS : KP4M (Mold steels HRc35)
DIN : 40CrMnNiMo8-6-4(1.2738)
AISI : P20+Ni

Cutting Speed : 918 ft/min.
R.P.M : 5,570 rev./min.
Feed : 87.80 inch/min.
Feed per tooth : .0079 inch/tooth
Milling Method : Side Cutting

Milling Depth : Axial : .1181″
Radial : .0079″
Coolant : Oil Mist
Overhang : 2.76″
Machine : Machining Center

TEST REPORT

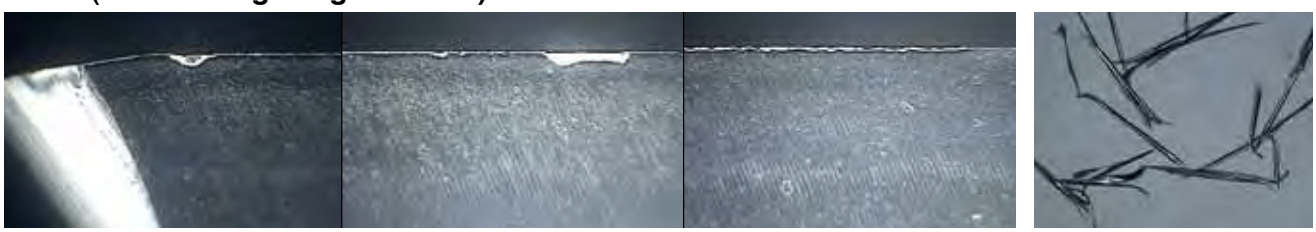


CUTTING CONDITION

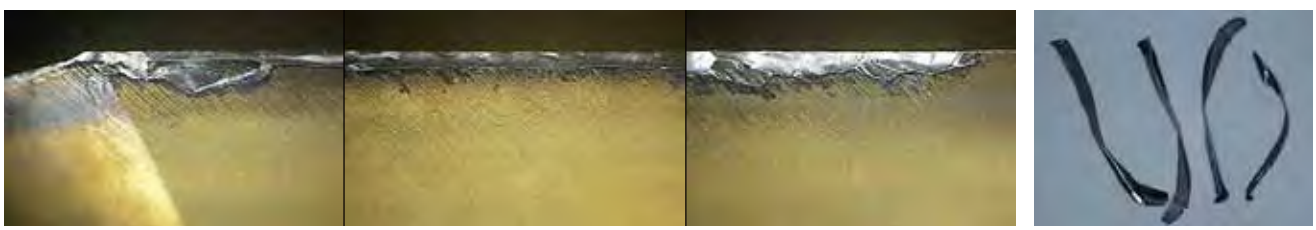
Tools : 4Flute Corner Radius, ∅16, R1.0
Work Material : KP4M (HRc35 / AISI P20+Ni DIN 1.2738 Improved)
Cutting Speed : 511 ft/min.
R.P.M : 3,100 rev./min.
Feed : 11.02 inch/min.
Feed per Tooth : .0656 inch/tooth
Milling Method : Down & Side Cutting
Milling Depth : Axial : .4724″
Radial : .0314″
Overhang/Coolant : 3.03″/Wet Cut
Machine : Machining Center LCV 650

▶ Cutting Edges

YG-1 (Total Milling Length : 196 ft)



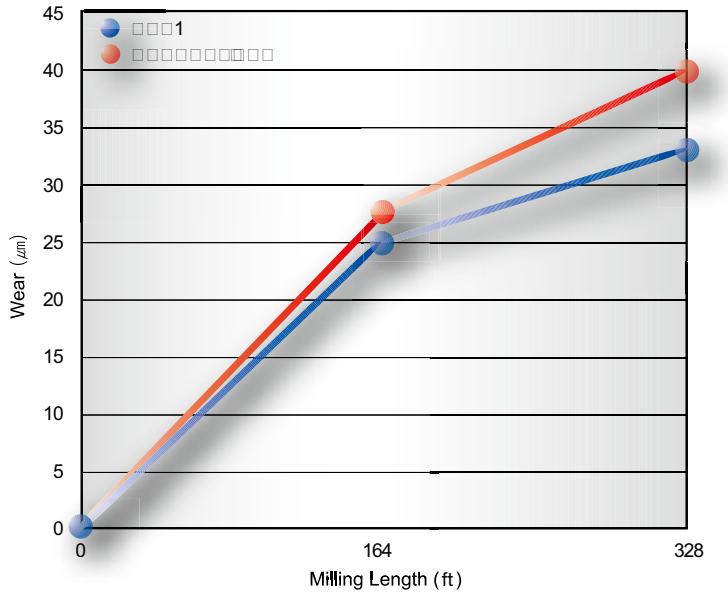
COMPETITOR A (Total Milling Length : 196 ft)



COMPETITOR B (Total Milling Length : 196 ft)



Carbide 6 Flute 45° Helix End Mill for Hardened Steel



CUTTING CONDITION

Tools : 6Flute, X5070 45° Helix
Size : Ø16 × Ø16 × 40 × 110
Work Material : • AISI : H13
• JIS : SKD61(HRc50)
• DIN : X40CrMoV5-1(1.2344)
Cutting Speed : 317 ft/min.
R.P.M : 1,920 rev./min.
Feed : 35.91″
Milling Method : Down & Side Cutting
Milling Depth : Axial : .9449″
Radial : .0378″
Coolant : Dry Cut
Overhang : 2.05″
Machine : Machining Center

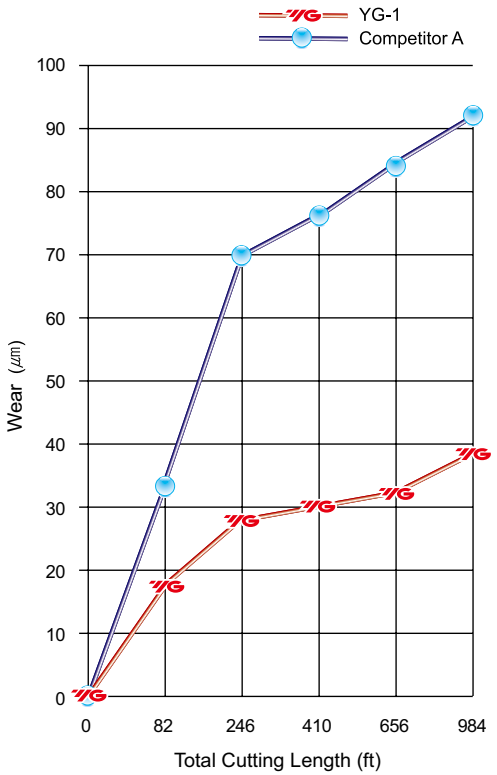
YG-1
(Total Milling Length 328 ft)



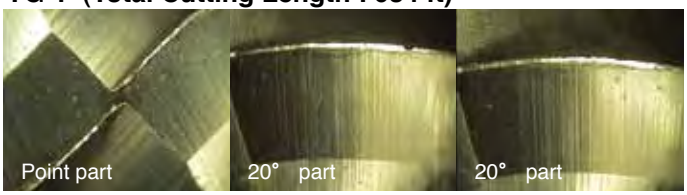
COMPETITOR A
(Total Milling Length 328 ft)



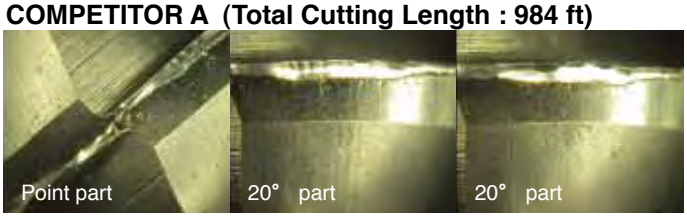
TEST REPORT (Ball)



YG-1 (Total Cutting Length : 984 ft)



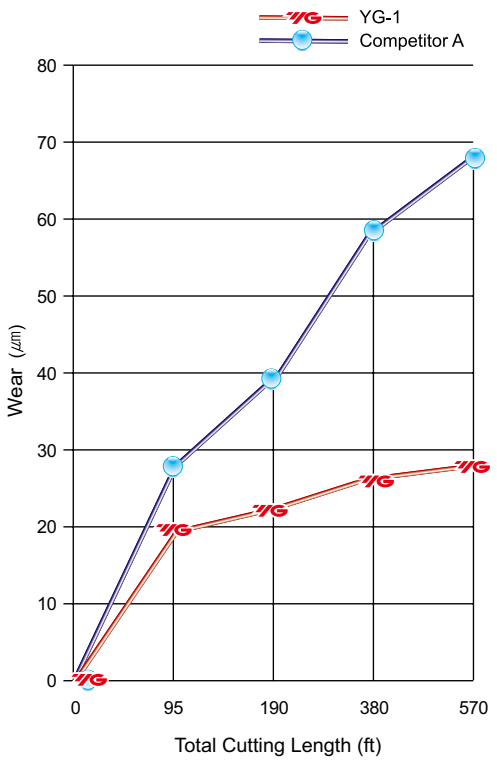
COMPETITOR A (Total Cutting Length : 984 ft)



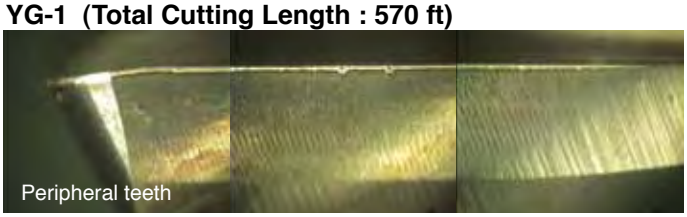
CUTTING CONDITION

Tool : 2Flute, Carbide Ball End Mill
Size : ∅6×6×12×90
Work Material : KP4M (HRc35 / AISI P20+Ni DIN 1.2738 Improved)
Cutting Speed : 426.7 ft/min.
R.P.M : 6,900 rev./min.
Feed : 32.68 inch/min.
Feed per tooth : .0024 inch/tooth
Milling Method : Profiling
Milling Depth : Axial : .0079″
Radial : .0472″
Coolant : Oil Mist
Overhang : 1.024″

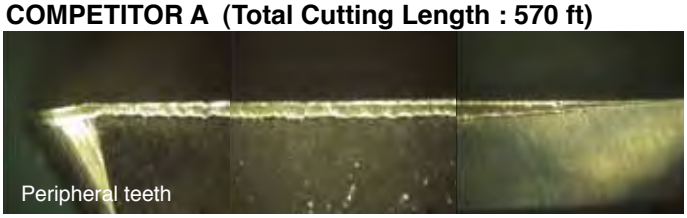
TEST REPORT (Corner Radius)



YG-1 (Total Cutting Length : 570 ft)



COMPETITOR A (Total Cutting Length : 570 ft)



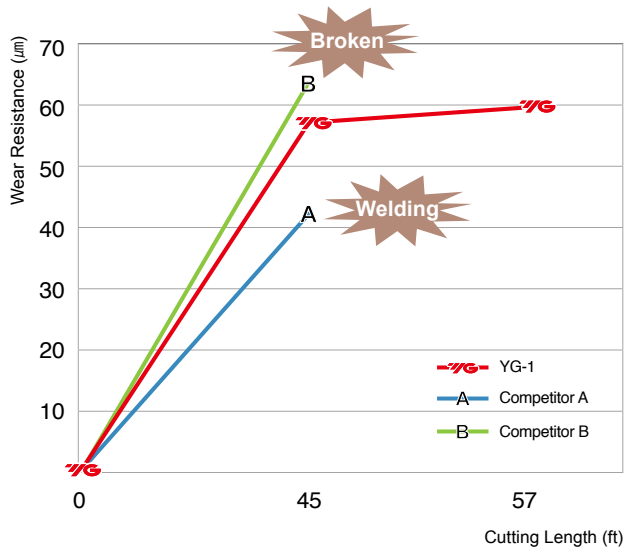
CUTTING CONDITION

Tool : 4Flute, Carbide Corner Radius End Mill
Size : ∅10(R0.5)×10×25×100
Work Material : KP4M (HRc35 / AISI P20+Ni DIN 1.2738 Improved)
Cutting Speed : 169 ft/min.
R.P.M : 1,640 rev./min.
Feed : 7.09 inch/min.
Feed per tooth : .0011 inch/tooth
Milling Method : Down & Side Cutting
Milling Depth : Axial : .9842″
Radial : .0197″
Coolant : Oil Mist
Overhang : 1.614″

CASE STUDY ◆ TitaNox-POWER END MILLS

(Reference page : p.925 ~ p.946)

Test Report-1 ◆ Y-Coated Solid Carbide 4 Flutes with Double Core End Mills



Cutting Edges

YG
Total Milling Length : 57 ft



COMPETITOR A
Total Milling Length : 53 ft



COMPETITOR B
Total Milling Length : 53 ft

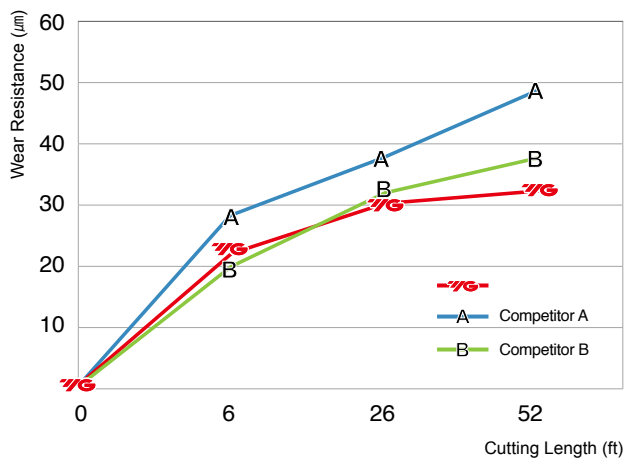


CUTTING CONDITION

Size : Ø12(R1) x Ø12 x 26 x 80
Work Material : DIN : TiAV6V4 (Titanium)
Cutting Depth : .470" (Axial Depth)
R.P.M : 1,591 rev./min.
Feed : 10 inch/min.

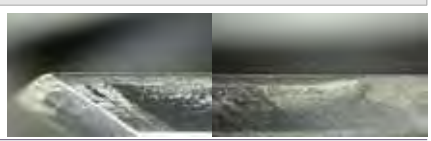
Milling Method : Slotting
Coolant : Wet Cut
Overhang : 1.41"
Machine : Machining Center

Test Report-2 ◆ Y-Coated Solid Carbide 5 Flutes End Mills

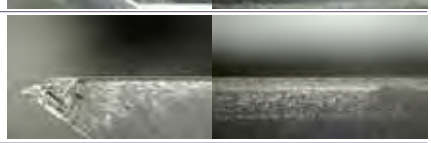


Cutting Edges

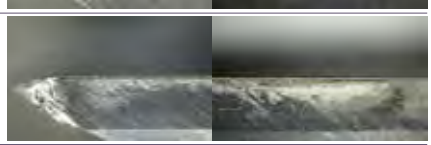
YG



COMPETITOR A



COMPETITOR B



CUTTING CONDITION

Size : Ø12 × Ø12 × 26 × 83
Work Material : DIN : TiAV6V4 (Titanium)
Cutting Depth : .470" (Axial Depth)
R.P.M : 1,591 rev./min.
Feed : 15.669 inch/min.

Milling Method : Down & Side Cutting
Axial Depth : .710"
Radial Depth : .141"
Coolant : Wet Cut
Machine : Machining Center

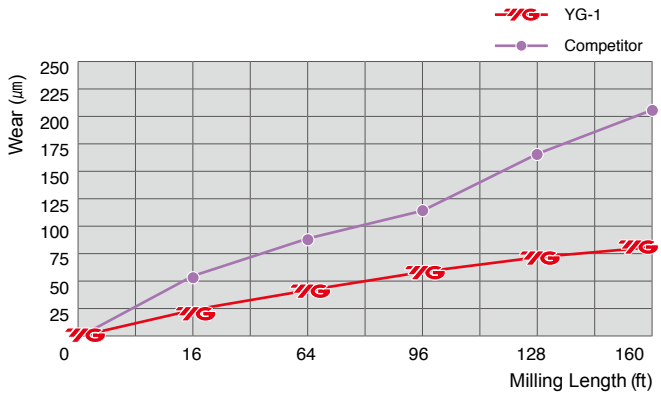
CASE STUDY ◆ V7 PLUS A END MILLS (Reference page : p.947 ~ p.983)

TEST I – 4 Flute vs Competitor

CUTTING CONDITION

Tools : 4 Flute, V7 PLUS A
Wear(㎛) : V7 PLUS A 83.518
Competitor 203.381
Milling Length(inch) : 160
Size : Ø10 x Ø10 x 22 x 72
Work Material : - AISI : 1045
- JIS : S45C(HRc30)
- DIN : C45

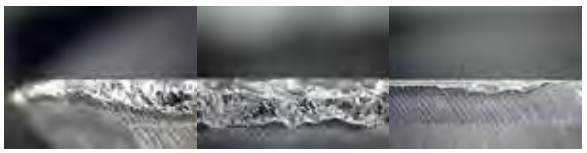
Cutting Speed : 754 ft/min.
R.P.M : 7,324 rev/min.
Feed : 57.64 inch/min.
Feed per tooth :.002 inch/tooth
Milling Method : Down & Side Cutting
Milling Depth : Axial : .394″
Radial : .118″
Coolant : Wet Cut
Overhang : 1.339″
Machine : Machining Center



V7 PLUS A



COMPETITOR

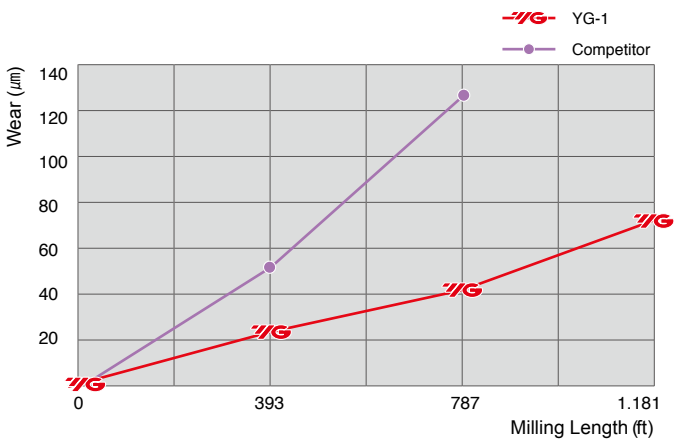


TEST II – 6 Flute vs Competitor

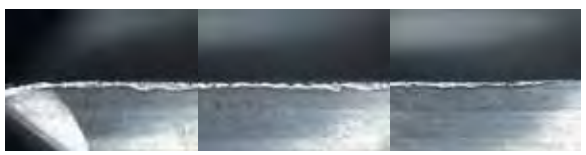
CUTTING CONDITION

Tools : 6 Flute, V7 PLUS A
Wear(㎛) : V7 PLUS A 70.855
Competitor 76.498
Milling Length(inch) : 1,181
Size : Ø12(R1) x Ø2 x 26 x 83
Work Material : - AISI : 1045
- JIS : S45C(HRc30)
- DIN : C45

Cutting Speed : 914 ft/min.
R.P.M : 7,392 rev/min.
Feed : 295.08 inch/min.
Feed per tooth : .007 inch/tooth
Milling Method : Trochoidal Cutting
Milling Depth : Axial : .945″
Radial : .024″
Coolant : Wet Cut
Overhang : 1.417″
Machine : Machining Center



V7 PLUS A



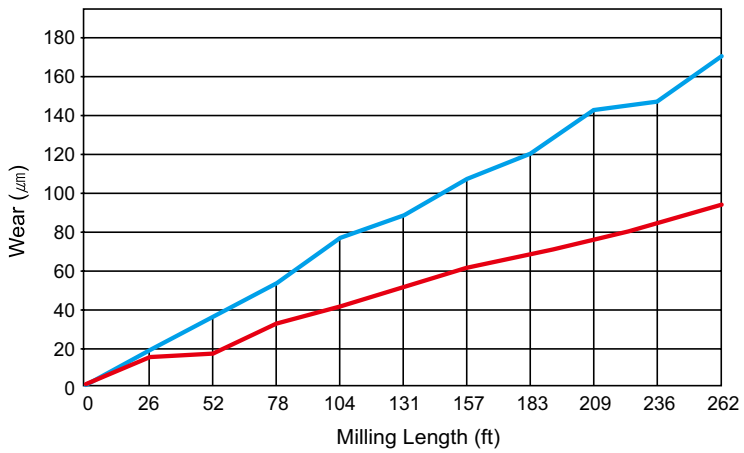
COMPETITOR



CASE STUDY ◆ D-POWER CFRP END MILLS

(Reference page : p.1063 ~ p.1068)

TEST Ⅰ - DUAL HELIX



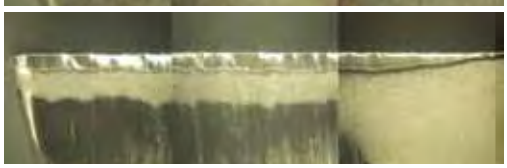
CUTTING CONDITION

Tools : 4 Flute, D-Power Dual Helix
Size : Ø6(R0.5) × Ø6 × 12 × 65
Work Material : CFRP
R.P.M : 7,960 rev./min.
Feed : 45.87 inch/min.
Cutting Depth : Axial : .24″
Radial : .09″
Coolant : Dry Cut
Overhang : 1.14″
Milling Method : Side Cutting
Machine : Machining Center

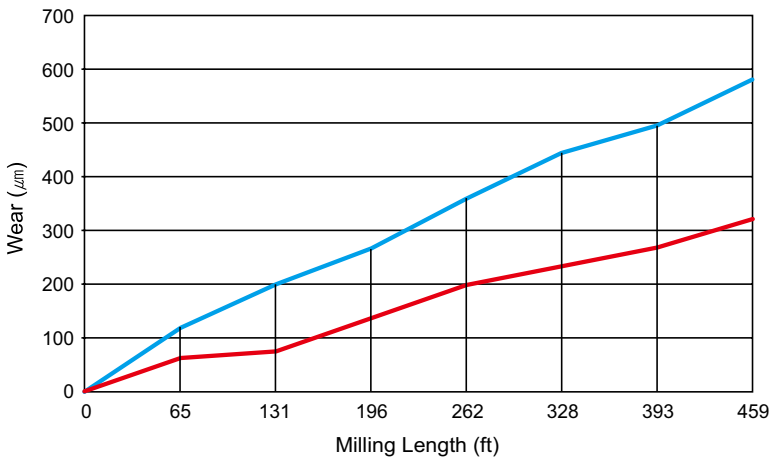
YG-1
(Total Milling Length 262ft)



COMPETITOR
(Total Milling Length 262ft)



TEST Ⅱ - 4 FLUTE, FINISH



CUTTING CONDITION

Tools : 4 Flute, D-Power
Size : Ø12 × Ø12 × 36 × 100
Work Material : CFRP
R.P.M : 5,310 rev./min.
Feed : 50.19 inch/min.
Cutting Depth : Axial : .47″
Radial : .05″
Coolant : Dry Cut
Overhang : 2.20″
Milling Method : Down & Side Cutting
Machine : Machining Center

YG-1
(Total Milling Length 459ft)



COMPETITOR
(Total Milling Length 459ft)



4 Flute Square End Mill, S45C

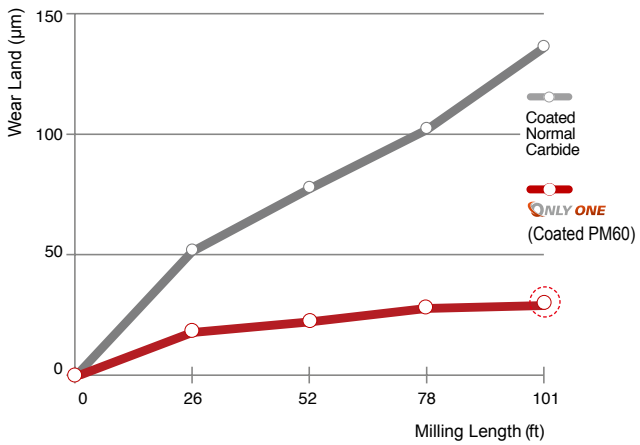
CUTTING CONDITION

Tool : Only One Coated PM60/Coated Normal Carbide
Size : Ø10xØ10x22x72/Ø10xØ10x22x70
Work Material : - AISI : 1045
- JIS : S45C
- KS : SM45C
- DIN : C45

R.P.M : 2,750 rev/min.
Feed : 20.47 inch/min.
Milling Method : Down & Side Cutting
Milling Depth : Axial : 12″
Radial : .04″
Coolant : Wet Cut
Machine : Machining Center

Cutting Edges Condition





4 Flute Square End Mill, S45C

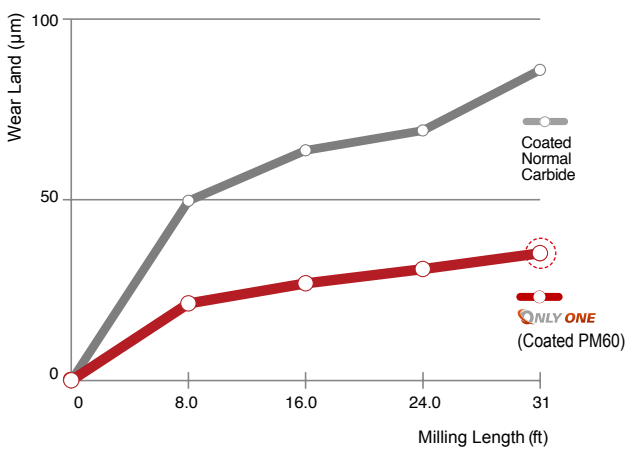
CUTTING CONDITION

Tool : Only One Coated PM60/Coated Normal Carbide
Size : Ø10xØ10x22x72/Ø10xØ10x22x70
Work Material : - AISI : 1045
- JIS : S45C
- KS : SM45C
- DIN : C45

R.P.M : 2,750 rev/min.
Feed : 20.47 inch/min.
Milling Method : Down & Side Cutting
Milling Depth : Axial : .39″
Radial : .04″
Coolant : Wet Cut
Machine : Machining Center

Cutting Edges Condition





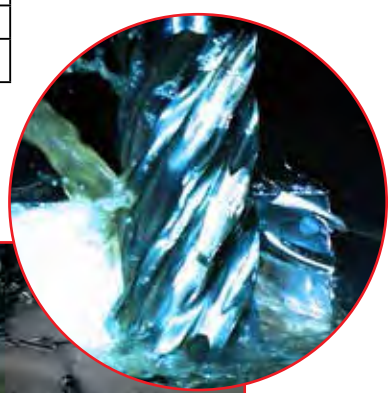
CASE STUDY ◆ SINE-POWER END MILLS (Reference page : p.1143 ~ p.1147)

HSS Co 8% 6 FLUTE END MILLS

SINE-POWER	
Material	HSS Co8%
Dimension	ø2”(R.125”) x ø2” x 4” x 7-3/4”
No. of Flute	6
Coating	Uncoated

CUTTING CONDITIONS		
Milling Method	Slotting	Profiling
Material	Ti6Al4V (Titanium)	
Coolant	Wet Cut	
RPM	100 rev./min.	100 rev./min.
Feed	2 IPM	3.15 ~ 4.2 IPM
Axial Depth	1-1/2 inch	1-1/2 inch
Radial Depth	2 inch	0.1 ~ 0.2 inch
Feed/Tooth	.0018 inch/tooth	.0053 ~ .007 inch/tooth

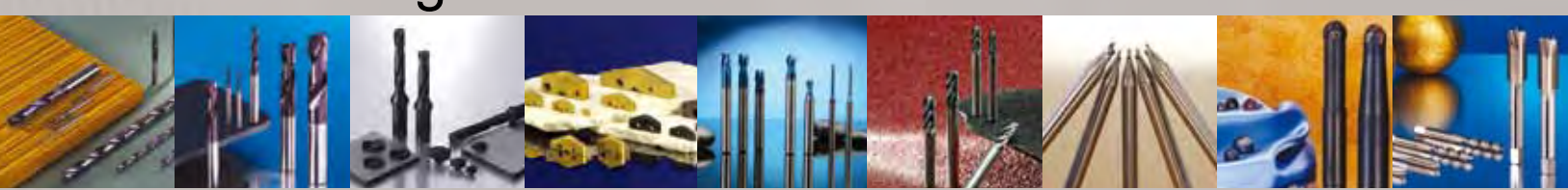
The above cutting conditions achieved 5 hours of machining





SINE-POWER SPECIFIC GEOMETRY DESIGN HELPS OUR CUSTOMERS TO INCREASE THEIR PRODUCTIVITY BY 15% IN TITANIUM MACHINING.

Global Cutting Tool Leader **YG-1**



DRILLING TOOLS

i-DREAM DRILLS, CARBIDE INSERTS

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

SOLID CARBIDE DREAM DRILLS - HIGH FEED

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

STANDARD CARBIDE DRILLS

HSS-PM MULTI-1 DRILLS

PREMIUM HSS HPD STRAIGHT SHANK DRILLS

HSS GOLD-P DRILLS

HSS STRAIGHT SHANK DRILLS

HSS AIRCRAFT DRILLS

HSS SILVER & DEMING DRILLS

HSS MORSE TAPER SHANK DRILLS

HSS (8% Cobalt) NC SPOTTING DRILLS

HSS COMBINATION DRILL & COUNTER SINK / CENTER DRILL

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 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 - HIGH FEED (with Coolant Holes)
For Carbon Steels, Alloy Steels and Cast Iron — DREAM DRILLS -HIGH FEED

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 Aluminum and Aluminum Alloys — DREAM DRILLS -ALU

SOLID CARBIDE DREAM DRILLS - CFRP
For Composite Matecials 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 HIGH HARDENED STEELS

STANDARD CARBIDE DRILLS
For General Purpose, 118° Point — STANDARD CARBIDE DRILLS

HSS-PM MULTI-1 DRILLS
For Multi Purpose Particularly for Stainless Steels and Titanium — MULTI-1 DRILLS

HPD DRILLS
For General Steels and Stainless Steels — HPD DRILLS

HSS GOLD-P DRILLS
Gold-P Coating — GOLD-P DRILLS

HSS STRAIGHT SHANK DRILLS
For General Purpose — STRAIGHT SHANK DRILLS

AIRCRAFT DRILLS
6 and 12 inch Length Drills — AIRCRAFT DRILLS

SILVER & DEMING DRILLS
118° Split Point, 3 Flat Black and Gold — SILVER & DEMING DRILLS

HSS MORSE TAPER SHANK DRILLS
For General Purpose, Standard Length — TAPER SHANK DRILLS

HSS (8% Cobalt) NC SPOTTING DRILLS
Centering and Chamfering of Holes — NC SPOTTING DRILLS

HSS COMBINATION DRILLS & COUNTER SINK / CENTER DRILL
Regular and Long Lengths — COMBINATION DRILLS & COUNTERSINK

CARBIDE & HSS-PM SPADE DRILLS
Carbide for Long Tool Life, and HSS-PM for General Machines and Large Diameters
Higher Productivity than Other Drilling Tools — SPADE DRILLS

TECHNICAL DATA — TECHNICAL DATA

DRILLING TOOLS **APPLICATION TABLE**

	ITEM	MODEL	DESCRIPTION	SIZE		PAGE
				MIN	MAX	
i-Dream Drills	Y03 *		Insert for General Purpose	.4724 (#A)	1.2500 (#J)	**44~49**
	YI3 *		Insert for Stainless Steels	.4724 (#A)	1.2500 (#J)	**44~49**
Spade Drills	S01~S08		HSS M4 Insert	.7031 (#1)	4.5000 (#8)	**242~245**
	S06~S08 (SM08)		Super Cobalt T15 Insert	.3740 (#Y)	4.5000 (#8)	**246~252 262~265**
	S11~S14		Primium cobalt M48 Insert	.3740 (#Y)	1.3780 (#2)	**253~255**
	S21~S23		Carbide C2, C5, C3 Insert	.3740 (#Y)	1.8750 (#3)	**256~260**
	S26~S28 (SM28)		Carbide C5 Insert (P40)	.3740 (#Y)	1.8750 (#3)	**256~260 266~267**
	S16~S18		Carbide C3 Insert (K10)	.3740 (#Y)	1.3780 (#2)	**256~260**
	SF05 SF15		Super Cobalt T15 Flat Bottom	.3750 (#Y)	1.3750 (#2)	**268**

◎ : Excellent ○ : Good

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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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DRILLING TOOLS **APPLICATION TABLE**

	ITEM	MODEL	INCH / METRIC	LENGTH	SIZE		PAGE
					MIN	MAX	
DREAM DRILLS-GENERAL	DH414		Inch	Stub(3XD)	D1/8	D5/8	**58**
	DH722		Inch	Long(5XD)	D13/64	D1/2	**59**
	DH416 DH711		Inch	Short(3XD)	D1/8	D5/8	**60**
	DH418 DH712		Inch	Long(5XD)	D13/64	D1/2	**62**
	DH404		Metric	Stub(3XD)	D3.0	D20.0	**63**
	DH423		Metric	Short(3XD)	D3.0	D20.0	**65**
	DH424		Metric	Long(5XD)	D1.0	D20.0	**68**
	DH406		Metric	Short(3XD)	D3.0	D20.0	**71**
	DH408		Metric	Long(5XD)	D1.0	D20.0	**74**
	DH421		Metric	Extra Long(8XD)	D3.0	D14.0	**77**
DREAM DRILLS-HIGH FEED	DGR493		Inch	Short(3XD)	D.1969	D.7874	**86**
	DGR495		Inch	Long(5XD)	D.1969	D.7874	**89**
DREAM DRILLS-INOX	DH463 DH714		Inch	Stub(3XD)	D1/8	D5/8	**96**
	DH464 DH715		Inch	Long(5XD)	D13/64	D1/2	**98**
	DH451		Metric	Short(3XD)	D3.0	D20.0	**99**
	DH452		Metric	Long(5XD)	D1.0	D20.0	**102**
	DH453		Metric	Extra Long(8XD)	D3.0	D14.0	**105**
DREAM DRILLS-ALU	DGE466 DGE718		Inch	Long(5XD)	D13/64	D1/2	**112**
	DGE433		Metric	Long(5XD)	D3.0	D20.0	**113**
DREAM DRILLS-CFRP	DI473		Inch	-	D.0980	D.7500	**120**
DREAM DRILLS-MQL TYPE	DH510		Metric	Extra Long(10XD)	D3.0	D14.0	**126**
	DH515		Metric	Extra Long(15XD)	D3.0	D12.0	**127**
	DH520		Metric	Extra Long(20XD)	D3.0	D12.0	**127**
	DHM10		Metric	Extra Long(10XD)	D3.0	D14.0	**128**
	DHM15		Metric	Extra Long(15XD)	D3.0	D12.0	**128**
	DHM20		Metric	Extra Long(20XD)	D3.0	D12.0	**128**
	DHM25		Metric	Extra Long(25XD)	D3.0	D10.0	**129**
	DHM30		Metric	Extra Long(30XD)	D3.0	D8.0	**129**

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
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DRILLING TOOLS **APPLICATION TABLE**

	ITEM	MODEL	INCH / METRIC	LENGTH	SIZE		PAGE
					MIN	MAX	
DREAM DRILLS For HIGH HARDENED STEELS	DH501		Inch	-	D1/8	D3/4	**134**
	DH500		Metric	-	D1.0	D14.0	**136**
STANDARD CARBIDE DRILLS	D5412		Metric	Jobber	#56	#1	**142**
	D5413		Inch	Jobber	A	Z	**143**
	D5417		Inch	Jobber	D3/64	D1/2	**144**
MULTI-1 DRILLS	CDR405		Inch	-	D3/32	D1/2	**150**
	CDR406		Inch	-	#45	#1	**151**
	CDR407		Inch	-	B	Z	**152**
HPD DRILLS	DJ543		Metric	Stub	D2.0	D13.0	**158**
	DJ544		Metric	Jobber	D2.0	D20.0	**160**
GOLD-P DRILLS	D1GP182 D8182		Inch	Jobber	D3/64	D3/4	**168**
	D1GP139		Inch	Jobber	A	Z	**169**
	D1GP138		Inch	Jobber	#56	#1	**170**
	D2GP185		Inch	Jobber	D3/64	D1/2	**171**
	D2GP186		Inch	Jobber	A	Z	**172**
	D2GP187		Inch	Jobber	#56	#1	**173**
	D2GP511		Inch	Jobber	D5/64	D1/2	**174**
	DLGP513		Inch	Jobber	A	Z	**175**
	DLGP512		Inch	Jobber	#47	#1	**176**
	DLGP195		Metric	Jobber	D1.0	D13.0	**177**
	DLGP506		Metric	Jobber	D2.0	D13.0	**179**
STRAIGHT SHANK DRILLS	D1118		Inch	Screw Machine	D3/64	D1/2	**188**
	D1115		Inch	Screw Machine	A	Z	**189**
	D1119		Inch	Screw Machine	#60	#1	**190**
	D2146 D4146		Inch	Screw Machine	D3/64	D1/2	**191**
	D2147 D4147		Inch	Screw Machine	A	Z	**192**
	D2148 D4148		Inch	Screw Machine	#60	#1	**193**
	DN514		Inch	Screw Machine	D3/32	D1/2	**195**

◎ : Excellent ○ : Good

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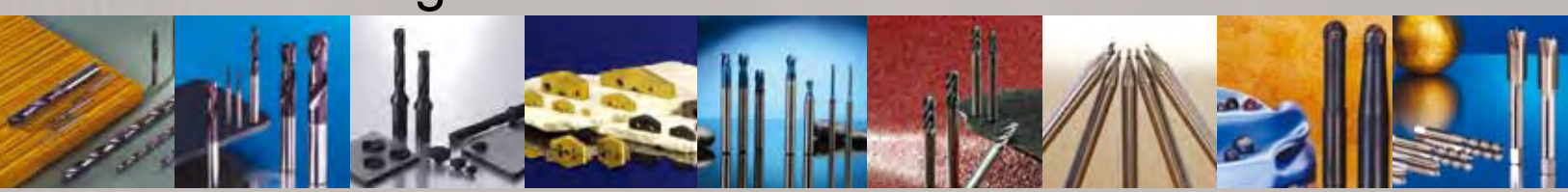
DRILLING TOOLS **APPLICATION TABLE**

	ITEM	MODEL	INCH / METRIC	LENGTH	SIZE		PAGE
					MIN	MAX	
STRAIGHT SHANK DRILLS	DN516		Inch	Screw Machine	A	Z	**196**
	DN515		Inch	Screw Machine	#47	#1	**197**
	DL517 DX517		Inch	Taper Length	D5/64	D1/2	**198**
	D4107		Metric	Screw Machine	D1.0	D31.0	**199**
AIRCRAFT DRILLS	DL601 DL604		Inch	Extension Length	D5/64	D1/2	**200**
	DL602 DL605		Inch	Extension Length	A	Z	**211**
	DL603 DL606		Inch	Extension Length	#43	#1	**212**
	D1631 D1634		Inch	Extension Length	D5/64	D1/2	**213**
	D1632 D1635		Inch	Extension Length	A	Z	**214**
	D1633 D1636		Inch	Extension Length	#43	#1	**215**
SILVER & DEMING DRILLS	D1191		Inch	—	D1/2	D1-1/2	**220**
MORSE TAPER SHANK DRILLS	D1211		Inch	—	D1/2	D2-1/2	**226**
NC SPOTTING DRILLS	D2N90(90˚)		Inch	—	D1/8	D1	**232**
	D2N90(120˚)		Inch	—	D1/8	D1	**232**
COMBINATION DRILL & COUNTER SINK / CENTER DRILL	D1C90		Inch	—	D3/64	D7/32	**238**

◎ : Excellent ○ : Good

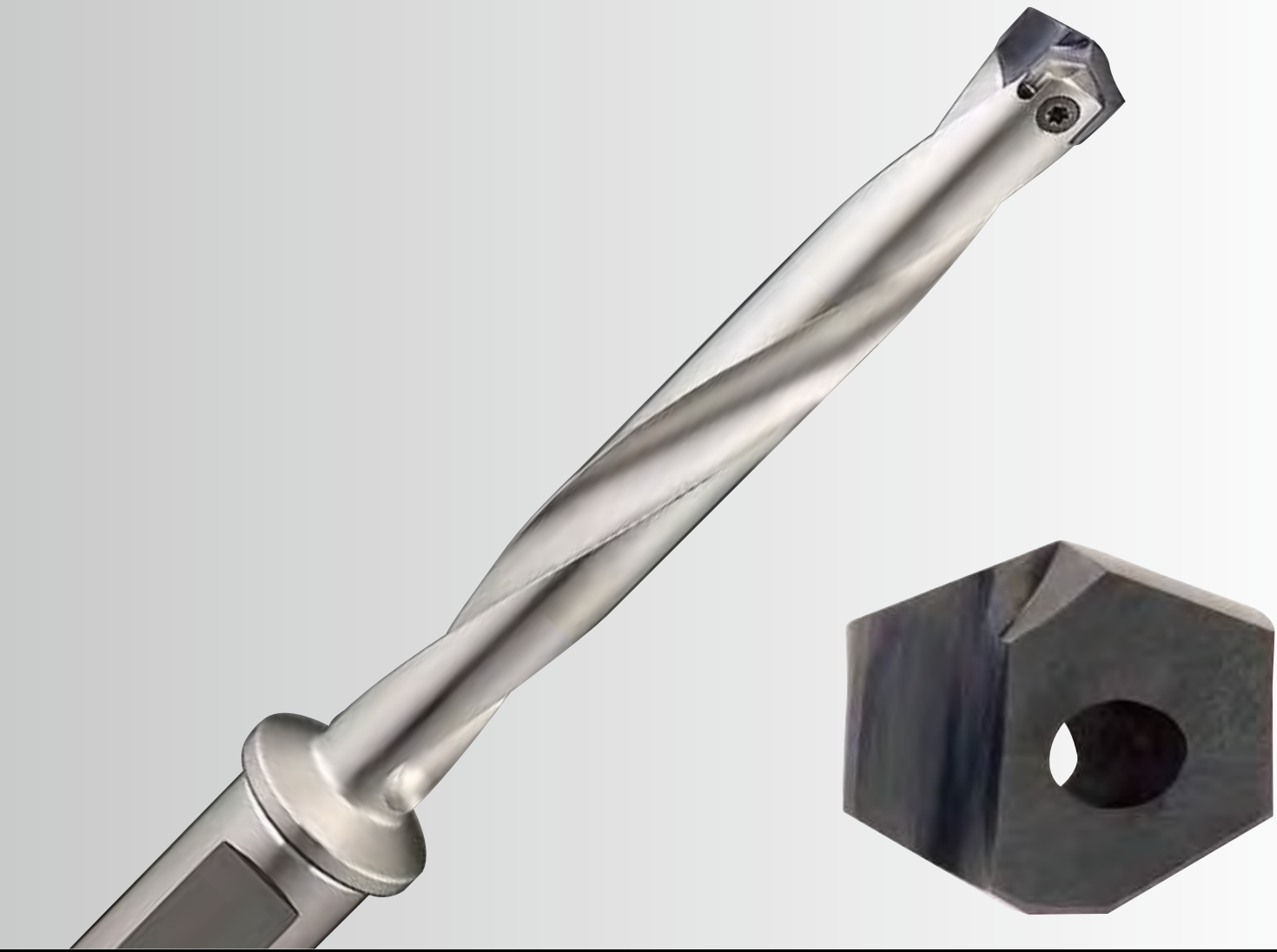
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Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
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Global Cutting Tool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



CARBIDE INSERT

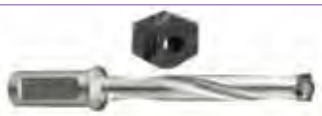
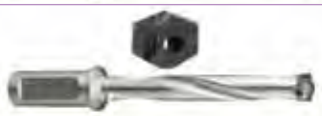
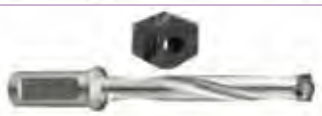
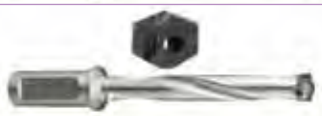
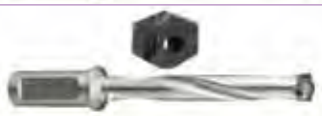
Being the best through innovation



i-Dream Drills

- For Steels and Stainless Steel Alloys

SELECTION GUIDE

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Comparison with Split Point Drill, Spade Drill & Dream Drill



◎ : Excellent ○ : Good

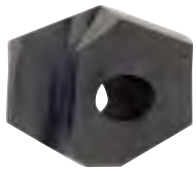
P												M	K		N	
Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys	
~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110	
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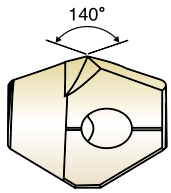
i-DREAM DRILL INSERTS & HOLDERS

- Features of *i-Dream Drill* Inserts
- Secure and accurate seating resulting in accurate repeatability and concentricity.

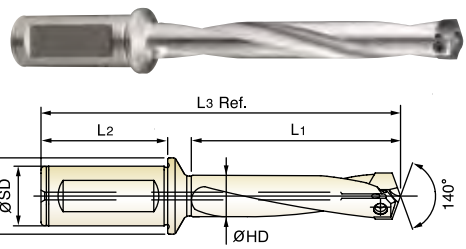
i-Dream Drill ***General***
- For most steel materials

i-Dream Drill ***INOX***
- For tough, ductile materials and stainless steels
- Light, sharp cutting edge
- Minimize cutting forces
- Reduce built-up edge





- Features of *i-Dream Drill* Holders
- Special Alloy Steels that maintains its hardness and toughness under high temperatures with generous coolant holes for effective coolant flow.
- Innovative surface treatment that improves wear resistance and reduces corrosion.
- High Performance flute design allowing maximum chip evacuation and minimum interference.



cutting conditions : p.50~51

Unit : Inch

Series Range	Insert EDP No.		Insert O.D.		Length	Holder EDP No.	Diameter	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth	Overall Length	Torx Screw No.
	TiAlN	TiCN	h7										
(mm)	General	INOX	dec.	inch / mm			HD	SD	L2	FD	L1	L3 Ref.	
A Ø12.00 to Ø13.99 3.6mm Thick	Y03A01	YI3A01	.4724	12.00	3D 5D 7D	ZA0301 ZA0501 ZA0701	.4528	3/4	2	1	1-27/64 2-23/64 3-5/16	4-29/64 5-13/32 6-11/32	TA1213
	Y03A02	YI3A02	.4764	12.10									
	Y03A03	YI3A03	.4803	12.20									
	Y03A04	YI3A04	.4844	31/64									
	Y03A05	YI3A05	.4921	12.50	3D 5D 7D	ZA0302 ZA0502 ZA0702	.4724	3/4	2	1	1-15/32 2-29/64 3-7/16	4-1/2 5-31/64 6-15/32	
	Y03A06	YI3A06	.4961	12.60									
	Y03A07	YI3A07	.5000	1/2									
	Y03A08	YI3A08	.5039	12.80									
	Y03A09	YI3A09	.5079	12.90									
	Y03A10	YI3A10	.5118	13.00	3D 5D 7D	ZA0303 ZA0503 ZA0703	.4921	3/4	2	1	1-17/32 2-9/16 3-37/64	4-37/64 5-19/32 6-5/8	
	Y03A11	YI3A11	.5156	33/64									
	Y03A12	YI3A12	.5197	13.20									
	Y03A13	YI3A13	.5312	17/32									
	Y03A14	YI3A14	.5315	13.50	3D 5D 7D	ZA0304 ZA0504 ZA0704	.5118	3/4	2	1	1-19/32 2-21/32 3-23/32	4-39/64 5-43/64 6-47/64	TA1314
	Y03A15	YI3A15	.5354	13.60									
	Y03A16	YI3A16	.5394	13.70									
	Y03A17	YI3A17	.5433	13.80									
	Y03A18	YI3A18	.5469	35/64									
B Ø14.00 to Ø15.99 4mm Thick	Y03B01	YI3B01	.5512	14.00	3D 5D 7D	ZB0301 ZB0501 ZB0701	.5315	3/4	2	1	1-21/32 2-3/4 3-55/64	4-23/32 5-13/16 6-59/64	TB1415
	Y03B02	YI3B02	.5551	14.10									
	Y03B03	YI3B03	.5591	14.20									
	Y03B04	YI3B04	.5625	9/16									
	Y03B05	YI3B05	.5630	14.30									
	Y03B06	YI3B06	.5669	14.40									

◎ : Excellent ○ : Good

	P											M	K		N	
	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
Y03 *	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎		◎	◎		
YI3 *	○	○		○				○		○		◎			○	○

YG *i*-Dream Drills

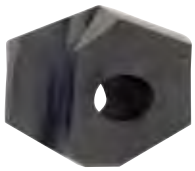
Y03B / YI3B SERIES
Y03C / YI3C SERIES

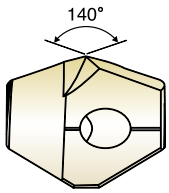
i-DREAM DRILL INSERTS & HOLDERS

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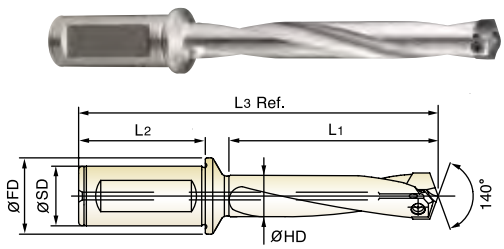
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- Minimize cutting forces
- Reduce built-up edge





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cutting conditions : p.50~51

Unit : Inch

Series Range	Insert EDP No.		Insert O.D.		Length	Holder EDP No.	Diameter	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth	Overall Length	Torx Screw No.
	TiAlN	TiCN	h7										
(mm)	General	INOX	dec.	inch / mm			HD	SD	L2	FD	L1	L3 Ref.	
B Ø14.00 to Ø15.99 4mm Thick	Y03B07	YI3B07	.5709	14.50	3D	ZB0302	.5512	3/4	2	1	1-23/32	4-51/64	TB1415
	Y03B08	YI3B08	.5748	14.60	5D	ZB0502					2-55/64	5-15/16	
	Y03B09	YI3B09	.5781	37/64	7D	ZB0702					4	7-5/64	
	Y03B10	YI3B10	.5827	14.80									
	Y03B11	YI3B11	.5906	15.00	3D	ZB0303	.5709	3/4	2	1	1-49/64	4-7/8	TB1516
	Y03B12	YI3B12	.5938	19/32	5D	ZB0503					2-61/64	6-3/64	
	Y03B13	YI3B13	.5945	15.10	7D	ZB0703					4-9/64	7-15/64	
	Y03B14	YI3B14	.5984	15.20									
	Y03B15	YI3B15	.6024	15.30									
	Y03B16	YI3B16	.6094	39/64									
	Y03B17	YI3B17	.6102	15.50	3D	ZB0304	.5906	3/4	2	1	1-53/64	4-29/32	
	Y03B18	YI3B18	.6142	15.60	5D	ZB0504					3-3/64	6-1/8	
	Y03B19	YI3B19	.6181	15.70	7D	ZB0704					4-17/64	7-11/32	
	Y03B20	YI3B20	.6220	15.80									
	Y03B21	YI3B21	.6250	5/8									
C Ø16.00 to Ø17.99 4.5mm Thick	Y03C01	YI3C01	.6299	16.00	3D	ZC0301	.6102	3/4	2	1	1-57/64	4-61/64	TC1617
	Y03C02	YI3C02	.6335	16.09	5D	ZC0501					3-5/32	6-7/32	
	Y03C03	YI3C03	.6378	16.20	7D	ZC0701					4-13/32	7-15/32	
	Y03C04	YI3C04	.6406	41/64									
	Y03C05	YI3C05	.6417	16.30									
	Y03C06	YI3C06	.6496	16.50	3D	ZC0302	.6299	3/4	2	1	1-61/64	5-1/32	
	Y03C07	YI3C07	.6562	21/32	5D	ZC0502					3-1/4	6-21/64	
	Y03C08	YI3C08	.6614	16.80	7D	ZC0702					4-35/64	7-5/8	

◎ : Excellent ○ : Good

	P											M	K			N	
	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	
Y03 *	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎		◎	◎			
YI3 *	○	○		○				○		○		◎			○	○	

i-Dream Drills

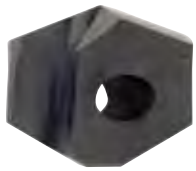
Y03C / YI3C SERIES
Y03D / YI3D SERIES

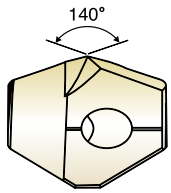
i-DREAM DRILL INSERTS & HOLDERS

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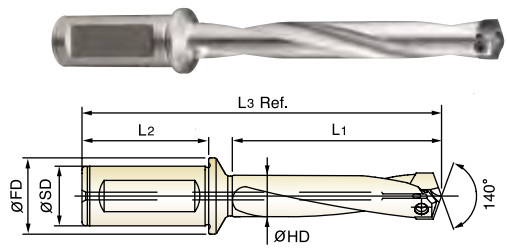
i-Dream Drill ***General***
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cutting conditions : p.50~51

Unit : Inch

Series Range	Insert EDP No.		Insert O.D.		Length	Holder EDP No.	Diameter	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth	Overall Length	Torx Screw No.
	TiAlN	TiCN	h7										
(mm)	General	INOX	dec.	inch / mm			HD	SD	L2	FD	L1	L3 Ref.	
C Ø16.00 to Ø17.99 4.5mm Thick	Y03C09	YI3C09	.6693	17.00	3D	ZC0303	.6496	3/4	2	1	2-1/64	5-5/64	TC1718
	Y03C10	YI3C10	.6919	43/64	5D	ZC0503					3-11/32	6-13/32	
	Y03C11	YI3C11	.6875	11/16	7D	ZC0703					4-11/16	7-3/4	
	Y03C12	YI3C12	.6890	17.50	3D	ZC0304	.6693	3/4	2	1	2-1/16	5-5/32	
	Y03C13	YI3C13	.7008	17.80	5D	ZC0504					3-7/16	6-17/32	
	Y03C14	YI3C14	.7031	45/64	7D	ZC0704					4-53/64	7-29/32	
D Ø18.00 to Ø19.99 5mm Thick	Y03D01	YI3D01	.7087	18.00	3D	ZD0301	.6890	1	2-3/16	1-1/4	2-1/8	5-1/2	TD1819
	Y03D02	YI3D02	.7188	23/32	5D	ZD0501					3-35/64	6-59/64	
					7D	ZD0701					4-61/64	8-11/32	
	Y03D03	YI3D03	.7283	18.50	3D	ZD0302	.7087	1	2-3/16	1-1/4	2-3/16	5-35/64	
	Y03D04	YI3D04	.7344	47/64	5D	ZD0502					3-41/64	7	
	Y03D05	YI3D05	.7402	18.80	7D	ZD0702					5-3/32	8-29/64	
	Y03D06	YI3D06	.7480	19.00	3D	ZD0303	.7283	1	2-3/16	1-1/4	2-1/4	5-43/64	TD1920
	Y03D07	YI3D07	.7500	3/4	5D	ZD0503					3-47/64	7-5/32	
	Y03D08	YI3D08	.7587	19.27	7D	ZD0703					5-15/64	8-21/32	
	Y03D09	YI3D09	.7656	49/64									
	Y03D10	YI3D10	.7677	19.50	3D	ZD0304	.7480	1	2-3/16	1-1/4	2-19/64	5-45/64	
	Y03D11	YI3D11	.7795	19.80	5D	ZD0504					3-27/32	7-15/64	
	Y03D12	YI3D12	.7812	25/32	7D	ZD0704					5-3/8	8-25/32	

◎ : Excellent ○ : Good

	P											M	K		N	
	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
Y03 *	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎		◎	◎		
YI3 *	○	○		○				○		○		◎			○	○

YG *i*-Dream Drills

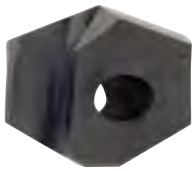
Y03E / YI3E SERIES
Y03F / YI3F SERIES

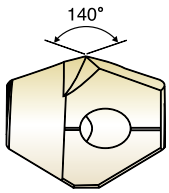
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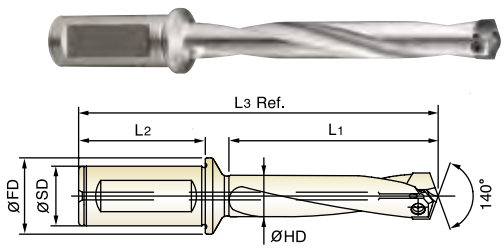
i-Dream Drill ***General***
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i-Dream Drill ***INOX***
- For tough, ductile materials and stainless steels
- Light, sharp cutting edge
- Minimize cutting forces
- Reduce built-up edge





- Features of *i*-*Dream Drill* Holders
- Special Alloy Steels that maintains its hardness and toughness under high temperatures with generous coolant holes for effective coolant flow.
- Innovative surface treatment that improves wear resistance and reduces corrosion.
- High Performance flute design allowing maximum chip evacuation and minimum interference.



cutting conditions : p.50~51

Unit : Inch

Series Range	Insert EDP No.		Insert O.D.		Length	Holder EDP No.	Diameter	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth	Overall Length	Torx Screw No.
	TiAlN	TiCN	h7										
(mm)	General	INOX	dec.	inch / mm			HD	SD	L2	FD	L1	L3 Ref.	
	Y03E01	YI3E01	.7874	20.00	3D	ZE0301					2-23/64	5-23/32	
					5D	ZE0501	.7638	1	2-3/16	1-1/4	3-15/16	7-9/32	
	Y03E02	YI3E02	.7969	51/64	7D	ZE0701					5-33/64	8-55/64	
E	Y03E03	YI3E03	.8071	20.50	3D	ZE0302					2-27/64	5-51/64	TE2021
	Y03E04	YI3E04	.8125	13/16	5D	ZE0502	.7835	1	2-3/16	1-1/4	4-1/32	7-13/32	
Ø20.00 to Ø21.99	Y03E05	YI3E05	.8150	20.70	7D	ZE0702					5-21/32	9-1/64	
	Y03E06	YI3E06	.8268	21.00	3D	ZE0303					2-31/64	5-7/8	
	Y03E07	YI3E07	.8281	53/64	5D	ZE0503	.8031	1	2-3/16	1-1/4	4-9/64	7-33/64	
5.5mm Thick	Y03E08	YI3E08	.8438	27/32	7D	ZE0703					5-25/32	9-11/64	TE2122
	Y03E09	YI3E09	.8465	21.50	3D	ZE0304					2-35/64	5-29/32	
	Y03E10	YI3E10	.8543	21.70	5D	ZE0504	.8228	1	2-3/16	1-1/4	4-15/64	7-19/32	
	Y03E11	YI3E11	.8594	55/64	7D	ZE0704					5-59/64	9-19/64	
	Y03F01	YI3F01	.8661	22.00	3D	ZF0301					2-19/32	5-63/64	
					5D	ZF0501	.8425	1	2-3/16	1-1/4	4-21/64	7-23/32	
	Y03F02	YI3F02	.8750	7/8	7D	ZF0701					6-1/16	9-29/64	TF2223
F	Y03F03	YI3F03	.8858	22.50	3D	ZF0302					2-21/32	6-1/32	
	Y03F04	YI3F04	.8906	57/64	5D	ZF0502	.8622	1	2-3/16	1-1/4	4-27/64	7-51/64	
Ø22.00 to Ø23.99	Y03F05	YI3F05	.8937	22.70	7D	ZF0702					6-13/64	9-9/16	
	Y03F06	YI3F06	.9055	23.00	3D	ZF0303					2-23/32	6-7/64	
	Y03F07	YI3F07	.9062	29/32	5D	ZF0503	.8819	1	2-3/16	1-1/4	4-17/32	7-29/32	
6mm Thick	Y03F08	YI3F08	.9219	59/64	7D	ZF0703					6-11/32	9-23/32	TF2324
	Y03F09	YI3F09	.9252	23.50	3D	ZF0304					2-25/32	6-3/16	
	Y03F10	YI3F10	.9331	23.70	5D	ZF0504	.9016	1	2-3/16	1-1/4	4-5/8	8-1/32	
	Y03F11	YI3F11	.9375	15/16	7D	ZF0704					6-15/32	9-7/8	

◎ : Excellent ○ : Good

	P											M	K			N	
	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
Y03 *	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎		◎	◎		
YI3 *	○	○		○				○		○		◎			○	○

i-Dream Drills

Y03G / YI3G SERIES
Y03H / YI3H SERIES

i-DREAM DRILL INSERTS & HOLDERS

- Features of *i-Dream Drill* Inserts

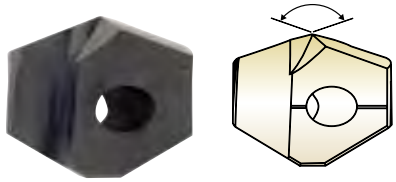
▶ Secure and accurate seating resulting in accurate repeatability and concentricity.

i-Dream Drill ***General***

▶ For most steel materials

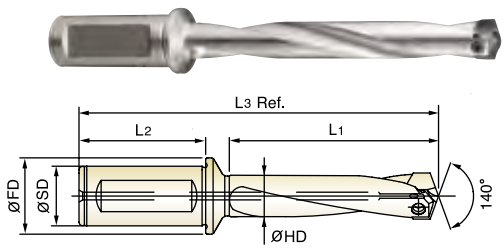
i-Dream Drill ***INOX***

▶ For tough, ductile materials and stainless steels
▶ Light, sharp cutting edge
▶ Minimize cutting forces
▶ Reduce built-up edge



- Features of *i-Dream Drill* Holders

▶ Special Alloy Steels that maintains its hardness and toughness under high temperatures with generous coolant holes for effective coolant flow.
▶ Innovative surface treatment that improves wear resistance and reduces corrosion.
▶ High Performance flute design allowing maximum chip evacuation and minimum interference.



cutting conditions : p.50~51

Unit : Inch

Series Range	Insert EDP No.		Insert O.D.		Length	Holder EDP No.	Diameter	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth	Overall Length	Torx Screw No.
	TiAlN	TiCN	h7										
(mm)	General	INOX	dec.	inch / mm			HD	SD	L2	FD	L1	L3 Ref.	
G Ø24.00 to Ø25.99 6.5mm Thick	Y03G01	YI3G01	.9449	24.00	3D	ZG0301	.9213	1-1/4	2-3/8	1-15/32	2-53/64	6-1/2	TG2425
					5D	ZG0501					4-23/32	8-25/64	
	Y03G02	YI3G02	.9531	61/64	7D	ZG0701					6-39/64	10-9/32	
	Y03G03	YI3G03	.9646	24.50	3D	ZG0302	.9409	1-1/4	2-3/8	1-15/32	2-57/64	6-17/32	
	Y03G04	YI3G04	.9688	31/32	5D	ZG0502					4-53/64	8-15/32	
	Y03G05	YI3G05	.9724	24.70	7D	ZG0702					6-3/4	10-25/64	
	Y03G06	YI3G06	.9843	63/64	3D	ZG0303	.9606	1-1/4	2-3/8	1-15/32	2-61/64	6-39/64	TG2526
	Y03G07	YI3G07	1.0000	1	5D	ZG0503					4-59/64	8-37/64	
					7D	ZG0703					6-57/64	10-35/64	
	Y03G08	YI3G08	1.0039	25.50	3D	ZG0304	.9803	1-1/4	2-3/8	1-15/32	3-1/64	6-47/64	
	Y03G09	YI3G09	1.0106	25.67	5D	ZG0504					5-1/64	8-47/64	
	Y03G10	YI3G10	1.0118	25.70	7D	ZG0704					7-1/32	10-3/4	
	Y03G11	YI3G11	1.0156	1-1/64									
H Ø26.00 to Ø27.99 7.1mm Thick	Y03H01	YI3H01	1.0236	26.00	3D	ZH0301	1.0000	1-1/4	2-3/8	1-15/32	3-5/64	6-3/4	TH2627
					5D	ZH0501					5-1/8	8-51/64	
	Y03H02	YI3H02	1.0312	1-1/32	7D	ZH0701					7-11/64	10-27/32	
	Y03H03	YI3H03	1.0433	26.50	3D	ZH0302	1.0197	1-1/4	2-3/8	1-15/32	3-1/8	6-51/64	
	Y03H04	YI3H04	1.0469	1-3/64	5D	ZH0502					5- 7/32	8-7/8	
	Y03H05	YI3H05	1.0625	1-1/16	7D	ZH0702					7-19/64	10-31/32	
	Y03H06	YI3H06	1.0630	27.00	3D	ZH0303	1.0394	1-1/4	2-3/8	1-15/32	3-3/16	6-7/8	TH2728
					5D	ZH0503					5-5/16	9	
					7D	ZH0703					7-7/16	11-1/8	
	Y03H07	YI3H07	1.0827	27.50	3D	ZH0304	1.0591	1-1/4	2-3/8	1-15/32	3-1/4	6-29/32	
	Y03H08	YI3H08	1.0938	1-3/32	5D	ZH0504					5-13/32	9-5/64	
					7D	ZH0704					7-37/64	11-15/64	

◎ : Excellent ○ : Good

	P											M	K		N	
	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
Y03 *	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎		◎	◎		
YI3 *	○	○		○				○		○		◎			○	○

YG *i*-Dream Drills

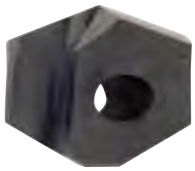
Y03I / YI3I SERIES
Y03J / YI3J SERIES

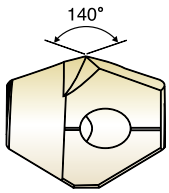
i-DREAM DRILL INSERTS & HOLDERS

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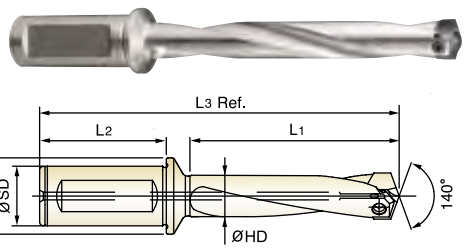
i-Dream Drill ***General***
- For most steel materials

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cutting conditions : p.50~51

Unit : Inch

Series Range	Insert EDP No.		Insert O.D.		Length	Holder EDP No.	Diameter	Shank Dia.	Shank Length	Flange Dia.	Drilling Depth	Overall Length	Torx Screw No.
	TiAlN	TiCN	h7										
(mm)	General	INOX	dec.	inch / mm			HD	SD	L2	FD	L1	L3 Ref.	
I Ø28.00 to Ø29.99 7.7mm Thick	Y03I01	YI3I01	1.1024	28.00	3D	ZI0301	1.0748	1-1/4	2-3/8	1-15/32	3-5/16	7	TI2829
					5D	ZI0501					5-33/64	9-15/64	
	Y03I02	YI3I02	1.1094	1-7/64	7D	ZI0701					7-23/32	11-7/16	
	Y03I03	YI3I03	1.1220	28.50	3D	ZI0302	1.0945	1-1/4	2-3/8	1-15/32	3-23/64	7-1/16	
					5D	ZI0502					5-39/64	9-5/16	
	Y03I04	YI3I04	1.1250	1-1/8	7D	ZI0702					7-55/64	11-9/16	
	Y03I05	YI3I05	1.1417	29.00	3D	ZI0303	1.1142	1-1/4	2-3/8	1-15/32	3-27/64	7-3/16	TI2930
					5D	ZI0503					5-45/64	9-15/32	
	Y03I06	YI3I06	1.1562	1-5/32	7D	ZI0703					7-63/64	11-3/4	
	Y03I07	YI3I07	1.1614	29.50	3D	ZI0304	1.1339	1-1/4	2-3/8	1-15/32	3-31/64	7-7/32	
					5D	ZI0504					5-13/16	9-35/64	
	Y03I08	YI3I08	1.1719	1-11/64	7D	ZI0704					8-1/8	11-7/8	
J Ø30.00 to Ø31.99 8mm Thick	Y03J01	YI3J01	1.1811	30.00	3D	ZJ0301	1.1535	1-1/4	2-3/8	1-15/32	3-35/64	7-21/64	TJ2831
					5D	ZJ0501					5-29/32	9-45/64	
	Y03J02	YI3J02	1.1875	1-3/16	7D	ZJ0701					8-17/64	12-1/16	
	Y03J03	YI3J03	1.2008	30.50	3D	ZJ0302	1.1732	1-1/4	2-3/8	1-15/32	3-39/64	7-3/8	
	Y03J04	YI3J04	1.2031	1-11/64	5D	ZJ0502					6	9-25/32	
	Y03J05	YI3J05	1.2188	1-7/32	7D	ZJ0702					8-13/32	12-11/64	
	Y03J06	YI3J06	1.2205	31.00	3D	ZJ0303	1.1929	1-1/4	2-3/8	1-15/32	3-21/32	7-13/32	TJ3132
					5D	ZJ0503					6-7/64	9-55/64	
					7D	ZJ0703					8-35/64	12-19/64	
	Y03J07	YI3J07	1.2402	31.50	3D	ZJ0304	1.2126	1-1/4	2-3/8	1-15/32	3-23/32	7-17/32	
					5D	ZJ0504					6-13/64	10-1/64	
	Y03J08	YI3J08	1.2500	1-1/4	7D	ZJ0704					8-11/16	12-31/64	

◎ : Excellent ○ : Good

	P											M	K			N	
	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
Y03 *	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎		◎	◎		
YI3 *	○	○		○				○		○		◎			○	○

INCH

ISO	Material			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
P	Non-alloyed steels, Cast steels Free-machining steels	1213, 13L13, 1215, 12L14, 1118 etc	Y03□ / Y13□	~500	100~150		312~394	.006~.011	.008~.014	.011~.016	.013~.020	.015~.022
				500~850	150~250	~24	262~344	.006~.009	.008~.014	.011~.016	.013~.020	.015~.022
	Low-alloyed steels, Cast steels (<5%) Carbon steels	1015, 1020, 1140, 1025, 1035, 1050, 1045, 1055 etc		~450	85~125		295~377	.006~.010	.008~.013	.010~.015	.012~.019	.013~.020
				450~755	125~225	~19	230~295	.005~.008	.007~.011	.009~.013	.012~.018	.013~.019
				755~900	225~265	19~27	197~262	.005~.008	.007~.011	.009~.013	.012~.018	.013~.019
				900~1200	265~350	27~37	180~230	.004~.006	.006~.010	.008~.012	.010~.015	.011~.017
	Alloyed steels	8620, 4130, 4137, 4140, 6150 etc		~600	125~175	~7	262~328	.006~.009	.007~.011	.009~.013	.012~.018	.013~.020
				600~800	175~235	7~22	230~295	.005~.008	.007~.011	.009~.013	.012~.018	.013~.020
				800~950	235~280	22~29	197~262	.005~.008	.006~.010	.009~.013	.012~.018	.013~.020
				950~1110	280~330	29~35	180~230	.004~.006	.005~.008	.008~.012	.010~.015	.011~.017
				1110~1230	330~360	35~39	148~197	.003~.005	.005~.008	.008~.012	.010~.015	.011~.017
	High-alloyed steels	A355, 9840, 4340 etc		600~1020	225~300	19~32	148~197	.005~.008	.006~.010	.008~.012	.008~.012	.009~.014
				1020~1200	300~355	32~38	131~180	.004~.006	.004~.007	.008~.012	.008~.012	.009~.014
				1200~1330	355~390	38~42	131~164	.003~.005	.004~.006	.007~.010	.007~.011	.009~.013
	Structural steels	A36, A516, A182 etc		350~500	100~150		246~312	.006~.009	.008~.014	.011~.015	.011~.017	.013~.019
				500~850	150~250	~24	197~246	.005~.008	.008~.013	.009~.013	.010~.015	.011~.017
				850~1200	250~355	24~38	164~213	.004~.006	.007~.011	.008~.012	.008~.013	.010~.015
	Tool steels	H13, H21, A2, S1 etc		500~705	150~210	~16	164~213	.004~.006	.005~.008	.007~.010	.008~.012	.009~.014
				705~950	210~280	16~29	131~164	.004~.006	.005~.008	.007~.010	.008~.012	.009~.014
M	Stainless steels	Austenitic and Austenitic/ferritic		450~610	135~185	~9	145~197	.004~.006	.005~.007	.006~.008	.006~.011	.007~.011
				610~930	185~275	9~28	89~145	.003~.005	.004~.006	.004~.006	.005~.008	.006~.009
K	Grey cast iron	Pearlitic, Ferritic		500~700	150~210	~16	328~410	.006~.010	.008~.015	.011~.017	.014~.020	.016~.022
		Pearlitic		700~850	210~250	16~24	246~312	.004~.008	.006~.011	.008~.012	.010~.014	.011~.016
	Cast iron nodular	Ferritic		540	165	4	312~394	.005~.009	.007~.012	.008~.013	.011~.016	.013~.017
		Pearlitic		850	250	24	246~312	.004~.008	.006~.010	.007~.011	.010~.014	.011~.016
	Malleable cast iron	Ferritic		450	125		328~410	.005~.009	.007~.012	.008~.013	.011~.016	.013~.017
		Pearlitic		780	230	21	246~312	.004~.007	.006~.010	.007~.011	.010~.014	.011~.016
N	Aluminum alloys (Wrought)	not heat treatable			65		820~1083	.0118~.0157	.0138~.0177	.0157~.0197	.0177~.0217	.0197~.0236
		hardened			150		656~820	.0118~.0157	.0138~.0177	.0157~.0197	.0177~.0217	.0197~.0236
	Aluminum alloys (Cast)	≤12% Si, not heat treatable			75		656~820	.0098~.0138	.0118~.0157	.0138~.0177	.0157~.0197	.0177~.0217
		≤12% Si, hardened			90		492~722	.0098~.0138	.0118~.0157	.0138~.0177	.0157~.0197	.0177~.0217
		>12% Si, not heat treatable			130		328~656	.0079~.0118	.0098~.0138	.0118~.0157	.0138~.0177	.0157~.0197
	Copper alloys	Free machining (Pb>1%)			110		377~476	.006~.011	.009~.014	.011~.014	.015~.018	.016~.019
		Brass			90		476~607	.007~.011	.009~.015	.012~.015	.015~.018	.017~.019
		Electrolitic copper			100		312~394	.002~.004	.004~.005	.004~.005	.006~.007	.007~.009
	Non ferrous material	Duroplastics										
		Fiber plastics										
		Hard rubber										

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.

METRIC

ISO	Material			Tensile Strength	Hardness		Cutting Speed	Feed [mm/rev]				
				[N/mm²]	HB	HRc	Vc [M/min]	Ø12.00 ~Ø14.99	Ø15.00 ~Ø17.99	Ø18.00 ~Ø21.99	Ø22.00 ~Ø26.99	Ø27.00 ~Ø31.99
P	Non-alloyed steels, Cast steels Free-machining steels	9SMn28, 9SMnPb28, 10SPb20 etc	YG03□ / YI3□	~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
M	Stainless steels	Austenitic and Austenitic/Ferritic		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
K	Grey cast iron	Pearlitic,Ferritic A48-76, 20B, 25B, 30B etc		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 A48-35B, 40B, 50B, 60B etc		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 60-40-18, 80-55-06 etc		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 100-70-03 etc		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 A48-74, A220-76, 32510 etc		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 50005, 70003 etc		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
N	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										

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.

Assembly of *i*-Dream Drills





Make sure to clean the insert and insert seat.



Slide the drill insert into the slot of the holder and press down the insert to touch the bottom of the slot.



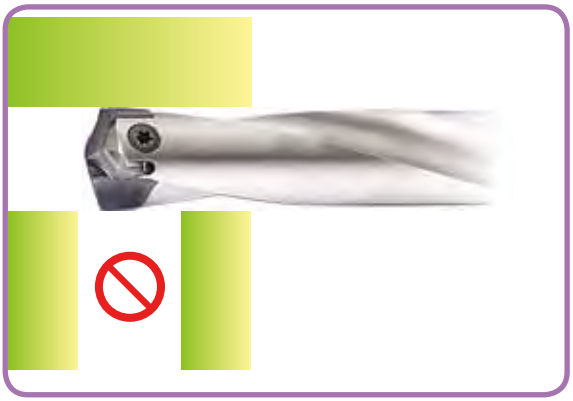
After confirming the insert is pressed down to the bottom of the slot, tighten the screw using anti-seize compound.

WRENCH TYPE	PRODUCT No.	T-HANDLE No.	SERIES
WING TYPE 	TWWT08	—	A
			B
			C
TORX BIT TYPE 	TWBT15	TWH600 	D
	TWBT20		E, F, G
	TWBT25		H, I, J

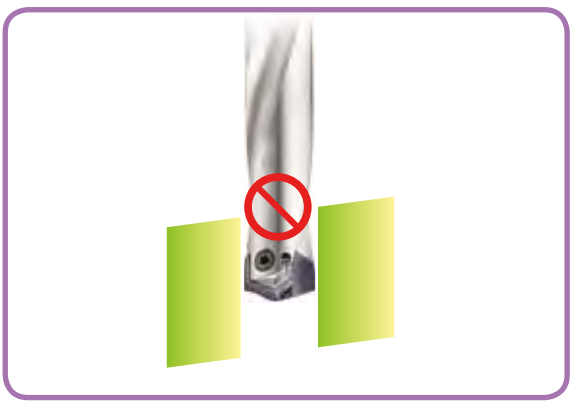
Use the wing type or T-type wrench.

- ▶ Need to use appropriate wrenches and screws as indicated.
- ▶ It's important to tighten up the screw properly.

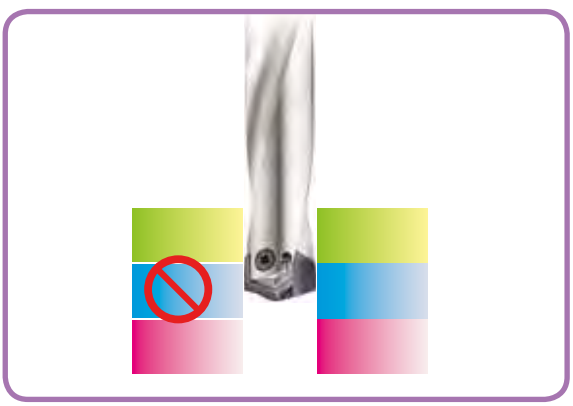
CAUTION-NOT RECOMMENDABLE APPLICATION



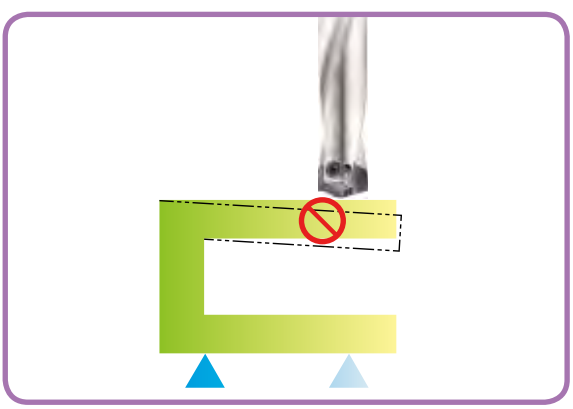
Intersecting cross hole is bigger than the drill insert's Margin Length.



Material with slanting entrance and exit over 7 degree. (If drilling 7 degree or under slanting surface, reduce the feed about 30-50 %)

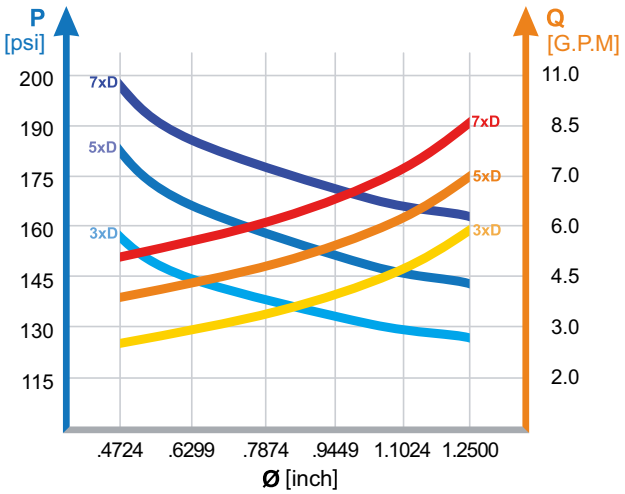


For drilling stacked plates, minimize the space between the plates.
The space stacked plates can cause insert breakage or poor chip control.



The material needs to be fixtured securely before drilling.

RECOMMENDED COOLANT PRESSURE AND FLOW RATE ON VERTICAL DRILLING



- Recommended emulsion mix is 6% - 8%.
- For Drilling in Stainless and High Strength steels, a mix of 10% is recommended.
- For horizontal drilling, 30% reduction on the coolant pressure and flow rate is possible.
- Dry drilling is possible for 1-2xD drilling. But not recommended.

TROUBLE SHOOTING



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

- WITH & WITHOUT COOLANT HOLES
  General Purpose 30Rc to 50Rc Alloys

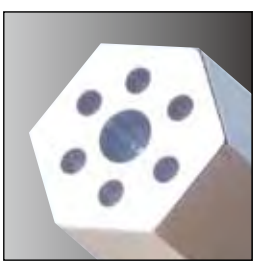
SOLID CARBIDE DREAM DRILLS-GENERAL (with & without Coolant Holes)

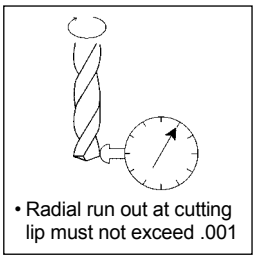
General Purpose HRc30 to HRc50 Alloys

	MODEL		DESCRIPTION		SIZE MIN	SIZE MAX	PAGE
INCH							
3XD	**DH414**		CARBIDE, DREAM DRILLS without COOLANT HOLES	*STUB*	D1/8	D5/8	**58**
5XD	**DH722**		CARBIDE, DREAM DRILLS without COOLANT HOLES	*LONG*	D13/64	D1/2	**59**
3XD	**DH416 DH711**		CARBIDE, DREAM DRILLS with COOLANT HOLES	*SHORT*	D1/8	D5/6	**60**
5XD	**DH418 DH712**		CARBIDE, DREAM DRILLS with COOLANT HOLES	*LONG*	D13/64	D1/2	**62**
METRIC							
3XD	**DH404**		CARBIDE, DREAM DRILLS without COOLANT HOLES	*STUB*	D3.0	D20.0	**63**
3XD	**DH423**		CARBIDE, DREAM DRILLS without COOLANT HOLES	*SHORT*	D3.0	D20.0	**65**
5XD	**DH424**		CARBIDE, DREAM DRILLS without COOLANT HOLES	*LONG*	D1.0	D20.0	**68**
5XD	**DH406**		CARBIDE, DREAM DRILLS with COOLANT HOLES	*SHORT*	D3.0	D20.0	**71**
5XD	**DH408**		CARBIDE, DREAM DRILLS with COOLANT HOLES	*LONG*	D1.0	D20.0	**74**
8XD	**DH421**		CARBIDE, DREAM DRILLS with COOLANT HOLES	*EXTRA LONG*	D3.0	D14.0	**77**
			RECOMMENDED CUTTING CONDITIONS				**80**

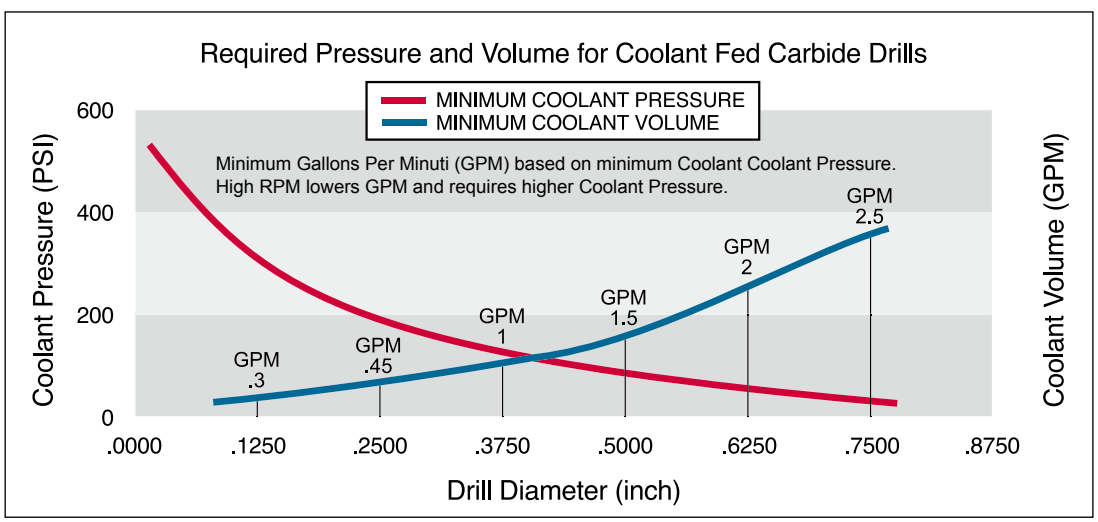
◎ : Excellent ○ : Good

P				H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
○	◎	◎			○	○					
○	◎	◎			○	○					
○	◎	◎			○	○					
○	◎	◎			○	○					
○	◎	◎			○	○					
○	◎	◎			○	○					
○	◎	◎			○	○					
○	◎	◎			○	○					
○	◎	◎			○	○					
○	◎	◎			○	○					





• Radial run out at cutting lip must not exceed .001



DREAM DRILLS -GENERAL

DH414 SERIES

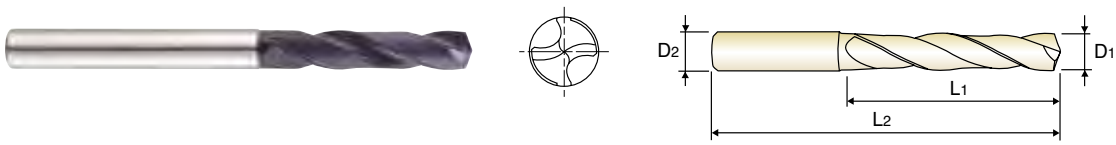
CARBIDE, DREAM DRILLS without COOLANT HOLES

STUB

▶ **Application** : Steel, cast steel, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metal, non-ferrous light metal, abrasive plastic.

▶ **Advantages** : Self centering - center drilling is not required
Excellent positioning - bushing is not necessary
Special Design - reaming is not required
- good chip removal
- powerful drilling

▶ **Tolerance** : Dia. Tolerance ∅D1: See page 253, Shank Tolerance ∅D2: -.0001 -.0005



MG | h6 | 140° | P.80

$D_1 = D_2$
3 × D

Unit : Inch

EDP No.	Diameter		Flute Length	Overall Length	EDP No.	Diameter		Flute Length	Overall Length
	Fractional	Decimal				Fractional	Decimal		
TiAlN	$D_1 = D_2$		L_1	L_2	TiAlN	$D_1 = D_2$		L_1	L_2
0081ATF	**1/8**	**.1250**	45/64	1-59/64	**0221ATF**	**11/32**	**.3438**	2-3/16	3-7/8
0091ATF	**9/64**	**.1406**	25/32	2-3/64	**0231ATF**	**23/64**	**.3594**	2-9/32	4
0101ATF	**5/32**	**.1562**	7/8	2-3/16	**2211ATF**	**U**	**.3680**	2-9/32	4
0111ATF	**11/64**	**.1719**	15/16	2-9/32	**0241ATF**	**3/8**	**.3750**	2-3/8	4-1/8
0121ATF	**3/16**	**.1875**	1	2-7/16	**0251ATF**	**25/64**	**.3906**	2-3/8	4-1/8
0131ATF	**13/64**	**.2031**	1	2-7/16	**0261ATF**	**13/32**	**.4062**	2-5/8	4-13/32
0141ATF	**7/32**	**.2188**	1-1/8	2-5/8	**0271ATF**	**27/64**	**.4219**	2-11/16	4-1/2
0151ATF	**15/64**	**.2344**	1-1/8	2-5/8	**0281ATF**	**7/16**	**.4375**	2-13/16	4-5/8
0161ATF	**1/4**	**.2500**	1-5/8	3-3/16	**0291ATF**	**29/64**	**.4531**	2-7/8	4-3/4
2061ATF	**F**	**.2570**	1-11/16	3-17/64	**0301ATF**	**15/32**	**.4688**	2-7/8	4-3/4
0171ATF	**17/64**	**.2656**	1-11/16	3-17/64	**0311ATF**	**31/64**	**.4844**	3	5-5/16
2091ATF	**I**	**.2720**	1-11/16	3-17/64	**0321ATF**	**1/2**	**.5000**	3-1/16	5-3/8
0181ATF	**9/32**	**.2812**	1-3/4	3-7/16	**0331ATF**	**33/64**	**.5156**	3-11/32	5-11/16
0191ATF	**19/64**	**.2969**	1-7/8	3-9/16	**0341ATF**	**17/32**	**.5312**	3-11/32	5-11/16
0201ATF	**5/16**	**.3125**	1-7/8	3-9/16	**0361ATF**	**9/16**	**.5625**	3-1/2	5-15/16
0211ATF	**21/64**	**.3281**	2-1/16	3-3/4	**0371ATF**	**37/64**	**.5781**	3-37/64	6
2171ATF	**Q**	**.3320**	2-1/16	3-3/4	**0401ATF**	**5/8**	**.6250**	3-25/3	6-19/64

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎				○	○					

DREAM DRILLS -GENERAL

DH722 SERIES

CARBIDE, DREAM DRILLS without COOLANT HOLES

LONG

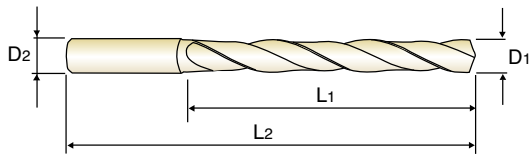
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▶ **Advantages** : Self centering - center drilling is not required
Excellent positioning - bushing is not necessary
Special Design - reaming is not required
- good chip removal
- powerful drilling

▶ **Tolerance** : Dia. Tolerance ∅D1: See page 253, Shank Tolerance ∅D2: -.0001 -.0005







MG | h6 | 140° | P.80

5 × D

Unit : mm

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decimal			
TiAlN	D1		D2	L1	L2
DH722013	13/64	.2031	1/4	1-3/4	3-15/16
DH722014	7/32	.2188	1/4	1-57/64	3-15/16
DH722015	15/64	.2344	1/4	1-57/64	3-15/16
DH722016	1/4	.2500	1/4	2-3/64	4-19/64
DH722206	F	.2570	5/16	2-13/64	4-19/64
DH722017	17/64	.2656	5/16	2-13/64	4-19/64
DH722209	I	.2720	5/16	2-13/64	4-19/64
DH722018	9/32	.2812	5/16	2-23/64	4-41/64
DH722019	19/64	.2969	5/16	2-33/64	4-41/64
DH722020	5/16	.3125	5/16	2-33/64	4-41/64
DH722021	21/64	.3281	3/8	2-43/64	5
DH722217	Q	.3320	3/8	2-43/64	5

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decim al			
TiAlN	D1		D2	L1	L2
DH722022	11/32	.3438	3/8	2-27/32	5
DH722023	23/64	.3594	3/8	3	5-23/64
DH722221	U	.3680	3/8	3	5-23/64
DH722024	3/8	.3750	3/8	3-5/32	5-23/64
DH722025	25/64	.3906	7/16	3-5/32	5-23/64
DH722026	13/32	.4062	7/16	3-5/16	5-7/8
DH722027	27/64	.4219	7/16	3-15/32	5-7/8
DH722028	7/16	.4375	7/16	3-5/8	6-7/32
DH722029	29/64	.4531	1/2	3-25/32	6-7/32
DH722030	15/32	.4688	1/2	3-25/32	6-7/32
DH722031	31/64	.4844	1/2	3-15/16	6-37/64
DH722032	1/2	.5000	1/2	4-3/32	6-37/64

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎				○	○					

DREAM DRILLS -GENERAL

DH416, DH711 SERIES

CARBIDE, DREAM DRILLS with COOLANT HOLES

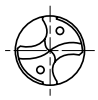
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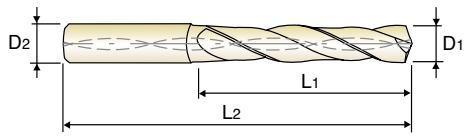
▶ **Application** : Steel, cast steel, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metal, non-ferrous light metal, abrasive plastic

▶ **Advantage** : Self centering - center drilling is not required
Excellent positioning - bushing is not necessary
Special Design - reaming is not required
- good chip removal
- powerful drilling

▶ **Tolerance** : Dia. Tolerance ØD1: See page 57, Shank Tolerance ØD2: -.0001 -.0005







MG | h6 | 140° | 20 bar P.80

3 × D

Unit : Inch

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decimal			
TiAlN	D1		D2	L1	L2
DH711008	1/8	.1250	3/16	1.102	2.992
0081BTF	1/8	.1250	15/64	1.102	2.992
DH711011	11/64	.1719	3/16	1.417	3.386
0111BTF	11/64	.1719	15/64	1.417	3.386
DH711012	3/16	.1875	3/16	1.575	3.543
0121BTF	3/16	.1875	15/64	1.575	3.543
0131BTF	13/64	.2031	15/64	1.082	3.228
DH711013	13/64	.2031	1/4	1.082	3.228
0141BTF	7/32	.2188	15/64	1.181	3.228
DH711014	7/32	.2188	1/4	1.181	3.228
0151BTF	15/64	.2344	15/64	1.181	3.228
DH711015	15/64	.2344	1/4	1.181	3.228
DH711016	1/4	.2500	1/4	1.279	3.465
0161BTF	1/4	.2500	17/64	1.279	3.465
2061BTF	F	.2570	17/64	1.279	3.465
DH711206	F	.2570	5/16	1.279	3.465
0171BTF	17/64	.2656	17/64	1.378	3.465
DH711017	17/64	.2656	5/16	1.378	3.465
2091BTF	I	.2720	.2720	1.378	3.465
DH711209	I	.2720	5/16	1.378	3.465
0181BTF	9/32	.2812	5/16	1.476	3.701
0191BTF	19/64	.2969	5/16	1.476	3.701
0201BTF	5/16	.3125	5/16	1.575	3.701
0211BTF	21/64	.3281	11/32	1.673	3.937
DH711021	21/64	.3281	3/8	1.673	3.937
2171BTF	Q	.3320	11/32	1.673	3.937

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decimal			
TiAlN	D1		D2	L1	L2
DH711217	Q	.3320	3/8	1.673	3.937
0221BTF	11/32	.3438	11/32	1.772	3.937
DH711022	11/32	.3438	3/8	1.772	3.937
DH711023	23/64	.3594	3/8	1.87	4.174
0231BTF	23/64	.3594	25/64	1.870	4.174
DH711221	U	.3680	3/8	1.87	4.174
2211BTF	U	.3680	25/64	1.870	4.174
DH711024	3/8	.3750	3/8	1.969	4.174
0241BTF	3/8	.3750	25/64	1.969	4.174
0251BTF	25/64	.3906	25/64	1.969	4.174
DH711025	25/64	.3906	7/16	1.969	4.174
0261BTF	13/32	.4062	27/64	2.067	4.567
DH711026	13/32	.4062	7/16	2.067	4.567
0271BTF	27/64	.4219	27/64	2.165	4.567
DH711027	27/64	.4219	7/16	2.165	4.567
DH711028	7/16	.4375	7/16	2.264	4.803
0281BTF	7/16	.4375	15/32	2.264	4.803
0291BTF	29/64	.4531	15/32	2.264	4.803
DH711029	29/64	.4531	1/2	2.264	4.803
0301BTF	15/32	.4688	15/32	2.362	4.803
DH711030	15/32	.4688	1/2	2.362	4.803
0311BTF	31/64	.4844	1/2	2.461	5.039
0321BTF	1/2	.5000	1/2	2.559	5.039
0331BTF	33/64	.5156	35/64	2.657	5.276
DH711033	33/64	.5156	9/16	2.657	5.276
0341BTF	17/32	.5312	35/64	2.756	5.276

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎				○	○					

CARBIDE, DREAM DRILLS with COOLANT HOLES

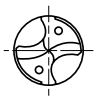
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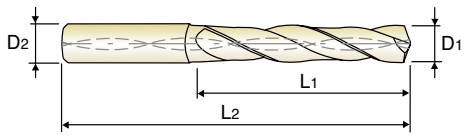
▶ **Application** : Steel, cast steel, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metal, non-ferrous light metal, abrasive plastic

▶ **Advantage** : Self centering - center drilling is not required
Excellent positioning - bushing is not necessary
Special Design - reaming is not required
- good chip removal
- powerful drilling

▶ **Tolerance** : Dia. Tolerance ØD1: See page 57, Shank Tolerance ØD2: -.0001 -.0005









P.80

3 × D

Unit : Inch

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length	EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decimal					Fractional	Decimal			
TiAlN	D1		D2	L1	L2	TiAlN	D1		D2	L1	L2
DH711034	**17/32**	**.5312**	9/16	2.756	5.276	**0371BTF**	**37/64**	**.5781**	37/64	2.953	5.512
0351BTF	**35/64**	**.5469**	35/64	2.756	5.276	**DH711037**	**37/64**	**.5781**	5/8	2.953	5.512
DH711035	**35/64**	**.5469**	9/16	2.756	5.276	**0381BTF**	**19/32**	**.5937**	5/8	3.051	5.709
DH711036	**9/16**	**.5625**	9/16	2.854	5.512	**0391BTF**	**39/64**	**.6094**	5/8	3.051	5.709
0361BTF	**9/16**	**.5625**	37/64	2.854	5.512	**0401BTF**	**5/8**	**.6250**	5/8	3.150	5.709

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎				○	○					

DREAM DRILLS -GENERAL

DH418, DH712 SERIES

CARBIDE, DREAM DRILLS with COOLANT HOLES

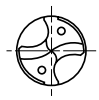
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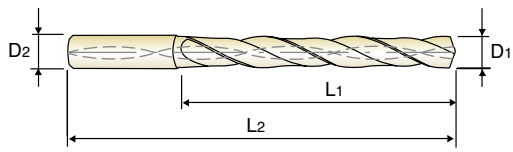
▶ **Application** : Steel, cast steel, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metal, non-ferrous light metal, abrasive plastic

▶ **Advantage** : Self centering - center drilling is not required
Excellent positioning - bushing is not necessary
Special Design - reaming is not required
- good chip removal
- powerful drilling

▶ **Tolerance** : Dia. Tolerance ØD1: See page 57, Shank Tolerance ØD2: -.0001 -.0005







MG | h6 | 140° | 20 bar P.80

5 × D

Unit : Inch

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decimal			
TiAlN	D1		D2	L1	L2
0131CTF	13/64	.2031	15/64	1-3/4	3-15/16
DH712013	13/64	.2031	1/4	1-3/4	3-15/16
0141CTF	7/32	.2188	15/64	1-57/64	3-15/16
DH712014	7/32	.2188	1/4	1-57/64	3-15/16
0151CTF	15/64	.2344	15/64	1-57/64	3-15/16
DH712015	15/64	.2344	1/4	1-57/64	3-15/16
DH712016	1/4	.2500	1/4	2-3/64	4-19/64
0161CTF	1/4	.2500	17/64	2-3/64	4-19/64
2061CTF	F	.2570	17/64	2-13/64	4-19/64
DH712206	F	.2570	5/16	2-13/64	4-19/64
0171CTF	17/64	.2656	17/64	2-13/64	4-19/64
DH712017	17/64	.2656	5/16	2-13/64	4-19/64
2091CTF	I	.2720	.2720	2-13/64	4-19/64
DH712209	I	.2720	5/16	2-13/64	4-19/64
0181CTF	9/32	.2812	5/16	2-23/64	4-41/64
0191CTF	19/64	.2969	5/16	2-33/64	4-41/64
0201CTF	5/16	.3125	5/16	2-33/64	4-41/64
0211CTF	21/64	.3281	11/32	2-43/64	5
DH712021	21/64	.3281	3/8	2-43/64	5
2171CTF	Q	.3320	11/32	2-43/64	5
DH712217	Q	.3320	3/8	2-43/64	5
0221CTF	11/32	.3438	11/32	2-27/32	5

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decimal			
TiAlN	D1		D2	L1	L2
DH712022	11/32	.3438	3/8	2-27/32	5
DH712023	23/64	.3594	3/8	3	5-23/64
0231CTF	23/64	.3594	25/64	3	5-23/64
DH712221	U	.3680	3/8	3	5-23/64
2211CTF	U	.3680	25/64	3	5-23/64
DH712024	3/8	.3750	3/8	3-5/32	5-23/64
0241CTF	3/8	.3750	25/64	3-5/32	5-23/64
0251CTF	25/64	.3906	25/64	3-5/32	5-23/64
DH712025	25/64	.3906	7/16	3-5/32	5-23/64
0261CTF	13/32	.4062	27/64	3-5/16	5-7/8
DH712026	13/32	.4062	7/16	3-5/16	5-7/8
0271CTF	27/64	.4219	27/64	3-15/32	5-7/8
DH712027	27/64	.4219	7/16	3-15/32	5-7/8
DH712028	7/16	.4375	7/16	3-5/8	6-7/32
0281CTF	7/16	.4375	15/32	3-5/8	6-7/32
0291CTF	29/64	.4531	15/32	3-25/32	6-7/32
DH712029	29/64	.4531	1/2	3-25/32	6-7/32
0301CTF	15/32	.4688	15/32	3-25/32	6-7/32
DH712030	15/32	.4688	1/2	3-25/32	6-7/32
0311CTF	31/64	.4844	1/2	3-15/16	6-37/64
0321CTF	1/2	.5000	1/2	4-3/32	6-37/64

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎				○	○					

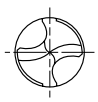
CARBIDE, DREAM DRILLS without COOLANT HOLES

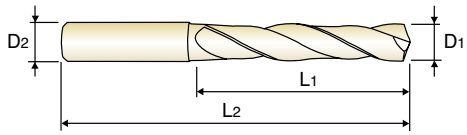
STUB

▶ **Application** : Steel, cast steel, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metal, non-ferrous light metal, abrasive plastic.

▶ **Advantages** : Self centering - center drilling is not required
Excellent positioning - bushing is not necessary
Special design - reaming is not required
- good chip removal
- powerful drilling







DIN 6539 | MG | h6 | h7 | 140° | P.81

$D_1 = D_2$

3 × D

Unit : mm

EDP No.	Diameter		Flute Length	Overall Length
	Fractional	Decimal		
TiAlN	$D_1 = D_2$		L_1	L_2
DH404030	3.0	.1181	16	46
DH404031	3.1	.1220	18	49
DH404032	3.2	.1260	18	49
DH404033	3.3	.1299	18	49
DH404034	3.4	.1339	20	52
DH404035	3.5	.1378	20	52
DH404036	3.6	.1417	20	52
DH404037	3.7	.1457	20	52
DH404038	3.8	.1496	22	55
DH404039	3.9	.1535	22	55
DH404040	4.0	.1575	22	55
DH404041	4.1	.1614	22	55
DH404042	4.2	.1654	22	55
DH404043	4.3	.1693	24	58
DH404044	4.4	.1732	24	58
DH404045	4.5	.1772	24	58
DH404046	4.6	.1811	24	58
DH404047	4.7	.1850	24	58
DH404048	4.8	.1890	26	62
DH404049	4.9	.1929	26	62
DH404050	5.0	.1969	26	62
DH404051	5.1	.2008	26	62
DH404052	5.2	.2047	26	62
DH404053	5.3	.2087	26	62
DH404054	5.4	.2126	28	66
DH404055	5.5	.2165	28	66
DH404056	5.6	.2205	28	66

EDP No.	Diameter		Flute Length	Overall Length
	Metric	Inch		
TiAlN	$D_1 = D_2$		L_1	L_2
DH404057	5.7	.2244	28	66
DH404058	5.8	.2283	28	66
DH404059	5.9	.2323	28	66
DH404060	6.0	.2362	28	66
DH404061	6.1	.2402	31	70
DH404062	6.2	.2441	31	70
DH404063	6.3	.2480	31	70
DH404064	6.4	.2520	31	70
DH404065	6.5	.2559	31	70
DH404066	6.6	.2598	31	70
DH404067	6.7	.2638	31	70
DH404068	6.8	.2677	34	74
DH404069	6.9	.2717	34	74
DH404070	7.0	.2756	34	74
DH404071	7.1	.2795	34	74
DH404072	7.2	.2835	34	74
DH404073	7.3	.2874	34	74
DH404074	7.4	.2913	34	74
DH404075	7.5	.2953	34	74
DH404076	7.6	.2992	37	79
DH404077	7.7	.3031	37	79
DH404078	7.8	.3071	37	79
DH404079	7.9	.3110	37	79
DH404080	8.0	.3150	37	79
DH404081	8.1	.3189	37	79
DH404082	8.2	.3228	37	79
DH404083	8.3	.3268	37	79

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎				○	○					

YG DREAM DRILLS -GENERAL

DH404 SERIES

CARBIDE, DREAM DRILLS without COOLANT HOLES

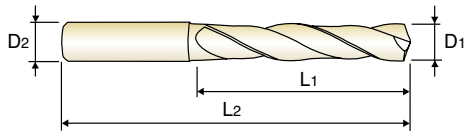
STUB

▶ **Application** : Steel, cast steel, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metal, non-ferrous light metal, abrasive plastic.

▶ **Advantages** : Self centering - center drilling is not required
Excellent positioning - bushing is not necessary
Special design - reaming is not required
- good chip removal
- powerful drilling







DIN 6539 | MG | h6 | h7 | 140° | P.81

$D_1 = D_2$
3 × D

Unit : mm

EDP No.	Diameter		Flute Length	Overall Length
	Metric	Inch		
TiAlN	$D_1 = D_2$		L_1	L_2
DH404084	8.4	.3307	37	79
DH404085	8.5	.3346	37	79
DH404086	8.6	.3386	40	84
DH404087	8.7	.3425	40	84
DH404088	8.8	.3465	40	84
DH404089	8.9	.3504	40	84
DH404090	9.0	.3543	40	84
DH404091	9.1	.3583	40	84
DH404092	9.2	.3622	40	84
DH404093	9.3	.3661	40	84
DH404094	9.4	.3701	40	84
DH404095	9.5	.3740	40	84
DH404096	9.6	.3780	43	89
DH404097	9.7	.3819	43	89
DH404098	9.8	.3858	43	89
DH404099	9.9	.3898	43	89
DH404100	10.0	.3937	43	89
DH404102	10.2	.4016	43	89
DH404105	10.5	.4134	43	89

EDP No.	Diameter		Flute Length	Overall Length
	Metric	Inch		
TiAlN	$D_1 = D_2$		L_1	L_2
DH404110	11.0	.4331	47	95
DH404115	11.5	.4528	47	95
DH404120	12.0	.4724	51	102
DH404130	13.0	.5118	51	102
DH404135	13.5	.5314	54	107
DH404140	14.0	.5512	54	107
DH404145	14.5	.5708	56	111
DH404150	15.0	.5905	56	111
DH404155	15.5	.6102	58	115
DH404160	16.0	.6299	58	115
DH404165	16.5	.6495	60	119
DH404170	17.0	.6692	60	119
DH404175	17.5	.6889	62	123
DH404180	18.0	.7087	62	123
DH404185	18.5	.7283	64	127
DH404190	19.0	.7480	64	127
DH404195	19.5	.7676	66	131
DH404200	20.0	.7874	66	131

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎				○	○					

CARBIDE, DREAM DRILLS without COOLANT HOLES

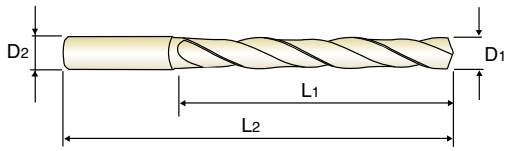
SHORT

▶ **Application** : Steel, cast steel, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metal, non-ferrous light metal, abrasive plastic.

▶ **Advantages** : Self centering - center drilling is not required
Excellent positioning - bushing is not necessary
Special design - reaming is not required
- good chip removal
- powerful drilling







DIN 6537 | MG | h6 | m7 | 140° | P.81

3 × D

Unit : mm

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length	EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal					Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2	TiAlN	D1			D2	L1	L2
DH423030	3.0		.1181	6	20	62	DH423051	5.1		.2008	6	28	66
DH423031	3.1		.1220	6	20	62	DH423013F	5.159	13/64	.2031	6	28	66
DH423008F	3.175	1/8	.1250	6	20	62	DH423052	5.2		.2047	6	28	66
DH423032	3.2		.1260	6	20	62	DH423053	5.3		.2087	6	28	66
DH423033	3.3		.1299	6	20	62	DH423054	5.4		.2126	6	28	66
DH423034	3.4		.1339	6	20	62	DH423055	5.5		.2165	6	28	66
DH423035	3.5		.1378	6	20	62	DH423014F	5.556	7/32	.2188	6	28	66
DH423009F	3.572	9/64	.1406	6	20	62	DH423056	5.6		.2205	6	28	66
DH423036	3.6		.1417	6	20	62	DH423057	5.7		.2244	6	28	66
DH423037	3.7		.1457	6	20	62	DH423058	5.8		.2283	6	28	66
DH423038	3.8		.1496	6	24	66	DH423059	5.9		.2323	6	28	66
DH423039	3.9		.1535	6	24	66	DH423015F	5.953	15/64	.2344	6	28	66
DH423010F	3.969	5/32	.1563	6	24	66	DH423060	6.0		.2362	6	28	66
DH423040	4.0		.1575	6	24	66	DH423061	6.1		.2402	8	34	79
DH423041	4.1		.1614	6	24	66	DH423062	6.2		.2441	8	34	79
DH423042	4.2		.1654	6	24	66	DH423063	6.3		.2480	8	34	79
DH423043	4.3		.1693	6	24	66	DH423016F	6.350	1/4	.2500	8	34	79
DH423011F	4.366	11/64	.1719	6	24	66	DH423064	6.4		.2520	8	34	79
DH423044	4.4		.1732	6	24	66	DH423065	6.5		.2559	8	34	79
DH423045	4.5		.1772	6	24	66	DH423066	6.6		.2598	8	34	79
DH423046	4.6		.1811	6	24	66	DH423067	6.7		.2638	8	34	79
DH423047	4.7		.1850	6	24	66	DH423017F	6.747	17/64	.2656	8	34	79
DH423012F	4.763	3/16	.1875	6	24	66	DH423068	6.8		.2677	8	34	79
DH423048	4.8		.1890	6	28	66	DH423069	6.9		.2717	8	34	79
DH423049	4.9		.1929	6	28	66	DH423070	7.0		.2756	8	34	79
DH423050	5.0		.1969	6	28	66	DH423071	7.1		.2795	8	41	79

▶ NEXT PAGE

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

P					H	M	K	N					S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium	
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~									
○	◎	◎				○	○						

DREAM DRILLS -GENERAL

DH423 SERIES

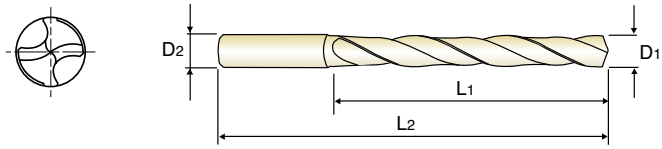
CARBIDE, DREAM DRILLS without COOLANT HOLES

SHORT

▶ **Application** : Steel, cast steel, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metal, non-ferrous light metal, abrasive plastic.

▶ **Advantages** : Self centering - center drilling is not required
Excellent positioning - bushing is not necessary
Special design - reaming is not required
- good chip removal
- powerful drilling





DIN 6537 | MG | h6 | m7 | 140° | P.81

3 × D

Unit : mm

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length	EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal					Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2	TiAlN	D1			D2	L1	L2
DH423018F	7.144	9/32	.2812	8	41	79	DH423092	9.2		.3622	10	47	89
DH423072	7.2		.2835	8	41	79	DH423093	9.3		.3661	10	47	89
DH423073	7.3		.2874	8	41	79	DH423094	9.4		.3701	10	47	89
DH423074	7.4		.2913	8	41	79	DH423095	9.5		.3740	10	47	89
DH423075	7.5		.2953	8	41	79	DH423024F	9.525	3/8	.3750	10	47	89
DH423019F	7.541	19/64	.2969	8	41	79	DH423096	9.6		.3780	10	47	89
DH423076	7.6		.2992	8	41	79	DH423097	9.7		.3819	10	47	89
DH423077	7.7		.3031	8	41	79	DH423098	9.8		.3858	10	47	89
DH423078	7.8		.3071	8	41	79	DH423099	9.9		.3898	10	47	89
DH423079	7.9		.3110	8	41	79	DH423025F	9.922	25/64	.3906	10	47	89
DH423020F	7.938	5/16	.3125	8	41	79	DH423100	10.0		.3937	10	47	89
DH423080	8.0		.3150	8	41	79	DH423101	10.1		.3976	12	55	102
DH423081	8.1		.3189	10	47	89	DH423102	10.2		.4016	12	55	102
DH423082	8.2		.3228	10	47	89	DH423103	10.3		.4055	12	55	102
DH423083	8.3		.3268	10	47	89	DH423026F	10.319	13/32	.4062	12	55	102
DH423021F	8.334	21/64	.3281	10	47	89	DH423104	10.4		.4094	12	55	102
DH423084	8.4		.3307	10	47	89	DH423105	10.5		.4134	12	55	102
DH423085	8.5		.3346	10	47	89	DH423106	10.6		.4173	12	55	102
DH423086	8.6		.3386	10	47	89	DH423107	10.7		.4213	12	55	102
DH423087	8.7		.3425	10	47	89	DH423027F	10.716	27/64	.4219	12	55	102
DH423022F	8.731	11/32	.3438	10	47	89	DH423108	10.8		.4252	12	55	102
DH423088	8.8		.3465	10	47	89	DH423109	10.9		.4291	12	55	102
DH423089	8.9		.3504	10	47	89	DH423110	11.0		.4331	12	55	102
DH423090	9.0		.3543	10	47	89	DH423111	11.1		.4370	12	55	102
DH423091	9.1		.3583	10	47	89	DH423028F	11.113	7/16	.4375	12	55	102
DH423023F	9.128	23/64	.3594	10	47	89	DH423112	11.2		.4409	12	55	102

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium	
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~									
○	◎	◎				○	○						

CARBIDE, DREAM DRILLS without COOLANT HOLES

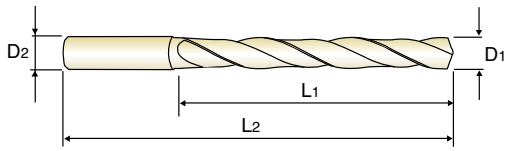
SHORT

▶ **Application** : Steel, cast steel, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metal, non-ferrous light metal, abrasive plastic.

▶ **Advantages** : Self centering - center drilling is not required
Excellent positioning - bushing is not necessary
Special design - reaming is not required
- good chip removal
- powerful drilling







DIN 6537 | MG | h6 | m7 | 140° | P.81

3 × D

Unit : mm

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH423113	11.3		.4449	12	55	102
DH423114	11.4		.4488	12	55	102
DH423115	11.5		.4528	12	55	102
DH423029F	11.509	29/64	.4531	12	55	102
DH423116	11.6		.4567	12	55	102
DH423117	11.7		.4606	12	55	102
DH423118	11.8		.4646	12	55	102
DH423119	11.9		.4685	12	55	102
DH423030F	11.906	15/32	.4688	12	55	102
DH423120	12.0		.4724	12	55	102
DH423123	12.3		.4843	14	60	107
DH423031F	12.303	31/64	.4844	14	60	107
DH423125	12.5		.4921	14	60	107
DH423032F	12.7	1/2	.5000	14	60	107
DH423128	12.8		.5039	14	60	107
DH423130	13.0		.5118	14	60	107
DH423135	13.5		.5315	14	60	107
DH423138	13.8		.5433	14	60	107
DH423140	14.0		.5512	14	60	107
DH423036F	14.288	9/16	.5625	16	65	115

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH423145	14.5		.5708	16	65	115
DH423148	14.8		.5827	16	65	115
DH423150	15.0		.5905	16	65	115
DH423155	15.5		.6102	16	65	115
DH423158	15.8		.6220	16	65	115
DH423040F	15.875	5/8	.6250	16	65	115
DH423160	16.0		.6299	16	65	115
DH423165	16.5		.6495	18	73	123
DH423168	16.8		.6614	18	73	123
DH423170	17.0		.6692	18	73	123
DH423044F	17.463	11/16	.6875	18	73	123
DH423175	17.5		.6889	18	73	123
DH423178	17.8		.7008	18	73	123
DH423180	18.0		.7087	18	73	123
DH423185	18.5		.7283	20	79	131
DH423190	19.0		.7480	20	79	131
DH423048F	19.05	3/4	.7500	20	79	131
DH423195	19.5		.7676	20	79	131
DH423198	19.8		.7795	20	79	131
DH423200	20.0		.7874	20	79	131

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎				○	○					

DREAM DRILLS -GENERAL

DH424 SERIES

CARBIDE, DREAM DRILLS without COOLANT HOLES

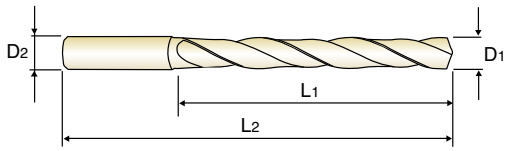
LONG

▶ **Application** : Steel, cast steel, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metal, non-ferrous light metal, abrasive plastic.

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Special design - reaming is not required
- good chip removal
- powerful drilling







DIN 6537 | MG | h6 | m7 | 140° | P.81

5 × D

Unit : mm

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length	EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal					Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2	TiAlN	D1			D2	L1	L2
DH424010	1.0		.0394	3	8	55	DH424033	3.3		.1299	6	28	66
DH424011	1.1		.0433	3	12	55	DH424034	3.4		.1339	6	28	66
DH424012	1.2		.0472	3	12	55	DH424035	3.5		.1378	6	28	66
DH424013	1.3		.0512	3	12	55	DH424009F	3.572	9/64	.1406	6	28	66
DH424014	1.4		.0551	3	12	55	DH424036	3.6		.1417	6	28	66
DH424015	1.5		.0591	3	16	55	DH424037	3.7		.1457	6	28	66
DH424004F	1.588	1/16	.0625	3	16	55	DH424038	3.8		.1496	6	36	74
DH424016	1.6		.0630	3	16	55	DH424039	3.9		.1535	6	36	74
DH424017	1.7		.0669	3	16	55	DH424010F	3.969	5/32	.1563	6	36	74
DH424018	1.8		.0709	3	16	55	DH424040	4.0		.1575	6	36	74
DH424019	1.9		.0748	3	16	55	DH424041	4.1		.1614	6	36	74
DH424005F	1.984	5/64	.0781	3	16	55	DH424042	4.2		.1654	6	36	74
DH424020	2.0		.0787	4	21	57	DH424043	4.3		.1693	6	36	74
DH424021	2.1		.0827	4	21	57	DH424011F	4.366	11/64	.1719	6	36	74
DH424022	2.2		.0866	4	21	57	DH424044	4.4		.1732	6	36	74
DH424023	2.3		.0906	4	21	57	DH424045	4.5		.1772	6	36	74
DH424006F	2.381	3/32	.0938	4	21	57	DH424046	4.6		.1811	6	36	74
DH424024	2.4		.0945	4	21	57	DH424047	4.7		.1850	6	36	74
DH424025	2.5		.0984	4	21	57	DH424012F	4.763	3/16	.1875	6	36	74
DH424026	2.6		.1024	4	21	57	DH424048	4.8		.1890	6	44	82
DH424027	2.7		.1063	4	21	57	DH424049	4.9		.1929	6	44	82
DH424007F	2.778	7/64	.1094	4	21	57	DH424050	5.0		.1969	6	44	82
DH424028	2.8		.1102	4	21	57	DH424051	5.1		.2008	6	44	82
DH424029	2.9		.1142	4	21	57	DH424013F	5.159	13/64	.2031	6	44	82
DH424030	3.0		.1181	6	28	66	DH424052	5.2		.2047	6	44	82
DH424031	3.1		.1220	6	28	66	DH424053	5.3		.2087	6	44	82
DH424008F	3.175	1/8	.1250	6	28	66	DH424054	5.4		.2126	6	44	82
DH424032	3.2		.1260	6	28	66	DH424055	5.5		.2165	6	44	82

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎				○	○					

DREAM DRILLS -GENERAL

DH424 SERIES

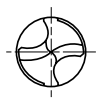
CARBIDE, DREAM DRILLS without COOLANT HOLES

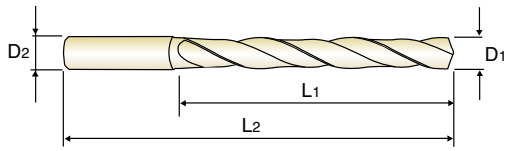
LONG

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Special design - reaming is not required
- good chip removal
- powerful drilling







DIN 6537 | MG | h6 | m7 | 140° | P.81

5 × D

Unit : mm

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH424014F	5.556	7/32	.2188	6	44	82
DH424056	5.6		.2205	6	44	82
DH424057	5.7		.2244	6	44	82
DH424058	5.8		.2283	6	44	82
DH424059	5.9		.2323	6	44	82
DH424015F	5.953	15/64	.2344	6	44	82
DH424060	6.0		.2362	6	44	82
DH424061	6.1		.2402	8	53	91
DH424062	6.2		.2441	8	53	91
DH424063	6.3		.2480	8	53	91
DH424016F	6.35	1/4	.2500	8	53	91
DH424064	6.4		.2520	8	53	91
DH424065	6.5		.2559	8	53	91
DH424066	6.6		.2598	8	53	91
DH424067	6.7		.2638	8	53	91
DH424017F	6.747	17/64	.2656	8	53	91
DH424068	6.8		.2677	8	53	91
DH424069	6.9		.2717	8	53	91
DH424070	7.0		.2756	8	53	91
DH424071	7.1		.2795	8	53	91
DH424018F	7.144	9/32	.2812	8	53	91
DH424072	7.2		.2835	8	53	91
DH424073	7.3		.2874	8	53	91
DH424074	7.4		.2913	8	53	91
DH424075	7.5		.2953	8	53	91
DH424019F	7.541	19/64	.2969	8	53	91
DH424076	7.6		.2992	8	53	91
DH424077	7.7		.3031	8	53	91

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH424078	7.8		.3071	8	53	91
DH424079	7.9		.3110	8	53	91
DH424020F	7.938	5/16	.3125	8	53	91
DH424080	8.0		.3150	8	53	91
DH424081	8.1		.3189	10	61	103
DH424082	8.2		.3228	10	61	103
DH424083	8.3		.3268	10	61	103
DH424021F	8.334	21/64	.3281	10	61	103
DH424084	8.4		.3307	10	61	103
DH424085	8.5		.3346	10	61	103
DH424086	8.6		.3386	10	61	103
DH424087	8.7		.3425	10	61	103
DH424022F	8.731	11/32	.3438	10	61	103
DH424088	8.8		.3465	10	61	103
DH424089	8.9		.3504	10	61	103
DH424090	9.0		.3543	10	61	103
DH424091	9.1		.3583	10	61	103
DH424023F	9.128	23/64	.3594	10	61	103
DH424092	9.2		.3622	10	61	103
DH424093	9.3		.3661	10	61	103
DH424094	9.4		.3701	10	61	103
DH424095	9.5		.3740	10	61	103
DH424024F	9.525	3/8	.3750	10	61	103
DH424096	9.6		.3780	10	61	103
DH424097	9.7		.3819	10	61	103
DH424098	9.8		.3858	10	61	103
DH424099	9.9		.3898	10	61	103
DH424025F	9.922	25/64	.3906	10	61	103

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎				○	○					

DREAM DRILLS -GENERAL

DH424 SERIES

CARBIDE, DREAM DRILLS without COOLANT HOLES

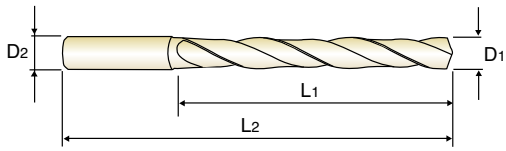
LONG

▶ **Application** : Steel, cast steel, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metal, non-ferrous light metal, abrasive plastic.

▶ **Advantages** : Self centering - center drilling is not required
Excellent positioning - bushing is not necessary
Special design - reaming is not required
- good chip removal
- powerful drilling







DIN 6537 | MG | h6 | m7 | 140° | P.81

5 × D

Unit : mm

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH424100	10.0		.3937	10	61	103
DH424101	10.1		.3976	12	71	118
DH424102	10.2		.4016	12	71	118
DH424103	10.3		.4055	12	71	118
DH424026F	10.319	13/32	.4062	12	71	118
DH424104	10.4		.4094	12	71	118
DH424105	10.5		.4134	12	71	118
DH424106	10.6		.4173	12	71	118
DH424107	10.7		.4213	12	71	118
DH424027F	10.716	27/64	.4219	12	71	118
DH424108	10.8		.4252	12	71	118
DH424109	10.9		.4291	12	71	118
DH424110	11.0		.4331	12	71	118
DH424111	11.1		.4370	12	71	118
DH424028F	11.113	7/16	.4375	12	71	118
DH424112	11.2		.4409	12	71	118
DH424113	11.3		.4449	12	71	118
DH424114	11.4		.4488	12	71	118
DH424115	11.5		.4528	12	71	118
DH424029F	11.509	29/64	.4531	12	71	118
DH424116	11.6		.4567	12	71	118
DH424117	11.7		.4606	12	71	118
DH424118	11.8		.4646	12	71	118
DH424119	11.9		.4685	12	71	118
DH424030F	11.906	15/32	.4688	12	71	118
DH424120	12.0		.4724	12	71	118
DH424123	12.3		.4843	14	77	124
DH424031F	12.303	31/64	.4844	14	77	124

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH424125	12.5		.4921	14	77	124
DH424032F	12.7	1/2	.5000	14	77	124
DH424128	12. 8		.5039	14	77	124
DH424130	13.0		.5118	14	77	124
DH424135	13.5		.5315	14	77	124
DH424138	13.8		.5433	14	77	124
DH424140	14.0		.5512	14	77	124
DH424036F	14.288	9/16	.5625	16	83	133
DH424145	14.5		.5708	16	83	133
DH424148	14.8		.5827	16	83	133
DH424150	15.0		.5905	16	83	133
DH424155	15.5		.6102	16	83	133
DH424158	15.8		.6220	16	83	133
DH424040F	15.875	5/8	.6250	16	83	133
DH424160	16.0		.6299	16	83	133
DH424165	16.5		.6495	18	93	143
DH424168	16.8		.6614	18	93	143
DH424170	17.0		.6692	18	93	143
DH424175	17.5		.6889	18	93	143
DH424178	17.8		.7008	18	93	143
DH424180	18.0		.7087	18	93	143
DH424185	18.5		.7283	20	101	153
DH424190	19.0		.7480	20	101	153
DH424048F	19.05	3/4	.7500	20	101	153
DH424195	19.5		.7676	20	101	153
DH424198	19.8		.7795	20	101	153
DH424200	20.0		.7874	20	101	153

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

P					H	M	K	N					S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP		Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~									
○	◎	◎				○	○						

DREAM DRILLS -GENERAL

DH406 SERIES

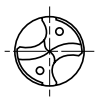
CARBIDE, DREAM DRILLS with COOLANT HOLES

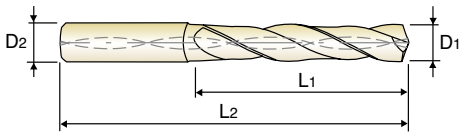
SHORT

▶ **Application** : Steel, cast steel, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metal, non-ferrous light metal, abrasive plastic.

▶ **Advantages** : Self centering - center drilling is not required
Excellent positioning - bushing is not necessary
Special Design - reaming is not required
- good chip removal
- powerful drilling







DIN 6537 | MG | h6 | m7 | 140° | 20 bar

P.82

3 × D

Unit : mm

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH406030	3.0		.1181	6	20	62
DH406031	3.1		.1220	6	20	62
DH406008F	3.175	1/8	.1250	6	20	62
DH406032	3.2		.1260	6	20	62
DH406033	3.3		.1299	6	20	62
DH406034	3.4		.1339	6	20	62
DH406035	3.5		.1378	6	20	62
DH406009F	3.572	9/64	.1406	6	20	62
DH406036	3.6		.1417	6	20	62
DH406037	3.7		.1457	6	20	62
DH406038	3.8		.1496	6	24	66
DH406039	3.9		.1535	6	24	66
DH406010F	3.969	5/32	.1563	6	24	66
DH406040	4.0		.1575	6	24	66
DH406041	4.1		.1614	6	24	66
DH406042	4.2		.1654	6	24	66
DH406043	4.3		.1693	6	24	66
DH406011F	4.366	11/64	.1719	6	24	66
DH406044	4.4		.1732	6	24	66
DH406045	4.5		.1772	6	24	66
DH406046	4.6		.1811	6	24	66
DH406047	4.7		.1850	6	24	66
DH406012F	4.763	3/16	.1875	6	24	66
DH406048	4.8		.1890	6	28	66
DH406049	4.9		.1929	6	28	66
DH406050	5.0		.1969	6	28	66
DH406051	5.1		.2008	6	28	66
DH406013F	5.159	13/64	.2031	6	28	66

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH406052	5.2		.2047	6	28	66
DH406053	5.3		.2087	6	28	66
DH406054	5.4		.2126	6	28	66
DH406055	5.5		.2165	6	28	66
DH406014F	5.556	7/32	.2188	6	28	66
DH406056	5.6		.2205	6	28	66
DH406057	5.7		.2244	6	28	66
DH406058	5.8		.2283	6	28	66
DH406059	5.9		.2323	6	28	66
DH406015F	5.953	15/64	.2344	6	28	66
DH406060	6.0		.2362	6	28	66
DH406061	6.1		.2402	8	34	79
DH406062	6.2		.2441	8	34	79
DH406063	6.3		.2480	8	34	79
DH406016F	6.35	1/4	.2500	8	34	79
DH406064	6.4		.2520	8	34	79
DH406065	6.5		.2559	8	34	79
DH406066	6.6		.2598	8	34	79
DH406067	6.7		.2638	8	34	79
DH406017F	6.747	17/64	.2656	8	34	79
DH406068	6.8		.2677	8	34	79
DH406069	6.9		.2717	8	34	79
DH406070	7.0		.2756	8	34	79
DH406071	7.1		.2795	8	41	79
DH406018F	7.144	9/32	.2812	8	41	79
DH406072	7.2		.2835	8	41	79
DH406073	7.3		.2874	8	41	79
DH406074	7.4		.2913	8	41	79

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎				○	○					

YG DREAM DRILLS -GENERAL

DH406 SERIES

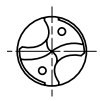
CARBIDE, DREAM DRILLS with COOLANT HOLES

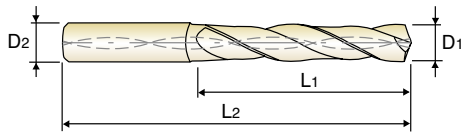
SHORT

▶ **Application** : Steel, cast steel, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metal, non-ferrous light metal, abrasive plastic.

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Excellent positioning - bushing is not necessary
Special Design - reaming is not required
- good chip removal
- powerful drilling







DIN 6537 | MG | h6 | m7 | 140° | 20 bar

P.82

3 × D

Unit : mm

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH406075	7.5		.2953	8	41	79
DH406019F	7.541	19/64	.2969	8	41	79
DH406076	7.6		.2992	8	41	79
DH406077	7.7		.3031	8	41	79
DH406078	7.8		.3071	8	41	79
DH406079	7.9		.3110	8	41	79
DH406020F	7.938	5/16	.3125	8	41	79
DH406080	8.0		.3150	8	41	79
DH406081	8.1		.3189	10	47	89
DH406082	8.2		.3228	10	47	89
DH406083	8.3		.3268	10	47	89
DH406021F	8.334	21/64	.3281	10	47	89
DH406084	8.4		.3307	10	47	89
DH406085	8.5		.3346	10	47	89
DH406086	8.6		.3386	10	47	89
DH406087	8.7		.3425	10	47	89
DH406022F	8.731	11/32	.3438	10	47	89
DH406088	8.8		.3465	10	47	89
DH406089	8.9		.3504	10	47	89
DH406090	9.0		.3543	10	47	89
DH406091	9.1		.3583	10	47	89
DH406023F	9.128	23/64	.3594	10	47	89
DH406092	9.2		.3622	10	47	89
DH406093	9.3		.3661	10	47	89
DH406094	9.4		.3701	10	47	89
DH406095	9.5		.3740	10	47	89
DH406024F	9.525	3/8	.3750	10	47	89
DH406096	9.6		.3780	10	47	89

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH406097	9.7		.3819	10	47	89
DH406098	9.8		.3858	10	47	89
DH406099	9.9		.3898	10	47	89
DH406025F	9.922	25/64	.3906	10	47	89
DH406100	10.0		.3937	10	47	89
DH406101	10.1		.3976	12	55	102
DH406102	10.2		.4016	12	55	102
DH406103	10.3		.4055	12	55	102
DH406026F	10.319	13/32	.4062	12	55	102
DH406104	10.4		.4094	12	55	102
DH406105	10.5		.4134	12	55	102
DH406106	10.6		.4173	12	55	102
DH406107	10.7		.4212	12	55	102
DH406027F	10.716	27/64	.4219	12	55	102
DH406108	10.8		.4252	12	55	102
DH406109	10.9		.4291	12	55	102
DH406110	11.0		.4330	12	55	102
DH406111	11.1		.4370	12	55	102
DH406028F	11.113	7/16	.4375	12	55	102
DH406112	11.2		.4409	12	55	102
DH406113	11.3		.4448	12	55	102
DH406114	11.4		.4488	12	55	102
DH406115	11.5		.4527	12	55	102
DH406029F	11.509	29/64	.4531	12	55	102
DH406116	11.6		.4566	12	55	102
DH406117	11.7		.4606	12	55	102
DH406118	11.8		.4645	12	55	102
DH406119	11.9		.4685	12	55	102

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎				○	○					

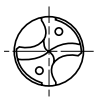
CARBIDE, DREAM DRILLS with COOLANT HOLES

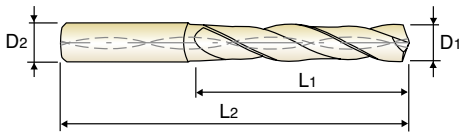
SHORT

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







DIN 6537 | MG | h6 | m7 | 140° | 20 bar | P.82

3 × D

Unit : mm

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH406030F	11.906	15/32	.4688	12	55	102
DH406120	12.0		.4724	12	55	102
DH406031F	12.303	31/64	.4844	14	60	107
DH406125	12.5		.4921	14	60	107
DH406032F	12.7	1/2	.5000	14	60	107
DH406130	13.0		.5118	14	60	107
DH406135	13.5		.5314	14	60	107
DH406140	14.0		.5512	14	60	107
DH406036F	14.288	9/16	.5625	16	65	115
DH406145	14.5		.5708	16	65	115
DH406150	15.0		.5905	16	65	115
DH406155	15.5		.6102	16	65	115

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH406040F	15.875	5/8	.6250	16	65	115
DH406160	16.0		.6299	16	65	115
DH406165	16.5		.6495	18	73	123
DH406170	17.0		.6692	18	73	123
DH406044F	17.463	11/16	.6875	18	73	123
DH406175	17.5		.6889	18	73	123
DH406180	18.0		.7087	18	73	123
DH406185	18.5		.7283	20	79	131
DH406190	19.0		.7480	20	79	131
DH406048F	19.05	3/4	.7500	20	79	131
DH406195	19.5		.7676	20	79	131
DH406200	20.0		.7874	20	79	131

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎				○	○					

DREAM DRILLS -GENERAL

DH408 SERIES

CARBIDE, DREAM DRILLS with COOLANT HOLES

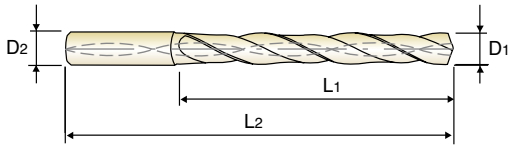
LONG

▶ **Application** : Steel, cast steel, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metal, non-ferrous light metal, abrasive plastic.

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







DIN 6537 | MG | h6 | m7 | 140° | 20 bar

P.82

5 × D

Unit : mm

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH408010	1.0		.0394	3	8	55
DH408011	1.1		.0433	3	12	55
DH408012	1.2		.0472	3	12	55
DH408013	1.3		.0512	3	12	55
DH408014	1.4		.0551	3	12	55
DH408015	1.5		.0591	3	16	55
DH408004F	1.588	1/16	.0625	3	16	55
DH408016	1.6		.0630	3	16	55
DH408017	1.7		.0669	3	16	55
DH408018	1.8		.0709	3	16	55
DH408019	1.9		.0748	3	16	55
DH408005F	1.984	5/64	.0781	3	16	55
DH408020	2.0		.0787	4	21	57
DH408021	2.1		.0827	4	21	57
DH408022	2.2		.0866	4	21	57
DH408023	2.3		.0906	4	21	57
DH408006F	2.381	3/32	.0938	4	21	57
DH408024	2.4		.0945	4	21	57
DH408025	2.5		.0984	4	21	57
DH408026	2.6		.1024	4	21	57
DH408027	2.7		.1063	4	21	57
DH408007F	2.778	7/64	.1094	4	21	57
DH408028	2.8		.1102	4	21	57
DH408029	2.9		.1142	4	21	57
DH408030	3.0		.1181	6	28	66
DH408031	3.1		.1220	6	28	66
DH408008F	3.175	1/8	.1250	6	28	66
DH408032	3.2		.1260	6	28	66

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH408033	3.3		.1299	6	28	66
DH408034	3.4		.1339	6	28	66
DH408035	3.5		.1378	6	28	66
DH408009F	3.572	9/64	.1406	6	28	66
DH408036	3.6		.1417	6	28	66
DH408037	3.7		.1457	6	28	66
DH408038	3.8		.1496	6	36	74
DH408039	3.9		.1535	6	36	74
DH408010F	3.969	5/32	.1563	6	36	74
DH408040	4.0		.1575	6	36	74
DH408041	4.1		.1614	6	36	74
DH408042	4.2		.1654	6	36	74
DH408043	4.3		.1693	6	36	74
DH408011F	4.366	11/64	.1719	6	36	74
DH408044	4.4		.1732	6	36	74
DH408045	4.5		.1772	6	36	74
DH408046	4.6		.1811	6	36	74
DH408047	4.7		.1850	6	36	74
DH408012F	4.763	3/16	.1875	6	36	74
DH408048	4.8		.1890	6	44	82
DH408049	4.9		.1929	6	44	82
DH408050	5.0		.1969	6	44	82
DH408051	5.1		.2008	6	44	82
DH408013F	5.159	13/64	.2031	6	44	82
DH408052	5.2		.2047	6	44	82
DH408053	5.3		.2087	6	44	82
DH408054	5.4		.2126	6	44	82
DH408055	5.5		.2165	6	44	82

▶ NEXT PAGE

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎				○	○					

DREAM DRILLS -GENERAL

DH408 SERIES

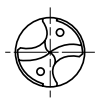
CARBIDE, DREAM DRILLS with COOLANT HOLES

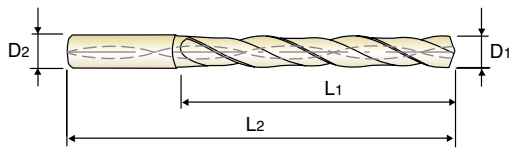
LONG

▶ **Application** : Steel, cast steel, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metal, non-ferrous light metal, abrasive plastic.

▶ **Advantages** : Self centering - center drilling is not required
Excellent positioning - bushing is not necessary
Special Design - reaming is not required
- good chip removal
- powerful drilling







DIN 6537 | MG | h6 | m7 | 140° | 20 bar

P.82

5 × D

Unit : mm

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH408014F	5.556	7/32	.2188	6	44	82
DH408056	5.6		.2205	6	44	82
DH408057	5.7		.2244	6	44	82
DH408058	5.8		.2283	6	44	82
DH408059	5.9		.2323	6	44	82
DH408015F	5.953	15/64	.2344	6	44	82
DH408060	6.0		.2362	6	44	82
DH408061	6.1		.2402	8	53	91
DH408062	6.2		.2441	8	53	91
DH408063	6.3		.2480	8	53	91
DH408016F	6.35	1/4	.2500	8	53	91
DH408064	6.4		.2520	8	53	91
DH408065	6.5		.2559	8	53	91
DH408066	6.6		.2598	8	53	91
DH408067	6.7		.2638	8	53	91
DH408017F	6.747	17/64	.2656	8	53	91
DH408068	6.8		.2677	8	53	91
DH408069	6.9		.2717	8	53	91
DH408070	7.0		.2756	8	53	91
DH408071	7.1		.2795	8	53	91
DH408018F	7.144	9/32	.2812	8	53	91
DH408072	7.2		.2835	8	53	91
DH408073	7.3		.2874	8	53	91
DH408074	7.4		.2913	8	53	91
DH408075	7.5		.2953	8	53	91
DH408019F	7.541	19/64	.2969	8	53	91
DH408076	7.6		.2992	8	53	91
DH408077	7.7		.3031	8	53	91

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH408078	7.8		.3071	8	53	91
DH408079	7.9		.3110	8	53	91
DH408020F	7.938	5/16	.3125	8	53	91
DH408080	8.0		.3150	8	53	91
DH408081	8.1		.3189	10	61	103
DH408082	8.2		.3228	10	61	103
DH408083	8.3		.3268	10	61	103
DH408021F	8.334	21/64	.3281	10	61	103
DH408084	8.4		.3307	10	61	103
DH408085	8.5		.3346	10	61	103
DH408086	8.6		.3386	10	61	103
DH408087	8.7		.3425	10	61	103
DH408022F	8.731	11/32	.3438	10	61	103
DH408088	8.8		.3465	10	61	103
DH408089	8.9		.3504	10	61	103
DH408090	9.0		.3543	10	61	103
DH408091	9.1		.3583	10	61	103
DH408023F	9.128	23/64	.3594	10	61	103
DH408092	9.2		.3622	10	61	103
DH408093	9.3		.3661	10	61	103
DH408094	9.4		.3701	10	61	103
DH408095	9.5		.3740	10	61	103
DH408024F	9.525	3/8	.3750	10	61	103
DH408096	9.6		.3780	10	61	103
DH408097	9.7		.3819	10	61	103
DH408098	9.8		.3858	10	61	103
DH408099	9.9		.3898	10	61	103
DH408025F	9.922	25/64	.3906	10	61	103

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎				○	○					

DREAM DRILLS -GENERAL

DH408 SERIES

CARBIDE, DREAM DRILLS with COOLANT HOLES

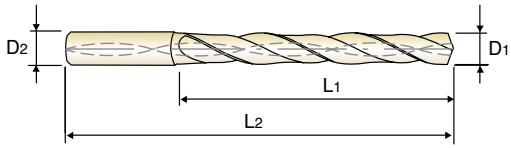
LONG

▶ **Application** : Steel, cast steel, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metal, non-ferrous light metal, abrasive plastic.

▶ **Advantages** : Self centering - center drilling is not required
Excellent positioning - bushing is not necessary
Special Design - reaming is not required
- good chip removal
- powerful drilling







DIN 6537 | MG | h6 | m7 | 140° | 20 bar

P.82

5 × D

Unit : mm

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D_1			D_2	L_1	L_2
DH408100	10.0		.3937	10	61	103
DH408101	10.1		.3976	12	71	118
DH408102	10.2		.4016	12	71	118
DH408103	10.3		.4055	12	71	118
DH408026F	10.319	13/32	.4062	12	71	118
DH408104	10.4		.4094	12	71	118
DH408105	10.5		.4134	12	71	118
DH408106	10.6		.4173	12	71	118
DH408107	10.7		.4212	12	71	118
DH408027F	10.716	27/64	.4219	12	71	118
DH408108	10.8		.4252	12	71	118
DH408109	10.9		.4291	12	71	118
DH408110	11.0		.4330	12	71	118
DH408111	11.1		.4370	12	71	118
DH408028F	11.113	7/16	.4375	12	71	118
DH408112	11.2		.4409	12	71	118
DH408113	11.3		.4448	12	71	118
DH408114	11.4		.4488	12	71	118
DH408115	11.5		.4527	12	71	118
DH408029F	11.509	29/64	.4531	12	71	118
DH408116	11.6		.4566	12	71	118
DH408117	11.7		.4606	12	71	118
DH408118	11.8		.4645	12	71	118
DH408119	11.9		.4685	12	71	118

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D_1			D_2	L_1	L_2
DH408030F	11.906	15/32	.4688	12	71	118
DH408120	12.0		.4724	12	71	118
DH408031F	12.303	31/64	.4844	14	77	124
DH408125	12.5		.4921	14	77	124
DH408032F	12.7	1/2	.5000	14	77	124
DH408130	13.0		.5118	14	77	124
DH408135	13.5		.5314	14	77	124
DH408140	14.0		.5512	14	77	124
DH408036F	14.288	9/16	.5625	16	83	133
DH408145	14.5		.5708	16	83	133
DH408150	15.0		.5905	16	83	133
DH408155	15.5		.6102	16	83	133
DH408040F	15.875	5/8	.6250	16	83	133
DH408160	16.0		.6299	16	83	133
DH408165	16.5		.6495	18	93	143
DH408170	17.0		.6692	18	93	143
DH408175	17.5		.6889	18	93	143
DH408180	18.0		.7087	18	93	143
DH408185	18.5		.7283	20	101	153
DH408190	19.0		.7480	20	101	153
DH408048F	19.05	3/4	.7500	20	101	153
DH408195	19.5		.7676	20	101	153
DH408200	20.0		.7874	20	101	153

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55		HRc55~							
○	◎	◎				○	○					

DREAM DRILLS -GENERAL

DH421 SERIES

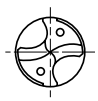
CARBIDE, DREAM DRILLS with COOLANT HOLES

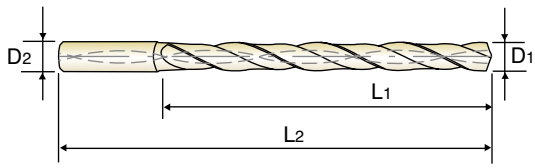
EXTRA LONG

▶ **Application** : Steel, cast steel, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metal, non-ferrous light metal, abrasive plastic.

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Excellent positioning - bushing is not necessary
Special Design - reaming is not required
- good chip removal
- powerful drilling







DIN 6537 | MG | h6 | m7 | 140° | 20 bar  P.82

8 × D

Unit : mm

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH421030	3.0		.1181	6	34	72
DH421031	3.1		.1220	6	34	72
DH421008F	3.175	1/8	.1250	6	34	72
DH421032	3.2		.1260	6	34	72
DH421033	3.3		.1299	6	34	72
DH421034	3.4		.1339	6	34	72
DH421229G	3.450	#29	.1360	6	34	72
DH421035	3.5		.1378	6	34	72
DH421009F	3.572	9/64	.1406	6	34	72
DH421036	3.6		.1417	6	34	72
DH421037	3.7		.1457	6	34	72
DH421038	3.8		.1496	6	43	81
DH421039	3.9		.1535	6	43	81
DH421010F	3.969	5/32	.1563	6	43	81
DH421040	4.0		.1575	6	43	81
DH421221G	4.040	#21	.1590	6	43	81
DH421041	4.1		.1614	6	43	81
DH421042	4.2		.1654	6	43	81
DH421043	4.3		.1693	6	43	81
DH421011F	4.366	11/64	.1719	6	43	81
DH421044	4.4		.1732	6	43	81
DH421045	4.5		.1772	6	43	81
DH421046	4.6		.1811	6	43	81
DH421047	4.7		.1850	6	43	81
DH421012F	4.763	3/16	.1875	6	57	95
DH421048	4.8		.1890	6	57	95
DH421049	4.9		.1929	6	57	95
DH421050	5.0		.1969	6	57	95

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH421051	5.1		.2008	6	57	95
DH421013F	5.159	13/64	.2031	6	57	95
DH421052	5.2		.2047	6	57	95
DH421053	5.3		.2087	6	57	95
DH421054	5.4		.2126	6	57	95
DH421055	5.5		.2165	6	57	95
DH421014F	5.556	7/32	.2188	6	57	95
DH421056	5.6		.2205	6	57	95
DH421057	5.7		.2244	6	57	95
DH421058	5.8		.2283	6	57	95
DH421059	5.9		.2323	6	57	95
DH421015F	5.953	15/64	.2344	6	57	95
DH421060	6.0		.2362	6	57	95
DH421061	6.1		.2402	8	76	114
DH421062	6.2		.2441	8	76	114
DH421063	6.3		.2480	8	76	114
DH421016F	6.350	1/4	.2500	8	76	114
DH421064	6.4		.2520	8	76	114
DH421065	6.5		.2559	8	76	114
DH421106L	6.53	F	.2570	8	76	114
DH421066	6.6		.2598	8	76	114
DH421067	6.7		.2638	8	76	114
DH421017F	6.747	17/64	.2656	8	76	114
DH421068	6.8		.2677	8	76	114
DH421069	6.9		.2717	8	76	114
DH421070	7.0		.2756	8	76	114
DH421071	7.1		.2795	8	76	114
DH421018F	7.144	9/32	.2813	8	76	114

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎				○	○					

DREAM DRILLS -GENERAL

DH421 SERIES

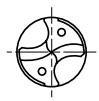
CARBIDE, DREAM DRILLS with COOLANT HOLES

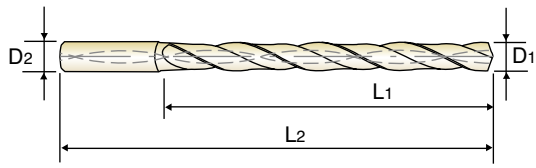
EXTRA LONG

▶ **Application** : Steel, cast steel, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metal, non-ferrous light metal, abrasive plastic.

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







DIN 6537 | MG | h6 | m7 | 140° | 20 bar

P.82

8 × D

Unit : mm

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length	EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal					Metric	Fractional	Decimal			
TiAlN	D_1			D_2	L_1	L_2	TiAlN	D_1			D_2	L_1	L_2
DH421072	7.2		.2835	8	76	114	DH421121L	9.350	U	.3680	10	95	142
DH421073	7.3		.2874	8	76	114	DH421094	9.4		.3701	10	95	142
DH421074	7.4		.2913	8	76	114	DH421095	9.5		.3740	10	95	142
DH421075	7.5		.2953	8	76	114	DH421024F	9.525	3/8	.3750	10	95	142
DH421019F	7.541	19/64	.2969	8	76	114	DH421096	9.6		.3780	10	95	142
DH421076	7.6		.2992	8	76	114	DH421097	9.7		.3819	10	95	142
DH421077	7.7		.3031	8	76	114	DH421098	9.8		.3858	10	95	142
DH421078	7.8		.3071	8	76	114	DH421099	9.9		.3898	10	95	142
DH421079	7.9		.3110	8	76	114	DH421025F	9.922	25/64	.3906	10	95	142
DH421020F	7.938	5/16	.3125	8	76	114	DH421100	10.0		.3937	10	95	142
DH421080	8.0		.3150	8	76	114	DH421101	10.1		.3976	12	114	162
DH421081	8.1		.3189	10	95	142	DH421102	10.2		.4016	12	114	162
DH421082	8.2		.3228	10	95	142	DH421103	10.3		.4055	12	114	162
DH421083	8.3		.3268	10	95	142	DH421026F	10.319	13/32	.4063	12	114	162
DH421021F	8.334	21/64	.3281	10	95	142	DH421104	10.4		.4094	12	114	162
DH421084	8.4		.3307	10	95	142	DH421105	10.5		.4134	12	114	162
DH421117L	8.430	Q	.3320	10	95	142	DH421106	10.6		.4173	12	114	162
DH421085	8.5		.3346	10	95	142	DH421107	10.7		.4212	12	114	162
DH421086	8.6		.3386	10	95	142	DH421027F	10.716	27/64	.4219	12	114	162
DH421087	8.7		.3425	10	95	142	DH421108	10.8		.4252	12	114	162
DH421022F	8.731	11/32	.3438	10	95	142	DH421109	10.9		.4291	12	114	162
DH421088	8.8		.3465	10	95	142	DH421110	11.0		.4330	12	114	162
DH421089	8.9		.3504	10	95	142	DH421111	11.1		.4370	12	114	162
DH421090	9.0		.3543	10	95	142	DH421028F	11.113	7/16	.4375	12	114	162
DH421091	9.1		.3583	10	95	142	DH421112	11.2		.4409	12	114	162
DH421023F	9.128	23/64	.3594	10	95	142	DH421113	11.3		.4448	12	114	162
DH421092	9.2		.3622	10	95	142	DH421114	11.4		.4488	12	114	162
DH421093	9.3		.3661	10	95	142	DH421115	11.5		.4527	12	114	162

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP		Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~									
○	◎	◎				○	○						

DREAM DRILLS -GENERAL

DH421 SERIES

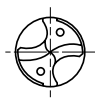
CARBIDE, DREAM DRILLS with COOLANT HOLES

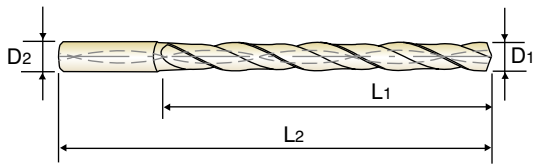
EXTRA LONG

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- good chip removal
- powerful drilling







DIN 6537 | MG | h6 | m7 | 140° | 20 bar P.82

8 × D

Unit : mm

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH421116	11.6		.4566	12	114	162
DH421117	11.7		.4606	12	114	162
DH421118	11.8		.4645	12	114	162
DH421119	11.9		.4685	12	114	162
DH421030F	11.906	15/32	.4688	12	114	162
DH421120	12.0		.4724	12	114	162
DH421031F	12.303	31/64	.4844	14	133	178
DH421125	12.5		.4921	14	133	178
DH421032F	12.700	1/2	.5000	14	133	178
DH421130	13.0		.5118	14	133	178
DH421033F	13.097	33/64	.5156	14	133	178
DH421135	13.5		.5314	14	133	178
DH421140	14.0		.5512	14	133	178

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
○	◎	◎				○	○					

DREAM DRILLS -GENERAL

RECOMMENDED CUTTING CONDITIONS

CARBIDE, DREAM DRILLS without COOLANT HOLES, TiAlN COATED

DH414, DH722 SERIES

WORK MATERIAL				K				P			
				CAST IRON		CAST IRON		CARBON STEELS		ALLOY STEELS	
STRENGTH				< HRc24		> HRc24		< HB240, GG25		< HB300, GG40	
DRILLING SPEED(SFM)				400 ~ 650 ft/min		280 ~ 430 ft/min		250 ~ 400 ft/min		210 ~ 350 ft/min	
DIAMETER				N	IPR	N	IPR	N	IPR	N	IPR
Fractional		Metric(mm)									
1/8	3/16	3.175	4.763	13120	.006	8750	.005	7880	.005	7000	.005
3/16	5/16	4.763	7.938	8200	.008	5470	.006	4920	.006	4370	.006
5/16	3/8	7.938	9.525	5970	.011	3980	.009	3560	.009	3190	.009
3/8	1/2	9.525	12.700	4690	.014	3120	.011	2810	.011	2500	.011
1/2	9/16	12.700	14.288	3860	.016	2570	.012	2310	.012	2060	.012
9/16	13/16	14.288	20.638	2980	.018	1990	.014	1790	.014	1590	.014

▸ Recommend to reduce the feed rate as following
DH414(3xD) : Feed 100%
DH722(5xD) : Feed 85%

N = R.P.M
IPR = feed rate(inch/rev.)

CARBIDE, DREAM DRILLS with COOLANT HOLES, TiAlN COATED

DH416, DH418, DH711, DH712 SERIES

WORK MATERIAL				K				P			
				CAST IRON		CAST IRON		CARBON STEELS		ALLOY STEELS	
STRENGTH				< HRc24		> HRc24		< HB240, GG25		< HB300, GG40	
DRILLING SPEED(SFM)				480 ~ 730 ft/min		310 ~ 490 ft/min		280 ~ 430 ft/min		250 ~ 400 ft/min	
DIAMETER				N	IPR	N	IPR	N	IPR	N	IPR
Fractional		Metric(mm)									
1/8	3/16	3.175	4.763	14870	.006	9620	.006	8750	.006	7880	.005
3/16	5/16	4.763	7.938	8200	.008	6010	.008	5470	.008	4920	.006
5/16	3/8	7.938	9.525	6760	.011	4370	.011	3980	.011	3580	.009
3/8	1/2	9.525	12.700	5310	.014	3440	.014	3120	.014	2810	.011
1/2	9/16	12.700	14.288	4370	.016	2830	.016	2570	.016	2310	.012
9/16	13/16	14.288	20.638	3380	.018	2190	.018	1990	.018	1790	.014

▸ Recommend to reduce the feed rate as following
DH416/DH711(3xD) : Feed 100%
DH418/DH712(5xD) : Feed 85%

N = R.P.M
IPR= feed rate (Inch/rev.)

CARBIDE, DREAM DRILLS without COOLANT HOLES, TiAlN COATED

DH404, DH423, DH424 SERIES

WORK MATERIAL		P						K					
		NON-ALLOY STEELS			ALLOY STEELS			SOFT GREY CAST IRON			HARD GREY CAST IRON		
STRENGTH		< HRc 20			> HRc 20			< 240 BHN			< 300 BHN		
DRILLING SPEED		130 ~ 400 ft/min			115 ~ 340 ft/min			220 ~ 650 ft/min			150 ~ 430 ft/min		
DIAMETER		N	S	IPR	N	S	IPR	N	S	IPR	N	S	IPR
Metric(mm)	Decimal												
1.0	.0394	13000	0.04	.002	11250	0.04	.002	21300	0.04	.002	14200	0.04	.002
2.0	.0787	13000	0.06	.002	11250	0.06	.002	21300	0.06	.002	14200	0.06	.002
3.0	.1181	13000	0.13	.005	11000	0.13	.005	21000	0.13	.005	14000	0.13	.005
4.0	.1575	9500	0.14	.006	8400	0.14	.006	16000	0.14	.006	10500	0.14	.006
5.0	.1969	7600	0.15	.006	6700	0.15	.006	13000	0.15	.006	8300	0.15	.006
6.0	.2362	6400	0.17	.007	5600	0.17	.007	11000	0.17	.007	6900	0.17	.007
7.0	.2756	5500	0.19	.007	4800	0.19	.007	9100	0.19	.007	5900	0.19	.007
8.0	.3150	4800	0.21	.008	4200	0.21	.008	8000	0.21	.008	5200	0.21	.008
9.0	.3543	4200	0.23	.009	3700	0.23	.009	7100	0.23	.009	4600	0.23	.009
10.0	.3937	3800	0.25	.010	3350	0.25	.010	6400	0.25	.010	4150	0.25	.010
12.0	.4724	3200	0.27	.011	2800	0.27	.011	5300	0.27	.011	3450	0.27	.011
14.0	.5512	2750	0.29	.011	2400	0.29	.011	4550	0.29	.011	3000	0.29	.011
16.0	.6299	2400	0.31	.012	2100	0.31	.012	4000	0.31	.012	2600	0.31	.012
18.0	.7087	2100	0.33	.013	1850	0.33	.013	3550	0.33	.013	2300	0.33	.013
20.0	.7874	1900	0.35	.014	1650	0.35	.014	3200	0.35	.014	2100	0.35	.014

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

N = R.P.M
S= feed rate (mm/rev.)
IPR= feed rate (Inch/rev.)

DREAM DRILLS -GENERAL

RECOMMENDED CUTTING CONDITIONS

CARBIDE, DREAM DRILLS with COOLANT HOLES, TiAlN COATED

DH406, DH408, DH421 SERIES

WORK MATERIAL		P						K					
		NON-ALLOY STEELS			ALLOY STEELS			SOFT GREY CAST IRON			HARD GREY CAST IRON		
STRENGTH		< HRc 20			> HRc 20			< 240 BHN			< 300 BHN		
DRILLING SPEED		160 ~ 490 ft/min			150 ~ 440 ft/min			270 ~ 820 ft/min			170 ~ 530 ft/min		
DIAMETER		N	S	IPR	N	S	IPR	N	S	IPR	N	S	IPR
Metric(mm)	Decimal												
1.0	.0394	16250	0.05	.002	14800	0.05	.002	26600	0.05	.002	17300	0.05	.002
2.0	.0787	16250	0.07	.003	14800	0.07	.003	26600	0.07	.003	17300	0.07	.003
3.0	.1181	16000	0.16	.006	14500	0.16	.006	26000	0.16	.006	17000	0.16	.006
4.0	.1575	12000	0.17	.007	11000	0.17	.007	20000	0.17	.007	13000	0.17	.007
5.0	.1969	9550	0.18	.007	8600	0.18	.007	16000	0.18	.007	10000	0.18	.007
6.0	.2362	8000	0.20	.008	7200	0.20	.008	13000	0.20	.008	8500	0.20	.008
7.0	.2756	6800	0.22	.009	6100	0.22	.009	11500	0.22	.009	7300	0.22	.009
8.0	.3150	6000	0.24	.009	5400	0.24	.009	9900	0.24	.009	6400	0.24	.009
9.0	.3543	5300	0.27	.011	4800	0.27	.011	8800	0.27	.011	5700	0.27	.011
10.0	.3937	4800	0.30	.012	4300	0.30	.012	8000	0.30	.012	5100	0.30	.012
12.0	.4724	4000	0.33	.013	3600	0.33	.013	6600	0.33	.013	4250	0.33	.013
14.0	.5512	3400	0.36	.014	3050	0.36	.014	5700	0.36	.014	3650	0.36	.014
16.0	.6299	3000	0.39	.015	2700	0.39	.015	5000	0.39	.015	3200	0.39	.015
18.0	.7087	2650	0.42	.017	2400	0.42	.017	4400	0.42	.017	2850	0.42	.017
20.0	.7874	2400	0.45	.018	2150	0.45	.018	4000	0.45	.018	2550	0.45	.018

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

N = R.P.M
S= feed rate (mm/rev.)
IPR= feed rate (Inch/rev.)

CARBIDE

Being the best through innovation



DREAM DRILLS - HIGH FEED

WITH COOLANT HOLES
- for Carbon Steels, Alloy Steels (up to HRc35) and Cast Iron

SOLID CARBIDE DREAM DRILLS - HIGH FEED (with Coolant Holes)

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
3XD DGR493		CARBIDE, DREAM DRILLS - HIGH FEED with COOLANT HOLES *SHORT*	.1969	.7874	**86**
5XD DGR495		CARBIDE, DREAM DRILLS - HIGH FEED with COOLANT HOLES *LONG*	.1969	.7874	**89**
		RECOMMENDED CUTTING CONDITIONS			**92**

◎ : Excellent ○ : Good

P				H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
◎	◎	○				◎					
◎	◎	○				◎					

DREAM DRILLS -HIGH FEED

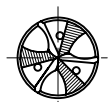
DGR493 SERIES

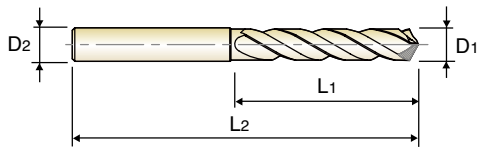
CARBIDE, DREAM DRILLS - HIGH FEED with COOLANT HOLES

SHORT

▶ Application : Carbon Steels, Alloy Steels (~ HRc35), Cast Iron
▶ Advantage : – Increases productivity due to 1.5 to 2 times faster feeding speed than 2-flute drill
– Multi-Layer coating delivers much better productivity and reliability.
– Self-Centering







DIN 6537 | MG | h6 | m7 | 140° | 20 bar

P.92

3 × D

Unit : mm

EDP No.	Diameter Inch	Diameter Metric	Shank Diameter	Flute Length	Overall Length	EDP No.	Diameter Inch	Diameter Metric	Shank Diameter	Flute Length	Overall Length
H-Coating	D1		D2	L1	L2	H-Coating	D1		D2	L1	L2
DGR493050		.1969	5.00	6	28	66	DGR493069		.2717	6.90	8	34	79
DGR493051		.2008	5.10	6	28	66	DGR496209	I	.2720	6.91	5/16	34	79
DGR496013	13/64	.2031	5.16	1/4	28	66	DGR493070		.2756	7.00	8	34	79
DGR493052		.2047	5.20	6	28	66	DGR493071		.2795	7.10	8	41	79
DGR493053		.2087	5.30	6	28	66	DGR496018	9/32	.2813	7.14	5/16	41	79
DGR493054		.2126	5.40	6	28	66	DGR493072		.2835	7.20	8	41	79
DGR496103	#3	.2130	5.41	1/4	28	66	DGR493073		.2874	7.30	8	41	79
DGR493055		.2165	5.50	6	28	66	DGR493074		.2913	7.40	8	41	79
DGR496014	7/32	.2188	5.56	1/4	28	66	DGR493075		.2953	7.50	8	41	79
DGR493056		.2205	5.60	6	28	66	DGR496019	19/64	.2969	7.54	5/16	41	79
DGR496102	#2	.2210	5.61	1/4	28	66	DGR493076		.2992	7.60	8	41	79
DGR493057		.2244	5.70	6	28	66	DGR493077		.3031	7.70	8	41	79
DGR496101	#1	.2280	5.79	1/4	28	66	DGR493078		.3071	7.80	8	41	79
DGR493058		.2283	5.80	6	28	66	DGR493079		.3110	7.90	8	41	79
DGR493059		.2323	5.90	6	28	66	DGR496020	5/16	.3125	7.94	5/16	41	79
DGR496015	15/64	.2344	5.95	1/4	28	66	DGR493080		.3150	8.00	8	41	79
DGR493060		.2362	6.00	6	28	66	DGR493081		.3189	8.10	10	47	89
DGR493061		.2402	6.10	8	34	79	DGR493082	P	.3228	8.20	10	47	89
DGR493062		.2441	6.20	8	34	79	DGR493083		.3268	8.30	10	47	89
DGR493063		.2480	6.30	8	34	79	DGR496021	21/64	.3281	8.33	3/8	47	89
DGR496016	1/4	.2500	6.35	1/4	34	79	DGR493084		.3307	8.40	10	47	89
DGR493064		.2520	6.40	8	34	79	DGR496217	Q	.3320	8.43	3/8	47	89
DGR493065		.2559	6.50	8	34	79	DGR493085		.3346	8.50	10	47	89
DGR496206	F	.2570	6.53	5/16	34	79	DGR493086		.3386	8.60	10	47	89
DGR493066		.2598	6.60	8	34	79	DGR493087		.3425	8.70	10	47	89
DGR493067		.2638	6.70	8	34	79	DGR496022	11/32	.3437	8.73	3/8	47	89
DGR496017	17/64	.2656	6.75	5/16	34	79	DGR493088		.3465	8.80	10	47	89
DGR493068		.2677	6.80	8	34	79	DGR493089		.3504	8.90	10	47	89

▶ NEXT PAGE

◎ : Excellent ○ : Good

P			H		M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
◎	◎	○				◎					

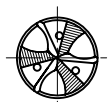
DREAM DRILLS -HIGH FEED

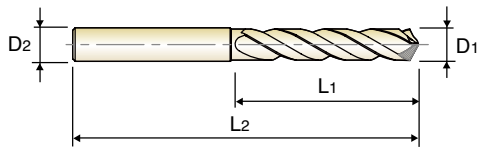
DGR493 SERIES

CARBIDE, DREAM DRILLS - HIGH FEED with COOLANT HOLES — *SHORT*

▶ Application : Carbon Steels, Alloy Steels (~ HRc35), Cast Iron
▶ Advantage : – Increases productivity due to 1.5 to 2 times faster feeding speed than 2-flute drill
– Multi-Layer coating delivers much better productivity and reliability.
– Self-Centering







DIN 6537 | MG | h6 | m7 | 140° | 20 bar

P.92

3 × D

Unit : mm

EDP No.	Diameter Inch	Diameter Metric	Shank Diameter	Flute Length	Overall Length	EDP No.	Diameter Inch	Diameter Metric	Shank Diameter	Flute Length	Overall Length
H-Coating	D1		D2	L1	L2	H-Coating	D1		D2	L1	L2
DGR493090		.3543	9.00	10	47	89	DGR496028	7/16	.4375	11.11	7/16	55	102
DGR493091		.3583	9.10	10	47	89	DGR493112		.4409	11.20	12	55	102
DGR496023	23/64	.3594	9.13	3/8	47	89	DGR493113		.4449	11.30	12	55	102
DGR493092		.3622	9.20	10	47	89	DGR493114		.4488	11.40	12	55	102
DGR493093		.3661	9.30	10	47	89	DGR493115		.4528	11.50	12	55	102
DGR496221	U	.3680	9.35	3/8	47	89	DGR496029	29/64	.4531	11.51	1/2	55	102
DGR493094		0.3701	9.40	10	47	89	DGR493116		.4567	11.60	12	55	102
DGR493095		.3740	9.50	10	47	89	DGR493117		.4606	11.70	12	55	102
DGR496024	3/8	0.3750	9.53	3/8	47	89	DGR493118		.4646	11.80	12	55	102
DGR493096		.3780	9.60	10	47	89	DGR493119		.4685	11.90	12	55	102
DGR493097		.3819	9.70	10	47	89	DGR496030	15/32	.4688	11.91	1/2	55	102
DGR493098	W	.3858	9.80	10	47	89	DGR493120		.4724	12.00	12	55	102
DGR493099		.3898	9.90	10	47	89	DGR493121		.4764	12.10	14	60	107
DGR496025	25/64	.3906	9.92	7/16	47	89	DGR493122		.4803	12.20	14	60	107
DGR493100		.3937	10.00	10	47	89	DGR493123		.4843	12.30	14	60	107
DGR493101		.3976	10.10	12	55	102	DGR496031	31/64	.4844	12.30	1/2	60	107
DGR493102		.4016	10.20	12	55	102	DGR493124		.4882	12.40	14	60	107
DGR493103		.4055	10.30	12	55	102	DGR493125		.4921	12.50	14	60	107
DGR496026	13/32	.4063	10.32	7/16	55	102	DGR493126		.4961	12.60	14	60	107
DGR493104		.4094	10.40	12	55	102	DGR496032	1/2	.5000	12.70	1/2	60	107
DGR493105		.4134	10.50	12	55	102	DGR493127		.5000	12.70	14	60	107
DGR493106		.4173	10.60	12	55	102	DGR493128		.5039	12.80	14	60	107
DGR493107		.4213	10.70	12	55	102	DGR493129		.5079	12.90	14	60	107
DGR496027	27/64	.4219	10.72	7/16	55	102	DGR493130		.5118	13.00	14	60	107
DGR493108		.4252	10.80	12	55	102	DGR493131	33/64	.5156	13.10	14	60	107
DGR493109		.4291	10.90	12	55	102	DGR493132		.5197	13.20	14	60	107
DGR493110		.4331	11.00	12	55	102	DGR493133		.5236	13.30	14	60	107
DGR493111		.4370	11.10	12	55	102	DGR493134		.5276	13.40	14	60	107

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○					◎					

DREAM DRILLS -HIGH FEED

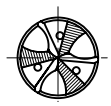
DGR493 SERIES

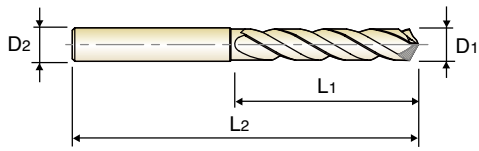
CARBIDE, DREAM DRILLS - HIGH FEED with COOLANT HOLES

SHORT

▶ Application : Carbon Steels, Alloy Steels (~ HRc35), Cast Iron
▶ Advantage : – Increases productivity due to 1.5 to 2 times faster feeding speed than 2-flute drill
– Multi-Layer coating delivers much better productivity and reliability.
– Self-Centering







DIN 6537 | MG | h6 | m7 | 140° | 20 bar

P.92

3 × D

Unit : mm

EDP No.	Diameter Inch		Diameter Metric		Shank Diameter	Flute Length	Overall Length
H-Coating	D1				D2	L1	L2
DGR496034	17/32	.5312	13.49		9/16	60	107
DGR493135		.5315	13.50		14	60	107
DGR493136		.5354	13.60		14	60	107
DGR493137		.5394	13.70		14	60	107
DGR493138		.5433	13.80		14	60	107
DGR496035	35/64	.5469	13.89		9/16	60	107
DGR493139		.5472	13.90		14	60	107
DGR493140		.5512	14.00		14	60	107
DGR493141		.5551	14.10		16	65	115
DGR493142		.5591	14.20		16	65	115
DGR496036	9/16	.5625	14.29		9/16	65	115
DGR493143		.5630	14.30		16	65	115
DGR493144		.5669	14.40		16	65	115
DGR493145		.5709	14.50		16	65	115
DGR493146		.5748	14.60		16	65	115
DGR496037	37/64	.5781	14.68		5/8	65	115
DGR493147		.5787	14.70		16	65	115
DGR493148		.5827	14.80		16	65	115
DGR493149		.5866	14.90		16	65	115
DGR493150		.5906	15.00		16	65	115
DGR496038	19/32	.5938	15.08		5/8	65	115
DGR493151		.5945	15.10		16	65	115
DGR493152		.5984	15.20		16	65	115
DGR493153		.6024	15.30		16	65	115
DGR493154		.6063	15.40		16	65	115

EDP No.	Diameter Inch		Diameter Metric		Shank Diameter	Flute Length	Overall Length
H-Coating	D1				D2	L1	L2
DGR496039	39/64	.6094	15.48		5/8	65	115
DGR493155		.6102	15.50		16	65	115
DGR493156		.6142	15.60		16	65	115
DGR493157		.6181	15.70		16	65	115
DGR493158		.6220	15.80		16	65	115
DGR496040	5/8	.6250	15.88		5/8	65	115
DGR493159		.6260	15.90		16	65	115
DGR493160		.6299	16.00		16	65	115
DGR493161		.6339	16.10		18	73	123
DGR496041	41/64	.6406	16.27		11/16	73	123
DGR493165		.6496	16.50		18	73	123
DGR496042	21/32	.6563	16.67		11/16	73	123
DGR493170		.6693	17.00		18	73	123
DGR496043	43/64	.6719	17.07		11/16	73	123
DGR496044	11/16	.6875	17.46		11/16	73	123
DGR493175		.6890	17.50		18	73	123
DGR496045	45/64	.7031	17.86		3/4	73	123
DGR493180		.7087	18.00		18	73	123
DGR496046	23/32	.7188	18.26		3/4	79	131
DGR493185		.7283	18.50		20	79	131
DGR496047	47/64	.7344	18.65		3/4	79	131
DGR493190		.7480	19.00		20	79	131
DGR496048	3/4	.7500	19.05		3/4	79	131
DGR493195		.7677	19.50		20	79	131
DGR493200		.7874	20.00		20	79	131

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○					◎					

DREAM DRILLS -HIGH FEED

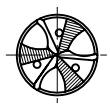
DGR495 SERIES

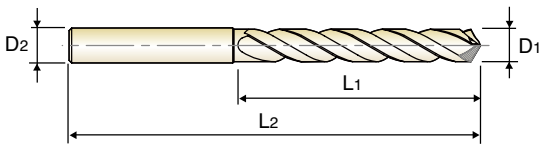
CARBIDE, DREAM DRILLS - HIGH FEED with COOLANT HOLES

LONG

▶ Application : Carbon Steels, Alloy Steels (~ HRc35), Cast Iron
▶ Advantage : – Increases productivity due to 1.5 to 2 times faster feeding speed than 2-flute drill
– Multi-Layer coating delivers much better productivity and reliability.
– Self-Centering







DIN 6537 | MG | h6 | m7 | 140° | 20 bar

P.92

5 × D

Unit : mm

EDP No.	Diameter Inch	Diameter Metric	Shank Diameter	Flute Length	Overall Length
H-Coating	D1		D2	L1	L2
DGR495050		.1969	5.00	6	44	82
DGR495051		.2008	5.10	6	44	82
DGR497013	13/64	.2031	5.16	1/4	44	82
DGR495052		.2047	5.20	6	44	82
DGR495053		.2087	5.30	6	44	82
DGR495054		.2126	5.40	6	44	82
DGR497103	#3	.2130	5.41	1/4	44	82
DGR495055		.2165	5.50	6	44	82
DGR497014	7/32	.2188	5.56	1/4	44	82
DGR495056		.2205	5.60	6	44	82
DGR497102	#2	.2210	5.61	1/4	44	82
DGR495057		.2244	5.70	6	44	82
DGR497101	#1	.2280	5.79	1/4	44	82
DGR495058		.2283	5.80	6	44	82
DGR495059		.2323	5.90	6	44	82
DGR497015	15/64	.2344	5.95	1/4	44	82
DGR495060		.2362	6.00	6	44	82
DGR495061		.2402	6.10	8	53	91
DGR495062		.2441	6.20	8	53	91
DGR495063		.2480	6.30	8	53	91
DGR497016	1/4	.2500	6.35	1/4	53	91
DGR495064		.2520	6.40	8	53	91
DGR495065		.2559	6.50	8	53	91
DGR497206	F	.2570	6.53	5/16	53	91
DGR495066		.2598	6.60	8	53	91
DGR495067		.2638	6.70	8	53	91
DGR497017	17/64	.2656	6.75	5/16	53	91
DGR495068		.2677	6.80	8	53	91

EDP No.	Diameter Inch	Diameter Metric	Shank Diameter	Flute Length	Overall Length
H-Coating	D1		D2	L1	L2
DGR495069		.2717	6.90	8	53	91
DGR497209	I	.2720	6.91	5/16	53	91
DGR495070		.2756	7.00	8	53	91
DGR495071		.2795	7.10	8	53	91
DGR497018	9/32	.2813	7.14	5/16	53	91
DGR495072		.2835	7.20	8	53	91
DGR495073		.2874	7.30	8	53	91
DGR495074		.2913	7.40	8	53	91
DGR495075		.2953	7.50	8	53	91
DGR497019	19/64	.2969	7.54	5/16	53	91
DGR495076		.2992	7.60	8	53	91
DGR495077		.3031	7.70	8	53	91
DGR495078		.3071	7.80	8	53	91
DGR495079		.3110	7.90	8	53	91
DGR497020	5/16	.3125	7.94	5/16	53	91
DGR495080		.3150	8.00	8	53	91
DGR495081		.3189	8.10	10	61	103
DGR495082	P	.3228	8.20	10	61	103
DGR495083		.3268	8.30	10	61	103
DGR497021	21/64	.3281	8.33	3/8	61	103
DGR495084		.3307	8.40	10	61	103
DGR497217	Q	.3320	8.43	3/8	61	103
DGR495085		.3346	8.50	10	61	103
DGR495086		.3386	8.60	10	61	103
DGR495087		.3425	8.70	10	61	103
DGR497022	11/32	.3437	8.73	3/8	61	103
DGR495088		.3465	8.80	10	61	103
DGR495089		.3504	8.90	10	61	103

▶ NEXT PAGE

◎ : Excellent ○ : Good

P			H		M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
◎	◎	○				◎					

DREAM DRILLS -HIGH FEED

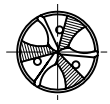
DGR495 SERIES

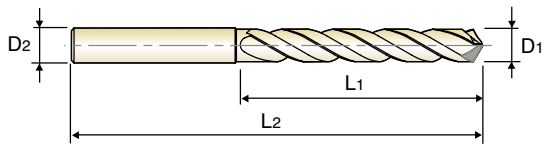
CARBIDE, DREAM DRILLS - HIGH FEED with COOLANT HOLES

LONG

▶ Application : Carbon Steels, Alloy Steels (~ HRc35), Cast Iron
▶ Advantage : – Increases productivity due to 1.5 to 2 times faster feeding speed than 2-flute drill
– Multi-Layer coating delivers much better productivity and reliability.
– Self-Centering







DIN 6537 | MG | h6 | m7 | 140° | 20 bar

P.92

5 × D

Unit : mm

EDP No.	Diameter Inch		Diameter Metric		Shank Diameter	Flute Length	Overall Length
H-Coating	D1				D2	L1	L2
DGR495090		.3543	9.00		10	61	103
DGR495091		.3583	9.10		10	61	103
DGR497023	23/64	.3594	9.13		3/8	61	103
DGR495092		.3622	9.20		10	61	103
DGR495093		.3661	9.30		10	61	103
DGR497221	U	.3680	9.35		3/8	61	103
DGR495094		.3701	9.40		10	61	103
DGR495095		.3740	9.50		10	61	103
DGR497024	3/8	.3750	9.53		3/8	61	103
DGR495096		.3780	9.60		10	61	103
DGR495097		.3819	9.70		10	61	103
DGR495098	W	.3858	9.80		10	61	103
DGR495099		.3898	9.90		10	61	103
DGR497025	25/64	.3906	9.92		7/16	61	103
DGR495100		.3937	10.00		10	61	103
DGR495101		.3976	10.10		12	71	118
DGR495102		.4016	10.20		12	71	118
DGR495103		.4055	10.30		12	71	118
DGR497026	13/32	.4063	10.32		7/16	71	118
DGR495104		.4094	10.40		12	71	118
DGR495105		.4134	10.50		12	71	118
DGR495106		.4173	10.60		12	71	118
DGR495107		.4213	10.70		12	71	118
DGR497027	27/64	.4219	10.72		7/16	71	118
DGR495108		.4252	10.80		12	71	118
DGR495109		.4291	10.90		12	71	118
DGR495110		.4331	11.00		12	71	118
DGR495111		.4370	11.10		12	71	118

EDP No.	Diameter Inch		Diameter Metric		Shank Diameter	Flute Length	Overall Length
H-Coating	D1				D2	L1	L2
DGR497028	7/16	.4375	11.11		7/16	71	118
DGR495112		.4409	11.20		12	71	118
DGR495113		.4449	11.30		12	71	118
DGR495114		.4488	11.40		12	71	118
DGR495115		.4528	11.50		12	71	118
DGR497029	29/64	.4531	11.51		1/2	71	118
DGR495116		.4567	11.60		12	71	118
DGR495117		.4606	11.70		12	71	118
DGR495118		.4646	11.80		12	71	118
DGR495119		.4685	11.90		12	71	118
DGR497030	15/32	.4688	11.91		1/2	71	118
DGR495120		.4724	12.00		12	71	118
DGR495121		.4764	12.10		14	77	124
DGR495122		.4803	12.20		14	77	124
DGR495123		.4843	12.30		14	77	124
DGR497031	31/64	.4844	12.30		1/2	77	124
DGR495124		.4882	12.40		14	77	124
DGR495125		.4921	12.50		14	77	124
DGR495126		.4961	12.60		14	77	124
DGR497032	1/2	.5000	12.70		1/2	77	124
DGR495127		.5000	12.70		14	77	124
DGR495128		.5039	12.80		14	77	124
DGR495129		.5079	12.90		14	77	124
DGR495130		.5118	13.00		14	77	124
DGR495131	33/64	.5156	13.10		14	77	124
DGR495132		.5197	13.20		14	77	124
DGR495133		.5236	13.30		14	77	124
DGR495134		.5276	13.40		14	77	124

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○					◎					

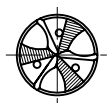
DREAM DRILLS -HIGH FEED

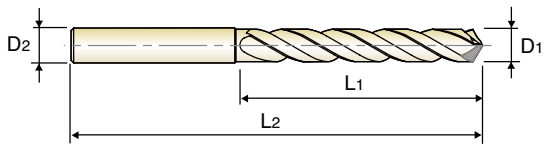
DGR495 SERIES

CARBIDE, DREAM DRILLS - HIGH FEED with COOLANT HOLES — *LONG*

▶ Application : Carbon Steels, Alloy Steels (~ HRc35), Cast Iron
▶ Advantage : – Increases productivity due to 1.5 to 2 times faster feeding speed than 2-flute drill
– Multi-Layer coating delivers much better productivity and reliability.
– Self-Centering







DIN 6537 | MG | h6 | m7 | 140° | 20 bar

P.92

5 × D

Unit : mm

EDP No.	Diameter Inch	Diameter Metric	Shank Diameter	Flute Length	Overall Length	EDP No.	Diameter Inch	Diameter Metric	Shank Diameter	Flute Length	Overall Length
H-Coating	D1		D2	L1	L2	H-Coating	D1		D2	L1	L2
DGR497034	17/32	.5312	13.49	9/16	77	124	DGR497039	39/64	.6094	15.48	5/8	83	133
DGR495135		.5315	13.50	14	77	124	DGR495155		.6102	15.50	16	83	133
DGR495136		.5354	13.60	14	77	124	DGR495156		.6142	15.60	16	83	133
DGR495137		.5394	13.70	14	77	124	DGR495157		.6181	15.70	16	83	133
DGR495138		.5433	13.80	14	77	124	DGR495158		.6220	15.80	16	83	133
DGR497035	35/64	.5469	13.89	9/16	77	124	DGR497040	5/8	.6250	15.88	5/8	83	133
DGR495139		.5472	13.90	14	77	124	DGR495159		.6260	15.90	16	83	133
DGR495140		.5512	14.00	14	77	124	DGR495160		.6299	16.00	16	83	133
DGR495141		.5551	14.10	16	83	133	DGR495161		.6339	16.10	18	93	143
DGR495142		.5591	14.20	16	83	133	DGR497041	41/64	.6406	16.27	11/16	93	143
DGR497036	9/16	.5625	14.29	9/16	83	133	DGR495165		.6496	16.50	18	93	143
DGR495143		.5630	14.30	16	83	133	DGR497042	21/32	.6563	16.67	11/16	93	143
DGR495144		.5669	14.40	16	83	133	DGR495170		.6693	17.00	18	93	143
DGR495145		.5709	14.50	16	83	133	DGR497043	43/64	.6719	17.07	11/16	93	143
DGR495146		.5748	14.60	16	83	133	DGR497044	11/16	.6875	17.46	11/16	93	143
DGR497037	37/64	.5781	14.68	5/8	83	133	DGR495175		.6890	17.50	18	93	143
DGR495147		.5787	14.70	16	83	133	DGR497045	45/64	.7031	17.86	3/4	93	143
DGR495148		.5827	14.80	16	83	133	DGR495180		.7087	18.00	18	93	143
DGR495149		.5866	14.90	16	83	133	DGR497046	23/32	.7188	18.26	3/4	101	153
DGR495150		.5906	15.00	16	83	133	DGR495185		.7283	18.50	20	101	153
DGR497038	19/32	.5938	15.08	5/8	83	133	DGR497047	47/64	.7344	18.65	3/4	101	153
DGR495151		.5945	15.10	16	83	133	DGR495190		.7480	19.00	20	101	153
DGR495152		.5984	15.20	16	83	133	DGR497048	3/4	.7500	19.05	3/4	101	153
DGR495153		.6024	15.30	16	83	133	DGR495195		.7677	19.50	20	101	153
DGR495154		.6063	15.40	16	83	133	DGR495200		.7874	20.00	20	101	153

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○					◎					

DREAM DRILLS -HIGH FEED

RECOMMENDED CUTTING CONDITIONS

CARBIDE, DREAM DRILLS - HIGH FEED with COOLANT HOLES

DGR493, DGR495 SERIES

WORK MATERIAL		P						K					
		CARBON STEELS ALLOY STEELS			ALLOY STEELS			CAST IRON			DUCTILE CAST IRON		
HARDNESS		~ HRc20			HRc20 ~ 35								
DRILLING SPEED		329 ft/min			247 ft/min			329 ft/min			264 ft/min		
DRILLING DIAMETER		SFM	IPR		SFM	IPR		SFM	IPR		SFM	IPR	
			Min	Max		Min	Max		Min	Max		Min	Max
5.0	.1969	328	.0079	.0098	246	.0079	.0098	328	.0091	.0118	263	.0079	.0098
6.0	.2362	328	.0094	.0118	246	.0094	.0118	328	.0106	.0142	263	.0094	.0118
7.0	.2756	328	.0110	.0138	247	.0110	.0138	328	.0126	.0165	263	.0110	.0138
8.0	.3150	328	.0126	.0157	247	.0126	.0157	328	.0142	.0189	263	.0126	.0157
9.0	.3543	328	.0142	.0177	247	.0142	.0177	328	.0161	.0213	263	.0142	.0177
10.0	.3937	329	.0157	.0197	246	.0157	.0197	329	.0177	.0236	263	.0157	.0197
11.0	.4331	329	.0173	.0217	247	.0173	.0195	329	.0197	.0260	263	.0173	.0217
12.0	.4724	329	.0189	.0236	247	.0189	.0213	329	.0213	.0283	263	.0189	.0236
13.0	.5118	328	.0205	.0256	247	.0205	.0230	328	.0232	.0307	263	.0205	.0256
14.0	.5512	329	.0220	.0276	247	.0220	.0248	329	.0248	.0331	263	.0220	.0276
16.0	.6299	328	.0220	.0283	247	.0220	.0252	328	.0252	.0315	264	.0220	.0283

SFM = ft/min
IPR = feed rate (Inch/rev.)

CARBIDE

Being the best through innovation



DREAM DRILLS -INOX

- **WITH COOLANT HOLES**
  Stainless Steels, Nickel Alloys and Titanium up to HRc35

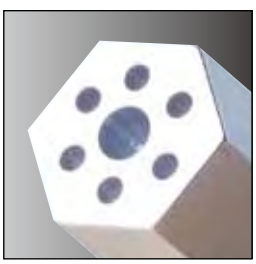
SELECTION GUIDE

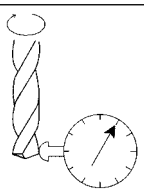
SOLID CARBIDE DREAM DRILLS -INOX (with Coolant Holes)
Stainless Steels, Nickel Alloys and Titanium up to HRc35.

ITEM	MODEL	DESCRIPTION		SIZE MIN	SIZE MAX	PAGE
INCH						
3XD **DH463 DH714**		CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES	*STUB*	D1/8	D5/8	**96**
5XD **DH464 DH715**		CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES	*LONG*	D13/64	D1/2	**98**
METRIC						
3XD **DH451**		CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES	*SHORT*	D3.0	D20.0	**99**
5XD **DH452**		CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES	*LONG*	D3.0	D20.0	**102**
8XD **DH453**		CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES	*EXTRA LONG*	D3.0	D14.0	**105**
		RECOMMENDED CUTTING CONDITIONS				**108**

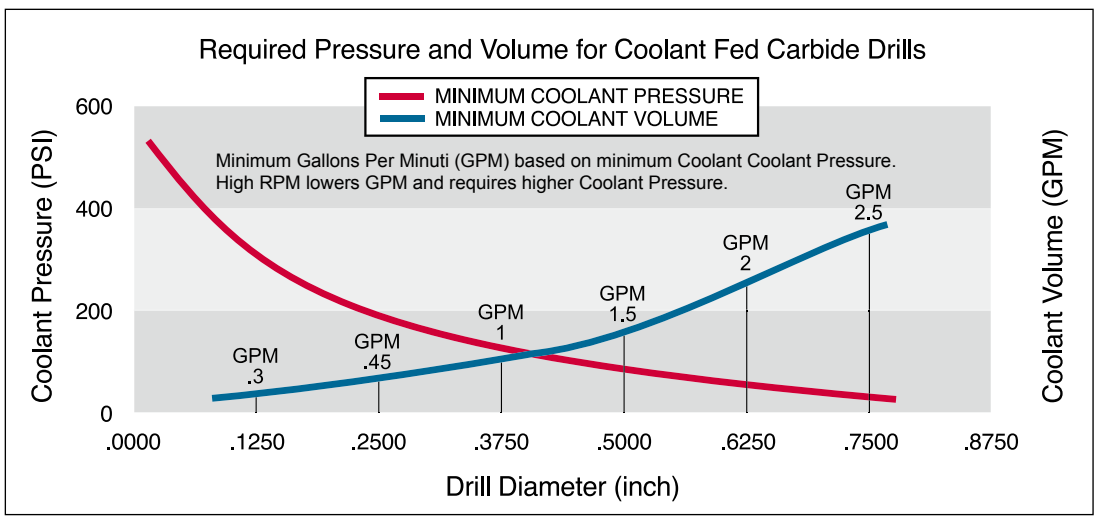
◎ : Excellent ○ : Good

P				H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
◎	◎	○			◎		○				○
◎	◎	○			◎		○				○
◎	◎	○			◎		○				○
◎	◎	○			◎		○				○
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• Radial run out at cutting lip must not exceed .001



DREAM DRILLS -INOX

DH463, DH714 SERIES

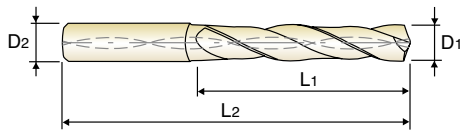
CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES

STUB

- Special flute shape and geometry suitable for machining stainless steel.
- Excellent chip evacuation from better surface treatment.
- Point R-thinning achieving superior centering and chip curl.
- TiAlN coating for better surface finishes and longer tool life.
- Tolerance : Dia. Tolerance ØD1: See page 253, Shank Tolerance ØD2: -.0001 -.0005







MG | 140° | 20 bar P.108

▶ for stainless steel 3 × D

Unit : Inch

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decimal			
TiAlN	D1		D2	L1	L2
DH714008	1/8	.1250	3/16	1.102	2.992
DH463008	1/8	.1250	15/64	1.102	2.992
DH714011	11/64	.1719	3/16	1.417	3.386
DH463011	11/64	.1719	15/64	1.417	3.386
DH714012	3/16	.1875	3/16	1.575	3.543
DH463012	3/16	.1875	15/64	1.575	3.543
DH463013	13/64	.2031	15/64	1.082	3.228
DH714013	13/64	.2031	1/4	1.082	3.228
DH463014	7/32	.2188	15/64	1.181	3.228
DH714014	7/32	.2188	1/4	1.181	3.228
DH463015	15/64	.2344	15/64	1.181	3.228
DH714015	15/64	.2344	1/4	1.181	3.228
DH714016	1/4	.2500	1/4	1.279	3.465
DH463016	1/4	.2500	17/64	1.279	3.465
DH463206	F	.2570	17/64	1.279	3.465
DH714206	F	.2570	5/16	1.279	3.465
DH463017	17/64	.2656	17/64	1.378	3.465
DH714017	17/64	.2656	5/16	1.378	3.465
DH463209	I	.2720	.2720	1.378	3.465
DH714209	I	.2720	5/16	1.378	3.465
DH463018	9/32	.2812	5/16	1.476	3.701
DH463019	19/64	.2969	5/16	1.476	3.701
DH463020	5/16	.3125	5/16	1.575	3.701
DH463021	21/64	.3281	11/32	1.673	3.937

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decimal			
TiAlN	D1		D2	L1	L2
DH714021	21/64	.3281	3/8	1.673	3.937
DH463217	Q	.3320	11/32	1.673	3.937
DH714217	Q	.3320	3/8	1.673	3.937
DH463022	11/32	.3438	11/32	1.772	3.937
DH714022	11/32	.3438	3/8	1.772	3.937
DH714023	23/64	.3594	3/8	1.870	4.174
DH463023	23/64	.3594	25/64	1.870	4.174
DH714221	U	.3680	3/8	1.870	4.174
DH463221	U	.3680	25/64	1.870	4.174
DH714024	3/8	.3750	3/8	1.969	4.174
DH463024	3/8	.3750	25/64	1.969	4.174
DH463025	25/64	.3906	25/64	1.969	4.174
DH714025	25/64	.3906	7/16	1.969	4.174
DH463026	13/32	.4062	27/64	2.067	4.567
DH714026	13/32	.4062	7/16	2.067	4.567
DH463027	27/64	.4219	27/64	2.165	4.567
DH714027	27/64	.4219	7/16	2.165	4.567
DH714028	7/16	.4375	7/16	2.264	4.803
DH463028	7/16	.4375	15/32	2.264	4.803
DH463029	29/64	.4531	15/32	2.264	4.803
DH714029	29/64	.4531	1/2	2.264	4.803
DH463030	15/32	.4688	15/32	2.362	4.803
DH714030	15/32	.4688	1/2	2.362	4.803
DH463031	31/64	.4844	1/2	2.461	5.039

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○				◎		○				○

DREAM DRILLS -INOX

DH463, DH714 SERIES

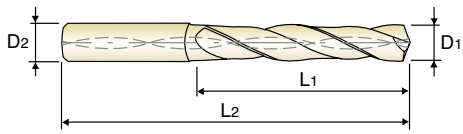
CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES

STUB

- Special flute shape and geometry suitable for machining stainless steel.
- Excellent chip evacuation from better surface treatment.
- Point R-thinning achieving superior centering and chip curl.
- TiAlN coating for better surface finishes and longer tool life.
- Tolerance : Dia. Tolerance ∅D1: See page 253, Shank Tolerance ∅D2: -.0001 -.0005







MG | 140° | 20 bar P.108

▶ for stainless steel

3 × D

Unit : Inch

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decimal			
TiAlN	D1		D2	L1	L2
DH463032	1/2	.5000	1/2	2.559	5.039
DH463033	33/64	.5156	35/64	2.657	5.276
DH714033	33/64	.5156	9/16	2.657	5.276
DH463034	17/32	.5312	35/64	2.756	5.276
DH714034	17/32	.5312	9/16	2.756	5.276
DH463035	35/64	.5469	35/64	2.756	5.276
DH714035	35/64	.5469	9/16	2.756	5.276

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decimal			
TiAlN	D1		D2	L1	L2
DH714036	9/16	.5625	9/16	2.854	5.512
DH463036	9/16	.5625	37/64	2.854	5.512
DH463037	37/64	.5781	37/64	2.953	5.512
DH714037	37/64	.5781	5/8	2.953	5.512
DH463038	19/32	.5937	5/8	3.051	5.709
DH463039	39/64	.6094	5/8	3.051	5.709
DH463040	5/8	.6250	5/8	3.150	5.709

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○				◎		○				○

DREAM DRILLS -INOX

DH464, DH715 SERIES

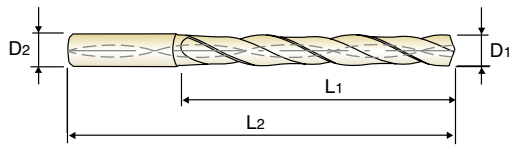
CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES

LONG

- Special flute shape and geometry suitable for machining stainless steel.
- Excellent chip evacuation from better surface treatment.
- Point R-thinning achieving superior centering and chip curl.
- TiAlN coating for better surface finishes and longer tool life.
- Tolerance : Dia. Tolerance ∅D1: See page 253, Shank Tolerance ∅D2: -.0001 -.0005







MG | 140° | 20 bar | P.108

▶ for stainless steel 5 × D

Unit : Inch

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decimal			
TiAlN	D1		D2	L1	L2
DH464013	13/64	.2031	15/64	1-3/4	3-15/16
DH715013	13/64	.2031	1/4	1-3/4	3-15/16
DH464014	7/32	.2188	15/64	1-57/64	3-15/16
DH715014	7/32	.2188	1/4	1-57/64	3-15/16
DH464015	15/64	.2344	15/64	1-57/64	3-15/16
DH715015	15/64	.2344	1/4	1-57/64	3-15/16
DH715016	1/4	.2500	1/4	2-3/64	4-19/64
DH464016	1/4	.2500	17/64	2-3/64	4-19/64
DH464206	F	.2570	17/64	2-13/64	4-19/64
DH715206	F	.2570	5/16	2-13/64	4-19/64
DH464017	17/64	.2656	17/64	2-13/64	4-19/64
DH715017	17/64	.2656	5/16	2-13/64	4-19/64
DH464209	I	.2720	.2720	2-13/64	4-19/64
DH715209	I	.2720	5/16	2-13/64	4-19/64
DH464018	9/32	.2812	5/16	2-23/64	4-41/64
DH464019	19/64	.2969	5/16	2-33/64	4-41/64
DH464020	5/16	.3125	5/16	2-33/64	4-41/64
DH464021	21/64	.3281	11/32	2-43/64	5
DH715021	21/64	.3281	3/8	2-43/64	5
DH464217	Q	.3320	11/32	2-43/64	5
DH715217	Q	.3320	3/8	2-43/64	5
DH464022	11/32	.3438	11/32	2-27/32	5

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decimal			
TiAlN	D1		D2	L1	L2
DH715022	11/32	.3438	3/8	2-27/32	5
DH715023	23/64	.3594	3/8	3	5-23/64
DH464023	23/64	.3594	25/64	3	5-23/64
DH715221	U	.3680	3/8	3	5-23/64
DH464221	U	.3680	25/64	3	5-23/64
DH715024	3/8	.3750	3/8	3-5/32	5-23/64
DH464024	3/8	.3750	25/64	3-5/32	5-23/64
DH464025	25/64	.3906	25/64	3-5/32	5-23/64
DH715025	25/64	.3906	7/16	3-5/32	5-23/64
DH464026	13/32	.4062	27/64	3-5/16	5-7/8
DH715026	13/32	.4062	7/16	3-5/16	5-7/8
DH464027	27/64	.4219	27/64	3-15/32	5-7/8
DH715027	27/64	.4219	7/16	3-15/32	5-7/8
DH715028	7/16	.4375	7/16	3-5/8	6-7/32
DH464028	7/16	.4375	15/32	3-5/8	6-7/32
DH464029	29/64	.4531	15/32	3-25/32	6-7/32
DH715029	29/64	.4531	1/2	3-25/32	6-7/32
DH464030	15/32	.4688	15/32	3-25/32	6-7/32
DH715030	15/32	.4688	1/2	3-25/32	6-7/32
DH464031	31/64	.4844	1/2	3-15/16	6-37/64
DH464032	1/2	.5000	1/2	4-3/32	6-37/64

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○				◎		○				○

DREAM DRILLS -INOX

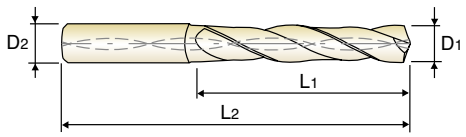
DH451 SERIES

CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES — *SHORT*

- Special flute shape and geometry suitable for machining stainless steel.
- Excellent chip evacuation from better surface treatment.
- Point R-thinning achieving superior centering and chip curl.
- TiAlN coating for better surface finishes and longer tool life.
- Tolerance : Dia. Tolerance ∅D1: See page 253, Shank Tolerance ∅D2: -.0001 -.0005







DIN 6537 | MG | h6 | m7 | 140° | 20 bar

P.108

▶ for stainless steel — 3 × D

Unit : mm

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH451030	3.0		.1181	6	20	62
DH451031	3.1		.1220	6	20	62
DH451008F	3.175	1/8	.1250	6	20	62
DH451032	3.2		.1260	6	20	62
DH451033	3.3		.1299	6	20	62
DH451034	3.4		.1339	6	20	62
DH451035	3.5		.1378	6	20	62
DH451009F	3.572	9/64	.1406	6	20	62
DH451036	3.6		.1417	6	20	62
DH451037	3.7		.1457	6	20	62
DH451038	3.8		.1496	6	24	66
DH451039	3.9		.1535	6	24	66
DH451010F	3.969	5/32	.1563	6	24	66
DH451040	4.0		.1575	6	24	66
DH451041	4.1		.1614	6	24	66
DH451042	4.2		.1654	6	24	66
DH451043	4.3		.1693	6	24	66
DH451011F	4.366	11/64	.1719	6	24	66
DH451044	4.4		.1732	6	24	66
DH451045	4.5		.1772	6	24	66
DH451046	4.6		.1811	6	24	66
DH451047	4.7		.1850	6	24	66
DH451012F	4.763	3/16	.1875	6	24	66
DH451048	4.8		.1890	6	28	66
DH451049	4.9		.1929	6	28	66
DH451050	5.0		.1969	6	28	66
DH451051	5.1		.2008	6	28	66
DH451013F	5.159	13/64	.2031	6	28	66
DH451052	5.2		.2047	6	28	66
DH451053	5.3		.2087	6	28	66
DH451054	5.4		.2126	6	28	66
DH451055	5.5		.2165	6	28	66
DH451014F	5.556	7/32	.2188	6	28	66
DH451056	5.6		.2205	6	28	66
DH451057	5.7		.2244	6	28	66
DH451058	5.8		.2283	6	28	66
DH451059	5.9		.2323	6	28	66
DH451015F	5.953	15/64	.2344	6	28	66
DH451060	6.0		.2362	6	28	66
DH451061	6.1		.2402	8	34	79
DH451062	6.2		.2441	8	34	79
DH451063	6.3		.2480	8	34	79
DH451016F	6.35	1/4	.2500	8	34	79
DH451064	6.4		.2520	8	34	79
DH451065	6.5		.2559	8	34	79
DH451066	6.6		.2598	8	34	79
DH451067	6.7		.2638	8	34	79
DH451017F	6.747	17/64	.2656	8	34	79
DH451068	6.8		.2677	8	34	79
DH451069	6.9		.2717	8	34	79
DH451070	7.0		.2756	8	34	79
DH451071	7.1		.2795	8	41	79

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○				◎		○				○

DREAM DRILLS -INOX

DH451 SERIES

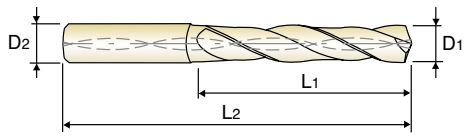
CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES

SHORT

- Special flute shape and geometry suitable for machining stainless steel.
- Excellent chip evacuation from better surface treatment.
- Point R-thinning achieving superior centering and chip curl.
- TiAlN coating for better surface finishes and longer tool life.
- Tolerance : Dia. Tolerance ∅D1: See page 253, Shank Tolerance ∅D2: -.0001 -.0005







DIN 6537 | MG | h6 | m7 | 140° | 20 bar

P.108

▶ for stainless steel

3 × D

Unit : mm

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH451018F	7.144	9/32	.2812	8	41	79
DH451072	7.2		.2835	8	41	79
DH451073	7.3		.2874	8	41	79
DH451074	7.4		.2913	8	41	79
DH451075	7.5		.2953	8	41	79
DH451019F	7.541	19/64	.2969	8	41	79
DH451076	7.6		.2992	8	41	79
DH451077	7.7		.3031	8	41	79
DH451078	7.8		.3071	8	41	79
DH451079	7.9		.3110	8	41	79
DH451020F	7.938	5/16	.3125	8	41	79
DH451080	8.0		.3150	8	41	79
DH451081	8.1		.3189	10	47	89
DH451082	8.2		.3228	10	47	89
DH451083	8.3		.3268	10	47	89
DH451021F	8.334	21/64	.3281	10	47	89
DH451084	8.4		.3307	10	47	89
DH451085	8.5		.3346	10	47	89
DH451086	8.6		.3386	10	47	89
DH451087	8.7		.3425	10	47	89
DH451022F	8.731	11/32	.3438	10	47	89
DH451088	8.8		.3465	10	47	89
DH451089	8.9		.3504	10	47	89
DH451090	9.0		.3543	10	47	89
DH451091	9.1		.3583	10	47	89
DH451023F	9.128	23/64	.3594	10	47	89

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH451092	9.2		.3622	10	47	89
DH451093	9.3		.3661	10	47	89
DH451094	9.4		.3701	10	47	89
DH451095	9.5		.3740	10	47	89
DH451024F	9.525	3/8	.3750	10	47	89
DH451096	9.6		.3780	10	47	89
DH451097	9.7		.3819	10	47	89
DH451098	9.8		.3858	10	47	89
DH451099	9.9		.3898	10	47	89
DH451025F	9.922	25/64	.3906	10	47	89
DH451100	10.0		.3937	10	47	89
DH451101	10.1		.3976	12	55	102
DH451102	10.2		.4016	12	55	102
DH451103	10.3		.4055	12	55	102
DH451026F	10.319	13/32	.4062	12	55	102
DH451104	10.4		.4094	12	55	102
DH451105	10.5		.4134	12	55	102
DH451106	10.6		.4173	12	55	102
DH451107	10.7		.4212	12	55	102
DH451027F	10.716	27/64	.4219	12	55	102
DH451108	10.8		.4252	12	55	102
DH451109	10.9		.4291	12	55	102
DH451110	11.0		.4330	12	55	102
DH451111	11.1		.4370	12	55	102
DH451028F	11.113	7/16	.4375	12	55	102
DH451112	11.2		.4409	12	55	102

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

P			H		M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
◎	◎	○			◎		○				○

DREAM DRILLS -INOX

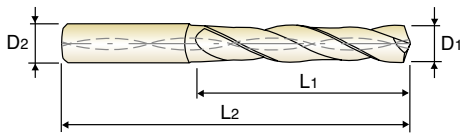
DH451 SERIES

CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES — *SHORT*

- Special flute shape and geometry suitable for machining stainless steel.
- Excellent chip evacuation from better surface treatment.
- Point R-thinning achieving superior centering and chip curl.
- TiAlN coating for better surface finishes and longer tool life.
- Tolerance : Dia. Tolerance ∅D1: See page 253, Shank Tolerance ∅D2: -.0001 -.0005







DIN 6537 | MG | h6 | m7 | 140° | 20 bar P.108

▶ **for stainless steel** — 3 × D

Unit : mm

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH451113	11.3		.4448	12	55	102
DH451114	11.4		.4488	12	55	102
DH451115	11.5		.4527	12	55	102
DH451029F	11.509	29/64	.4531	12	55	102
DH451116	11.6		.4566	12	55	102
DH451117	11.7		.4606	12	55	102
DH451118	11.8		.4645	12	55	102
DH451119	11.9		.4685	12	55	102
DH451030F	11.906	15/32	.4688	12	55	102
DH451120	12.0		.4724	12	55	102
DH451031F	12.303	31/64	.4844	14	60	107
DH451125	12.5		.4921	14	60	107
DH451032F	12.7	1/2	.5000	14	60	107
DH451130	13.0		.5118	14	60	107
DH451135	13.5		.5314	14	60	107
DH451140	14.0		.5512	14	60	107

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH451036F	14.288	9/16	.5625	16	65	115
DH451145	14.5		.5708	16	65	115
DH451150	15.0		.5905	16	65	115
DH451155	15.5		.6102	16	65	115
DH451040F	15.875	5/8	.6250	16	65	115
DH451160	16.0		.6299	16	65	115
DH451165	16.5		.6495	18	73	123
DH451170	17.0		.6692	18	73	123
DH451044F	17.463	11/16	.6875	18	73	123
DH451175	17.5		.6889	18	73	123
DH451180	18.0		.7087	18	73	123
DH451185	18.5		.7283	20	79	131
DH451190	19.0		.7480	20	79	131
DH451048F	19.05	3/4	.7500	20	79	131
DH451195	19.5		.7676	20	79	131
DH451200	20.0		.7874	20	79	131

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○				◎		○				○

DREAM DRILLS -INOX

DH452 SERIES

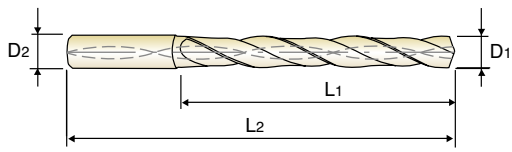
CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES

LONG

- Special flute shape and geometry suitable for machining stainless steel.
- Excellent chip evacuation from better surface treatment.
- Point R-thinning achieving superior centering and chip curl.
- TiAlN coating for better surface finishes and longer tool life.
- Tolerance : Dia. Tolerance ∅D1: See page 253, Shank Tolerance ∅D2: -.0001 -.0005







DIN 6537 | MG | h6 | m7 | 140° | 20 bar

P.108

▶ **for stainless steel**

5 × D

Unit : mm

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH452010	1.0		.0394	3	8	55
DH452011	1.1		.0433	3	12	55
DH452012	1.2		.0472	3	12	55
DH452013	1.3		.0512	3	12	55
DH452014	1.4		.0551	3	12	55
DH452015	1.5		.0591	3	16	55
DH452004F	1.588	1/16	.0625	3	16	55
DH452016	1.6		.0630	3	16	55
DH452017	1.7		.0669	3	16	55
DH452018	1.8		.0709	3	16	55
DH452019	1.9		.0748	3	16	55
DH452005F	1.984	5/64	.0781	3	16	55
DH452020	2.0		.0787	4	21	57
DH452021	2.1		.0827	4	21	57
DH452022	2.2		.0866	4	21	57
DH452023	2.3		.0906	4	21	57
DH452006F	2.381	3/32	.0938	4	21	57
DH452024	2.4		.0945	4	21	57
DH452025	2.5		.0984	4	21	57
DH452026	2.6		.1024	4	21	57
DH452027	2.7		.1063	4	21	57
DH452007F	2.778	7/64	.1094	4	21	57
DH452028	2.8		.1102	4	21	57
DH452029	2.9		.1142	4	21	57
DH452030	3.0		.1181	6	28	66
DH452031	3.1		.1220	6	28	66
DH452008F	3.175	1/8	.1250	6	28	66
DH452032	3.2		.1260	6	28	66

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH452033	3.3		.1299	6	28	66
DH452034	3.4		.1339	6	28	66
DH452035	3.5		.1378	6	28	66
DH452009F	3.572	9/64	.1406	6	28	66
DH452036	3.6		.1417	6	28	66
DH452037	3.7		.1457	6	28	66
DH452038	3.8		.1496	6	36	74
DH452039	3.9		.1535	6	36	74
DH452010F	3.969	5/32	.1563	6	36	74
DH452040	4.0		.1575	6	36	74
DH452041	4.1		.1614	6	36	74
DH452042	4.2		.1654	6	36	74
DH452043	4.3		.1693	6	36	74
DH452011F	4.366	11/64	.1719	6	36	74
DH452044	4.4		.1732	6	36	74
DH452045	4.5		.1772	6	36	74
DH452046	4.6		.1811	6	36	74
DH452047	4.7		.1850	6	36	74
DH452012F	4.763	3/16	.1875	6	36	74
DH452048	4.8		.1890	6	44	82
DH452049	4.9		.1929	6	44	82
DH452050	5.0		.1969	6	44	82
DH452051	5.1		.2008	6	44	82
DH452013F	5.159	13/64	.2031	6	44	82
DH452052	5.2		.2047	6	44	82
DH452053	5.3		.2087	6	44	82
DH452054	5.4		.2126	6	44	82
DH452055	5.5		.2165	6	44	82

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○				◎		○				○

DREAM DRILLS -INOX

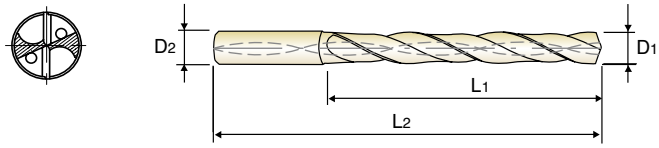
DH452 SERIES

CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES

LONG

- Special flute shape and geometry suitable for machining stainless steel.
- Excellent chip evacuation from better surface treatment.
- Point R-thinning achieving superior centering and chip curl.
- TiAlN coating for better surface finishes and longer tool life.
- Tolerance : Dia. Tolerance ∅D1: See page 253, Shank Tolerance ∅D2: -.0001 -.0005





DIN 6537 | MG | h6 | m7 | 140° | 20 bar

P.108

▶ for stainless steel

5 × D

Unit : mm

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH452014F	5.556	7/32	.2188	6	44	82
DH452056	5.6		.2205	6	44	82
DH452057	5.7		.2244	6	44	82
DH452058	5.8		.2283	6	44	82
DH452059	5.9		.2323	6	44	82
DH452015F	5.953	15/64	.2344	6	44	82
DH452060	6.0		.2362	6	44	82
DH452061	6.1		.2402	8	53	91
DH452062	6.2		.2441	8	53	91
DH452063	6.3		.2480	8	53	91
DH452016F	6.35	1/4	.2500	8	53	91
DH452064	6.4		.2520	8	53	91
DH452065	6.5		.2559	8	53	91
DH452066	6.6		.2598	8	53	91
DH452067	6.7		.2638	8	53	91
DH452017F	6.747	17/64	.2656	8	53	91
DH452068	6.8		.2677	8	53	91
DH452069	6.9		.2717	8	53	91
DH452070	7.0		.2756	8	53	91
DH452071	7.1		.2795	8	53	91
DH452018F	7.144	9/32	.2812	8	53	91
DH452072	7.2		.2835	8	53	91
DH452073	7.3		.2874	8	53	91
DH452074	7.4		.2913	8	53	91
DH452075	7.5		.2953	8	53	91
DH452019F	7.541	19/64	.2969	8	53	91
DH452076	7.6		.2992	8	53	91
DH452077	7.7		.3031	8	53	91

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH452078	7.8		.3071	8	53	91
DH452079	7.9		.3110	8	53	91
DH452020F	7.938	5/16	.3125	8	53	91
DH452080	8.0		.3150	8	53	91
DH452081	8.1		.3189	10	61	103
DH452082	8.2		.3228	10	61	103
DH452083	8.3		.3268	10	61	103
DH452021F	8.334	21/64	.3281	10	61	103
DH452084	8.4		.3307	10	61	103
DH452085	8.5		.3346	10	61	103
DH452086	8.6		.3386	10	61	103
DH452087	8.7		.3425	10	61	103
DH452022F	8.731	11/32	.3438	10	61	103
DH452088	8.8		.3465	10	61	103
DH452089	8.9		.3504	10	61	103
DH452090	9.0		.3543	10	61	103
DH452091	9.1		.3583	10	61	103
DH452023F	9.128	23/64	.3594	10	61	103
DH452092	9.2		.3622	10	61	103
DH452093	9.3		.3661	10	61	103
DH452094	9.4		.3701	10	61	103
DH452095	9.5		.3740	10	61	103
DH452024F	9.525	3/8	.3750	10	61	103
DH452096	9.6		.3780	10	61	103
DH452097	9.7		.3819	10	61	103
DH452098	9.8		.3858	10	61	103
DH452099	9.9		.3898	10	61	103
DH452025F	9.922	25/64	.3906	10	61	103

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○				◎		○				○

YG DREAM DRILLS -INOX

DH452 SERIES

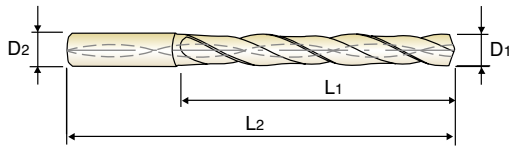
CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES

LONG

- Special flute shape and geometry suitable for machining stainless steel.
- Excellent chip evacuation from better surface treatment.
- Point R-thinning achieving superior centering and chip curl.
- TiAlN coating for better surface finishes and longer tool life.
- Tolerance : Dia. Tolerance ∅D1: See page 253, Shank Tolerance ∅D2: -.0001 -.0005







DIN 6537 | MG | h6 | m7 | 140° | 20 bar P.108

▶ **for stainless steel**

5 × D

Unit : mm

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH452100	10.0		.3937	10	61	103
DH452101	10.1		.3976	12	71	118
DH452102	10.2		.4016	12	71	118
DH452103	10.3		.4055	12	71	118
DH452026F	10.319	13/32	.4062	12	71	118
DH452104	10.4		.4094	12	71	118
DH452105	10.5		.4134	12	71	118
DH452106	10.6		.4173	12	71	118
DH452107	10.7		.4212	12	71	118
DH452027F	10.716	27/64	.4219	12	71	118
DH452108	10.8		.4252	12	71	118
DH452109	10.9		.4291	12	71	118
DH452110	11.0		.4330	12	71	118
DH452111	11.1		.4370	12	71	118
DH452028F	11.113	7/16	.4375	12	71	118
DH452112	11.2		.4409	12	71	118
DH452113	11.3		.4448	12	71	118
DH452114	11.4		.4488	12	71	118
DH452115	11.5		.4527	12	71	118
DH452029F	11.509	29/64	.4531	12	71	118
DH452116	11.6		.4566	12	71	118
DH452117	11.7		.4606	12	71	118
DH452118	11.8		.4645	12	71	118
DH452119	11.9		.4685	12	71	118

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH452030F	11.906	15/32	.4688	12	71	118
DH452120	12.0		.4724	12	71	118
DH452031F	12.303	31/64	.4844	14	77	124
DH452125	12.5		.4921	14	77	124
DH452032F	12.7	1/2	.5000	14	77	124
DH452130	13.0		.5118	14	77	124
DH452135	13.5		.5314	14	77	124
DH452140	14.0		.5512	14	77	124
DH452036F	14.288	9/16	.5625	16	83	133
DH452145	14.5		.5708	16	83	133
DH452150	15.0		.5905	16	83	133
DH452155	15.5		.6102	16	83	133
DH452040F	15.875	5/8	.6250	16	83	133
DH452160	16.0		.6299	16	83	133
DH452165	16.5		.6495	18	93	143
DH452170	17.0		.6692	18	93	143
DH452175	17.5		.6889	18	93	143
DH452180	18.0		.7087	18	93	143
DH452185	18.5		.7283	20	101	153
DH452190	19.0		.7480	20	101	153
DH452048F	19.05	3/4	.7500	20	101	153
DH452195	19.5		.7676	20	101	153
DH452200	20.0		.7874	20	101	153

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○				◎		○				○

DREAM DRILLS -INOX

DH453 SERIES

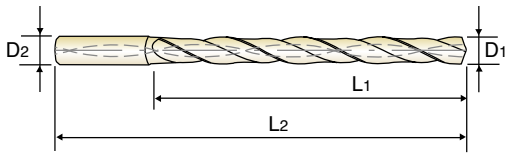
CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES

EXTRA LONG

- Special flute shape and geometry suitable for machining stainless steel.
- Excellent chip evacuation from better surface treatment.
- Point R-thinning achieving superior centering and chip curl.
- TiAlN coating for better surface finishes and longer tool life.
- Tolerance : Dia. Tolerance ∅D1: See page 253, Shank Tolerance ∅D2: -.0001 -.0005







DIN 6537 | MG | h6 | m7 | 140° | 20 bar

P.108

▶ for stainless steel

8 × D

Unit : mm

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH453030	3.0		.1181	6	34	72
DH453031	3.1		.1220	6	34	72
DH453008F	3.175	1/8	.1250	6	34	72
DH453032	3.2		.1260	6	34	72
DH453033	3.3		.1299	6	34	72
DH453034	3.4		.1339	6	34	72
DH453229G	3.454	#29	.1360	6	34	72
DH453035	3.5		.1378	6	34	72
DH453009F	3.572	9/64	.1406	6	34	72
DH453036	3.6		.1417	6	34	72
DH453037	3.7		.1457	6	34	72
DH453038	3.8		.1496	6	43	81
DH453039	3.9		.1535	6	43	81
DH453010F	3.969	5/32	.1563	6	43	81
DH453040	4.0		.1575	6	43	81
DH453221G	4.038	#21	.1590	6	43	81
DH453041	4.1		.1614	6	43	81
DH453042	4.2		.1654	6	43	81
DH453043	4.3		.1693	6	43	81
DH453011F	4.366	11/64	.1719	6	43	81
DH453044	4.4		.1732	6	43	81
DH453045	4.5		.1772	6	43	81
DH453046	4.6		.1811	6	43	81
DH453047	4.7		.1850	6	43	81
DH453012F	4.763	3/16	.1875	6	57	95
DH453048	4.8		.1890	6	57	95
DH453049	4.9		.1929	6	57	95

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH453050	5.0		.1969	6	57	95
DH453051	5.1		.2008	6	57	95
DH453013F	5.159	13/64	.2031	6	57	95
DH453052	5.2		.2047	6	57	95
DH453053	5.3		.2087	6	57	95
DH453054	5.4		.2126	6	57	95
DH453055	5.5		.2165	6	57	95
DH453014F	5.556	7/32	.2188	6	57	95
DH453056	5.6		.2205	6	57	95
DH453057	5.7		.2244	6	57	95
DH453058	5.8		.2283	6	57	95
DH453059	5.9		.2323	6	57	95
DH453015F	5.953	15/64	.2344	6	57	95
DH453060	6.0		.2362	6	57	95
DH453061	6.1		.2402	8	76	114
DH453062	6.2		.2441	8	76	114
DH453063	6.3		.2480	8	76	114
DH453016F	6.35	1/4	.2500	8	76	114
DH453064	6.4		.2520	8	76	114
DH453065	6.5		.2559	8	76	114
DH453106L	6.527	F	.2570	8	76	114
DH453066	6.6		.2598	8	76	114
DH453067	6.7		.2638	8	76	114
DH453017F	6.747	17/64	.2656	8	76	114
DH453068	6.8		.2677	8	76	114
DH453069	6.9		.2717	8	76	114
DH453070	7.0		.2756	8	76	114

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

P			H		M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
◎	◎	○			◎		○				○

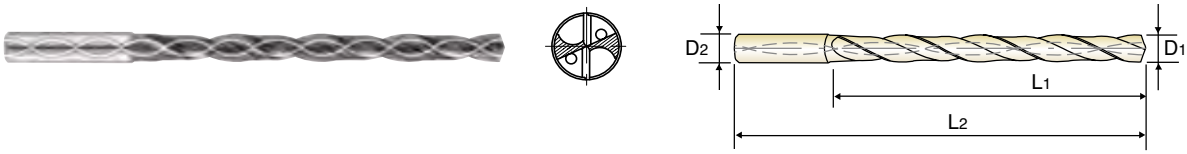
DREAM DRILLS -INOX

DH453 SERIES

CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES

EXTRA LONG

- Special flute shape and geometry suitable for machining stainless steel.
- Excellent chip evacuation from better surface treatment.
- Point R-thinning achieving superior centering and chip curl.
- TiAlN coating for better surface finishes and longer tool life.
- Tolerance : Dia. Tolerance ∅D1: See page 253, Shank Tolerance ∅D2: -.0001 -.0005



DIN 6537 | MG | h6 | m7 | 140° | 20 bar

P.108

▶ for stainless steel

8 × D

Unit : mm

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH453071	7.1		.2795	8	76	114
DH453018F	7.144	9/32	.2813	8	76	114
DH453072	7.2		.2835	8	76	114
DH453073	7.3		.2874	8	76	114
DH453074	7.4		.2913	8	76	114
DH453075	7.5		.2953	8	76	114
DH453019F	7.541	19/64	.2969	8	76	114
DH453076	7.6		.2992	8	76	114
DH453077	7.7		.3031	8	76	114
DH453078	7.8		.3071	8	76	114
DH453079	7.9		.3110	8	76	114
DH453020F	7.938	5/16	.3125	8	76	114
DH453080	8.0		.3150	8	76	114
DH453081	8.1		.3189	10	95	142
DH453082	8.2		.3228	10	95	142
DH453083	8.3		.3268	10	95	142
DH453021F	8.334	21/64	.3281	10	95	142
DH453084	8.4		.3307	10	95	142
DH453117L	8.432	Q	.3320	10	95	142
DH453085	8.5		.3346	10	95	142
DH453086	8.6		.3386	10	95	142
DH453087	8.7		.3425	10	95	142
DH453022F	8.731	11/32	.3438	10	95	142
DH453088	8.8		.3465	10	95	142
DH453089	8.9		.3504	10	95	142
DH453090	9.0		.3543	10	95	142

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH453091	9.1		.3583	10	95	142
DH453023F	9.128	23/64	.3594	10	95	142
DH453092	9.2		.3622	10	95	142
DH453093	9.3		.3661	10	95	142
DH453121L	9.347	U	.3680	10	95	142
DH453094	9.4		.3701	10	95	142
DH453095	9.5		.3740	10	95	142
DH453024F	9.525	3/8	.3750	10	95	142
DH453096	9.6		.3780	10	95	142
DH453097	9.7		.3819	10	95	142
DH453098	9.8		.3858	10	95	142
DH453099	9.9		.3898	10	95	142
DH453025F	9.922	25/64	.3906	10	95	142
DH453100	10.0		.3937	10	95	142
DH453101	10.1		.3976	12	114	162
DH453102	10.2		.4016	12	114	162
DH453103	10.3		.4055	12	114	162
DH453026F	10.319	13/32	.4063	12	114	162
DH453104	10.4		.4094	12	114	162
DH453105	10.5		.4134	12	114	162
DH453106	10.6		.4173	12	114	162
DH453107	10.7		.4212	12	114	162
DH453027F	10.716	27/64	.4219	12	114	162
DH453108	10.8		.4252	12	114	162
DH453109	10.9		.4291	12	114	162
DH453110	11.0		.4330	12	114	162

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○				◎		○				○

DREAM DRILLS -INOX

DH453 SERIES

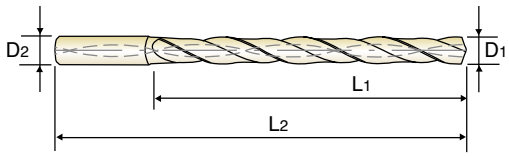
CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES

EXTRA LONG

- Special flute shape and geometry suitable for machining stainless steel.
- Excellent chip evacuation from better surface treatment.
- Point R-thinning achieving superior centering and chip curl.
- TiAlN coating for better surface finishes and longer tool life.
- Tolerance : Dia. Tolerance ∅D1: See page 253, Shank Tolerance ∅D2: -.0001 -.0005







DIN 6537 | MG | h6 | m7 | 140° | 20 bar

P.108

▶ for stainless steel

8 × D

Unit : mm

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH453111	11.1		.4370	12	114	162
DH453028F	11.113	7/16	.4375	12	114	162
DH453112	11.2		.4409	12	114	162
DH453113	11.3		.4448	12	114	162
DH453114	11.4		.4488	12	114	162
DH453115	11.5		.4527	12	114	162
DH453116	11.6		.4566	12	114	162
DH453117	11.7		.4606	12	114	162
DH453118	11.8		.4645	12	114	162
DH453119	11.9		.4685	12	114	162

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
TiAlN	D1			D2	L1	L2
DH453030F	11.906	15/32	.4688	12	114	162
DH453120	12.0		.4724	12	114	162
DH453031F	12.303	31/64	.4844	14	133	178
DH453125	12.5		.4921	14	133	178
DH453032F	12.7	1/2	.5000	14	133	178
DH453130	13.0		.5118	14	133	178
DH453033F	13.097	33/64	.5156	14	133	178
DH453135	13.5		.5314	14	133	178
DH453140	14.0		.5512	14	133	178

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○				◎		○				○

DREAM DRILLS -INOX

RECOMMENDED CUTTING CONDITIONS

CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES, TiAlN COATED

DH451, DH463, DH714, DH452, DH464, DH715, DH453 SERIES

WORK MATERIAL			P			M			M			N		
			CARBON STEELS ALLOY STEELS			STAINLESS STEELS			STAINLESS STEELS			ALUMINUM		
STRENGTH						< 800 N/mm²			> 800 N/mm²			< 10% Si		
DRILLING SPEED(SFM)			260 ~ 410 ft/min			120 ~ 230 ft/min			60 ~ 140 ft/min			490 ~ 720 ft/min		
DIAMETER			N	S	IPR	N	S	IPR	N	S	IPR	N	S	IPR
Metric(mm)	Decimal	Fractional												
1.0	.0394		26000	0.02	.001	12000	0.02	.001	6200	0.02	.001	48000	0.04	.002
1.5	.0591		18000	0.03	.001	9000	0.03	.001	5400	0.02	.001	43000	0.05	.002
2.5	.0984		10800	0.05	.002	7000	0.04	.002	4200	0.03	.001	25500	0.08	.003
3.0	.1181	1/8	13000	0.04	.002	7400	0.04	.002	4700	0.02	.001	23000	0.12	.005
4.0	.1575	5/32	10000	0.05	.002	5600	0.05	.002	3600	0.03	.001	17500	0.18	.007
5.0	.1969	13/64	8000	0.05	.002	4400	0.05	.002	2800	0.03	.001	14000	0.20	.008
6.0	.2362	15/64	6600	0.06	.002	3700	0.06	.002	2400	0.04	.002	11700	0.25	.010
8.0	.3150	5/16	5000	0.08	.003	2800	0.08	.003	1800	0.06	.002	8800	0.30	.012
10.0	.3937	25/64	4000	0.10	.004	2200	0.10	.004	1400	0.08	.003	7000	0.40	.016
12.0	.4724	15/32	3300	0.12	.005	1900	0.12	.005	1200	0.10	.004	5800	0.50	.020
14.0	.5512	35/64	2800	0.15	.006	1600	0.15	.006	1000	0.12	.005	5000	0.60	.024
16.0	.6299	5/8	2500	0.20	.008	1400	0.20	.008	900	0.15	.006	4380	0.80	.031
18.0	.7087	45/64	2200	0.22	.009	1250	0.22	.009	800	0.17	.007	3900	1.00	.039
20.0	.7874	25/32	2000	0.24	.009	1120	0.24	.009	720	0.19	.007	3500	1.20	.047

WORK MATERIAL			N			N			S		
			ALUMINUM			NON FRERROUS			TITANIUM TITANIUM ALLOYS		
STRENGTH			< 10% Si								
DRILLING SPEED(SFM)			390 ~ 570 ft/min			390 ~ 490 ft/min			80 ~ 160 ft/min		
DIAMETER			N	S	IPR	N	S	IPR	N	S	IPR
Metric(mm)	Decimal	Fractional									
1.0	.0394		38000	0.03	.001	38000	0.02	.001	8100	0.01	.0004
1.5	.0591		32000	0.04	.002	25500	0.03	.001	7500	0.01	.0004
2.5	.0984		19500	0.06	.002	15500	0.05	.002	4500	0.02	.001
3.0	.1181	1/8	18500	0.10	.004	16000	0.08	.003	5300	0.03	.001
4.0	.1575	5/32	13900	0.15	.006	11900	0.10	.004	4000	0.04	.002
5.0	.1969	13/64	11000	0.18	.007	9500	0.12	.005	3200	0.05	.002
6.0	.2362	15/64	9300	0.25	.010	8000	0.15	.006	2650	0.06	.002
8.0	.3150	5/16	7000	0.30	.012	6000	0.18	.007	2000	0.07	.003
10.0	.3937	25/64	5600	0.35	.014	4800	0.22	.009	1600	0.08	.003
12.0	.4724	15/32	4600	0.40	.016	4000	0.26	.010	1300	0.10	.004
14.0	.5512	35/64	4000	0.50	.020	3400	0.30	.012	1100	0.12	.005
16.0	.6299	5/8	3500	0.60	.024	3000	0.40	.016	1000	0.14	.006
18.0	.7087	45/64	3100	0.70	.028	2650	0.45	.018	900	0.16	.006
20.0	.7874	25/32	2800	0.80	.031	2400	0.50	.020	800	0.18	.007

▶ Recommend to reduce the feed rate as following
DH463/DH714/DH451(3xD), DH464/DH714/DH452(5xD) : Feed 100%
DH453(8xD) : Feed 85%

N = R.P.M
S= feed rate (mm/rev.)
IPR= feed rate (Inch/rev.)

CARBIDE

Being the best through innovation



DREAM DRILLS -ALU

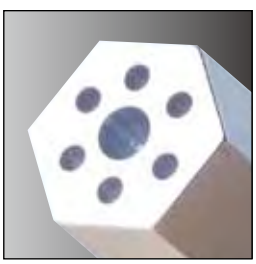
- WITH COOLANT HOLES
  for Aluminum & Aluminum Alloys

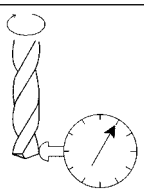
SOLID CARBIDE DREAM DRILLS - ALU (with Coolant Holes)

ITEM	MODEL	DESCRIPTION		SIZE MIN	SIZE MAX	PAGE
INCH						
5XD	DGE466 DGE718		CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES	*LONG*	D13/64	D1/2	**112**
METRIC						
5XD	DGE433		CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES	*LONG*	D3.0	D20.0	**113**
			RECOMMENDED CUTTING CONDITIONS				**116**

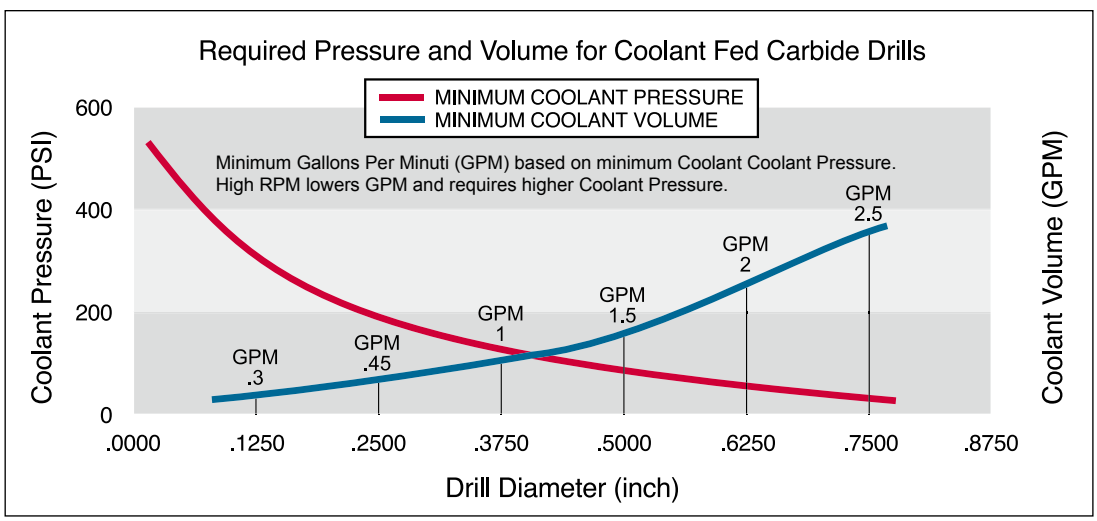
◎ : Excellent ○ : Good

			H		M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
							◎				
							◎				





• Radial run out at cutting lip must not exceed .001



DREAM DRILLS -ALU

DGE466, DGE718 SERIES

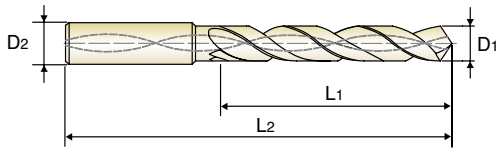
CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES

LONG

- Wider and deeper flute gullets for maximum chip removal
- Special geometry and smooth coating reduces built up edge and improves finishes
- Tolerance : Dia. Tolerance ØD1: See page 57, Shank Tolerance ØD2: -.0001 -.0005







MG | h6 | 118° | 20 bar | P.116

▶ **for aluminum**

5 × D

Unit : Inch

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decimal			
DLC	D1		D2	L1	L2
DGE466013	13/64	.2031	15/64	1-3/4	3-15/16
DGE718013	13/64	.2031	1/4	1-3/4	3-15/16
DGE466014	7/32	.2188	15/64	1-57/64	3-15/16
DGE718014	7/32	.2188	1/4	1-57/64	3-15/16
DGE466015	15/64	.2344	15/64	1-57/64	3-15/16
DGE718015	15/64	.2344	1/4	1-57/64	3-15/16
DGE718016	1/4	.2500	1/4	2-3/64	4-19/64
DGE466016	1/4	.2500	17/64	2-3/64	4-19/64
DGE466206	F	.2570	17/64	2-13/64	4-19/64
DGE718206	F	.2570	5/16	2-13/64	4-19/64
DGE466017	17/64	.2656	17/64	2-13/64	4-19/64
DGE718017	17/64	.2656	5/16	2-13/64	4-19/64
DGE466209	I	.2720	.272	2-13/64	4-19/64
DGE718209	I	.2720	5/16	2-13/64	4-19/64
DGE466018	9/32	.2812	5/16	2-23/64	4-41/64
DGE466019	19/64	.2969	5/16	2-33/64	4-41/64
DGE466020	5/16	.3125	5/16	2-33/64	4-41/64
DGE466021	21/64	.3281	11/32	2-43/64	5
DGE718021	21/64	.3281	3/8	2-43/64	5
DGE466217	Q	.3320	11/32	2-43/64	5
DGE718217	Q	.3320	3/8	2-43/64	5
DGE466022	11/32	.3438	11/32	2-27/32	5

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decimal			
DLC	D1		D2	L1	L2
DGE718022	11/32	.3438	3/8	2-27/32	5
DGE718023	23/64	.3594	3/8	3	5-23/64
DGE466023	23/64	.3594	25/64	3	5-23/64
DGE718221	U	.3680	3/8	3	5-23/64
DGE466221	U	.3680	25/64	3	5-23/64
DGE718024	3/8	.3750	3/8	3-5/32	5-23/64
DGE466024	3/8	.3750	25/64	3-5/32	5-23/64
DGE466025	25/64	.3906	25/64	3-5/32	5-23/64
DGE718025	25/64	.3906	7/16	3-5/32	5-23/64
DGE466026	13/32	.4062	27/64	3-5/16	5-7/8
DGE718026	13/32	.4062	7/16	3-5/16	5-7/8
DGE466027	27/64	.4219	27/64	3-15/32	5-7/8
DGE718027	27/64	.4219	7/16	3-15/32	5-7/8
DGE718028	7/16	.4375	7/16	3-5/8	6-7/32
DGE466028	7/16	.4375	15/32	3-5/8	6-7/32
DGE466029	29/64	.4531	15/32	3-25/32	6-7/32
DGE718029	29/64	.4531	1/2	3-25/32	6-7/32
DGE466030	15/32	.4688	15/32	3-25/32	6-7/32
DGE718030	15/32	.4688	1/2	3-25/32	6-7/32
DGE466031	31/64	.4844	1/2	3-15/16	6-37/64
DGE466032	1/2	.5000	1/2	4-3/32	6-37/64

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
								◎				

DREAM DRILLS -ALU

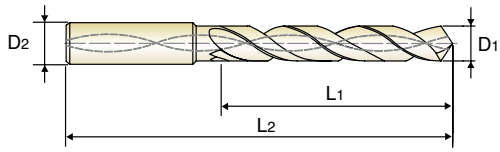
DGE433 SERIES

CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES — *LONG*

▶ Wider and deeper flute gullets for maximum chip removal
▶ Special geometry and smooth coating reduces built up edge and improves finishes







DIN 6537 | MG | h6 | m7 | 118° | 20 bar

P.116

▶ **for aluminum**

5 × D

Unit : mm

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
DLC	D1			D2	L1	L2
DGE433030	3.0		.1181	6	28	66
DGE433031	3.1		.1220	6	28	66
DGE433008F	3.175	1/8	.1250	6	28	66
DGE433032	3.2		.1260	6	28	66
DGE433033	3.3		.1299	6	28	66
DGE433034	3.4		.1339	6	28	66
DGE433035	3.5		.1378	6	28	66
DGE433009F	3.572	9/64	.1406	6	28	66
DGE433036	3.6		.1417	6	28	66
DGE433037	3.7		.1457	6	28	66
DGE433038	3.8		.1496	6	36	74
DGE433039	3.9		.1535	6	36	74
DGE433010F	3.969	5/32	.1563	6	36	74
DGE433040	4.0		.1575	6	36	74
DGE433041	4.1		.1614	6	36	74
DGE433042	4.2		.1654	6	36	74
DGE433043	4.3		.1693	6	36	74
DGE433011F	4.366	11/64	.1719	6	36	74
DGE433044	4.4		.1732	6	36	74
DGE433045	4.5		.1772	6	36	74
DGE433046	4.6		.1811	6	36	74
DGE433047	4.7		.1850	6	36	74
DGE433012F	4.763	3/16	.1875	6	36	74
DGE433048	4.8		.1890	6	44	82

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
DLC	D1			D2	L1	L2
DGE433049	4.9		.1929	6	44	82
DGE433050	5.0		.1969	6	44	82
DGE433051	5.1		.2008	6	44	82
DGE433013F	5.159	13/64	.2031	6	44	82
DGE433052	5.2		.2047	6	44	82
DGE433053	5.3		.2087	6	44	82
DGE433054	5.4		.2126	6	44	82
DGE433055	5.5		.2165	6	44	82
DGE433014F	5.556	7/32	.2188	6	44	82
DGE433056	5.6		.2205	6	44	82
DGE433057	5.7		.2244	6	44	82
DGE433058	5.8		.2283	6	44	82
DGE433059	5.9		.2323	6	44	82
DGE433015F	5.953	15/64	.2344	6	44	82
DGE433060	6.0		.2362	6	44	82
DGE433061	6.1		.2402	8	53	91
DGE433062	6.2		.2441	8	53	91
DGE433063	6.3		.2480	8	53	91
DGE433016F	6.35	1/4	.2500	8	53	91
DGE433064	6.4		.2520	8	53	91
DGE433065	6.5		.2559	8	53	91
DGE433066	6.6		.2598	8	53	91
DGE433067	6.7		.2638	8	53	91
DGE433017F	6.747	17/64	.2656	8	53	91

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
								◎				

DREAM DRILLS -ALU

DGE433 SERIES

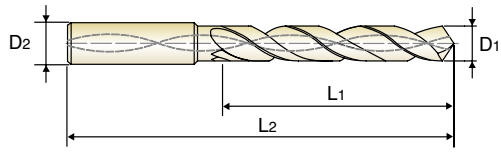
CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES

LONG

▶ Wider and deeper flute gullets for maximum chip removal
▶ Special geometry and smooth coating reduces built up edge and improves finishes







DIN 6537 | MG | h6 | m7 | 118° | 20 bar

P.116

▶ **for aluminum**

5 × D

Unit : mm

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
DLC	D1			D2	L1	L2
DGE433068	6.8		.2677	8	53	91
DGE433069	6.9		.2717	8	53	91
DGE433070	7.0		.2756	8	53	91
DGE433071	7.1		.2795	8	53	91
DGE433018F	7.144	9/32	.2812	8	53	91
DGE433072	7.2		.2835	8	53	91
DGE433073	7.3		.2874	8	53	91
DGE433074	7.4		.2913	8	53	91
DGE433075	7.5		.2953	8	53	91
DGE433019F	7.541	19/64	.2969	8	53	91
DGE433076	7.6		.2992	8	53	91
DGE433077	7.7		.3031	8	53	91
DGE433078	7.8		.3071	8	53	91
DGE433079	7.9		.3110	8	53	91
DGE433020F	7.938	5/16	.3125	8	53	91
DGE433080	8.0		.3150	8	53	91
DGE433081	8.1		.3189	10	61	103
DGE433082	8.2		.3228	10	61	103
DGE433083	8.3		.3268	10	61	103
DGE433021F	8.334	21/64	.3281	10	61	103
DGE433084	8.4		.3307	10	61	103
DGE433085	8.5		.3346	10	61	103
DGE433086	8.6		.3386	10	61	103
DGE433087	8.7		.3425	10	61	103
DGE433022F	8.731	11/32	.3438	10	61	103
DGE433088	8.8		.3465	10	61	103

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
DLC	D1			D2	L1	L2
DGE433089	8.9		.3504	10	61	103
DGE433090	9.0		.3543	10	61	103
DGE433091	9.1		.3583	10	61	103
DGE433023F	9.128	23/64	.3594	10	61	103
DGE433092	9.2		.3622	10	61	103
DGE433093	9.3		.3661	10	61	103
DGE433094	9.4		.3701	10	61	103
DGE433095	9.5		.3740	10	61	103
DGE433024F	9.525	3/8	.3750	10	61	103
DGE433096	9.6		.3780	10	61	103
DGE433097	9.7		.3819	10	61	103
DGE433098	9.8		.3858	10	61	103
DGE433099	9.9		.3898	10	61	103
DGE433025F	9.922	25/64	.3906	10	61	103
DGE433100	10.0		.3937	10	61	103
DGE433101	10.1		.3976	12	71	118
DGE433102	10.2		.4016	12	71	118
DGE433103	10.3		.4055	12	71	118
DGE433026F	10.319	13/32	.4062	12	71	118
DGE433104	10.4		.4094	12	71	118
DGE433105	10.5		.4134	12	71	118
DGE433106	10.6		.4173	12	71	118
DGE433107	10.7		.4212	12	71	118
DGE433027F	10.716	27/64	.4219	12	71	118
DGE433108	10.8		.4252	12	71	118
DGE433109	10.9		.4291	12	71	118

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55		HRc55~							
								◎				

DREAM DRILLS -ALU

DGE433 SERIES

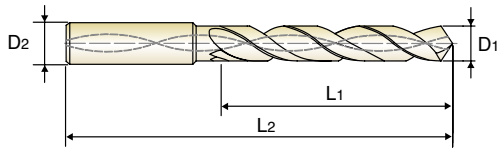
CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES

LONG

▶ Wider and deeper flute gullets for maximum chip removal
▶ Special geometry and smooth coating reduces built up edge and improves finishes







DIN 6537 | MG | h6 | m7 | 118° | 20 bar

P.116

▶ **for aluminum**

5 × D

Unit : mm

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
DLC	D1			D2	L1	L2
DGE433110	11.0		.4330	12	71	118
DGE433111	11.1		.4370	12	71	118
DGE433028F	11.113	7/16	.4375	12	71	118
DGE433112	11.2		.4409	12	71	118
DGE433113	11.3		.4448	12	71	118
DGE433114	11.4		.4488	12	71	118
DGE433115	11.5		.4527	12	71	118
DGE433029F	11.509	29/64	.4531	12	71	118
DGE433116	11.6		.4566	12	71	118
DGE433117	11.7		.4606	12	71	118
DGE433118	11.8		.4645	12	71	118
DGE433119	11.9		.4685	12	71	118
DGE433030F	11.906	15/32	.4688	12	71	118
DGE433120	12.0		.4724	12	71	118
DGE433031F	12.303	31/64	.4844	14	77	124
DGE433125	12.5		.4921	14	77	124
DGE433032F	12.7	1/2	.5000	14	77	124
DGE433130	13.0		.5118	14	77	124

EDP No.	Diameter			Shank Diameter	Flute Length	Overall Length
	Metric	Fractional	Decimal			
DLC	D1			D2	L1	L2
DGE433135	13.5		.5314	14	77	124
DGE433140	14.0		.5512	14	77	124
DGE433036F	14.288	9/16	.5625	16	83	133
DGE433145	14.5		.5708	16	83	133
DGE433150	15.0		.5905	16	83	133
DGE433155	15.5		.6102	16	83	133
DGE433040F	15.875	5/8	.6250	16	83	133
DGE433160	16.0		.6299	16	83	133
DGE433165	16.5		.6495	18	93	143
DGE433170	17.0		.6692	18	93	143
DGE433175	17.5		.6889	18	93	143
DGE433180	18.0		.7087	18	93	143
DGE433185	18.5		.7283	20	101	153
DGE433190	19.0		.7480	20	101	153
DGE433048F	19.05	3/4	.7500	20	101	153
DGE433195	19.5		.7676	20	101	153
DGE433200	20.0		.7874	20	101	153

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
								◎				

DREAM DRILLS -ALU

RECOMMENDED CUTTING CONDITIONS

CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES, DLC COATED

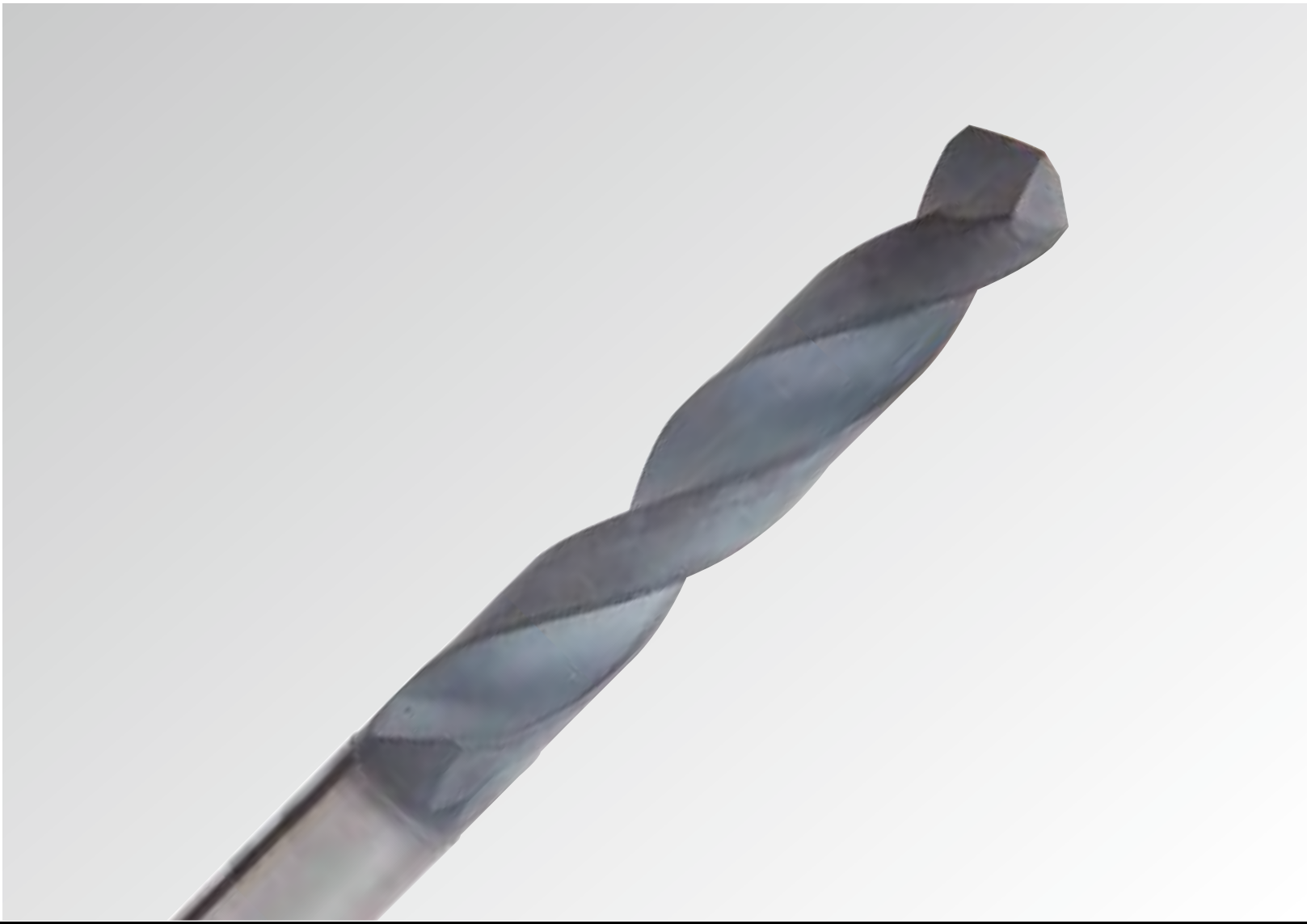
DGE466, DGE718, DGE433 SERIES

WORK MATERIAL		N							
		ALUMINUM ALLOY CASTING ALUMINUM DIE CASTING				WROUGHT ALUMINUM ALLOY			
DRILLING SPEED(SFM)		240 ~ 650 ft/min				240 ~ 650 ft/min			
DIAMETER		N	S	IPR		N	S	IPR	
Metric(mm)	Decimal								
3.0~6.0	.1181 ~ .2362	8000 ~ 15000	0.2 ~ 0.5	.008	.020	8000 ~ 15000	0.15 ~ 0.3	.006	.012
~10.0	~.3937	6000 ~ 10500	0.3 ~ 1.0	.012	.039	6000 ~ 10500	0.20 ~ 0.4	.008	.016
~14.0	~.5512	4500 ~ 5800	0.3 ~ 1.0	.012	.039	4500 ~ 5800	0.20 ~ 0.4	.008	.016
~20.0	~.7874	3200 ~ 4600	0.3 ~ 1.0	.012	.039	3200 ~ 4600	0.30 ~ 1.0	.012	.039

N = R.P.M
S= feed rate (mm/rev.)
IPR= feed rate (Inch/rev.)

CARBIDE

Being the best through innovation



DREAM DRILLS -CFRP

- For composite materials including CFRP, GFRP

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

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
DI473		CARBIDE, DREAM DRILLS - CFRP	.0980	.7500	120
		RECOMMENDED CUTTING CONDITIONS			121

◎ : Excellent ○ : Good

P				H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
										◎	

DREAM DRILLS -CFRP

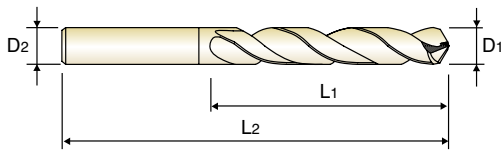
DI473 SERIES

CARBIDE, DREAM DRILLS-CFRP

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







DIN 6537 | MG | h6 | m7 | 118° P.121

Unit : Inch | Unit : mm

EDP No.	Drill Diameter Fractional	Drill Diameter Decimal	Shank Diameter	Flute Length	Overall Length	Shank Diameter	Flute Length	Overall Length
DIAMOND COATED	D1		D2	L1	L2	D2	L1	L2
DI473040G	#40	.0980	.2362	.9449	2.5984	6	24	66
DI473008F	1/8	.1250	.2362	1.1024	2.5984	6	28	66
DI473030G	#30	.1285	.2362	1.1024	2.5984	6	28	66
DI473010F	5/32	.1562	.2362	1.4173	2.9134	6	36	74
DI473021G	#21	.1590	.2362	1.4173	2.9134	6	36	74
DI473012F	3/16	.1875	.2362	1.4173	2.9134	6	36	74
DI473012G	#12	.1890	.2362	1.7323	3.2283	6	44	82
DI473011G	#11	.1910	.2362	1.7323	3.2283	6	44	82
DI473007G	#7	.2010	.2362	1.7323	3.2283	6	44	82
DI473013F	13/64	.2031	.2362	1.7323	3.2283	6	44	82
DI473014F	7/32	.2188	.2362	1.7323	3.2283	6	44	82
DI473015F	15/64	.2344	.2362	1.7323	3.2283	6	44	82
DI473016F	1/4	.2500	.3150	2.0866	3.5827	8	53	91
DI473020F	5/16	.3125	.3150	2.0866	3.5827	8	53	91
DI473024F	3/8	.3750	.3937	2.4016	4.0551	10	61	103
DI473028F	7/16	.4375	.4724	2.7953	4.6457	12	71	118
DI473032F	1/2	.5000	.5512	3.0315	4.8819	14	77	124
DI473036F	9/16	.5625	.6299	3.2677	5.2362	16	83	133
DI473040F	5/8	.6250	.6299	3.2677	5.2362	16	83	133
DI473044F	11/16	.6875	.7087	3.6614	5.6299	18	93	143
DI473048F	3/4	.7500	.7874	3.9764	6.0236	20	101	153

◎ : Excellent ○ : Good

P			H		M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
										◎	

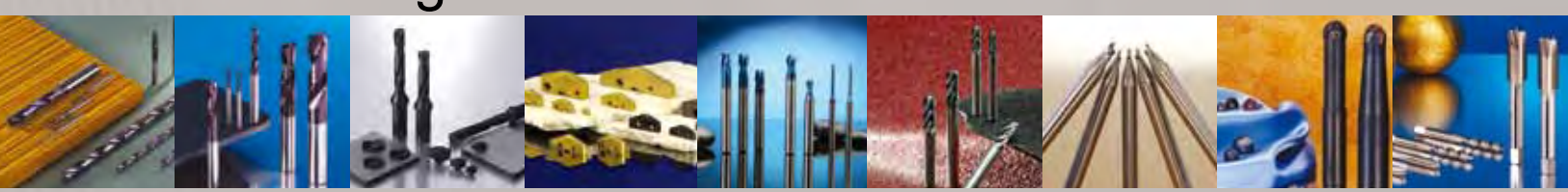
CARBIDE, DREAM DRILLS - CFRP

D1473 SERIES

WORK MATERIAL	N		
	CFRP		
DRILLING SPEED	325 ~ 490 ft/min		
DRILLING DIAMETER	SFM	IPR	
		Min	Max
1/8	328 ~ 492	.0012	.0027
5/32	330 ~ 491		
3/16	328 ~ 490		
1/4	328 ~ 495		
5/16	330 ~ 495		
3/8	325 ~ 492		
1/2	330 ~ 484		
5/8	329 ~ 488		
3/4	334 ~ 482		

SFM = ft/min
IPR = feed rate (Inch/rev.)

Global Cutting Tool Leader **YG-1**



CARBIDE

Being the best through innovation



DREAM DRILLS -MQL TYPE

- WITH COOLANT HOLES
  Minimum Quantity Lubrication. Drilling Deep Holes, 10D, 15D, 20D, 25D & 30D

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

Minimum Quantity Lubrication. Drilling Deep Holes, 10D, 15D, 20D, 25D & 30D

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
METRIC					
10XD	DH510	CARBIDE, DREAM DRILLS MQL TYPE with COOLANT HOLES *EXTRA LONG*	D3.0	D14.0	**126**
15XD	DH515	CARBIDE, DREAM DRILLS MQL TYPE with COOLANT HOLES *EXTRA LONG*	D3.0	D12.0	**127**
20XD	DH520	CARBIDE, DREAM DRILLS MQL TYPE with COOLANT HOLES ◇ *EXTRA LONG*	D3.0	D12.0	**127**
10XD	DHM10	CARBIDE, DREAM DRILLS MQL TYPE END MILL SHANK with COOLANT HOLES ◇ *EXTRA LONG*	D3.0	D14.0	**128**
15XD	DHM15	CARBIDE, DREAM DRILLS MQL TYPE END MILL SHANK with COOLANT HOLES ◇ *EXTRA LONG*	D3.0	D12.0	**128**
20XD	DHM20	CARBIDE, DREAM DRILLS MQL TYPE END MILL SHANK with COOLANT HOLES ◇ *EXTRA LONG*	D3.0	D12.0	**128**
25XD	DHM25	CARBIDE, DREAM DRILLS MQL TYPE END MILL SHANK with COOLANT HOLES ◇ *EXTRA LONG*	D3.0	D10.0	**129**
30XD	DHM30	CARBIDE, DREAM DRILLS MQL TYPE END MILL SHANK with COOLANT HOLES ◇ *EXTRA LONG*	D3.0	D8.0	**129**
		RECOMMENDED CUTTING CONDITIONS			**130**

◇ Call for Availability

◎ : Excellent ○ : Good

P				H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
◎	◎	○				○					
◎	◎	○				○					
◎	◎	○				○					
◎	◎	○				○					
◎	◎	○				○					
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◎	◎	○				○					

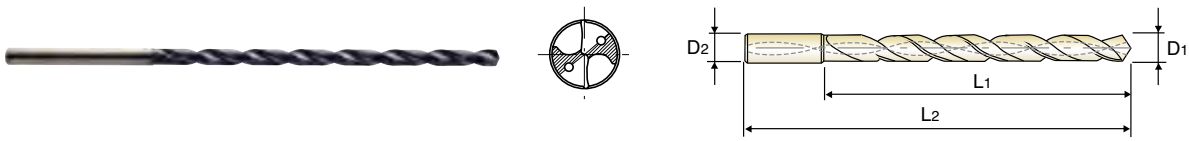
DREAM DRILLS -MQL TYPE

DH510 SERIES

CARBIDE, DREAM DRILLS MQL TYPE with COOLANT HOLES

EXTRA LONG

- 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



MG | 30° | h6 | h7 | 140° | 20 bar P.130

10 × D

Unit : mm

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Metric	Inch			
TiAlN	D1		D2	L1	L2
DH510030	3.0	.1181	3	39	90
DH510033	3.3	.1299	4	46	97
DH510035	3.5	.1378	4	46	97
DH510040	4.0	.1575	4	52	103
DH510042	4.2	.1654	5	59	112
DH510045	4.5	.1772	5	59	112
DH510050	5.0	.1969	5	65	118
DH510055	5.5	.2165	6	72	127
DH510060	6.0	.2362	6	78	133
DH510065	6.5	.2559	7	85	141
DH510068	6.8	.2677	7	91	147
DH510070	7.0	.2756	7	91	147
DH510075	7.5	.2953	8	98	155

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Metric	Inch			
TiAlN	D1		D2	L1	L2
DH510080	8.0	.3150	8	104	161
DH510085	8.5	.3346	9	111	169
DH510090	9.0	.3543	9	117	175
DH510095	9.5	.3740	10	124	182
DH510100	10.0	.3937	10	130	188
DH510105	10.5	.4134	11	137	201
DH510110	11.0	.4330	11	143	207
DH510115	11.5	.4527	12	150	215
DH510120	12.0	.4724	12	156	221
DH510125	12.5	.4921	13	163	229
DH510130	13.0	.5118	13	169	235
DH510135	13.5	.5314	14	176	243
DH510140	14.0	.5512	14	182	249

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○					○					

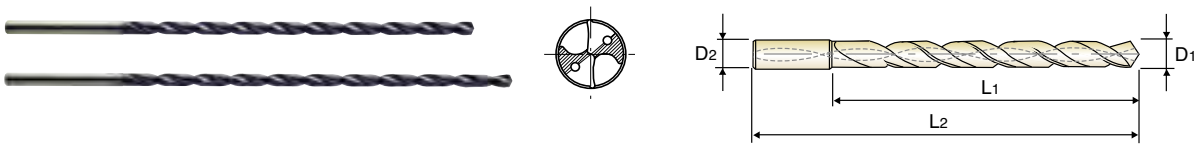
DREAM DRILLS -MQL TYPE

DH515 SERIES
DH520 SERIES

CARBIDE, DREAM DRILLS MQL TYPE with COOLANT HOLES

EXTRA LONG

- 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



MG | 30° | h6 | h7 | 140° | 45 bar P.130

15 × D (DH515) | 20 × D (DH520)

Unit : mm

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Metric	Inch			
TiAlN	D1		D2	L1	L2
DH515030	3.0	.1181	3	54	105
DH515035	3.5	.1378	4	63	114
DH515040	4.0	.1575	4	72	123
DH515045	4.5	.1772	5	81	134
DH515050	5.0	.1969	5	90	143
DH515055	5.5	.2165	6	99	154
DH515060	6.0	.2362	6	108	163
DH515070	7.0	.2756	7	126	182
DH515080	8.0	.3150	8	144	201
DH515090	9.0	.3543	9	162	220
DH515100	10.0	.3937	10	180	238
DH515110	11.0	.4330	11	198	262
DH515120	12.0	.4724	12	216	281

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Metric	Inch			
TiAlN	D1		D2	L1	L2
DH520030	3.0	.1181	3	69	120
DH520035	3.5	.1378	4	81	132
DH520040	4.0	.1575	4	92	143
DH520045	4.5	.1772	5	104	157
DH520050	5.0	.1969	5	115	168
DH520055	5.5	.2165	6	127	182
DH520060	6.0	.2362	6	138	193
DH520070	7.0	.2756	7	161	217
DH520080	8.0	.3150	8	184	241
DH520090	9.0	.3543	9	207	265
DH520100	10.0	.3937	10	230	288
DH520120	12.0	.4724	12	276	341

◎ : Excellent ○ : Good

P					H	M	K	N					S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○					○					

DREAM DRILLS -MQL TYPE

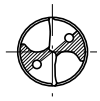
DHM10 SERIES
DHM15 SERIES
DHM20 SERIES

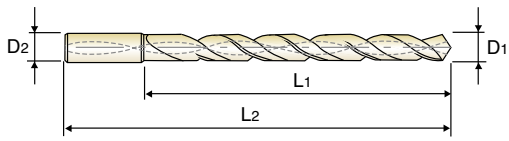
CARBIDE, DREAM DRILLS MQL TYPE END MILL SHANK with COOLANT HOLES

EXTRA LONG

- Non step drilling up to 10 times (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







DHM10 DHM15 DHM20

◇ Call for Availability

MG | 30° | h6 | h7 | 140° | 20 bar | 45 bar | P.130

10 × D (DHM10) | 15 × D (DHM15) | 20 × D (DHM20)

10 × D

Unit : mm

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Metric	Inch			
TiAlN	D1		D2	L1	L2
DHM10030	3.0	.1181	6	40	80
DHM10033	3.3	.1299	6	47	87
DHM10035	3.5	.1378	6	47	87
DHM10040	4.0	.1575	6	53	93
DHM10042	4.2	.1654	6	60	100
DHM10045	4.5	.1772	6	60	100
DHM10050	5.0	.1969	6	66	106
DHM10055	5.5	.2165	6	73	113
DHM10060	6.0	.2362	6	79	119
DHM10065	6.5	.2559	8	86	126
DHM10068	6.8	.2677	8	92	132
DHM10070	7.0	.2756	8	92	132
DHM10075	7.5	.2953	8	99	139
DHM10080	8.0	.3150	8	105	145
DHM10085	8.5	.3346	10	112	156
DHM10090	9.0	.3543	10	118	162
DHM10095	9.5	.3740	10	126	170
DHM10100	10.0	.3937	10	132	176
DHM10105	10.5	.4134	12	139	188
DHM10110	11.0	.4330	12	145	194
DHM10115	11.5	.4527	12	152	201
DHM10120	12.0	.4724	12	158	207
DHM10125	12.5	.4921	14	165	214
DHM10130	13.0	.5118	14	171	220
DHM10135	13.5	.5314	14	178	227
DHM10140	14.0	.5512	14	184	233

15 × D

Unit : mm

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Metric	Inch			
TiAlN	D1		D2	L1	L2
DHM15030	3.0	.1181	6	55	95
DHM15035	3.5	.1378	6	64	104
DHM15040	4.0	.1575	6	73	113
DHM15045	4.5	.1772	6	82	122
DHM15050	5.0	.1969	6	91	131
DHM15055	5.5	.2165	6	100	140
DHM15060	6.0	.2362	6	109	149
DHM15070	7.0	.2756	8	127	167
DHM15080	8.0	.3150	8	145	185
DHM15090	9.0	.3543	10	163	207
DHM15100	10.0	.3937	10	182	226
DHM15110	11.0	.4330	12	200	249
DHM15120	12.0	.4724	12	218	267

20 × D

Unit : mm

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Metric	Inch			
TiAlN	D1		D2	L1	L2
DHM20030	3.0	.1181	6	70	110
DHM20035	3.5	.1378	6	82	122
DHM20040	4.0	.1575	6	93	133
DHM20045	4.5	.1772	6	105	145
DHM20050	5.0	.1969	6	116	156
DHM20055	5.5	.2165	6	128	168
DHM20060	6.0	.2362	6	139	179
DHM20070	7.0	.2756	8	162	202
DHM20080	8.0	.3150	8	185	225
DHM20090	9.0	.3543	10	208	252
DHM20100	10.0	.3937	10	232	276
DHM20110	11.0	.4330	12	255	304
DHM20120	12.0	.4724	12	278	327

◎ : Excellent ○ : Good

P			H		M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
◎	◎	○				○					

DREAM DRILLS -MQL TYPE

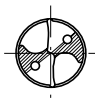
DHM25 SERIES
DHM30 SERIES

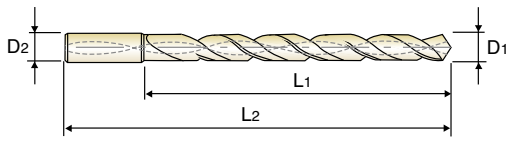
CARBIDE, DREAM DRILLS MQL TYPE END MILL SHANK with COOLANT HOLES

EXTRA LONG

- Non step drilling up to 25 times (30 times) of drill diameter
- Available for processing MQL(Minimum Quantity Lubrication)
- Excellent positioning – Bush is not necessary
- Special design – Good chip removal
- Powerful drilling







◇ Call for Availability

MG | 30° | h6 | h7 | 140° | 45 bar | P.130

25 × D (DHM25) | 30 × D (DHM30)

Unit : mm

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Metric	Inch			
TiAlN	D1		D2	L1	L2
DHM25030	3.0	.1181	6	85	125
DHM25035	3.5	.1378	6	99	139
DHM25040	4.0	.1575	6	113	153
DHM25045	4.5	.1772	6	127	167
DHM25050	5.0	.1969	6	141	181
DHM25055	5.5	.2165	6	155	195
DHM25060	6.0	.2362	6	169	209
DHM25070	7.0	.2756	8	197	237
DHM25080	8.0	.3150	8	225	265
DHM25090	9.0	.3543	10	253	297
DHM25100	10.0	.3937	10	282	326

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Metric	Inch			
TiAlN	D1		D2	L1	L2
DHM30030	3.0	.1181	6	100	140
DHM30035	3.5	.1378	6	117	157
DHM30040	4.0	.1575	6	133	173
DHM30045	4.5	.1772	6	150	190
DHM30050	5.0	.1969	6	166	206
DHM30055	5.5	.2165	6	183	223
DHM30060	6.0	.2362	6	199	239
DHM30070	7.0	.2756	8	232	272
DHM30080	8.0	.3150	8	265	305

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○					○					

DREAM DRILLS -MQL TYPE

RECOMMENDED CUTTING CONDITIONS

CARBIDE, DREAM DRILLS MQL TYPE with COOLANT HOLES, TiAlN COATED

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

WORK MATERIAL		P				K							
		CARBON STEELS				CAST IRON				DUCTILE CAST IRON			
STRENGTH		~ 1060 N/mm²				250 ~ 350 N/mm²				400 ~ 500 N/mm²			
DRILLING SPEED(SFM)		230 ~ 290 ft/min				230 ~ 290 ft/min				220 ~ 240 ft/min			
DIAMETER		N	S	IPR		N	S	IPR		N	S	IPR	
Metric(mm)	Decimal												
3	.1181	7500	0.06~0.12	.0024	.0047	7500	0.06~0.12	.0024	.0047	7500	0.06~0.12	.0024	.0047
4	.1575	6400	0.08~0.16	.0031	.0063	6400	0.08~0.16	.0031	.0063	5600	0.08~0.16	.0031	.0063
5	.1969	5800	0.10~0.20	.0039	.0079	5800	0.10~0.20	.0039	.0079	4500	0.10~0.20	.0039	.0079
6	.2362	4800	0.12~0.24	.0047	.0094	4800	0.12~0.24	.0047	.0094	3800	0.12~0.24	.0047	.0094
8	.3150	3600	0.16~0.28	.0063	.0110	3600	0.16~0.28	.0063	.0110	2800	0.16~0.28	.0063	.0110
10	.3937	2900	0.20~0.35	.0079	.0138	2900	0.20~0.35	.0079	.0138	2300	0.20~0.35	.0079	.0138
12	.4724	2400	0.24~0.42	.0094	.0165	2400	0.24~0.42	.0094	.0165	1900	0.24~0.42	.0094	.0165
14	.5512	2050	0.28~0.46	.0110	.0181	2050	0.28~0.46	.0110	.0181	1600	0.28~0.46	.0110	.0181

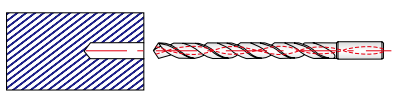
N = R.P.M
S= feed rate (mm/rev.)
IPR= feed rate (Inch/rev.)

DHM25, DHM30 SERIES

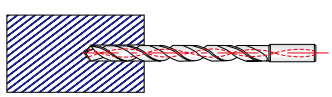
WORK MATERIAL		P				K							
		CARBON STEELS				CAST IRON				DUCTILE CAST IRON			
STRENGTH		~ 1060 N/mm²				250 ~ 350 N/mm²				400 ~ 500 N/mm²			
DRILLING SPEED(SFM)		230 ~ 290 ft/min				230 ~ 290 ft/min				220 ~ 240 ft/min			
DIAMETER		N	S	IPR		N	S	IPR		N	S	IPR	
Metric(mm)	Decimal												
3	.1181	6400	0.06~0.12	.0024	.0047	6400	0.06~0.12	.0024	.0047	6400	0.06~0.12	.0024	.0047
4	.1575	5500	0.08~0.16	.0031	.0063	5500	0.08~0.16	.0031	.0063	4700	0.08~0.16	.0031	.0063
5	.1969	4900	0.10~0.20	.0039	.0079	4900	0.10~0.20	.0039	.0079	3800	0.10~0.20	.0039	.0079
6	.2362	4200	0.12~0.24	.0047	.0094	4200	0.12~0.24	.0047	.0094	3200	0.12~0.24	.0047	.0094
8	.3150	3000	0.16~0.28	.0063	.0110	3000	0.16~0.28	.0063	.0110	2400	0.16~0.28	.0063	.0110
10	.3937	2500	0.20~0.35	.0079	.0138	2500	0.20~0.35	.0079	.0138	1900	0.20~0.35	.0079	.0138

N = R.P.M
S= feed rate (mm/rev.)
IPR= feed rate (Inch/rev.)

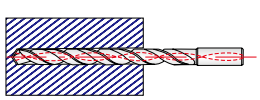
▶ Coolant Pressure : 900 PSI



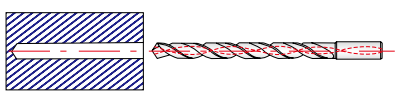
1. Use a YG 3xD Drill to produce a guide hole no larger than .004 over the required drill size. Drill the pilot hole 2xD deep hole.



2. Enter the guide hole at 50 SFM surface and .010 feed rate / per rev.



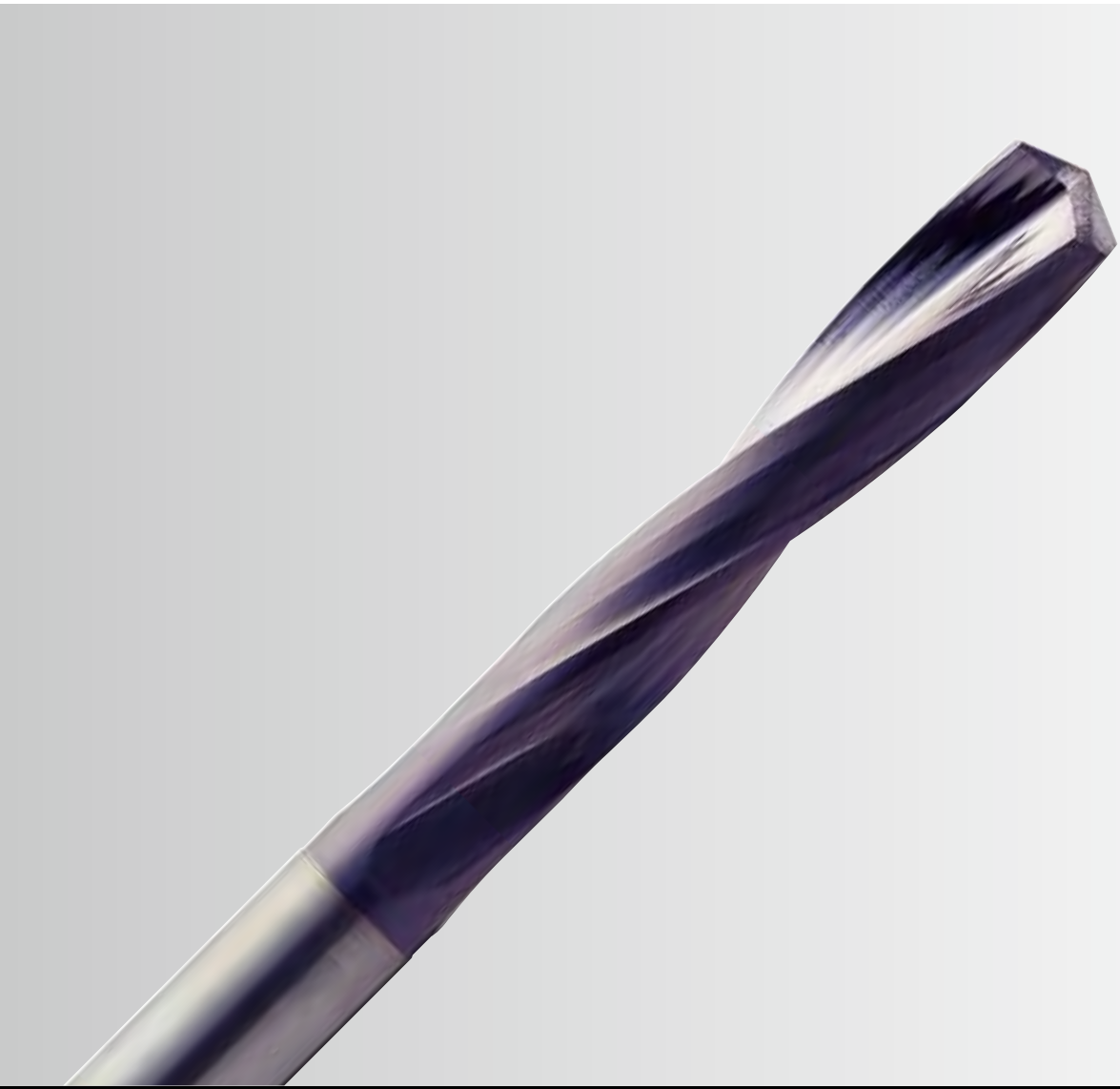
3. Before hitting the bottom of the guide hole, Increase SFM and feed rate for normal drilling.



4. After drilling, to withdraw drill, reduce SFM to 50 @ 10 inches per minute.

CARBIDE

Being the best through innovation



DREAM DRILLS
- For HIGH HARDENED STEELS

- HIGH HARDENED STEELS, HRc50~HRc70

SOLID CARBIDE DREAM DRILLS for HIGH HARDENED STEELS
High Hardened Steels, HRc50~HRc70

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
INCH					
	DH501 	CARBIDE, DREAM DRILLS for HIGH HARDENED STEEL (HRc50~HRc70)	D1/8	D3/4	**134**
METRIC					
	DH500 	CARBIDE, DREAM DRILLS for HIGH HARDENED STEEL (HRc50~HRc70)	D1.0	D14.0	**136**
		RECOMMENDED CUTTING CONDITIONS			**138**

◎ : Excellent ○ : Good

P				H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
			◎	◎							
			◎	◎							

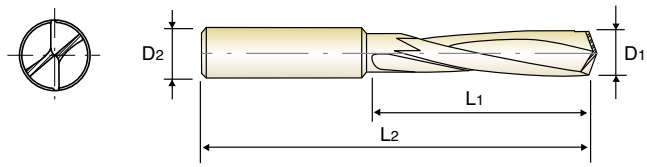
DREAM DRILLS for HIGH HARDENED STEELS

DH501 SERIES

CARBIDE, DREAM DRILLS for HIGH HARDENED STEEL (HRc50~70)

- **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
- **Tolerance** : Dia. Tolerance ∅D1: See page 247, Shank Tolerance ∅D2: -.0001 -.0005





MG | 15° | h6 | 140°

P.138

Unit : Inch

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decimal			
TiAlN	D1		D2	L1	L2
DH501001	1/8	.1250	1/8	21/32	2
DH501002	#30	.1285	3/16	23/32	2
DH501003	#29	.1360	3/16	13/16	2
DH501004	#28	.1405	3/16	13/16	2
DH501005	9/64	.1406	3/16	13/16	2
DH501006	#27	.1440	3/16	13/16	2
DH501007	#26	.1470	3/16	13/16	2
DH501008	#25	.1495	3/16	7/8	2-1/16
DH501009	#24	.1520	3/16	7/8	2-1/16
DH501010	#23	.1540	3/16	7/8	2-1/16
DH501011	5/32	.1562	3/16	7/8	2-1/16
DH501012	#22	.1570	3/16	7/8	2-1/16
DH501013	#21	.1590	3/16	7/8	2-1/16
DH501014	#20	.1610	3/16	1	2-1/2
DH501015	#19	.1660	3/16	1	2-1/2
DH501016	11/64	.1719	3/16	1-1/8	2-3/4
DH501017	#15	.1800	3/16	1-1/8	2-3/4
DH501018	#14	.1820	3/16	1-1/8	2-3/4
DH501019	3/16	.1875	3/16	1-1/8	2-3/4
DH501020	#10	.1935	1/4	1-9/32	2-7/8
DH501021	#9	.1960	1/4	1-9/32	2-7/8
DH501022	#8	.1990	1/4	1-9/32	2-7/8
DH501023	#7	.2010	1/4	1-9/32	2-7/8
DH501024	13/64	.2031	1/4	1-9/32	2-7/8
DH501025	#6	.2040	1/4	1-9/32	2-7/8
DH501026	#5	.2055	1/4	1-9/32	2-7/8
DH501027	#4	.2090	1/4	1-9/32	2-7/8
DH501028	#3	.2130	1/4	1-13/32	3
DH501029	7/32	.2188	1/4	1-13/32	3
DH501030	#2	.2210	1/4	1-13/32	3
DH501031	#1	.2280	1/4	1-13/32	3
DH501032	15/64	.2344	1/4	1-13/32	3
DH501033	B	.2380	1/4	1-19/32	3-1/8
DH501034	C	.2420	1/4	1-19/32	3-1/8
DH501035	D	.2460	1/4	1-19/32	3-1/8
DH501036	1/4	.2500	1/4	1-19/32	3-1/8
DH501037	F	.2570	3/8	1-19/32	3-1/8
DH501038	G	.2610	3/8	1-19/32	3-1/8
DH501039	17/64	.2656	3/8	1-19/32	3-1/8
DH501040	I	.2720	3/8	1-25/32	3-3/8
DH501041	J	.2770	3/8	1-25/32	3-3/8
DH501042	9/32	.2812	3/8	1-25/32	3-3/8
DH501043	L	.2900	3/8	1-25/32	3-3/8
DH501044	M	.2950	3/8	1-25/32	3-3/8
DH501045	19/64	.2969	3/8	1-25/32	3-3/8
DH501046	N	.3020	3/8	1-31/32	3-7/8
DH501047	5/16	.3125	3/8	1-31/32	3-7/8
DH501048	O	.3160	3/8	1-31/32	3-7/8

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
			◎	◎								

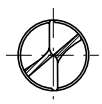
DREAM DRILLS for HIGH HARDENED STEELS

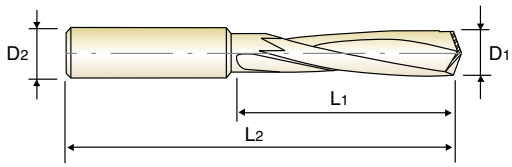
DH501 SERIES

CARBIDE, DREAM DRILLS for HIGH HARDENED STEEL (HRc50~70)

- **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
- **Tolerance** : Dia. Tolerance ∅D1: See page 247, Shank Tolerance ∅D2: -.0001 -.0005







MG | 15° | h6 | 140° P.138

Unit : Inch

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decimal			
TiAlN	D1		D2	L1	L2
DH501049	21/64	.3281	3/8	1-31/32	3-7/8
DH501050	Q	.3320	3/8	1-31/32	3-7/8
DH501051	R	.3390	3/8	2-1/4	4-1/8
DH501052	11/32	.3438	3/8	2-1/4	4-1/8
DH501053	23/64	.3594	3/8	2-1/4	4-1/8
DH501054	U	.3680	3/8	2-1/4	4-1/8
DH501055	3/8	.3750	3/8	2-1/4	4-1/8
DH501056	V	.3770	1/2	2-1/2	4-3/8
DH501057	25/64	.3906	1/2	2-1/2	4-3/8
DH501058	X	.3970	1/2	2-1/2	4-3/8
DH501059	Y	.4040	1/2	2-1/2	4-3/8
DH501060	13/32	.4062	1/2	2-1/2	4-3/8
DH501061	Z	.4130	1/2	2-1/2	4-3/8
DH501062	27/64	.4219	1/2	2-13/16	4-5/8
DH501063	7/16	.4375	1/2	2-13/16	4-5/8
DH501064	29/64	.4531	1/2	2-13/16	4-5/8
DH501065	15/32	.4688	1/2	2-13/16	4-5/8
DH501066	31/64	.4844	1/2	2-13/16	4-5/8

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decimal			
TiAlN	D1		D2	L1	L2
DH501067	1/2	.5000	1/2	3-1/16	5
DH501068	33/64	.5156	5/8	3-1/16	5
DH501069	17/32	.5312	5/8	3-1/16	5
DH501070	35/64	.5469	5/8	3-1/16	5
DH501071	9/16	.5625	5/8	3-1/16	5
DH501072	37/64	.5781	5/8	3-9/32	5-1/4
DH501073	19/32	.5937	5/8	3-9/32	5-1/4
DH501074	39/64	.6094	5/8	3-9/32	5-1/4
DH501075	5/8	.6250	5/8	3-9/32	5-1/4
DH501076	41/64	.6406	3/4	3-9/32	5-1/4
DH501077	21/32	.6563	3/4	3-11/16	5-5/8
DH501078	43/64	.6719	3/4	3-11/16	5-5/8
DH501079	11/16	.6875	3/4	3-11/16	5-5/8
DH501080	45/64	.7031	3/4	3-11/16	5-5/8
DH501081	23/32	.7188	3/4	3-3/4	6
DH501082	47/64	.7344	3/4	3-3/4	6
DH501083	3/4	.7500	3/4	3-3/4	6

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
			◎	◎								

DREAM DRILLS for HIGH HARDENED STEELS

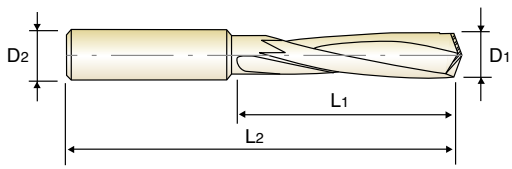
DH500 SERIES

CARBIDE, DREAM DRILLS for HIGH HARDENED STEEL (HRc50~70)

▶ **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







MG | 15° | h6 | h7 | 140° P.138

Unit : mm

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decimal			
TiAlN	D1		D2	L1	L2
DH500010	1.0	.0394	3	6	40
DH500011	1.1	.0433	3	6	40
DH500012	1.2	.0472	3	6	40
DH500013	1.3	.0512	3	8	40
DH500014	1.4	.0551	3	8	40
DH500015	1.5	.0591	3	8	40
DH500016	1.6	.0630	3	10	40
DH500017	1.7	.0669	3	10	40
DH500018	1.8	.0709	3	10	40
DH500019	1.9	.0748	3	10	40
DH500020	2.0	.0787	3	12	42
DH500025	2.5	.0984	3	14	44
DH500026	2.6	.1024	3	16	44
DH500028	2.8	.1102	3	16	46
DH500030	3.0	.1181	3	18	46
DH500033	3.3	.1299	4	18	48
DH500034	3.4	.1339	4	20	50
DH500035	3.5	.1378	4	20	50
DH500038	3.8	.1496	4	22	52
DH500040	4.0	.1575	4	22	52
DH500041	4.1	.1614	6	25	65
DH500042	4.2	.1654	6	25	65
DH500043	4.3	.1693	6	28	68
DH500044	4.4	.1732	6	28	68

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decimal			
TiAlN	D1		D2	L1	L2
DH500045	4.5	.1772	6	28	68
DH500046	4.6	.1811	6	28	68
DH500048	4.8	.1890	6	32	72
DH500049	4.9	.1929	6	32	72
DH500050	5.0	.1969	6	32	72
DH500051	5.1	.2008	6	32	72
DH500052	5.2	.2047	6	32	72
DH500053	5.3	.2087	6	32	72
DH500055	5.5	.2165	6	35	75
DH500060	6.0	.2362	6	35	75
DH500062	6.2	.2441	8	40	80
DH500065	6.5	.2559	8	40	80
DH500068	6.8	.2677	8	45	85
DH500069	6.9	.2717	8	45	85
DH500070	7.0	.2756	8	45	85
DH500075	7.5	.2953	8	45	85
DH500080	8.0	.3150	8	50	98
DH500085	8.5	.3346	10	50	98
DH500086	8.6	.3386	10	57	105
DH500088	8.8	.3465	10	57	105
DH500090	9.0	.3543	10	57	105
DH500093	9.3	.3661	10	57	105
DH500095	9.5	.3740	10	57	105
DH500100	10.0	.3937	10	63	111

▶ NEXT PAGE

◎ : Excellent ○ : Good

P			H		M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
			◎	◎							

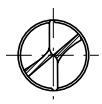
DREAM DRILLS for HIGH HARDENED STEELS

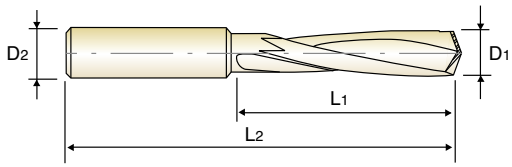
DH500 SERIES

CARBIDE, DREAM DRILLS for HIGH HARDENED STEEL (HRc50~70)

- **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
- **Tolerance** : Dia. Tolerance ∅D1: See page 247, Shank Tolerance ∅D2: -.0001 -.0005







MG | 15° | h6 | 140° P.138

Unit : mm

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decimal			
TiAlN	D1		D2	L1	L2
DH500102	10.2	.4016	12	63	111
DH500103	10.3	.4055	12	63	111
DH500105	10.5	.4134	12	71	111
DH500108	10.8	.4252	12	71	119
DH500110	11.0	.4331	12	71	119

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decimal			
TiAlN	D1		D2	L1	L2
DH500115	11.5	.4528	12	71	119
DH500120	12.0	.4724	12	71	119
DH500121	12.1	.4764	14	77	125
DH500140	14.0	.5512	14	77	125

◎ : Excellent ○ : Good

P			H		M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
			◎	◎							

DREAM DRILLS for HIGH HARDENED STEELS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, DREAM DRILLS for HIGH HARDENED STEEL (HRc50~70), TiAlN COATED

DH501 SERIES

WORK MATERIAL			P			H					
			HARDENED STEELS								
			HRc 50~55			HRc 55~60			HRc 60~70		
DRILLING SPEED(SFM)			45 ~ 72 ft/min			32 ~ 52 ft/min			26 ~ 42 ft/min		
DIAMETER			N	S	IPR	N	S	IPR	N	S	IPR
Fractional	Metric(mm)	Decimal									
5/64	1.984	.0781	2860	0.04	.0015	2000	0.04	.0015	1900	0.04	.0015
1/8	3.175	.1250	1900	0.04	.0015	1330	0.04	.0015	1250	0.04	.0015
5/32	3.969	.1563	1430	0.04	.0015	1000	0.04	.0015	950	0.04	.0015
13/64	5.159	.2031	1150	0.04	.0015	800	0.04	.0015	750	0.04	.0015
15/64	5.953	.2344	960	0.04	.0015	670	0.04	.0015	630	0.04	.0015
5/16	7.938	.3125	720	0.04	.0015	500	0.04	.0015	480	0.04	.0015
25/64	9.922	.3906	570	0.04	.0015	400	0.04	.0015	380	0.04	.0015
15/32	11.906	.4688	480	0.04	.0015	330	0.04	.0015	320	0.04	.0015
9/16	14.288	.5625	435	0.04	.0015	280	0.04	.0015	270	0.04	.0015
41/64	16.272	.6406	380	0.04	.0015	250	0.04	.0015	240	0.04	.0015
11/16	17.463	.6875	325	0.04	.0015	235	0.04	.0015	190	0.04	.0015
47/64	18.653	.7344	310	0.04	.0015	220	0.04	.0015	180	0.04	.0015

N = R.P.M
S= feed rate (mm/rev.)
IPR= feed rate (Inch/rev.)

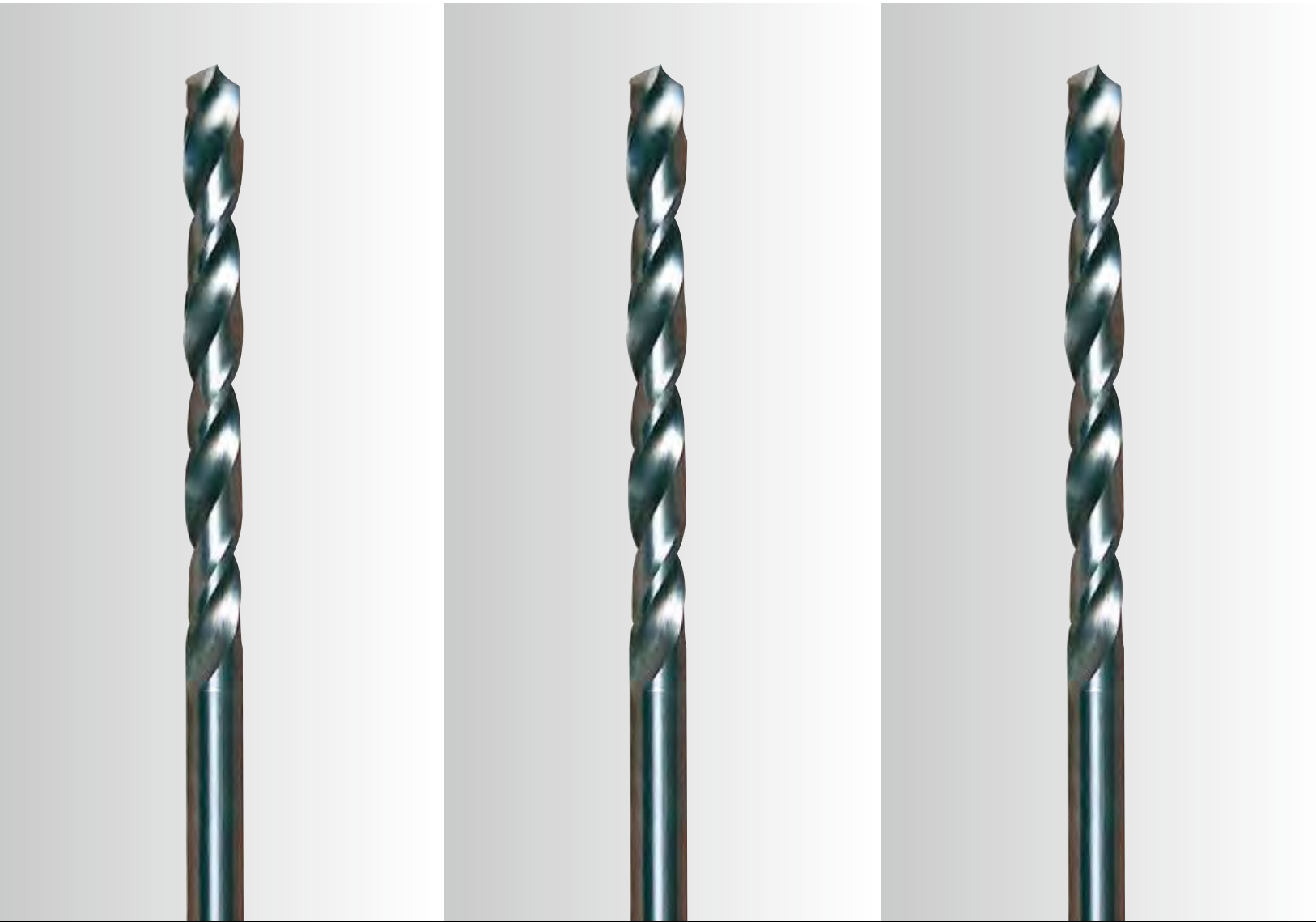
DH500 SERIES

WORK MATERIAL			P			H					
			HARDENED STEELS								
			HRc 50~55			HRc 55~60			HRc 60~70		
DRILLING SPEED(SFM)			45 ~ 72 ft/min			32 ~ 52 ft/min			26 ~ 42 ft/min		
DIAMETER			N	S	IPR	N	S	IPR	N	S	IPR
Fractional	Metric(mm)	Decimal									
1.0		.0394	5600	0.04	.0015	4000	0.04	.0015	3700	0.04	.0015
2.0		.0787	2900	0.04	.0015	2100	0.04	.0015	1900	0.04	.0015
3.0		.1181	1900	0.04	.0015	1330	0.04	.0015	1250	0.04	.0015
4.0		.1575	1430	0.04	.0015	1000	0.04	.0015	950	0.04	.0015
5.0		.1969	1150	0.04	.0015	800	0.04	.0015	750	0.04	.0015
6.0		.2362	960	0.04	.0015	670	0.04	.0015	630	0.04	.0015
8.0		.3150	720	0.04	.0015	500	0.04	.0015	480	0.04	.0015
10.0		.3937	570	0.04	.0015	400	0.04	.0015	380	0.04	.0015
12 .0		.4724	480	0.04	.0015	330	0.04	.0015	320	0.04	.0015
14.0		.5512	438	0.04	.0015	282	0.04	.0015	272	0.04	.0015

N = R.P.M
S= feed rate (mm/rev.)
IPR= feed rate (Inch/rev.)

CARBIDE

Being the best through innovation



STANDARD CARBIDE DRILLS

- General Purpose
  118° Point

STANDARD SOLID CARBIDE DRILLS
General Purpose
118° Point

ITEM	MODEL	DESCRIPTION		SIZE MIN	SIZE MAX	PAGE
INCH						
D5412 DH412		CARBIDE DRILLS / Wire gauge sizes	*JOBBER*	#56	#1	**142**
D5413 DH413		CARBIDE DRILLS / Letter sizes	*JOBBER*	A	Z	**143**
D5417 DH417		CARBIDE DRILLS / Fractional sizes	*JOBBER*	D3/64	D1/2	**144**
		RECOMMENDED CUTTING CONDITIONS				**145**

◎ : Excellent ○ : Good

P				H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
◎	◎				○	○	○				○
◎	◎				○	○	○				○
◎	◎				○	○	○				○

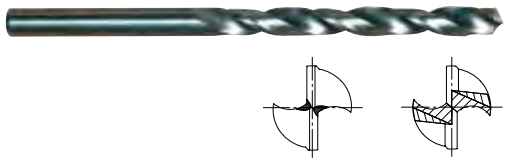
STANDARD CARBIDE DRILLS

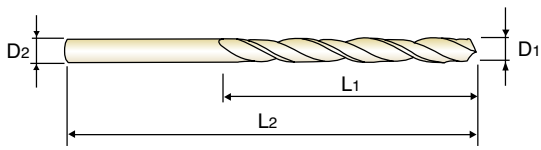
DH412 SERIES
D5412 SERIES

CARBIDE DRILLS

JOBBER

▶ **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.





MG | N 30° | h6 | h7 | 118° | P.145

$D_1 = D_2$

▶ Wire gauge sizes

Unit : Inch

EDP No.		Diameter		Flute Length	Overall Length	EDP No.		Diameter		Flute Length	Overall Length
		Wire gauge	Decimal					Wire gauge	Decimal		
Bright Finish	TiAlN	$D_1 = D_2$		L_1	L_2	Bright Finish	TiAlN	$D_1 = D_2$		L_1	L_2
D5412101	DH412101	1	.2280	1-3/4	3	D5412129	DH412129	29	.1360	1-3/8	2-1/2
D5412102	DH412102	2	.2210	1-3/4	3	D5412130	DH412130	30	.1285	1-1/4	2-1/4
D5412103	DH412103	3	.2130	1-3/4	3	D5412131	DH412131	31	.1200	1-1/4	2-1/4
D5412104	DH412104	4	.2090	1-3/4	3	D5412132	DH412132	32	.1160	1-1/4	2-1/4
D5412105	DH412105	5	.2055	1-3/4	3	D5412133	DH412133	33	.1130	1-1/4	2-1/4
D5412106	DH412106	6	.2040	1-3/4	3	D5412134	DH412134	34	.1110	1-1/4	2-1/4
D5412107	DH412107	7	.2010	1-3/4	3	D5412135	DH412135	35	.1100	1-1/4	2-1/4
D5412108	DH412108	8	.1990	1-3/4	3	D5412136	DH412136	36	.1065	1-1/4	2-1/4
D5412109	DH412109	9	.1960	1- 3/4	3	D5412137	DH412137	37	.1040	1-1/4	2-1/4
D5412110	DH412110	10	.1935	1-5/8	2-3/4	D5412138	DH412138	38	.1015	1-1/4	2-1/4
D5412111	DH412111	11	.1910	1-5/8	2-3/4	D5412139	DH412139	39	.0995	1-1/4	2-1/4
D5412112	DH412112	12	.1890	1-5/8	2-3/4	D5412140	DH412140	40	.0980	1	2
D5412113	DH412113	13	.1850	1-5/8	2-3/4	D5412141	DH412141	41	.0960	1	2
D5412114	DH412114	14	.1820	1-5/8	2-3/4	D5412142	DH412142	42	.0935	1	2
D5412115	DH412115	15	.1800	1-5/8	2-3/4	D5412143	DH412143	43	.0890	1	2
D5412116	DH412116	16	.1770	1-5/8	2-3/4	D5412144	DH412144	44	.0860	1	2
D5412117	DH412117	17	.1730	1-5/8	2-3/4	D5412145	DH412145	45	.0820	7/8	1-3/4
D5412118	DH412118	18	.1695	1-5/8	2-3/4	D5412146	DH412146	46	.0810	7/8	1-3/4
D5412119	DH412119	19	.1660	1-5/8	2-3/4	D5412147	DH412147	47	.0785	7/8	1-3/4
D5412120	DH412120	20	.1610	1-3/8	2-1/2	D5412148	DH412148	48	.0760	7/8	1-3/4
D5412121	DH412121	21	.1590	1-3/8	2-1/2	D5412149	DH412149	49	.0730	7/8	1-3/4
D5412122	DH412122	22	.1570	1-3/8	2-1/2	D5412150	DH412150	50	.0700	7/8	1-3/4
D5412123	DH412123	23	.1540	1-3/8	2-1/2	D5412151	DH412151	51	.0670	3/4	1-1/2
D5412124	DH412124	24	.1520	1-3/8	2-1/2	D5412152	DH412152	52	.0635	3/4	1-1/2
D5412125	DH412125	25	.1495	1-3/8	2-1/2	D5412153	DH412153	53	.0595	3/4	1-1/2
D5412126	DH412126	26	.1470	1-3/8	2-1/2	D5412154	DH412154	54	.0550	3/4	1-1/2
D5412127	DH412127	27	.1440	1-3/8	2-1/2	D5412155	DH412155	55	.0520	3/4	1-1/2
D5412128	DH412128	28	.1405	1-3/8	2-1/2	D5412156	DH412156	56	.0465	3/4	1-1/2

▶ Other coating is available on you request.

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎					○	○	○				○

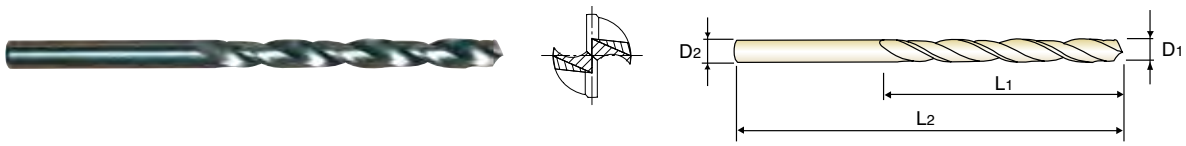
STANDARD CARBIDE DRILLS

DH413 SERIES
D5413 SERIES

CARBIDE DRILLS

JOBBER

▶ **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.



MG | N 30° | h6 | h7 | 118° | P.145

$D_1 = D_2$

▶ Letter sizes

Unit : Inch

EDP No.		Diameter		Flute Length	Overall Length	EDP No.		Diameter		Flute Length	Overall Length
		Letter	Decimal					Letter	Decimal		
Bright Finish	TiAlN	$D_1 = D_2$		L_1	L_2	Bright Finish	TiAlN	$D_1 = D_2$		L_1	L_2
D5413201	DH413201	A	.2340	2	3-1/4	D5413214	DH413214	N	.3020	2-3/8	3-3/4
D5413202	DH413202	B	.2380	2	3-1/4	D5413215	DH413215	O	.3160	2-3/8	3-3/4
D5413203	DH413203	C	.2420	2	3-1/4	D5413216	DH413216	P	.3230	2-3/8	3-3/4
D5413204	DH413204	D	.2460	2	3-1/4	D5413217	DH413217	Q	.3320	2-1/2	4
D5413205	DH413205	E	.2500	2	3-1/4	D5413218	DH413218	R	.3390	2-1/2	4
D5413206	DH413206	F	.2570	2	3-1/4	D5413219	DH413219	S	.3480	2-1/2	4
D5413207	DH413207	G	.2610	2-1/8	3-1/2	D5413220	DH413220	T	.3580	2-3/4	4-1/4
D5413208	DH413208	H	.2660	2-1/8	3-1/2	D5413221	DH413221	U	.3680	2-3/4	4-1/4
D5413209	DH413209	I	.2720	2-1/8	3-1/2	D5413222	DH413222	V	.3770	2-3/4	4-1/4
D5413210	DH413210	J	.2770	2-1/8	3-1/2	D5413223	DH413223	W	.3860	2-7/8	4-1/2
D5413211	DH413211	K	.2810	2-1/8	3-1/2	D5413224	DH413224	X	.3970	2-7/8	4-1/2
D5413212	DH413212	L	.2900	2-1/8	3-1/2	D5413225	DH413225	Y	.4040	2-7/8	4-1/2
D5413213	DH413213	M	.2950	2-3/8	3-3/4	D5413226	DH413226	Z	.4130	2-7/8	4-1/2

▶ Other coating is available on you request.

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎					○	○	○				○

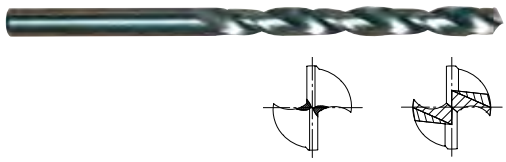
STANDARD CARBIDE DRILLS

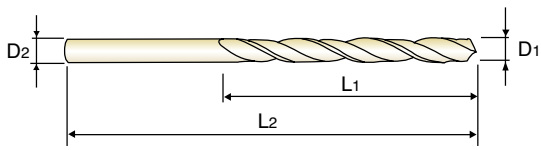
DH417 SERIES
D5417 SERIES

CARBIDE DRILLS

JOBBER

▶ **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.





MG | N 30° | h6 | h7 | 118° | P.145

$D_1 = D_2$

▶ Fractional sizes

Unit : Inch

EDP No.		Diameter		Flute Length	Overall Length	EDP No.		Diameter		Flute Length	Overall Length
		Fractional	Decimal					Fractional	Decimal		
Bright Finish	TiAlN	$D_1 = D_2$		L_1	L_2	Bright Finish	TiAlN	$D_1 = D_2$		L_1	L_2
D5417003	DH417003	3/64	.0469	3/4	1-1/2	D5417018	DH417018	9/32	.2813	2-1/8	3-1/2
D5417004	DH417004	1/16	.0625	3/4	1-1/2	D5417019	DH417019	19/64	.2969	2-3/8	3-3/4
D5417005	DH417005	5/64	.0781	7/8	1-3/4	D5417020	DH417020	5/16	.3125	2-3/8	3-3/4
D5417006	DH417006	3/32	.0938	1	2	D5417021	DH417021	21/64	.3281	2-1/2	4
D5417007	DH417007	7/64	.1094	1-1/4	2-1/4	D5417022	DH417022	11/32	.3438	2-1/2	4
D5417008	DH417008	1/8	.1250	1-1/4	2-1/4	D5417023	DH417023	23/64	.3594	2-3/4	4-1/4
D5417009	DH417009	9/64	.1406	1-3/8	2-1/2	D5417024	DH417024	3/8	.3750	2-3/4	4-1/4
D5417010	DH417010	5/32	.1563	1-3/8	2-1/2	D5417025	DH417025	25/64	.3906	2-7/8	4-1/2
D5417011	DH417011	11/64	.1719	1-5/8	2-3/4	D5417026	DH417026	13/32	.4063	2-7/8	4-1/2
D5417012	DH417012	3/16	.1875	1-5/8	2-3/4	D5417027	DH417027	27/64	.4219	2-7/8	4-1/2
D5417013	DH417013	13/64	.2031	1-3/4	3	D5417028	DH417028	7/16	.4375	2-7/8	4-1/2
D5417014	DH417014	7/32	.2188	1-3/4	3	D5417029	DH417029	29/64	.4531	3	4-3/4
D5417015	DH417015	15/64	.2344	2	3-1/4	D5417030	DH417030	15/32	.4688	3	4-3/4
D5417016	DH417016	1/4	.2500	2	3-1/4	D5417031	DH417031	31/64	.4844	3	4-3/4
D5417017	DH417017	17/64	.2656	2-1/8	3-1/2	D5417032	DH417032	1/2	.5000	3	4-3/4

▶ Other coating is available on you request.

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎					○	○	○				○

CARBIDE DRILLS

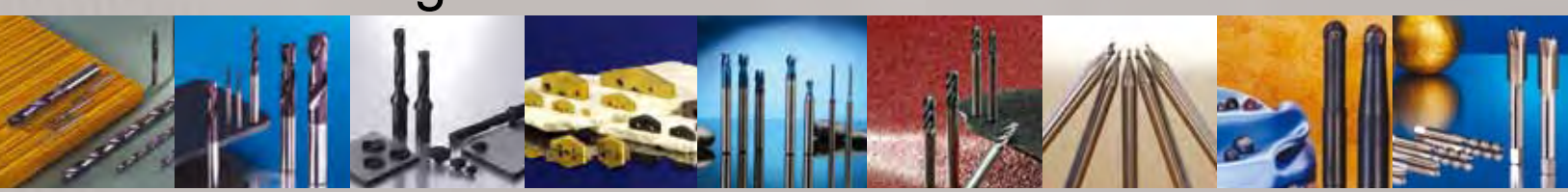
D5412, DH412, D5413, DH413, D5417, DH417 SERIES

WORK MATERIAL	P				K			
	NON-ALLOY STEELS		ALLOY STEELS		SOFT GREY CAST IRON		HARD GREY CAST IRON	
DIAMETER	N	S	N	S	N	S	N	
3/64	23000	.0012	17200	.0012	32000	.0016	23000	.0016
5/64	11500	.0016	8600	.0016	16000	.0020	11500	.0020
1/8	7800	.0020	5750	.0020	10500	.0024	7600	.0024
5/32	5800	.0024	4300	.0024	7800	.0028	5700	.0028
13/64	4700	.0028	3450	.0028	6200	.0031	4550	.0031
15/64	3900	.0031	2850	.0031	5200	.0035	3800	.0035
9/32	3350	.0035	2450	.0035	4500	.0039	3250	.0039
5/16	2900	.0039	2150	.0039	3900	.0047	2850	.0047
23/64	2600	.0043	1900	.0043	3450	.0055	2550	.0055
25/64	2350	.0047	1700	.0047	3100	.0063	2300	.0063
7/16	2150	.0051	1600	.0051	2850	.0071	2100	.0071
15/32	1950	.0055	1450	.0055	2600	.0079	1900	.0079
33/64	1800	.0063	1350	.0063	2400	.0079	1750	.0079

WORK MATERIAL	M		N					
	STAINLESS STEELS		Al-Si ALLOY, Si<10%		Al-Si ALLOY, Si>10%		Ti, Ni ALLOY STEELS	
DIAMETER	N	S	N	S	N	S	N	S
3/64	12000	.0016	54000	.0020	42000	.0020	11800	.0008
5/64	6000	.0012	27000	.0024	21000	.0024	5900	.0012
1/8	4000	.0016	18000	.0028	14000	.0028	3900	.0016
5/32	3000	.0020	13000	.0031	10500	.0031	2950	.0020
13/64	2400	.0024	10500	.0035	8500	.0035	2350	.0024
15/64	2000	.0028	8800	.0043	7100	.0043	1950	.0028
9/32	1700	.0031	7600	.0051	6100	.0051	1700	.0031
5/16	1500	.0035	6600	.0059	5350	.0059	1450	.0035
23/64	1350	.0039	5900	.0067	4750	.0067	1300	.0039
25/64	1200	.0043	5300	.0075	4250	.0075	1200	.0043
7/16	1100	.0047	4850	.0083	3900	.0083	1050	.0047
15/32	1000	.0051	4450	.0091	3550	.0091	980	.0051
33/64	950	.0051	4100	.0098	3300	.0098	905	.0051

N = R.P.M
S = Inch per Revolution(inch/rev.)

Global Cutting Tool Leader **YG-1**



HSS

Being the best through innovation



MULTI-1 DRILLS

- **HSS-PM MULTI-1 DRILLS**
  Multi Purpose Drilling. Particularly for Stainless Steels, Titanium

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
INCH					
CDRA05		PREMIUM HSS-PM MULTI-1 DRILLS / M15 Fractional sizes	D3/32		**150**
CDRA06		PREMIUM HSS-PM MULTI-1 DRILLS / M16 Wire gauge sizes	#45		**151**
CDRA07		PREMIUM HSS-PM MULTI-1 DRILLS / M17 Letter sizes	B		**152**
		RECOMMENDED CUTTING CONDITIONS			**153**

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○				○	○	○				◎
◎	◎	○				○	○	○				◎
◎	◎	○				○	○	○				◎

MULTI-1 DRILLS

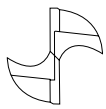
CDRA05 SERIES

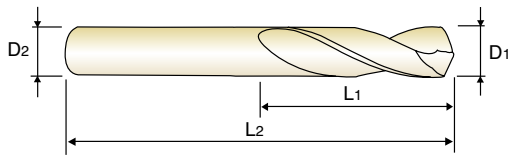
PREMIUM HSS-PM, MULTI-1 DRILLS

▶ **Features** : Excellent wear resistance by using Premium powder metallurgy materials.
With special point geometry, no centering required.
Minimal drill wandering and improved hole tolerances.
Better tool life with excellent coating.

▶ **Application** : Applicable to various materials including aluminum and stainless steel, as well carbon steel and structural steel.







PREMIUM HSS-PM | N 30° | h6 | h7 | 135° | P.153

▶ M15 / Fractional sizes

Unit : Inch

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decimal			
TiAlN	D1		D2	L1	L2
M15006	3/32	.0938	1/8	1/2	1-3/4
M15007	7/64	.1094	1/8	5/8	1-7/8
M15008	1/8	.1250	1/8	3/4	2
M15009	9/64	.1406	3/16	13/16	2-1/8
M15010	5/32	.1563	3/16	13/16	2-1/8
M15011	11/64	.1719	3/16	1	2-3/8
M15012	3/16	.1875	3/16	1	2-3/8
M15013	13/64	.2031	1/4	1-1/8	2-7/8
M15014	7/32	.2188	1/4	1-1/8	2-7/8
M15015	15/64	.2344	1/4	1-1/4	3
M15016	1/4	.2500	1/4	1-1/4	3
M15017	17/64	.2656	3/8	1-3/8	3-3/16
M15018	9/32	.2813	3/8	1-3/8	3-3/16
M15019	19/64	.2969	3/8	1-3/8	3-3/16

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decimal			
TiAlN	D1		D2	L1	L2
M15020	5/16	.3125	3/8	1-1/2	3-3/8
M15021	21/64	.3281	3/8	1-1/2	3-3/8
M15022	11/32	.3438	3/8	1-5/8	3-1/2
M15023	23/64	.3594	3/8	1-5/8	3-1/2
M15024	3/8	.3750	3/8	1-5/8	3-1/2
M15025	25/64	.3906	1/2	1-11/16	3-7/8
M15026	13/32	.4063	1/2	1-11/16	3-7/8
M15027	27/64	.4219	1/2	1-7/8	4-1/8
M15028	7/16	.4375	1/2	1-7/8	4-1/8
M15029	29/64	.4531	1/2	1-7/8	4-1/8
M15030	15/32	.4688	1/2	2	4-1/4
M15031	31/64	.4844	1/2	2	4-1/4
M15032	1/2	.5000	1/2	2	4-1/4

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○				○	○	○				◎

MULTI-1 DRILLS

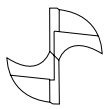
CDRA06 SERIES

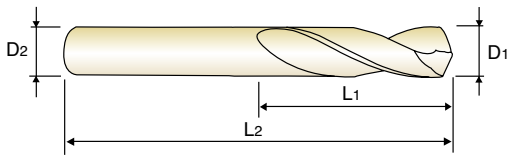
PREMIUM HSS-PM, MULTI-1 DRILLS

▶ **Features** : Excellent wear resistance by using Premium powder metallurgy materials.
With special point geometry, no centering required.
Minimal drill wandering and improved hole tolerances.
Better tool life with excellent coating.

▶ **Application** : Applicable to various materials including aluminum and stainless steel, as well carbon steel and structural steel.







PREMIUM HSS-PM | N 30° | h6 | h7 | 135° P.153

▶ M16 / Wire gauge sizes

Unit : Inch

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Wire gauge	Decimal			
TiAlN	D1		D2	L1	L2
M16045	45	.0820	1/8	3/4	2
M16044	44	.0860	1/8	3/4	2
M16043	43	.0890	1/8	3/4	2
M16042	42	.0935	1/8	3/4	2
M16041	41	.0960	1/8	13/16	2-1/16
M16040	40	.0980	1/8	13/16	2-1/16
M16039	39	.0995	1/8	13/16	2-1/4
M16038	38	.1015	1/8	13/16	2-1/4
M16037	37	.1040	1/8	13/16	2-1/4
M16036	36	.1065	1/8	13/16	2-1/4
M16035	35	.1100	1/8	7/8	2-5/16
M16034	34	.1110	1/8	7/8	2-5/16
M16033	33	.1130	1/8	7/8	2-5/16
M16032	32	.1160	1/8	7/8	2-5/16
M16031	31	.1120	1/8	7/8	2-5/16
M16030	30	.1285	3/16	15/16	2-3/8
M16029	29	.1360	3/16	15/16	2-3/8
M16028	28	.1405	3/16	15/16	2-3/8
M16027	27	.1440	3/16	1	2-7/16
M16026	26	.1470	3/16	1	2-7/16
M16025	25	.1495	3/16	1	2-7/16
M16024	24	.1520	3/16	1	2-7/16
M16023	23	.1540	3/16	1	2-7/16

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Wire gauge	Decimal			
TiAlN	D1		D2	L1	L2
M16022	22	.1570	3/16	1-1/16	2-1/2
M16021	21	.1590	3/16	1-1/16	2-1/2
M16020	20	.1610	3/16	1-1/16	2-1/2
M16019	19	.1660	3/16	1-1/16	2-1/2
M16018	18	.1695	3/16	1-1/16	2-1/2
M16017	17	.1730	3/16	1-1/8	2-9/16
M16016	16	.1770	3/16	1-1/8	2-9/16
M16015	15	.1800	3/16	1-1/8	2-9/16
M16014	14	.1820	3/16	1-1/8	2-9/16
M16013	13	.1850	3/16	1-1/8	2-9/16
M16012	12	.1890	1/4	1-3/16	3
M16011	11	.1910	1/4	1-3/16	3
M16010	10	.1935	1/4	1-3/16	3
M16009	9	.1960	1/4	1-3/16	3
M16008	8	.1990	1/4	1-3/16	3
M16007	7	.2010	1/4	1-3/16	3
M16006	6	.2040	1/4	1-1/4	3-1/16
M16005	5	.2055	1/4	1-1/4	3-1/16
M16004	4	.2090	1/4	1-1/4	3-1/16
M16003	3	.2130	1/4	1-1/4	3-1/16
M16002	2	.2210	1/4	1-5/16	3-1/8
M16001	1	.2280	1/4	1-5/16	3-1/8

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○				○	○	○				◎

MULTI-1 DRILLS

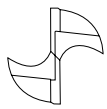
CDRA07 SERIES

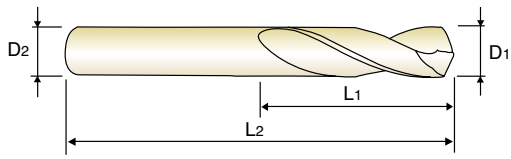
PREMIUM HSS-PM, MULTI-1 DRILLS

▶ **Features** : Excellent wear resistance by using Premium powder metallurgy materials.
With special point geometry, no centering required.
Minimal drill wandering and improved hole tolerances.
Better tool life with excellent coating.

▶ **Application** : Applicable to various materials including aluminum and stainless steel, as well carbon steel and structural steel.







PREMIUM HSS-PM | N 30° | h6 | h7 | 135° P.153

▶ M17 / Letter sizes

Unit : Inch

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Letter	Decimal			
TiAlN	D1		D2	L1	L2
M1700B	B	.2380	1/4	1-3/8	3-3/16
M1700C	C	.2420	1/4	1-3/8	3-3/16
M1700D	D	.2460	1/4	1-3/8	3-3/16
M1700F	F	.2570	3/8	1-7/16	3-1/4
M1700G	G	.2610	3/8	1-7/16	3-1/4
M1700I	I	.2720	3/8	1-1/2	3-5/16
M1700J	J	.2770	3/8	1-1/2	3-5/16
M1700L	L	.2900	3/8	1-9/16	3-3/8
M1700M	M	.2950	3/8	1-9/16	3-3/8

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Letter	Decimal			
TiAlN	D1		D2	L1	L2
M1700N	N	.3020	3/8	1-5/8	3-7/16
M1700O	O	.3160	3/8	1-11/16	3-1/2
M1700Q	Q	.3320	3/8	1-11/16	3-1/2
M1700R	R	.3390	3/8	1-11/16	3-1/2
M1700U	U	.3680	3/8	1-13/16	3-5/8
M1700V	V	.3770	1/2	1-7/8	3-31/32
M1700X	X	.3970	1/2	1-15/16	4-1/32
M1700Y	Y	.4040	1/2	1-15/16	4-1/32
M1700Z	Z	.4130	1/2	2	4-1/32

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○				○	○	○				◎

PREMIUM HSS-PM, MULTI-1 DRILLS

CDRA05, CDRA06, CDRA07 SERIES

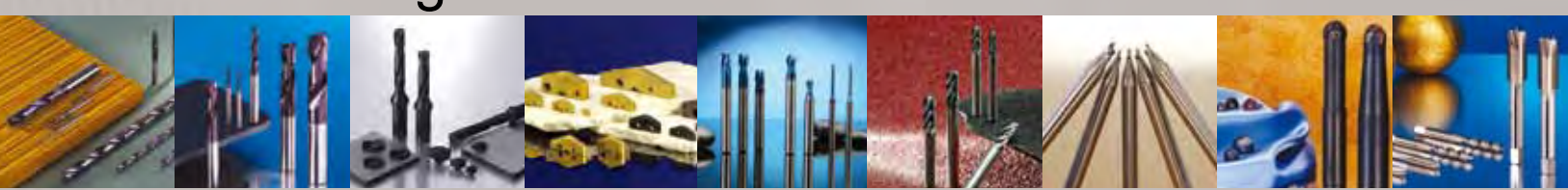
WORK MATERIAL	P								
	STRUCTUAL STEEL CARBON STEEL			ALLOY STEEL			MOLD STEEL		
DIAMETER	RPM	FEED (IPR)	FEED (inch/min)	RPM	FEED (IPR)	FEED (inch/min)	RPM	FEED (IPR)	FEED (inch/min)
3/32	5000	.0030	15.00	4000	.0030	12.00	1800	.0030	5.40
1/8	3800	.0050	19.00	3000	.0040	12.00	1400	.0040	5.60
5/32	3000	.0060	18.00	2400	.0050	12.00	1100	.0040	4.40
3/16	2500	.0070	17.50	2000	.0050	10.00	900	.0040	3.60
1/4	1900	.0080	15.20	1500	.0070	10.50	700	.0050	3.50
5/16	1500	.0090	13.50	1200	.0080	9.60	550	.0070	3.85
3/8	1250	.0100	12.50	1000	.0090	9.00	450	.0080	3.60
1/2	950	.0110	10.45	750	.0100	7.50	350	.0090	3.15

WORK MATERIAL	M			K			N		
	STAINLESS STEEL			CAST IRON			ALUMINIUM ALLOY COPPER ALLOY NONFERROUS ALLOY		
DIAMETER	RPM	FEED (IPR)	FEED (inch/min)	RPM	FEED (IPR)	FEED (inch/min)	RPM	FEED (IPR)	FEED (inch/min)
3/32	1800	.0030	5.40	5700	.0040	22.80	8700	.0040	34.80
1/8	1400	.0040	5.60	4250	.0060	25.50	6500	.0060	39.00
5/32	1100	.0040	4.40	3400	.0070	23.80	5200	.0070	36.40
3/16	900	.0040	3.60	2850	.0080	22.80	4300	.0080	34.40
1/4	700	.0050	3.50	2100	.0100	21.00	3200	.0090	28.80
5/16	550	.0070	3.85	1750	.0120	21.00	2600	.0110	28.60
3/8	450	.0080	3.60	1450	.0120	17.40	2200	.0130	28.60
1/2	350	.0090	3.15	1100	.0150	16.50	1650	.0150	24.75

WORK MATERIAL	S		
	NICKEL ALLOY TITANIUM ALLOY		
DIAMETER	RPM	FEED (IPR)	FEED (inch/min)
3/32	800	.0010	0.80
1/8	600	.0020	1.20
5/32	500	.0020	1.00
3/16	400	.0020	0.80
1/4	300	.0030	0.90
5/16	250	.0030	0.75
3/8	200	.0040	0.80
1/2	150	.0050	0.75

N = R.P.M
S = Inch per Revolution(inch/rev.)

Global Cutting Tool Leader **YG-1**



HSS

Being the best through innovation





HPD DRILLS

- **HSS-EX HPD STRAIGHT SHANK DRILLS for Stainless Steels**

HPD - HIGH PERFORMANCE DRILLS

HPD-SUS Drills for High precision drilling in Stainless steels

ITEM	MODEL	DESCRIPTION		SIZE MIN	SIZE MAX	PAGE
METRIC						
DJ543		HSS-EX, HPD-SUS DRILLS	*STUB*	D2.0	D13.0	**158**
DJ544		HSS-EX, HPD-SUS DRILLS	*JOBBER*	D2.0	D20.0	**160**
		RECOMMENDED CUTTING CONDITIONS				**163**

◎ : Excellent ○ : Good

P				H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
◎					◎		○	○			○
◎					◎		○	○			○

HPD DRILLS

DJ543 SERIES

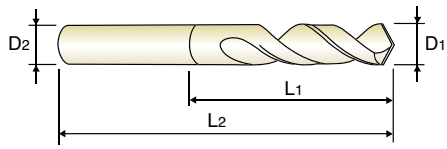
HSS-EX, HPD-SUS DRILLS

STUB

- **Application** : Designed for drilling in stainless steels, mild steels, aluminum, aluminum alloy, aluminum die cast, copper, copper alloy, etc.
- **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
- **Plain Shank** : DIN6535-HA







HSS EX | W 38° | h7 | h8 | 130° | 120° | P.163

$D_1=D_2$

Unit : mm

EDP No.	Diameter		Flute Length	Overall Length
	Metric	Inch		
	$D_1 = D_2$		L_1	L_2
0201JCN	2.0	.0787	12	44
0211JCN	2.1	.0827	12	44
0221JCN	2.2	.0866	13	45
0231JCN	2.3	.0906	13	45
0241JCN	2.4	.0945	14	46
0251JCN	2.5	.0984	14	46
0261JCN	2.6	.1024	14	46
0271JCN	2.7	.1063	16	48
0281JCN	2.8	.1102	16	48
0291JCN	2.9	.1142	16	48
0301JCN	3.0	.1181	16	48
0311JCN	3.1	.1220	18	50
0321JCN	3.2	.1260	18	50
0331JCN	3.3	.1299	18	50
0341JCN	3.4	.1339	20	52
0351JCN	3.5	.1378	20	52
0361JCN	3.6	.1417	20	52
0371JCN	3.7	.1457	20	52
0381JCN	3.8	.1496	22	54
0391JCN	3.9	.1535	22	54
0401JCN	4.0	.1575	22	54
0411JCN	4.1	.1614	22	66
0421JCN	4.2	.1654	22	66
0431JCN	4.3	.1693	24	68
0441JCN	4.4	.1732	24	68
0451JCN	4.5	.1772	24	68
0461JCN	4.6	.1811	24	68
0471JCN	4.7	.1850	24	68

EDP No.	Diameter		Flute Length	Overall Length
	Metric	Inch		
TiN	$D_1 = D_2$		L_1	L_2
0481JCN	4.8	.1890	26	70
0491JCN	4.9	.1929	26	70
0501JCN	5.0	.1969	26	70
0511JCN	5.1	.2008	26	70
0521JCN	5.2	.2047	26	70
0531JCN	5.3	.2087	26	70
0541JCN	5.4	.2126	28	72
0551JCN	5.5	.2165	28	72
0561JCN	5.6	.2205	28	72
0571JCN	5.7	.2244	28	72
0581JCN	5.8	.2283	28	72
0591JCN	5.9	.2323	28	72
0601JCN	6.0	.2362	28	72
0611JCN	6.1	.2402	31	75
0621JCN	6.2	.2441	31	75
0631JCN	6.3	.2480	31	75
0641JCN	6.4	.2520	31	75
0651JCN	6.5	.2559	31	75
0661JCN	6.6	.2598	31	75
0671JCN	6.7	.2638	31	75
0681JCN	6.8	.2677	34	78
0691JCN	6.9	.2717	34	78
0701JCN	7.0	.2756	34	78
0711JCN	7.1	.2795	34	78
0721JCN	7.2	.2835	34	78
0731JCN	7.3	.2874	34	78
0741JCN	7.4	.2913	34	78
0751JCN	7.5	.2953	34	78

over 4mm

* Individually packaged

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55		HRc55~							
◎						◎		○	○			○

HSS-EX, HPD-SUS DRILLS

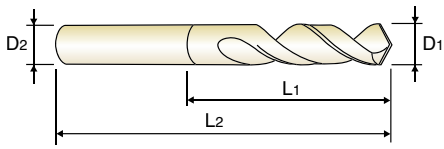
STUB

- **Application** : Designed for drilling in stainless steels, mild steels, aluminum, aluminum alloy, aluminum die cast, copper, copper alloy, etc.
- **Advantage** : Self centering - center drilling is not required
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  Special Design - reaming is not required
  - good chip removal
  - powerful drilling
- **Plain Shank** : DIN6535-HA





four facet



HSS EX | W 38° | h7 | h8 | 130° | 120°

P.163

$D_1=D_2$

Unit : mm

EDP No.	Diameter		Flute Length	Overall Length
	Metric	Inch		
TiN	$D_1 = D_2$		L_1	L_2
0761JCN	7.6	.2992	37	81
0771JCN	7.7	.3031	37	81
0781JCN	7.8	.3071	37	81
0791JCN	7.9	.3110	37	81
0801JCN	8.0	.3150	37	81
0811JCN	8.1	.3189	37	87
0821JCN	8.2	.3228	37	87
0831JCN	8.3	.3268	37	87
0841JCN	8.4	.3307	37	87
0851JCN	8.5	.3346	37	87
0861JCN	8.6	.3386	40	90
0871JCN	8.7	.3425	40	90
0881JCN	8.8	.3465	40	90
0891JCN	8.9	.3504	40	90
0901JCN	9.0	.3543	40	90
0911JCN	9.1	.3583	40	90
0921JCN	9.2	.3622	40	90
0931JCN	9.3	.3661	40	90
0941JCN	9.4	.3701	40	90
0951JCN	9.5	.3740	40	90
0961JCN	9.6	.3780	43	93
0971JCN	9.7	.3819	43	93
0981JCN	9.8	.3858	43	93
0991JCN	9.9	.3898	43	93
1001JCN	10.0	.3937	43	93
1011JCN	10.1	.3976	43	100
1021JCN	10.2	.4016	43	100
1031JCN	10.3	.4055	43	100

EDP No.	Diameter		Flute Length	Overall Length
	Metric	Inch		
TiN	$D_1 = D_2$		L_1	L_2
1041JCN	10.4	.4094	43	100
1051JCN	10.5	.4134	43	100
1061JCN	10.6	.4173	43	100
1071JCN	10.7	.4212	47	104
1081JCN	10.8	.4252	47	104
1091JCN	10.9	.4291	47	104
1101JCN	11.0	.4330	47	104
1111JCN	11.1	.4370	47	104
1121JCN	11.2	.4409	47	104
1131JCN	11.3	.4448	47	104
1141JCN	11.4	.4488	47	104
1151JCN	11.5	.4527	47	104
1161JCN	11.6	.4566	47	104
1171JCN	11.7	.4606	47	104
1181JCN	11.8	.4645	47	104
1191JCN	11.9	.4685	51	108
1201JCN	12.0	.4724	51	108
1211JCN	12.1	.4764	51	108
1221JCN	12.2	.4803	51	108
1231JCN	12.3	.4843	51	108
1241JCN	12.4	.4882	51	108
1251JCN	12.5	.4921	51	108
1261JCN	12.6	.4961	51	108
1271JCN	12.7	.5000	51	108
1281JCN	12.8	.5039	51	108
1291JCN	12.9	.5079	51	108
1301JCN	13.0	.5118	51	108

* Individually packaged

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎						◎		○	○			○

HPD DRILLS

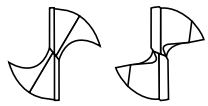
DJ544 SERIES

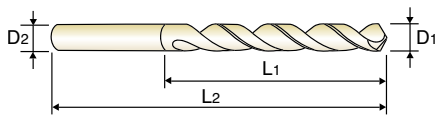
HSS-EX, HPD-SUS DRILLS

JOBBER

▶ **Application** : Designed for drilling in stainless steels, mild steels, aluminum, aluminum alloy, aluminum die cast, copper, copper alloy, 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 deflection.
High vanadium HSS-EX material with superior TiN coating - higher speed and feed, longer service life
High quality-good surface finishes, high productivity.







HSS EX | W 38° | h7 | h8 | 130° | 120° | P.163

up to 4mm over 4mm

$D_1 = D_2$

Unit : mm

EDP No.	Diameter		Flute Length	Overall Length
	Metric	Inch		
TiN	$D_1 = D_2$		L_1	L_2
0201KCN	2.0	.0787	24	56
0211KCN	2.1	.0827	24	56
0221KCN	2.2	.0866	27	59
0231KCN	2.3	.0906	27	59
0241KCN	2.4	.0945	30	62
0251KCN	2.5	.0984	30	62
0261KCN	2.6	.1024	30	62
0271KCN	2.7	.1063	33	65
0281KCN	2.8	.1102	33	65
0291KCN	2.9	.1142	33	65
0301KCN	3.0	.1181	33	65
0311KCN	3.1	.1220	36	68
0321KCN	3.2	.1260	36	68
0331KCN	3.3	.1299	36	68
0341KCN	3.4	.1339	39	71
0351KCN	3.5	.1378	39	71
0361KCN	3.6	.1417	39	71
0371KCN	3.7	.1457	39	71
0381KCN	3.8	.1496	43	75
0391KCN	3.9	.1535	43	75
0401KCN	4.0	.1575	43	75
0411KCN	4.1	.1614	43	87
0421KCN	4.2	.1654	43	87
0431KCN	4.3	.1693	47	91
0441KCN	4.4	.1732	47	91

EDP No.	Diameter		Flute Length	Overall Length
	Metric	Inch		
TiN	$D_1 = D_2$		L_1	L_2
0451KCN	4.5	.1772	47	91
0461KCN	4.6	.1811	47	91
0471KCN	4.7	.1850	47	91
0481KCN	4.8	.1890	52	96
0491KCN	4.9	.1929	52	96
0501KCN	5.0	.1969	52	96
0511KCN	5.1	.2008	52	96
0521KCN	5.2	.2047	52	96
0531KCN	5.3	.2087	52	96
0541KCN	5.4	.2126	57	101
0551KCN	5.5	.2165	57	101
0561KCN	5.6	.2205	57	101
0571KCN	5.7	.2244	57	101
0581KCN	5.8	.2283	57	101
0591KCN	5.9	.2323	57	101
0601KCN	6.0	.2362	57	101
0611KCN	6.1	.2402	63	107
0621KCN	6.2	.2441	63	107
0631KCN	6.3	.2480	63	107
0641KCN	6.4	.2520	63	107
0651KCN	6.5	.2559	63	107
0661KCN	6.6	.2598	63	107
0671KCN	6.7	.2638	63	107
0681KCN	6.8	.2677	69	113
0691KCN	6.9	.2717	69	113

* Individually packaged

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎						◎		○	○			○

HPD DRILLS

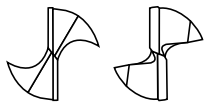
DJ544 SERIES

HSS-EX, HPD-SUS DRILLS

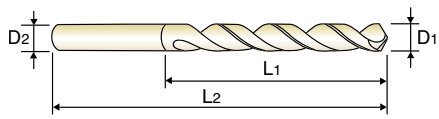
JOBBER

▶ **Application** : Designed for drilling in stainless steels, mild steels, aluminum, aluminum alloy, aluminum die cast, copper, copper alloy, etc.
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Wide flute and stub length-increasing chip removal and reducing vibration and deflection.
High vanadium HSS-EX material with superior TiN coating - higher speed and feed, longer service life
High quality-good surface finishes, high productivity.





up to 13mm over 13mm



HSS EX | W 38° | h7 | h8 | 130° | 120° | up to 4mm

P.163

$D_1 = D_2$

Unit : mm

EDP No.	Diameter		Flute Length	Overall Length	EDP No.	Diameter		Flute Length	Overall Length
	Metric	Inch				Metric	Inch		
TiN	$D_1 = D_2$		L_1	L_2	TiN	$D_1 = D_2$		L_1	L_2
0701KCN	7.0	.2756	69	113	0951KCN	9.5	.3740	81	131
0711KCN	7.1	.2795	69	113	0961KCN	9.6	.3780	87	137
0721KCN	7.2	.2835	69	113	0971KCN	9.7	.3819	87	137
0731KCN	7.3	.2874	69	113	0981KCN	9.8	.3858	87	137
0741KCN	7.4	.2913	69	113	0991KCN	9.9	.3898	87	137
0751KCN	7.5	.2953	69	113	1001KCN	10.0	.3937	87	137
0761KCN	7.6	.2992	75	119	1011KCN	10.1	.3976	87	144
0771KCN	7.7	.3031	75	119	1021KCN	10.2	.4016	87	144
0781KCN	7.8	.3071	75	119	1031KCN	10.3	.4055	87	144
0791KCN	7.9	.3110	75	119	1041KCN	10.4	.4094	87	144
0801KCN	8.0	.3150	75	119	1051KCN	10.5	.4134	87	144
0811KCN	8.1	.3189	75	125	1061KCN	10.6	.4173	87	144
0821KCN	8.2	.3228	75	125	1071KCN	10.7	.4212	94	151
0831KCN	8.3	.3268	75	125	1081KCN	10.8	.4252	94	151
0841KCN	8.4	.3307	75	125	1091KCN	10.9	.4291	94	151
0851KCN	8.5	.3346	75	125	1101KCN	11.0	.4330	94	151
0861KCN	8.6	.3386	81	131	1111KCN	11.1	.4370	94	151
0871KCN	8.7	.3425	81	131	1121KCN	11.2	.4409	94	151
0881KCN	8.8	.3465	81	131	1131KCN	11.3	.4448	94	151
0891KCN	8.9	.3504	81	131	1141KCN	11.4	.4488	94	151
0901KCN	9.0	.3543	81	131	1151KCN	11.5	.4527	94	151
0911KCN	9.1	.3583	81	131	1161KCN	11.6	.4566	94	151
0921KCN	9.2	.3622	81	131	1171KCN	11.7	.4606	94	151
0931KCN	9.3	.3661	81	131	1181KCN	11.8	.4645	94	151
0941KCN	9.4	.3701	81	131	1191KCN	11.9	.4685	101	158

* Individually packaged

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎						◎		○	○			○

HPD DRILLS

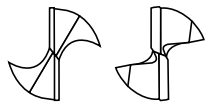
DJ544 SERIES

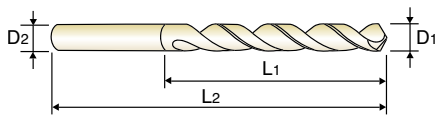
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HSS EX | W 38° | h7 | h8 | 130° | 120° | P.163

up to 4mm over 4mm

$D_1 = D_2$

Unit : mm

EDP No.	Diameter		Flute Length	Overall Length
	Metric	Inch		
TiN	$D_1 = D_2$		L_1	L_2
1201KCN	12.0	.4724	101	158
1211KCN	12.1	.4764	101	158
1221KCN	12.2	.4803	101	158
1231KCN	12.3	.4843	101	158
1241KCN	12.4	.4882	101	158
1251KCN	12.5	.4921	101	158
1261KCN	12.6	.4961	101	158
1271KCN	12.7	.5000	101	158
1281KCN	12.8	.5039	101	158
1291KCN	12.9	.5079	101	158
1301KCN	13.0	.5118	101	158
1351KCN	13.5	.5314	106	166
1401KCN	14.0	.5512	106	166
1411KCN	14.1	.5551	109	169
1451KCN	14.5	.5708	109	169

EDP No.	Diameter		Flute Length	Overall Length
	Metric	Inch		
TiN	$D_1 = D_2$		L_1	L_2
1501KCN	15.0	.5905	109	169
1551KCN	15.5	.6102	112	172
1561KCN	15.6	.6141	112	172
1601KCN	16.0	.6299	112	172
1651KCN	16.5	.6495	115	181
1701KCN	17.0	.6692	115	181
1751KCN	17.5	.6889	118	184
1761KCN	17.6	.6929	118	184
1801KCN	18.0	.7087	118	184
1851KCN	18.5	.7283	122	188
1901KCN	19.0	.7480	122	188
1951KCN	19.5	.7676	125	191
1961KCN	19.6	.7716	125	191
2001KCN	20.0	.7874	125	191

* Individually packaged

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎						◎		○	○			○

HSS-EX, HPD-SUS DRILLS

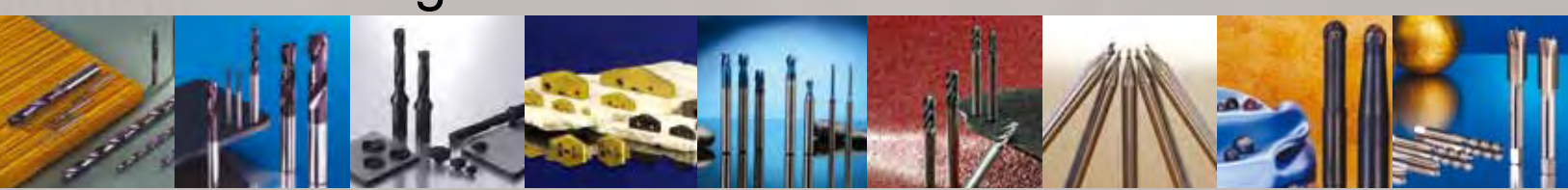
DJ543, DJ544 SERIES

Please decrease the feed rate 15% in JOBBERS SERIES.
Please decrease the feed and speed 20% for cast surface.

WORK MATERIAL	P		M				N			
	MILD STEELS, LOW CARBON STEELS		STAINLESS STEELS (SUS304, 200)		STAINLESS STEELS (SUS420, 440)		ALUMINUM & ALUMINUM ALLOY		PLASTICS, COPPER, COPPER ALLOYS	
DIAMETER	N	S	N	S	N	S	N	S	N	S
2.0	6300	0.003	2600	0.003	3100	0.003	11000	0.004	5600	0.002
3.0	4200	0.005	1800	0.003	2100	0.003	7350	0.005	3750	0.003
4.0	3200	0.006	1300	0.004	1600	0.004	7050	0.007	2800	0.004
5.0	2500	0.006	1050	0.006	1250	0.006	5500	0.009	2250	0.005
6.0	2100	0.007	900	0.007	1050	0.007	4600	0.010	1850	0.006
8.0	1550	0.009	650	0.009	800	0.009	3500	0.013	1350	0.008
10.0	1250	0.010	550	0.010	630	0.012	2800	0.016	1100	0.010
12.0	1050	0.013	450	0.013	530	0.014	2300	0.020	950	0.012
14.0	900	0.014	400	0.014	450	0.017	2050	0.022	800	0.013
16.0	790	0.016	350	0.016	390	0.019	1750	0.024	700	0.014
18.0	700	0.018	300	0.017	350	0.020	1600	0.028	620	0.016
20.0	620	0.019	260	0.018	320	0.021	1450	0.030	560	0.016

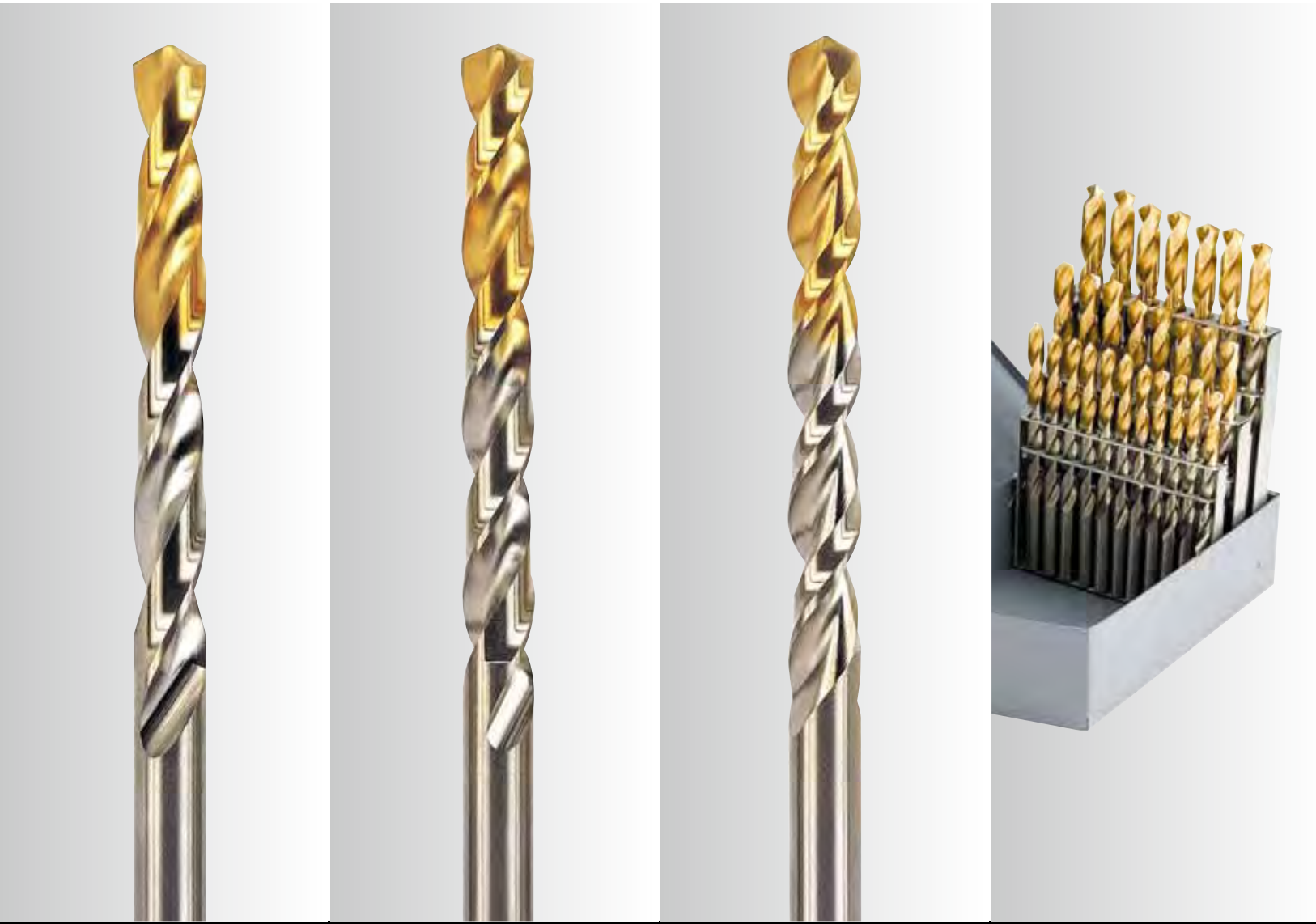
N = R.P.M
S = Inch per Revolution (inch/rev.)

Global Cutting Tool Leader **YG-1**



HSS

Being the best through innovation



GOLD-P DRILLS

- GOLD-P COATING

GOLD-P DRILLS (GOLD-P COATED)

Competitive price and same performance as full TiN coating

ITEM	MODEL	DESCRIPTION		SIZE MIN	SIZE MAX	PAGE
INCH						
D1GP182 D8182		HSS, STRAIGHT SHANK, GOLD-P COATED / Fractional sizes	*JOBBER*	D3/64	D3/4	**168**
D1GP139		HSS, STRAIGHT SHANK, GOLD-P COATED / Letter sizes	*JOBBER*	A	Z	**169**
D1GP138		HSS, STRAIGHT SHANK, GOLD-P COATED / Wire gauge sizes	*JOBBER*	#56	#1	**170**
D2GP185		HSSCo8, STRAIGHT SHANK, GOLD-P COATED / Fractional sizes	*JOBBER*	D3/64	D1/2	**171**
D2GP186		HSSCo8, STRAIGHT SHANK, GOLD-P COATED / Letter sizes	*JOBBER*	A	Z	**172**
D2GP187		HSSCo8, STRAIGHT SHANK, GOLD-P COATED / Wire gauge sizes	*JOBBER*	#56	#1	**173**
DLGP511		HSSCo5, STRAIGHT SHANK PARABOLIC FLUTE, GOLD-P COATED / Fractional sizes	*JOBBER*	D5/64	D1/2	**174**
DLGP513		HSSCo5, STRAIGHT SHANK PARABOLIC FLUTE, GOLD-P COATED / Letter sizes	*JOBBER*	A	Z	**175**
DLGP512		HSSCo5, STRAIGHT SHANK PARABOLIC FLUTE, GOLD-P COATED / Wire gauge sizes	*JOBBER*	#47	#1	**176**
METRIC						
DLGP195		HSSCo5, STRAIGHT SHANK DRILLS, GOLD-P COATED	*JOBBER*	D1.0	D13.0	**177**
DLGP506		HSSCo5 DH100 STRAIGHT SHANK DRILLS for DEEP HOLES, GOLD-P COATED	*JOBBER*	D2.0	D13.0	**179**
		RECOMMENDED CUTTING CONDITIONS				**182**

◎ : Excellent ○ : Good

P				H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
◎	◎				○		○				○
◎	◎				○		○				○
◎	◎				○		○				○
◎	◎				○		○				○
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GOLD-P DRILLS

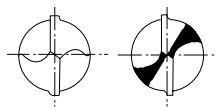
D1GP182 SERIES
D8182 SERIES

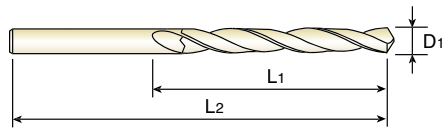
HSS, STRAIGHT SHANK, GOLD-P COATED

JOBBER

- **Flute Geometry** : Right hand helix, wider flutes
- **Point Angle** : 135˚
  under 1/16 : Normal point
  1/16 & over : Split point
- **Surface treatment** : Bright body TiN coating on working part
  over TiN coating on flute length
- **Application** : Drilling in steel, cast steel alloyed and Non-alloyed, grey cast iron, graphite, malleable cast iron







ANSI HSS N 30° h8 135° P.182

▶ Fractional sizes

Unit : Inch

EDP No.	Diameter Fractional D1	Diameter Decimal D1	Flute Length L1	Overall Length L2
* D1GP113003	3/64	.0469	3/4	1-3/4
* D1GP182004	1/16	.0625	7/8	1-7/8
* D1GP182005	5/64	.0781	1	2
* D1GP182006	3/32	.0938	1-1/4	2-1/4
* D1GP182007	7/64	.1094	1-1/2	2-5/8
* D1GP182008	1/8	.1250	1-5/8	2-3/4
* D1GP182009	9/64	.1406	1-3/4	2-7/8
* D1GP182010	5/32	.1563	2	3-1/8
* D1GP182011	11/64	.1719	2-1/8	3-1/4
* D1GP182012	3/16	.1875	2-5/16	3-1/2
* D1GP182013	13/64	.2031	2-7/16	3-5/8
* D1GP182014	7/32	.2188	2-1/2	3-3/4
* D1GP182015	15/64	.2344	2-5/8	3-7/8
* D1GP182016	1/4	.2500	2-3/4	4
* D1GP182017	17/64	.2656	2-7/8	4-1/8
* D1GP182018	9/32	.2813	2-15/16	4-1/4
* D1GP182019	19/64	.2969	3-1/16	4-3/8
* D1GP182020	5/16	.3125	3-3/16	4-1/2
** D1GP182021	21/64	.3281	3-5/16	4-5/8
** D1GP182022	11/32	.3438	3-7/16	4-3/4
** D1GP182023	23/64	.3594	3-1/2	4-7/8
** D1GP182024	3/8	.3750	3-5/8	5
** D1GP182025	25/64	.3906	3-3/4	5-1/8
** D1GP182026	13/32	.4063	3-7/8	5-1/4
** D1GP182027	27/64	.4219	3-15/16	5-3/8
** D1GP182028	7/16	.4375	4-1/16	5-1/2
** D1GP182029	29/64	.4531	4-3/16	5-5/8
** D1GP182030	15/32	.4688	4-5/16	5-3/4
** D1GP182031	31/64	.4844	4-3/8	5-7/8
** D1GP182032	1/2	.5000	4-1/2	6
** D8182033	33/64	.5156	4-13/16	6-5/8
** D8182034	17/32	.5312	4-13/16	6-5/8
** D8182035	35/64	.5469	4-13/16	6-5/8
** D8182036	9/16	.5625	4-13/16	6-5/8
** D8182037	37/64	.5781	4-13/16	6-5/8
⁂ D8182038	19/32	.5937	5-3/16	7-1/8
⁂ D8182039	39/64	.6094	5-3/16	7-1/8
⁂ D8182040	5/8	.6250	5-3/16	7-1/8
⁂ D8182042	21/32	.6563	5-3/16	7-1/8
⁂ D8182044	11/16	.6875	5-5/8	7-5/8
⁂ D8182045	45/64	.7031	5-5/8	9-1/2
⁂ D8182046	23/32	.7188	5-5/8	9-1/2
⁂ D8182047	47/64	.7344	5-5/8	9-3/4
⁂ D8182048	3/4	.7500	5-7/8	9-3/4

* 10per package
** 5per package
⁂ 3per package

Tolerance Diameter (Inch)	
up to 1/8(.1250)	0 ~ −.0005
over 1/8(.1250) up to 1/4(.2500)	0 ~ −.0007
over 1/4(.2500) up to 1/2(.5000)	0 ~ −.0010

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎					○		○				○

GOLD-P DRILLS

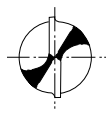
D1GP139 SERIES

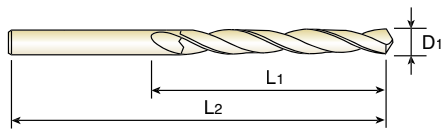
HSS, STRAIGHT SHANK, GOLD-P COATED

JOBBER

- ▶ **Flute Geometry** : Right hand helix, wider flutes
- ▶ **Point Angle** : 135°:Split point
- ▶ **Surface treatment** : Bright body TiN coating on working part
- ▶ **Application** : Drilling in steel, cast steel alloyed and Non-alloyed, grey cast iron, graphite, malleable cast iron







ANSI HSS N ≈ 30° h8 135° P.182

▶ Letter sizes

Unit : Inch

EDP No.	Diameter Letter	Diameter Decimal	Flute Length	Overall Length
	D1		L1	L2
* D1GP139101	A	.2340	2-5/8	3-7/8
* D1GP139102	B	.2380	2-3/4	4
* D1GP139103	C	.2420	2-3/4	4
* D1GP139104	D	.2460	2-3/4	4
* D1GP139105	E	.2500	2-3/4	4
* D1GP139106	F	.2570	2-7/8	4-1/8
* D1GP139107	G	.2610	2-7/8	4-1/8
* D1GP139108	H	.2660	2-7/8	4-1/8
* D1GP139109	I	.2720	2-7/8	4-1/8
* D1GP139110	J	.2770	2-7/8	4-1/8
* D1GP139111	K	.2810	2-15/16	4-1/4
* D1GP139112	L	.2900	2-15/16	4-1/4
* D1GP139113	M	.2950	3-1/16	4-3/8
* D1GP139114	N	.3020	3-1/16	4-3/8
* D1GP139115	O	.3160	3-3/16	4-1/2
* D1GP139116	P	.3230	3-5/16	4-5/8
** D1GP139117	Q	.3320	3-7/16	4-3/4
** D1GP139118	R	.3390	3-7/16	4-3/4
** D1GP139119	S	.3480	3-1/2	4-7/8
** D1GP139120	T	.3580	3-1/2	4-7/8
** D1GP139121	U	.3680	3-5/8	5
** D1GP139122	V	.3770	3-5/8	5
** D1GP139123	W	.3860	3-3/4	5-1/8
** D1GP139124	X	.3970	3-3/4	5-1/8
** D1GP139125	Y	.4040	3-7/8	5-1/4
** D1GP139126	Z	.4130	3-7/8	5-1/4

* 10per package
** 5per package

Tolerance Diameter (Inch)	
up to 1/8(.1250)	0 ~ −.0005
over 1/8(.1250) up to 1/4(.2500)	0 ~ −.0007
over 1/4(.2500) up to 1/2(.5000)	0 ~ −.0010

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎					○		○				○

GOLD-P DRILLS

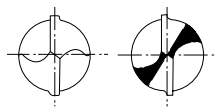
D1GP138 SERIES

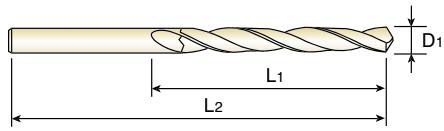
HSS, STRAIGHT SHANK, GOLD-P COATED

JOBBER

- ▶ **Flute Geometry** : Right hand helix, wider flutes
- ▶ **Point Angle** : 135°, Split point
  Wire gauge size #53~#56 : Normal point
  Wire gauge size #1~#52 : Split point
- ▶ **Surface treatment** : Bright body TiN coating on working part
- ▶ **Application** : Drilling in steel, cast steel alloyed and Non-alloyed, grey cast iron, graphite, malleable cast iron







ANSI | HSS | N 30° | h8 | 135° | 118°

#53~#56 #1~#52

P.182

▶ Wire gauge sizes

Unit : Inch

EDP No.	Diameter		Flute Length	Overall Length
	Wire gauge	Decimal	D1	
			L1	L2
* D1GP138256	1	.2280	2-5/8	3-7/8
* D1GP138255	2	.2210	2-5/8	3-7/8
* D1GP138254	3	.2130	2-1/2	3-3/4
* D1GP138253	4	.2090	2-1/2	3-3/4
* D1GP138252	5	.2055	2-1/2	3-3/4
* D1GP138251	6	.2040	2-1/2	3-3/4
* D1GP138250	7	.2010	2-7/16	3-5/8
* D1GP138249	8	.1990	2-7/16	3-5/8
* D1GP138248	9	.1960	2-7/16	3-5/8
* D1GP138247	10	.1935	2-7/16	3-5/8
* D1GP138246	11	.1910	2-5/16	3-1/2
* D1GP138245	12	.1890	2-5/16	3-1/2
* D1GP138244	13	.1850	2-5/16	3-1/2
* D1GP138243	14	.1820	2-3/16	3-3/8
* D1GP138242	15	.1800	2-3/16	3-3/8
* D1GP138241	16	.1770	2-3/16	3-3/8
* D1GP138240	17	.1730	2-3/16	3-3/8
* D1GP138239	18	.1695	2-1/8	3-1/4
* D1GP138238	19	.1660	2-1/8	3-1/4
* D1GP138237	20	.1610	2-1/8	3-1/4
* D1GP138236	21	.1590	2-1/8	3-1/4
* D1GP138235	22	.1570	2	3-1/8
* D1GP138234	23	.1540	2	3-1/8
* D1GP138233	24	.1520	2	3-1/8
* D1GP138232	25	.1495	1-7/8	3
* D1GP138231	26	.1470	1-7/8	3
* D1GP138230	27	.1440	1-7/8	3
* D1GP138229	28	.1405	1-3/4	2-7/8

EDP No.	Diameter		Flute Length	Overall Length
	Wire gauge	Decimal	D1	
			L1	L2
* D1GP138228	29	.1360	1-3/4	2-7/8
* D1GP138227	30	.1285	1-5/8	2-3/4
* D1GP138226	31	.1200	1-5/8	2-3/4
* D1GP138225	32	.1160	1-5/8	2-3/4
* D1GP138224	33	.1130	1-1/2	2-5/8
* D1GP138223	34	.1110	1-1/2	2-5/8
* D1GP138222	35	.1100	1-1/2	2-5/8
* D1GP138221	36	.1065	1-7/16	2-1/2
* D1GP138220	37	.1040	1-7/16	2-1/2
* D1GP138219	38	.1015	1-7/16	2-1/2
* D1GP138218	39	.0995	1-3/8	2-3/8
* D1GP138217	40	.0980	1-3/8	2-3/8
* D1GP138216	41	.0960	1-3/8	2-3/8
* D1GP138215	42	.0935	1-1/4	2-1/4
* D1GP138214	43	.0890	1-1/4	2-1/4
* D1GP138213	44	.0860	1-1/8	2-1/8
* D1GP138212	45	.0820	1-1/8	2-1/8
* D1GP138211	46	.0810	1-1/8	2-1/8
* D1GP138210	47	.0785	1	2
* D1GP138209	48	.0760	1	2
* D1GP138208	49	.0730	1	2
* D1GP138207	50	.0700	1	2
* D1GP138206	51	.0670	1	2
* D1GP138205	52	.0635	7/8	1-7/8
* D1GP134204	53	.0595	7/8	1-7/8
* D1GP134203	54	.0550	7/8	1-7/8
* D1GP134202	55	.0520	7/8	1-7/8
* D1GP134201	56	.0465	3/4	1-3/4

▶ **Tolerance** : See page 168

* 10per package

◎ : Excellent ○ : Good

P			H		M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
◎	◎				○		○				○

GOLD-P DRILLS

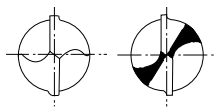
D2GP185 SERIES

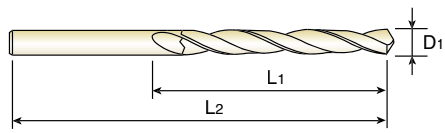
HSSCo8, STRAIGHT SHANK, GOLD-P COATED

JOBBER

- ▶ **Flute Geometry** : Right hand helix, wider flutes
- ▶ **Point Angle** : 135˚
  under 1/16 : Normal point
  1/16 & over : Split point
- ▶ **Surface treatment** : Bright body TiN coating on working part
- ▶ **Application** : Drilling in steel, cast steel alloyed and Non-alloyed, grey cast iron, graphite, malleable cast iron







ANSI | HSS Co8 | N ≈30° | h8 | 135° P.182

▶ Fractional sizes

Unit : Inch

EDP No.	Diameter Fractional D1	Diameter Decimal D1	Flute Length L1	Overall Length L2
* D2GP185003	3/64	.0469	3/4	1-3/4
* D2GP185004	1/16	.0625	7/8	1-7/8
* D2GP185005	5/64	.0781	1	2
* D2GP185006	3/32	.0938	1-1/4	2-1/4
* D2GP185007	7/64	.1094	1-1/2	2-5/8
* D2GP185008	1/8	.1250	1-5/8	2-3/4
* D2GP185009	9/64	.1406	1-3/4	2-7/8
* D2GP185010	5/32	.1563	2	3-1/8
* D2GP185011	11/64	.1719	2-1/8	3-1/4
* D2GP185012	3/16	.1875	2-5/16	3-1/2
* D2GP185013	13/64	.2031	2-7/16	3-5/8
* D2GP185014	7/32	.2188	2-1/2	3-3/4
* D2GP185015	15/64	.2344	2-5/8	3-7/8
* D2GP185016	1/4	.2500	2-3/4	4
* D2GP185017	17/64	.2656	2-7/8	4-1/8

EDP No.	Diameter Fractional D1	Diameter Decimal D1	Flute Length L1	Overall Length L2
* D2GP185018	9/32	.2813	2-15/16	4-1/4
* D2GP185019	19/64	.2969	3-1/16	4-3/8
* D2GP185020	5/16	.3125	3-3/16	4-1/2
** D2GP185021	21/64	.3281	3-5/16	4-5/8
** D2GP185022	11/32	.3438	3-7/16	4-3/4
** D2GP185023	23/64	.3594	3-1/2	4-7/8
** D2GP185024	3/8	.3750	3-5/8	5
** D2GP185025	25/64	.3906	3-3/4	5-1/8
** D2GP185026	13/32	.4063	3-7/8	5-1/4
** D2GP185027	27/64	.4219	3-15/16	5-3/8
** D2GP185028	7/16	.4375	4-1/16	5-1/2
** D2GP185029	29/64	.4531	4-3/16	5-5/8
** D2GP185030	15/32	.4688	4-5/16	5-3/4
** D2GP185031	31/64	.4844	4-3/8	5-7/8
** D2GP185032	1/2	.5000	4-1/2	6

* 10per package
** 5per package

Tolerance Diameter (Inch)	
up to 1/8(.1250)	0 ~ −.0005
over 1/8(.1250) up to 1/4(.2500)	0 ~ −.0007
over 1/4(.2500) up to 1/2(.5000)	0 ~ −.0010

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎					○		○				○

GOLD-P DRILLS

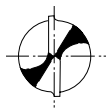
D2GP186 SERIES

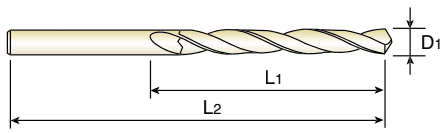
HSSCo8, STRAIGHT SHANK, GOLD-P COATED

JOBBER

- **Flute Geometry** : Right hand helix, wider flutes
- **Point Angle** : 135° : Split point
- **Surface treatment** : Bright body TiN coating on working part
- **Application** : Drilling in steel, cast steel alloyed and Non-alloyed, grey cast iron, graphite, malleable cast iron







ANSI | HSS Co8 | N ≈ 30° | h8 | 135° P.182

▶ Letter sizes

Unit : Inch

EDP No.	Diameter Letter	Diameter Decimal	Flute Length	Overall Length
	D1		L1	L2
* D2GP186101	A	.2340	2-5/8	3-7/8
* D2GP186102	B	.2380	2-3/4	4
* D2GP186103	C	.2420	2-3/4	4
* D2GP186104	D	.2460	2-3/4	4
* D2GP185105	E	.2500	2-3/4	4
* D2GP186106	F	.2570	2-7/8	4-1/8
* D2GP186107	G	.2610	2-7/8	4-1/8
* D2GP186108	H	.2660	2-7/8	4-1/8
* D2GP186109	I	.2720	2-7/8	4-1/8
* D2GP186110	J	.2770	2-7/8	4-1/8
* D2GP186111	K	.2810	2-15/16	4-1/4
* D2GP186112	L	.2900	2-15/16	4-1/4
* D2GP186113	M	.2950	3-1/16	4-3/8
* D2GP186114	N	.3020	3-1/16	4-3/8
* D2GP186115	O	.3160	3-3/16	4-1/2
* D2GP186116	P	.3230	3-5/16	4-5/8
** D2GP186117	Q	.3320	3-7/16	4-3/4
** D2GP186118	R	.3390	3-7/16	4-3/4
** D2GP186119	S	.3480	3-1/2	4-7/8
** D2GP186120	T	.3580	3-1/2	4-7/8
** D2GP186121	U	.3680	3-5/8	5
** D2GP186122	V	.3770	3-5/8	5
** D2GP186123	W	.3860	3-3/4	5-1/8
** D2GP186124	X	.3970	3-3/4	5-1/8
** D2GP186125	Y	.4040	3-7/8	5-1/4
** D2GP186126	Z	.4130	3-7/8	5-1/4

* 10per package
** 5per package

Tolerance Diameter (Inch)	
up to 1/8(.1250)	0 ~ −.0005
over 1/8(.1250) up to 1/4(.2500)	0 ~ −.0007
over 1/4(.2500) up to 1/2(.5000)	0 ~ −.0010

◎ : Excellent ○ : Good

P			H		M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
◎	◎				○		○				○

GOLD-P DRILLS

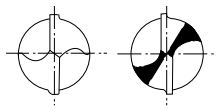
D2GP187 SERIES

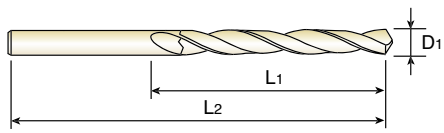
HSSCo8, STRAIGHT SHANK, GOLD-P COATED

JOBBER

- ▶ **Flute Geometry** : Right hand helix, wider flutes
- ▶ **Point Angle** : 135° : Split point
  Wire gauge size #53~#56 : Normal point
  Wire gauge size #1~#52 : Split point
- ▶ **Surface treatment** : Bright body TiN coating on working part
- ▶ **Application** : Drilling in steel, cast steel alloyed and Non-alloyed, grey cast iron, graphite, malleable cast iron







ANSI | HSS Co8 | N ≈30° | h8 | 135° | P.182

▶ Wire gauge sizes

Unit : Inch

EDP No.	Diameter		Flute Length	Overall Length
	Wire gauge	Decimal	D1	
			L1	L2
* D2GP187256	1	.2280	2-5/8	3-7/8
* D2GP187255	2	.2210	2-5/8	3-7/8
* D2GP187254	3	.2130	2-1/2	3-3/4
* D2GP187253	4	.2090	2-1/2	3-3/4
* D2GP187252	5	.2055	2-1/2	3-3/4
* D2GP187251	6	.2040	2-1/2	3-3/4
* D2GP187250	7	.2010	2-7/16	3-5/8
* D2GP187249	8	.1990	2-7/16	3-5/8
* D2GP187248	9	.1960	2-7/16	3-5/8
* D2GP187247	10	.1935	2-7/16	3-5/8
* D2GP187246	11	.1910	2-5/16	3-1/2
* D2GP187245	12	.1890	2-5/16	3-1/2
* D2GP187244	13	.1850	2-5/16	3-1/2
* D2GP187243	14	.1820	2-3/16	3-3/8
* D2GP187242	15	.1800	2-3/16	3-3/8
* D2GP187241	16	.1770	2-3/16	3-3/8
* D2GP187240	17	.1730	2-3/16	3-3/8
* D2GP187239	18	.1695	2-1/8	3-1/4
* D2GP187238	19	.1660	2-1/8	3-1/4
* D2GP187237	20	.1610	2-1/8	3-1/4
* D2GP187236	21	.1590	2-1/8	3-1/4
* D2GP187235	22	.1570	2	3-1/8
* D2GP187234	23	.1540	2	3-1/8
* D2GP187233	24	.1520	2	3-1/8
* D2GP187232	25	.1495	1-7/8	3
* D2GP187231	26	.1470	1-7/8	3
* D2GP187230	27	.1440	1-7/8	3
* D2GP187229	28	.1405	1-3/4	2-7/8

EDP No.	Diameter		Flute Length	Overall Length
	Wire gauge	Decimal	D1	
			L1	L2
* D2GP187228	29	.1360	1-3/4	2-7/8
* D2GP187227	30	.1285	1-5/8	2-3/4
* D2GP187226	31	.1200	1-5/8	2-3/4
* D2GP187225	32	.1160	1-5/8	2-3/4
* D2GP187224	33	.1130	1-1/2	2-5/8
* D2GP187223	34	.1110	1-1/2	2-5/8
* D2GP187222	35	.1100	1-1/2	2-5/8
* D2GP187221	36	.1065	1-7/16	2-1/2
* D2GP187220	37	.1040	1-7/16	2-1/2
* D2GP187219	38	.1015	1-7/16	2-1/2
* D2GP187218	39	.0995	1-3/8	2-3/8
* D2GP187217	40	.0980	1-3/8	2-3/8
* D2GP187216	41	.0960	1-3/8	2-3/8
* D2GP187215	42	.0935	1-1/4	2-1/4
* D2GP187214	43	.0890	1-1/4	2-1/4
* D2GP187213	44	.0860	1-1/8	2-1/8
* D2GP187212	45	.0820	1-1/8	2-1/8
* D2GP187211	46	.0810	1-1/8	2-1/8
* D2GP187210	47	.0785	1	2
* D2GP187209	48	.0760	1	2
* D2GP187208	49	.0730	1	2
* D2GP187207	50	.0700	1	2
* D2GP187206	51	.0670	1	2
* D2GP187205	52	.0635	7/8	1-7/8
* D2GP187204	53	.0595	7/8	1-7/8
* D2GP187203	54	.0550	7/8	1-7/8
* D2GP187202	55	.0520	7/8	1-7/8
* D2GP187201	56	.0465	3/4	1-3/4

▶ **Tolerance** : See page 168

* 10per package

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎					○		○				○

GOLD-P DRILLS

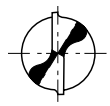
DLGP511 SERIES

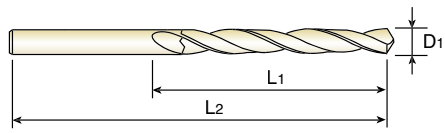
HSSCo5, STRAIGHT SHANK PARABOLIC FLUTE, GOLD-P COATED

JOBBER

- **Flute Geometry** : Right hand spiral, 38° helix, parabolic flute.
- **Point Angle** : 130° : Split point
- **Surface treatment** : Bright body TiN coating on working part
- **Application** : Improved chip removal in most materials, especially in deep drilling applications.







ANSI | HSS Co5 | N ≈ 38° | h8 | 130° P.183

▶ Fractional sizes

Unit : Inch

EDP No.	Diameter Fractional D1	Diameter Decimal D1	Flute Length L1	Overall Length L2
* DLGP511005	5/64	.0781	1	2
* DLGP511006	3/32	.0938	1-1/4	2-1/4
* DLGP511007	7/64	.1094	1-1/2	2-5/8
* DLGP511008	1/8	.1250	1-5/8	2-3/4
* DLGP511009	9/64	.1406	1-3/4	2-7/8
* DLGP511010	5/32	.1563	2	3-1/8
* DLGP511011	11/64	.1719	2-1/8	3-1/4
* DLGP511012	3/16	.1875	2-5/16	3-1/2
* DLGP511013	13/64	.2031	2-7/16	3-5/8
* DLGP511014	7/32	.2188	2-1/2	3-3/4
* DLGP511015	15/64	.2344	2-5/8	3-7/8
* DLGP511016	1/4	.2500	2-3/4	4
* DLGP511017	17/64	.2656	2-7/8	4-1/8
* DLGP511018	9/32	.2813	2-15/16	4-1/4

EDP No.	Diameter Fractional D1	Diameter Decimal D1	Flute Length L1	Overall Length L2
* DLGP511019	19/64	.2969	3-1/16	4-3/8
* DLGP511020	5/16	.3125	3-3/16	4-1/2
** DLGP511021	21/64	.3281	3-5/16	4-5/8
** DLGP511022	11/32	.3438	3-7/16	4-3/4
** DLGP511023	23/64	.3594	3-1/2	4-7/8
** DLGP511024	3/8	.3750	3-5/8	5
** DLGP511025	25/64	.3906	3-3/4	5-1/8
** DLGP511026	13/32	.4063	3-7/8	5-1/4
** DLGP511027	27/64	.4219	3-15/16	5-3/8
** DLGP511028	7/16	.4375	4-1/16	5-1/2
** DLGP511029	29/64	.4531	4-3/16	5-5/8
** DLGP511030	15/32	.4688	4-5/16	5-3/4
** DLGP511031	31/64	.4844	4-3/8	5-7/8
** DLGP511032	1/2	.5000	4-1/2	6

* 10per package
** 5per package

Tolerance Diameter (Inch)	
up to 1/8(.1250)	0 ~ −.0005
over 1/8(.1250) up to 1/4(.2500)	0 ~ −.0007
over 1/4(.2500) up to 1/2(.5000)	0 ~ −.0010

◎ : Excellent ○ : Good

P			H		M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
◎	◎					○	○				○

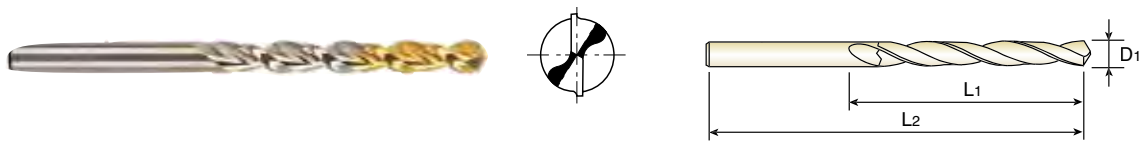
GOLD-P DRILLS

DLGP513 SERIES

HSSCo5, STRAIGHT SHANK PARABOLIC FLUTE, GOLD-P COATED

JOBBER

- ▶ **Flute Geometry** : Right hand spiral, 38° helix, parabolic flute.
- ▶ **Point Angle** : 130° : Split point
- ▶ **Surface treatment** : Bright body TiN coating on working part
- ▶ **Application** : Improved chip removal in most materials, especially in deep drilling applications.



ANSI | HSS Co5 | N ≈ 38° | h8 | 130° P.183

▶ Letter sizes

Unit : Inch

EDP No.	Diameter Letter	Diameter Decimal	Flute Length	Overall Length
	D1		L1	L2
* DLGP513101	A	.2340	2-5/8	3-7/8
* DLGP513102	B	.2380	2-3/4	4
* DLGP513103	C	.2420	2-3/4	4
* DLGP513104	D	.2460	2-3/4	4
* DLGP513105	E	.2500	2-3/4	4
* DLGP513106	F	.2570	2-7/8	4-1/8
* DLGP513107	G	.2610	2-7/8	4-1/8
* DLGP513108	H	.2660	2-7/8	4-1/8
* DLGP513109	I	.2720	2-7/8	4-1/8
* DLGP513110	J	.2770	2-7/8	4-1/8
* DLGP513111	K	.2810	2-15/16	4-1/4
* DLGP513112	L	.2900	2-15/16	4-1/4
* DLGP513113	M	.2950	3-1/16	4-3/8
* DLGP513114	N	.3020	3-1/16	4-3/8
* DLGP513115	O	.3160	3-3/16	4-1/2
* DLGP513116	P	.3230	3-5/16	4-5/8
** DLGP513117	Q	.3320	3-7/16	4-3/4
** DLGP513118	R	.3390	3-7/16	4-3/4
** DLGP513119	S	.3480	3-1/2	4-7/8
** DLGP513120	T	.3580	3-1/2	4-7/8
** DLGP513121	U	.3680	3-5/8	5
** DLGP513122	V	.3770	3-5/8	5
** DLGP513123	W	.3860	3-3/4	5-1/8
** DLGP513124	X	.3970	3-3/4	5-1/8
** DLGP513125	Y	.4040	3-7/8	5-1/4
** DLGP513126	Z	.4130	3-7/8	5-1/4

* 10per package
** 5per package

Tolerance Diameter (Inch)	
up to 1/8(.1250)	0 ~ −.0005
over 1/8(.1250) up to 1/4(.2500)	0 ~ −.0007
over 1/4(.2500) up to 1/2(.5000)	0 ~ −.0010

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎						○	○				

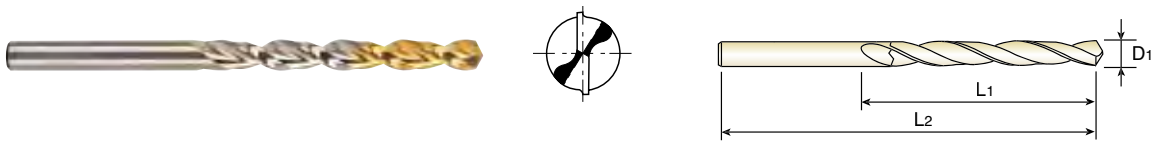
GOLD-P DRILLS

DLGP512 SERIES

HSSCo5, STRAIGHT SHANK PARABOLIC FLUTE, GOLD-P COATED

JOBBER

- **Flute Geometry** : Right hand spiral, 38° helix, parabolic flute.
- **Point Angle** : 130° : Split point
- **Surface treatment** : Bright body TiN coating on working part
- **Application** : Improved chip removal in most materials, especially in deep drilling applications.



ANSI | HSS Co5 | N ≈ 38° | h8 | 130° | P.183

▶ Wire gauge sizes

Unit : Inch

EDP No.	Diameter		Flute Length	Overall Length
	Wire gauge	Decimal	D1	
			L1	L2
* DLGP512247	1	.2280	2-5/8	3-7/8
* DLGP512246	2	.2210	2-5/8	3-7/8
* DLGP512245	3	.2130	2-1/2	3-3/4
* DLGP512244	4	.2090	2-1/2	3-3/4
* DLGP512243	5	.2055	2-1/2	3-3/4
* DLGP512242	6	.2040	2-1/2	3-3/4
* DLGP512241	7	.2010	2-7/16	3-5/8
* DLGP512240	8	.1990	2-7/16	3-5/8
* DLGP512239	9	.1960	2-7/16	3-5/8
* DLGP512238	10	.1935	2-7/16	3-5/8
* DLGP512237	11	.1910	2-5/16	3-1/2
* DLGP512236	12	.1890	2-5/16	3-1/2
* DLGP512235	13	.1850	2-5/16	3-1/2
* DLGP512234	14	.1820	2-3/16	3-3/8
* DLGP512233	15	.1800	2-3/16	3-3/8
* DLGP512232	16	.1770	2-3/16	3-3/8
* DLGP512231	17	.1730	2-3/16	3-3/8
* DLGP512230	18	.1695	2-1/8	3-1/4
* DLGP512229	19	.1660	2-1/8	3-1/4
* DLGP512228	20	.1610	2-1/8	3-1/4
* DLGP512227	21	.1590	2-1/8	3-1/4
* DLGP512226	22	.1570	2	3-1/8
* DLGP512225	23	.1540	2	3-1/8
* DLGP512224	24	.1520	2	3-1/8

EDP No.	Diameter		Flute Length	Overall Length
	Wire gauge	Decimal	D1	
			L1	L2
* DLGP512223	25	.1495	1-7/8	3
* DLGP512222	26	.1470	1-7/8	3
* DLGP512221	27	.1440	1-7/8	3
* DLGP512220	28	.1405	1-3/4	2-7/8
* DLGP512219	29	.1360	1-3/4	2-7/8
* DLGP512218	30	.1285	1-5/8	2-3/4
* DLGP512217	31	.1200	1-5/8	2-3/4
* DLGP512216	32	.1160	1-5/8	2-3/4
* DLGP512215	33	.1130	1-1/2	2-5/8
* DLGP512214	34	.1110	1-1/2	2-5/8
* DLGP512213	35	.1100	1-1/2	2-5/8
* DLGP512212	36	.1065	1-7/16	2-1/2
* DLGP512211	37	.1040	1-7/16	2-1/2
* DLGP512210	38	.1015	1-7/16	2-1/2
* DLGP512209	39	.0995	1-3/8	2-3/8
* DLGP512208	40	.0980	1-3/8	2-3/8
* DLGP512207	41	.0960	1-3/8	2-3/8
* DLGP512206	42	.0935	1-1/4	2-1/4
* DLGP512205	43	.0890	1-1/4	2-1/4
* DLGP512204	44	.0860	1-1/8	2-1/8
* DLGP512203	45	.0820	1-1/8	2-1/8
* DLGP512202	46	.0810	1-1/8	2-1/8
* DLGP512201	47	.0785	1	2

▶ **Tolerance** : See page 168

* 10per package

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎						○	○				

GOLD-P DRILLS

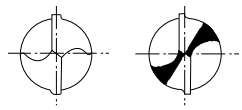
DLGP195 SERIES

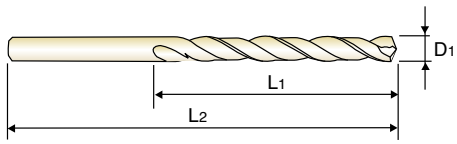
HSSCo5, STRAIGHT SHANK DRILLS, GOLD-P COATED

JOBBER

- ▶ **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 to steels, cast steels alloyed and Non-alloyed, grey cast iron, graphite, malleable cast iron







DIN 338 | HSS Co5 | N ≈33° | h8 | 135° | P.182

Unit : mm

EDP No.	Diameter Metric D1	Diameter Inch D1	Flute Length L1	Overall Length L2
* DLGP195010	1.0	.0394	12	34
* DLGP195011	1.1	.0433	14	36
* DLGP195012	1.2	.0472	16	38
* DLGP195013	1.3	.0512	16	38
* DLGP195014	1.4	.0551	18	40
* DLGP195015	1.5	.0591	18	40
* DLGP195016	1.6	.0630	20	43
* DLGP195017	1.7	.0669	20	43
* DLGP195018	1.8	.0709	22	46
* DLGP195019	1.9	.0748	22	46
* DLGP195020	2.0	.0787	24	49
* DLGP195021	2.1	.0827	24	49
* DLGP195022	2.2	.0866	27	53
* DLGP195023	2.3	.0906	27	53
* DLGP195024	2.4	.0945	30	57
* DLGP195025	2.5	.0984	30	57
* DLGP195026	2.6	.1024	30	57
* DLGP195027	2.7	.1063	33	61
* DLGP195028	2.8	.1102	33	61
* DLGP195029	2.9	.1142	33	61
* DLGP195030	3.0	.1181	33	61
* DLGP195031	3.1	.1220	36	65
* DLGP195032	3.2	.1260	36	65
* DLGP195033	3.3	.1299	36	65
* DLGP195034	3.4	.1339	39	70
* DLGP195035	3.5	.1378	39	70
* DLGP195036	3.6	.1417	39	70
* DLGP195037	3.7	.1457	39	70
* DLGP195038	3.8	.1496	43	75
* DLGP195039	3.9	.1535	43	75
* DLGP195040	4.0	.1575	43	75
* DLGP195041	4.1	.1614	43	75

EDP No.	Diameter Metric D1	Diameter Inch D1	Flute Length L1	Overall Length L2
* DLGP195042	4.2	.1654	43	75
* DLGP195043	4.3	.1693	47	80
* DLGP195044	4.4	.1732	47	80
* DLGP195045	4.5	.1772	47	80
* DLGP195046	4.6	.1811	47	80
* DLGP195047	4.7	.1850	47	80
* DLGP195048	4.8	.1890	52	86
* DLGP195049	4.9	.1929	52	86
* DLGP195050	5.0	.1969	52	86
* DLGP195051	5.1	.2008	52	86
* DLGP195052	5.2	.2047	52	86
* DLGP195053	5.3	.2087	52	86
* DLGP195054	5.4	.2126	57	93
* DLGP195055	5.5	.2165	57	93
* DLGP195056	5.6	.2205	57	93
* DLGP195057	5.7	.2244	57	93
* DLGP195058	5.8	.2283	57	93
* DLGP195059	5.9	.2323	57	93
* DLGP195060	6.0	.2362	57	93
* DLGP195061	6.1	.2402	63	101
* DLGP195062	6.2	.2441	63	101
* DLGP195063	6.3	.2480	63	101
* DLGP195064	6.4	.2520	63	101
* DLGP195065	6.5	.2559	63	101
* DLGP195066	6.6	.2598	63	101
* DLGP195067	6.7	.2638	63	101
* DLGP195068	6.8	.2677	69	109
* DLGP195069	6.9	.2717	69	109
* DLGP195070	7.0	.2756	69	109
* DLGP195071	7.1	.2795	69	109
* DLGP195072	7.2	.2835	69	109
* DLGP195073	7.3	.2874	69	109

* 10per package

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎					○		○				○

GOLD-P DRILLS

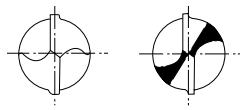
DLGP195 SERIES

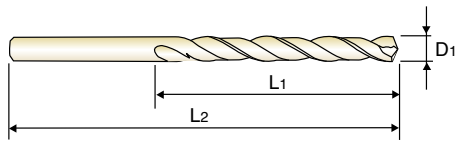
HSSCo5, STRAIGHT SHANK DRILLS, GOLD-P COATED

JOBBER

- **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 to steels, cast steels alloyed and Non-alloyed, grey cast iron, graphite, malleable cast iron







DIN 338 | HSS Co5 | N ≈33° | h8 | 135° P.182

Unit : mm

EDP No.	Diameter Metric D1	Diameter Inch D1	Flute Length L1	Overall Length L2
* DLGP195074	7.4	.2913	69	109
* DLGP195075	7.5	.2953	69	109
* DLGP195076	7.6	.2992	75	117
* DLGP195077	7.7	.3031	75	117
* DLGP195078	7.8	.3071	75	117
* DLGP195079	7.9	.3110	75	117
* DLGP195080	8.0	.3150	75	117
* DLGP195081	8.1	.3189	75	117
* DLGP195082	8.2	.3228	75	117
* DLGP195083	8.3	.3268	75	117
** DLGP195084	8.4	.3307	75	117
** DLGP195085	8.5	.3346	75	117
** DLGP195086	8.6	.3386	81	125
** DLGP195087	8.7	.3425	81	125
** DLGP195088	8.8	.3465	81	125
** DLGP195089	8.9	.3504	81	125
** DLGP195090	9.0	.3543	81	125
** DLGP195091	9.1	.3583	81	125
** DLGP195092	9.2	.3622	81	125
** DLGP195093	9.3	.3661	81	125
** DLGP195094	9.4	.3701	81	125
** DLGP195095	9.5	.3740	81	125
** DLGP195096	9.6	.3780	87	133
** DLGP195097	9.7	.3819	87	133
** DLGP195098	9.8	.3858	87	133
** DLGP195099	9.9	.3898	87	133
** DLGP195100	10.0	.3937	87	133
** DLGP195101	10.1	.3976	87	133
** DLGP195102	10.2	.4016	87	133

EDP No.	Diameter Metric D1	Diameter Inch D1	Flute Length L1	Overall Length L2
** DLGP195103	10.3	.4055	87	133
** DLGP195104	10.4	.4094	87	133
** DLGP195105	10.5	.4134	87	133
** DLGP195106	10.6	.4173	87	133
** DLGP195107	10.7	.4212	94	142
** DLGP195108	10.8	.4252	94	142
** DLGP195109	10.9	.4291	94	142
** DLGP195110	11.0	.4330	94	142
** DLGP195111	11.1	.4370	94	142
** DLGP195112	11.2	.4409	94	142
** DLGP195113	11.3	.4448	94	142
** DLGP195114	11.4	.4488	94	142
** DLGP195115	11.5	.4527	94	142
** DLGP195116	11.6	.4566	94	142
** DLGP195117	11.7	.4606	94	142
** DLGP195118	11.8	.4645	94	142
** DLGP195119	11.9	.4685	101	151
** DLGP195120	12.0	.4724	101	151
** DLGP195121	12.1	.4764	101	151
** DLGP195122	12.2	.4803	101	151
** DLGP195123	12.3	.4843	101	151
** DLGP195124	12.4	.4882	101	151
** DLGP195125	12.5	.4921	101	151
** DLGP195126	12.6	.4921	101	151
** DLGP195127	12.7	.5000	101	151
** DLGP195128	12.8	.5039	101	151
** DLGP195129	12.9	.5079	101	151
** DLGP195130	13.0	.5118	101	151

* 10per package
** 5per package

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎					○		○				○

GOLD-P DRILLS

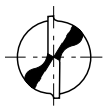
DLGP506 SERIES

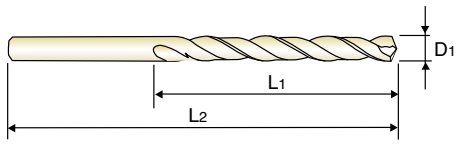
HSSCo5, DH100 STRAIGHT SHANK DRILLS for DEEP HOLES, GOLD-P COATED

JOBBER

- ▶ **Flute Geometry** : Right hand, 38° helix, Parabolic flutes
- ▶ **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.







DIN 338 | HSS Co5 | N ≈ 38° | h8 | 130° P.183

Unit : mm

EDP No.	Diameter Metric D1	Diameter Inch D1	Flute Length L1	Overall Length L2
* DLGP506020	2.0	.0787	24	49
* DLGP506021	2.1	.0827	24	49
* DLGP506022	2.2	.0866	27	53
* DLGP506023	2.3	.0906	27	53
* DLGP506024	2.4	.0945	30	57
* DLGP506025	2.5	.0984	30	57
* DLGP506026	2.6	.1024	30	57
* DLGP506027	2.7	.1063	33	61
* DLGP506028	2.8	.1102	33	61
* DLGP506029	2.9	.1142	33	61
* DLGP506030	3.0	.1181	33	61
* DLGP506031	3.1	.1220	36	65
* DLGP506032	3.2	.1260	36	65
* DLGP506033	3.3	.1299	36	65
* DLGP506034	3.4	.1339	39	70
* DLGP506035	3.5	.1378	39	70
* DLGP506036	3.6	.1417	39	70
* DLGP506037	3.7	.1457	39	70
* DLGP506038	3.8	.1496	43	75
* DLGP506039	3.9	.1535	43	75
* DLGP506040	4.0	.1575	43	75
* DLGP506041	4.1	.1614	43	75
* DLGP506042	4.2	.1654	43	75
* DLGP506043	4.3	.1693	47	80
* DLGP506044	4.4	.1732	47	80
* DLGP506045	4.5	.1772	47	80
* DLGP506046	4.6	.1811	47	80
* DLGP506047	4.7	.1850	47	80

EDP No.	Diameter Metric D1	Diameter Inch D1	Flute Length L1	Overall Length L2
* DLGP506048	4.8	.1890	52	86
* DLGP506049	4.9	.1929	52	86
* DLGP506050	5.0	.1969	52	86
* DLGP506051	5.1	.2008	52	86
* DLGP506052	5.2	.2047	52	86
* DLGP506053	5.3	.2087	52	86
* DLGP506054	5.4	.2126	57	93
* DLGP506055	5.5	.2165	57	93
* DLGP506056	5.6	.2205	57	93
* DLGP506057	5.7	.2244	57	93
* DLGP506058	5.8	.2283	57	93
* DLGP506059	5.9	.2323	57	93
* DLGP506060	6.0	.2362	57	93
* DLGP506061	6.1	.2402	63	101
* DLGP506062	6.2	.2441	63	101
* DLGP506063	6.3	.2480	63	101
* DLGP506064	6.4	.2520	63	101
* DLGP506065	6.5	.2559	63	101
* DLGP506066	6.6	.2598	63	101
* DLGP506067	6.7	.2638	63	101
* DLGP506068	6.8	.2677	69	109
* DLGP506069	6.9	.2717	69	109
* DLGP506070	7.0	.2756	69	109
* DLGP506071	7.1	.2795	69	109
* DLGP506072	7.2	.2835	69	109
* DLGP506073	7.3	.2874	69	109
* DLGP506074	7.4	.2913	69	109
* DLGP506075	7.5	.2953	69	109

* 10per package

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎						○	○				

GOLD-P DRILLS

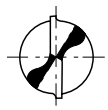
DLGP506 SERIES

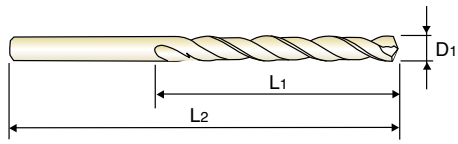
HSSCo5, DH100 STRAIGHT SHANK DRILLS for DEEP HOLES, GOLD-P COATED

JOBBER

- ▶ **Flute Geometry** : Right hand, 38° helix, Parabolic flutes
- ▶ **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.







DIN 338 | HSS Co5 | N ≈ 38° | h8 | 130° P.183

Unit : mm

EDP No.	Diameter Metric D1	Diameter Inch D1	Flute Length L1	Overall Length L2
* DLGP506076	7.6	.2992	75	117
* DLGP506077	7.7	.3031	75	117
* DLGP506078	7.8	.3071	75	117
* DLGP506079	7.9	.3110	75	117
* DLGP506080	8.0	.3150	75	117
* DLGP506081	8.1	.3189	75	117
* DLGP506082	8.2	.3228	75	117
* DLGP506083	8.3	.3268	75	117
** DLGP506084	8.4	.3307	75	117
** DLGP506085	8.5	.3346	75	117
** DLGP506086	8.6	.3386	81	125
** DLGP506087	8.7	.3425	81	125
** DLGP506088	8.8	.3465	81	125
** DLGP506089	8.9	.3504	81	125
** DLGP506090	9.0	.3543	81	125
** DLGP506091	9.1	.3583	81	125
** DLGP506092	9.2	.3622	81	125
** DLGP506093	9.3	.3661	81	125
** DLGP506094	9.4	.3701	81	125
** DLGP506095	9.5	.3740	81	125
** DLGP506096	9.6	.3780	87	133
** DLGP506097	9.7	.3819	87	133
** DLGP506098	9.8	.3858	87	133
** DLGP506099	9.9	.3898	87	133
** DLGP506100	10.0	.3937	87	133
** DLGP506101	10.1	.3976	87	133
** DLGP506102	10.2	.4016	87	133
** DLGP506103	10.3	.4055	87	133

EDP No.	Diameter Metric D1	Diameter Inch D1	Flute Length L1	Overall Length L2
** DLGP506104	10.4	.4094	87	133
** DLGP506105	10.5	.4134	87	133
** DLGP506106	10.6	.4173	87	133
** DLGP506107	10.7	.4212	94	142
** DLGP506108	10.8	.4252	94	142
** DLGP506109	10.9	.4291	94	142
** DLGP506110	11.0	.4330	94	142
** DLGP506111	11.1	.4370	94	142
** DLGP506112	11.2	.4409	94	142
** DLGP506113	11.3	.4448	94	142
** DLGP506114	11.4	.4488	94	142
** DLGP506115	11.5	.4527	94	142
** DLGP506116	11.6	.4566	94	142
** DLGP506117	11.7	.4606	94	142
** DLGP506118	11.8	.4645	94	142
** DLGP506119	11.9	.4685	101	151
** DLGP506120	12.0	.4724	101	151
** DLGP506121	12.1	.4764	101	151
** DLGP506122	12.2	.4803	101	151
** DLGP506123	12.3	.4843	101	151
** DLGP506124	12.4	.4882	101	151
** DLGP506125	12.5	.4921	101	151
** DLGP506126	12.6	.4921	101	151
** DLGP506127	12.7	.5000	101	151
** DLGP506128	12.8	.5039	101	151
** DLGP506129	12.9	.5079	101	151
** DLGP506130	13.0	.5118	101	151

* 10per package
** 5per package

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎						○	○				

GOLD-P DRILLS

GOLD-P COATED DRILL SETS





EDP No.	Series No.	Description	SIZE	Q'TY
D1GP138 SET	D1GP SET924	HSS Straight Shank, Split Point (#53 ~ #56 : NORMAL point)	#1~#56(Wire gauge)	56 pcs
D1GP139 SET	D1GP SET925	HSS Straight Shank, Split Point	A~Z(Letter)	26 pcs
D1GP182 SET	D1GP SET926	HSS Straight Shank, Split Point	Ø1/16~Ø1/2(Fractional)	29 pcs
D2GP185 SET	D2GP SET927	HSSCo8 Straight Shank, Split Point	Ø1/16~Ø1/2(Fractional)	29 pcs
D2GP186 SET	D2GP SET928	HSSCo8 Straight Shank, Split Point	A~Z(Letter)	26 pcs
D2GP187 SET	D2GP SET930	HSSCo8 Straight Shank, Split Point (#53 ~ #56 : NORMAL point)	#1~#56(Wire gauge)	56 pcs
DLGP511 SET	DLGP SET931	HSSCo5 Straight Shank, Split Point	Ø5/64~Ø1/2(Fractional)	28 pcs
DLGP512 SET	DLGP SET932	HSSCo5 Straight Shank, Split Point	#1~#47(Wire gauge)	47 pcs
DLGP513 SET	DLGP SET933	HSSCo5 Straight Shank, Split Point	A~Z(Letter)	26 pcs

GOLD-P DRILLS

RECOMMENDED CUTTING CONDITIONS

HSS & HSSCo5, STRAIGHT SHANK, GOLD-P COATED

D1GP182, D1GP139, D1GP138, D2GP185, D2GP186, D2GP187, DLGP195, SERIES

WORK MATERIAL			P						M	
			CARBON STEELS		CARBON STEELS		ALLOY STEELS		STAINLESS STEELS	
HARDNESS					~ HRc23		HRc23 ~ 34		~ HRc23	
STRENGTH			~ 570N/mm²		~ 830N/mm²		830~1110N/mm²		~ 830N/mm²	
DIAMETER			N	S	N	S	N	S	N	S
Fractional	Decimal	Metric								
3/64	.0469	1.0	14000	.0008	12500	.0008	7700	.0008	7000	.0008
#47	.0785	2.0	7000	.0023	6100	.0024	3850	.0024	3500	.0024
#32	.1160	3.0	4650	.0038	4100	.0031	2550	.0031	2350	.0031
#22	.1570	4.0	3500	.0044	3050	.0043	1950	.0039	1750	.0039
#9	.1960	5.0	2800	.0049	2450	.0043	1550	.0039	1400	.0039
B	.2380	6.0	2350	.0056	2050	.0051	1300	.0047	1150	.0047
J	.2770	7.0	2000	.0064	1750	.0059	1100	.0055	1000	.0055
O	.3160	8.0	1750	.0072	1550	.0071	960	.0059	875	.0059
T	.3580	9.0	1550	.0077	1350	.0087	855	.0071	780	.0071
X	.3970	10.0	1400	.0084	1250	.0087	770	.0071	700	.0071
7/16	.4375	11.0	1250	.0087	1100	.0087	700	.0071	650	.0071
15/32	.4688	12.0	1150	.0090	1000	.0087	650	.0079	585	.0079
1/2	.5000	13.0	1050	.0090	950	.0087	595	.0079	540	.0079

WORK MATERIAL			N				S	
			ALUMINUM ALLOYS, ZINC ALLOYS		MAGNESIUM ALLOYS		TITANIUM ALLOYS	
HARDNESS								
STRENGTH							~410N/mm²	
DIAMETER			N	S	N	S	N	S
Fractional	Decimal	Metric						
3/64	.0469	1.0	30000	.0008	11500	.0012	8050	.0008
#47	.0785	2.0	15000	.0023	5800	.0035	4050	.0024
#32	.1160	3.0	9900	.0038	3850	.0051	2700	.0031
#22	.1570	4.0	7450	.0044	2900	.0059	2000	.0035
#9	.1960	5.0	5950	.0049	2300	.0067	1600	.0039
B	.2380	6.0	14950	.0056	1950	.0075	1350	.0047
J	.2770	7.0	4250	.0064	1650	.0087	1150	.0055
O	.3160	8.0	3700	.0072	1450	.0094	1000	.0059
T	.3580	9.0	3300	.0079	1280	.0106	895	.0067
X	.3970	10.0	3000	.0090	1150	.0114	805	.0071
7/16	.4375	11.0	2700	.0090	1050	.0118	730	.0071
15/32	.4688	12.0	2480	.0090	960	.0122	670	.0079
1/2	.5000	13.0	2300	.0090	890	.0122	620	.0079

N = R.P.M
S = Inch per Revolution (inch/rev.)

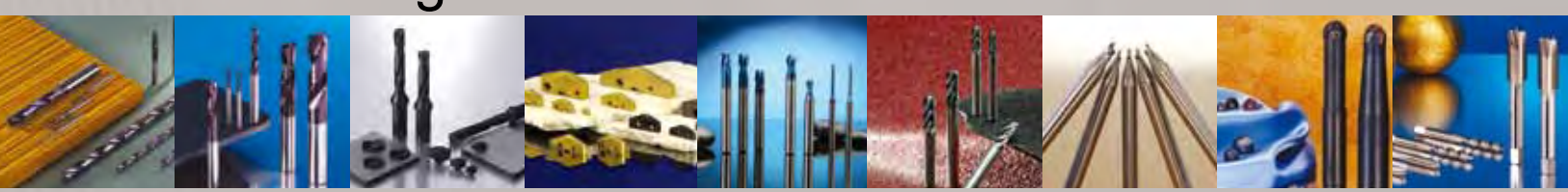
HSSCo5, STRAIGHT SHANK PARABOLIC FLUTE, GOLD-P COATED

DLGP511, DLGP513, DLGP512, DLGP506 SERIES

WORK MATERIAL			P				K			
			CARBON STEELS ALLOY STEELS		TOOL STEELS HARDENED STEELS		SOFT GREY CAST IRON		HARD GREY CAST IRON	
HARDNESS			HRc15 ~ 30		HRc20 ~ 40					
STRENGTH			700 ~ 1000N/mm^2		800~1200N/mm^2					
DIAMETER			N	S	N	S	N	S	N	S
Fractional	Decimal	Metric								
3/64	.0469	1.0	8750	.0008	6300	.0008	16000	.0008	9800	.0008
#47	.0785	2.0	4400	.0022	3150	.0022	7900	.0027	4900	.0027
#32	.1160	3.0	2900	.0032	2100	.0032	5250	.0043	3250	.0043
#22	.1570	4.0	2200	.0036	1600	.0036	3950	.0054	2450	.0054
#9	.1960	5.0	1750	.0041	1250	.0041	3150	.0054	1950	.0054
B	.2380	6.0	1450	.0047	1050	.0047	2650	.0069	1650	.0069
J	.2770	7.0	1250	.0054	900	.0054	2250	.0078	1400	.0078
O	.3160	8.0	1100	.0060	790	.0060	1950	.0087	1250	.0087
T	.3580	9.0	975	.0066	700	.0066	1750	.0095	1100	.0095
X	.3970	10.0	875	.0071	630	.0071	1600	.0108	980	.0108
7/16	.4375	11.0	800	.0077	575	.0077	1450	.0108	890	.0108
15/32	.4688	12.0	730	.0077	525	.0077	1300	.0108	815	.0108
1/2	.5000	13.0	675	.0077	485	.0077	1200	.0108	755	.0108

N = R.P.M
S = Inch per Revolution (inch/rev.)

Global Cutting Tool Leader **YG-1**



HSS

YG

Being the best through innovation



STRAIGHT SHANK DRILLS

- General Purpose

STRAIGHT SHANK TWIST DRILLS

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

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
INCH					
D1118		HSS, STRAIGHT SHANK SCREW MACHINE / Fractional sizes	D3/64	D1/2	**188**
D1115		HSS, STRAIGHT SHANK SCREW MACHINE / Letter sizes	A	Z	**189**
D1119		HSS, STRAIGHT SHANK SCREW MACHINE / Wire gauge sizes	#60	#1	**190**
D2146 D4146		HSSCo8, STRAIGHT SHANK SCREW MACHINE / Fractional sizes	D3/64	D1/2	**191**
D2147 D4147		HSSCo8, STRAIGHT SHANK SCREW MACHINE / Letter sizes	A	Z	**192**
D2148 D4148		HSSCo8, STRAIGHT SHANK SCREW MACHINE / Wire gauge sizes	#60	#1	**193**
DN514		HSSCo5, STRAIGHT SHANK PARABOLIC FLUTE SCREW MACHINE, TiN COATED / Fractional sizes	D3/32	D1/2	**195**
DN516		HSSCo5, STRAIGHT SHANK PARABOLIC FLUTE SCREW MACHINE, TiN COATED / Letter sizes	A	Z	**196**
DN515		HSSCo5, STRAIGHT SHANK PARABOLIC FLUTE SCREW MACHINE, TiN COATED / Wire gauge sizes	#47	#1	**197**
DL517 DX517		HSSCo5, TAPER LENGTH STRAIGHT SHANK DRILL / Fractional sizes	D5/64	D1/2	**198**
METRIC					
D4107		HSSCo5, STRAIGHT SHANK SCREW MACHINE *STUB*	D1.0	D31.0	**199**
		RECOMMENDED CUTTING CONDITIONS			**202**

◎ : Excellent ○ : Good

P				H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
◎	◎				○	○	○				○
◎	◎				○	○	○				○
◎	◎				○	○	○				○
◎	◎				○		○				○
◎	◎				○		○				○
◎	◎				○		○				○
◎	◎					○	○				
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◎	◎				○	○	○				○

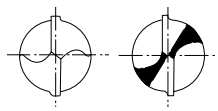
STRAIGHT SHANK DRILLS

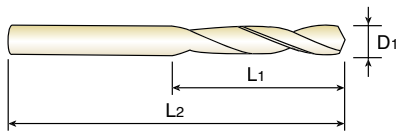
D1118 SERIES

HSS, STRAIGHT SHANK SCREW MACHINE

▶ **Flute Geometry** : Right hand spiral, wider flutes
▶ **Point Angle** : 135°
under 1/16 : Normal point
1/16 & over : Split point
▶ **Application** : Drilling in steel, cast steel alloyed and Non-alloyed, grey cast iron, graphite, malleable cast iron







ANSI HSS N 20~30° ANSI 135° P.202

▶ Fractional sizes

Unit : Inch

EDP No.	Diameter Fractional	Diameter Decimal	Flute Length	Overall Length
	D1		L1	L2
* D1118003	3/64	.0469	1/2	1-3/8
* D1118004	1/16	.0625	5/8	1-5/8
* D1118005	5/64	.0781	11/16	1-11/16
* D1118006	3/32	.0938	3/4	1-3/4
* D1118007	7/64	.1094	13/16	1-13/16
* D1118008	1/8	.1250	7/8	1-7/8
* D1118009	9/64	.1406	15/16	1-15/16
* D1118010	5/32	.1563	1	2-1/16
* D1118011	11/64	.1719	1-1/16	2-1/8
* D1118012	3/16	.1875	1-1/8	2-3/16
* D1118013	13/64	.2031	1-3/16	2-1/4
* D1118014	7/32	.2188	1-1/4	2-3/8
* D1118015	15/64	.2344	1-5/16	2-7/16
* D1118016	1/4	.2500	1-3/8	2-1/2
* D1118017	17/64	.2656	1-7/16	2-5/8

EDP No.	Diameter Fractional	Diameter Decimal	Flute Length	Overall Length
	D1		L1	L2
* D1118018	9/32	.2813	1-1/2	2-11/16
* D1118019	19/64	.2969	1-9/16	2-3/4
* D1118020	5/16	.3125	1-5/8	2-13/16
* D1118021	21/64	.3281	1-11/16	2-15/16
** D1118022	11/32	.3438	1-11/16	3
** D1118023	23/64	.3594	1-3/4	3-1/16
** D1118024	3/8	.3750	1-13/16	3-1/8
** D1118025	25/64	.3906	1-7/8	3-1/4
** D1118026	13/32	.4063	1-15/16	3-5/16
** D1118027	27/64	.4219	2	3-3/8
** D1118028	7/16	.4375	2-1/16	3-7/16
** D1118029	29/64	.4531	2-1/8	3-9/16
** D1118030	15/32	.4688	2-1/8	3-5/8
** D1118031	31/64	.4844	2-3/16	3-11/16
** D1118032	1/2	.5000	2-1/4	3-3/4

* 10per package
** 5per package

Tolerance Diameter (Inch)	
up to 1/8(.1250)	0 ~ −.0005
over 1/8(.1250) up to 1/4(.2500)	0 ~ −.0007
over 1/4(.2500) up to 1/2(.5000)	0 ~ −.0010

◎ : Excellent ○ : Good

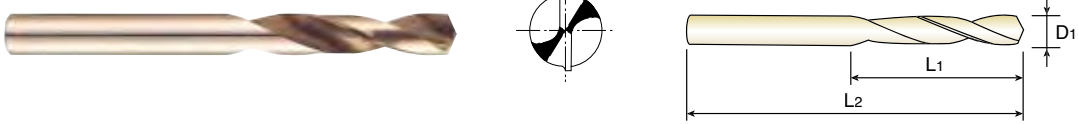
P				H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
◎	◎				○	○	○				○

STRAIGHT SHANK DRILLS

D1115 SERIES

HSS, STRAIGHT SHANK SCREW MACHINE

▶ **Flute Geometry** : Right hand spiral, wider flutes
▶ **Point Angle** : 135° : Split point
▶ **Application** : Drilling in steel, cast steel alloyed and Non-alloyed, grey cast iron, graphite, malleable cast iron



ANSI | HSS | N 20~30° | ANSI | 135° | P.202

▶ Letter sizes

Unit : Inch

EDP No.	Diameter Letter	Diameter Decimal	Flute Length	Overall Length
	D1		L1	L2
* D1115201	A	.2340	1-5/16	2-7/16
* D1115202	B	.2380	1-3/8	2-1/2
* D1115203	C	.2420	1-3/8	2-1/2
* D1115204	D	.2460	1-3/8	2-1/2
* D1115205	E	.2500	1-3/8	2-1/2
* D1115206	F	.2570	1-7/16	2-5/8
* D1115207	G	.2610	1-7/16	2-5/8
* D1115208	H	.2660	1-1/2	2-11/16
* D1115209	I	.2720	1-1/2	2-11/16
* D1115210	J	.2770	1-1/2	2-11/16
* D1115211	K	.2810	1-1/2	2-11/16
* D1115212	L	.2900	1-9/16	2-3/4
* D1115213	M	.2950	1-9/16	2-3/4

EDP No.	Diameter Letter	Diameter Decimal	Flute Length	Overall Length
	D1		L1	L2
* D1115214	N	.3020	1-5/8	2-13/16
* D1115215	O	.3160	1-11/16	2-15/16
* D1115216	P	.3230	1-11/16	2-15/16
** D1115217	Q	.3320	1-11/16	3
** D1115218	R	.3390	1-11/16	3
** D1115219	S	.3480	1-3/4	3-1/16
** D1115220	T	.3580	1-3/4	3-1/16
** D1115221	U	.3680	1-13/16	3-1/8
** D1115222	V	.3770	1-7/8	3-1/4
** D1115223	W	.3860	1-7/8	3-1/4
** D1115224	X	.3970	1-15/16	3-5/16
** D1115225	Y	.4040	1-15/16	3-5/16
** D1115226	Z	.4130	2	3-3/8

* 10per package
** 5per package

Tolerance Diameter (Inch)	
up to 1/8(.1250)	0 ~ −.0005
over 1/8(.1250) up to 1/4(.2500)	0 ~ −.0007
over 1/4(.2500) up to 1/2(.5000)	0 ~ −.0010

◎ : Excellent ○ : Good

P				H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
◎	◎				○	○	○				○

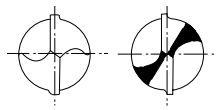
STRAIGHT SHANK DRILLS

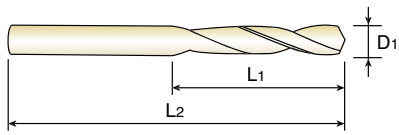
D1119 SERIES

HSS, STRAIGHT SHANK SCREW MACHINE

▶ **Flute Geometry** : Right hand spiral, wider flutes
▶ **Point Angle** : 135° : Split point
Wire gauge size #53~#60 : Normal point
Wire gauge size #1~#52 : Split point
▶ **Application** : Drilling in steel, cast steel alloyed and Non-alloyed, grey cast iron, graphite, malleable cast iron







ANSI HSS N 20~30° ANSI 135° P.202

▶ Wire gauge sizes

Unit : Inch

EDP No.	Diameter		Flute Length	Overall Length
	Wire gauge	Decimal		
	D1		L1	L2
* D1119201	1	.2280	1-5/16	2-7/16
* D1119202	2	.2210	1-5/16	2-7/16
* D1119203	3	.2130	1-1/4	2-3/8
* D1119204	4	.2090	1-1/4	2-3/8
* D1119205	5	.2055	1-1/4	2-3/8
* D1119206	6	.2040	1-1/4	2-3/8
* D1119207	7	.2010	1-3/16	2-1/4
* D1119208	8	.1990	1-3/16	2-1/4
* D1119209	9	.1960	1-3/16	2-1/4
* D1119210	10	.1935	1-3/16	2-1/4
* D1119211	11	.1910	1-3/16	2-1/4
* D1119212	12	.1890	1-3/16	2-1/4
* D1119213	13	.1850	1-1/8	2-3/16
* D1119214	14	.1820	1-1/8	2-3/16
* D1119215	15	.1800	1-1/8	2-3/16
* D1119216	16	.1770	1-1/8	2-3/16
* D1119217	17	.1730	1-1/8	2-3/16
* D1119218	18	.1695	1-1/16	2-1/8
* D1119219	19	.1660	1-1/16	2-1/8
* D1119220	20	.1610	1-1/16	2-1/8
* D1119221	21	.1590	1-1/16	2-1/8
* D1119222	22	.1570	1-1/16	2-1/8
* D1119223	23	.1540	1	2-1/16
* D1119224	24	.1520	1	2-1/16
* D1119225	25	.1495	1	2-1/16
* D1119226	26	.1470	1	2-1/16
* D1119227	27	.1440	1	2-1/16
* D1119228	28	.1405	15/16	1-15/16
* D1119229	29	.1360	15/16	1-15/16
* D1119230	30	.1285	15/16	1-15/16

EDP No.	Diameter		Flute Length	Overall Length
	Wire gauge	Decimal		
	D1		L1	L2
* D1119231	31	.1200	7/8	1-7/8
* D1119232	32	.1160	7/8	1-7/8
* D1119233	33	.1130	7/8	1-7/8
* D1119234	34	.1110	7/8	1-7/8
* D1119235	35	.1100	7/8	1-7/8
* D1119236	36	.1065	13/16	1-13/16
* D1119237	37	.1040	13/16	1-13/16
* D1119238	38	.1015	13/16	1-13/16
* D1119239	39	.0995	13/16	1-13/16
* D1119240	40	.0980	13/16	1-13/16
* D1119241	41	.0960	13/16	1-13/16
* D1119242	42	.0935	3/4	1-3/4
* D1119243	43	.0890	3/4	1-3/4
* D1119244	44	.0860	3/4	1-3/4
* D1119245	45	.0820	3/4	1-3/4
* D1119246	46	.0810	3/4	1-3/4
* D1119247	47	.0785	11/16	1-11/16
* D1119248	48	.0760	11/16	1-11/16
* D1119249	49	.0730	11/16	1-11/16
* D1119250	50	.0700	11/16	1-11/16
* D1119251	51	.0670	11/16	1-11/16
* D1119252	52	.0635	11/16	1-11/16
* D1119253	53	.0595	5/8	1-5/8
* D1119254	54	.0550	5/8	1-5/8
* D1119255	55	.0520	5/8	1-5/8
* D1119256	56	.0465	1/2	1-3/8
* D1119257	57	.0430	1/2	1-3/8
* D1119258	58	.0420	1/2	1-3/8
* D1119259	59	.0410	1/2	1-3/8
* D1119260	60	.0400	1/2	1-3/8

▶ **Tolerance** : See page 188 / * 10per package

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎					○	○	○				○

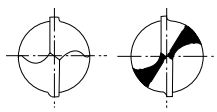
STRAIGHT SHANK DRILLS

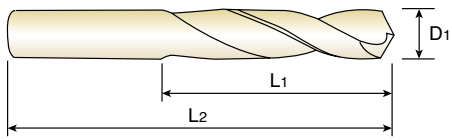
D2146 SERIES UN-COATED
D4146 SERIES TiN-COATED

HSSCo8, STRAIGHT SHANK SCREW MACHINE

▶ **Flute Geometry** : Right hand spiral, wider flutes
▶ **Point Angle** : 135°
under 1/16 : Normal point
1/16 & over : Split point
▶ **Application** : Drilling in steel, cast steel alloyed and Non-alloyed, grey cast iron, graphite, malleable cast iron







ANSI | HSS Co8 | N 20~30° | ANSI | 135° P.202

▶ Fractional sizes

Unit : Inch

EDP No.		Diameter		Flute Length	Overall Length
		Fractional	Decimal		
UN-COATED	TiN-COATED	D1		L1	L2
* D2146003	D4146003	3/64	.0469	1/2	1-3/8
* D2146004	D4146004	1/16	.0625	5/8	1-5/8
* D2146005	D4146005	5/64	.0781	11/16	1-11/16
* D2146006	D4146006	3/32	.0938	3/4	1-3/4
** D2146007	D4146007	7/64	.1094	13/16	1-13/16
** D2146008	D4146008	1/8	.1250	7/8	1-7/8
** D2146009	D4146009	9/64	.1406	15/16	1-15/16
** D2146010	D4146010	5/32	.1563	1	2-1/16
** D2146011	D4146011	11/64	.1719	1-1/16	2-1/8
** D2146012	D4146012	3/16	.1875	1-1/8	2-3/16
** D2146013	D4146013	13/64	.2031	1-3/16	2-1/4
** D2146014	D4146014	7/32	.2188	1-1/4	2-3/8
** D2146015	D4146015	15/64	.2344	1-5/16	2-7/16
** D2146016	D4146016	1/4	.2500	1-3/8	2-1/2
** D2146017	D4146017	17/64	.2656	1-7/16	2-5/8
** D2146018	D4146018	9/32	.2813	1-1/2	2-11/16
** D2146019	D4146019	19/64	.2969	1-9/16	2-3/4
** D2146020	D4146020	5/16	.3125	1-5/8	2-13/16
** D2146021	D4146021	21/64	.3281	1-11/16	2-15/16
** D2146022	D4146022	11/32	.3438	1-11/16	3
** D2146023	D4146023	23/64	.3594	1-3/4	3-1/16
** D2146024	D4146024	3/8	.3750	1-13/16	3-1/8
** D2146025	D4146025	25/64	.3906	1-7/8	3-1/4
** D2146026	D4146026	13/32	.4063	1-15/16	3-5/16
** D2146027	D4146027	27/64	.4219	2	3-3/8
** D2146028	D4146028	7/16	.4375	2-1/16	3-7/16
** D2146029	D4146029	29/64	.4531	2-1/8	3-9/16
** D2146030	D4146030	15/32	.4688	2-1/8	3-5/8
** D2146031	D4146031	31/64	.4844	2-3/16	3-11/16
** D2146032	D4146032	1/2	.5000	2-1/4	3-3/4

▶ **Tolerance** : See page 188 / * 10per package ** 5per package

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎					○	○	○				○

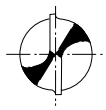
STRAIGHT SHANK DRILLS

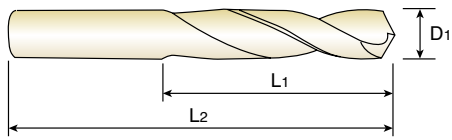
D2147 SERIES UN-COATED
D4147 SERIES TiN-COATED

HSSCo8, STRAIGHT SHANK SCREW MACHINE

▶ **Flute Geometry** : Right hand spiral, wider flutes
▶ **Point Angle** : 135° : Split point
▶ **Application** : Drilling in steel, cast steel alloyed and Non-alloyed, grey cast iron, graphite, malleable cast iron







ANSI | HSS Co8 | N 20~30° | ANSI | 135° P.202

▶ Letter sizes

Unit : Inch

EDP No.		Diameter		Flute Length	Overall Length
		Letter	Decimal		
UN-COATED	TiN-COATED	D1		L1	L2
** D2147201	D4147201	A	.2340	1-5/16	2-7/16
** D2147202	D4147202	B	.2380	1-3/8	2-1/2
** D2147203	D4147203	C	.2420	1-3/8	2-1/2
** D2147204	D4147204	D	.2460	1-3/8	2-1/2
** D2147205	D4147205	E	.2500	1-3/8	2-1/2
** D2147206	D4147206	F	.2570	1-7/16	2-5/8
** D2147207	D4147207	G	.2610	1-7/16	2-5/8
** D2147208	D4147208	H	.2660	1-1/2	2-11/16
** D2147209	D4147209	I	.2720	1-1/2	2-11/16
** D2147210	D4147210	J	.2770	1-1/2	2-11/16
** D2147211	D4147211	K	.2810	1-1/2	2-11/16
** D2147212	D4147212	L	.2900	1-9/16	2-3/4
** D2147213	D4147213	M	.2950	1-9/16	2-3/4
** D2147214	D4147214	N	.3020	1-5/8	2-13/16
** D2147215	D4147215	O	.3160	1-11/16	2-15/16
** D2147216	D4147216	P	.3230	1-11/16	2-15/16
** D2147217	D4147217	Q	.3320	1-11/16	3
** D2147218	D4147218	R	.3390	1-11/16	3
** D2147219	D4147219	S	.3480	1-3/4	3-1/16
** D2147220	D4147220	T	.3580	1-3/4	3-1/16
** D2147221	D4147221	U	.3680	1-13/16	3-1/8
** D2147222	D4147222	V	.3770	1-7/8	3-1/4
** D2147223	D4147223	W	.3860	1-7/8	3-1/4
** D2147224	D4147224	X	.3970	1-15/16	3-5/16
** D2147225	D4147225	Y	.4040	1-15/16	3-5/16
** D2147226	D4147226	Z	.4130	2	3-3/8

▶ **Tolerance** : See page 188 / ** 5per package

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎					○		○				○

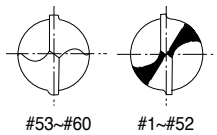
STRAIGHT SHANK DRILLS

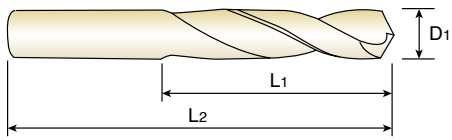
D2148 SERIES UN-COATED
D4148 SERIES TiN-COATED

HSSCo8, STRAIGHT SHANK SCREW MACHINE

▶ **Flute Geometry** : Right hand spiral, wider flutes
▶ **Point Angle** : 135° : Split point
Wire gauge size #53~#60 : Normal point
Wire gauge size #1~#52 : Split point
▶ **Application** : Drilling in steel, cast steel alloyed and Non-alloyed, grey cast iron, graphite, malleable cast iron







ANSI | HSS Co8 | N 20~30° | ANSI | 135° | P.202

▶ Wire gauge sizes

Unit : Inch

EDP No.		Diameter		Flute Length	Overall Length
		Wire gauge	Decimal		
UN-COATED	TiN-COATED	D1		L1	L2
** D2148101	D4148101	1	.2280	1-5/16	2-7/16
** D2148102	D4148102	2	.2210	1-5/16	2-7/16
** D2148103	D4148103	3	.2130	1-1/4	2-3/8
** D2148104	D4148104	4	.2090	1-1/4	2-3/8
** D2148105	D4148105	5	.2055	1-1/4	2-3/8
** D2148106	D4148106	6	.2040	1-1/4	2-3/8
** D2148107	D4148107	7	.2010	1-3/16	2-1/4
** D2148108	D4148108	8	.1990	1-3/16	2-1/4
** D2148109	D4148109	9	.1960	1-3/16	2-1/4
** D2148110	D4148110	10	.1935	1-3/16	2-1/4
** D2148111	D4148111	11	.1910	1-3/16	2-1/4
** D2148112	D4148112	12	.1890	1-3/16	2-1/4
** D2148113	D4148113	13	.1850	1-1/8	2-3/16
** D2148114	D4148114	14	.1820	1-1/8	2-3/16
** D2148115	D4148115	15	.1800	1-1/8	2-3/16
** D2148116	D4148116	16	.1770	1-1/8	2-3/16
** D2148117	D4148117	17	.1730	1-1/8	2-3/16
** D2148118	D4148118	18	.1695	1-1/16	2-1/8
** D2148119	D4148119	19	.1660	1-1/16	2-1/8
** D2148120	D4148120	20	.1610	1-1/16	2-1/8
** D2148121	D4148121	21	.1590	1-1/16	2-1/8
** D2148122	D4148122	22	.1570	1-1/16	2-1/8
** D2148123	D4148123	23	.1540	1	2-1/16
** D2148124	D4148124	24	.1520	1	2-1/16
** D2148125	D4148125	25	.1495	1	2-1/16
** D2148126	D4148126	26	.1470	1	2-1/16
** D2148127	D4148127	27	.1440	1	2-1/16
** D2148128	D4148128	28	.1405	15/16	1-15/16
** D2148129	D4148129	29	.1360	15/16	1-15/16
** D2148130	D4148130	30	.1285	15/16	1-15/16

▶ **Tolerance** : See page 188 / ** 5per package

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎					○		○				○

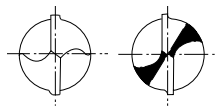
STRAIGHT SHANK DRILLS

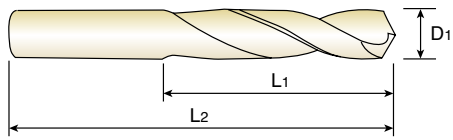
D2148 SERIES UN-COATED
D4148 SERIES TiN-COATED

HSSCo8, STRAIGHT SHANK SCREW MACHINE

▶ **Flute Geometry** : Right hand spiral, wider flutes
▶ **Point Angle** : 135° : Split point
Wire gauge size #53~#60 : Normal point
Wire gauge size #1~#52 : Split point
▶ **Application** : Drilling in steel, cast steel alloyed and Non-alloyed, grey cast iron, graphite, malleable cast iron







ANSI | HSS Co8 | N 20~30° | ANSI | 135° P.202

▶ Wire gauge sizes

Unit : Inch

EDP No.		Diameter		Flute Length	Overall Length
		Wire gauge	Decimal		
UN-COATED	TiN-COATED	D1		L1	L2
** D2148131	D4148131	31	.1200	7/8	1-7/8
** D2148132	D4148132	32	.1160	7/8	1-7/8
** D2148133	D4148133	33	.1130	7/8	1-7/8
** D2148134	D4148134	34	.1110	7/8	1-7/8
** D2148135	D4148135	35	.1100	7/8	1-7/8
** D2148136	D4148136	36	.1065	13/16	1-13/16
* D2148137	D4148137	37	.1040	13/16	1-13/16
* D2148138	D4148138	38	.1015	13/16	1-13/16
* D2148139	D4148139	39	.0995	13/16	1-13/16
* D2148140	D4148140	40	.0980	13/16	1-13/16
* D2148141	D4148141	41	.0960	13/16	1-13/16
* D2148142	D4148142	42	.0935	3/4	1-3/4
* D2148143	D4148143	43	.0890	3/4	1-3/4
* D2148144	D4148144	44	.0860	3/4	1-3/4
* D2148145	D4148145	45	.0820	3/4	1-3/4
* D2148146	D4148146	46	.0810	3/4	1-3/4
* D2148147	D4148147	47	.0785	11/16	1-11/16
* D2148148	D4148148	48	.0760	11/16	1-11/16
* D2148149	D4148149	49	.0730	11/16	1-11/16
* D2148150	D4148150	50	.0700	11/16	1-11/16
* D2148151	D4148151	51	.0670	11/16	1-11/16
* D2148152	D4148152	52	.0635	11/16	1-11/16
* D2148153	D4148153	53	.0595	5/8	1-5/8
* D2148154	D4148154	54	.0550	5/8	1-5/8
* D2148155	D4148155	55	.0520	5/8	1-5/8
* D2148156	D4148156	56	.0465	1/2	1-3/8
* D2148157	D4148157	57	.0430	1/2	1-3/8
* D2148158	D4148158	58	.0420	1/2	1-3/8
* D2148159	D4148159	59	.0410	1/2	1-3/8
* D2148160	D4148160	60	.0400	1/2	1-3/8

▶ **Tolerance** : See page 188 / * 10per package ** 5per package

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎					○		○				○

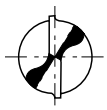
STRAIGHT SHANK DRILLS

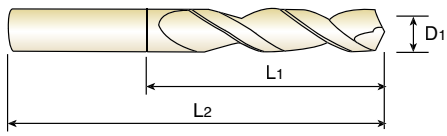
DN514 SERIES

HSSCo5, STRAIGHT SHANK PARABOLIC FLUTE SCREW MACHINE, TiN COATED

▶ **Flute Geometry** : Right hand spiral, Parabolic flute
38° helix
▶ **Point Angle** : 130° : Split point
▶ **Application** : Improved chip removal in most materials, especially in deep drilling applications.







ANSI HSS-E 38° ANSI 130°

P.203

▶ Fractional sizes

Unit : Inch

EDP No.	Diameter		Flute Length	Overall Length
	Fractional	Decimal		
TiN	D1		L1	L2
* DN514006	3/32	.0938	3/4	1-3/4
** DN514007	7/64	.1094	13/16	1-13/16
** DN514008	1/8	.1250	7/8	1-7/8
** DN514009	9/64	.1406	15/16	1-15/16
** DN514010	5/32	.1563	1	2-1/16
** DN514011	11/64	.1719	1-1/16	2-1/8
** DN514012	3/16	.1875	1-1/8	2-3/16
** DN514013	13/64	.2031	1-3/16	2-1/4
** DN514014	7/32	.2188	1-1/4	2-3/8
** DN514015	15/64	.2344	1-5/16	2-7/16
** DN514016	1/4	.2500	1-3/8	2-1/2
** DN514017	17/64	.2656	1-7/16	2-5/8
** DN514018	9/32	.2813	1-1/2	2-11/16
** DN514019	19/64	.2969	1-9/16	2-3/4

EDP No.	Diameter		Flute Length	Overall Length
	Fractional	Decimal		
TiN	D1		L1	L2
** DN514020	5/16	.3125	1-5/8	2-13/16
** DN514021	21/64	.3281	1-11/16	2-15/16
** DN514022	11/32	.3438	1-11/16	3
** DN514023	23/64	.3594	1-3/4	3-1/16
** DN514024	3/8	.3750	1-13/16	3-1/8
** DN514025	25/64	.3906	1-7/8	3-1/4
** DN514026	13/32	.4063	1-15/16	3-5/16
** DN514027	27/64	.4219	2	3-3/8
** DN514028	7/16	.4375	2-1/16	3-7/16
** DN514029	29/64	.4531	2-1/8	3-9/16
** DN514030	15/32	.4688	2-1/8	3-5/8
** DN514031	31/64	.4844	2-3/16	3-11/16
** DN514032	1/2	.5000	2-1/4	3-3/4

* 10per package
** 5per package

Tolerance Diameter (Inch)	
up to 1/8(.1250)	0 ~ −.0005
over 1/8(.1250) up to 1/4(.2500)	0 ~ −.0007
over 1/4(.2500) up to 1/2(.5000)	0 ~ −.0010

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎						○	○				

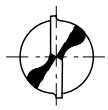
STRAIGHT SHANK DRILLS

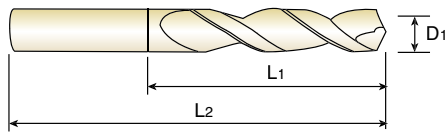
DN516 SERIES

HSSCo5, STRAIGHT SHANK PARABOLIC FLUTE SCREW MACHINE, TiN COATED

- **Flute Geometry** : Right hand spiral, Parabolic flute 38° helix
- **Point Angle** : 130° : Split point
- **Application** : Improved chip removal in most materials, especially in deep drilling applications.







ANSI HSS-E 38° ANSI 130° P.203

▶ Letter sizes

Unit : Inch

EDP No.	Diameter		Flute Length	Overall Length
	Letter	Decimal		
TiN	D1		L1	L2
** DN516101	A	.2340	1-5/16	2-7/16
** DN516102	B	.2380	1-3/8	2-1/2
** DN516103	C	.2420	1-3/8	2-1/2
** DN516104	D	.2460	1-3/8	2-1/2
** DN516105	E	.2500	1-3/8	2-1/2
** DN516106	F	.2570	1-7/16	2-5/8
** DN516107	G	.2610	1-7/16	2-5/8
** DN516108	H	.2660	1-1/2	2-11/16
** DN516109	I	.2720	1-1/2	2-11/16
** DN516110	J	.2770	1-1/2	2-11/16
** DN516111	K	.2810	1-1/2	2-11/16
** DN516112	L	.2900	1-9/16	2-3/4
** DN516113	M	.2950	1-9/16	2-3/4

EDP No.	Diameter		Flute Length	Overall Length
	Letter	Decimal		
TiN	D1		L1	L2
** DN516114	N	.3020	1-5/8	2-13/16
** DN516115	O	.3160	1-11/16	2-15/16
** DN516116	P	.3230	1-11/16	2-15/16
** DN516117	Q	.3320	1-11/16	3
** DN516118	R	.3390	1-11/16	3
** DN516119	S	.3480	1-3/4	3-1/16
** DN516120	T	.3580	1-3/4	3-1/16
** DN516121	U	.3680	1-13/16	3-1/8
** DN516122	V	.3770	1-7/8	3-1/4
** DN516123	W	.3860	1-7/8	3-1/4
** DN516124	X	.3970	1-15/16	3-5/16
** DN516125	Y	.4040	1-15/16	3-5/16
** DN516126	Z	.4130	2	3-3/8

** 5per package

Tolerance Diameter (Inch)	
up to 1/8(.1250)	0 ~ −.0005
over 1/8(.1250) up to 1/4(.2500)	0 ~ −.0007
over 1/4(.2500) up to 1/2(.5000)	0 ~ −.0010

◎ : Excellent ○ : Good

P				H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
◎	◎					○	○				

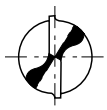
STRAIGHT SHANK DRILLS

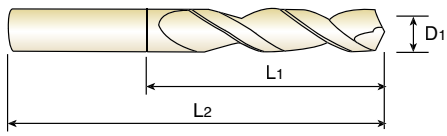
DN515 SERIES

HSSCo5, STRAIGHT SHANK PARABOLIC FLUTE SCREW MACHINE, TiN COATED

▶ **Flute Geometry** : Right hand spiral, Parabolic flute
38° helix
▶ **Point Angle** : 130° : Split point
▶ **Application** : Improved chip removal in most materials, especially in deep drilling applications.







ANSI HSS-E 38° ANSI 130° P.203

▶ Wire gauge sizes

Unit : Inch

EDP No.	Diameter		Flute Length	Overall Length
	Wire gauge	Decimal		
TiN	D1		L1	L2
** DN515201	1	.2280	1-5/16	2-7/16
** DN515202	2	.2210	1-5/16	2-7/16
** DN515203	3	.2130	1-1/4	2-3/8
** DN515204	4	.2090	1-1/4	2-3/8
** DN515205	5	.2055	1-1/4	2-3/8
** DN515206	6	.2040	1-1/4	2-3/8
** DN515207	7	.2010	1-3/16	2-1/4
** DN515208	8	.1990	1-3/16	2-1/4
** DN515209	9	.1960	1-3/16	2-1/4
** DN515210	10	.1935	1-3/16	2-1/4
** DN515211	11	.1910	1-3/16	2-1/4
** DN515212	12	.1890	1-3/16	2-1/4
** DN515213	13	.1850	1-1/8	2-3/16
** DN515214	14	.1820	1-1/8	2-3/16
** DN515215	15	.1800	1-1/8	2-3/16
** DN515216	16	.1770	1-1/8	2-3/16
** DN515217	17	.1730	1-1/8	2-3/16
** DN515218	18	.1695	1-1/16	2-1/8
** DN515219	19	.1660	1-1/16	2-1/8
** DN515220	20	.1610	1-1/16	2-1/8
** DN515221	21	.1590	1-1/16	2-1/8
** DN515222	22	.1570	1-1/16	2-1/8
** DN515223	23	.1540	1	2-1/16
** DN515224	24	.1520	1	2-1/16

EDP No.	Diameter		Flute Length	Overall Length
	Wire gauge	Decimal		
TiN	D1		L1	L2
** DN515225	25	.1495	1	2-1/16
** DN515226	26	.1470	1	2-1/16
** DN515227	27	.1440	1	2-1/16
** DN515228	28	.1405	15/16	1-15/16
** DN515229	29	.1360	15/16	1-15/16
** DN515230	30	.1285	15/16	1-15/16
** DN515231	31	.1200	7/8	1-7/8
** DN515232	32	.1160	7/8	1-7/8
** DN515233	33	.1130	7/8	1-7/8
** DN515234	34	.1110	7/8	1-7/8
** DN515235	35	.1100	7/8	1-7/8
** DN515236	36	.1065	13/16	1-13/16
* DN515237	37	.1040	13/16	1-13/16
* DN515238	38	.1015	13/16	1-13/16
* DN515239	39	.0995	13/16	1-13/16
* DN515240	40	.0980	13/16	1-13/16
* DN515241	41	.0960	13/16	1-13/16
* DN515242	42	.0935	3/4	1-3/4
* DN515243	43	.0890	3/4	1-3/4
* DN515244	44	.0860	3/4	1-3/4
* DN515245	45	.0820	3/4	1-3/4
* DN515246	46	.0810	3/4	1-3/4
* DN515247	47	.0785	11/16	1-11/16

* 10per package
** 5per package

Tolerance Diameter (Inch)	
up to 1/8(.1250)	0 ~ −.0005
over 1/8(.1250) up to 1/4(.2500)	0 ~ −.0007
over 1/4(.2500) up to 1/2(.5000)	0 ~ −.0010

◎ : Excellent ○ : Good

P					H	M	K	N					S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium	
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~									
◎	◎						○	○					

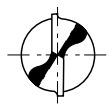
STRAIGHT SHANK DRILLS

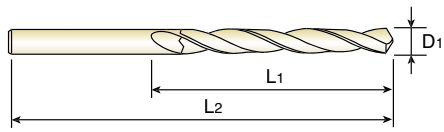
DL517 SERIES UN-COATED
DX517 SERIES TiCN-COATED

HSSCo5, TAPER LENGTH STRAIGHT SHANK DRILL

▶ Flute Geometry : Right hand spiral, Parabolic flute
38° helix
▶ Point Angle : 130° : Split point
▶ Application : Improved chip removal in most materials, especially in deep drilling applications.







ANSI HSS-E 38° ANSI 130°

P.204

▶ Fractional sizes

Unit : Inch

EDP No.		Diameter		Flute Length	Overall Length
		Fractional	Decimal		
UN-COATED	TiCN-COATED	D1		L1	L2
* DL517005	DX517005	5/64	.0781	2	3-3/4
* DL517006	DX517006	3/32	.0938	2-1/4	4-1/4
* DL517007	DX517007	7/64	.1094	2-1/2	4-5/8
* DL517008	DX517008	1/8	.1250	2-3/4	5-1/8
* DL517009	DX517009	9/64	.1406	3	5-3/8
* DL517010	DX517010	5/32	.1563	3	5-3/8
* DL517011	DX517011	11/64	.1719	3-3/8	5-3/4
* DL517012	DX517012	3/16	.1875	3-3/8	5-3/4
* DL517013	DX517013	13/64	.2031	3-5/8	6
* DL517014	DX517014	7/32	.2188	3-5/8	6
* DL517015	DX517015	15/64	.2344	3-3/4	6-1/8
** DL517016	DX517016	1/4	.2500	3-3/4	6-1/8
** DL517017	DX517017	17/64	.2656	3-7/8	6-1/4
** DL517018	DX517018	9/32	.2813	3-7/8	6-1/4
** DL517019	DX517019	19/64	.2969	4	6-3/8
** DL517020	DX517020	5/16	.3125	4	6-3/8
** DL517021	DX517021	21/64	.3281	4-1/8	6-1/2
** DL517022	DX517022	11/32	.3438	4-1/8	6-3/4
** DL517023	DX517023	23/64	.3594	4-1/4	6-3/4
** DL517024	DX517024	3/8	.3750	4-1/4	6-3/4
** DL517025	DX517025	25/64	.3906	4-3/8	7
** DL517026	DX517026	13/32	.4063	4-3/8	7
** DL517027	DX517027	27/64	.4219	4-5/8	7-1/4
** DL517028	DX517028	7/16	.4375	4-5/8	7-1/4
** DL517029	DX517029	29/64	.4531	4-3/4	7-1/2
** DL517030	DX517030	15/32	.4688	4-3/4	7-1/2
** DL517031	DX517031	31/64	.4844	4-3/4	7-3/4
** DL517032	DX517032	1/2	.5000	4-3/4	7-3/4

▶ **Tolerance** : See page 197

* 10per package ** 5per package

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎						○	○				

STRAIGHT SHANK DRILLS

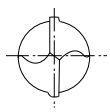
D4107 SERIES

HSSCo8, STRAIGHT SHANK SCREW MACHINE

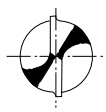
STUB

- **Flute Geometry** : Right hand spiral helix
- **Point Angle** : 135˚
  under 1.6mm : Normal point
  1.6mm & over : Split point
- **Surface Treatment** : TiN Coating
- **Application** : Drills suitable for drilling in thin materials with portable drills. Special twist drills for automatic and turret lathes.

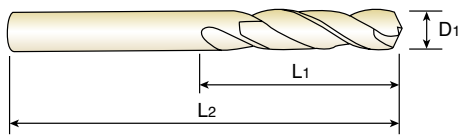




under 1.6mm



1.6mm & over



DIN 1897 | HSS Co8 | N 33˚ | h8 | 135˚

P.205

Unit : mm

EDP No.	Diameter Metric	Diameter Inch	Flute Length	Overall Length
TiN	D1		L1	L2
* D4107010	1.0	.0394	6	26
* D4107011	1.1	.0433	7	28
* D4107012	1.2	.0472	8	30
* D4107912	1.25	.0492	8	30
* D4107013	1.3	.0512	8	30
* D4107014	1.4	.0551	9	32
* D4107015	1.5	.0591	9	32
* D4107016	1.6	.0630	10	34
* D4107017	1.7	.0669	10	34
* D4107917	1.75	.0689	11	36
* D4107018	1.8	.0709	11	36
* D4107019	1.9	.0748	11	36
* D4107020	2.0	.0787	12	38
* D4107021	2.1	.0827	12	38
* D4107022	2.2	.0866	13	40
* D4107925	2.25	0.886	13	40
* D4107023	2.3	.0906	13	40
* D4107024	2.4	.0945	14	43
* D4107025	2.5	.0984	14	43
* D4107026	2.6	.1024	14	43
* D4107027	2.7	.1063	16	46
** D4107927	2.75	.1083	16	46
** D4107028	2.8	.1102	16	46
** D4107029	2.9	.1142	16	46
** D4107030	3.0	.1181	16	46
** D4107031	3.1	.1220	18	49
** D4107032	3.2	.1260	18	49
** D4107932	3.25	.1280	18	49
** D4107033	3.3	.1299	18	49
** D4107034	3.4	.1339	20	52

EDP No.	Diameter Metric	Diameter Inch	Flute Length	Overall Length
TiN			L1	L2
** D4107035	3.5	.1378	20	52
** D4107036	3.6	.1417	20	52
** D4107037	3.7	.1457	20	52
** D4107937	3.75	.1476	20	52
** D4107038	3.8	.1496	22	55
** D4107039	3.9	.1535	22	55
** D4107040	4.0	.1575	22	55
** D4107041	4.1	.1614	22	55
** D4107042	4.2	.1654	22	55
** D4107942	4.25	.1673	22	55
** D4107043	4.3	.1693	24	58
** D4107044	4.4	.1732	24	58
** D4107045	4.5	.1772	24	58
** D4107046	4.6	.1811	24	58
** D4107946	4.65	.1831	24	58
** D4107047	4.7	.1850	24	58
** D4107947	4.75	.1870	24	58
** D4107048	4.8	.1890	26	62
** D4107049	4.9	.1929	26	62
** D4107050	5.0	.1969	26	62
** D4107051	5.1	.2008	26	62
** D4107052	5.2	.2047	26	62
** D4107952	5.25	.2067	26	62
** D4107053	5.3	.2087	26	62
** D4107054	5.4	.2126	28	66
** D4107055	5.5	.2165	28	66
** D4107955	5.55	.2185	28	66
** D4107056	5.6	.2205	28	66
** D4107057	5.7	.2244	28	66
** D4107957	5.75	.2264	28	66

- The HSSCo5(DL107) is available when you need.
  The TiN(D4107), TiCN(D7107) and TiAlN(DQ107) are available on your request.

* 10per package ** 5per package

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎					○	○	○				○

STRAIGHT SHANK DRILLS

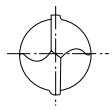
D4107 SERIES

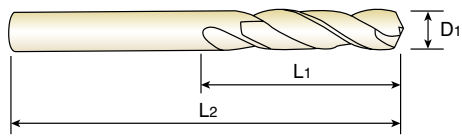
HSSCo8, STRAIGHT SHANK SCREW MACHINE

STUB

▶ **Flute Geometry** : Right hand spiral helix
▶ **Point Angle** : 135°
under 1.6mm : Normal point
1.6mm & over : Split point
▶ **Surface Treatment** : TiN Coating
▶ **Application** : Drills suitable for drilling in thin materials with portable drills. Special twist drills for automatic and turret lathes.







DIN 1897 | HSS Co8 | N 33° | h8 | 135° P.205

Unit : mm

EDP No.	Diameter		Flute Length	Overall Length
	Metric	Inch		
TiN	D1		L1	L2
** D4107058	5.8	.2283	28	66
** D4107059	5.9	.2323	28	66
** D4107060	6.0	.2362	28	66
** D4107061	6.1	.2402	31	70
** D4107062	6.2	.2441	31	70
** D4107962	6.25	.2461	31	70
** D4107063	6.3	.2480	31	70
** D4107064	6.4	.2520	31	70
** D4107065	6.5	.2559	31	70
** D4107066	6.6	.2598	31	70
** D4107067	6.7	.2638	31	70
** D4107967	6.75	.2657	34	74
** D4107068	6.8	.2677	34	74
** D4107069	6.9	.2717	34	74
** D4107070	7.0	.2756	34	74
** D4107071	7.1	.2795	34	74
** D4107072	7.2	.2835	34	74
** D4107972	7.25	.2854	34	74
** D4107073	7.3	.2874	34	74
** D4107074	7.4	.2913	34	74
** D4107974	7.45	.2933	34	74
** D4107075	7.5	.2953	34	74
** D4107076	7.6	.2992	37	79
** D4107077	7.7	.3031	37	79
** D4107977	7.75	.3051	37	79
** D4107078	7.8	.3071	37	79
** D4107079	7.9	.3110	37	79
** D4107080	8.0	.3150	37	79
** D4107081	8.1	.3189	37	79
** D4107082	8.2	.3228	37	79

EDP No.	Diameter		Flute Length	Overall Length
	Metric	Inch		
TiN	D1		L1	L2
** D4107982	8.25	.3248	37	79
** D4107083	8.3	.3268	37	79
** D4107084	8.4	.3307	37	79
** D4107085	8.5	.3346	37	79
** D4107086	8.6	.3386	40	84
** D4107087	8.7	.3425	40	84
** D4107987	8.75	.3445	40	84
** D4107088	8.8	.3465	40	84
** D4107089	8.9	.3504	40	84
** D4107090	9.0	.3543	40	84
** D4107091	9.1	.3583	40	84
** D4107092	9.2	.3622	40	84
** D4107992	9.25	.3642	40	84
** D4107093	9.3	.3661	40	84
** D4107993	9.35	.3681	40	84
** D4107094	9.4	.3701	40	84
** D4107095	9.5	.3740	40	84
** D4107096	9.6	.3780	43	89
** D4107097	9.7	.3819	43	89
** D4107997	9.75	.3839	43	89
** D4107098	9.8	.3858	43	89
** D4107099	9.9	.3898	43	89
** D4107100	10.0	.3937	43	89
** D4107102	10.2	.4016	43	89
** D4107802	10.25	.4035	43	89
** D4107105	10.5	.4134	43	89
** D4107807	10.75	.4232	47	95
** D4107110	11.0	.4330	47	95
** D4107812	11.25	.4429	47	95
** D4107115	11.5	.4527	47	95

▶ The HSSCo5(DL107) is available when you need.
The TiN(D4107), TiCN(D7107) and TiAlN(DQ107) are available on your request.

** 5per package

◎ : Excellent ○ : Good

P			H		M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
◎	◎				○	○	○				○

STRAIGHT SHANK DRILLS

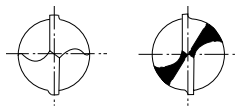
D4107 SERIES

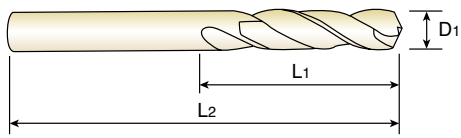
HSSCo8, STRAIGHT SHANK SCREW MACHINE

STUB

- ▶ **Flute Geometry** : Right hand spiral helix
- ▶ **Point Angle** : 135˚
  under 1.6mm : Normal point
  1.6mm & over : Split point
- ▶ **Surface Treatment** : TiN Coating
- ▶ **Application** : Drills suitable for drilling in thin materials with portable drills. Special twist drills for automatic and turret lathes.







DIN 1897 | HSS Co8 | N 33° | h8 | 135° P.205

Unit : mm

EDP No.	Diameter Metric	Diameter Inch	Flute Length	Overall Length
TiN	D1		L1	L2
** D4107817	11.75	.4626	47	95
** D4107118	11.8	.4645	47	95
** D4107120	12.0	.4724	51	102
** D4107822	12.25	.4823	51	102
** D4107125	12.5	.4921	51	102
** D4107827	12.75	.5020	51	102
** D4107130	13.0	.5118	51	102
- D4107832	13.25	.5217	54	107
- D4107135	13.5	.5314	54	107
- D4107837	13.75	.5413	54	107
- D4107138	13.8	.5433	54	107
- D4107140	14.0	.5512	54	107
- D4107842	14.25	.5610	56	111
- D4107145	14.5	.5708	56	111
- D4107847	14.75	.5807	56	111
- D4107150	15.0	.5905	56	111
- D4107852	15.25	.6004	58	115
- D4107155	15.5	.6102	58	115
- D4107857	15.75	.6201	58	115
- D4107160	16.0	.6299	58	115
- D4107862	16.25	.6398	60	119
- D4107165	16.5	.6495	60	119
- D4107867	16.75	.6594	60	119
- D4107170	17.0	.6692	60	119
- D4107872	17.25	.6791	62	123
- D4107175	17.5	.6889	62	123

EDP No.	Diameter Metric	Diameter Inch	Flute Length	Overall Length
TiN	D1		L1	L2
- D4107877	17.75	.6907	62	123
- D4107180	18.0	.7087	62	123
- D4107882	18.25	.7185	64	127
- D4107185	18.5	.7283	64	127
- D4107887	18.75	.7382	64	127
- D4107190	19.0	.7480	64	127
- D4107892	19.25	.7579	66	131
- D4107195	19.5	.7676	66	131
- D4107897	19.75	.7776	66	131
- D4107200	20.0	.7874	66	131
- D4107205	20.5	.8071	68	136
- D4107210	21.0	.8268	68	136
- D4107215	21.5	.8465	70	141
- D4107220	22.0	.8661	70	141
- D4107225	22.5	.8858	72	146
- D4107230	23.0	.9055	72	146
- D4107235	23.5	.9252	72	146
- D4107240	24.0	.9449	75	151
- D4107245	24.5	.9646	75	151
- D4107250	25.0	.9843	75	151
- D4107260	26.0	1.0236	78	156
- D4107270	27.0	1.0630	81	162
- D4107280	28.0	1.1024	81	162
- D4107290	29.0	1.1417	84	168
- D4107300	30.0	1.1811	84	168
- D4107310	31.0	1.2205	87	174

▶ The HSSCo5(DL107) is available when you need.
The TiN(D4107), TiCN(D7107) and TiAlN(DQ107) are available on your request.

** 5per package
- 1per package

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎					○	○	○				○

STRAIGHT SHANK DRILLS

RECOMMENDED CUTTING CONDITIONS

HSS & HSSCo8, STRAIGHT SHANK SCREW MACHINE DRILLS

D1118, D1115, D1119, D2146, D2147, D2148 SERIES

WORK MATERIAL	P									
	CARBON STEELS		CARBON STEELS		CARBON STEELS		ALLOY STEELS		ALLOY STEELS	
HARDNESS			~ HRc23		~ HRc23 ~ 28		HRc23 ~ 34		HRc34 ~ 38	
STRENGTH	~ 570 N/mm²		~ 830 N/mm²		830 ~ 950 N/mm²		830 ~ 1110 N/mm²		1110 ~ 1260 N/mm²	
DIAMETER	N	S	N	S	N	S	N	S	N	S
~ 3/32	3380	.0010	2550	.0010	1900	.0006	2380	.0008	1400	.0006
3/32 ~ 5/32	2700	.0020	2000	.0020	1500	.0010	1880	.0020	1100	.0008
11/64 ~ 1/4	1700	.0025	1280	.0025	960	.0015	1190	.0025	700	.0010
17/64 ~ 23/64	1050	.0051	780	.0051	590	.0030	730	.0051	430	.0015
3/8 ~ 37/64	750	.0059	560	.0060	425	.0030	520	.0070	310	.0020
19/32 ~ 1	440	.0090	330	.0090	255	.0051	300	.0090	180	.0020
1 ~	260	.0110	195	.0110	145	.0070	180	.0070	107	.0030

WORK MATERIAL	P		M		K		N		N	
	TOOL STEELS		STAINLESS STEELS		CAST IRON		ALUMINUM ALLOYS		MAGNESIUM ALLOYS	
HARDNESS			HRc23		~ HRc21					
STRENGTH	~ 270 N/mm²		830 N/mm²		~ 800 N/mm²					
DIAMETER	N	S	N	S	N	S	N	S	N	S
~ 3/32	3180	.0016	2550	.0010	2250	.0010	6400	.0015	8600	.0015
3/32 ~ 5/32	2500	.0020	2000	.0020	2000	.0020	5000	.0025	6800	.0025
11/64 ~ 1/4	1590	.0025	1280	.0025	1280	.0025	3200	.0030	4300	.0030
17/64 ~ 23/64	970	.0051	780	.0051	780	.0051	2000	.0070	2600	.0070
3/8 ~ 37/64	700	.0070	560	.0060	560	.0060	1400	.0078	1900	.0078
19/32 ~ 1	440	.0090	330	.0090	330	.0090	820	.0118	1100	.0118
1 ~	240	.1180	195	.0110	195	.0110	490	.0150	660	.0150

WORK MATERIAL	N		N		S	
	ZINC ALLOYS		PLASTIC		TITANIUM ALLOYS	
HARDNESS						
STRENGTH					410 N/mm²	
DIAMETER	N	S	N	S	N	S
~ 3/32	6400	.0015	3380	.0010	1400	.0008
3/32 ~ 5/32	5000	.0025	2700	.0020	1100	.0010
11/64 ~ 1/4	3200	.0030	1700	.0025	700	.0015
17/64 ~ 23/64	2000	.0070	1050	.0051	430	.0030
3/8 ~ 37/64	1400	.0078	750	.0060	430	.0030
19/32 ~ 1	820	.0118	440	.0090	180	.0051
1 ~	490	.0150	260	.0110	107	.0070

N = R.P.M
S =Inch per Revolution (inch/rev.)

HSSCo5, STRAIGHT SHANK PARABOLIC FLUTE SCREW MACHINE, TiN COATED

DN514, DN516, DN515 SERIES

WORK MATERIAL	P				K			
	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/mm^2		800 ~ 1200 N/mm^2					
DIAMETER	N	S	N	S	N	S	N	S
~ 5/64	2630	.0012	2100	.0010	4200	.0023	1680	.0500
3/32 ~ 7/64	2100	.0015	1680	.0012	3300	.0031	1310	.0023
1/8 ~ 5/32	1680	.0020	1310	.0015	2630	.0039	1050	.0031
11/64 ~ 3/16	1310	.0023	1050	.0019	2100	.0051	840	.0039
13/64 ~ 15/64	1050	.0023	840	.0019	1680	.0051	660	.0039
1/4 ~ 9/32	840	.0031	660	.0023	1310	.0063	530	.0051
19/64 ~ 11/32	660	.0039	530	.0031	1050	.0078	420	.0067
23/64 ~ 7/16	530	.0051	420	.0039	840	.0098	330	.0082
29/64 ~ 9/16	420	.0051	330	.0039	660	.0098	260	.0082
37/64 ~ 45/64	330	.0059	260	.0051	530	.0118	210	.0098
23/32 ~ 7/8	260	.0078	210	.0059	420	.0157	170	.0118
57/64 ~ 1-1/8	210	.0098	170	.0078	330	.0196	130	.0196
1-9/64 ~	170	.0098	130	.0078	260	.0196	110	.0196

N = R.P.M
S =Inch per Revolution (inch/rev.)

STRAIGHT SHANK DRILLS

RECOMMENDED CUTTING CONDITIONS

HSSCo5, TAPER LENGTH STRAIGHT SHANK DRILL, TiCN COATED

DX517 SERIES

WORK MATERIAL	P				K			
	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/mm^2		800 ~ 1200 N/mm^2					
DIAMETER	N	S	N	S	N	S	N	S
~ 5/64	4900	.0023	3400	.0023	8500	.0027	5400	.0027
3/32 ~ 7/64	3000	.0031	2350	.0031	5700	.0043	3500	.0043
1/8 ~ 5/32	2440	.0035	1800	.0035	4300	.0055	2700	.0055
11/64 ~ 15/64	1950	.0039	1400	.0039	3450	.0055	2150	.0055
1/4 ~ 9/32	1400	.0055	1000	.0055	2450	.0078	1550	.0078
19/64 ~ 5/16	1200	.0059	850	.0059	2100	.0086	1350	.0086
21/64 ~ 23/64	1100	.0066	800	.0066	1950	.0094	1200	.0094
3/8 ~ 25/64	950	.0071	660	.0071	1750	.0110	1050	.0110
13/32 ~ 7/16	900	.0078	630	.0078	1600	.0110	960	.0110
29/64 ~ 15/32	800	.0078	575	.0078	1450	.0110	900	.0110
31/64 ~ 1/2	720	.0078	500	.0078	1300	.0110	830	.0110

N = R.P.M
S =Inch per Revolution (inch/rev.)

HSSCo5, TAPER LENGTH STRAIGHT SHANK DRILL

DL517 SERIES

WORK MATERIAL	P				K			
	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/mm^2		800 ~ 1200 N/mm^2					
DIAMETER	N	S	N	S	N	S	N	S
~ 5/64	3990	.0023	2770	.0023	6920	.0027	4400	.0027
3/32 ~ 7/64	2440	.0031	1910	.0031	4640	.0043	2850	.0043
1/8 ~ 5/32	1990	.0035	1470	.0035	3500	.0055	2200	.0055
11/64 ~ 15/64	1590	.0039	1140	.0039	2810	.0055	1750	.0055
1/4 ~ 9/32	1140	.0055	810	.0055	1990	.0078	1260	.0078
19/64 ~ 5/16	980	.0059	690	.0059	1710	.0086	1100	.0086
21/64 ~ 23/64	900	.0066	650	.0066	1590	.0094	980	.0094
3/8 ~ 25/64	770	.0071	540	.0071	1420	.0110	850	.0110
13/32 ~ 7/16	730	.0078	510	.0078	1300	.0110	780	.0110
29/64 ~ 15/32	650	.0078	470	.0078	1180	.0110	730	.0110
31/64 ~ 1/2	590	.0078	410	.0078	1060	.0110	680	.0110

N = R.P.M
S =Inch per Revolution (inch/rev.)

HSSCo8, STRAIGHT SHANK SCREW MACHINE

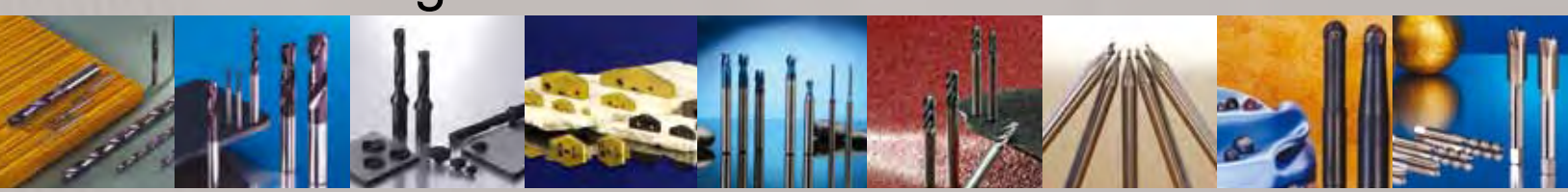
D4107 SERIES

WORK MATERIAL	P												M	
	CARBON STEELS		CARBON STEELS		CARBON STEELS		ALLOY STEELS		ALLOY STEELS		TOOL STEELS		STAINLESS STEELS	
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		~ 270 N/mm²		830 N/mm²	
DIAMETER	N	S	N	S	N	S	N	S	N	S	N	S	N	S
2.5	4225	.0010	3200	.0010	2500	.0006	2980	.0008	1750	.0006	3975	.0017	3200	.0010
3.0	3375	.0020	2500	.0020	2000	.0010	2350	.0020	1375	.0008	3125	.0020	2500	.0020
5.0	2125	.0025	1600	.0025	1280	.0015	1500	.0025	875	.0010	2000	.0025	1600	.0025
8.0	1310	.0051	975	.0051	785	.0030	910	.0051	535	.0015	1210	.0051	975	.0051
11.0	935	.0059	700	.0059	565	.0030	650	.0071	385	.0020	875	.0071	700	.0059
19.0	550	.0091	410	.0091	340	.0051	375	.0091	225	.0020	550	.0091	410	.0091
31.0	325	.0110	244	.0110	193	.0071	225	.0071	134	.0030	300	.0118	244	.0110

WORK MATERIAL	K		N								S	
	CAST IRON		ALUMINUM ALLOYS		MAGNESIUM ALLOYS		ZINC ALLOYS		PLASTIC		TITANIUM ALLOYS	
HARDNESS	~ HRc21											
STRENGTH	~ 800 N/mm²										410 N/mm²	
DIAMETER	N	S	N	S	N	S	N	S	N	S	N	S
2.5	2800	.0010	7950	.0015	10700	.0015	7950	.0015	4225	.0010	1750	.0008
3.0	2500	.0020	6200	.0025	8450	.0025	6200	.0025	3350	.0020	1375	.0010
5.0	1600	.0025	3950	.0030	5350	.0030	3950	.0030	2125	.0025	875	.0015
8.0	975	.0051	2490	.0071	3240	.0071	2490	.0071	1310	.0051	535	.0030
11.0	700	.0059	1740	.0079	2365	.0079	1740	.0079	935	.0059	535	.0030
19.0	410	.0091	1020	.0118	1370	.0118	1020	.0118	550	.0091	225	.0051
31.0	244	.0110	610	.0150	820	.0150	610	.0150	325	.0110	134	.0071

N = R.P.M
S =Inch per Revolution (inch/rev.)

Global Cutting Tool Leader **YG-1**



HSS

Being the best through innovation



AIRCRAFT DRILLS

- 6 and 12 inch Length Drills

AIRCRAFT DRILLS

6 and 12 inch Length Drills

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
INCH					
DL601 DL604		HSSCo5, AIRCRAFT EXTENSION DRILL 135° SPLIT POINT COLORING / Fractional sizes	D5/64	D1/2	**210**
DL602 DL605		HSSCo5, AIRCRAFT EXTENSION DRILL 135° SPLIT POINT COLORING / Letter sizes	A	Z	**211**
DL603 DL606		HSSCo5, AIRCRAFT EXTENSION DRILL 135° SPLIT POINT COLORING / Wire gauge sizes	#43	#1	**212**
D1631 D1634		HSS, AIRCRAFT EXTENSION DRILL 135° SPLIT POINT STEAM OXIDE / Fractional sizes	D5/64	D1/2	**213**
D1632 D1635		HSS, AIRCRAFT EXTENSION DRILL 135° SPLIT POINT STEAM OXIDE / Letter sizes	A	Z	**214**
D1633 D1636		HSS, AIRCRAFT EXTENSION DRILL 135° SPLIT POINT STEAM OXIDE / Wire gauge sizes	#43	#1	**215**
		RECOMMENDED CUTTING CONDITIONS			**216**

◎ : Excellent ○ : Good

P				H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
◎	○				○	○	○	○	○		
◎	○				○	○	○	○	○		
◎	○				○	○	○	○	○		
◎	◎	○			○	○	○	○	○		○
◎	◎	○			○	○	○	○	○		○
◎	◎	○			○	○	○	○	○		○

AIRCRAFT DRILLS

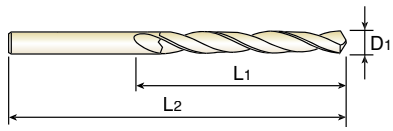
DL601 SERIES
DL604 SERIES

HSSCo5, AIRCRAFT EXTENSION DRILL 135° SPLIT POINT COLORING

▶ **Flute Geometry** : Right hand spiral, 30° helix
▶ **Point Angle** : 135° : Split point
▶ **Application** : Improved chip removal in most materials, especially in deep drilling applications.







HSS Co5 | NAS 907 | N 30° | 135°

P.216

▶ Fractional sizes

Unit : Inch

EDP No.	Diameter Fractional	Diameter Decimal	Flute Length	Overall Length
	D1		L1	L2
* DL601005	5/64	.0781	1	6
* DL601006	3/32	.0938	1-1/4	6
* DL601007	7/64	.1094	1-1/2	6
* DL601008	1/8	.1250	1-5/8	6
* DL601009	9/64	.1406	1-3/4	6
* DL601010	5/32	.1563	2	6
* DL601011	11/64	.1719	2-1/8	6
* DL601012	3/16	.1875	2-5/16	6
* DL601013	13/64	.2031	2-7/16	6
* DL601014	7/32	.2188	2-1/2	6
* DL601015	15/64	.2344	2-5/8	6
** DL601016	1/4	.2500	2-3/4	6
** DL601017	17/64	.2656	2-7/8	6
** DL601018	9/32	.2813	2-15/16	6
** DL601019	19/64	.2969	3-1/16	6
** DL601020	5/16	.3125	3-3/16	6
** DL601021	21/64	.3281	3-5/16	6
** DL601022	11/32	.3438	3-7/16	6
** DL601023	23/64	.3594	3-1/2	6
** DL601024	3/8	.3750	3-5/8	6
** DL601025	25/64	.3906	3-3/4	6
** DL601026	13/32	.4063	3-7/8	6
** DL601027	27/64	.4219	3-15/16	6
** DL601028	7/16	.4375	4-1/16	6

EDP No.	Diameter Fractional	Diameter Decimal	Flute Length	Overall Length
	D1		L1	L2
** DL601029	29/64	.4531	4-3/16	6
** DL601030	15/32	.4688	4-5/16	6
** DL601031	31/64	.4844	4-3/8	6
** DL601032	1/2	.5000	4-1/2	6
** DL604014	7/32	.2188	2-1/2	12
** DL604015	15/64	.2344	2-5/8	12
** DL604016	1/4	.2500	2-3/4	12
** DL604017	17/64	.2656	2-7/8	12
** DL604018	9/32	.2813	2-15/16	12
** DL604019	19/64	.2969	3-1/16	12
** DL604020	5/16	.3125	3-3/16	12
** DL604021	21/64	.3281	3-5/16	12
** DL604022	11/32	.3438	3-7/16	12
** DL604023	23/64	.3594	3-1/2	12
** DL604024	3/8	.3750	3-5/8	12
** DL604025	25/64	.3906	3-3/4	12
** DL604026	13/32	.4063	3-7/8	12
** DL604027	27/64	.4219	3-15/16	12
** DL604028	7/16	.4375	4-1/16	12
** DL604029	29/64	.4531	4-3/16	12
** DL604030	15/32	.4688	4-5/16	12
** DL604031	31/64	.4844	4-3/8	12
** DL604032	1/2	.5000	4-1/2	12

* 10per package
** 5per package

Tolerance Diameter (Inch)	
up to 1/8(.1250)	0 ~ −.0005
over 1/8(.1250) up to 1/4(.2500)	0 ~ −.0007
over 1/4(.2500) up to 1/2(.5000)	0 ~ −.0010

◎ : Excellent ○ : Good

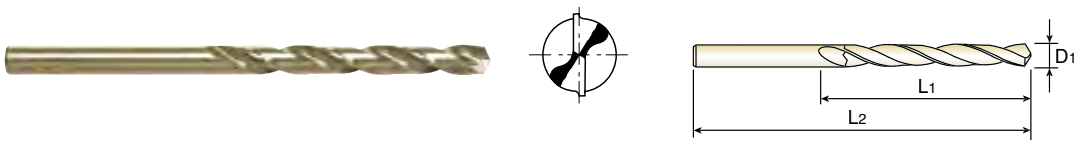
P				H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
◎	○				○	○	○	○	○		

AIRCRAFT DRILLS

DL602 SERIES
DL605 SERIES

HSSCo5, AIRCRAFT EXTENSION DRILL 135° SPLIT POINT COLORING

▶ **Flute Geometry** : Right hand spiral, 30° helix
▶ **Point Angle** : 135° : Split point
▶ **Application** : Improved chip removal in most materials, especially in deep drilling applications.



HSS Co5 | NAS 907 | N 30° | 135° P.216

▶ Letter sizes

Unit : Inch

EDP No.	Diameter Letter	Diameter Decimal	Flute Length	Overall Length
	D1		L1	L2
* DL602101	A	.2340	2-5/8	6
** DL602102	B	,2380	2-3/4	6
** DL602103	C	.2420	2-3/4	6
** DL602104	D	.2460	2-3/4	6
** DL602105	E	.2500	2-3/4	6
** DL602106	F	.2570	2-7/8	6
** DL602107	G	.2610	2-7/8	6
** DL602108	H	.2660	2-7/8	6
** DL602109	I	.2720	2-7/8	6
** DL602110	J	.2770	2-7/8	6
** DL602111	K	.2810	2-15/16	6
** DL602112	L	.2900	2-15/16	6
** DL602113	M	.2950	3-1/16	6
** DL602114	N	.3020	3-1/16	6
** DL602115	O	.3160	3-3/16	6
** DL602116	P	.3230	3-5/16	6
** DL602117	Q	.3320	3-7/16	6
** DL602118	R	.3390	3-7/16	6
** DL602119	S	.3480	3-1/2	6
** DL602120	T	.3580	3-1/2	6
** DL602121	U	.3680	3-5/8	6
** DL602122	V	.3770	3-5/8	6
** DL602123	W	.3860	3-3/4	6
** DL602124	X	.3970	3-3/4	6
** DL602125	Y	.4040	3-7/8	6
** DL602126	Z	.4130	3-7/8	6

EDP No.	Diameter Letter	Diameter Decimal	Flute Length	Overall Length
	D1		L1	L2
* DL605101	A	.2340	2-5/8	12
** DL605102	B	,2380	2-3/4	12
** DL605103	C	.2420	2-3/4	12
** DL605104	D	.2460	2-3/4	12
** DL605105	E	.2500	2-3/4	12
** DL605106	F	.2570	2-7/8	12
** DL605107	G	.2610	2-7/8	12
** DL605108	H	.2660	2-7/8	12
** DL605109	I	.2720	2-7/8	12
** DL605110	J	.2770	2-7/8	12
** DL605111	K	.2810	2-15/16	12
** DL605112	L	.2900	2-15/16	12
** DL605113	M	.2950	3-1/16	12
** DL605114	N	.3020	3-1/16	12
** DL605115	O	.3160	3-3/16	12
** DL605116	P	.3230	3-5/16	12
** DL605117	Q	.3320	3-7/16	12
** DL605118	R	.3390	3-7/16	12
** DL605119	S	.3480	3-1/2	12
** DL605120	T	.3580	3-1/2	12
** DL605121	U	.3680	3-5/8	12
** DL605122	V	.3770	3-5/8	12
** DL605123	W	.3860	3-3/4	12
** DL605124	X	.3970	3-3/4	12
** DL605125	Y	.4040	3-7/8	12
** DL605126	Z	.4130	3-7/8	12

▶ **Tolerance** : See page 210

* 10per package
** 5per package

◎ : Excellent ○ : Good

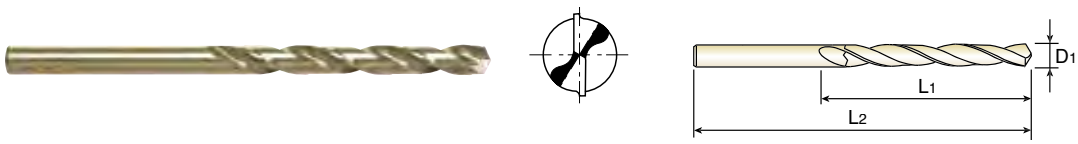
P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	○					○	○	○	○	○		

AIRCRAFT DRILLS

DL603 SERIES
DL606 SERIES

HSSCo5, AIRCRAFT EXTENSION DRILL 135° SPLIT POINT COLORING

▶ **Flute Geometry** : Right hand spiral, parabolic fute
30° helix
▶ **Point Angle** : 135° : Split point
▶ **Application** : Improved chip removal in most materials, especially in deep drilling applications.



HSS Co5 | NAS 907 | N 30° | 135° P.216

▶ Wire gauge sizes

Unit : Inch

EDP No.	Diameter		Flute Length	Overall Length
	Wire gauge	Decimal	D1	
			L1	L2
* DL603256	1	.2280	2-5/8	6
* DL603255	2	.2210	2-5/8	6
* DL603254	3	.2130	2-1/2	6
* DL603253	4	.2090	2-1/2	6
* DL603252	5	.2055	2-1/2	6
* DL603251	6	.2040	2-1/2	6
* DL603250	7	.2010	2-7/16	6
* DL603249	8	.1990	2-7/16	6
* DL603248	9	.1960	2-7/16	6
* DL603247	10	.1935	2-7/16	6
* DL603246	11	.1910	2-5/16	6
* DL603245	12	.1890	2-5/16	6
* DL603244	13	.1850	2-5/16	6
* DL603243	14	.1820	2-3/16	6
* DL603242	15	.1800	2-3/16	6
* DL603241	16	.1770	2-3/16	6
* DL603240	17	.1730	2-3/16	6
* DL603239	18	.1695	2-1/8	6
* DL603238	19	.1660	2-1/8	6
* DL603237	20	.1610	2-1/8	6
* DL603236	21	.1590	2-1/8	6
* DL603235	22	.1570	2	6
* DL603234	23	.1540	2	6

EDP No.	Diameter		Flute Length	Overall Length
	Wire gauge	Decimal	D1	
			L1	L2
* DL603233	24	.1520	2	6
* DL603232	25	.1495	1-7/8	6
* DL603231	26	.1470	1-7/8	6
* DL603230	27	.1440	1-7/8	6
* DL603229	28	.1405	1-3/4	6
* DL603228	29	.1360	1-3/4	6
* DL603227	30	.1280	1-5/8	6
* DL603226	31	.1200	1-5/8	6
* DL603225	32	.1160	1-5/8	6
* DL603224	33	.1130	1-1/2	6
* DL603223	34	.1110	1-1/2	6
* DL603222	35	.1100	1-1/2	6
* DL603221	36	.1065	1-7/16	6
* DL603220	37	.1040	1-7/16	6
* DL603219	38	.1015	1-7/16	6
* DL603218	39	.0995	1-3/8	6
* DL603217	40	.0980	1-3/8	6
* DL603216	41	.0960	1-3/8	6
* DL603215	42	.0935	1-1/4	6
* DL603214	43	.0890	1-1/4	6
* DL606256	1	.2280	2-5/8	12
* DL606254	3	.2130	2-1/2	12

* 10per package

Tolerance Diameter (Inch)	
up to 1/8(.1250)	0 ~ −.0005
over 1/8(.1250) up to 1/4(.2500)	0 ~ −.0007
over 1/4(.2500) up to 1/2(.5000)	0 ~ −.0010

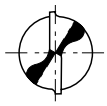
◎ : Excellent ○ : Good

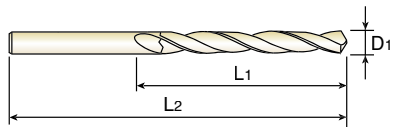
P				H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
◎	○				○	○	○	○	○		

HSS, AIRCRAFT EXTENSION DRILL 135° SPLIT POINT STEAM OXIDE

▶ **Flute Geometry** : Right hand spiral, 30° helix
▶ **Point Angle** : 135° : Split point
▶ **Application** : Improved chip removal in most materials, especially in deep drilling applications.







HSS | NAS 907 | N 30° | 135° | P.216

▶ Fractional sizes

Unit : Inch

EDP No.	Diameter		Flute Length	Overall Length
	Fractional	Decimal		
	D1		L1	L2
* D1631005	5/64	.0781	1	6
* D1631006	3/32	.0938	1-1/4	6
* D1631007	7/64	.1094	1-1/2	6
* D1631008	1/8	.1250	1-5/8	6
* D1631009	9/64	.1406	1-3/4	6
* D1631010	5/32	.1563	2	6
* D1631011	11/64	.1719	2-1/8	6
* D1631012	3/16	.1875	2-5/16	6
* D1631013	13/64	.2031	2-7/16	6
* D1631014	7/32	.2188	2-1/2	6
* D1631015	15/64	.2344	2-5/8	6
** D1631016	1/4	.2500	2-3/4	6
** D1631017	17/64	.2656	2-7/8	6
** D1631018	9/32	.2813	2-15/16	6
** D1631019	19/64	.2969	3-1/16	6
** D1631020	5/16	.3125	3-3/16	6
** D1631021	21/64	.3281	3-5/16	6
** D1631022	11/32	.3438	3-7/16	6
** D1631023	23/64	.3594	3-1/2	6
** D1631024	3/8	.3750	3-5/8	6
** D1631025	25/64	.3906	3-3/4	6
** D1631026	13/32	.4063	3-7/8	6
** D1631027	27/64	.4219	3-15/16	6
** D1631028	7/16	.4375	4-1/16	6
** D1631029	29/64	.4531	4-3/16	6
** D1631030	15/32	.4688	4-5/16	6
** D1631031	31/64	.4844	4-3/8	6
** D1631032	1/2	.5000	4-1/2	6
* D1634014	7/32	.2188	2-1/2	12
* D1634015	15/64	.2344	2-5/8	12
** D1634016	1/4	.2500	2-3/4	12
** D1634017	17/64	.2656	2-7/8	12
** D1634018	9/32	.2813	2-15/16	12
** D1634019	19/64	.2969	3-1/16	12
** D1634020	5/16	.3125	3-3/16	12
** D1634021	21/64	.3281	3-5/16	12
** D1634022	11/32	.3438	3-7/16	12
** D1634023	23/64	.3594	3-1/2	12
** D1634024	3/8	.3750	3-5/8	12
** D1634025	25/64	.3906	3-3/4	12
** D1634026	13/32	.4063	3-7/8	12
** D1634027	27/64	.4219	3-15/16	12
** D1634028	7/16	.4375	4-1/16	12
** D1634029	29/64	.4531	4-3/16	12
** D1634030	15/32	.4688	4-5/16	12
** D1634031	31/64	.4844	4-3/8	12
** D1634032	1/2	.5000	4-1/2	12

* 10per package
** 5per package

Tolerance Diameter (Inch)	
up to 1/8(.1250)	0 ~ −.0005
over 1/8(.1250) up to 1/4(.2500)	0 ~ −.0007
over 1/4(.2500) up to 1/2(.5000)	0 ~ −.0010

◎ : Excellent ○ : Good

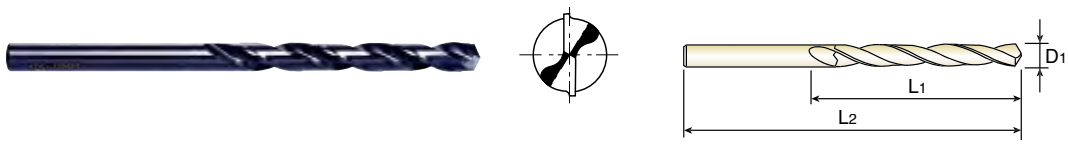
P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○				○	○	○	○	○		○

AIRCRAFT DRILLS

D1632 SERIES
D1635 SERIES

HSS, AIRCRAFT EXTENSION DRILL 135° SPLIT POINT STEAM OXIDE

▶ **Flute Geometry** : Right hand spiral, 30° helix
▶ **Point Angle** : 135° : Split point
▶ **Application** : Improved chip removal in most materials, especially in deep drilling applications.



HSS | NAS 907 | N 30° | 135° | P.216

▶ Letter sizes

Unit : Inch

EDP No.	Diameter Letter	Diameter Decimal	Flute Length	Overall Length
	D1		L1	L2
* D1632101	A	.2340	2-5/8	6
** D1632102	B	,2380	2-3/4	6
** D1632103	C	.2420	2-3/4	6
** D1632104	D	.2460	2-3/4	6
** D1632105	E	.2500	2-3/4	6
** D1632106	F	.2570	2-7/8	6
** D1632107	G	.2610	2-7/8	6
** D1632108	H	.2660	2-7/8	6
** D1632109	I	.2720	2-7/8	6
** D1632110	J	.2770	2-7/8	6
** D1632111	K	.2810	2-15/16	6
** D1632112	L	.2900	2-15/16	6
** D1632113	M	.2950	3-1/16	6
** D1632114	N	.3020	3-1/16	6
** D1632115	O	.3160	3-3/16	6
** D1632116	P	.3230	3-5/16	6
** D1632117	Q	.3320	3-7/16	6
** D1632118	R	.3390	3-7/16	6
** D1632119	S	.3480	3-1/2	6
** D1632120	T	.3580	3-1/2	6
** D1632121	U	.3680	3-5/8	6
** D1632122	V	.3770	3-5/8	6
** D1632123	W	.3860	3-3/4	6
** D1632124	X	.3970	3-3/4	6
** D1632125	Y	.4040	3-7/8	6
** D1632126	Z	.4130	3-7/8	6

EDP No.	Diameter Letter	Diameter Decimal	Flute Length	Overall Length
	D1		L1	L2
* D1635101	A	.2340	2-5/8	12
** D1635102	B	,2380	2-3/4	12
** D1635103	C	.2420	2-3/4	12
** D1635104	D	.2460	2-3/4	12
** D1635105	E	.2500	2-3/4	12
** D1635106	F	.2570	2-7/8	12
** D1635107	G	.2610	2-7/8	12
** D1635108	H	.2660	2-7/8	12
** D1635109	I	.2720	2-7/8	12
** D1635110	J	.2770	2-7/8	12
** D1635111	K	.2810	2-15/16	12
** D1635112	L	.2900	2-15/16	12
** D1635113	M	.2950	3-1/16	12
** D1635114	N	.3020	3-1/16	12
** D1635115	O	.3160	3-3/16	12
** D1635116	P	.3230	3-5/16	12
** D1635117	Q	.3320	3-7/16	12
** D1635118	R	.3390	3-7/16	12
** D1635119	S	.3480	3-1/2	12
** D1635120	T	.3580	3-1/2	12
** D1635121	U	.3680	3-5/8	12
** D1635122	V	.3770	3-5/8	12
** D1635123	W	.3860	3-3/4	12
** D1635124	X	.3970	3-3/4	12
** D1635125	Y	.4040	3-7/8	12
** D1635126	Z	.4130	3-7/8	12

▶ **Tolerance** : See page 210

* 10per package
** 5per package

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○				○	○	○	○	○		○

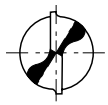
AIRCRAFT DRILLS

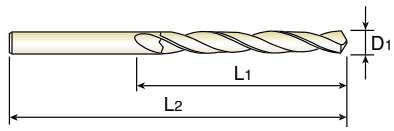
D1633 SERIES
D1636 SERIES

HSS, AIRCRAFT EXTENSION DRILL 135° SPLIT POINT STEAM OXIDE

- **Flute Geometry** : Right hand spiral, 30° helix
- **Point Angle** : 135° : Split point
- **Application** : Improved chip removal in most materials, especially in deep drilling applications.







HSS | NAS 907 | N 30° | 135° | P.216

▶ Wire gauge sizes

Unit : Inch

EDP No.	Diameter		Flute Length	Overall Length
	Wire gauge	Decimal	D1	
			L1	L2
* D1633256	1	.2280	2-5/8	6
* D1633255	2	.2210	2-5/8	6
* D1633254	3	.2130	2-1/2	6
* D1633253	4	.2090	2-1/2	6
* D1633252	5	.2055	2-1/2	6
* D1633251	6	.2040	2-1/2	6
* D1633250	7	.2010	2-7/16	6
* D1633249	8	.1990	2-7/16	6
* D1633248	9	.1960	2-7/16	6
* D1633247	10	.1935	2-7/16	6
* D1633246	11	.1910	2-5/16	6
* D1633245	12	.1890	2-5/16	6
* D1633244	13	.1850	2-5/16	6
* D1633243	14	.1820	2-3/16	6
* D1633242	15	.1800	2-3/16	6
* D1633241	16	.1770	2-3/16	6
* D1633240	17	.1730	2-3/16	6
* D1633239	18	.1695	2-1/8	6
* D1633238	19	.1660	2-1/8	6
* D1633237	20	.1610	2-1/8	6
* D1633236	21	.1590	2-1/8	6
* D1633235	22	.1570	2	6
* D1633234	23	.1540	2	6

EDP No.	Diameter		Flute Length	Overall Length
	Wire gauge	Decimal	D1	
			L1	L2
* D1633233	24	.1520	2	6
* D1633232	25	.1495	1-7/8	6
* D1633231	26	.1470	1-7/8	6
* D1633230	27	.1440	1-7/8	6
* D1633229	28	.1405	1-3/4	6
* D1633228	29	.1360	1-3/4	6
* D1633227	30	.1280	1-5/8	6
* D1633226	31	.1200	1-5/8	6
* D1633225	32	.1160	1-5/8	6
* D1633224	33	.1130	1-1/2	6
* D1633223	34	.1110	1-1/2	6
* D1633222	35	.1100	1-1/2	6
* D1633221	36	.1065	1-7/16	6
* D1633220	37	.1040	1-7/16	6
* D1633219	38	.1015	1-7/16	6
* D1633218	39	.0995	1-3/8	6
* D1633217	40	.0980	1-3/8	6
* D1633216	41	.0960	1-3/8	6
* D1633215	42	.0935	1-1/4	6
* D1633214	43	.0890	1-1/4	6
* D1636256	1	.2280	2-5/8	12
* D1636254	3	.2130	2-1/2	12

* 10per package

Tolerance Diameter (Inch)	
up to 1/8(.1250)	0 ~ −.0005
over 1/8(.1250) up to 1/4(.2500)	0 ~ −.0007
over 1/4(.2500) up to 1/2(.5000)	0 ~ −.0010

◎ : Excellent ○ : Good

P				H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
◎	◎	○			○	○	○	○	○		○

AIRCRAFT DRILLS

RECOMMENDED CUTTING CONDITIONS

HSS & HSSCo5, AIRCRAFT EXTENSION DRILL 135° SPLIT POINT

DL601, DL602, DL603, D1631, D1632, D1633 SERIES

WORK MATERIAL	P									
	CARBON STEELS		CARBON STEELS		CARBON STEELS		ALLOY STEELS		ALLOY STEELS	
HARDNESS			~ HRc23		~ HRc23 ~ 28		HRc23 ~ 34		HRc34 ~ 38	
STRENGTH	~ 570 N/mm²		~ 830 N/mm²		830 ~ 950 N/mm²		830 ~ 1110 N/mm²		1110 ~ 1260 N/mm²	
DIAMETER	N	S	N	S	N	S	N	S	N	S
~ 3/32	3380	.0010	2550	.0010	1900	.0006	2380	.0008	1400	.0006
3/32 ~ 5/32	2700	.0020	2000	.0020	1500	.0010	1880	.0020	1100	.0008
11/64 ~ 1/4	1700	.0025	1280	.0025	960	.0015	1190	.0025	700	.0010
17/64 ~ 23/64	1050	.0051	780	.0051	590	.0030	730	.0051	430	.0015
3/8 ~ 37/64	750	.0059	560	.0060	425	.0030	520	.0070	310	.0020
19/32 ~ 1	440	.0090	330	.0090	255	.0051	300	.0090	180	.0020
1 ~	260	.0110	195	.0110	145	.0070	180	.0070	107	.0030

WORK MATERIAL	P		M		K		N		N	
	TOOL STEELS		STAINLESS STEELS		CAST IRON		ALUMINUM ALLOYS		MAGNESIUM ALLOYS	
HARDNESS			HRc23		~ HRc21					
STRENGTH	~ 270 N/mm²		830 N/mm²		~ 800 N/mm²					
DIAMETER	N	S	N	S	N	S	N	S	N	S
~ 3/32	3180	.0016	2550	.0010	2250	.0010	6400	.0015	8600	.0015
3/32 ~ 5/32	2500	.0020	2000	.0020	2000	.0020	5000	.0025	6800	.0025
11/64 ~ 1/4	1590	.0025	1280	.0025	1280	.0025	3200	.0030	4300	.0030
17/64 ~ 23/64	970	.0051	780	.0051	780	.0051	2000	.0070	2600	.0070
3/8 ~ 37/64	700	.0070	560	.0060	560	.0060	1400	.0078	1900	.0078
19/32 ~ 1	440	.0090	330	.0090	330	.0090	820	.0118	1100	.0118
1 ~	240	.1180	195	.0110	195	.0110	490	.0150	660	.0150

WORK MATERIAL	N		N		S	
	ZINC ALLOYS		PLASTIC		TITANIUM ALLOYS	
HARDNESS						
STRENGTH					410 N/mm²	
DIAMETER	N	S	N	S	N	S
~ 3/32	6400	.0015	3380	.0010	1400	.0008
3/32 ~ 5/32	5000	.0025	2700	.0020	1100	.0010
11/64 ~ 1/4	3200	.0030	1700	.0025	700	.0015
17/64 ~ 23/64	2000	.0070	1050	.0051	430	.0030
3/8 ~ 37/64	1400	.0078	750	.0060	430	.0030
19/32 ~ 1	820	.0118	440	.0090	180	.0051
1 ~	490	.0150	260	.0110	107	.0070

N = R.P.M
S =Inch per Revolution (inch/rev.)

HSS

Being the best through innovation



SILVER & DEMING DRILLS

- 118° Split Point
  3 Flats Black and Gold

HSS SILVER & DEMING DRILLS

118° Split Point

3 Flat Black and Gold

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
INCH					
D1191		HSS(M2), 118° SPLIT POINT 3FLAT BLACK&GOLD SILVER & DEMING DRILLS	D1/2	D1-1/2	**220**
		RECOMMENDED CUTTING CONDITIONS			**221**

◎ : Excellent ○ : Good

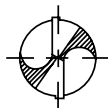
P				H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
◎	◎				○	○	○				

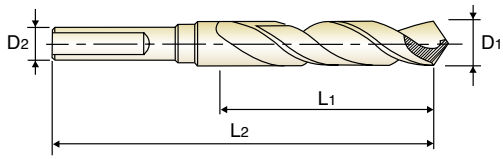
SILVER & DEMING DRILLS

D1191 SERIES

HSS(M2), 118° SPLIT POINT 3FLAT BLACK&GOLD SILVER & DEMING DRILLS







ANSI HSS 30~35° h8 118° P.221

Unit : Inch

EDP No.	Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
D1191032	1/2	1/2	3	6
D1191033	33/64	1/2	3	6
D1191034	17/32	1/2	3	6
D1191035	35/64	1/2	3	6
D1191036	9/16	1/2	3	6
D1191037	37/64	1/2	3	6
D1191038	19/32	1/2	3	6
D1191039	39/64	1/2	3	6
D1191040	5/8	1/2	3	6
D1191041	41/64	1/2	3	6
D1191042	21/32	1/2	3	6
D1191043	43/64	1/2	3	6
D1191044	11/16	1/2	3	6
D1191045	45/64	1/2	3	6
D1191046	23/32	1/2	3	6
D1191047	47/64	1/2	3	6
D1191048	3/4	1/2	3	6
D1191049	49/64	1/2	3	6
D1191050	25/32	1/2	3	6
D1191051	51/64	1/2	3	6
D1191052	13/16	1/2	3	6
D1191053	53/64	1/2	3	6
D1191054	27/32	1/2	3	6
D1191055	55/64	1/2	3	6
D1191056	7/8	1/2	3	6
D1191057	57/64	1/2	3	6
D1191058	29/32	1/2	3	6
D1191059	59/64	1/2	3	6
D1191060	15/16	1/2	3	6

EDP No.	Diameter D1	Shank Diameter D2	Flute Length L1	Overall Length L2
D1191061	61/64	1/2	3	6
D1191062	31/32	1/2	3	6
D1191063	63/64	1/2	3	6
D1191064	1	1/2	3	6
D1191101	1-1/64	1/2	3	6
D1191102	1-1/32	1/2	3	6
D1191103	1-3/64	1/2	3	6
D1191104	1-1/16	1/2	3	6
D1191105	1-5/64	1/2	3	6
D1191106	1-3/32	1/2	3	6
D1191107	1-7/64	1/2	3	6
D1191108	1-1/8	1/2	3	6
D1191109	1-9/64	1/2	3	6
D1191110	1-5/32	1/2	3	6
D1191111	1-11/64	1/2	3	6
D1191112	1-3/16	1/2	3	6
D1191113	1-13/64	1/2	3	6
D1191114	1-7/32	1/2	3	6
D1191115	1-15/64	1/2	3	6
D1191116	1-1/4	1/2	3	6
D1191118	1-9/32	1/2	3	6
D1191120	1-5/16	1/2	3	6
D1191122	1-11/32	1/2	3	6
D1191124	1-3/8	1/2	3	6
D1191126	1-13/32	1/2	3	6
D1191128	1-7/16	1/2	3	6
D1191130	1-15/32	1/2	3	6
D1191132	1-1/2	1/2	3	6

* Individually packaged

◎ : Excellent ○ : Good

P					H	M	K	N					S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP		Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~									
◎	◎					○	○	○					

HSS(M2), 118° SPLIT POINT 3FLAT BLACK&GOLD SILVER & DEMING DRILLS

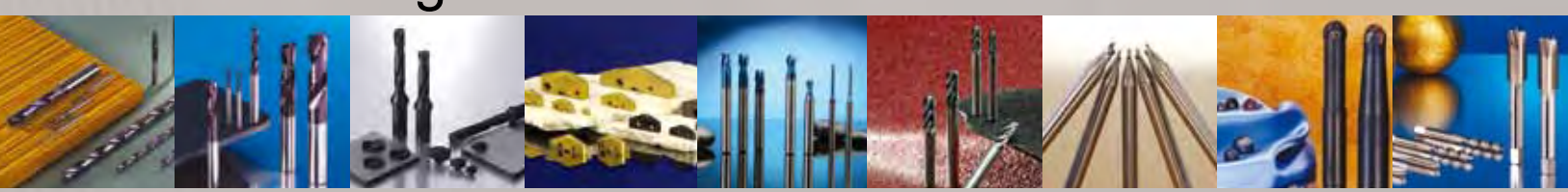
D1191 SERIES

WORK MATERIAL	P											
	CARBON STEELS		CARBON STEELS		CARBON STEELS		ALLOY STEELS		ALLOY STEELS		TOOL STEELS	
HARDNESS			~ HRc23		~ HRc23 ~ 28		HRc23 ~ 34		HRc34 ~ 38			
STRENGTH	~ 570 N/mm²		~ 830 N/mm²		830 ~ 950 N/mm²		830 ~ 1110 N/mm²		1110 ~ 1260 N/mm²		~ 270 N/mm²	
DIAMETER	N	S	N	S	N	S	N	S	N	S	N	S
1/2	645	.0067	480	.0067	370	.0035	440	.0067	265	.0020	645	.0067
3/4	440	.0091	330	.0091	255	.0051	300	.0091	180	.0020	440	.0091
1	325	.0110	245	.0110	185	.0063	220	.0110	133	.0030	325	.0110
1-9/32	260	.0110	195	.0110	145	.0071	180	.0110	107	.0030	240	.0118
1-1/2	220	.0130	165	.0130	120	.0076	150	.0130	90	.0030	198	.0121

WORK MATERIAL	M		N									
	STAINLESS STEELS		CAST IRON		ALUMINUM ALLOYS		MAGNESIUM ALLOYS		ZINC ALLOYS		PLASTIC	
HARDNESS	HRc23		~ HRc21									
STRENGTH	830 N/mm²		~ 800 N/mm²									
DIAMETER	N	S	N	S	N	S	N	S	N	S	N	S
1/2	480	.0067	480	.0067	1200	.0100	1600	.0100	1200	.0100	645	.0067
3/4	330	.0091	330	.0091	820	.0118	1100	.0118	820	.0118	440	.0091
1	245	.0110	245	.0110	605	.0146	810	.0150	605	.0146	325	.0110
1-9/32	195	.0110	195	.0110	490	.0150	660	.0150	490	.0150	260	.0110
1-1/2	165	.0130	165	.0130	410	.0172	550	.0180	410	.0172	220	.0130

N = R.P.M
S = Inch per Revolution(inch/rev.)

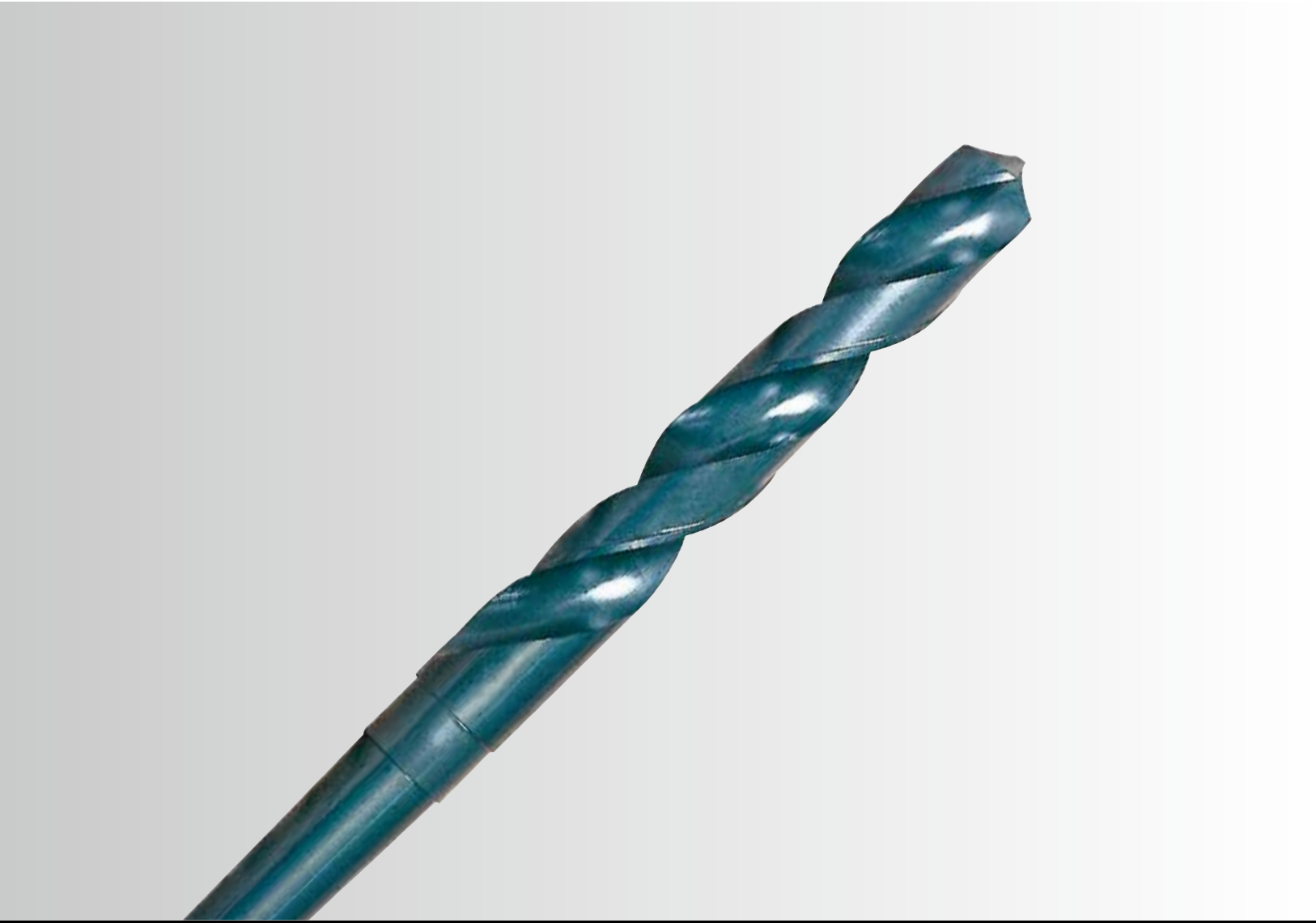
Global Cutting Tool Leader **YG-1**



HSS

YG

Being the best through innovation



MORSE TAPER SHANK DRILLS

- General Purpose
  Standard Length

HSS MORSE TAPER SHANK DRILLS

General Purpose

Standard Length

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
INCH					
D1211		HSS(M2), MORSE TAPER SHANK TWIST DRILL	D1/2	D2-1/2	**226**
		RECOMMENDED CUTTING CONDITIONS			**228**

◎ : Excellent ○ : Good

P				H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
◎	◎	○			○	○	○				

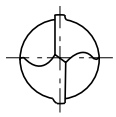
MORSE TAPER SHANK DRILLS

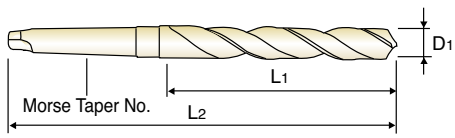
D1211 SERIES

HSS(M2) MORSE TAPER SHANK TWIST DRILL

▶ **Surface treatment** :Steam Tempered(Black Oxide Finish)
▶ **Application** : Drilling steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron, graphite.







ANSI HSS 30~35° 2~5 h8 118° P.228

Unit : Inch

EDP No.	Diameter D1	Flute Length L1	Overall Length L2	Morse Taper No.
D1211032	1/2	4-3/8	8-1/4	2
D1211033	33/64	4-5/8	8-1/2	2
D1211034	17/32	4-5/8	8-1/2	2
D1211035	35/64	4-7/8	8-3/4	2
D1211036	9/16	4-7/8	8-3/4	2
D1211037	37/64	4-7/8	8-3/4	2
D1211038	19/32	4-7/8	8-3/4	2
D1211039	39/64	4-7/8	8-3/4	2
D1211040	5/8	4-7/8	8-3/4	2
D1211041	41/64	5-1/8	9	2
D1211042	21/32	5-1/8	9	2
D1211043	43/64	5-3/8	9-1/4	2
D1211044	11/16	5-3/8	9-1/4	2
D1211045	45/64	5-5/8	9-1/2	2
D1211046	23/32	5-5/8	9-1/2	2
D1211047	47/64	5-7/8	9-3/4	2
D1211048	3/4	5-7/8	9-3/4	2
D1211049	49/64	6	9-7/8	2
D1211050	25/32	6	9-7/8	2
D1211051	51/64	6-1/8	10-3/4	3
D1211052	13/16	6-1/8	10-3/4	3
D1211053	53/64	6-1/8	10-3/4	3
D1211054	27/32	6-1/8	10-3/4	3
D1211055	55/64	6-1/8	10-3/4	3
D1211056	7/8	6-1/8	10-3/4	3
D1211057	57/64	6-1/8	10-3/4	3
D1211058	29/32	6-1/8	10-3/4	3
D1211059	59/64	6-1/8	10-3/4	3
D1211060	15/16	6-1/8	10-3/4	3

EDP No.	Diameter D1	Flute Length L1	Overall Length L2	Morse Taper No.
D1211061	61/64	6-3/8	11	3
D1211062	31/32	6-3/8	11	3
D1211063	63/64	6-3/8	11	3
D1211100	1	6-3/8	11	3
D1211101	1-1/64	6-1/2	11-1/8	3
D1211102	1-1/32	6-1/2	11-1/8	3
D1211103	1-3/64	6-5/8	11-1/4	3
D1211104	1-1/16	6-5/8	11-1/4	3
D1211105	1-5/64	6-7/8	12-1/2	4
D1211106	1-3/32	6-7/8	12-1/2	4
D1211107	1-7/64	7-1/8	12-3/4	4
D1211108	1-1/8	7-1/8	12-3/4	4
D1211109	1-9/64	7-1/4	12-7/8	4
D1211110	1-5/32	7-1/4	12-7/8	4
D1211111	1-11/64	7-3/8	13	4
D1211112	1-3/16	7-3/8	13	4
D1211113	1-13/64	7-1/2	13-1/8	4
D1211114	1-7/32	7-1/2	13-1/8	4
D1211115	1-15/64	7-7/8	13-1/2	4
D1211116	1-1/4	7-7/8	13-1/2	4
D1211117	1-17/64	8-1/2	14-1/8	4
D1211118	1-9/32	8-1/2	14-1/8	4
D1211119	1-19/64	8-5/8	14-1/4	4
D1211120	1-5/16	8-5/8	14-1/4	4
D1211121	1-21/64	8-3/4	14-3/8	4
D1211122	1-11/32	8-3/4	14-3/8	4
D1211123	1-23/64	8-7/8	14-1/2	4
D1211124	1-3/8	8-7/8	14-1/2	4
D1211126	1-13/32	9	14-5/8	4

◎ : Excellent ○ : Good

P			H		M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
◎	◎	○			○	○	○				

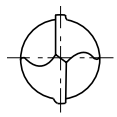
MORSE TAPER SHANK DRILLS

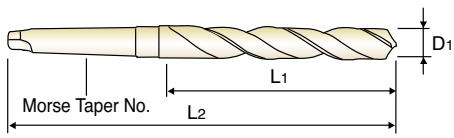
D1211 SERIES

HSS(M2) MORSE TAPER SHANK TWIST DRILL

▶ **Surface treatment** :Steam Tempered(Black Oxide Finish)
▶ **Application** : Drilling steels, cast steels alloyed and non-alloyed, grey cast iron, malleable cast iron, graphite.







ANSI HSS 30~35° 2~5 h8 118° P.228

Unit : Inch

EDP No.	Diameter D1	Flute Length L1	Overall Length L2	Morse Taper No.
D1211128	1-7/16	9-1/8	14-3/4	4
D1211130	1-15/32	9-1/4	14-7/8	4
D1211132	1-1/2	9-3/8	15	4
D1211133	1-33/64	9-3/8	16-3/8	4
D1211134	1-17/32	9-3/8	16-3/8	5
D1211136	1-9/16	9-5/8	16-5/8	5
D1211138	1-19/32	9-7/8	16-7/8	5
D1211140	1-5/8	10	17	5
D1211142	1-21/32	10-1/8	17-1/8	5
D1211144	1-11/16	10-1/8	17-1/8	5
D1211146	1-23/32	10-1/8	17-1/8	5
D1211148	1-3/4	10-1/8	17-1/8	5
D1211152	1-13/16	10-1/8	17-1/8	5
D1211154	1-27/32	10-1/8	17-1/8	5
D1211156	1-7/8	10-3/8	17-3/8	5

EDP No.	Diameter D1	Flute Length L1	Overall Length L2	Morse Taper No.
D1211160	1-15/16	10-3/8	17-3/8	5
D1211162	1-31/32	10-3/8	17-3/8	5
D1211200	2	10-3/8	17-3/8	5
D1211202	2-1/32	10-3/8	17-3/8	5
D1211204	2-1/16	10-1/4	17-3/8	5
D1211206	2-3/32	10-1/4	17-3/8	5
D1211208	2-1/8	10-1/4	17-3/8	5
D1211210	2-5/32	10-1/4	17-3/8	5
D1211212	2-3/16	10-1/4	17-3/8	5
D1211214	2-7/32	10-1/8	17-3/8	5
D1211216	2-1/4	10-1/8	17-3/8	5
D1211220	2-5/16	10-1/8	17-3/8	5
D1211224	2-3/8	10-1/8	17-3/8	5
D1211228	2-7/16	11-1/4	18-3/4	5
D1211232	2-1/2	11-1/4	18-3/4	5

◎ : Excellent ○ : Good

P					H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels			Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~								
◎	◎	○				○	○	○				

MORSE TAPER SHANK DRILLS

RECOMMENDED CUTTING CONDITIONS

HSS(M2) MORSE TAPER SHANK TWIST DRILL

D1211 SERIES

WORK MATERIAL	P											
	CARBON STEELS		CARBON STEELS		CARBON STEELS		ALLOY STEELS		ALLOY STEELS		TOOL STEELS	
HARDNESS			~ HRc23		~ HRc23 ~ 28		HRc23 ~ 34		HRc34 ~ 38			
STRENGTH	~ 570 N/mm²		~ 830 N/mm²		830 ~ 950 N/mm²		830 ~ 1110 N/mm²		1110 ~ 1260 N/mm²		~ 270 N/mm²	
DIAMETER	N	S	N	S	N	S	N	S	N	S	N	S
1/2	645	.0067	480	.0067	370	.0035	440	.0067	265	.0020	645	.0067
3/4	440	.0091	330	.0091	255	.0051	300	.0091	180	.0020	440	.0091
1	325	.0110	245	.0110	185	.0063	220	.0110	133	.0030	325	.0110
1-17/64	260	.0110	195	.0110	145	.0071	180	.0110	107	.0030	240	.0118
1-1/2	220	.0130	165	.0130	120	.0076	150	.0130	90	.0030	198	.0121
1-31/32	165	.0130	125	.0130	93	.0079	115	.0130	68	.0030	150	.0169
2-3/8	140	.0157	105	.0157	78	.0091	95	.0157	57	.0039	125	.0188

WORK MATERIAL	M		K		N							
	STAINLESS STEELS		CAST IRON		ALUMINUM ALLOYS		MAGNESIUM ALLOYS		ZINC ALLOYS		PLASTIC	
HARDNESS	HRc23		~ HRc21									
STRENGTH	830 N/mm²		~ 800 N/mm²									
DIAMETER	N	S	N	S	N	S	N	S	N	S	N	S
1/2	480	.0067	480	.0067	1200	.0100	1600	.0100	1200	.0100	645	.0067
3/4	330	.0091	330	.0091	820	.0118	1100	.0118	820	.0118	440	.0091
1	245	.0110	245	.0110	605	.0146	810	.0150	605	.0146	325	.0110
1-17/64	195	.0110	195	.0110	490	.0150	660	.0150	490	.0150	260	.0110
1-1/2	165	.0130	165	.0130	410	.0172	550	.0180	410	.0172	220	.0130
1-31/32	125	.0130	125	.0130	310	.0181	415	.0181	310	.0181	165	.0130
2-3/8	105	.0157	105	.0157	260	.0196	345	.0196	260	.0196	140	.0157

N = R.P.M
S = Inch per Revolution (inch/rev.)

HSS

YG

Being the best through innovation





NC SPOTTING DRILLS

- HSS(8% COBALT)
  Centering and Chamfering of Holes

HSS(8% Cobalt) NC SPOTTING DRILLS
Centering and Chamfering of Holes

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
INCH					
D2N90		HSSCo8, NC SPOTTING DRILLS 90°	D1/8	D1	**232**
		HSSCo8, NC SPOTTING DRILLS 120°	D1/8	D1	**232**
		RECOMMENDED CUTTING CONDITIONS			**233**

◎ : Excellent ○ : Good

P				H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
◎	◎				○		○		○		
◎	◎				○		○		○		

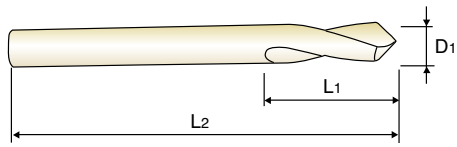
NC SPOTTING DRILLS

D2N90 SERIES

HSSCo8, NC SPOTTING DRILLS

▶ **Application** : For more precise centering work on NC/CNC machine. A larger diameter in respect to the subsequent drilling tool permit to obtain the centering and chamfering simultaneously.





NC | HSS Co8 | h6 | h6 | 90° | 120° P.233

NC Spotting drills 90°

Unit : Inch

EDP No.	Diameter	Flute Length	Overall Length
	D1	L1	L2
0081L	1/8	.472	1.93
0121L	3/16	.590	2.44
0161L	1/4	.669	2.76
0201L	5/16	.984	3.11
0241L	3/8	.827	3.50
0321L	1/2	.984	4.02
0401L	5/8	1.575	4.53
0481L	3/4	1.968	5.16
0641L	1	1.968	6.14

NC Spotting drills 120°

EDP No.	Diameter	Flute Length	Overall Length
	D1	L1	L2
2081L	1/8	.472	1.93
2121L	3/16	.590	2.44
2161L	1/4	.669	2.76
2201L	5/16	.984	3.11
2241L	3/8	.827	3.50
2321L	1/2	.984	4.02
2401L	5/8	1.575	4.53
2481L	3/4	1.968	5.16
2641L	1	1.968	6.14

* Individually packaged

◎ : Excellent ○ : Good

P			H		M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
◎	◎				○		○		○		

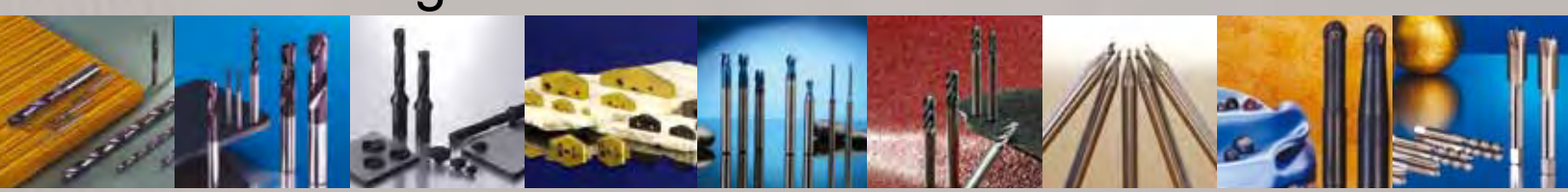
HSSCo8, NC SPOTTING DRILLS

D2N90 SERIES

WORK MATERIAL	P						M		N	
	CARBON STEELS		ALLOY STEELS		ALLOY STEELS, TOOL STEELS, HARDENED STEELS		STAINLESS STEELS		ALUMINUM, ALUMINUM ALLOYS	
DIAMETER	N	S	N	S	N	S	N	S	N	S
1/8 ~ 5/32	2460	.002	2110	.002	1080	.002	940	.002	7040	.005
11/64 ~ 3/16	1850	.002	1580	.002	800	.002	700	.002	5280	.006
13/64 ~ 15/64	1510	.003	1300	.003	670	.003	580	.003	4400	.006
1/4 ~ 5/16	1170	.003	1030	.003	540	.003	460	.003	3520	.007
21/64 ~ 25/64	880	.004	790	.004	400	.004	350	.004	2640	.008
13/32 ~ 15/32	700	.004	630	.004	320	.004	290	.004	2110	.009
31/64 ~ 5/8	590	.005	530	.005	260	.005	240	.005	1760	.011
41/64 ~ 47/64	460	.007	400	.007	200	.007	180	.007	1320	.012
3/4 ~ 1	350	.009	320	.009	150	.009	140	.009	1060	.017

N = R.P.M
S = Inch per Revolution (inch/rev.)

Global Cutting Tool Leader **YG-1**



HSS

Being the best through innovation



COMBINATION DRILL & COUNTER SINK / CENTER DRILL

- Regular and Long Length

HSS COMBINATION DRILL & COUNTER SINK / CENTER DRILL
Regular and Long Length

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
INCH					
D1C90		HSS(M2), COMBINATION DRILL & COUNTER SINK / CENTER DRILL	D3/64	D7/32	**238**
		RECOMMENDED CUTTING CONDITIONS			**238**

◎ : Excellent ○ : Good

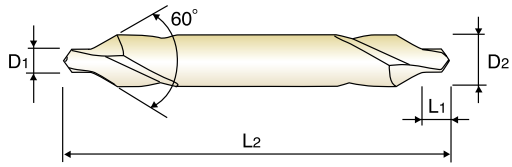
P				H	M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
◎	◎				○	○	○	○	○		○

COMBINATION DRILL & COUNTER SINK

D1C90 SERIES

HSS(M2), COMBINATION DRILL & COUNTER SINK / CENTER DRILL





HSS | h8 | k12 | 120°

P.238

60°

EDP No.	Size	Diameter	Shank Diameter	Drill Length	Overall Length
		D1	D2	L1	L2
* D1C90079	1	3/64	1/8	1/16	1-1/2
* D1C90080	2	1/16	3/16	5/64	1-3/4
* D1C90081	3	3/32	1/4	1/8	2
* D1C90082	4	1/8	5/16	5/32	2-1/4
* D1C90083	5	3/16	7/16	1/4	2-1/2
★ D1C90084	6	7/32	1/2	7/32	3

* 10per package
★ Individually package

60°

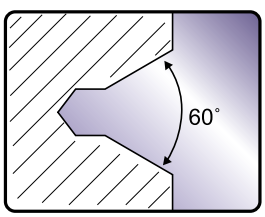
EDP No.	Size	Diameter	Shank Diameter	Drill Length	Overall Length
		D1	D2	L1	L2
* D1C90141	1	3/64	1/8	3/64	1-1/4
* D1C90142	2	5/64	3/16	5/64	1-7/8
* D1C90143	3	7/64	1/4	7/64	2
* D1C90144	4	1/8	5/16	1/8	2-1/8
* D1C90145	5	3/16	7/16	3/16	2-3/4

* 10per package

LONG LENGTH (60°)

Unit : Inch

EDP No.	Size	Diameter	Shank Diameter	Drill Length	Overall Length
		D1	D2	L1	L2
D1C90085	1	3/64	1/8	3/64	3
D1C90086	1	3/64	1/8	3/64	4
D1C90087	1	3/64	1/8	3/64	5
D1C90088	1	3/64	1/8	3/64	6
D1C90089	2	5/64	3/16	5/64	3
D1C90090	2	5/64	3/16	5/64	4
D1C90091	2	5/64	3/16	5/64	5
D1C90092	2	5/64	3/16	5/64	6
D1C90093	3	7/64	1/4	7/64	4
D1C90094	3	7/64	1/4	7/64	5
D1C90095	3	7/64	1/4	7/64	6
D1C90096	4	1/8	5/16	1/8	4
D1C90097	4	1/8	5/16	1/8	5
D1C90098	4	1/8	5/16	1/8	6
D1C90099	5	3/16	7/16	3/16	4
D1C90100	5	3/16	7/16	3/16	5
D1C90101	5	3/16	7/16	3/16	6
D1C90102	6	7/32	1/2	7/32	4
D1C90103	6	7/32	1/2	7/32	5
D1C90104	6	7/32	1/2	7/32	6



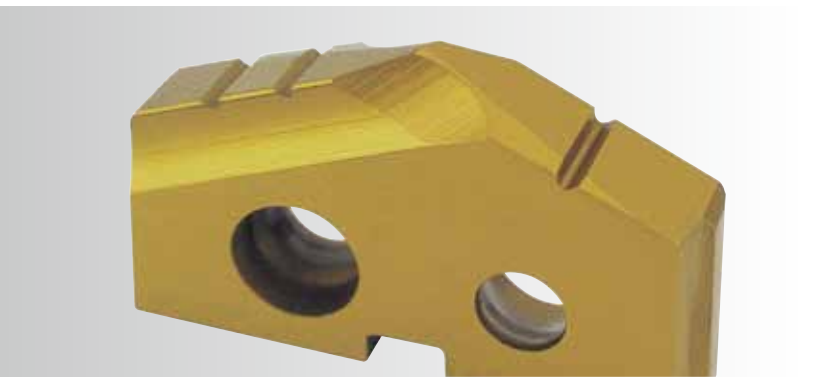
◎ : Excellent ○ : Good

P			H		M	K	N				S
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Stainless Steels	Cast Iron	Aluminum	Copper	Bronze	CFRP	Titanium
~HB225	HB225~325	HRc30~45	HRc45~55	HRc55~							
◎	◎				○	○	○	○	○		○

INSERTS & HOLDERS

Being the best through innovation



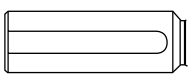
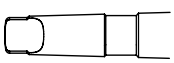
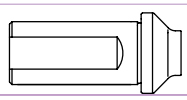





SPADE DRILLS

- **Carbide for Long Tool Life, and HSS-PM for General Machines and Large Diameters Higher Productivity than Other Drilling Tools**

SPADE DRILL INSERTS & HOLDER

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
SERIES 1~8		SPADE DRILL INSERTS - HSS M4	.7031 (#1)	4.5000 (#8)	242
SERIES Y,Z,0,1~8		SPADE DRILL INSERTS - SUPER HSS T15	.3740 (#Y)	4.5000 (#8)	246
SERIES Y,Z,0,1,2		SPADE DRILL INSERTS - PREMIUM HSS M48	.3740 (#Y)	1.3780 (#2)	253
SERIES Y,Z,0,1~3		CARBIDE BLADE INSERTS-C2(K20)	.3740 (#Y)	1.8750 (#3)	256
SERIES Y,Z,0,1~3		CARBIDE BLADE INSERTS-C5(P40)	.3740 (#Y)	1.8750 (#3)	256
SERIES Y,Z,0,1~2		CARBIDE BLADE INSERTS-C3(K10)	.3740 (#Y)	1.3780 (#2)	256
SERIES Y,Z,0,1~8		SM-POINT SPADE DRILL INSERTS - SUPER COBALT(T15)	.3740 (#Y)	4.5000 (#8)	262
SERIES Y,Z,0,1~3		SM-POINT SPADE DRILL INSERTS - CARBIDE(C5)	.3740 (#Y)	1.8750 (#3)	266
SERIES Y,Z,0,1,2		SPADE DRILL FLAT BOTTOM INSERTS - SUPER COBALT T15	.3750 (#Y)	1.3750 (#2)	268
STRAIGHT SHANK		SPADE DRILL HOLDER - STRAIGHT SHANK			269
TAPER SHANK		SPADE DRILL HOLDER - TAPER SHANK			273
FLANGED SHANK		SPADE DRILL HOLDER - FLANGED SHANK			275
		HOLDER ACCESSORIES			277
		RECOMMENDED CUTTING CONDITIONS			278

◎ : Excellent ○ : Good

P											M	K		N	
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

- General purpose insert for most materials
- Not recommended for tool steels and high temp alloys
- High toughness for loose or manual machines

POINT ANGLE **- under 2-1/2 : 132 degree**
- over 2-1/2 : 144 degree



cutting conditions : p.278

Series Min. to Max. (inch/mm)	Diameter			Thick	EDP No.		
	Fractional (inch)	Metric (mm)	Decimal (inch)	Metric (inch/mm)	HSS (M4) TiN	HSS (M4) TiAlN	HSS (M4) Hardslick
1 .690 (17.53) to .960 (24.38)	45/64	17.86	.7031	5/32 (4.0)	S01101	S03101	S04101
		18.00	.7087		S01102	S03102	S04102
	23/32	18.26	.7188		S01103	S03103	S04103
		18.50	.7283		S01104	S03104	S04104
	47/64	18.65	.7344		S01105	S03105	S04105
		19.00	.7480		S01106	S03106	S04106
	3/4	19.05	.7500		S01107	S03107	S04107
	49/64	19.45	.7656		S01108	S03108	S04108
		19.50	.7677		S01109	S03109	S04109
	25/32	19.84	.7813		S01110	S03110	S04110
		20.00	.7874		S01111	S03111	S04111
	51/64	20.24	.7969		S01160	S03160	S04160
		20.50	.8071		S01112	S03112	S04112
	13/16	20.64	.8125		S01113	S03113	S04113
		21.00	.8268		S01114	S03114	S04114
	27/32	21.43	.8438		S01115	S03115	S04115
	55/64	21.83	.8594		S01161	S03161	S04161
		22.00	.8661		S01116	S03116	S04116
	7/8	22.23	.8750		S01117	S03117	S04117
	57/64	22.62	.8906		S01162	S03162	S04162
		23.00	.9055		S01118	S03118	S04118
	29/32	23.02	.9063		S01119	S03119	S04119
	59/64	23.42	.9219		S01120	S03120	S04120
	15/16	23.81	.9375		S01121	S03121	S04121
		24.00	.9449		S01122	S03122	S04122
2 .961 (24.41) to 1.380 (35.05)	31/32	24.61	.9688	3/16 (4.8)	S01201	S03201	S04201
	63/64	25.00	.9843		S01202	S03202	S04202
	1	25.40	1.0000		S01203	S03203	S04203
	1-1/64	25.80	1.0156		S01204	S03204	S04204
		26.00	1.0236		S01205	S03205	S04205
	1-1/32	26.19	1.0313		S01206	S03206	S04206
	1-3/64	26.59	1.0469		S01260	S03260	S04260
	1-1/16	26.99	1.0625		S01207	S03207	S04207
		27.00	1.0630		S01208	S03208	S04208

◎ : Excellent ○ : Good

P											M	K		N	
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

- General purpose insert for most materials
- Not recommended for tool steels and high temp alloys
- High toughness for loose or manual machines

POINT ANGLE **- under 2-1/2 : 132 degree**
- over 2-1/2 : 144 degree



cutting conditions : p.278

Series Min. to Max. (inch/mm)	Diameter			Thick	EDP No.		
					HSS (M4)		
	Fractional (inch)	Metric (mm)	Decimal (inch)	Metric (inch/mm)	TiN	TiAlN	Hardslick
2 .961 (24.41) to 1.380 (35.05)	1-3/32	27.78	1.0938	3/16 (4.8)	SO1209	SO3209	SO4209
		28.00	1.1024		SO1210	SO3210	SO4210
	1-7/64	28.18	1.1094		SO1261	SO3261	SO4261
	1-1/8	28.58	1.1250		SO1211	SO3211	SO4211
		29.00	1.1417		SO1212	SO3212	SO4212
	1-5/32	29.37	1.1563		SO1213	SO3213	SO4213
		30.00	1.1811		SO1214	SO3214	SO4214
	1-3/16	30.16	1.1875		SO1215	SO3215	SO4215
	1-7/32	30.96	1.2188		SO1216	SO3216	SO4216
		31.00	1.2205		SO1217	SO3217	SO4217
	1-1/4	31.75	1.2500		SO1218	SO3218	SO4218
		32.00	1.2598		SO1219	SO3219	SO4219
	1-9/32	32.54	1.2813		SO1220	SO3220	SO4220
		33.00	1.2992		SO1221	SO3221	SO4221
	1-5/16	33.34	1.3125		SO1222	SO3222	SO4222
		34.00	1.3386		SO1223	SO3223	SO4223
	1-11/32	34.13	1.3438		SO1224	SO3224	SO4224
	1-3/8	34.93	1.3750		SO1225	SO3225	SO4225
		35.00	1.3780		SO1226	SO3226	SO4226
3 1.353 (34.37) to 1.882 (47.80)	1-13/32	35.72	1.4063	1/4 (6.4)	SO1301	SO3301	SO4301
		36.00	1.4173		SO1302	SO3302	SO4302
	1-7/16	36.51	1.4375		SO1303	SO3303	SO4303
		37.00	1.4567		SO1304	SO3304	SO4304
	1-15/32	37.31	1.4688		SO1305	SO3305	SO4305
		38.00	1.4961		SO1306	SO3306	SO4306
	1-1/2	38.10	1.5000		SO1307	SO3307	SO4307
	1-17/32	38.89	1.5313		SO1308	SO3308	SO4308
		39.00	1.5354		SO1309	SO3309	SO4309
	1-9/16	39.69	1.5625		SO1310	SO3310	SO4310
		40.00	1.5748		SO1311	SO3311	SO4311
	1-19/32	40.48	1.5938		SO1312	SO3312	SO4312
		41.00	1.6142		SO1313	SO3313	SO4313
	1-5/8	41.28	1.6250		SO1314	SO3314	SO4314
		42.00	1.6535		SO1315	SO3315	SO4315

◎ : Excellent ○ : Good

P											M	K		N	
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

- General purpose insert for most materials
- Not recommended for tool steels and high temp alloys
- High toughness for loose or manual machines

POINT ANGLE **- under 2-1/2 : 132 degree**
- over 2-1/2 : 144 degree



cutting conditions : p.278

Series Min. to Max. (inch/mm)	Diameter			Thick	EDP No.		
	Fractional (inch)	Metric (mm)	Decimal (inch)	Metric (inch/mm)	HSS (M4) TiN	HSS (M4) TiAlN	HSS (M4) Hardslick
3 1.353 (34.37) to 1.882 (47.80)	1-21/32	42.07	1.6563	1/4 (6.4)	SO1316	SO3316	SO4316
	1-11/16	42.86	1.6875		SO1317	SO3317	SO4317
		43.00	1.6929		SO1318	SO3318	SO4318
	1-23/32	43.66	1.7188		SO1319	SO3319	SO4319
		44.00	1.7323		SO1320	SO3320	SO4320
	1-3/4	44.45	1.7500		SO1321	SO3321	SO4321
		45.00	1.7717		SO1322	SO3322	SO4322
	1-25/32	45.24	1.7813		SO1323	SO3323	SO4323
		46.00	1.8110		SO1324	SO3324	SO4324
	1-13/16	46.04	1.8125		SO1325	SO3325	SO4325
	1-27/32	46.83	1.8438		SO1326	SO3326	SO4326
		47.00	1.8504		SO1327	SO3327	SO4327
	1-7/8	47.63	1.8750		SO1328	SO3328	SO4328
4 1.850 (46.99) to 2.570 (65.28)	1-29/32	48.42	1.9063	5/16 (7.9)	SO1402	SO3402	SO4402
	1-15/16	49.21	1.9375		SO1404	SO3404	SO4404
	1-31/32	50.01	1.9688		SO1406	SO3406	SO4406
	2	50.80	2.0000		SO1407	SO3407	SO4407
	2-1/32	51.59	2.0313		SO1409	SO3409	SO4409
	2-3/64	52.00	2.0472		SO1410	SO3410	SO4410
	2-1/16	52.39	2.0625		SO1411	SO3411	SO4411
	2-3/32	53.18	2.0938		SO1413	SO3413	SO4413
	2-1/8	53.98	2.1250		SO1414	SO3414	SO4414
	2-5/32	54.77	2.1563		SO1416	SO3416	SO4416
	2-3/16	55.56	2.1875		SO1418	SO3418	SO4418
	2-7/32	56.36	2.2188		SO1420	SO3420	SO4420
	2-1/4	57.15	2.2500		SO1422	SO3422	SO4422
	2-9/32	57.94	2.2813		SO1423	SO3423	SO4423
	2-5/16	58.74	2.3125		SO1425	SO3425	SO4425
	2-11/32	59.53	2.3438		SO1427	SO3427	SO4427
	2-3/8	60.33	2.3750		SO1429	SO3429	SO4429
	2-13/32	61.12	2.4063		SO1431	SO3431	SO4431
	2-7/16	61.91	2.4375		SO1432	SO3432	SO4432
	2-15/32	62.71	2.4688		SO1434	SO3434	SO4434
	2-1/2	63.50	2.5000		SO1436	SO3436	SO4436

◎ : Excellent ○ : Good

P											M	K		N	
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 4,5,6,7,8

SPADE DRILL INSERTS - HSS M4

- General purpose insert for most materials
- Not recommended for tool steels and high temp alloys
- High toughness for loose or manual machines

POINT ANGLE **- under 2-1/2 : 132 degree**
- over 2-1/2 : 144 degree



cutting conditions : p.278

Series Min. to Max. (inch/mm)	Diameter			Thick	EDP No.		
	Fractional (inch)	Metric (mm)	Decimal (inch)	Metric (inch/mm)	HSS (M4) TiN	HSS (M4) TiAlN	HSS (M4) Hardslick
4	2-17/32	64.29	2.5313	5/16 (7.9)	SO1438	SO3438	SO4438
	2-9/16	65.09	2.5625		SO1440	SO3440	SO4440
5 2.456 (62.38) to 3.000 (76.20)	2-1/2	63.50	2.5000	7/16 (11.1)	SO1501	SO3501	SO4501
	2-5/8	66.68	2.6250		SO1507	SO3507	SO4507
	2-3/4	69.85	2.7500		SO1512	SO3512	SO4512
	2-25/32	70.64	2.7813		SO1514	SO3514	SO4514
	2-13/16	71.44	2.8125		SO1515	SO3515	SO4515
	2-27/32	72.23	2.8438		SO1517	SO3517	SO4517
	2-7/8	73.03	2.8750		SO1518	SO3518	SO4518
	2-29/32	73.82	2.9063		SO1519	SO3519	SO4519
	2-15/16	74.61	2.9375		SO1521	SO3521	SO4521
	2-31/32	75.41	2.9688		SO1522	SO3522	SO4522
	3	76.20	3.0000		SO1524	SO3524	SO4524
6 3.001(76.23) to 3.507(89.08)	3-1/16	77.79	3.0625	7/16 (11.1)	SO1602	SO3602	SO4602
	3-1/8	79.38	3.1250		SO1605	SO3605	SO4605
	3-1/4	82.55	3.2500		SO1611	SO3611	SO4611
	3-3/8	85.73	3.3750		SO1616	SO3616	SO4616
	3-7/16	87.31	3.4375		SO1619	SO3619	SO4619
	3-1/2	88.90	3.5000		SO1622	SO3622	SO4622
7 3.455 (87.76) to 4.000 (101.60)	3-9/16	90.49	3.5625	7/16 (11.1)	SO1703	SO3703	SO4703
	3-5/8	92.08	3.6250		SO1706	SO3706	SO4706
	3-3/4	95.25	3.7500		SO1711	SO3711	SO4711
	3-7/8	98.43	3.8750		SO1717	SO3717	SO4717
	4	101.60	4.0000		SO1722	SO3722	SO4722
8 4.001 (101.63) to 4.507 (114.48)	4-1/8	104.78	4.1250	7/16 (11.1)	SO1804	SO3804	SO4804
	4-1/4	107.95	4.2500		SO1807	SO3807	SO4807
	4-3/8	111.13	4.3750		SO1811	SO3811	SO4811
	4-1/2	114.30	4.5000		SO1815	SO3815	SO4815

◎ : Excellent ○ : Good

P											M	K		N	
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)

- Increase wear resistance over M4
- For use in medium carbon steel to high temperature alloys over 280 Brinell
- Performs best in rigid setups

POINT ANGLE **- under 2-1/2 : 132 degree**
- over 2-1/2 : 144 degree



cutting conditions : p.278

Series Min. to Max. (inch/mm)	Diameter			Thick	EDP No.		
	Fractional (inch)	Metric (mm)	Decimal (inch)	Metric (inch/mm)	SUPER COBALT(T15) TiN	SUPER COBALT(T15) TiAlN	SUPER COBALT(T15) Hardslick
Y .374 (9.50) to .436 (11.07)		9.50	.3740	3/32 (2.4)	* S06Y01	* S08Y01	* S09Y01
	3/8	9.53	.3750		* S06Y02	* S08Y02	* S09Y02
		9.80	.3860		* S06Y03	* S08Y03	* S09Y03
	25/64	9.92	.3906		* S06Y04	* S08Y04	* S09Y04
		10.00	.3937		* S06Y05	* S08Y05	* S09Y05
		10.20	.4016		* S06Y06	* S08Y06	* S09Y06
	13/32	10.32	.4063		* S06Y07	* S08Y07	* S09Y07
		10.50	.4134		* S06Y08	* S08Y08	* S09Y08
	27/64	10.72	.4219		* S06Y09	* S08Y09	* S09Y09
		10.80	.4252		* S06Y10	* S08Y10	* S09Y10
		11.00	.4331		* S06Y11	* S08Y11	* S09Y11
Z .437 (11.11) to .510 (12.95)	7/16	11.11	.4375	3/32 (2.4)	* S06Z01	* S08Z01	* S09Z01
		11.50	.4528		* S06Z02	* S08Z02	* S09Z02
	29/64	11.51	.4531		* S06Z03	* S08Z03	* S09Z03
	15/32	11.91	.4688		* S06Z04	* S08Z04	* S09Z04
		12.00	.4724		* S06Z05	* S08Z05	* S09Z05
	31/64	12.30	.4844		* S06Z06	* S08Z06	* S09Z06
		12.50	.4921		* S06Z07	* S08Z07	* S09Z07
	1/2	12.70	.5000		* S06Z08	* S08Z08	* S09Z08
0 .511 (12.98) to .695 (17.65)		13.00	.5118	1/8 (3.2)	* S06001	* S08001	* S09001
	33/64	13.10	.5156		* S06002	* S08002	* S09002
	17/32	13.49	.5313		* S06003	* S08003	* S09003
		13.50	.5315		* S06004	* S08004	* S09004
	35/64	13.89	.5469		* S06060	* S08060	* S09060
		14.00	.5512		* S06005	* S08005	* S09005
	9/16	14.29	.5625		* S06006	* S08006	* S09006
		14.50	.5709		* S06007	* S08007	* S09007
	37/64	14.68	.5781		* S06008	* S08008	* S09008
		15.00	.5906		* S06009	* S08009	* S09009
	19/32	15.08	.5938		* S06010	* S08010	* S09010
	39/64	15.48	.6094		* S06061	* S08061	* S09061
		15.50	.6102		* S06011	* S08011	* S09011
	5/8	15.88	.6250		* S06012	* S08012	* S09012

* 2pcs per package

◎ : Excellent ○ : Good

P											M	K		N	
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)

- Increase wear resistance over M4
- For use in medium carbon steel to high temperature alloys over 280 Brinell
- Performs best in rigid setups

POINT ANGLE **- under 2-1/2 : 132 degree**
- over 2-1/2 : 144 degree



cutting conditions : p.278

Series Min. to Max. (inch/mm)	Diameter			Thick	EDP No.		
	Fractional (inch)	Metric (mm)	Decimal (inch)	Metric (inch/mm)	SUPER COBALT(T15) TiN	TiAlN	Hardslick
0 .511 (12.98) to .695 (17.65)		16.00	.6299	1/8 (3.2)	* SO6013	* SO8013	* SO9013
	41/64	16.27	.6406		* SO6062	* SO8062	* SO9062
		16.50	.6496		* SO6014	* SO8014	* SO9014
	21/32	16.67	.6563		* SO6015	* SO8015	* SO9015
		17.00	.6693		* SO6016	* SO8016	* SO9016
	43/64	17.07	.6719		* SO6063	* SO8063	* SO9063
	11/16	17.46	.6875		* SO6017	* SO8017	* SO9017
		17.50	.6890		* SO6018	* SO8018	* SO9018
1 .690 (17.53) to .960 (24.38)	45/64	17.86	.7031	5/32 (4.0)	SO6101	SO8101	SO9101
		18.00	.7087		SO6102	SO8102	SO9102
	23/32	18.26	.7188		SO6103	SO8103	SO9103
		18.50	.7283		SO6104	SO8104	SO9104
	47/64	18.65	.7344		SO6105	SO8105	SO9105
		19.00	.7480		SO6106	SO8106	SO9106
	3/4	19.05	.7500		SO6107	SO8107	SO9107
	49/64	19.45	.7656		SO6108	SO8108	SO9108
		19.50	.7677		SO6109	SO8109	SO9109
	25/32	19.84	.7813		SO6110	SO8110	SO9110
		20.00	.7874		SO6111	SO8111	SO9111
	51/64	20.24	.7969		SO6160	SO8160	SO9160
		20.50	.8071		SO6112	SO8112	SO9112
	13/16	20.64	.8125		SO6113	SO8113	SO9113
		21.00	.8268		SO6114	SO8114	SO9114
	27/32	21.43	.8438		SO6115	SO8115	SO9115
	55/64	21.83	.8594		SO6161	SO8161	SO9161
		22.00	.8661		SO6116	SO8116	SO9116
	7/8	22.23	.8750		SO6117	SO8117	SO9117
	57/64	22.62	.8906		SO6162	SO8162	SO9162
		23.00	.9055		SO6118	SO8118	SO9118
	29/32	23.02	.9063		SO6119	SO8119	SO9119
	59/64	23.42	.9219		SO6120	SO8120	SO9120
	15/16	23.81	.9375		SO6121	SO8121	SO9121
		24.00	.9449		SO6122	SO8122	SO9122

* 2pcs per package

◎ : Excellent ○ : Good

P											M	K		N	
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 - SUPER COBALT(T15)

- Increase wear resistance over M4
- For use in medium carbon steel to high temperature alloys over 280 Brinell
- Performs best in rigid setups

POINT ANGLE **- under 2-1/2 : 132 degree**
- over 2-1/2 : 144 degree



cutting conditions : p.278

Series Min. to Max. (inch/mm)	Diameter			Thick	EDP No.		
	Fractional (inch)	Metric (mm)	Decimal (inch)	Metric (inch/mm)	SUPER COBALT(T15) TiN	SUPER COBALT(T15) TiAlN	SUPER COBALT(T15) Hardslick
2 .961 (24.41) to 1.380 (35.05)	31/32	24.61	.9688	3/16 (4.8)	S06201	S08201	S09201
	63/64	25.00	.9843		S06202	S08202	S09202
	1	25.40	1.0000		S06203	S08203	S09203
	1-1/64	25.80	1.0156		S06204	S08204	S09204
		26.00	1.0236		S06205	S08205	S09205
	1-1/32	26.19	1.0313		S06206	S08206	S09206
	1-3/64	26.59	1.0469		S06260	S08260	S09260
	1-1/16	26.99	1.0625		S06207	S08207	S09207
		27.00	1.0630		S06208	S08208	S09208
	1-3/32	27.78	1.0938		S06209	S08209	S09209
		28.00	1.1024		S06210	S08210	S09210
	1-7/64	28.18	1.1094		S06261	S08261	S09261
	1-1/8	28.58	1.1250		S06211	S08211	S09211
		29.00	1.1417		S06212	S08212	S09212
	1-5/32	29.37	1.1563		S06213	S08213	S09213
		30.00	1.1811		S06214	S08214	S09214
	1-3/16	30.16	1.1875		S06215	S08215	S09215
	1-7/32	30.96	1.2188		S06216	S08216	S09216
		31.00	1.2205		S06217	S08217	S09217
	1-1/4	31.75	1.2500		S06218	S08218	S09218
		32.00	1.2598		S06219	S08219	S09219
	1-9/32	32.54	1.2813		S06220	S08220	S09220
		33.00	1.2992		S06221	S08221	S09221
	1-5/16	33.34	1.3125		S06222	S08222	S09222
		34.00	1.3386		S06223	S08223	S09223
	1-11/32	34.13	1.3438		S06224	S08224	S09224
	1-3/8	34.93	1.3750		S06225	S08225	S09225
		35.00	1.3780		S06226	S08226	S09226
3	1-13/32	35.72	1.4063	1/4 (6.4)	S06301	S08301	S09301
		36.00	1.4173		S06302	S08302	S09302
	1-7/16	36.51	1.4375		S06303	S08303	S09303
		37.00	1.4567		S06304	S08304	S09304
	1-15/32	37.31	1.4688		S06305	S08305	S09305

◎ : Excellent ○ : Good

P											M	K		N	
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 COBALT(T15)

- Increase wear resistance over M4
- For use in medium carbon steel to high temperature alloys over 280 Brinell
- Performs best in rigid setups

POINT ANGLE **- under 2-1/2 : 132 degree**
- over 2-1/2 : 144 degree



cutting conditions : p.278

Series Min. to Max. (inch/mm)	Diameter			Thick	EDP No.		
					SUPER COBALT(T15)		
	Fractional (inch)	Metric (mm)	Decimal (inch)	Metric (inch/mm)	TiN	TiAlN	Hardslick
3 **1.353 (34.37) to 1.882 (47.80)**		38.00	1.4961	1/4 (6.4)	S06306	S08306	S09306
	1-1/2	38.10	1.5000		S06307	S08307	S09307
	1-17/32	38.89	1.5313		S06308	S08308	S09308
		39.00	1.5354		S06309	S08309	S09309
	1-9/16	39.69	1.5625		S06310	S08310	S09310
		40.00	1.5748		S06311	S08311	S09311
	1-19/32	40.48	1.5938		S06312	S08312	S09312
		41.00	1.6142		S06313	S08313	S09313
	1-5/8	41.28	1.6250		S06314	S08314	S09314
		42.00	1.6535		S06315	S08315	S09315
	1-21/32	42.07	1.6563		S06316	S08316	S09316
	1-11/16	42.86	1.6875		S06317	S08317	S09317
		43.00	1.6929		S06318	S08318	S09318
	1-23/32	43.66	1.7188		S06319	S08319	S09319
		44.00	1.7323		S06320	S08320	S09320
	1-3/4	44.45	1.7500		S06321	S08321	S09321
		45.00	1.7717		S06322	S08322	S09322
	1-25/32	45.24	1.7813		S06323	S08323	S09323
		46.00	1.8110		S06324	S08324	S09324
	1-13/16	46.04	1.8125		S06325	S08325	S09325
	1-27/32	46.83	1.8438		S06326	S08326	S09326
		47.00	1.8504		S06327	S08327	S09327
	1-7/8	47.63	1.8750		S06328	S08328	S09328
4 **1.850 (46.99) to 2.570 (65.28)**	1-29/32	48.42	1.9062	5/16 (7.9)	S06402	S08402	S09402
	1-15/16	49.21	1.9375		S06404	S08404	S09404
	1-31/32	50.01	1.9688		S06406	S08406	S09406
	2	50.80	2.0000		S06407	S08407	S09407
	2-1/32	51.59	2.0312		S06409	S08409	S09409
	2-3/64	52.00	2.0472		S06410	S08410	S09410
	2-1/16	52.39	2.0625		S06411	S08411	S09411
	2-3/32	53.18	2.0938		S06413	S08413	S09413
	2-1/8	53.98	2.1250		S06414	S08414	S09414
	2-5/32	54.77	2.1562		S06416	S08416	S09416

◎ : Excellent ○ : Good

P											M	K		N	
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 4,5

SPADE DRILL INSERTS - SUPER COBALT(T15)

- Increase wear resistance over M4
- For use in medium carbon steel to high temperature alloys over 280 Brinell
- Performs best in rigid setups

POINT ANGLE **- under 2-1/2 : 132 degree**
- over 2-1/2 : 144 degree



cutting conditions : p.278

Series Min. to Max. (inch/mm)	Diameter			Thick	EDP No.		
	Fractional (inch)	Metric (mm)	Decimal (inch)	Metric (inch/mm)	SUPER COBALT(T15) TiN	SUPER COBALT(T15) TiAlN	SUPER COBALT(T15) Hardslick
4 1.850 (46.99) to 2.570 (65.28)	2-3/16	55.56	2.1875	5/16 (7.9)	S06418	S08418	S09418
	2-7/32	56.36	2.2188		S06420	S08420	S09420
	2-1/4	57.15	2.2500		S06422	S08422	S09422
	2-9/32	57.94	2.2812		S06423	S08423	S09423
	2-5/16	58.74	2.3125		S06425	S08425	S09425
	2-11/32	59.53	2.3438		S06427	S08427	S09427
	2-3/8	60.33	2.3750		S06429	S08429	S09429
	2-13/32	61.12	2.4062		S06431	S08431	S09431
	2-7/16	61.91	2.4375		S06432	S08432	S09432
	2-15/32	62.71	2.4688		S06434	S08434	S09434
	2-1/2	63.50	2.5000		S06436	S08436	S09436
	2-17/32	64.29	2.5312		S06438	S08438	S09438
	2-9/16	65.09	2.5625		S06440	S08440	S09440
5 2.456 (62.38) to 3.000 (76.20)	2-1/2	63.50	2.5000	7/16 (11.1)	—	—	S09501
		64.00	2.5197		—	—	S09502
	2-17/32	64.29	2.5312		—	—	S09503
	2-9/16	65.09	2.5625		—	—	S09504
	2-19/32	65.88	2.5938		—	—	S09505
		66.00	2.5984		—	—	S09506
	2-5/8	66.68	2.6250		—	—	S09507
	2-21/32	67.47	2.6562		—	—	S09508
		68.00	2.6772		—	—	S09509
	2-11/16	68.26	2.6875		—	—	S09510
	2-23/32	69.09	2.7188		—	—	S09511
	2-3/4	69.85	2.7500		—	—	S09512
		70.00	2.7559		—	—	S09513
	2-25/32	70.64	2.7812		—	—	S09514
	2-13/16	71.44	2.8125		—	—	S09515
		72.00	2.8346		—	—	S09516
	2-27/32	72.23	2.8438		—	—	S09517
	2-7/8	73.03	2.8750		—	—	S09518
	2-29/32	73.82	2.9062		—	—	S09519
		74.00	2.9134		—	—	S09520

◎ : Excellent ○ : Good

P											M	K		N	
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 5,6,7

SPADE DRILL INSERTS - SUPER COBALT(T15)

- Increase wear resistance over M4
- For use in medium carbon steel to high temperature alloys over 280 Brinell
- Performs best in rigid setups

POINT ANGLE **- under 2-1/2 : 132 degree**
- over 2-1/2 : 144 degree



cutting conditions : p.278

Series Min. to Max. (inch/mm)	Diameter			Thick	EDP No.		
	Fractional (inch)	Metric (mm)	Decimal (inch)	Metric (inch/mm)	SUPER COBALT(T15) TiN	TiAlN	Hardslick
5	2-15/16	74.61	2.9375	7/16 (11.1)	—	—	S09521
	2-31/32	75.41	2.8688		—	—	S09522
		76.00	2.9921		—	—	S09523
	3	76.20	3.0000		—	—	S09524
6 3.001 (76.23) to 3.507 (89.08)	3-1/32	76.99	3.0312	7/16 (11.1)	—	—	S09601
	3-1/16	77.79	3.0625		—	—	S09602
		78.00	3.0709		—	—	S09603
	3-3/32	78.58	3.0938		—	—	S09604
	3-1/8	79.38	3.1250		—	—	S09605
		80.00	3.1496		—	—	S09606
	3-5/32	80.17	3.1562		—	—	S09607
	3-3/16	80.96	3.1875		—	—	S09608
	3-7/32	81.76	3.2188		—	—	S09609
		82.00	3.2283		—	—	S09610
	3-1/4	82.55	3.2500		—	—	S09611
	3-9/32	83.34	3.2812		—	—	S09612
		84.00	3.3071		—	—	S09613
	3-5/16	84.14	3.3125		—	—	S09614
	3-11/32	84.93	3.3438		—	—	S09615
	3-3/8	85.73	3.3750		—	—	S09616
		86.00	3.3858		—	—	S09617
	3-13/32	86.52	3.3062		—	—	S09618
	3-7/16	87.31	3.4375		—	—	S09619
		88.00	3.4646		—	—	S09620
	3-15/32	88.11	3.4688		—	—	S09621
	3-1/2	88.90	3.5000		—	—	S09622
7 3.455(87.76) to 4.000(101.60)	3-17/32	89.69	3.5312	7/16 (11.1)	—	—	S09701
		90.00	3.5433		—	—	S09702
	3-9/16	90.49	3.5625		—	—	S09703
	3-19/32	91.28	3.5938		—	—	S09704
		92.00	3.6221		—	—	S09705
	3-5/8	92.08	3.6250		—	—	S09706
	3-21/32	92.87	3.6563		—	—	S09707

◎ : Excellent ○ : Good

P											M	K		N	
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 - SUPER COBALT(T15)

- Increase wear resistance over M4
- For use in medium carbon steel to high temperature alloys over 280 Brinell
- Performs best in rigid setups

POINT ANGLE **- under 2-1/2 : 132 degree**
- over 2-1/2 : 144 degree



cutting conditions : p.278

Series Min. to Max. (inch/mm)	Diameter			Thick	EDP No.		
	Fractional (inch)	Metric (mm)	Decimal (inch)	Metric (inch/mm)	SUPER COBALT(T15) TiN	SUPER COBALT(T15) TiAlN	SUPER COBALT(T15) Hardslick
7 3.455 (87.76) to 4.000 (101.60)	3-11/16	93.66	3.6875	7/16 (11.1)	—	—	S09708
		94.00	3.7008		—	—	S09709
	3-23/32	94.46	3.7188		—	—	S09710
	3-3/4	95.25	3.7500		—	—	S09711
		96.00	3.7795		—	—	S09712
	3-25/32	96.04	3.7812		—	—	S09713
	3-13/16	96.84	3.8125		—	—	S09714
	3-27/32	97.63	3.8438		—	—	S09715
		98.00	3.8583		—	—	S09716
	3-7/8	98.43	3.8750		—	—	S09717
	3-29/32	99.22	3.9062		—	—	S09718
		100.00	3.9370		—	—	S09719
	3-15/16	100.01	3.9375		—	—	S09720
	3-31/32	100.81	3.9688		—	—	S09721
	4	101.60	4.0000		—	—	S09722
8 4.001 (101.63) to 4.507 (114.48)	4-1/64	102.00	4.0156	7/16 (11.1)	—	—	S09801
	4-1/16	103.19	4.0625		—	—	S09802
	4-3/32	104.00	4.0945		—	—	S09803
	4-1/8	104.78	4.1250		—	—	S09804
		106.00	4.1732		—	—	S09805
	4-3/16	106.36	4.1875		—	—	S09806
	4-1/4	107.95	4.2500		—	—	S09807
		108.00	4.2520		—	—	S09808
	4-5/16	109.54	4.3125		—	—	S09809
		110.00	4.3307		—	—	S09810
	4-3/8	111.13	4.3750		—	—	S09811
		112.00	4.4094		—	—	S09812
	4-7/16	112.71	4.4375		—	—	S09813
		114.00	4.4882		—	—	S09814
	4-1/2	114.30	4.5000		—	—	S09815

◎ : Excellent ○ : Good

P											M	K		N	
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 COBALT(M48)

- Increased tool life over T15
- For use in high temperature alloys and materials including medium carbon, Alloy and tool steels with 350~500 Brinell
- Rigid set up needed

POINT ANGLE : 132 degree



cutting conditions : p.278

Series Min. to Max. (inch/mm)	Diameter			Thick	EDP No.		
					PREMIUM COBALT(M48)		
	Fractional (inch)	Metric (mm)	Decimal (inch)	Metric (inch/mm)	TiN	TiAlN	Hardslick
Y .374 (9.50) to .436 (11.07)		9.50	.3740	3/32 (2.4)	* S11Y01	* S13Y01	* S14Y01
	3/8	9.53	.3750		* S11Y02	* S13Y02	* S14Y02
		9.80	.3860		* S11Y03	* S13Y03	* S14Y03
	25/64	9.92	.3906		* S11Y04	* S13Y04	* S14Y04
		10.00	.3937		* S11Y05	* S13Y05	* S14Y05
		10.20	.4016		* S11Y06	* S13Y06	* S14Y06
	13/32	10.32	.4063		* S11Y07	* S13Y07	* S14Y07
		10.50	.4134		* S11Y08	* S13Y08	* S14Y08
	27/64	10.72	.4219		* S11Y09	* S13Y09	* S14Y09
		10.80	.4252		* S11Y10	* S13Y10	* S14Y10
		11.00	.4331		* S11Y11	* S13Y11	* S14Y11
Z .437 (11.11) to .510 (12.95)	7/16	11.11	.4375	3/32 (2.4)	* S11Z01	* S13Z01	* S14Z01
		11.50	.4528		* S11Z02	* S13Z02	* S14Z02
	29/64	11.51	.4531		* S11Z03	* S13Z03	* S14Z03
	15/32	11.91	.4688		* S11Z04	* S13Z04	* S14Z04
		12.00	.4724		* S11Z05	* S13Z05	* S14Z05
	31/64	12.30	.4844		* S11Z06	* S13Z06	* S14Z06
		12.50	.4921		* S11Z07	* S13Z07	* S14Z07
	1/2	12.70	.5000		* S11Z08	* S13Z08	* S14Z08
0 .511 (12.98) to .695 (17.65)		13.00	.5118	1/8 (3.2)	* S11001	* S13001	* S14001
	33/64		.5156		* S11002	* S13002	* S14002
	17/32		.5313		* S11003	* S13003	* S14003
		13.50	.5315		* S11004	* S13004	* S14004
	35/64		.5469		* S11060	* S13060	* S14060
		14.00	.5512		* S11005	* S13005	* S14005
	9/16		.5625		* S11006	* S13006	* S14006
		14.50	.5709		* S11007	* S13007	* S14007
	37/64		.5781		* S11008	* S13008	* S14008
		15.00	.5906		* S11009	* S13009	* S14009
	19/32		.5938		* S11010	* S13010	* S14010
	39/64		.6094		* S11061	* S13061	* S14061
		15.50	.6102		* S11011	* S13011	* S14011
	5/8		.6250		* S11012	* S13012	* S14012

* 2pcs per package

◎ : Excellent ○ : Good

P											M	K		N	
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 COBALT(M48)

- Increased tool life over T15
- For use in high temperature alloys and materials including medium carbon, Alloy and tool steels with 350~500 Brinell
- Rigid set up needed

POINT ANGLE : 132 degree



cutting conditions : p.278

Series Min. to Max. (inch/mm)	Diameter			Thick	EDP No.		
	Fractional (inch)	Metric (mm)	Decimal (inch)	Metric (inch/mm)	PREMIUM COBALT(M48) TiN	TiAlN	Hardslick
0 .511 (12.98) to .695 (17.65)		16.00	.6299	1/8 (3.2)	* S11013	* S13013	* S14013
	41/64		.6406		* S11062	* S13062	* S14062
		16.50	.6496		* S11014	* S13014	* S14014
	21/32		.6563		* S11015	* S13015	* S14015
		17.00	.6693		* S11016	* S13016	* S14016
	43/64		.6719		* S11063	* S13063	* S14063
	11/16		.6875		* S11017	* S13017	* S14017
		17.50	.6890		* S11018	* S13018	* S14018
1 .690 (17.53) to .960 (24.38)	45/64	17.86	.7031	5/32 (4.0)	S11101	S13101	S14101
		18.00	.7087		S11102	S13102	S14102
	23/32	18.26	.7188		S11103	S13103	S14103
		18.50	.7283		S11104	S13104	S14104
	47/64	18.65	.7344		S11105	S13105	S14105
		19.00	.7480		S11106	S13106	S14106
	3/4	19.05	.7500		S11107	S13107	S14107
	49/64	19.45	.7656		S11108	S13108	S14108
		19.50	.7677		S11109	S13109	S14109
	25/32	19.84	.7812		S11110	S13110	S14110
		20.00	.7874		S11111	S13111	S14111
	51/64	20.24	.7969		S11160	S13160	S14160
		20.50	.8071		S11112	S13112	S14112
	13/16	20.64	.8125		S11113	S13113	S14113
		21.00	.8268		S11114	S13114	S14114
	27/32	21.43	.8438		S11115	S13115	S14115
	55/64	21.83	.8594		S11161	S13161	S14161
		22.00	.8661		S11116	S13116	S14116
	7/8	22.23	.8750		S11117	S13117	S14117
	57/64	22.62	.8906		S11162	S13162	S14162
		23.00	.9055		S11118	S13118	S14118
	29/32	23.02	.9062		S11119	S13119	S14119
	59/64	23.42	.9219		S11120	S13120	S14120
	15/16	23.81	.9375		S11121	S13121	S14121
		24.00	.9449		S11122	S13122	S14122

* 2pcs per package

◎ : Excellent ○ : Good

P											M	K		N	
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 COBALT(M48)

- Increased tool life over T15
- For use in high temperature alloys and materials including medium carbon, Alloy and tool steels with 350~500 Brinell
- Rigid set up needed

POINT ANGLE : 132 degree



cutting conditions : p.278

Series Min. to Max. (inch/mm)	Diameter			Thick	EDP No.		
	Fractional (inch)	Metric (mm)	Decimal (inch)	Metric (inch/mm)	PREMIUM COBALT(M48) TiN	PREMIUM COBALT(M48) TiAlN	PREMIUM COBALT(M48) Hardslick
2 .961 (24.41) to 1.380 (35.05)	31/32	24.61	.9688	3/16 (4.8)	S11201	S13201	S14201
	63/64	25.00	.9843		S11202	S13202	S14202
	1	25.40	1.0000		S11203	S13203	S14203
	1-1/64	25.80	1.0156		S11204	S13204	S14204
		26.00	1.0236		S11205	S13205	S14205
	1-1/32	26.19	1.0312		S11206	S13206	S14206
	1-3/64	26.59	1.0469		S11260	S13260	S14260
	1-1/16	26.99	1.0625		S11207	S13207	S14207
		27.00	1.0630		S11208	S13208	S14208
	1-3/32	27.78	1.0938		S11209	S13209	S14209
		28.00	1.1024		S11210	S13210	S14210
	1-7/64	28.18	1.1094		S11261	S13261	S14261
	1-1/8	28.58	1.1250		S11211	S13211	S14211
		29.00	1.1417		S11212	S13212	S14212
	1-5/32	29.37	1.1562		S11213	S13213	S14213
		30.00	1.1811		S11214	S13214	S14214
	1-3/16	30.16	1.1875		S11215	S13215	S14215
	1-7/32	30.96	1.2188		S11216	S13216	S14216
		31.00	1.2205		S11217	S13217	S14217
	1-1/4	31.75	1.2500		S11218	S13218	S14218
		32.00	1.2598		S11219	S13219	S14219
	1-9/32	32.54	1.2812		S11220	S13220	S14220
		33.00	1.2992		S11221	S13221	S14221
	1-5/16	33.34	1.3125		S11222	S13222	S14222
		34.00	1.3386		S11223	S13223	S14223
	1-11/32	34.13	1.3438		S11224	S13224	S14224
	1-3/8	34.93	1.3750		S11225	S13225	S14225
		35.00	1.3780		S11226	S13226	S14226

◎ : Excellent ○ : Good

P											M	K		N	
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

CARBIDE BLADE INSERTS(C2,C5,C3)

- High performance on Gray cast iron over 220 Brinell, malleable cast iron with short chips, silicon aluminum and copper alloys. (C3)
- For general use in carbon steels and alloys steels. (C5)
- For use in Gray cast iron up to 220 Brinell, nonferrous metals,copper, brass and aluminum. (C2)

POINT ANGLE : 132 degree



cutting conditions : p.279

Series Min. to Max. (inch/mm)	Diameter			Thick	EDP No.					
					Multi purpose Geometry				Cast Iron Geometry	
					C2(K20)		C5(P40)		C3(K10)	
	Fractional (inch)	Metric (mm)	Decimal (inch)	Metric (inch/mm)	TiN	TiAIN	TiN	TiAIN	TiN	TiAIN
Y .374 (9.50) to .436 (11.07)		9.50	.3740	3/32 (2.4)	* S21Y01	* S23Y01	* S26Y01	* S28Y01	* S16Y01	* S18Y01
	3/8	9.53	.3750		* S21Y02	* S23Y02	* S26Y02	* S28Y02	* S16Y02	* S18Y02
		9.80	.3860		* S21Y03	* S23Y03	* S26Y03	* S28Y03	* S16Y03	* S18Y03
	25/64	9.92	.3906		* S21Y04	* S23Y04	* S26Y04	* S28Y04	* S16Y04	* S18Y04
		10.00	.3937		* S21Y05	* S23Y05	* S26Y05	* S28Y05	* S16Y05	* S18Y05
		10.20	.4016		* S21Y06	* S23Y06	* S26Y06	* S28Y06	* S16Y06	* S18Y06
	13/32	10.32	.4063		* S21Y07	* S23Y07	* S26Y07	* S28Y07	* S16Y07	* S18Y07
		10.50	.4134		* S21Y08	* S23Y08	* S26Y08	* S28Y08	* S16Y08	* S18Y08
	27/64	10.72	.4219		* S21Y09	* S23Y09	* S26Y09	* S28Y09	* S16Y09	* S18Y09
		10.80	.4252		* S21Y10	* S23Y10	* S26Y10	* S28Y10	* S16Y10	* S18Y10
		11.00	.4331		* S21Y11	* S23Y11	* S26Y11	* S28Y11	* S16Y11	* S18Y11
Z .437 (11.11) to .510 (12.95)	7/16	11.11	.4375	3/32 (2.4)	* S21Z01	* S23Z01	* S26Z01	* S28Z01	* S16Z01	* S18Z01
		11.50	.4528		* S21Z02	* S23Z02	* S26Z02	* S28Z02	* S16Z02	* S18Z02
	29/64	11.51	.4531		* S21Z03	* S23Z03	* S26Z03	* S28Z03	* S16Z03	* S18Z03
	15/32	11.91	.4688		* S21Z04	* S23Z04	* S26Z04	* S28Z04	* S16Z04	* S18Z04
		12.00	.4724		* S21Z05	* S23Z05	* S26Z05	* S28Z05	* S16Z05	* S18Z05
	31/64	12.30	.4844		* S21Z06	* S23Z06	* S26Z06	* S28Z06	* S16Z06	* S18Z06
		12.50	.4921		* S21Z07	* S23Z07	* S26Z07	* S28Z07	* S16Z07	* S18Z07
	1/2	12.70	.5000		* S21Z08	* S23Z08	* S26Z08	* S28Z08	* S16Z08	* S18Z08

* 2pcs per package

◎ : Excellent ○ : Good

	P											M	K		N	
	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
C2	○	○	○	○	○	◎	◎	○	○	○	○	◎	○	○	◎	◎
C5	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○
C3													◎	◎		

SPADE DRILLS

SERIES 0

CARBIDE BLADE INSERTS(C2,C5,C3)

- High performance on Gray cast iron over 220 Brinell, malleable cast iron with short chips, silicon aluminum and copper alloys. (C3)
- For general use in carbon steels and alloys steels. (C5)
- For use in Gray cast iron up to 220 Brinell, nonferrous metals,copper, brass and aluminum. (C2)

POINT ANGLE : 132 degree



cutting conditions : p.279

Series Min. to Max. (inch/mm)	Diameter			Thick	EDP No.					
					Multi purpose Geometry				Cast Iron Geometry	
					C2(K20)		C5(P40)		C3(K10)	
	Fractional (inch)	Metric (mm)	Decimal (inch)	Metric (inch/mm)	TiN	TiAlN	TiN	TiAlN	TiN	TiAlN
0 .511 (12.98) to .695 (17.65)		13.00	.5118	1/8 (3.2)	* S21001	* S23001	* S26001	* S28001	* S16001	* S18001
	33/64	13.10	.5156		* S21002	* S23002	* S26002	* S28002	* S16002	* S18002
	17/32	13.49	.5313		* S21003	* S23003	* S26003	* S28003	* S16003	* S18003
		13.50	.5315		* S21004	* S23004	* S26004	* S28004	* S16004	* S18004
	35/64	13.89	.5469		* S21060	* S23060	* S26060	* S28060	* S16060	* S18060
		14.00	.5512		* S21005	* S23005	* S26005	* S28005	* S16005	* S18005
	9/16	14.29	.5625		* S21006	* S23006	* S26006	* S28006	* S16006	* S18006
		14.50	.5709		* S21007	* S23007	* S26007	* S28007	* S16007	* S18007
	37/64	14.68	.5781		* S21008	* S23008	* S26008	* S28008	* S16008	* S18008
		15.00	.5906		* S21009	* S23009	* S26009	* S28009	* S16009	* S18009
	19/32	15.08	.5938		* S21010	* S23010	* S26010	* S28010	* S16010	* S18010
	39/64	15.48	.6094		* S21061	* S23061	* S26061	* S28061	* S16061	* S18061
		15.50	.6102		* S21011	* S23011	* S26011	* S28011	* S16011	* S18011
		15.70	.6181		* S21064	* S23064	* S26064	* S28064	* S16064	* S18064
	5/8	15.88	.6250		* S21012	* S23012	* S26012	* S28012	* S16012	* S18012
		16.00	.6299		* S21013	* S23013	* S26013	* S28013	* S16013	* S18013
	41/64	16.27	.6406		* S21062	* S23062	* S26062	* S28062	* S16062	* S18062
		16.50	.6496		* S21014	* S23014	* S26014	* S28014	* S16014	* S18014
	21/32	16.67	.6563		* S21015	* S23015	* S26015	* S28015	* S16015	* S18015
		17.00	.6693		* S21016	* S23016	* S26016	* S28016	* S16016	* S18016
	43/64	17.07	.6719		* S21063	* S23063	* S26063	* S28063	* S16063	* S18063
	11/16	17.46	.6875		* S21017	* S23017	* S26017	* S28017	* S16017	* S18017
		17.50	.6890		* S21018	* S23018	* S26018	* S28018	* S16018	* S18018

* 2pcs per package

◎ : Excellent ○ : Good

	P											M	K			N	
	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
C2	○	○	○	○	○	◎	◎	○	○	○	○	◎	○	○		◎	◎
C5	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○		○	○
C3													◎	◎			

SPADE DRILLS

SERIES 1

CARBIDE BLADE INSERTS(C2,C5,C3)

- High performance on Gray cast iron over 220 Brinell, malleable cast iron with short chips, silicon aluminum and copper alloys. (C3)
- For general use in carbon steels and alloys steels. (C5)
- For use in Gray cast iron up to 220 Brinell, nonferrous metals,copper, brass and aluminum. (C2)

POINT ANGLE : 132 degree



cutting conditions : p.279

Series Min. to Max. (inch/mm)	Diameter			Thick	EDP No.					
					Multi purpose Geometry				Cast Iron Geometry	
					C2(K20)		C5(P40)		C3(K10)	
	Fractional (inch)	Metric (mm)	Decimal (inch)	Metric (inch/mm)	TiN	TiAlN	TiN	TiAlN	TiN	TiAlN
1 .690 (17.53) to .960 (24.38)	45/64	17.86	.7031	5/32 (4.0)	S21101	S23101	S26101	S28101	S16101	S18101
		18.00	.7087		S21102	S23102	S26102	S28102	S16102	S18102
	23/32	18.26	.7188		S21103	S23103	S26103	S28103	S16103	S18103
		18.50	.7283		S21104	S23104	S26104	S28104	S16104	S18104
	47/64	18.65	.7344		S21105	S23105	S26105	S28105	S16105	S18105
		19.00	.7480		S21106	S23106	S26106	S28106	S16106	S18106
	3/4	19.05	.7500		S21107	S23107	S26107	S28107	S16107	S18107
	49/64	19.45	.7656		S21108	S23108	S26108	S28108	S16108	S18108
		19.50	.7677		S21109	S23109	S26109	S28109	S16109	S18109
	25/32	19.84	.7813		S21110	S23110	S26110	S28110	S16110	S18110
		20.00	.7874		S21111	S23111	S26111	S28111	S16111	S18111
	51/64	20.24	.7969		S21160	S23160	S26160	S28160	S16160	S18160
		20.50	.8071		S21112	S23112	S26112	S28112	S16112	S18112
	13/16	20.64	.8125		S21113	S23113	S26113	S28113	S16113	S18113
		21.00	.8268		S21114	S23114	S26114	S28114	S16114	S18114
	27/32	21.43	.8438		S21115	S23115	S26115	S28115	S16115	S18115
	55/64	21.83	.8594		S21161	S23161	S26161	S28161	S16161	S18161
		22.00	.8661		S21116	S23116	S26116	S28116	S16116	S18116
	7/8	22.23	.8750		S21117	S23117	S26117	S28117	S16117	S18117
	57/64	22.62	.8906		S21162	S23162	S26162	S28162	S16162	S18162
		23.00	.9055		S21118	S23118	S26118	S28118	S16118	S18118
	29/32	23.02	.9063		S21119	S23119	S26119	S28119	S16119	S18119
	59/64	23.42	.9219		S21120	S23120	S26120	S28120	S16120	S18120
	15/16	23.81	.9375		S21121	S23121	S26121	S28121	S16121	S18121
		24.00	.9449		S21122	S23122	S26122	S28122	S16122	S18122

◎ : Excellent ○ : Good

	P											M	K		N	
	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
C2	○	○	○	○	○	◎	◎	○	○	○	○	◎	○	○	◎	◎
C5	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○
C3													◎	◎		

SPADE DRILLS

SERIES 2

CARBIDE BLADE INSERTS(C2,C5,C3)

- High performance on Gray cast iron over 220 Brinell, malleable cast iron with short chips, silicon aluminum and copper alloys. (C3)
- For general use in carbon steels and alloys steels. (C5)
- For use in Gray cast iron up to 220 Brinell, nonferrous metals,copper, brass and aluminum. (C2)

POINT ANGLE : 132 degree



cutting conditions : p.279

Series Min. to Max. (inch/mm)	Diameter			Thick	EDP No.					
					Multi purpose Geometry				Cast Iron Geometry	
					C2(K20)		C5(P40)		C3(K10)	
	Fractional (inch)	Metric (mm)	Decimal (inch)	Metric (inch/mm)	TiN	TiAlN	TiN	TiAlN	TiN	TiAlN
2 .961 (24.41) to 1.380 (35.05)	31/32	24.61	.9688	3/16 (4.8)	S21201	S23201	S26201	S28201	S16201	S18201
	63/64	25.00	.9843		S21202	S23202	S26202	S28202	S16202	S18202
	1	25.40	1.0000		S21203	S23203	S26203	S28203	S16203	S18203
	1-1/64	25.80	1.0156		S21204	S23204	S26204	S28204	S16204	S18204
		26.00	1.0236		S21205	S23205	S26205	S28205	S16205	S18205
	1-1/32	26.19	1.0313		S21206	S23206	S26206	S28206	S16206	S18206
	1-3/64	26.59	1.0469		S21260	S23260	S26260	S28260	S16260	S18260
	1-1/16	26.99	1.0625		S21207	S23207	S26207	S28207	S16207	S18207
		27.00	1.0630		S21208	S23208	S26208	S28208	S16208	S18208
	1-3/32	27.78	1.0938		S21209	S23209	S26209	S28209	S16209	S18209
		28.00	1.1024		S21210	S23210	S26210	S28210	S16210	S18210
	1-7/64	28.18	1.1094		S21261	S23261	S26261	S28261	S16261	S18261
	1-1/8	28.58	1.1250		S21211	S23211	S26211	S28211	S16211	S18211
		29.00	1.1417		S21212	S23212	S26212	S28212	S16212	S18212
	1-5/32	29.37	1.1563		S21213	S23213	S26213	S28213	S16213	S18213
		30.00	1.1811		S21214	S23214	S26214	S28214	S16214	S18214
	1-3/16	30.16	1.1875		S21215	S23215	S26215	S28215	S16215	S18215
	1-7/32	30.96	1.2188		S21216	S23216	S26216	S28216	S16216	S18216
		31.00	1.2205		S21217	S23217	S26217	S28217	S16217	S18217
	1-1/4	31.75	1.2500		S21218	S23218	S26218	S28218	S16218	S18218
		32.00	1.2598		S21219	S23219	S26219	S28219	S16219	S18219
	1-9/32	32.54	1.2813		S21220	S23220	S26220	S28220	S16220	S18220
		33.00	1.2992		S21221	S23221	S26221	S28221	S16221	S18221
	1-5/16	33.34	1.3125		S21222	S23222	S26222	S28222	S16222	S18222
		34.00	1.3386		S21223	S23223	S26223	S28223	S16223	S18223
	1-11/32	34.13	1.3438		S21224	S23224	S26224	S28224	S16224	S18224
	1-3/8	34.93	1.3750		S21225	S23225	S26225	S28225	S16225	S18225
		35.00	1.3780		S21226	S23226	S26226	S28226	S16226	S18226

◎ : Excellent ○ : Good

	P											M	K		N	
	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
C2	○	○	○	○	○	◎	◎	○	○	○	○	◎	○	○	◎	◎
C5	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○
C3													◎	◎		

SPADE DRILLS

SERIES 3

CARBIDE BLADE INSERTS(C2,C5,C3)

- High performance on Gray cast iron over 220 Brinell, malleable cast iron with short chips, silicon aluminum and copper alloys. (C3)
- For general use in carbon steels and alloys steels. (C5)
- For use in Gray cast iron up to 220 Brinell, nonferrous metals,copper, brass and aluminum. (C2)

POINT ANGLE : 132 degree



cutting conditions : p.279

Series Min. to Max. (inch/mm)	Diameter			Thick	EDP No.					
					Multi purpose Geometry				Cast Iron Geometry	
					C2(K20)		C5(P40)		C3(K10)	
	Fractional (inch)	Metric (mm)	Decimal (inch)	Metric (inch/mm)	TiN	TiAlN	TiN	TiAlN	TiN	TiAlN
3 1.353 (34.37) to 1.882 (47.80)	1-13/32	35.72	1.4063	1/4 (6.4)	S21301	S23301	S26301	S28301	Special or non-standard inserts available on request	
		36.00	1.4173		S21302	S23302	S26302	S28302		
	1-7/16	36.51	1.4375		S21303	S23303	S26303	S28303		
		37.00	1.4567		S21304	S23304	S26304	S28304		
	1-15/32	37.31	1.4688		S21305	S23305	S26305	S28305		
		38.00	1.4961		S21306	S23306	S26306	S28306		
	1-1/2	38.10	1.5000		S21307	S23307	S26307	S28307		
	1-17/32	38.89	1.5313		S21308	S23308	S26308	S28308		
		39.00	1.5354		S21309	S23309	S26309	S28309		
	1-9/16	39.69	1.5625		S21310	S23310	S26310	S28310		
		40.00	1.5748		S21311	S23311	S26311	S28311		
	1-19/32	40.48	1.5938		S21312	S23312	S26312	S28312		
		41.00	1.6142		S21313	S23313	S26313	S28313		
	1-5/8	41.28	1.6250		S21314	S23314	S26314	S28314		
		42.00	1.6535		S21315	S23315	S26315	S28315		
	1-21/32	42.07	1.6563		S21316	S23316	S26316	S28316		
	1-11/16	42.86	1.6875		S21317	S23317	S26317	S28317		
		43.00	1.6929		S21318	S23318	S26318	S28318		
	1-23/32	43.66	1.7188		S21319	S23319	S26319	S28319		
		44.00	1.7323		S21320	S23320	S26320	S28320		
	1-3/4	44.45	1.7500		S21321	S23321	S26321	S28321		
		45.00	1.7717		S21322	S23322	S26322	S28322		
	1-25/32	45.24	1.7813		S21323	S23323	S26323	S28323		
		46.00	1.8110		S21324	S23324	S26324	S28324		
	1-13/16	46.04	1.8125		S21325	S23325	S26325	S28325		
	1-27/32	46.83	1.8438		S21326	S23326	S26326	S28326		
		47.00	1.8504		S21327	S23327	S26327	S28327		
	1-7/8	47.63	1.8750		S21328	S23328	S26328	S28328		

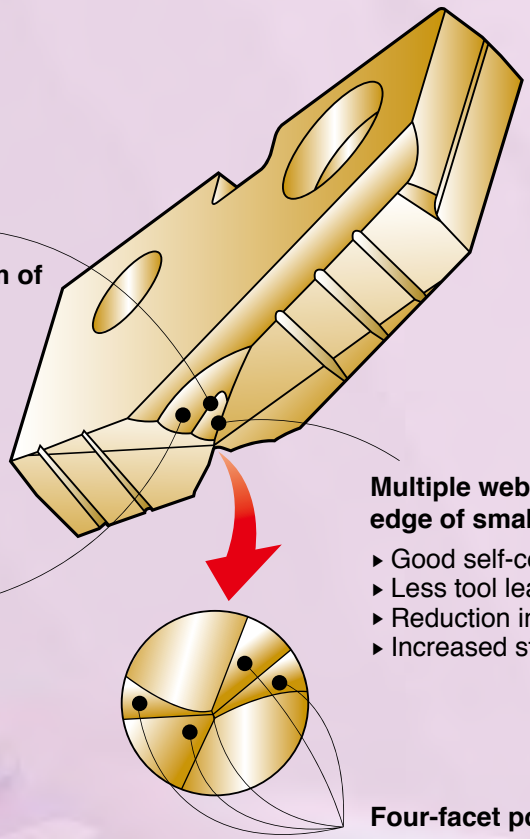
◎ : Excellent ○ : Good

	P											M	K			N	
	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
C2	○	○	○	○	○	◎	◎	○	○	○	○	◎	○	○		◎	◎
C5	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○		○	○
C3													◎	◎			

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.

Multiple web thinning with the cutting edge of small web thinning.

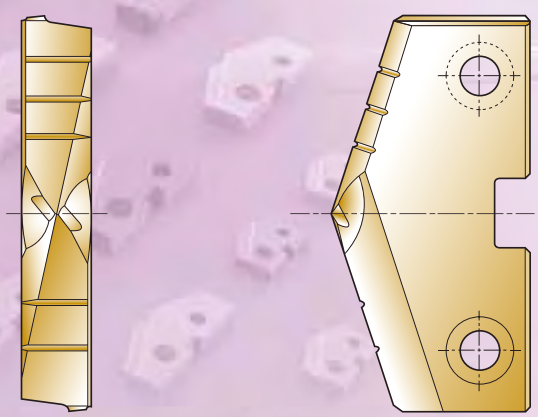
- Good self-centering
- Less tool lead off
- Reduction in bell mouthing, thrust
- Increased stability

Radius back face

- Wide chip space

Four-facet point

- Self-centering
- Less thrust force



SPADE DRILLS

SERIES Y,Z,0,1

SM-POINT SPADE DRILL INSERTS - SUPER COBALT(T15)

- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

POINT ANGLE : 132 degree



cutting conditions : p.278

Series Min. to Max. (inch/mm)	Diameter Fractional (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	EDP No. TiAlN
Y .374 (9.50) to .436 (11.07) Thick 3/32 (2.4)		9.50	.3740	* SM08Y01
	3/8	9.53	.3750	* SM08Y02
		9.80	.3858	* SM08Y03
	25/64	9.92	.3906	* SM08Y04
		10.00	.3937	* SM08Y05
		10.20	.4016	* SM08Y06
	13/32	10.32	.4062	* SM08Y07
		10.50	.4134	* SM08Y08
	27/64	10.72	.4219	* SM08Y09
		10.80	.4252	* SM08Y10
		11.00	.4331	* SM08Y11
Z .437 (11.11) to .510 (12.95) 3/32(2.4)	7/16	11.11	.4375	* SM08Z01
		11.50	.4528	* SM08Z02
	29/64	11.51	.4531	* SM08Z03
	15/32	11.91	.4688	* SM08Z04
		12.00	.4724	* SM08Z05
	31/64	12.30	.4844	* SM08Z06
		12.50	.4921	* SM08Z07
	1/2	12.70	.5000	* SM08Z08
0 .511 (12.98) to .695 (17.65) Thick 1/8 (3.2)		13.00	.5118	* SM08001
	33/64	13.10	.5156	* SM08002
	17/32	13.49	.5312	* SM08003
		13.50	.5315	* SM08004
	35/64	13.89	.5469	* SM08060
		14.00	.5512	* SM08005
	9/16	14.29	.5625	* SM08006
		14.50	.5709	* SM08007
	37/64	14.68	.5781	* SM08008
		15.00	.5906	* SM08009
	19/32	15.08	.5938	* SM08010
	39/64	15.48	.6094	* SM08061
		15.50	.6102	* SM08011
	5/8	15.88	.6250	* SM08012

Series Min. to Max. (inch/mm)	Diameter Fractional (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	EDP No. TiAlN
0 .511 (12.98) to .695 (17.65)		16.00	.6299	* SM08013
	41/64	16.27	.6406	* SM08062
		16.50	.6496	* SM08014
	21/32	16.67	.6562	* SM08015
		17.00	.6693	* SM08016
	43/64	17.07	.6719	* SM08063
	11/16	17.46	.6875	* SM08017
		17.50	.6890	* SM08018
1 .690 (17.53) to .960 (24.38) Thick 5/32 (4.0)	45/64	17.86	.7031	SM08101
		18.00	.7087	SM08102
	23/32	18.26	.7188	SM08103
		18.50	.7283	SM08104
	47/64	18.65	.7344	SM08105
		19.00	.7480	SM08106
	3/4	19.05	.7500	SM08107
	49/64	19.45	.7656	SM08108
		19.50	.7677	SM08109
	25/32	19.84	.7812	SM08110
		20.00	.7874	SM08111
	51/64	20.24	.7969	SM08160
		20.50	.8071	SM08112
	13/16	20.64	.8125	SM08113
		21.00	.8268	SM08114
	27/32	21.43	.8438	SM08115
	55/64	21.83	.8594	SM08161
		22.00	.8661	SM08116
	7/8	22.23	.8750	SM08117
	57/64	22.62	.8906	SM08162
		23.00	.9055	SM08118
	29/32	23.02	.9062	SM08119
	59/64	23.42	.9219	SM08120
	15/16	23.81	.9375	SM08121
		24.00	.9449	SM08122

* 2pcs per package

◎ : Excellent ○ : Good

P											M	K		N	
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
◎	◎	◎	◎	○	○	○	◎	◎	○	○	○	○	◎	○	○

SM-POINT SPADE DRILL INSERTS - SUPER COBALT(T15)

- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

POINT ANGLE : 132 degree



cutting conditions : p.278

Series Min. to Max. (inch/mm)	Diameter			EDP No.
	Fractional (inch)	Metric (mm)	Decimal (inch)	TiAlN
2 **.961 (24.41) to 1.380 (35.05)** **Thick** 3/16 (4.8)	31/32	24.61	.9688	SM08201
	63/64	25.00	.9843	SM08202
	1	25.40	1.0000	SM08203
	1-1/64	25.80	1.0156	SM08204
		26.00	1.0236	SM08205
	1-1/32	26.19	1.0312	SM08206
	1-3/64	26.59	1.0469	SM08260
	1-1/16	26.99	1.0625	SM08207
		27.00	1.0630	SM08208
	1-3/32	27.78	1.0938	SM08209
		28.00	1.1024	SM08210
	1-7/64	28.18	1.1094	SM08261
	1-1/8	28.58	1.1250	SM08211
		29.00	1.1417	SM08212
	1-5/32	29.37	1.1562	SM08213
		30.00	1.1811	SM08214
	1-3/16	30.16	1.1875	SM08215
	1-7/32	30.96	1.2188	SM08216
		31.00	1.2205	SM08217
	1-1/4	31.75	1.2500	SM08218
		32.00	1.2598	SM08219
	1-9/32	32.54	1.2812	SM08220
		33.00	1.2992	SM08221
	1-5/16	33.34	1.3125	SM08222
		34.00	1.3386	SM08223
	1-11/32	34.13	1.3438	SM08224
	1-3/8	34.93	1.3750	SM08225
		35.00	1.3780	SM08226

Series Min. to Max. (inch/mm)	Diameter			EDP No.
	Fractional (inch)	Metric (mm)	Decimal (inch)	TiAlN
3 **1.353 (34.37) to 1.882 (47.80)** **Thick** 1/4 (6.4)	1-13/32	35.72	1.4062	SM08301
		36.00	1.4173	SM08302
	1-7/16	36.51	1.4375	SM08303
		37.00	1.4567	SM08304
	1-15/32	37.31	1.4688	SM08305
		38.00	1.4961	SM08306
	1-1/2	38.10	1.5000	SM08307
	1-17/32	38.89	1.5312	SM08308
		39.00	1.5354	SM08309
	1-9/16	39.69	1.5625	SM08310
		40.00	1.5748	SM08311
	1-19/32	40.48	1.5938	SM08312
		41.00	1.6142	SM08313
	1-5/8	41.28	1.6250	SM08314
		42.00	1.6535	SM08315
	1-21/32	42.07	1.6562	SM08316
	1-11/16	42.86	1.6875	SM08317
		43.00	1.6929	SM08318
	1-23/32	43.66	1.7188	SM08319
		44.00	1.7323	SM08320
	1-3/4	44.45	1.7500	SM08321
		45.00	1.7717	SM08322
	1-25/32	45.24	1.7812	SM08323
		46.00	1.8110	SM08324
	1-13/16	46.04	1.8125	SM08325
	1-27/32	46.83	1.8438	SM08326
		47.00	1.8504	SM08327
	1-7/8	47.63	1.8750	SM08328

◎ : Excellent ○ : Good

P											M	K		N	
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 4,5

SM-POINT SPADE DRILL INSERTS - SUPER COBALT(T15)

- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

POINT ANGLE **- under 2-1/2 : 132 degree**
- over 2-1/2 : 144 degree



cutting conditions : p.278

Series Min. to Max. (inch/mm)	Diameter Fractional (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	EDP No. TiAlN
4 1.850 (46.99) to 2.570 (65.28) Thick 5/16 (7.9)		48.00	1.8898	SM08401
	1-29/32	48.42	1.9062	SM08402
		49.00	1.9291	SM08403
	1-15/16	49.21	1.9375	SM08404
		50.00	1.9685	SM08405
	1-31/32	50.01	1.9688	SM08406
	2	50.80	2.0000	SM08407
		51.00	2.0079	SM08408
	2-1/32	51.59	2.0312	SM08409
	2-3/64	52.00	2.0472	SM08410
	2-1/16	52.39	2.0625	SM08411
		53.00	2.0866	SM08412
	2-3/32	53.18	2.0938	SM08413
	2-1/8	53.98	2.1250	SM08414
		54.00	2.1260	SM08415
	2-5/32	54.77	2.1562	SM08416
		55.00	2.1654	SM08417
	2-3/16	55.56	2.1875	SM08418
		56.00	2.2047	SM08419
	2-7/32	56.36	2.2188	SM08420
		57.00	2.2441	SM08421
	2-1/4	57.15	2.2500	SM08422
	2-9/32	57.94	2.2812	SM08423
		58.00	2.2835	SM08424
	2-5/16	58.74	2.3125	SM08425
		59.00	2.3228	SM08426
	2-11/32	59.53	2.3438	SM08427
		60.00	2.3622	SM08428
	2-3/8	60.33	2.3750	SM08429
		61.00	2.4016	SM08430
	2-13/32	61.12	2.4062	SM08431
	2-7/16	61.91	2.4375	SM08432

Series Min. to Max. (inch/mm)	Diameter Fractional (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	EDP No. TiAlN
4 1.850 (46.99) to 2.570 (65.28)		62.00	2.4409	SM08433
	2-15/32	62.71	2.4688	SM08434
		63.00	2.4803	SM08435
	2-1/2	63.50	2.5000	SM08436
		64.00	2.5197	SM08437
	2-17/32	64.29	2.5312	SM08438
		65.00	2.5591	SM08439
	2-9/16	65.09	2.5625	SM08440
5 2.456 (62.38) to 3.000 (76.20) Thick 7/16 (11.1)	2-1/2	63.50	2.5000	SM08501
		64.00	2.5197	SM08502
	2-17/32	64.29	2.5312	SM08503
	2-9/16	65.09	2.5625	SM08504
	2-19/32	65.88	2.5938	SM08505
		66.00	2.5984	SM08506
	2-5/8	66.68	2.6250	SM08507
	2-21/32	67.47	2.6562	SM08508
		68.00	2.6772	SM08509
	2-11/16	68.26	2.6875	SM08510
	2-23/32	69.05	2.7188	SM08511
	2-3/4	69.85	2.7500	SM08512
		70.00	2.7559	SM08513
	2-25/32	70.64	2.7812	SM08514
	2-13/16	71.44	2.8125	SM08515
		72.00	2.8346	SM08516
	2-27/32	72.23	2.8438	SM08517
	2-7/8	73.03	2.8750	SM08518
	2-29/32	73.82	2.9062	SM08519
		74.00	2.9134	SM08520
	2-15/16	74.61	2.9375	SM08521
	2-31/32	75.41	2.9688	SM08522
		76.00	2.9921	SM08523
	3	76.20	3.0000	SM08524

◎ : Excellent ○ : Good

P											M	K		N	
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 6,7,8

SM-POINT SPADE DRILL INSERTS - SUPER COBALT(T15)

- Improved stability and hole straightness by newly developed thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.

POINT ANGLE : 144 degree



cutting conditions : p.278

Series Min. to Max. (inch/mm)	Diameter Fractional (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	EDP No. TiAlN
6 3.001 (76.23) to 3.507 (89.08) Thick 7/16 (11.1)	3-1/32	76.99	3.0312	SM08601
	3-1/16	77.79	3.0625	SM08602
		78.00	3.0709	SM08603
	3-3/32	78.58	3.0938	SM08604
	3-1/8	79.38	3.1250	SM08605
		80.00	3.1496	SM08606
	3-5/32	80.17	3.1562	SM08607
	3-3/16	80.96	3.1875	SM08608
	3-7/32	81.76	3.2188	SM08609
		82.00	3.2283	SM08610
	3-1/4	82.55	3.2500	SM08611
	3-9/32	83.34	3.2812	SM08612
		84.00	3.3071	SM08613
	3-5/16	84.14	3.3125	SM08614
	3-11/32	84.93	3.3438	SM08615
	3-3/8	85.73	3.3750	SM08616
		86.00	3.3858	SM08617
	3-13/32	86.52	3.4063	SM08618
	3-7/16	87.31	3.4375	SM08619
		88.00	3.4646	SM08620
	3-15/32	88.11	3.4688	SM08621
	3-1/2	88.90	3.5000	SM08622
7 3.455 (87.76) to 4.000 (101.60)	3-17/32	89.69	3.5312	SM08701
		90.00	3.5433	SM08702
	3-9/16	90.49	3.5625	SM08703
	3-19/32	91.28	3.5938	SM08704
		92.00	3.6221	SM08705
	3-5/8	92.08	3.6250	SM08706
	3-21/32	92.87	3.6562	SM08707
	3-11/16	93.66	3.6875	SM08708

Series Min. to Max. (inch/mm)	Diameter Fractional (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	EDP No. TiAlN
7 3.455 (87.76) to 4.000 (101.60) Thick 7/16 (11.1)		94.00	3.7008	SM08709
	3-23/32	94.46	3.7188	SM08710
	3-3/4	95.25	3.7500	SM08711
		96.00	3.7795	SM08712
	3-25/32	96.04	3.7812	SM08713
	3-13/16	96.84	3.8125	SM08714
	3-27/32	97.63	3.8438	SM08715
		98.00	3.8583	SM08716
	3-7/8	98.43	3.8750	SM08717
	3-29/32	99.22	3.9062	SM08718
		100.00	3.9370	SM08719
	3-15/16	100.01	3.9375	SM08720
	3-31/32	100.81	3.9688	SM08721
	4	101.60	4.0000	SM08722
8 4.001 (101.63) to 4.507 (114.48) Thick 7/16 (11.1)	4-1/64	102.00	4.0156	SM08801
	4-1/16	103.19	4.0625	SM08802
	4-3/32	104.00	4.0945	SM08803
	4-1/8	104.78	4.1250	SM08804
		106.00	4.1732	SM08805
	4-3/16	106.36	4.1875	SM08806
	4-1/4	107.95	4.2500	SM08807
		108.00	4.2520	SM08808
	4-5/16	109.54	4.3125	SM08809
		110.00	4.3307	SM08810
	4-3/8	111.13	4.3750	SM08811
		112.00	4.4094	SM08812
	4-7/16	112.71	4.4375	SM08813
		114.00	4.4882	SM08814
	4-1/2	114.30	4.5000	SM08815

◎ : Excellent ○ : Good

P											M	K		N	
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,0,1

SM-POINT SPADE DRILL INSERTS - CARBIDE(C5)

- Improved stability and hole straightness by newly developed chip thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.
- Increased speeds & feeds

POINT ANGLE : 132 degree



cutting conditions : p.279

Series Min. to Max. (inch/mm)	Diameter Fractional (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	EDP No. TiAlN
Y .374 (9.50) to .436 (11.07) Thick 3/32 (2.4)		9.50	.3740	* SM28Y01
	3/8	9.53	.3750	* SM28Y02
		9.80	.3858	* SM28Y03
	25/64	9.92	.3906	* SM28Y04
		10.00	.3937	* SM28Y05
		10.20	.4016	* SM28Y06
	13/32	10.32	.4062	* SM28Y07
		10.50	.4134	* SM28Y08
	27/64	10.72	.4219	* SM28Y09
		10.80	.4252	* SM28Y10
		11.00	.4331	* SM28Y11
Z .437 (11.11) to .510 (12.95) 3/32(2.4)	7/16	11.11	.4375	* SM28Z01
		11.50	.4528	* SM28Z02
	29/64	11.51	.4531	* SM28Z03
	15/32	11.91	.4688	* SM28Z04
		12.00	.4724	* SM28Z05
	31/64	12.30	.4844	* SM28Z06
		12.50	.4921	* SM28Z07
	1/2	12.70	.5000	* SM28Z08
0 .511 (12.98) to .695 (17.65) Thick 1/8 (3.2)		13.00	.5118	* SM28001
	33/64	13.10	.5156	* SM28002
	17/32	13.49	.5312	* SM28003
		13.50	.5315	* SM28004
	35/64	13.89	.5469	* SM28060
		14.00	.5512	* SM28005
	9/16	14.29	.5625	* SM28006
		14.50	.5709	* SM28007
	37/64	14.68	.5781	* SM28008
		15.00	.5906	* SM28009
	19/32	15.08	.5938	* SM28010
	39/64	15.48	.6094	* SM28061
		15.50	.6102	* SM28011
	5/8	15.88	.6250	* SM28012

Series Min. to Max. (inch/mm)	Diameter Fractional (inch)	Diameter Metric (mm)	Diameter Decimal (inch)	EDP No. TiAlN
0 .511 (12.98) to .695 (17.65)		16.00	.6299	* SM28013
	41/64	16.27	.6406	* SM28062
		16.50	.6496	* SM28014
	21/32	16.67	.6562	* SM28015
		17.00	.6693	* SM28016
	43/64	17.07	.6719	* SM28063
	11/16	17.46	.6875	* SM28017
		17.50	.6890	* SM28018
1 .690 (17.53) to .960 (24.38) Thick 5/32 (4.0)	45/64	17.86	.7031	SM28101
		18.00	.7087	SM28102
	23/32	18.26	.7188	SM28103
		18.50	.7283	SM28104
	47/64	18.65	.7344	SM28105
		19.00	.7480	SM28106
	3/4	19.05	.7500	SM28107
	49/64	19.45	.7656	SM28108
		19.50	.7677	SM28109
	25/32	19.84	.7812	SM28110
		20.00	.7874	SM28111
	51/64	20.24	.7969	SM28160
		20.50	.8071	SM28112
	13/16	20.64	.8125	SM28113
		21.00	.8268	SM28114
	27/32	21.43	.8438	SM28115
	55/64	21.83	.8594	SM28161
		22.00	.8661	SM28116
	7/8	22.23	.8750	SM28117
	57/64	22.62	.8906	SM28162
		23.00	.9055	SM28118
	29/32	23.02	.9062	SM28119
	59/64	23.42	.9219	SM28120
	15/16	23.81	.9375	SM28121
		24.00	.9449	SM28122

* 2pcs per package

◎ : Excellent ○ : Good

P											M	K		N	
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

SM-POINT SPADE DRILL INSERTS - CARBIDE(C5)

- Improved stability and hole straightness by newly developed chip thinning design.
- Less thrust force and excellent self-centering.
- Any non-standard size available.
- Increased speeds & feeds

POINT ANGLE : 132 degree



cutting conditions : p.279

Series Min. to Max. (inch/mm)	Diameter			EDP No.
	Fractional (inch)	Metric (mm)	Decimal (inch)	TiAlN
2 **.961 (24.41) to 1.380 (35.05)** **Thick** 3/16 (4.8)	31/32	24.61	.9688	SM28201
	63/64	25.00	.9843	SM28202
	1	25.40	1.0000	SM28203
	1-1/64	25.80	1.0156	SM28204
		26.00	1.0236	SM28205
	1-1/32	26.19	1.0312	SM28206
	1-3/64	26.59	1.0469	SM28260
	1-1/16	26.99	1.0625	SM28207
		27.00	1.0630	SM28208
	1-3/32	27.78	1.0938	SM28209
		28.00	1.1024	SM28210
	1-7/64	28.18	1.1094	SM28261
	1-1/8	28.58	1.1250	SM28211
		29.00	1.1417	SM28212
	1-5/32	29.37	1.1562	SM28213
		30.00	1.1811	SM28214
	1-3/16	30.16	1.1875	SM28215
	1-7/32	30.96	1.2188	SM28216
		31.00	1.2205	SM28217
	1-1/4	31.75	1.2500	SM28218
		32.00	1.2598	SM28219
	1-9/32	32.54	1.2812	SM28220
		33.00	1.2992	SM28221
	1-5/16	33.34	1.3125	SM28222
		34.00	1.3386	SM28223
	1-11/32	34.13	1.3438	SM28224
	1-3/8	34.93	1.3750	SM28225
		35.00	1.3780	SM28226

Series Min. to Max. (inch/mm)	Diameter			EDP No.
	Fractional (inch)	Metric (mm)	Decimal (inch)	TiAlN
3 **1.353 (34.37) to 1.882 (47.80)** **Thick** 1/4 (6.4)	1-13/32	35.72	1.4062	SM28301
		36.00	1.4173	SM28302
	1-7/16	36.51	1.4375	SM28303
		37.00	1.4567	SM28304
	1-15/32	37.31	1.4688	SM28305
		38.00	1.4961	SM28306
	1-1/2	38.10	1.5000	SM28307
	1-17/32	38.89	1.5312	SM28308
		39.00	1.5354	SM28309
	1-9/16	39.69	1.5625	SM28310
		40.00	1.5748	SM28311
	1-19/32	40.48	1.5938	SM28312
		41.00	1.6142	SM28313
	1-5/8	41.28	1.6250	SM28314
		42.00	1.6535	SM28315
	1-21/32	42.07	1.6562	SM28316
	1-11/16	42.86	1.6875	SM28317
		43.00	1.6929	SM28318
	1-23/32	43.66	1.7188	SM28319
		44.00	1.7323	SM28320
	1-3/4	44.45	1.7500	SM28321
		45.00	1.7717	SM28322
	1-25/32	45.24	1.7812	SM28323
		46.00	1.8110	SM28324
	1-13/16	46.04	1.8125	SM28325
	1-27/32	46.83	1.8438	SM28326
		47.00	1.8504	SM28327
	1-7/8	47.63	1.8750	SM28328

◎ : Excellent ○ : Good

P											M	K		N	
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,0,1,2

SPADE DRILL FLAT BOTTOM INSERTS - SUPER COBALT T15

POINT ANGLE : 180 degree



cutting conditions : p.280

Series	Diameter		EDP No.	
	Fractional (inch)	Decimal (inch)	TiN	TiAlN
Y	3/8	.3750	* SF05024	* SF15024
	13/32	.4063	* SF05026	* SF15026
Z	7/16	.4375	* SF05028	* SF15028
	15/32	.4688	* SF05030	* SF15030
	1/2	.5000	* SF05032	* SF15032
0	17/32	.5313	* SF05034	* SF15034
	9/16	.5625	* SF05036	* SF15036
	19/32	.5938	* SF05038	* SF15038
	5/8	.6250	* SF05040	* SF15040
	21/32	.6563	* SF05042	* SF15042
	11/16	.6875	* SF05044	* SF15044
1	23/32	.7188	SF05046	SF15046
	3/4	.7500	SF05048	SF15048
	25/32	.7813	SF05050	SF15050
	13/16	.8125	SF05052	SF15052
	27/32	.8438	SF05054	SF15054
	7/8	.8750	SF05056	SF15056
	29/32	.9063	SF05058	SF15058
	15/16	.9375	SF05060	SF15060

Series	Diameter		EDP No.	
	Fractional (inch)	Decimal (inch)	TiN	TiAlN
2	31/32	.9688	SF05062	SF15062
	1	1.0000	SF05100	SF15100
	1-1/32	1.0313	SF05102	SF15102
	1-1/16	1.0625	SF05104	SF15104
	1-3/32	1.0938	SF05106	SF15106
	1-1/8	1.1250	SF05108	SF15108
	1-5/32	1.1563	SF05110	SF15110
	1-3/16	1.1875	SF05112	SF15112
	1-7/32	1.2188	SF05114	SF15114
	1-1/4	1.2500	SF05116	SF15116
	1-9/32	1.2813	SF05118	SF15118
	1-5/16	1.3125	SF05120	SF15120
	1-11/32	1.3438	SF05122	SF15122
	1-3/8	1.3750	SF05124	SF15124

* 2pcs per package

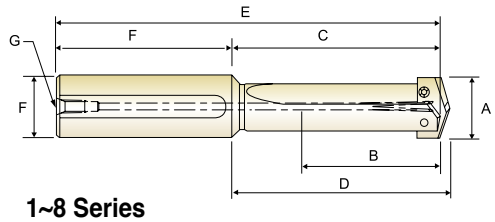
◎ : Excellent ○ : Good

P											M	K		N	
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
◎	◎	◎	◎	○	○	○	◎	◎	○	○	○	○	◎	○	○

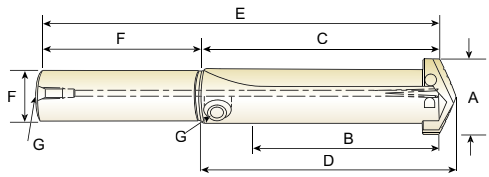
STRAIGHT SHANK HOLDER, STRAIGHT FLUTE



Y~0.5 Series



1~8 Series

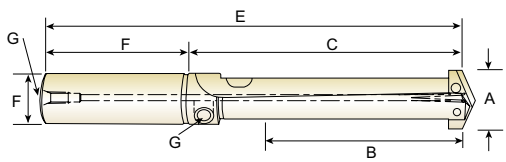


SHORT LENGTH

Unit : Inch

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Flute Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	P13Y01	3/8 – 27/64	1-1/4	2-1/32	2-1/8	4-13/32	3/4	2-3/8	1/8
Z	P13Z01	7/16 – 1/2	1-1/4	2-1/32	2-1/8	4-13/32	3/4	2-3/8	1/8
0	P13001	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	P13051	39/64 – 11/16	1-3/8	2-3/16	2-19/64	4-9/16	3/4	2-3/8	1/8
1	P13101	45/64 – 15/16	2-5/8	3-7/8	4-1/64	6-7/8	3/4	3	1/8
	P13102	45/64 – 15/16	2-5/8	3-7/8	4-1/64	6-7/8	1	3	1/8
1.5	P13151	55/64 – 15/16	2-5/8	3-7/8	4-1/64	6-7/8	3/4	3	1/8
	P13152	55/64 – 15/16	2-5/8	3-7/8	4-1/64	6-7/8	1	3	1/8
2	P13202	31/32 – 1-3/8	3-3/8	4-1/2	4-41/64	8	1	3-1/2	1/8
	P13203	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	P13252	1-3/16 – 1-3/8	3-3/8	4-1/2	4-41/64	8	1	3-1/2	1/8
	P13253	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	P13303	1-13/32 – 1-7/8	4-3/4	6	6-3/16	10	1-1/4	4	1/4
	P13304	1-13/32 – 1-7/8	4-3/4	6	6-3/16	10	1-1/2	4	1/4
4	P13404	1-29/32 – 2-9/16	5-1/8	6-1/2	6-11/16	10-1/2	1-1/2	4	1/4
	P13405	1-29/32 – 2-9/16	5-1/8	6-1/2	6-11/16	10-1/2	1-3/4	4	1/4
5-6	P13506	2-1/2 – 3-1/2	6-3/4	8-1/2	8-3/4	12-1/2	2	4	1/2
7-8	P13708	3-17/32 – 4-1/2	6-3/4	8-7/8	9-1/8	13-7/8	3	5	1/2





INTERMEDIATE LENGTH

Unit : Inch

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Flute Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
1	P14102	45/64 – 15/16	4-5/8	5-7/8	6-1/64	8-7/8	1	3	1/8
1.5	P14152	55/64 – 15/16	4-5/8	5-7/8	6-1/64	8-7/8	1	3	1/8
2	P14203	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	P14253	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	P14304	1-13/32 – 1-7/8	6-1/2	7-3/4	7-15/16	11-3/4	1-1/2	4	1/4

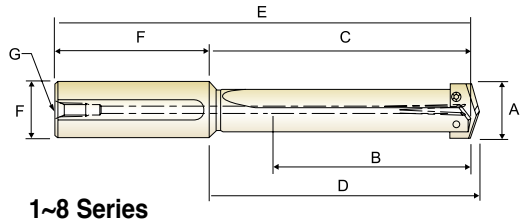
SPADE DRILLS

P15 SERIES

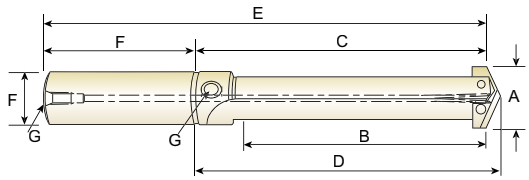
STRAIGHT SHANK HOLDER, STRAIGHT FLUTE



Y~0.5 Series



1~8 Series



STANDARD LENGTH

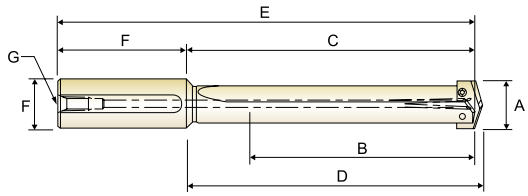
Unit : Inch

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Flute Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	P15Y01	3/8 – 27/64	2-3/8	3-5/32	3-1/4	5-17/32	3/4	2-3/8	1/8
Z	P15Z01	7/16 – 1/2	2-3/8	3-5/32	3-1/4	5-17/32	3/4	2-3/8	1/8
0	P15001	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	P15051	39/64 – 11/16	2-1/2	3-5/16	3-27/64	5-11/16	3/4	2-3/8	1/8
1	P15101	45/64 – 15/16	6-5/8	7-7/8	8-1/64	10-7/8	3/4	3	1/8
	P15102	45/64 – 15/16	6-5/8	7-7/8	8-1/64	10-7/8	1	3	1/8
1.5	P15151	55/64 – 15/16	6-5/8	7-7/8	8-1/64	10-7/8	3/4	3	1/8
	P15152	55/64 – 15/16	6-5/8	7-7/8	8-1/64	10-7/8	1	3	1/8
2	P15202	31/32 – 1-3/8	7-3/8	8-1/2	8-41/64	12	1	3-1/2	1/8
	P15203	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	P15252	1-3/16 – 1-3/8	7-3/8	8-1/2	8-41/64	12	1	3-1/2	1/8
	P15253	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	P15303	1-13/32 – 1-7/8	8-1/4	9-1/2	9-11/16	13-1/2	1-1/4	4	1/4
	P15304	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	P15404	1-29/32 – 2-9/16	9-1/8	10-1/2	10-11/16	14-1/2	1-1/2	4	1/4
	P15405	1-29/32 – 2-9/16	9-1/8	10-1/2	10-11/16	14-1/2	1-3/4	4	1/4
5-6	P15506	2-1/2 – 3-1/2	10-3/4	12-1/2	12-3/4	16-1/2	2	4	1/2
7-8	P15708	3-17/32 – 4-1/2	10-3/4	12-7/8	13-1/8	17-7/8	3	5	1/2

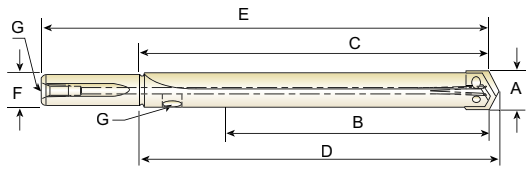
STRAIGHT SHANK HOLDER, STRAIGHT FLUTE



Y~0.5 Series



1~8 Series



EXTENDED LENGTH

Unit : Inch

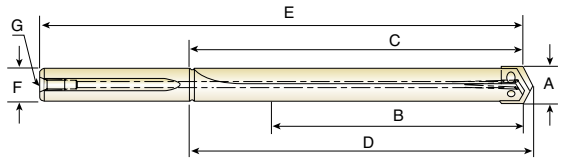
Series	EDP No.	Drill Insert Range	Max. Drill Depth	Flute Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	P16Y01	3/8 – 27/64	4-3/8	5-5/32	5-1/4	7-17/32	3/4	2-3/8	1/8
Z	P16Z01	7/16 – 1/2	4-3/8	5-5/32	5-1/4	7-17/32	3/4	2-3/8	1/8
0	P16001	33/64 – 11/16	4-1/2	5-5/16	5-27/64	7-11/16	3/4	2-3/8	1/8
0.5	P16051	39/64 – 11/16	4-1/2	5-5/16	5-27/64	7-11/16	3/4	2-3/8	1/8
1	P16102	45/64 – 15/16	10-5/8	11-7/8	12-1/64	14-7/8	1	3	1/8
1.5	P16152	55/64 – 15/16	10-5/8	11-7/8	12-1/64	14-7/8	1	3	1/8
2	P16203	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	P16253	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	P16303	1-13/32 – 1-7/8	13-3/4	15	15-3/16	19	1-1/4	4	1/4
4	P16404	1-29/32 – 2-9/16	16-5/8	18	18-3/16	22	1-1/2	4	1/4
5-6	P16506	2-1/2 – 3-1/2	18-1/4	20	20-1/4	24	2	4	1/2
7-8	P16708	3-17/32 – 4-1/2	21-7/8	24	24-1/4	29	3	5	1/2

SPADE DRILLS

P17 SERIES

STRAIGHT SHANK HOLDER, STRAIGHT FLUTE



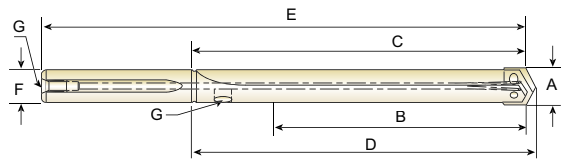


LONG LENGTH

Unit : Inch

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Flute Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
0	P17001	33/64 – 11/16	7	7-13/16	7-59/64	10-3/16	3/4	2-3/8	1/8
0.5	P17051	39/64 – 11/16	7	7-13/16	7-59/64	10-3/16	3/4	2-3/8	1/8





EXTRA LONG LENGTH

Unit : Inch

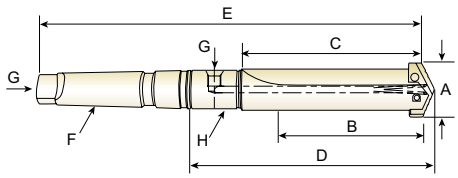
Series	EDP No.	Drill Insert Range	Max. Drill Depth	Flute Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
1	P17101	45/64 – 15/16	18	19-1/4	19-25/64	22-1/4	1	3	1/8
2	P17202	31/32 – 1-3/8	20-1/8	21-1/4	21-25/64	24-3/4	1-1/4	3-1/2	1/8
3	P17303	1-13/32 – 1-7/8	22	23-1/4	23-7/16	27-1/4	1-1/2	4	1/4
4	P17404	1-29/32 – 2-9/16	24-5/8	26	26-3/16	30	1-1/2	4	1/4
5	P17506	2-1/2 – 3-1/2	26	27-3/4	28	31-3/4	2	4	1/2
7	P17708	3-17/32 – 4-1/2	27	29-1/8	29-3/8	34-1/8	3	5	1/2

SPADE DRILLS

P01 SERIES
P08 SERIES

TAPER SHANK HOLDER, STRAIGHT FLUTE / HELICAL FLUTE





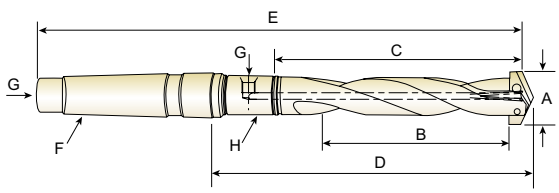
SHORT LENGTH

Unit : Inch

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Flute Length	Ref. Length	Overall Length	MT	Pipe Tap	RCI
		A	B	C	D	E	F	G	H
Y	P01Y02	3/8 – 27/64	1-1/4	2-1/32	3-15/32	6-5/16	#2	1/16	PR1030
Z	P01Z02	7/16 – 1/2	1-1/4	2-1/32	3-15/32	6-5/16	#2	1/16	PR1030
0	P01002	33/64 – 11/16	1-3/8	2-3/16	3-41/64	6-15/32	#2	1/16	PR1030
0.5	P01052	39/64 – 11/16	1-3/8	2-3/16	3-41/64	6-15/32	#2	1/16	PR1030
1	P01103	45/64 – 15/16	2-3/4	3-7/8	5-39/64	9-5/32	#3	1/8	PR1031
	P01104	45/64 – 15/16	2-3/4	3-7/8	5-43/64	10-5/32	#4	1/8	PR1031
1.5	P01153	55/64 – 15/16	2-3/4	3-7/8	5-39/64	9-5/32	#3	1/8	PR1031
	P01154	55/64 – 15/16	2-3/4	3-7/8	5-43/64	10-5/32	#4	1/8	PR1031
2	P01203	31/32 – 1-3/8	3-3/8	4-1/2	6-15/64	9-25/32	#3	1/8	PR1031
	P01204	31/32 – 1-3/8	3-3/8	4-1/2	6-19/64	10-25/32	#4	1/8	PR1031
2.5	P01253	1-3/16 – 1-3/8	3-3/8	4-1/2	6-15/64	9-25/32	#3	1/8	PR1031
	P01254	1-3/16 – 1-3/8	3-3/8	4-1/2	6-37/64	11-1/16	#4	1/4	PR1042
3	P01304	1-13/32 – 1-7/8	4-3/4	6	8-1/8	12-9/16	#4	1/4	PR1042
	P01305	1-13/32 – 1-7/8	4-3/4	6	8-1/8	13-13/16	#5	1/4	PR1043
4	P01404	1-29/32 – 2-9/16	5-1/8	6-1/2	8-5/8	13-1/16	#4	1/4	PR1042
	P01405	1-29/32 – 2-9/16	5-1/8	6-1/2	8-5/8	14-5/16	#5	1/4	PR1043
5-6	P01505	2-1/2 – 3-1/2	6-3/4	8-1/2	11-5/16	16-15/16	#5	1/2	PR1054
7-8	P01705	3-17/32 – 4-1/2	6-3/4	8-7/8	11-11/16	17-5/16	#5	1/2	PR1054

▶ You can also apply **RCI**(**R**otary **C**oolant **I**nducer) for internal cooling. (See page 277)





INTERMEDIATE LENGTH

Unit : Inch

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Flute Length	Ref. Length	Overall Length	MT	Pipe Tap	RCI
		A	B	C	D	E	F	G	H
1	P08103	45/64 – 15/16	4-3/4	5-7/8	7-39/64	11-5/32	#3	1/8	PR1031
1.5	P08153	55/64 – 15/16	4-3/4	5-7/8	7-39/64	11-5/32	#3	1/8	PR1031
2	P08204	31/32 – 1-3/8	5-3/8	6-1/2	8-19/64	12-25/32	#4	1/8	PR1031
2.5	P08254	1-3/16 – 1-3/8	5-3/8	6-1/2	8-37/64	13-1/16	#4	1/4	PR1042

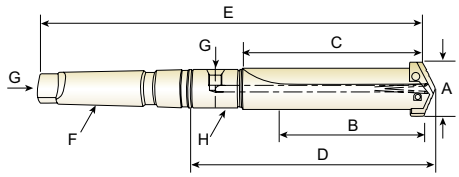
▶ You can also apply **RCI**(**R**otary **C**oolant **I**nducer) for internal cooling. (See page 277)

SPADE DRILLS

P03 SERIES

TAPER SHANK HOLDER, STRAIGHT FLUTE





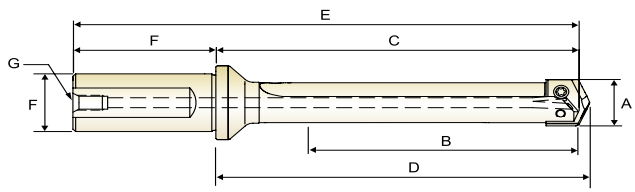
STANDARD LENGTH

Unit : Inch

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Flute Length	Ref. Length	Overall Length	MT	Pipe Tap	RCI
		A	B	C	D	E	F	G	H
Y	P03Y02	3/8 – 27/64	2-3/8	3-5/32	4-19/32	7-7/16	#2	1/16	PR1030
Z	P03Z02	7/16 – 1/2	2-3/8	3-5/32	4-19/32	7-7/16	#2	1/16	PR1030
0	P03002	33/64 – 11/16	2-1/2	3-5/16	4-49/64	7-19/32	#2	1/16	PR1030
0.5	P03052	39/64 – 11/16	2-1/2	3-5/16	4-49/64	7-19/32	#2	1/16	PR1030
1	P03103	45/64 – 15/16	6-3/4	7-7/8	9-39/64	13-5/32	#3	1/8	PR1031
	P03104	45/64 – 15/16	6-3/4	7-7/8	9-43/64	14-5/32	#4	1/8	PR1031
1.5	P03153	55/64 – 15/16	6-3/4	7-7/8	9-39/64	13-5/32	#3	1/8	PR1031
	P03154	55/64 – 15/16	6-3/4	7-7/8	9-43/64	14-5/32	#4	1/8	PR1031
2	P03203	31/32 – 1-3/8	7-3/8	8-1/2	10-15/64	13-25/32	#3	1/8	PR1031
	P03204	31/32 – 1-3/8	7-3/8	8-1/2	10-19/64	14-25/32	#4	1/8	PR1031
2.5	P03253	1-3/16 – 1-3/8	7-3/8	8-1/2	10-15/64	13-25/32	#3	1/8	PR1031
	P03254	1-3/16 – 1-3/8	7-3/8	8-1/2	10-37/64	15-1/16	#4	1/4	PR1042
3	P03304	1-13/32 – 1-7/8	8-1/4	9-1/2	11-5/8	16-1/16	#4	1/4	PR1042
	P03305	1-13/32 – 1-7/8	8-1/4	9-1/2	11-5/8	17-5/16	#5	1/4	PR1043
4	P03404	1-29/32 – 2-9/16	9-1/8	10-1/2	12-5/8	17-1/16	#4	1/4	PR1042
	P03405	1-29/32 – 2-9/16	9-1/8	10-1/2	12-5/8	18-5/16	#5	1/4	PR1043
5-6	P03505	2-1/2 – 3-1/2	10-3/4	12-1/2	15-5/16	20-15/16	#5	1/2	PR1054
7-8	P03705	3-17/32 – 4-1/2	10-3/4	12-7/8	15-11/16	21-5/16	#5	1/2	PR1054

▶ You can also apply **RCI**(**R**otary **C**oolant **I**nducer) for internal cooling. (See page 277)

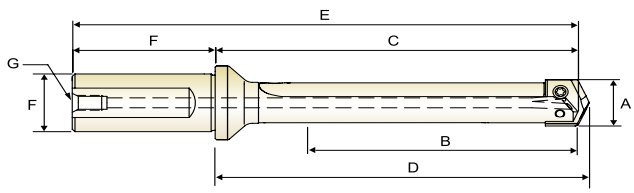
FLANGED STRAIGHT SHANK HOLDER, STRAIGHT FLUGTE



SHORT LENGTH SPADE DRILL HOLDER

Unit : Inch

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Flute Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	P25Y01	3/8 – 27/64	1-1/4	2-13/32	2-1/2	4-7/16	3/4	2-1/32	1/8
Z	P25Y01	7/16 – 1/2	1-1/4	2-13/32	2-1/2	4-7/16	3/4	2-1/32	1/8
0	P25001	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	P25051	39/64 – 11/16	1-3/8	2-1/2	2-39/64	4-17/32	3/4	2-1/32	1/8
1	P25102	45/64 – 15/16	2-5/8	4-7/32	4-23/64	6-1/2	1	2-9/32	1/8
1.5	P25152	55/64 – 15/16	2-5/8	4-7/32	4-23/64	6-1/2	1	2-9/32	1/8
2	P25203	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	P25253	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	P25303	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	P25404	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



INTERMEDIATED LENGTH

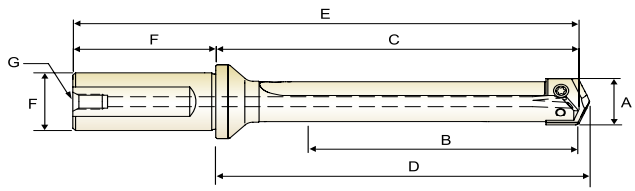
Unit : Inch

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Flute Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
1	P26102	45/64 ~ 15/16	4-5/8	6-3/32	6-15/64	8-3/8	1	2-9/32	1/8
1.5	P26152	55/64 ~ 15/16	4-5/8	6-3/32	6-15/64	8-3/8	1	2-9/32	1/8
2	P26203	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	P26253	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	P26304	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

P27 SERIES
P28 SERIES

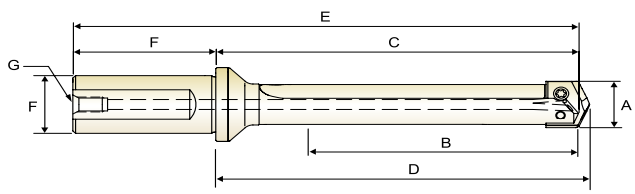
FLANGED STRAIGHT SHANK HOLDER, STRAIGHT FLUGTE



STANDARD LENGTH

Unit : Inch

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Flute Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	P27Y01	3/8 ~ 27/64	2-3/8	3-17/32	3-5/8	5-9/16	3/4	2-1/32	1/8
Z	P27Z01	7/16 ~ 1/2	2-3/8	3-17/32	3-5/8	5-9/16	3/4	2-1/32	1/8
0	P27001	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	P27051	39/64 ~ 11/16	2-1/2	3-5/8	3-47/64	5-21/32	3/4	2-1/32	1/8
1	P27102	45/64 ~ 15/16	6-5/8	8-3/32	8-15/64	10-3/8	1	2-9/32	1/8
1.5	P27152	55/64 ~ 15/16	6-5/8	8-3/32	8-15/64	10-3/8	1	2-9/32	1/8
2	P27203	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	P27253	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	P27303	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	P27404	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



EXTENDED LENGTGH

Unit : Inch

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Flute Length	Ref. Length	Overall Length	Shank		Pipe Tap
							Dia.	Length	
		A	B	C	D	E	F		G
Y	P28Y01	3/8 ~ 27/64	4-3/8	5-17/32	5-5/8	7-9/16	3/4	2-1/32	1/8
Z	P28Y01	7/16 ~ 1/2	4-3/8	5-17/32	5-5/8	7-9/16	3/4	2-1/32	1/8
0	P28001	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	P28051	39/64 ~ 11/16	4-1/2	5-5/8	5-47/64	7-21/32	3/4	2-1/32	1/8
1	P28102	45/64 ~ 15/16	10-5/8	12-3/32	12-15/64	14-3/8	1	2-9/32	1/8
1.5	P28152	55/64 ~ 15/16	10-5/8	12-3/32	12-15/64	14-3/8	1	2-9/32	1/8
2	P28203	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	P28253	1-3/32 ~ 1-3/8	11-3/8	13-1/16	13-13/64	15-11/32	1-1/4	2-9/32	1/4

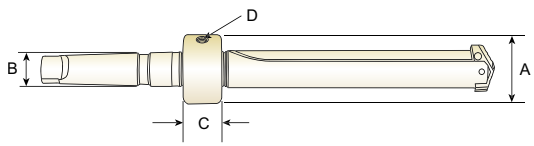
HOLDER ACCESSORIES

TORX SCREWS AND PREMIUM TORX HAND DRIVERS

Series	Torx Screws		Torx Screws (Nylon Locking)		Premium Torx Drivers	Drill Range		Torque in Lbs. 5.5
	Item	PKG EDP No. (10 Screws)	Item	PKG EDP No. (10 Screws)	EDP No.	Fractional inch	Metric mm	
Y	2XT7	J7Y001	2XT7N	J7Y006	J5Y007	3/8 – 27/64	9.5 – 11.0	5.5
Z	2LXT7	J7Z011	2LXT7N	J7Z016	J5Y007	7/16 – 1/2	11.5 – 12.5	5.5
0	2.5XT8	J80021	2.5XT8N	J80026	J50008	33/64 – 11/16	13.0 – 17.5	11.0
0.5	2.5LXT8	J80531	2.5LXT8N	J80536	J50008	39/64 – 11/16	15.5 – 17.5	11.0
1	3XT9	J91041	3XT9N	J91046	J51009	45/64 – 15/16	18.0 – 24.0	20.0
1.5	3LXT9	J91551	3LXT9N	J91556	J51009	55/64 – 15/16	22.0 – 24.0	20.0
2	4XT15	JB2061	4XT15N	JB2066	J52015	31/32 – 1-3/8	25.0 – 35.0	45.0
2.5	4XT15	JB2061	4XT15N	JB2066	J52015	31/32 – 1-3/8	30.0 – 35.0	45.0
3-4	5XT20	JC3081	5XT20N	JC3086	J53020	1-13/32 – 2-9/16	36.0 – 65.0	90.0
5-8	6XT25	JD5091	6XT25N	JD5096	J55025	2-1/2 – 4-1/2	64.0 – 114.0	155.0

NOTE : Replacement screws sold in packages (10 screws per package)





ROTARY COOLANT INDUCER (RCI) AND ACCESSORIES



Complete with O'Rings, Flat Washers and Locking Clips.

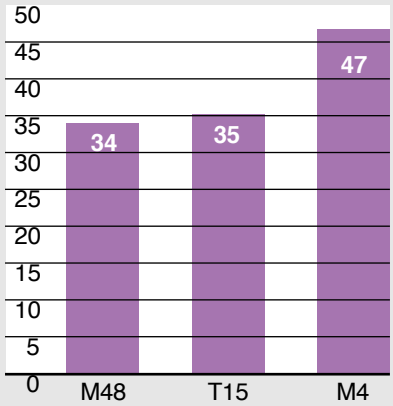
EDP No.	I.D. A	Pipe O.D. B	Length C	Tap D	Thread for Driving Rod
PR1030	1-3/4	3/4	7/8	1/8	5/16 – NC
PR1031	2-1/8	1	1-1/8	1/8	5/16 – NC
PR1042	2-1/2	1-1/4	1-3/8	1/4	3/8 – NC
PR1043	3	1-3/4	1-3/8	1/4	3/8 – NC
PR1054	3-3/4	2-1/4	1-3/4	1/2	1/2 – NC

SPADE DRILLS

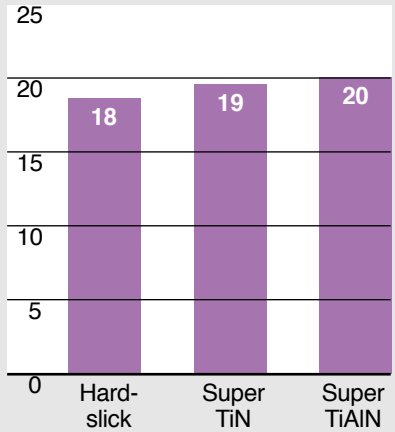
RECOMMENDED CUTTING CONDITIONS

SPADE BLADE INSERTS SELECTION & APPLICATIONS HSS

Toughness Values



Wear Values



- **WHEN TO USE M4**
  - Loose or Manual Machines
  - If T15 Breaks
- **WHEN TO USE T15**
  - When M4 Life needs to be Extended
  - If M48 Breaks
- **WHEN TO USE M48**
  - Extend Life T15
- **WHEN TO USE SM POINT**
  - Reduce Thrust
  - Smoother Entry
  - Improve Hole Quality
  - Higher Speeds and Feeds

SPEEDS – FEED RECOMMENDATIONS (STD POINT-SM POINT)

STANDARD GEOMETRY
SM POINT

Material	Material Hardness (BHN)	SFM Surface Footage		Feed (IPR) 3/8 ~ 1/2		33/64 ~ 11/16		45/64 ~ 15/16		31/32~ 1-3/8		1-13/32 ~ 1-7/8		1-29/32 ~ 2-9/16		2-19/32 ~ 4-1/2	
Free Machining Steel 1118, 1215, 12L14	100 - 150	280	330	.007	.008	.010	.012	.013	.016	.016	.019	.020	.020	.023	.023	.028	.028
	150 - 200	260	305	.007	.007	.010	.011	.013	.015	.016	.017	.020	.020	.023	.023	.028	.028
	200 - 250	240	285	.007	.006	.010	.010	.013	.014	.016	.016	.020	.020	.023	.023	.028	.028
Low & Medium Carbon Steel 1018, 1040, 1140		240	280	.006	.007	.009	.010	.012	.014	.015	.017	.019	.019	.023	.023	.027	.027
		225	265	.005	.006	.008	.009	.010	.013	.014	.016	.018	.018	.021	.021	.024	.024
		210	245	.005	.006	.008	.009	.010	.013	.014	.016	.018	.018	.021	.021	.024	.024
		195	230	.004	.005	.007	.008	.009	.012	.012	.015	.016	.016	.019	.019	.022	.022
Alloy Steel 4140, 5140, 8640	125 - 175	210	245	.006	.007	.008	.010	.010	.014	.014	.017	.017	.017	.019	.019	.022	.022
	175 - 225	195	230	.005	.006	.008	.009	.010	.013	.014	.016	.017	.017	.019	.019	.022	.022
	225 - 275	180	215	.005	.006	.007	.009	.010	.013	.014	.016	.017	.017	.019	.019	.022	.022
	275 - 325	170	200	.004	.005	.006	.008	.009	.012	.012	.015	.015	.015	.017	.017	.020	.020
	325 - 375	155	185	.003	.004	.006	.007	.009	.011	.012	.014	.015	.015	.017	.017	.020	.020
High Strength Alloy Stee 4340, 4330V, 300M		110	130	.005	.006	.007	.009	.009	.011	.010	.013	.014	.014	.017	.017	.020	.020
		85	105	.004	.005	.007	.008	.009	.010	.010	.012	.014	.014	.017	.017	.020	.020
		70	85	.003	.004	.006	.007	.008	.009	.009	.011	.012	.012	.015	.015	.018	.018
Structural Steel A36, A285, A516	100 - 150	200	240	.006	.008	.010	.011	.012	.015	.014	.017	.018	.018	.021	.021	.026	.026
	150 - 250	170	195	.005	.006	.009	.010	.010	.013	.012	.015	.016	.016	.019	.019	.024	.024
	250 - 350	140	165	.004	.005	.008	.009	.009	.012	.010	.013	.014	.014	.017	.017	.020	.020
High Temp, Alloy Hastelloy B, Inconel 600		40	50	.003	.004	.006	.007	.007	.009	.008	.011	.010	.012	.012	.015	.015	.017
		35	45	.003	.004	.006	.006	.007	.008	.008	.010	.010	.010	.012	.012	.015	.014
Stainless Steel 303, 416, 420, 17-4 PH	135 - 185	105	125	.006	.007	.008	.009	.009	.012	.011	.014	.014	.014	.016	.016	.020	.020
	185 - 275	90	110	.005	.006	.007	.008	.008	.011	.010	.012	.012	.012	.014	.014	.018	.018
Tool Steel H-13, H021, A04, O-2, S-3		110	130	.004	.004	.006	.007	.008	.010	.010	.012	.012	.012	.015	.015	.017	.017
		90	110	.004	.004	.006	.007	.008	.010	.010	.012	.012	.012	.015	.015	.017	.017
Aluminum	30	850	-	.008	-	.013	-	.016	-	.020	-	.022	.022	.025	.025	.025	.025
	180	450	-	.008	-	.013	-	.016	-	.018	-	.022	.022	.025	.025	.025	.025
Cast Iron Gray, Ductile, Nodular		250	295	.007	.008	.012	.012	.016	.016	.020	.020	.024	.024	.027	.027	.030	.030
		225	265	.006	.007	.011	.011	.014	.015	.018	.019	.022	.022	.025	.025	.028	.028
		195	230	.006	.006	.009	.009	.012	.013	.016	.017	.018	.018	.021	.021	.024	.024
		165	195	.005	.005	.007	.008	.009	.011	.012	.014	.014	.014	.017	.017	.020	.020
		135	160	.004	.005	.006	.007	.007	.010	.009	.011	.012	.012	.014	.014	.016	.016

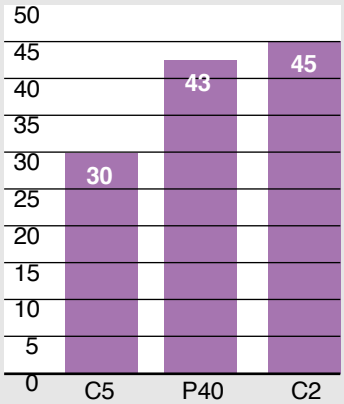
The recommendations for speed, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points. Speed and feed reduction (20% reduction in speed and 10% reduction in feed) are recommended.

SPADE DRILLS

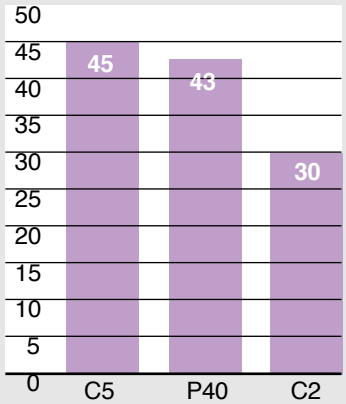
RECOMMENDED CUTTING CONDITIONS

SPADE BLADE INSERTS SELECTION & APPLICATIONS CARBIDE

Toughness Values



Wear Values



If C5 chips try C2 at 10% – 20% lower S.F.M. than C5 rating

Grade	Geometry and Application	Stocked Coatings
P40 & C5	Steel Cutting	Super TiN TiAlN
C3	Cast Iron	Super TiN TiAlN
P40 & C2	Ductile Iron Stainless Steel Aluminum Exotic Alloys	Super TiN TiAlNE

Note : Carbide has a lower transverse rupture strength than HSS and is prone to chipping and breakage.

Recutting of chips or lack of rigidity can cause breakage.

Check Coolant Recommendations Chart on Page 461 for flow rates.

SPEEDS – FEED RECOMMENDATIONS (STD POINT-SM POINT)

STANDARD GEOMETRY
SM POINT

Material	Material Hardness (BHN)	SFM Surface Footage		Feed (IPR) 3/8 ~ 1/2		33/64 ~ 11/16		45/64 ~ 15/16		31/32 ~ 1-3/8		1-13/32 ~ 1-7/8	
Free Machining Steel 1118, 1215, 12L14	100 - 150	420	485	.006	.008	.009	.012	.012	.016	.015	.019	.019	-
	150 - 200	360	420	.006	.007	.008	.011	.011	.015	.013	.017	.017	-
	200 - 250	340	395	.005	.006	.008	.010	.010	.014	.012	.016	.015	-
Low & Medium Carbon Steel 1018, 1040, 1140	125 - 175	340	395	.005	.007	.008	.010	.010	.014	.014	.017	.017	-
	175 - 225	310	360	.005	.006	.007	.009	.008	.013	.012	.016	.016	-
	225 - 275	270	315	.004	.006	.007	.009	.008	.013	.012	.016	.015	-
	275 - 325	230	270	.004	.005	.006	.008	.006	.012	.010	.015	.014	-
Alloy Steel 4140, 5140, 8640	125 - 175	325	380	.005	.007	.008	.010	.010	.014	.013	.017	.016	-
	175 - 225	300	350	.005	.006	.007	.009	.009	.013	.012	.016	.015	-
	225 - 275	270	315	.004	.006	.007	.009	.009	.013	.012	.016	.015	-
	275 - 325	250	290	.004	.005	.006	.008	.008	.012	.011	.015	.014	-
	325 - 375	220	260	.003	.004	.005	.007	.008	.011	.010	.014	.013	-
High Strength Alloy Stee 4340, 4330V, 300M	225 - 300	200	235	.005	.006	.007	.009	.008	.011	.010	.013	.014	-
	300 - 350	180	210	.004	.005	.006	.008	.007	.010	.009	.012	.012	-
	350 - 400	160	190	.003	.004	.005	.007	.006	.009	.008	.011	.010	-
Structural Steel A36, A285, A516	100 - 150	310	360	.006	.008	.010	.011	.011	.015	.012	.017	.016	-
	150 - 250	250	290	.005	.006	.008	.010	.009	.013	.011	.015	.015	-
	250 - 350	230	270	.004	.005	.007	.009	.008	.012	.009	.013	.013	-
High Temp, Alloy Hastelloy B, Inconel 600	140 - 220	80	125	.003	.004	.006	.007	.007	.009	.009	.011	.011	-
	220 - 310	60	100	.003	.004	.005	.006	.006	.008	.008	.010	.010	-
Stainless Steel 303, 416, 420, 17-4 PH	135 - 185	210	245	.006	.007	.008	.009	.009	.012	.011	.014	.013	-
	185 - 275	160	190	.005	.006	.007	.008	.008	.011	.010	.012	.011	-
Tool Steel H-13, H021, A04, O-2, S-3	150 - 200	220	260	.003	.004	.005	.007	.007	.010	.009	.012	.011	-
	200 - 250	170	200	.003	.004	.005	.007	.007	.010	.009	.012	.011	-
Aluminum	30	1500	-	.008	-	.013	-	.016	-	.020	-	.022	-
	180	1000	-	.007	-	.011	-	.014	-	.018	-	.020	-
Cast Iron Gray, Ductile, Nodular	120 - 150	460	505	.006	.008	.009	.012	.011	.015	.015	.019	.020	-
	150 - 200	400	485	.005	.007	.008	.011	.010	.013	.014	.017	.018	-
	200 - 220	360	435	.005	.006	.007	.009	.008	.012	.012	.015	.015	-
	220 - 260	310	375	.004	.005	.006	.008	.007	.011	.010	.013	.013	-
	260 - 320	270	340	.004	.005	.005	.007	.006	.010	.008	.011	.011	-

The recommendations for speed, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points. Speed and feed reduction (20% reduction in speed and 10% reduction in feed) are recommended.

SPADE DRILLS

RECOMMENDED CUTTING CONDITIONS

SUPER COBALT T15 FLAT BOTTOM

Material	Material Hardness (BHN)	Speed (SFM)		Feed			
		TiN	TiAlN	3/8 ~ 1/2	33/64 ~ 11/16	45/64 ~ 15/16	31/32 ~ 1-3/8
Free machining Steel **1213, 12L13, 1215** **12L14, 1118**	100 - 150 150 - 200 200 - 250	165 150 135	220 215 190	0.005 0.005 0.004	0.007 0.007 0.007	0.010 0.010 0.010	0.013 0.013 0.012
Low Carbon Steel **1015, 1020, 1140,** **1025**	85 - 125 125 - 175 175 - 225 225 - 275	140 135 125 115	195 190 180 175	0.005 0.005 0.004 0.004	0.007 0.007 0.006 0.006	0.009 0.009 0.008 0.008	0.012 0.012 0.011 0.011
Medium Carbon Steel **1035, 1050, 1045** **1055, 1140**	125 - 175 175 - 225 225 - 275 275 - 325	135 125 115 105	195 180 165 150	0.004 0.004 0.004 0.003	0.007 0.006 0.006 0.005	0.009 0.007 0.007 0.007	0.011 0.011 0.011 0.009
Structural Steel **A36, A516, A182**	100 - 150 150 - 250 250 - 350	115 100 80	165 140 115	0.004 0.004 0.003	0.007 0.007 0.006	0.009 0.008 0.007	0.011 0.009 0.008
Cast Iron / S,G Iron **A48-76 GR30/GR45** **A536-72 60-40-18** **A220-76 GR40010**	120 - 150 150 - 200 200 - 220 220 - 260 260 - 320	145 130 110 95 80	215 190 165 150 120	0.005 0.005 0.005 0.004 0.004	0.010 0.008 0.008 0.006 0.005	0.014 0.011 0.010 0.008 0.006	0.016 0.016 0.014 0.010 0.008
Alloy Steel **8620, 4130, 4137** **4140, 6150**	125 - 175 175 - 225 225 - 275 275 - 325 325 - 375	125 115 105 100 90	165 150 145 140 120	0.005 0.004 0.004 0.003 0.003	0.006 0.006 0.005 0.005 0.005	0.008 0.008 0.007 0.007 0.007	0.011 0.011 0.011 0.009 0.009
Tool Steel **H13, H21, A2, S1**	150 - 200 200 - 250	65 45	90 75	0.003 0.003	0.005 0.005	0.006 0.006	0.008 0.008
High Temp. Alloy **Hastelloy B,Inconel**	140 - 220 220 - 310 225 - 300	20 15 65	30 25 90	0.003 0.003 0.004	0.005 0.004 0.006	0.006 0.006 0.007	0.008 0.006 0.008
High Strength Alloy **9840, 4340, 4330V**	300 - 350 350 - 400	45 40	70 60	0.003 0.003	0.006 0.005	0.007 0.006	0.008 0.007
Aluminium **2014, 6061, 7075**	30 180	520 255	700 390	0.007 0.007	0.011 0.011	0.014 0.014	0.017 0.016
Stainless Steel **310, 316, 410, 330**	135 - 185 185 - 275	60 50	90 80	0.005 0.004	0.007 0.006	0.008 0.007	0.009 0.009

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

*** Formulas :**

$$SFM = (RPM) \cdot (.262) \cdot (DIA.)$$

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

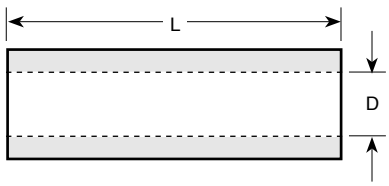
$$RPM = \frac{(SFM) \cdot (3.82)}{(DIA.)}$$

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.

SPADE BLADE INSERTS HORSEPOWER CONSUMPTION RATE

Metal Removal Rates (MRR)
Example : 1.50 Dia. Drill @ 6.412 I.P.M.

Volume of Cylinder Method : D^2x.785xL
D = Hole Diameter
L = Length in I.P.M.
.785 is Constant



Material Drilled 4140 250 BHN :
Cutting Data : 180 S.F.M. (458 R.P.M.) x .014 Feed per Rev.

458 R.P.M. x .014 = 6.412 I.P.M. (L)

D^2 $(1.5)^2$ x .785 x L (6.412) = 11.3 C.U.In./ Min (MRR)

MRR of 11.3 x 1.4 Energy Value = 15.8HP.

metal removal rates (mrR)

- Cubic inches of metal removal per unit of horsepower.
- Unit horsepower (HP_u) is the amount of power to remove a volume of metal in a period of time.
  - HP_u = power to cut 1 cubic inch per minute – found in tables

Average Unit Horsepower Values of Energy Per Unit Volume

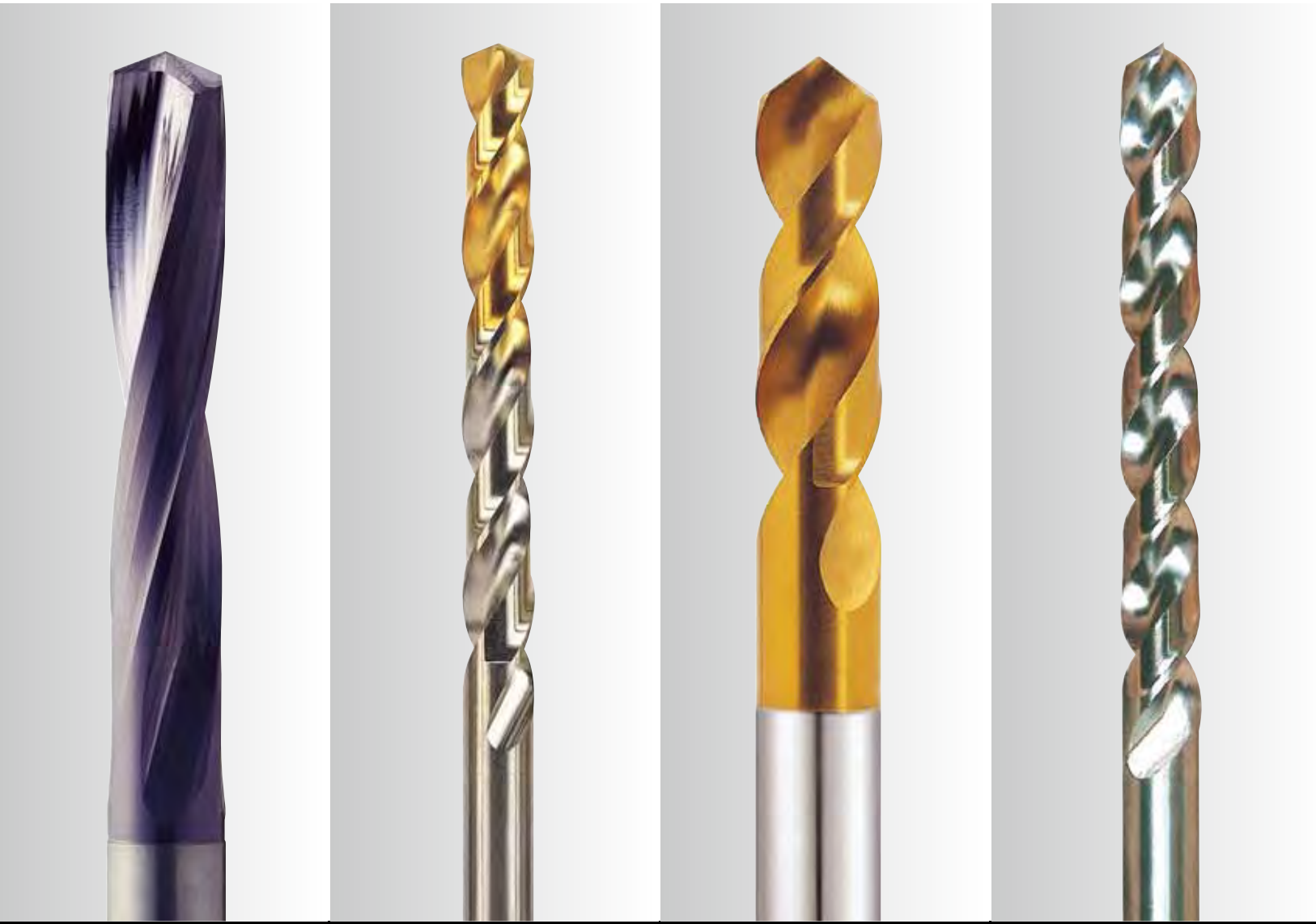
Material	BHN	HP_u (HP/(in^3/min.))
Carbon Steels	150-200	1.0
	200-250	1.4
	250-350	1.6
Leaded Steels	150-175	0.7
Cast Irons	125-190	0.5
	190-250	1.6
Stainless Steels	135-275	1.5
Aluminum Alloys	50-100	0.3
Magnesium Alloys	40-90	0.2
Copper	125-140	0.7
Copper Alloys	100-150	0.7

COOLANT RECOMMENDATIONS (SPADE BLADE)

Material	Material Hardness (BHN)	Coolant Pressure (PSi) / Coolant Volumetric Flowrate (GPM)						
		3/8 ~ 1/2	33/64 ~ 11/16	23/32 ~ 1	1 ~ 1-1/4	1-1/4 ~ 2	2 ~ 3	3 ~ 4
Free Machining Steel **1118, 1215, 12L14, etc.**	100 – 250	175-185 2.5-2.6	100-120 2.8-3.0	105-140 4.4-5.2	80-115 7-8	75-100 12-14	40-50 30-33	65-90 38-44
Low Carbon Steel **1010, 1020, 1025, 1522, etc.**	85 – 275	165-170 2.4-2.5	75-90 2.4-2.6	75-95 3.7-4.2	60-80 6-7	55-75 11-12	30-40 26-30	50-65 33-38
Medium Carbon Steel **1030,1040,1050,1527,1140,1151,etc.**	125 – 325	160-165 2.3-2.4	70-85 2.3-2.6	70-90 3.6-4.1	55-75 5-6	50-70 10-12	30-40 26-30	50-65 33-38
Alloy Steel **4140, 5140, 8640, etc.**	125 – 375	160-165 2.3-2.4	66-75 2.2-2.4	65-80 3.5-3.9	50-70 5-6	45-60 10-11	30-35 26-28	40-50 30-33
High Strength Alloy **4340, 4330V, 300M, etc.**	225 – 400	150-155 2.3-2.4	55-60 2.1-2.2	45-50 2.9-3.1	25-30 4-5	25-30 7-8	20-25 21-23	25-30 23-26
Structural Steel **A36, A285, A516, etc.**	100 – 350	160-165 2.3-2.4	75-85 2.4-2.6	65-80 3.5-3.9	40-55 5-6	40-50 9-10	25-30 23-26	40-50 30-33
High Temp. Alloy **Hastelloy B, Inconel 600, etc.**	140 – 310	150-155 2.3-2.4	60-65 2.2-2.3	50-55 3.1-3.2	30-35 4-5	25-30 7-8	25-30 23-26	- -
Stainless Steel **301, 316, 330, 17-4PH, etc.**	135 – 275	165-170 2.4-2.5	70-85 2.3-2.6	65-75 3.5-3.7	40-55 5-6	40-50 9-10	25-30 23-26	35-45 28-31
Tool Steel **H-13, H-21, A-4, O-2, S-3, etc.**	150 – 250	150-155 2.3-2.4	55-60 2.1-2.2	45-50 2.9-3.1	25-30 4-5	25-30 7-8	20-25 21-23	25-30 23-26
Aluminum	30 – 180	190-210 2.6-2.7	140-180 3.3-3.7	150-200 5.3-6.1	115-160 8-9	90-125 14-16	40-50 30-33	60-80 36-42
Cast Iron	120 – 320	155-160 2.3-2.4	60-65 2.2-2.3	50-60 3.1-3.3	30-40 4-5	30-35 8-9	25-30 23-26	30-35 26-28

DRILLS

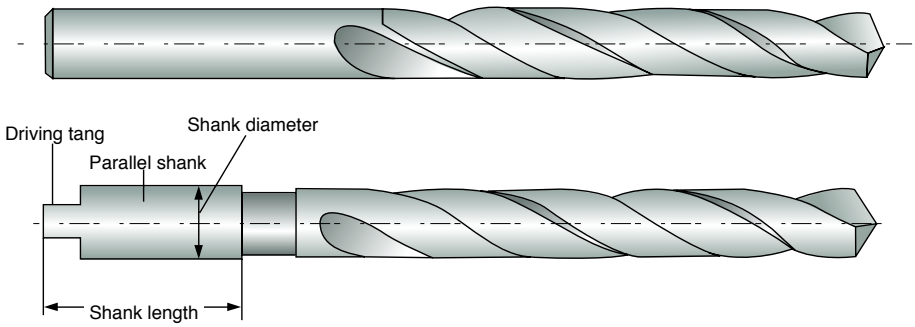
Being the best through innovation



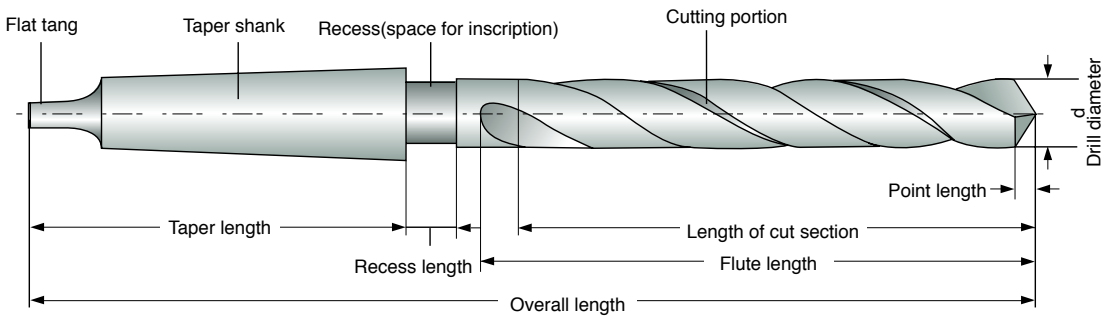
TECHNICAL DATA

TECHNICAL DATA

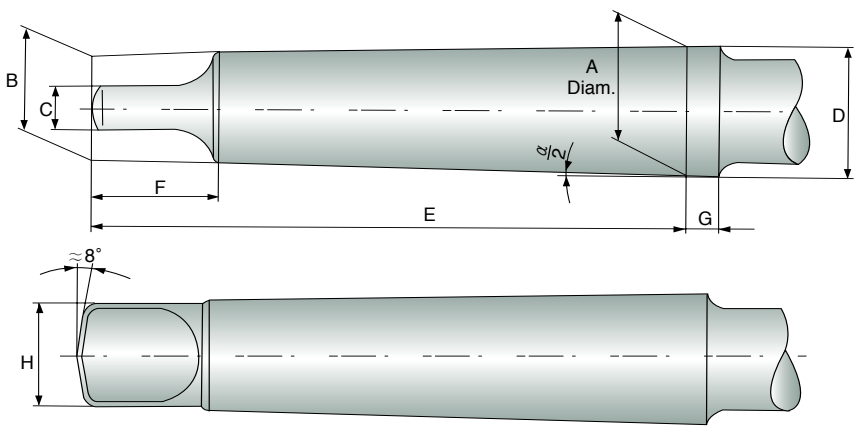
1 Twist Drill with parallel shank



2 Twist Drill with taper shank

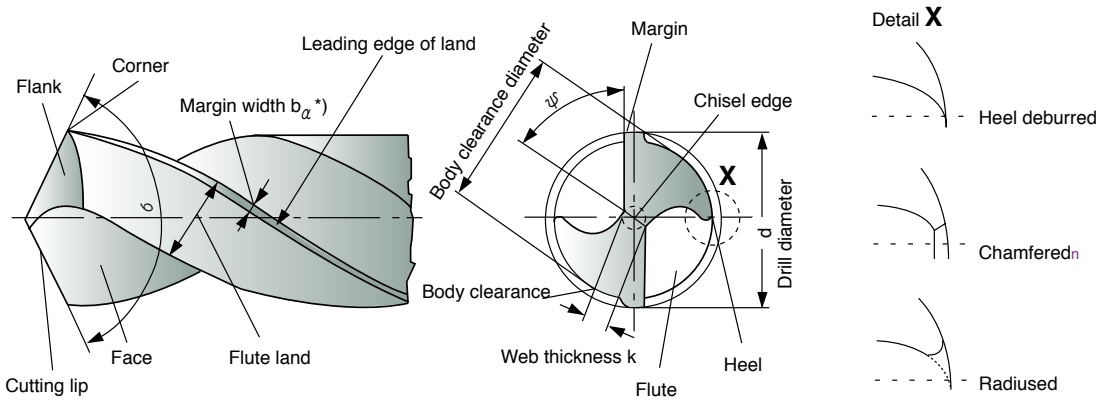


3 General dimensions of morse taper shanks



Morse Taper Shank	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



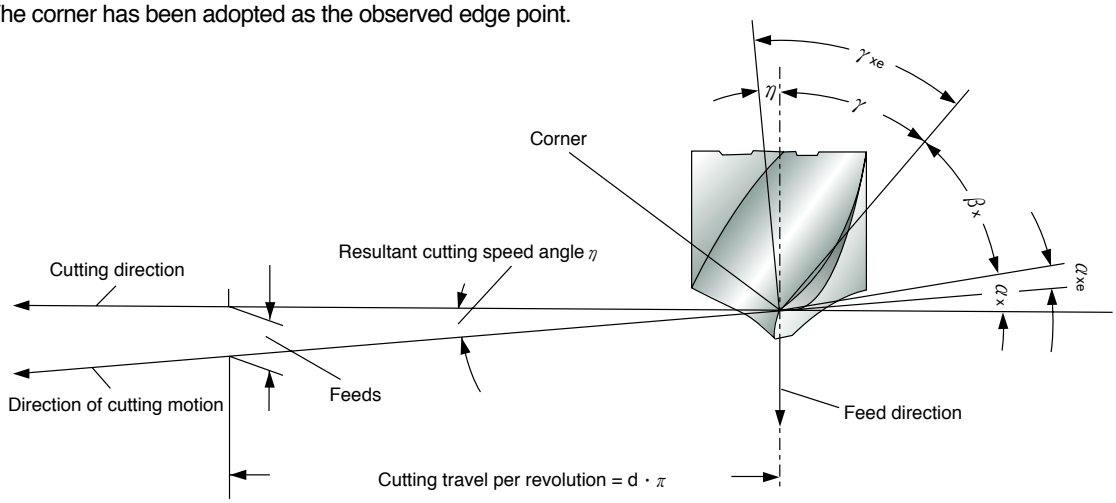
σ = Point angle (sigma)

ψ = Chisel edge angle (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.

5 Angle at the cutting edges

The corner has been adopted as the observed edge point.



α_x = Side clearance angle (alpha)

α_{xe} = Effective side clearance angle

β_x = Side wedge angle (beta)

γ_x = Front rake angle (gamma)

γ_{xe} = Working front rake angle

η = Resultant cutting speed angle (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.

TECHNICAL DATA

6 Web thickness k

Test values : The web thickness according to Fig. 1 shall not be less than the minimum value k_{min} indicated in Fig. 2.
Test point : At the point of the drill.
Testing equipment : Slide gauge with measuring points.

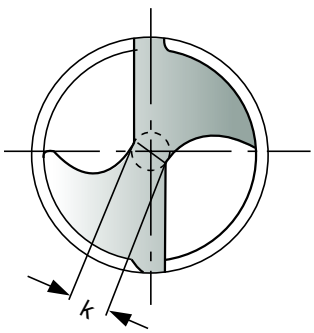


Figure 1. Web thickness k

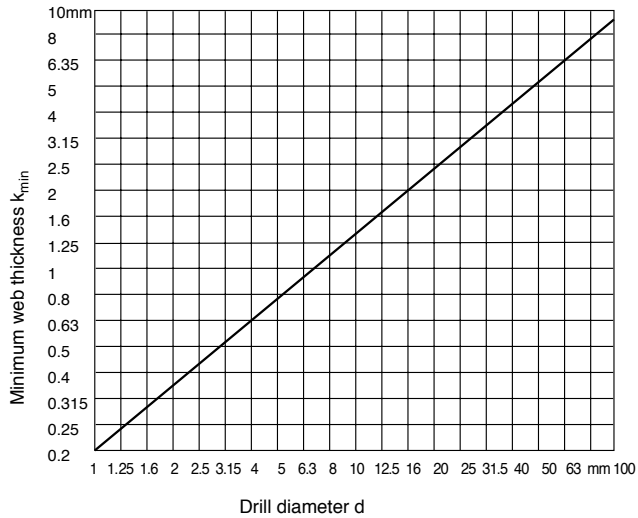


Figure 2. Web thickness k_{min}

7 Margin width b_α

Test values : The land width as in Fig. 3 shall lie within the limited values indicated in Fig. 4.
Test point : 5mm behind the corner
Testing equipment : Slide gauge

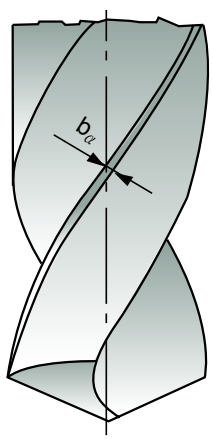


Figure 3. Margin width b_α

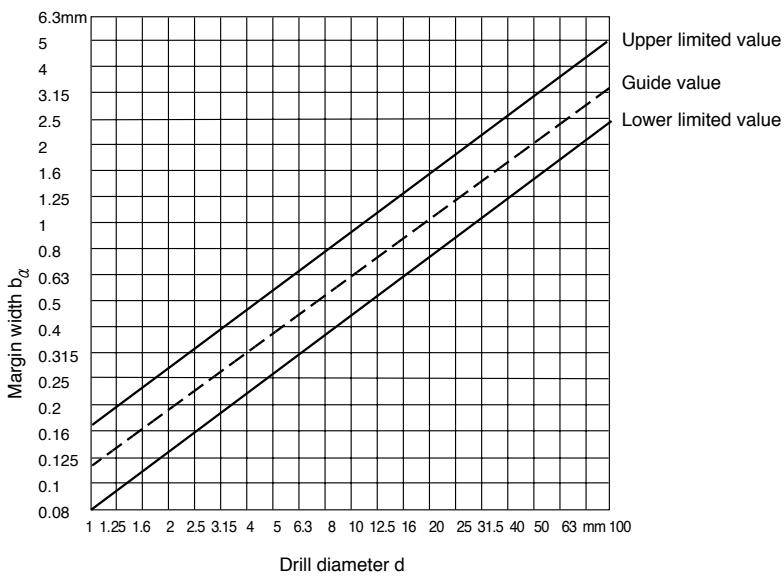


Figure 4. Margin width b_α

Angle on Twist Drills

(1) Side rake angle γ_f (Helix angle)

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.

Test point : At the corner, see Fig. 6.

Testing equipment : According to VDI Guideline 3331 Part 1, Section Margin width 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).

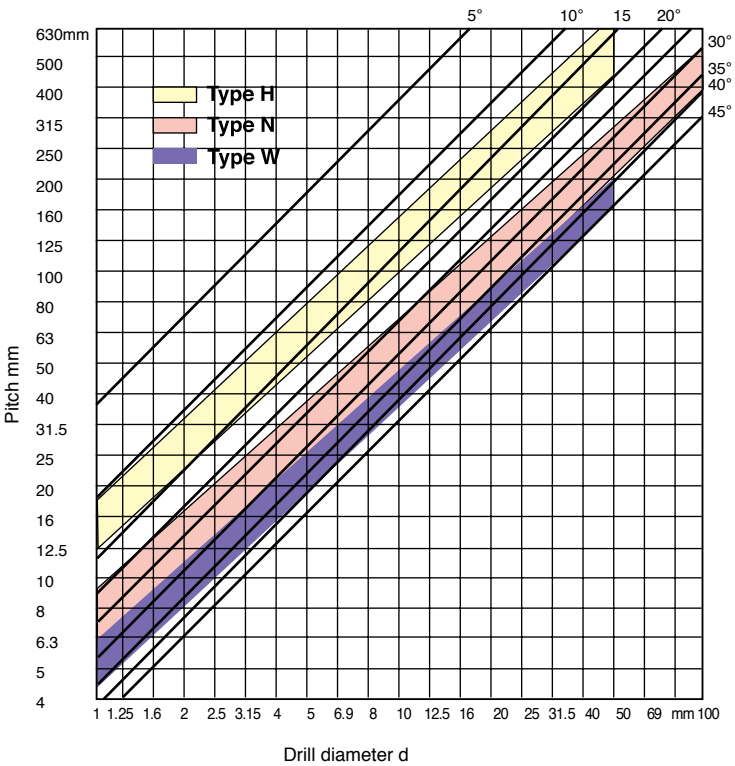


Figure 6. Side rake angle γ_f

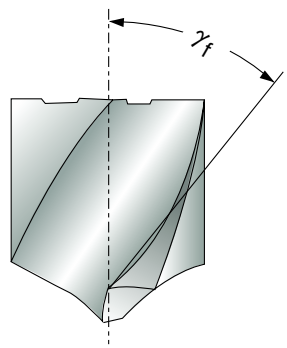


Figure 5. Side rake angle γ_f

(2) Point angle σ

Test value : Usual executin for tool types N and H : σ=118°, for tool type W : σ=130°

Test point : At the cutting, see Fig. 7.

Testing equipment : According to VDI Guideline 3331 Part 1, Section Margin width b_α

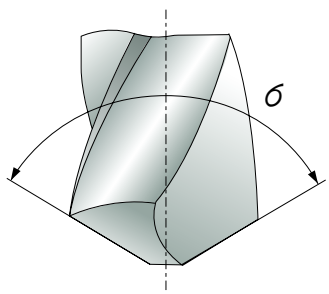


Figure 7. Point angle σ

TECHNICAL DATA

9 Resharpening Twist Drills

(1) Drills are worn off irregularly. It should be sharpened prior to developing into excessive wear.

(2) Resharpening

① Grind the correct point angle to suit your application. (figure 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)
③ Grind Primary relief and Secondary clearance. (figure 9)
④ Grind web thinning. (figure 10)

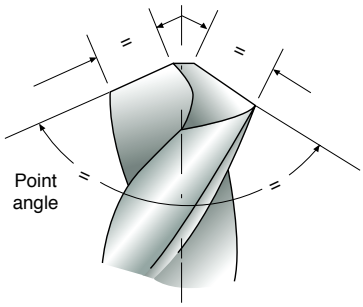


Figure 8

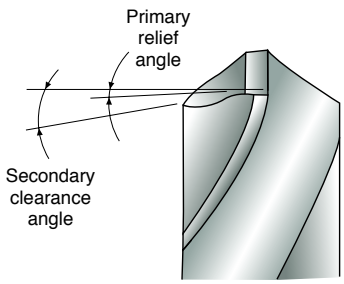


Figure 9

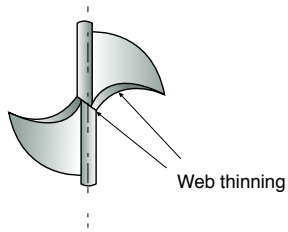
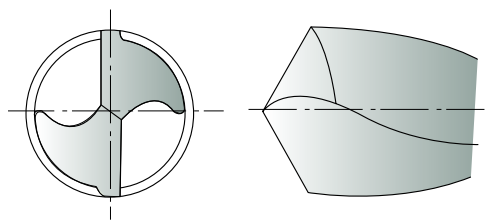


Figure 10

10 Web thinning

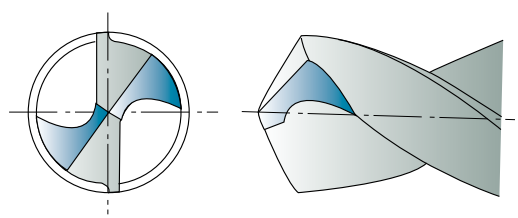
(1) Without thinning

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.



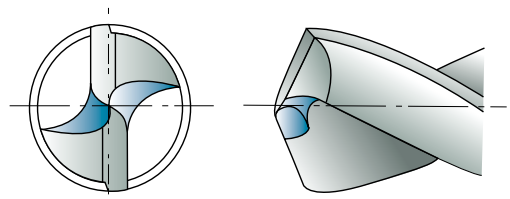
(2) Type C thinning (DIN1412 FORM C, SPLIT POINT)

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.



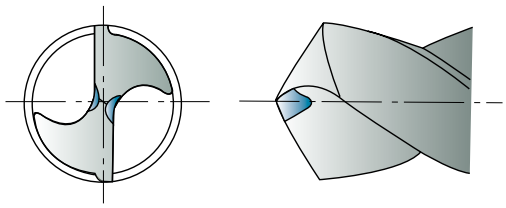
(3) Type R thinning (HELICAL THINNING)

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



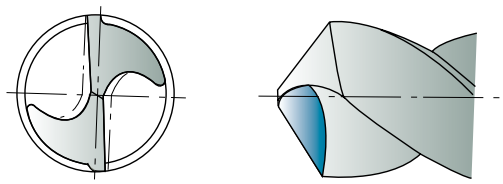
(4) Type A thinning (DIN1412 FORM A)

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.



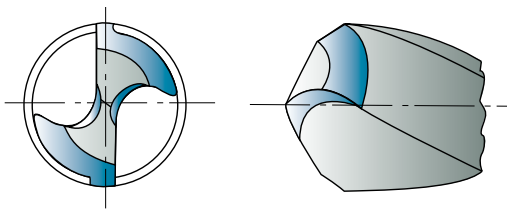
(5) Type B thinning (DIN1412 FORM B)

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 hardened steels are designed, this type is applied to decrease rake angle and avoid chipping of cutting lips.



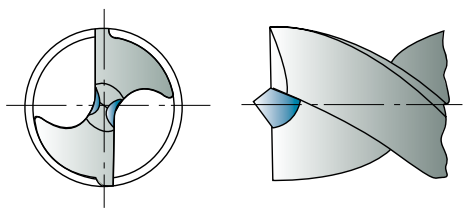
(6) Type D thinning (DIN1412 FORM D)

Grey cast iron thinning; bevelling of external edges strengthens the cutting edge.
Used for medium to high grey cast iron hardness and for abrasives.



(7) Type E thinning (DIN1412 FORM E)

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 for drilling thin sheet metal.



Surface Finishes for high speed steels Twist Drills

(1) Bright Finish

Drills with a bright finish are without surface treatment and ground condition.
Especially bright finished drills are used in machining of non ferrous materials.

(2) Coloring (Gold color)

The coloring is a thin oxide layer formed on the tool surfaces.
This is often applied to cobalt high speed steels twist drills.

(3) Steam Tempered (black oxide finish)

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.

12 Coating

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.

(1) TiN (Titanium Nitride) coating

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.

(2) TiCN (Titanium Carbon Nitride) coating

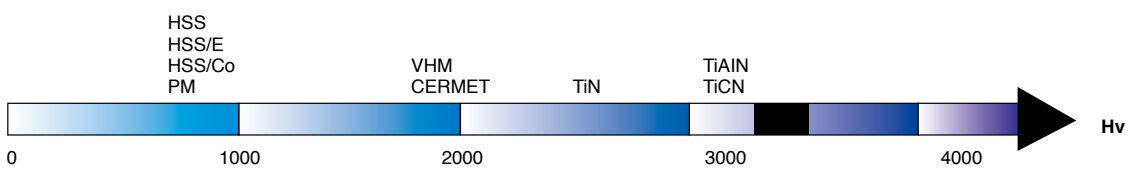
TiCN coating should be employed when severe thermodynamic stress is expected, for example when drilling in high hardened steels or in mild steels with high speed and feed.

(3) TiAlN (Titanium Alumium Nitride) coating

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.

(4) Properties of coating

Properties	TiN	TiCN	TiAlN
Coating color	gold - yellow	blue - grey	violet - grey
Hardness (Hv 0.05)	2300	3000	3000
Coating thickness(㎛)	1~4	1~4	1~5
Max. working temperature (°C)	600	400	800
Coefficient of friction against steels(dry)	0.4	0.4	0.4



(5) Selection of coating

Work-material	HSS TWIST DRILLS	CARBIDE DRILLS
Unalloyed steels	TiCN, TiAlN	TiCN, TiAlN
Steels < 1000 N/mm²	TiCN, TiAlN	TiCN, TiAlN
Steels > 1000 N/mm²	TiCN, TiAlN	TiCN, TiAlN
Stainless steels	TiCN, TiAlN	TiCN, TiAlN
Cast iron	TiCN, TiAlN	TiAlN
Al-wrought alloys	TiN	TiN
Al-cast alloys	TiCN	TiCN
Copper (pure)	CrN	CrN
Brass	TiCN	TiCN
Bronze	TiCN	TiCN

Drill sizes before Tapping

(1) Metric - ISO threads coarse pitch

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

Nominal diameter	Tap Pitch	Drill diameter	Nominal diameter	Tap Pitch	Drill diameter	Nominal diameter	Tap Pitch	
2.5	0.35	2.15	17	1.5	15.5	33	1.5	31.5
3	0.35	2.65	18	1	17	33	2	31
3.5	0.35	3.15	18	1.5	16.5	33	3	30
4	0.5	3.5	18	2	16	35	1.5	33.5
4.5	0.5	4	20	1	19	36	1.5	34.5
5	0.5	4.5	20	1.5	18.5	36	2	34
5.5	0.5	5	20	2	18	36	3	33
6	0.75	5.2	22	1	21	38	1.5	36.5
7	0.75	6.2	22	1.5	20.5	39	1.5	37.5
8	0.75	7.2	22	2	20	39	2	37
8	1	7	24	1	23	39	3	36
9	0.75	8.2	24	1.5	22.5	40	1.5	38.5
9	1	8	24	2	22	40	2	38
10	0.75	9.2	25	1	24	40	3	37
10	1	9	25	1.5	23.5	42	1.5	40.5
10	1.25	8.8	25	2	23	42	2	40
11	0.75	10.2	26	1.5	24.5	42	3	39
11	1	10	27	1	26	45	1.5	43.5
12	1	11	27	1.5	25.5	45	2	43
12	1.25	10.8	27	2	25	45	3	42
12	1.5	10.5	28	1	27	48	1.5	46.5
14	1	13	28	1.5	26.5	48	2	46
14	1.25	12.8	28	2	26	48	3	45
14	1.5	12.5	30	1	29	50	1.5	48.5
15	1	14	30	1.5	28.5	50	2	48
15	1.5	13.5	30	2	28	50	3	47
16	1	15	30	3	27	52	1.5	50.5
16	1.5	14.5	32	1.5	30.5	52	2	50
17	1	16	32	2	30	52	3	49

i-DREAM DRILLS
DREAM DRILLS -GENERAL
DREAM DRILLS -HIGH FEED
DREAM DRILLS -INOX
DREAM DRILLS -ALU
DREAM DRILLS -CFRP
DREAM DRILLS -MQL TYPE
DREAM DRILLS for HIGH HARDENED STEELS
STANDARD CARBIDE DRILLS
MULTI-1 DRILLS
HPD DRILLS
GOLD-P DRILLS
STRAIGHT SHANK DRILLS
AIRCRAFT DRILLS
SILVER & DEMING DRILLS
TAPER SHANK DRILLS
NC SPOTTING DRILLS
COMBINATION DRILLS & COUNTERSINK
SPADE DRILLS
TECHNICAL DATA

(3) WITHWORTH pipe threads (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

(4) American unified coarse threads

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

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

Drill Diameter Tolerance Inch

up to .118	over .118 up to .236	over .236 up to .394	over .394 up to .709
+0 -.00055	+0 -.00071	+0 -.00087	+0 -.00106

Drill Diameter Tolerance Metric

Diameter (mm)	1 - 3 from to	3 - 6 over to	6 - 10 over to	10 - 18 over to	18 - 30 over to
h6	0 –.00024	0 –.00032	0 –.00036	0 –.00044	0 –.00052
h7	0 –.0004	0 –.00048	0 –.00059	0 –.00071	0 –.00083
h8	0 –.00056	0 –.00071	0 –.00087	0 –.00107	0 –.00130
m7	+.00048 +.00007	+.00063 +.00015	+.00083 +.00023	+.00099 +.00027	+.00114 +.00031

Trouble Shooting in Drilling

Occurrence of trouble	Cause of trouble	Countermeasures
Drill will not enter work	1. Drill is dull. 2. Lip relief too small. 3. Too thick a web.	1. Grind lip relief sufficiently. 2. Grind web thinning. 3. Choose a drill with narrow web.
Margin chipping	1.Oversized jig bushing.	1. Choose the suitable jig bushing for drill diameter
Cutting lip breaks	1. Lip relief too much. 2. Feed too heavy.	1. Grind lip relief sufficiently. 2. Decrease feed rate.
Tang breaks Bruch der	1. Imperfect fit between taper shank and socket. 2. Burred or Badly worn sockets.	1. Clean the dirt or chips in sockets. 2. Change the worn sockets to new ones.
Drill breaks in brass	1. Unsuitable drill 2. Flutes clogged with chips	1. Choose the suitable drill for work material.
Chipping of drill center	1. Lip relief too much. 2. Feed too heavy.	1. Grind lip relief sufficiently. 2. Decrease feed rate.
Hole oversize	1. Unequal angle or length of cutting edges. 2. Loosen spindle.	1. Resharpening point, choose correct drills. 2. Tighten spindle sufficiently.
Outer corners broken down	1. Cutting speed too high. 2. Hard spots in work material. 3. Flutes clogged with chips. 4. Too wear of drills.	1. Grind point to suit work material. 2. Decrease the feed rates. 3. Resharpening early beforce too wear.
Large chip of one flute and small chip of other flute	1. Improperly ground point. 2. Only one lip doing all the cutting	1. Properly grind point. 2. Grind point with same point angle and length of lip 3. Grind with small lip height.
Hole rough	1. Improperly ground point. 2. Unenough coolant supply 3. Too much feed. 4. Fixture not rigid.	1. Properly grind point. 2. Supply coolant enough. 3. Decrease the feed rate. 4. Tighten the fixture or replace.

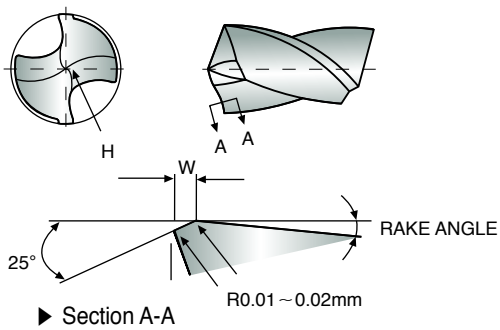
Characteristic of DREAM DRILLS

- YG-1's Dream Drill Series are suitable for high speed and accurate drilling operations by special design and high quality.
- Good performance for Steels, Cast Irons, Tool steels, Alloy steels and Stainless steels.
- Rapid chip evacuation and excellent chip breaking can be achieved by special designed cutting edges on point and chip breakers on leading edges.
- High accuracy and stability.
- Longer tool life with TiAlN coating.
- Self-centering

TECHNICAL DATA

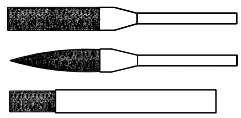
17 Honing Guide of DREAM DRILLS

■ **Dimension of Honing**



▶ Section A-A

■ **Scraper**



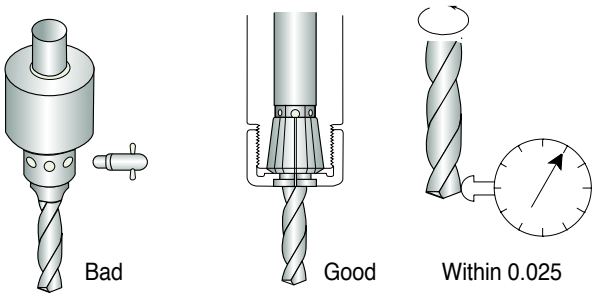
for Roughing (#140)

for Finishing (#230～#400)

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.

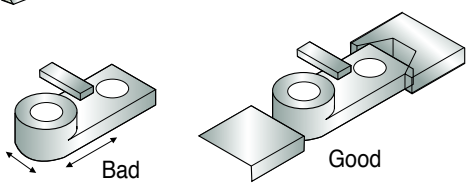
18 Use of DREAM DRILLS

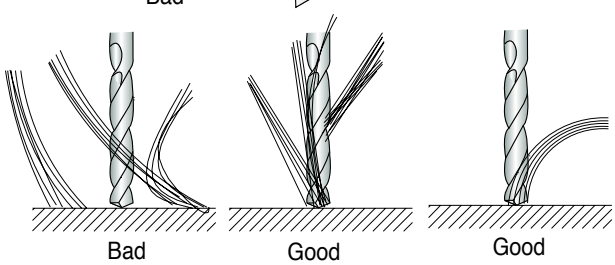


▶ Chucking with spring collet correctly.

▶ Radial run out at cutting lip must not exceed 0.025 mm.

▶ Tighten clamp of work piece.

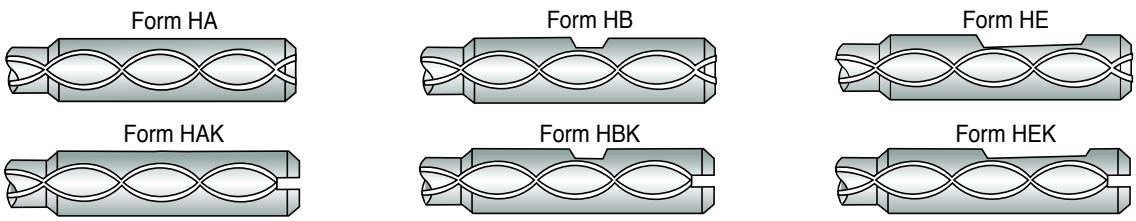




▶ Supply coolant enough to the entrance of hole.

▶ When using Dream Drills with Coolant holes, Supply high pressure coolant.

19 Shank Type DREAM DRILLS with Coolant Holes



▶ Shank Type of stocked products is Form HA.

▶ If you need other Shank Type, we can supply them.

THREADING TOOLS

SOLID CARBIDE THREAD MILLS

COMBO TAPS(Spiral Point & Spiral Flute)

SPIRAL FLUTE TAPS

SPIRAL POINT TAPS

STRAIGHT FLUTE TAPS

FORMING TAPS

SCREW THREAD INSERT TAPS

PIPE TAPS

TECHNICAL DATA

YG-1 CO., LTD.

Contents

THREADING TOOLS

CARBIDE THREAD MILLS

CARBIDE & HSS TAPS

TECHNICAL DATA

YG-1 CO., LTD.

Contents / THREADING TOOLS

SOLID CARBIDE THREAD MILLS
For blind holes and through holes with one single tool / Higher cutting speed and feed than taps
THREAD MILLS

COMBO TAPS
Multi Purpose tapping / YG-1's Patent / Super HSS & HSS-E for Prevention of Oversized Threads
COMBO TAPS

SPIRAL FLUTE TAPS
Tapping Blind Holes / Super HSS, HSS-E, HSS-PM, HSS-V & HSS
SPIRAL FLUTE TAPS

SPIRAL POINT TAPS
Tapping Through Holes / Super HSS, HSS-E, HSS-PM, HSS-V & HSS
SPIRAL POINT TAPS

STRAIGHT FLUTE TAPS
Tapping Through & Blind Holes / Carbide, Super HSS & HSS
STRAIGHT FLUTE TAPS

FORMING TAPS
Tapping by Forming Soft Mateials (NO Chips)
FORMING TAPS

SCREW THREAD INSERT TAPS
Tapping STI Threads of Soft Materials (HSS-E)
SCREW THREAD INSERT TAPS

PIPE TAPS
Tapping NPT, NPTF, NPS & NPSF threads
PIPE TAPS

TECHNICAL DATA
TECHNICAL DATA






SOLID CARBIDE THREAD MILL

INCH

EDP No.	MODEL	Description	Page
TE		Solid Carbide Thread mill for Unified Internal Threads - ANSI B 1.1	**327**
TD		Solid Carbide Thread mill for Metric Internal Threads - DIN 13	**328**
TF **TG**		Solid Carbide Thread mill for Unified Internal Threads - ANSI B 1.20.1(NPT) / ANSI B1.20.3(NPTF)	**329**

Application Program Available

Programming of Thread Milling

☞ Internal Thread Milling in Machining Center

☞ Fanuc

English

INCH

Thread Milling

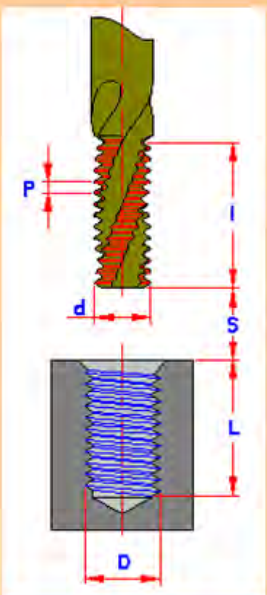
UN - Unified

D = thread diameter (Inch)	0.375
P = pitch (TPI)	16
L = thread length (Inch)	0.750
S = safety distance (Inch)	0.250

Steel, High Alloy, < 1200 N/mm2

NC0285C0750 16TPI L121E480

Number of passes, axial	1
Number of passes, radial (max 2)	1
d = cutter diameter (Inch)	0.285
l = length of cutting edge (Inch)	0.750
z = number of flutes	4
V = cutting speed (SFM)	262
Fz = feed/tooth (inch/tooth)	0.0010
Fdr = drilling feed(inch/rev.)	
N = spindle speed (rpm)	3,511
FD = feed at thread diameter (inch/min)	14
Fd = feed in center of mill (inch/min)	3.4
T = time to mill the thread (seconds)	9



CNC program for Fanuc

```
G90 G00 G57 X0. Y0.
G43 H10 Z0.250 M3 S3511
G91 G00 Z-1.0156
G41 D10 X0. Y-0.1563 F3.4
G03 X0.1906 Y0.1563 Z0.0156 R0.1594
G03 X0. Y0. Z0.0625 I-0.1906 J0.
G03 X-0.1906 Y0.1563 Z0.0156 R0.1594
G00 G40 X0. Y-0.1563
G00 Z0.9219
G90 G49 G00 Z8. M5
M30
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COMBO TAPS

INCH

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Thread Depth	Surface Treatment	Page
T2 T2-S T2-C		HSS-EX	UNC/UNF	MU	USCTI 302A	H2~H6	2 ~ 3P	2.5D	Bright Steam Oxide TiCN	335
T5 T5-S T5-C		HSS-EX	M	MU	USCTI 302A	D3~D8	2 ~ 3P		Bright Steam Oxide TiCN	337
T6 T6-N	with Internal Coolant 	HSS-EX	UNC/UNF	MU	USCTI 302A	H4~H6	2 ~ 3P		Bright TiN	338
T8 T8-N	with Internal Coolant 	HSS-EX	M	MU	USCTI 302A	D5~D7	2 ~ 3P		Bright TiN	339
T7 T7-C	Short Chamfer 	HSS-EX	UNC/UNF	MU	USCTI 302A	H2~H6	1 ~ 2P		Bright TiCN	340
T9 T9-C	Short Chamfer 	HSS-EX	M	MU	USCTI 302A	D3~D8	1 ~ 2P		Bright TiCN	342
T1-S T1-C		HSS-EX	UNC/UNF	MU	DIN-ANSI Shank	H2~H6	2 ~ 3P		Steam Oxide TiCN	343
TA-S TA-C		HSS-EX	M	MU	DIN-ANSI Shank	D3~D7	2 ~ 3P		Steam Oxide TiCN	344
TCA-S/C TCB-S/C		Super HSS HSS-EX	UNC/UNF	VA	USCTI 302A	H2~H6	2 ~ 3P		Steam Oxide TiCN	345
TCC-S/C TCD-S/C		Super HSS HSS-EX	M	VA	USCTI 302A	D3~D7	2 ~ 3P		Steam Oxide TiCN	347
T4 T4-S T4-C		HSS-EX	UNC/UNF	MU	USCTI 302A	H2~H6	4 ~ 5P	3.0D	Bright Steam Oxide TiCN	348
T3 T3-S T3-C		HSS-EX	M	MU	USCTI 302A	D3~D8	4 ~ 5P		Bright Steam Oxide TiCN	350
TB TB-N	with Internal Coolant 	HSS-EX	UNC/UNF	MU	USCTI 302A	H4~H6	4 ~ 5P		Bright TiN	351
TH TH-N	with Internal Coolant 	HSS-EX	M	MU	USCTI 302A	D5~D7	4 ~ 5P		Bright TiN	352
TC-S TC-C		HSS-EX	UNC/UNF	MU	DIN-ANSI Shank	H2~H6	4 ~ 5P		Steam Oxide TiCN	353
TK-S TK-C		HSS-EX	M	MU	DIN-ANSI Shank	D3~D7	4 ~ 5P		Steam Oxide TiCN	354
TCE-S/C TCF-S/C		Super HSS HSS-EX	UNC/UNF	VA	USCTI 302A	H2~H6	4P		Steam Oxide TiCN	355
TCG-S/C TCH-S/C		Super HSS HSS-EX	M	VA	USCTI 302A	D3~D7	4P		Steam Oxide TiCN	357

SPIRAL FLUTE TAPS

INCH

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Thread Depth	Surface Treatment	Page
BB/BI		Super HSS	UNC/UNF	**VG**	USCTI 302A	H2~H6	2 ~ 3P	2.5D	Steam Oxide Hardslick	**362**
BH/BM		Super HSS	M/MF	**VG**	USCTI 302A	D3~D7	2 ~ 3P		Steam Oxide Hardslick	**364**
BF/BK		Super HSS	UNC/UNF	**VG**	DIN-ANSI Shank	H2~H6	2 ~ 3P		Steam Oxide Hardslick	**365**
BD/BO		Super HSS	M/MF	**VG**	DIN-ANSI Shank	D3~D7	2 ~ 3P		Steam Oxide Hardslick	**366**
H5/H7/H8		P-HSS	UNC/UNF	**HR**	USCTI 302A	H2~H5	2 ~ 3P		Steam Oxide TiCN Hardslick	**367**
TQ858/ TK858/TR858		P-HSS	M/MF	**HR**	USCTI 302A	H2~H5	2 ~ 3P		Steam Oxide TiCN Hardslick	**368**
B3/B5/D6		P-HSS	UNC/UNF	**Ti Ni**	USCTI 302A	H2~H5	2 ~ 3P		Steam Oxide TiCN Hardslick	**369**
G9/H0		P-HSS	UNC/UNF	**VA**	DIN-ANSI Shank	H2~H3	2 ~ 3P		Hardslick	**371**
H2/H4		P-HSS	UNC/UNF	**VA**	DIN-ANSI Shank	H3	4 ~ 5P	3.0D	TiN Hardslick	**372**
BG/BG-GB		HSSE-V3	UNC/UN8	**VG**	DIN-ANSI Shank	2B	2 ~ 3P	2.5D	Hardslick Gold & Black	**373**
B1/B0/B2/D2		HSSE-V3	UNC/UNF	**VA**	USCTI 302A	H2~H7	2 ~ 3P		Bright Steam Oxide TiN/Hardslick	**374**
BS/BT		HSSE-V3	M/MF	**VA**	USCTI 302A	D3~D7	2 ~ 3P		Steam Oxide Hardslick	**377**
E6/E8/E9		HSSE-V3	M/MF	**VA**	DIN-ANSI Shank	D3~D7	2 ~ 3P		Steam Oxide TiCN Hardslick	**378**
D3/E0		HSSE-V3	UNC/UNF	**VG**	USCTI 302A	H2~H11	2 ~ 3P		Hardslick Steam Oxide	**379**
BU/BV		HSSE-V3	M/MF	**VG**	USCTI 302A	D3~D11	2 ~ 3P		Steam Oxide Hardslick	**382**
E2/E4/E5		HSSE-V3	M/MF	**VG**	DIN-ANSI Shank	D3~D7	2 ~ 3P		Steam Oxide TiCN Hardslick	**384**
C0/D8		HSSE-V3	UNC/UNF	**AI**	USCTI 302A	H2~H5	2 ~ 3P		Bright Hardslick	**385**
BW/BX		HSSE-V3	M/MF	**AI**	USCTI 302A	D3~D6	2 ~ 3P		Bright Hardslick	**386**

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Thread Depth	Surface Treatment	Page
C2/C3/C4/D9		HSSE-V3	UNC/UNF	**GS**	USCTI 302	H2~H6	1.5 ~ 2P	2.5D	Steam Oxide Bright/TiN Hardslick	**387**
F4/F8/F6		HSS-V	UNC/UNF	**GS**	USCTI 302A	H2~H6	1.5 ~ 2P		Steam Oxide TiN Hardslick	**388**
G4/G5/G6		HSS-V	M/MF	**GS**	USCTI 302A	D3~D6	1.5 ~ 2P		Bright TiCN Hardslick	**390**
G0/G1/G2		HSS-V	UNC/UNF	**GS**	DIN-ANSI Shank	H2~H6	2 ~ 3P		Bright TiN Hardslick	**391**
T7A96/T6A96/ T8A96 T7295/T6295/ T8295		HSS	UNC/UNF	**GS**	USCTI 302	H2~H5	4 ~ 5P 1.5 ~ 2P		Bright Steam Oxide TiN	**393**
T7A86/T6A86/ T8A86 T7A85/T6A85/ T8A85		HSS	M/MF	**GS**	USCTI 302	D3~D6	4 ~ 5P 1.5 ~ 2P		Bright Steam Oxide TiN	**394**
T7D01/T8D01 T7D02/T8D02		HSS	UNC/UNF	**GS**	USCTI Long Shank	H3	4 ~ 5P 1.5 ~ 2P		Bright TiN	**395**

SPIRAL POINT TAPS

INCH

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Thread Depth	Surface Treatment	Page
M9/O1		Super HSS	UNC/UNF	VG	USCTI 302A	H2~H6	4 ~ 5P	3.0D	Steam Oxide Hardslick	400
N7/N8		Super HSS	M/MF	VG	USCTI 302A	D3~D7	4 ~ 5P		Steam Oxide Hardslick	402
N4/O5		Super HSS	UNC/UNF	VG	DIN-ANSI Shank	H2~H6	4 ~ 5P		Steam Oxide Hardslick	403
N3/O3		Super HSS	M/MF	VG	DIN-ANSI Shank	D3~D7	4 ~ 5P		Steam Oxide Hardslick	404
M4/M6/M7		P-HSS	UNC/UNF	HR	USCTI 302A	H2~H5	4 ~ 5P		Steam Oxide TiCN Hardslick	405
TQ808/ TK808/TR808		P-HSS	M/MF	HR	USCTI 302A	H2~H5	4 ~ 5P		Steam Oxide TiCN Hardslick	406
I3/I5/J6		P-HSS	UNC/UNF	Ti Ni	USCTI 302A	H2~H5	4 ~ 5P		Steam Oxide TiCN Hardslick	407
M2/M3		P-HSS	UNC/UNF	VA	USCTI Long Shank	H2~H3	4 ~ 5P		Hardslick	409
I0/I2/J2		HSSE-V3	UNC/UNF	VA	USCTI 302A	H2~H7	4 ~ 5P		Steam Oxide TiN Hardslick	410
O9/IA		HSSE-V3	M/MF	VA	USCTI 302A	D3~D7	4 ~ 5P		Steam Oxide Hardslick	413
K3/K5/K6		HSSE-V3	M/MF	VA	DIN-ANSI Shank	D3~D7	4 ~ 5P		Steam Oxide TiCN Hardslick	414
J3/J8		HSSE-V3	UNC/UNF	VG	USCTI 302A	H2~H11	4 ~ 5P		Steam Oxide Hardslick	415
IB/IC		HSSE-V3	M/MF	VG	USCTI 302A	D3~D11	4 ~ 5P		Steam Oxide Hardslick	419
J9/K7/K2		HSSE-V3	M/MF	VG	DIN-ANSI Shank	D3~D7	4 ~ 5P		Steam Oxide TiCN Hardslick	421
T2496		HSSE-V3	UNC/UNF	Al	USCTI 302A	H2~H5	4 ~ 5P		Bright	422
T2K01		HSSE-V3	M/MF	Al	USCTI 302A	D3~D6	4 ~ 5P		Bright	423
I9/J0/J1/J7		HSSE-V3	UNC/UNF	GS	USCTI	H2~H6	4 ~ 5P		Steam Oxide Bright/TiN Hardslick	424
K9/L0/L1		HSS-V	UNC/UNF	GS	USCTI 302A	H2~H6	4 ~ 5P		Bright TiN Hardslick	425

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Thread Depth	Surface Treatment	Page
L7/L8/L9		HSS-V	M/MF	**GS**	USCTI 302A	D3~D6	4 ~ 5P	3.0D	Bright TiCN Hardslick	**426**
L3/L4/L5		HSS-V	UNC/UNF	**GS**	DIN-ANSI Shank	H2~H6	4 ~ 5P		Bright TiN Hardslick	**427**
T7216/T6216/ T8216 T7C16/ T6C16/T8C16		HSS	UNC/UNF	**GS**	USCTI 302	H1~H7	4 ~ 5P		Bright Finish Steam Oxide TiN	**428**
T7256/T6256		HSS	UNC/UNF	**GS**	USCTI 302	H1~H7	1.5 ~ 2P		Bright Finish Steam Oxide	**432**
T7217/T6217/ T8217		HSS	M/MF	**GS**	USCTI 302	D3~D7	4 ~ 5P		Bright Finish Steam Oxide TiN	**434**
T7226/T6226/ T8226		HSS	UNC/UNF	**GS**	USCTI 302	+.005" oversize	4 ~ 5P		Bright Finish Steam Oxide TiN	**435**
T7B17/ T6B17/T8B17		HSS	M/MF	**GS**	USCTI 302	+.127mm oversize	4 ~ 5P		Bright Finish Steam Oxide TiN	**436**
T7236/T6236/ T8236 T7G36/ T6G36/ T8G36		HSS	UNC/UNF	**GS**	USCTI Long Shank	H3	4 ~ 5P		Bright Finish Steam Oxide TiN	**437**

STRAIGHT FLUTE TAPS

INCH

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Thread Depth	Surface Treatment	Page
T0C01		Carbide	UNC/UNF	**GG**	USCTI 302A	2B	1.5 ~ 2P	2.0D	Bright	**441**
TR		Super HSS	UNC/UNF	**GG**	USCTI 302A	H3~H5	2 ~ 3P		TiAlN	**442**
			M	**GG**		D4~D6	2 ~ 3P			
TR-A, TR-R		Super HSS	UNC/UNF	**GG**	USCTI 302A	H3~H5	2 ~ 3P		TiAlN	**444**
			M	**GG**		D4~D6	2 ~ 3P			
T7316/T6316/ T8316/T7A16 T7B16		HSS	UNC/ UNF/ UNS	**GS**	USCTI 302	H1~H7	9P/5P/2P		Bright Steam Oxide TiN	**446**
T7315/T6315/ T8315		HSS	M/MF	**GS**	USCTI 302	D3~D9	9P/5P/2P		Bright Steam Oxide TiN	**452**
T7326		HSS	UNC/UNF	**GS**	USCTI 302	+.005" oversize	5P/2P		Bright	**453**
T7B15		HSS	M/MF	**GS**	USCTI 302	+.127mm oversize	5P/2P		Bright	**454**
T7336		HSS	UNC/UNF	**GS**	USCTI 302 (Left Hand)	H2~H4	5P/2P		Bright	**455**
T7A15		HSS	UNC/UNF	**GS**	USCTI 302 (Left Hand)	D4~D8	5P/2P		Bright	**456**
T7616/T6616/ T8616		HSS	UNC/UNF	**GS**	USCTI Long Shank	H3	4 ~ 5P		Bright Steam Oxide TiN	**457**

FORMING TAPS

INCH

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Thread Depth	Surface Treatment	Page
TKR03		Super HSS	UNC/UNF	**GV**	USCTI 302A	H3~H7	2 ~ 3P	3.0D	TiCN	**461**
ZF		HSSE-V3	UNC/UNF	**GV**	USCTI 302	H2~H5	2 ~ 3P		Bright	**462**
Z0/Z1/Z2/Z3		HSSE-V3	UNC/UNF	**GV**	USCTI 302A	H2~H12	4 ~ 5P 1.5 ~ 2P		Bright TiN	**463**
Z4/Z5/Z6/Z7		HSSE-V3	UNC/UNF	**GV**	USCTI 302A	H3~H12	4 ~ 5P 1.5 ~ 2P		Bright TiN	**465**
Z8/ZA/ZC Z9/ZB/ZD		HSSE-V3	M/MF	**GV**	USCTI 302A	D3~D11	4 ~ 5P 1.5 ~ 2P		Bright TiN / TiCN	**467**
T7R01/T8R01/ THR01 T7R02/T8R02/ THR02		HSS	UNC/UNF	**GV**	USCTI 302A	H2~H5	4 ~ 5P 1.5 ~ 2P		Bright TiN / TiCN	**468**

SCREW THREAD INSERT TAPS

INCH

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Thread Depth	Surface Treatment	Page
ST/SI		HSSE-V3	UNC/UNF	GS	USCTI 322	2B	1.5 ~ 2P	2.5D	Hardslick	471
T7406		HSS	UNC/UNF	GS	USCTI 322	H2~H4	1.5 ~ 2P		Bright	472
T7425		HSS	M/MF	GS	USCTI 322A	D2~D4	1.5 ~ 2P		Bright	473
ST/SI		HSSE-V3	UNC/UNF	GS	USCTI 322	2B	4 ~ 5P	3.0D	Hardslick	474
T7436		HSS	UNC/UNF	GS	USCTI 322	H1~H4	4 ~ 5P		Bright	475
T7415		HSS	M/MF	GS	USCTI 322A	D2~D4	4 ~ 5P		Bright	476
T7426		HSS	UNC/UNF	GS	USCTI 322	H1~H4	4 ~ 5P 1.5 ~ 2P	2.0D	Bright	477
T7405		HSS	M/MF	GS	USCTI 322A	D2~D4	4 ~ 5P 1.5 ~ 2P		Bright	478

PIPE TAPS

INCH

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Chamfer	Thread Depth	Surface Treatment	Page
Q1/Q0/Q6		HSSE-V3	NPTF	VA	USCTI 311	2 ~ 3P	2.5D	Bright Steam Oxide Hardslick	481
Q9/R0/R1		HSSE-V3	NPTF	GG	USCTI 311	2 ~ 3P		Bright TiN Hardslick	482
R7/R8/R9/S0		HSSE-V3	NPTF	GG	USCTI 311	2 ~ 3P	2.0D	Bright TiN Hardslick Nitrided-Steam Oxide	483
S1/S2		HSSE-V3	NPTF	GG	USCTI 311	2 ~ 3P		Bright TiCN	484
T7L36/T6L36 T7536/T6536		HSS	NPS/NPSF	GS	USCTI 311	4 ~ 5P		Bright Steam Oxide	485
T7505/T6505/ TH505		HSS	NPT	GS	USCTI 311	2 ~ 3P		Bright Steam Oxide TiCN	486
T7546/T8546		HSS	NPTF	GS	USCTI 311	2 ~ 3P		Bright TiN	487

HIGH PERFORMANCE TAPS RECOMMENDATION TABLE

Super HSS : Premium HSS Metallurgy
P-HSS : Powdered Metallurgy
HSSE-V3 : 3% Vanadium Alloy HSS-EX
HSS-V : Vanadium Alloy HSS

◎= RECOMMENDED
○= SUITABLE

COOLANT
A = Cutting Oil
T = Oil Emulsion
X = Cutting Oil/Oil Emulsion

SERIES			MU			MU			MU
			T2	T2 -S	T2 -C	T5	T5 -S	T5 -C	T6 T6-N
DESCRIPTION			USCTI 302A			USCTI 302A			USCTI 302A
PAGE			335			337			338
THREADS			UNC/UNF			M			UNC/UNF
TAP MATERIALS			HSS-EX			HSS-EX			HSS-EX
CHAMFER LENGTH			2-3P			2-3P			2-3P
SURFACE TREATMENT			Bright	Steam Oxide	TiCN	Bright	Steam Oxide	TiCN	Bright TiN
SPIRAL FLUTE ANGLE			R40°			R40°			R40°
THREAD DEPTH			2.5D			2.5D			2.5D
HOLE TYPE			Blind			Blind			Blind

Material Group	Material Sub-Group	ISO	Hardness (HRc)	Hardness (BHN)	Cutting Speed (SFM) Uncoated	Cutting Speed (SFM) Coated	COOLANT							
Steel	Low carbon steels Free machining carbon steels	P	< 15	< 180	25 - 50	50 - 80	T	◎	◎	◎	◎	◎	◎	◎
	Medium to high carbon steels Low alloyed steels	P	< 23	< 240	25 - 50	50 - 80	T	◎	◎	◎	◎	◎	◎	◎
	Steel castings & forgings Heat-treatable alloy steels	P	> 24 ≤ 38	> 250 ≤ 350	6 - 30	10 - 35	X	◎	◎	◎	◎	◎	◎	◎
	Alloyed tool steels Mold steels	P	> 38 ≤ 44	> 350 ≤ 420	6 - 12	-	A	◎	◎	◎	◎	◎	◎	◎
Stainless Steel	Free machining stainless steels	M	< 23	< 240	12 - 35	20 - 50	A	◎	◎	◎	◎	◎	◎	◎
	Heat-and corrosion-resistant stainless steels Valve stainless steels	M	> 24 ≤ 38	> 250 ≤ 350	12 - 15	12 - 15	A	◎	◎	◎	◎	◎	◎	◎
	Stainless steel castings Precipitation hardening stainless steels	M	> 38 ≤ 44	> 350 ≤ 420	12 - 15	-	A	◎	◎	◎	◎	◎	◎	◎
Cast Iron	Grey cast iron	K	-	≤ 220	35 - 50	50 - 65	T	◎	◎	◎	◎	◎	◎	◎
	Nodular cast iron / Chilled cast iron Meehanite iron / Ductile iron	K	-	≥ 250	12 - 45	25 - 55	X	◎	◎	◎	◎	◎	◎	◎
Copper	Pure and alloyed copper	N	-	-	50 - 60	65 - 100	T	◎	◎	◎	◎	◎	◎	◎
Brass	Free machining brass Alloyed brass	N	-	-	30 - 65	-	T	◎	◎	◎	◎	◎	◎	◎
Bronze		N	44	< 420	12 - 20	35 - 80	T	◎	◎	◎	◎	◎	◎	◎
Aluminum	Pure Aluminum Aluminum alloys	N	-	-	50 - 65	-	T	◎	◎	◎	◎	◎	◎	◎
	Aluminum alloy castings	N	-	-	40 - 65	45 - 90	T	◎	◎	◎	◎	◎	◎	◎
Zinc		N	-	-	25 - 65	50 - 80	T	◎	◎	◎	◎	◎	◎	◎
Magnesium		N	-	-	-	45 - 100	T	◎	◎	◎	◎	◎	◎	◎
Nickel Alloys	718 & 625 INCOn / Waspaloy Hastelloyn / Invar Moneln / Incoloy	S	≤ 38	≤ 350	10 - 15	-	A	○	○	○	○	○	○	○
	718 Inconel A286	S	> 38 ≤ 44	> 350 ≤ 420	10 - 12	-	A							
Titanium		S	≤ 38	≤ 350	3 - 15	-	A	○	○	○	○	○	○	○

MU	MU	MU	MU		MU		VA	VA	MU			MU		
T8 T8-N	T7 T7-C	T9 T9-C	T1-S	T1-C	TA-S	TA-C	TCA-S/C TCB-S/C	TCC-S/C TCD-S/C	T4	T4 -S	T4 -C	T3	T3 -S	T3 -C
USCTI 302A	USCTI 302A	USCTI 302A	DIN-ANSI Shank		DIN-ANSI Shank		USCTI 302A	USCTI 302A	USCTI 302A			USCTI 302A		
339	340	342	343		344		345	347	348			350		
M	UNC/UNF	M	UNC/UNF		M		UNC/UNF	M	UNC/UNF			M		
HSS-EX	HSS-EX	HSS-EX	HSS-EX		HSS-EX		Super HSS HSS-EX	Super HSS HSS-EX	HSS-EX			HSS-EX		
2-3P	1-2P	1-2P	2-3P		2-3P		2-3P	2-3P	4-5P			4-5P		
Bright TiN	Bright TiCN	Bright TiCN	Steam Oxide	TiCN	Steam Oxide	TiCN	Steam Oxide TiCN	Steam Oxide TiCN	Bright	Steam Oxide	TiCN	Bright	Steam Oxide	TiCN
R40°	R40°	R40°	R40°		R40°		R45°	R45°	-			-		
2.5D	2.5D	2.5D	2.5D		2.5D		2.5D	2.5D	3.0D			3.0D		
Blind	Blind	Blind	Blind		Blind		Blind	Blind	Through			Through		
														
◎	◎	◎	◎	◎	◎	◎	○	○	◎	◎	◎	◎	◎	◎
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HIGH PERFORMANCE TAPS RECOMMENDATION TABLE

Super HSS : Premium HSS Metallurgy
P-HSS : Powdered Metallurgy
HSSE-V3 : 3% Vanadium Alloy HSS-EX
HSS-V : Vanadium Alloy HSS

◎= RECOMMENDED
○= SUITABLE

COOLANT
A = Cutting Oil
T = Oil Emulsion
X = Cutting Oil/Oil Emulsion

			MU	MU	MU	
		SERIES	TB TB-N	TH TH-N	TC-S	TC-C
		DESCRIPTION	USCTI 302A	USCTI 302A	DIN-ANSI Shank	
		PAGE	351	352	353	
		THREADS	UNC/UNF	M	UNC/UNF	
		TAP MATERIALS	HSS-EX	HSS-EX	HSS-EX	
		CHAMFER LENGTH	4-5P	4-5P	4-5P	
		SURFACE TREATMENT	Bright TiN	Bright TiN	Steam Oxide	TiCN
		SPIRAL FLUTE ANGLE	-	-	-	
		THREAD DEPTH	3.0D	3.0D	3.0D	
		HOLE TYPE	Through	Through	Through	

Material Group	Material Sub-Group	ISO	Hardness (HRc)	Hardness (BHN)	Cutting Speed (SFM) Uncoated	Cutting Speed (SFM) Coated	COOLANT				
Steel	Low carbon steels Free machining carbon steels	P	< 15	< 180	25 - 50	50 - 80	T	◎	◎	◎	◎
	Medium to high carbon steels Low alloyed steels	P	< 23	< 240	25 - 50	50 - 80	T	◎	◎	◎	◎
	Steel castings & forgings Heat-treatable alloy steels	P	> 24 ≤ 38	> 250 ≤ 350	6 - 30	10 - 35	X	◎	◎	◎	◎
	Alloyed tool steels Mold steels	P	> 38 ≤ 44	> 350 ≤ 420	6 - 12	-	A	◎	◎	◎	◎
Stainless Steel	Free machining stainless steels	M	< 23	< 240	12 - 35	20 - 50	A	◎	◎	◎	◎
	Heat-and corrosion-resistant stainless steels Valve stainless steels	M	> 24 ≤ 38	> 250 ≤ 350	12 - 15	12 - 15	A	◎	◎	◎	◎
	Stainless steel castings Precipitation hardening stainless steels	M	> 38 ≤ 44	> 350 ≤ 420	12 - 15	-	A	◎	◎	◎	◎
Cast Iron	Grey cast iron	K	-	≤ 220	35 - 50	50 - 65	T	◎	◎	◎	◎
	Nodular cast iron / Chilled cast iron Meehanite iron / Ductile iron	K	-	≥ 250	12 - 45	25 - 55	X	◎	◎	◎	◎
Copper	Pure and alloyed copper	N	-	-	50 - 60	65 - 100	T	◎	◎	◎	◎
Brass	Free machining brass Alloyed brass	N	-	-	30 - 65	-	T	◎	◎	◎	◎
Bronze		N	44	< 420	12 - 20	35 - 80	T	◎	◎	◎	◎
Aluminum	Pure Aluminum Aluminum alloys	N	-	-	50 - 65	-	T	◎	◎		◎
	Aluminum alloy castings	N	-	-	40 - 65	45 - 90	T	◎	◎		◎
Zinc		N	-	-	25 - 65	50 - 80	T	◎	◎	◎	◎
Magnesium		N	-	-	-	45 - 100	T	◎	◎	◎	◎
Nickel Alloys	718 & 625 INCOn / Waspaloy Hastelloyn / Invar Moneln / Incoloy	S	≤ 38	≤ 350	10 - 15	-	A	○	○	○	○
	718 Inconel A286	S	> 38 ≤ 44	> 350 ≤ 420	10 - 12	-	A				
Titanium		S	≤ 38	≤ 350	3 - 15	-	A	○	○	○	○

MU		VA	VA	VG	VG	VG	VG	HR	HR
TK-S	TK-C	TCE-S/C TCF-S/C	TCG-S/C TCH-S/C	BB/BI	BH/BM	BF/BK	BD/BO	H5/H7/H8	TQ858/ TK858/ TR858
DIN-ANSI Shank		USCTI 302A	USCTI 302A	USCTI 302A	USCTI 302A	DIN-ANSI Shank	DIN-ANSI Shank	USCTI 302A	USCTI 302A
354		355	357	362	364	365	366	367	368
M		UNC/UNF	M	UNC/UNF	M/MF	UNC/UNF	M/MF	UNC/UNF	M/MF
HSS-EX		Super HSS HSS-EX	Super HSS HSS-EX	Super HSS	Super HSS	Super HSS	Super HSS	P-HSS	P-HSS
4-5P		4P	4P	2-3P	2-3P	2-3P	2-3P	2-3P	2-3P
Steam Oxide	TiCN	Steam Oxide TiCN	Steam Oxide TiCN	Steam Oxide Hardslick	Steam Oxide Hardslick	Steam Oxide Hardslick	Steam Oxide Hardslick	Steam Oxide TiCN Hardslick	Steam Oxide TiCN Hardslick
-		-	-	R40°	R40°	R40°	R40°	R15°	R15°
3.0D		3.0D	3.0D	2.5D	2.5D	2.5D	2.5D	2.5D	2.5D
Through		Through	Through	Blind	Blind	Blind	Blind	Blind	Blind
									
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HIGH PERFORMANCE TAPS RECOMMENDATION TABLE

Super HSS : Premium HSS Metallurgy
P-HSS : Powdered Metallurgy
HSSE-V3 : 3% Vanadium Alloy HSS-EX
HSS-V : Vanadium Alloy HSS

◎= RECOMMENDED
○= SUITABLE

SERIES	Ti / Ni B3/B5/D6	VA G9/H0	VA H2/H4
DESCRIPTION	USCTI 302A	USCTI Long Shank	USCTI Long Shank
PAGE	369	371	372
THREADS	UNC/UNF	UNC/UNF	UNC/UNF
TAP MATERIALS	P-HSS	P-HSS	P-HSS
CHAMFER LENGTH	2-3P	2-3P	4-5P
SURFACE TREATMENT	Steam Oxide TiCN Hardslick	Hardslick	TiN Hardslick
SPIRAL FLUTE ANGLE	R15°	R45°	L15°
THREAD DEPTH	2.5D	2.5D	3.0D
HOLE TYPE	Blind	Blind	Through

COOLANT
A = Cutting Oil
T = Oil Emulsion
X = Cutting Oil/Oil Emulsion

Material Group	Material Sub-Group	ISO	Hardness (HRc)	Hardness (BHN)	Cutting Speed (SFM) Uncoated	Cutting Speed (SFM) Coated	COOLANT			
Steel	Low carbon steels Free machining carbon steels	P	< 15	< 180	25 - 50	50 - 80	T		○	○
	Medium to high carbon steels Low alloyed steels	P	< 23	< 240	25 - 50	50 - 80	T		◎	◎
	Steel castings & forgings Heat-treatable alloy steels	P	> 24 ≤ 38	> 250 ≤ 350	6 - 30	10 - 35	X			
	Alloyed tool steels Mold steels	P	> 38 ≤ 44	> 350 ≤ 420	6 - 12	-	A			
Stainless Steel	Free machining stainless steels	M	< 23	< 240	12 - 35	20 - 50	A		◎	◎
	Heat-and corrosion-resistant stainless steels Valve stainless steels	M	> 24 ≤ 38	> 250 ≤ 350	12 - 15	12 - 15	A			
	Stainless steel castings Precipitation hardening stainless steels	M	> 38 ≤ 44	> 350 ≤ 420	12 - 15	-	A			
Cast Iron	Grey cast iron	K	-	≤ 220	35 - 50	50 - 65	T			
	Nodular cast iron / Chilled cast iron Meehanite iron / Ductile iron	K	-	≥ 250	12 - 45	25 - 55	X			
Copper	Pure and alloyed copper	N	-	-	50 - 60	65 - 100	T		○	○
Brass	Free machining brass Alloyed brass	N	-	-	30 - 65	-	T		○	○
Bronze		N	44	< 420	12 - 20	35 - 80	T			
Aluminum	Pure Aluminum Aluminum alloys	S	-	-	50 - 65	-	T		○	○
	Aluminum alloy castings	S	-	-	40 - 65	45 - 90	T			
Zinc		N	-	-	25 - 65	50 - 80	T		○	○
Magnesium		N	-	-	-	45 - 100	T		○	○
Nickel Alloys	718 & 625 INCOn / Waspaloy Hastelloyn / Invar Moneln / Incoloy	S	≤ 38	≤ 350	10 - 15	-	A	◎		
	718 Inconel A286	S	> 38 ≤ 44	> 350 ≤ 420	10 - 12	-	A	◎		
Titanium		S	≤ 38	≤ 350	3 - 15	-	A	◎		

VG	VA	VA	VA	VG	VG	VG	AI
BG/BG-GB	**B1/B0/B2/D2**	**BS/BT**	**E6/E8/E9**	**D3/E0**	**BU/BV**	**E2/E4/E5**	**C0/D8**
DIN-ANSI Shank	USCTI 302A	USCTI 302A	DIN-ANSI Shank	USCTI 302A	USCTI 302A	DIN-ANSI Shank	USCTI 302A
373	374	377	378	379	382	384	385
UNC/UN8	UNC/UNF	M/MF	M/MF	UNC/UNF	M/MF	M/MF	UNC/UNF
HSSE-V3	HSSE-V3	HSSE-V3	HSSE-V3	HSSE-V3	HSSE-V3	HSSE-V3	HSSE-V3
2-3P	2-3P	2-3P	2-3P	2-3P	2-3P	2-3P	2-3P
Hardslick Gold & Black	Bright Steam Oxide TiN Hardslick	Steam Oxide Hardslick	Steam Oxide TiCN Hardslick	Steam Oxide Hardslick	Steam Oxide Hardslick	Steam Oxide TiCN Hardslick	Bright Hardslick
R40°	R45°	R45°	R45°	R45°	R45°	R45°	R50°
2.5D	2.5D	2.5D	2.5D	2.5D	2.5D	2.5D	2.5D
Blind	Blind	Blind	Blind	Blind	Blind	Blind	Blind
							
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				○	○	○	

HIGH PERFORMANCE TAPS RECOMMENDATION TABLE

Super HSS : Premium HSS Metallurgy
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HSSE-V3 : 3% Vanadium Alloy HSS-EX
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◎= RECOMMENDED
○= SUITABLE

COOLANT
A = Cutting Oil
T = Oil Emulsion
X = Cutting Oil/Oil Emulsion

			AI	GS	GS
SERIES			BW/BX	C2/C3/C4/ D9	F4/F8/F6
DESCRIPTION			USCTI 302A	USCTI 302	USCTI 302A
PAGE			386	387	388
THREADS			M/MF	UNC/UNF	UNC/UNF
TAP MATERIALS			HSSE-V3	HSSE-V3	HSS-V
CHAMFER LENGTH			2-3P	1.5-2P	1.5-2P
SURFACE TREATMENT			Bright Hardslick	Steam Oxide Bright/TiN Hardslick	Steam Oxide TiN Hardslick
SPIRAL FLUTE ANGLE			R50°	R45°	R50°
THREAD DEPTH			2.5D	2.5D	2.5D
HOLE TYPE			Blind	Blind	Blind
					
Material Group	Material Sub-Group	ISO	Hardness (HRc)	Hardness (BHN)	Cutting Speed (SFM) Uncoated	Cutting Speed (SFM) Coated	COOLANT		
Steel	Low carbon steels Free machining carbon steels	P	< 15	< 180	25 - 50	50 - 80	T		◎	◎
	Medium to high carbon steels Low alloyed steels	P	< 23	< 240	25 - 50	50 - 80	T		◎	◎
	Steel castings & forgings Heat-treatable alloy steels	P	> 24 ≤ 38	> 250 ≤ 350	6 - 30	10 - 35	X		○	○
	Alloyed tool steels Mold steels	P	> 38 ≤ 44	> 350 ≤ 420	6 - 12	-	A			
Stainless Steel	Free machining stainless steels	M	< 23	< 240	12 - 35	20 - 50	A		○	○
	Heat-and corrosion-resistant stainless steels Valve stainless steels	M	> 24 ≤ 38	> 250 ≤ 350	12 - 15	12 - 15	A		○	○
	Stainless steel castings Precipitation hardening stainless steels	M	> 38 ≤ 44	> 350 ≤ 420	12 - 15	-	A			
Cast Iron	Grey cast iron	K	-	≤ 220	35 - 50	50 - 65	T			
	Nodular cast iron / Chilled cast iron Meehanite iron / Ductile iron	K	-	≥ 250	12 - 45	25 - 55	X		○	○
Copper	Pure and alloyed copper	N	-	-	50 - 60	65 - 100	T			
Brass	Free machining brass Alloyed brass	N	-	-	30 - 65	-	T			
Bronze		N	44	< 420	12 - 20	35 - 80	T			
Aluminum	Pure Aluminum Aluminum alloys	N	-	-	50 - 65	-	T	◎		
	Aluminum alloy castings	N	-	-	40 - 65	45 - 90	T	◎	○	○
Zinc		N	-	-	25 - 65	50 - 80	T			
Magnesium		N	-	-	-	45 - 100	T			
Nickel Alloys	718 & 625 INCOn / Waspaloy Hastelloyn / Invar Moneln / Incoloy	S	≤ 38	≤ 350	10 - 15	-	A			
	718 Inconel A286	S	> 38 ≤ 44	> 350 ≤ 420	10 - 12	-	A			
Titanium		S	≤ 38	≤ 350	3 - 15	-	A			

GS	GS	GS	GS	GS	VG	VG
G4/G5/G6	**G0/G1/G2**	**T7A96/T6A96/T8A96 T7295/T6295/T8295**	**T7A86/T6A86/T8A86 T7A85/T6A85/T8A85**	**T7D01/T8D01 T7D02/T8D02**	**M9/O1**	**N7/N8**
USCTI 302A	DIN-ANSI Shank	USCTI 302	USCTI 302	USCTI Long Shank	USCTI 302A	USCTI 302A
390	391	393	394	395	400	402
M/MF	UNC/UNF	UNC/UNF	M/MF	UNC/UNF	UNC/UNF	M/MF
HSS-V	HSS-V	HSS	HSS	HSS	Super HSS	Super HSS
1.5-2P	2-3P	4-5P 1.5-2P	4-5P 1.5-2P	4-5P 1.5-2P	4-5P	4-5P
Bright TiCN Hardslick	Bright TiN Hardslick	Bright Steam Oxide TiN	Bright Steam Oxide TiN	Bright TiN	Steam Oxide Hardslick	Steam Oxide Hardslick
R50°	R45°	R50°	R50°	R50°	-	-
2.5D	2.5D	2.5D	2.5D	2.5D	3.0D	3.0D
Blind	Blind	Blind	Blind	Blind	Through	Through
						
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Super HSS : Premium HSS Metallurgy
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◎= RECOMMENDED
○= SUITABLE

COOLANT
A = Cutting Oil
T = Oil Emulsion
X = Cutting Oil/Oil Emulsion

			VG	VG	HR
		SERIES	N4/O5	N3/O3	M4/M6/M7
		DESCRIPTION	DIN-ANSI Shank	DIN-ANSI Shank	USCTI 302A
		PAGE	403	404	405
		THREADS	UNC/UNF	M/MF	UNC/UNF
		TAP MATERIALS	Super HSS	Super HSS	P-HSS
		CHAMFER LENGTH	4-5P	4-5P	4-5P
		SURFACE TREATMENT	Steam Oxide Hardslick	Steam Oxide Hardslick	Steam Oxide TiCN Hardslick
		SPIRAL FLUTE ANGLE	-	-	-
		THREAD DEPTH	3.0D	3.0D	3.0D
		HOLE TYPE	Through	Through	Through

Material Group	Material Sub-Group	ISO	Hardness (HRc)	Hardness (BHN)	Cutting Speed (SFM) Uncoated	Cutting Speed (SFM) Coated	COOLANT			
Steel	Low carbon steels Free machining carbon steels	P	< 15	< 180	25 - 50	50 - 80	T	○	○	
	Medium to high carbon steels Low alloyed steels	P	< 23	< 240	25 - 50	50 - 80	T	◎	◎	
	Steel castings & forgings Heat-treatable alloy steels	P	> 24 ≤ 38	> 250 ≤ 350	6 - 30	10 - 35	X	◎	◎	○
	Alloyed tool steels Mold steels	P	> 38 ≤ 44	> 350 ≤ 420	6 - 12	-	A			◎
Stainless Steel	Free machining stainless steels	M	< 23	< 240	12 - 35	20 - 50	A	◎	◎	
	Heat-and corrosion-resistant stainless steels Valve stainless steels	M	> 24 ≤ 38	> 250 ≤ 350	12 - 15	12 - 15	A	◎	◎	○
	Stainless steel castings Precipitation hardening stainless steels	M	> 38 ≤ 44	> 350 ≤ 420	12 - 15	-	A			◎
Cast Iron	Grey cast iron	K	-	≤ 220	35 - 50	50 - 65	T			
	Nodular cast iron / Chilled cast iron Meehanite iron / Ductile iron	K	-	≥ 250	12 - 45	25 - 55	X			
Copper	Pure and alloyed copper	N	-	-	50 - 60	65 - 100	T	○	○	
Brass	Free machining brass Alloyed brass	N	-	-	30 - 65	-	T	○	○	
Bronze		N	44	< 420	12 - 20	35 - 80	T			◎
Aluminum	Pure Aluminum Aluminum alloys	N	-	-	50 - 65	-	T	○	○	
	Aluminum alloy castings	N	-	-	40 - 65	45 - 90	T			
Zinc		N	-	-	25 - 65	50 - 80	T	○	○	
Magnesium		N	-	-	-	45 - 100	T	○	○	
Nickel Alloys	718 & 625 INCOn / Waspaloy Hastelloyn / Invar Moneln / Incoloy	S	≤ 38	≤ 350	10 - 15	-	A			○
	718 Inconel A286	S	> 38 ≤ 44	> 350 ≤ 420	10 - 12	-	A			○
Titanium		S	≤ 38	≤ 350	3 - 15	-	A			○

HR	Ti / Ni	VA	VA	VA	VA	VG	VG	VG
TQ808/ TK808/ TR808	**I3/I5/J6**	**M2/M3**	**I0/I2/J2**	**O9/IA**	**K3/K5/K6**	**J3/J8**	**IB/IC**	**J9/K7/K2**
USCTI 302A	USCTI 302A	USCTI Long Shank	USCTI 302A	USCTI 302A	DIN-ANSI Shank	USCTI 302A	USCTI 302A	DIN-ANSI Shank
406	407	409	410	413	414	415	419	421
M/MF	UNC/UNF	UNC/UNF	UNC/UNF	M/MF	M/MF	UNC/UNF	M/MF	M/MF
P-HSS	P-HSS	P-HSS	HSSE-V3	HSSE-V3	HSSE-V3	HSSE-V3	HSSE-V3	HSSE-V3
4-5P	4-5P	4-5P	4-5P	4-5P	4-5P	4-5P	4-5P	4-5P
Steam Oxide TiCN Hardslick	Steam Oxide TiCN Hardslick	Hardslick	Steam Oxide TiN Hardslick	Steam Oxide Hardslick	Steam Oxide TiCN Hardslick	Steam Oxide Hardslick	Steam Oxide Hardslick	Steam Oxide TiCN Hardslick
	-	-	-	-	-	-	-	-
3.0D	3.0D	3.0D	3.0D	3.0D	3.0D	3.0D	3.0D	3.0D
Through	Through	Through	Through	Through	Through	Through	Through	Through
								
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HIGH PERFORMANCE TAPS RECOMMENDATION TABLE

Super HSS : Premium HSS Metallurgy
P-HSS : Powdered Metallurgy
HSSE-V3 : 3% Vanadium Alloy HSS-EX
HSS-V : Vanadium Alloy HSS

◎= RECOMMENDED
○= SUITABLE

COOLANT
A = Cutting Oil
T = Oil Emulsion
X = Cutting Oil/Oil Emulsion

								Al	Al	GS
							SERIES	T2496	T2K01	I9/J0/J1/J7
							DESCRIPTION	USCTI 302A	USCTI 302A	USCTI
							PAGE	422	423	424
							THREADS	UNC/UNF	M/MF	UNC/UNF
							TAP MATERIALS	HSSE-V3	HSSE-V3	HSSE-V3
							CHAMFER LENGTH	4-5P	4-5P	4-5P
							SURFACE TREATMENT	Bright	Bright	Steam Oxide Bright/TiN Hardslick
							SPIRAL FLUTE ANGLE	-	-	-
							THREAD DEPTH	3.0D	3.0D	3.0D
							HOLE TYPE	Through	Through	Through
Material Group	Material Sub-Group	ISO	Hardness (HRc)	Hardness (BHN)	Cutting Speed (SFM) Uncoated	Cutting Speed (SFM) Coated	COOLANT			
Steel	Low carbon steels Free machining carbon steels	P	< 15	< 180	25 - 50	50 - 80	T			◎
	Medium to high carbon steels Low alloyed steels	P	< 23	< 240	25 - 50	50 - 80	T			◎
	Steel castings & forgings Heat-treatable alloy steels	P	> 24 ≤ 38	> 250 ≤ 350	6 - 30	10 - 35	X			○
	Alloyed tool steels Mold steels	P	> 38 ≤ 44	> 350 ≤ 420	6 - 12	-	A			
Stainless Steel	Free machining stainless steels	M	< 23	< 240	12 - 35	20 - 50	A			○
	Heat-and corrosion-resistant stainless steels Valve stainless steels	M	> 24 ≤ 38	> 250 ≤ 350	12 - 15	12 - 15	A			○
	Stainless steel castings Precipitation hardening stainless steels	M	> 38 ≤ 44	> 350 ≤ 420	12 - 15	-	A			
Cast Iron	Grey cast iron	K	-	≤ 220	35 - 50	50 - 65	T			
	Nodular cast iron / Chilled cast iron Meehanite iron / Ductile iron	K	-	≥ 250	12 - 45	25 - 55	X			○
Copper	Pure and alloyed copper	N	-	-	50 - 60	65 - 100	T			
Brass	Free machining brass Alloyed brass	N	-	-	30 - 65	-	T			
Bronze		N	44	< 420	12 - 20	35 - 80	T			
Aluminum	Pure Aluminum Aluminum alloys	N	-	-	50 - 65	-	T	◎	◎	
	Aluminum alloy castings	N	-	-	40 - 65	45 - 90	T	◎	◎	○
Zinc		N	-	-	25 - 65	50 - 80	T			
Magnesium		N	-	-	-	45 - 100	T			
Nickel Alloys	718 & 625 INCOn / Waspaloy Hastelloyn / Invar Moneln / Incoloy	S	≤ 38	≤ 350	10 - 15	-	A			
	718 Inconel A286	S	> 38 ≤ 44	> 350 ≤ 420	10 - 12	-	A			
Titanium		S	≤ 38	≤ 350	3 - 15	-	A			

GS	GS	GS	GS	GS	GS	GS	GS
K9/L0/L1	**L7/L8/L9**	**L3/L4/L5**	**T7216/T6216/T8216 T7C16/T6C16/T8C16**	**T7256 /T6256**	**T7217/T6217/ T8217**	**T7226/T6226/ T8226**	**T7B17/T6B17/ T8B17**
USCTI 302A	USCTI 302A	DIN-ANSI Shank	USCTI 302	USCTI 302	USCTI 302	USCTI Oversize	USCTI Oversize
425	426	427	428	432	434	435	436
UNC/UNF	M/MF	UNC/UNF	UNC/UNF	UNC/UNF	M/MF	UNC/UNF	M/MF
HSS-V	HSS-V	HSS-V	HSS	HSS	HSS	HSS	HSS
4-5P	4-5P	4-5P	4-5P	1.5-2P	4-5P	4-5P	4-5P
Bright TiN Hardslick	Bright TiCN Hardslick	Bright TiN Hardslick	Bright Steam Oxide TiN	Bright Steam Oxide	Bright Steam Oxide TiN	Bright Steam Oxide TiN	Bright Steam Oxide TiN
-	-	-	-	-	-	-	-
3.0D	3.0D	3.0D	3.0D	3.0D	3.0D	3.0D	3.0D
Through	Through	Through	Through	Through	Through	Through	Through
							
◎	◎	◎	◎	◎	◎	◎	◎
◎	◎	◎	◎	◎	◎	◎	◎
○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○

HIGH PERFORMANCE TAPS RECOMMENDATION TABLE

Super HSS : Premium HSS Metallurgy
P-HSS : Powdered Metallurgy
HSSE-V3 : 3% Vanadium Alloy HSS-EX
HSS-V : Vanadium Alloy HSS

◎= RECOMMENDED
○= SUITABLE

COOLANT
A = Cutting Oil
T = Oil Emulsion
X = Cutting Oil/Oil Emulsion

		GS	GG
SERIES		T7236/T6236/T8236 T7G36/T6G36/T8G36	T0C01
DESCRIPTION		USCTI Long Shank	USCTI 302A
PAGE		437	441
THREADS		UNC/UNF	UNC/UNF
TAP MATERIALS		HSS	Carbide
CHAMFER LENGTH		4-5P	1.5-2P
SURFACE TREATMENT		Bright Steam Oxide TiN	Bright
SPIRAL FLUTE ANGLE		-	-
THREAD DEPTH		3.0D	2.0D
HOLE TYPE		Through	Blind Through

Material Group	Material Sub-Group	ISO	Hardness (HRc)	Hardness (BHN)	Cutting Speed (SFM) Uncoated	Cutting Speed (SFM) Coated	COOLANT		
Steel	Low carbon steels Free machining carbon steels	P	< 15	< 180	25 - 50	50 - 80	T	◎	
	Medium to high carbon steels Low alloyed steels	P	< 23	< 240	25 - 50	50 - 80	T	◎	
	Steel castings & forgings Heat-treatable alloy steels	P	> 24 ≤ 38	> 250 ≤ 350	6 - 30	10 - 35	X	○	
	Alloyed tool steels Mold steels	P	> 38 ≤ 44	> 350 ≤ 420	6 - 12	-	A		
Stainless Steel	Free machining stainless steels	M	< 23	< 240	12 - 35	20 - 50	A	○	
	Heat-and corrosion-resistant stainless steels Valve stainless steels	M	> 24 ≤ 38	> 250 ≤ 350	12 - 15	12 - 15	A	○	
	Stainless steel castings Precipitation hardening stainless steels	M	> 38 ≤ 44	> 350 ≤ 420	12 - 15	-	A		
Cast Iron	Grey cast iron	K	-	≤ 220	35 - 50	50 - 65	T		◎
	Nodular cast iron / Chilled cast iron Meehanite iron / Ductile iron	K	-	≥ 250	12 - 45	25 - 55	X	○	◎
Copper	Pure and alloyed copper	N	-	-	50 - 60	65 - 100	T		◎
Brass	Free machining brass Alloyed brass	N	-	-	30 - 65	-	T		
Bronze		N	44	< 420	12 - 20	35 - 80	T		
Aluminum	Pure Aluminum Aluminum alloys	N	-	-	50 - 65	-	T		
	Aluminum alloy castings	N	-	-	40 - 65	45 - 90	T	○	◎
Zinc		N	-	-	25 - 65	50 - 80	T		
Magnesium		N	-	-	-	45 - 100	T		
Nickel Alloys	718 & 625 INCOn / Waspaloy Hastelloyn / Invar Moneln / Incoloy	S	≤ 38	≤ 350	10 - 15	-	A		
	718 Inconel A286	S	> 38 ≤ 44	> 350 ≤ 420	10 - 12	-	A		
Titanium		S	≤ 38	≤ 350	3 - 15	-	A		

GG	GG	GG	GG	GS	GS	GS	GS
TR		TR-A, TR-R		T7316/T6316/T8316 T7A16/T7B16	T7315/T6315/ T8315	T7326	T7B15
USCTI 302A	USCTI 302A	USCTI 302A	USCTI 302A	USCTI 302	USCTI 302	USCTI Oversize	USCTI Oversize
442		444		446	452	453	454
UNC/UNF	M	UNC/UNF	M	UNC/UNF/UNS	M/MF	UNC/UNF	UNC/UNF
Super HSS	Super HSS	Super HSS	Super HSS	HSS	HSS	HSS	HSS
2P~3P	2P~3P	2P~3P	2P~3P	9P / 5P / 2P	9P / 5P / 2P	5P / 2P	5P / 2P
TiAlN	TiAlN	TiAlN	TiAlN	Bright Steam Oxide TiN	Bright Steam Oxide TiN	Bright	Bright
-	-	-	-	-	-	-	-
2.0D	2.0D	2.0D	2.0D	2.0D	2.0D	2.0D	2.0D
Blind Through	Blind Through	Blind Through	Blind Through	Blind Through	Blind Through	Blind Through	Blind Through
							
				◎	◎	◎	◎
				◎	◎	◎	◎
				◎	◎	◎	◎
◎	◎	◎	◎				
				◎	◎	◎	◎
				◎	◎	◎	◎
				◎	◎	◎	◎
◎	◎	◎	◎	◎	◎	◎	◎
				◎	◎	◎	◎
				◎	◎	◎	◎

HIGH PERFORMANCE TAPS RECOMMENDATION TABLE

Super HSS : Premium HSS Metallurgy
P-HSS : Powdered Metallurgy
HSSE-V3 : 3% Vanadium Alloy HSS-EX
HSS-V : Vanadium Alloy HSS

◎= RECOMMENDED
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COOLANT
A = Cutting Oil
T = Oil Emulsion
X = Cutting Oil/Oil Emulsion

								GS	GS	GS
							SERIES	T7336 (LH)	T7A15 (LH)	T7616/ T6616/ T8616
							DESCRIPTION	USCTI 302 (Left Hand)	USCTI 302 (Left Hand)	USCTI Long Shank
							PAGE	455	456	457
							THREADS	UNC/UNF	UNC/UNF	UNC/UNF
							TAP MATERIALS	HSS	HSS	HSS
							CHAMFER LENGTH	5P / 2P	5P / 2P	4-5P
							SURFACE TREATMENT	Bright	Bright	Bright Steam Oxide TiN
							SPIRAL FLUTE ANGLE	-	-	-
							THREAD DEPTH	2.0D	2.0D	2.0D
							HOLE TYPE	Blind Through	Blind Through	Blind Through
Material Group	Material Sub-Group	ISO	Hardness (HRc)	Hardness (BHN)	Cutting Speed (SFM) Uncoated	Cutting Speed (SFM) Coated	COOLANT			
Steel	Low carbon steels Free machining carbon steels	P	< 15	< 180	25 - 50	50 - 80	T	◎	◎	◎
	Medium to high carbon steels Low alloyed steels	P	< 23	< 240	25 - 50	50 - 80	T	◎	◎	◎
	Steel castings & forgings Heat-treatable alloy steels	P	> 24 ≤ 38	> 250 ≤ 350	6 - 30	10 - 35	X			
	Alloyed tool steels Mold steels	P	> 38 ≤ 44	> 350 ≤ 420	6 - 12	-	A			
Stainless Steel	Free machining stainless steels	M	< 23	< 240	12 - 35	20 - 50	A	◎	◎	◎
	Heat-and corrosion-resistant stainless steels Valve stainless steels	M	> 24 ≤ 38	> 250 ≤ 350	12 - 15	12 - 15	A			
	Stainless steel castings Precipitation hardening stainless steels	M	> 38 ≤ 44	> 350 ≤ 420	12 - 15	-	A			
Cast Iron	Grey cast iron	K	-	≤ 220	35 - 50	50 - 65	T			
	Nodular cast iron / Chilled cast iron Meehanite iron / Ductile iron	K	-	≥ 250	12 - 45	25 - 55	X			
Copper	Pure and alloyed copper	N	-	-	50 - 60	65 - 100	T	◎	◎	◎
Brass	Free machining brass Alloyed brass	N	-	-	30 - 65	-	T	◎	◎	◎
Bronze		N	44	< 420	12 - 20	35 - 80	T			
Aluminum	Pure Aluminum Aluminum alloys	N	-	-	50 - 65	-	T	◎	◎	◎
	Aluminum alloy castings	N	-	-	40 - 65	45 - 90	T	◎	◎	◎
Zinc		N	-	-	25 - 65	50 - 80	T	◎	◎	◎
Magnesium		N	-	-	-	45 - 100	T	◎	◎	◎
Nickel Alloys	718 & 625 INCOn / Waspaloy Hastelloyn / Invar Moneln / Incoloy	S	≤ 38	≤ 350	10 - 15	-	A			
	718 Inconel A286	S	> 38 ≤ 44	> 350 ≤ 420	10 - 12	-	A			
Titanium		S	≤ 38	≤ 350	3 - 15	-	A			

GV	GV	GV	GV	GV	GV	GS	GS
TKR03	**ZF**	**Z0/Z1/Z2/Z3**	**Z4/Z5/Z6/Z7**	**Z8/ZA/ZC Z9/ZB/ZD**	**T7R01/T8R01/THR01 T7R02/T8R02/THR02**	**ST/SI**	**T7406**
USCTI 302A	USCTI 302	USCTI 302A	USCTI 302A	USCTI 302A	USCTI 302A	USCTI 322	USCTI 322
461	462	463	465	467	468	471	472
UNC/UNF	UNC/UNF	UNC/UNF	UNC/UNF	M/MF	UNC/UNF	UNC/UNF	UNC/UNF
Super HSS	HSSE-V3	HSSE-V3	HSSE-V3	HSSE-V3	HSS	HSSE-V3	HSS
2-3P	2-3P	4-5P 1.5-2P	4-5P 1.5-2P	4-5P 1.5-2P	4-5P 1.5-2P	1.5-2P	1.5-2P
TiCN	Bright	Bright TiN	Bright TiN	Bright TiN TiCN	Bright TiN TiCN	Hardslick	Bright
-	-	-	-	-	-	R40°	R50°
3.0D	3.0D	3.0D	3.0D	3.0D	3.0D	2.5D	2.5D
Blind Through	Blind Through	Blind Through	Blind Through	Blind Through	Blind Through	Blind	Blind
							
◎	◎	◎	◎	◎	◎	◎	○
◎		◎	◎	◎	◎	◎	○
						○	
◎	◎	◎	◎	◎	○		
						○	○
◎		◎	◎	◎	○		
◎		◎	◎	◎	○		
◎	◎	◎	◎	◎	◎	○	○
◎	◎	◎	◎	◎	◎	○	○
◎		◎	◎	◎	○		
◎		◎	◎	◎	○		

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COOLANT
A = Cutting Oil
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			GS	GS	GS
		SERIES	T7425	STI TAP (ST/SI)	T7436
		DESCRIPTION	USCTI 322A	USCTI 322	USCTI 322
		PAGE	473	474	475
		THREADS	M/MF	UNC/UNF	UNC/UNF
		TAP MATERIALS	HSS	HSSE-V3	HSS
		CHAMFER LENGTH	1.5-2P	4-5P	4-5P
		SURFACE TREATMENT	Bright	Hardslick	Bright
		SPIRAL FLUTE ANGLE	R50°	-	-
		THREAD DEPTH	2.5D	3.0D	3.0D
		HOLE TYPE	Blind	Through	Through

Material Group	Material Sub-Group	ISO	Hardness (HRc)	Hardness (BHN)	Cutting Speed (SFM) Uncoated	Cutting Speed (SFM) Coated	COOLANT			
Steel	Low carbon steels Free machining carbon steels	P	< 15	< 180	25 - 50	50 - 80	T	○	◎	○
	Medium to high carbon steels Low alloyed steels	P	< 23	< 240	25 - 50	50 - 80	T	○	◎	○
	Steel castings & forgings Heat-treatable alloy steels	P	> 24 ≤ 38	> 250 ≤ 350	6 - 30	10 - 35	X		○	
	Alloyed tool steels Mold steels	P	> 38 ≤ 44	> 350 ≤ 420	6 - 12	-	A			
Stainless Steel	Free machining stainless steels	M	< 23	< 240	12 - 35	20 - 50	A			
	Heat-and corrosion-resistant stainless steels Valve stainless steels	M	> 24 ≤ 38	> 250 ≤ 350	12 - 15	12 - 15	A			
	Stainless steel castings Precipitation hardening stainless steels	M	> 38 ≤ 44	> 350 ≤ 420	12 - 15	-	A			
Cast Iron	Grey cast iron	K	-	≤ 220	35 - 50	50 - 65	T	○	○	○
	Nodular cast iron / Chilled cast iron Meehanite iron / Ductile iron	K	-	≥ 250	12 - 45	25 - 55	X			
Copper	Pure and alloyed copper	N	-	-	50 - 60	65 - 100	T			
Brass	Free machining brass Alloyed brass	N	-	-	30 - 65	-	T			
Bronze		N	44	< 420	12 - 20	35 - 80	T			
Aluminum	Pure Aluminum Aluminum alloys	N	-	-	50 - 65	-	T	○	○	○
	Aluminum alloy castings	N	-	-	40 - 65	45 - 90	T	○	○	○
Zinc		N	-	-	25 - 65	50 - 80	T			
Magnesium		N	-	-	-	45 - 100	T			
Nickel Alloys	718 & 625 INCOn / Waspaloy Hastelloyn / Invar Moneln / Incoloy	S	≤ 38	≤ 350	10 - 15	-	A			
	718 Inconel A286	S	> 38 ≤ 44	> 350 ≤ 420	10 - 12	-	A			
Titanium		S	≤ 38	≤ 350	3 - 15	-	A			

GS	GS	GS	VA	GG	GG	GG	GS
T7415	**T7426**	**T7405**	**Q1/Q0/Q6**	**Q9/R0/R1**	**R7/R8/R9/S0**	**S1/S2 (INTERRUPTED)**	**T7L36/T6L36 T7536/T6536**
USCTI 322A	USCTI 322	USCTI 322A	USCTI 311	USCTI 311	USCTI 311	USCTI 311	USCTI 311
476	477	478	481	482	483	484	485
M/MF	UNC/UNF	M/MF	NPTF	NPTF	NPTF	NPTF	NPS/NPSF
HSS	HSS	HSS	HSSE-V3	HSSE-V3	HSSE-V3	HSSE-V3	HSS
4-5P	4-5P 1.5-2P	4-5P 1.5-2P	2-3P	2-3P	2-3P	2-3P	4-5P
Bright	Bright	Bright	Bright Steam Oxide Hardslick	Bright TiN Hardslick	Bright TiN Hardslick Nitrided-Steam Oxide	Bright TiCN	Bright Steam Oxide
-	-	-	R15°	R15°	-	-	-
3.0D	2.0D	2.0D	2.5D	2.5D	2.0D	2.0D	2.0D
Through	Blind Through	Blind Through	Blind	Blind Through	Blind Through	Blind Through	Blind Through
							
○	○	○	○	◎	◎	◎	○
○	○	○	◎	◎	◎	◎	○
			○	○	○	○	
			◎				
			○				
○	○	○		◎	◎	◎	○
			○	◎	◎	◎	
○	○	○					○
○	○	○	○				○

HIGH PERFORMANCE TAPS RECOMMENDATION TABLE

Super HSS : Premium HSS Metallurgy
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HSS-V : Vanadium Alloy HSS

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COOLANT
A = Cutting Oil
T = Oil Emulsion
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								GS	GS
							SERIES	T7505/T6505/ TH505 (INTERRUPTED)	T7546/T8546
							DESCRIPTION	USCTI 311	USCTI 311
							PAGE	486	487
							THREADS	NPT	NPTF
							TAP MATERIALS	HSS	HSS
							CHAMFER LENGTH	2-3P	2-3P
							SURFACE TREATMENT	Bright Steam Oxide TiCN	Bright TiN
							SPIRAL FLUTE ANGLE	-	-
							THREAD DEPTH	2.0D	2.0D
							HOLE TYPE	Blind Through	Blind Through
Material Group	Material Sub-Group	ISO	Hardness (HRc)	Hardness (BHN)	Cutting Speed (SFM) Uncoated	Cutting Speed (SFM) Coated	COOLANT		
Steel	Low carbon steels Free machining carbon steels	P	< 15	< 180	25 - 50	50 - 80	T	○	○
	Medium to high carbon steels Low alloyed steels	P	< 23	< 240	25 - 50	50 - 80	T	○	○
	Steel castings & forgings Heat-treatable alloy steels	P	> 24 ≤ 38	> 250 ≤ 350	6 - 30	10 - 35	X		
	Alloyed tool steels Mold steels	P	> 38 ≤ 44	> 350 ≤ 420	6 - 12	-	A		
Stainless Steel	Free machining stainless steels	M	< 23	< 240	12 - 35	20 - 50	A		
	Heat-and corrosion-resistant stainless steels Valve stainless steels	M	> 24 ≤ 38	> 250 ≤ 350	12 - 15	12 - 15	A		
	Stainless steel castings Precipitation hardening stainless steels	M	> 38 ≤ 44	> 350 ≤ 420	12 - 15	-	A		
Cast Iron	Grey cast iron	K	-	≤ 220	35 - 50	50 - 65	T	○	○
	Nodular cast iron / Chilled cast iron Meehanite iron / Ductile iron	K	-	≥ 250	12 - 45	25 - 55	X		
Copper	Pure and alloyed copper	N	-	-	50 - 60	65 - 100	T		
Brass	Free machining brass Alloyed brass	N	-	-	30 - 65	-	T		
Bronze		N	44	< 420	12 - 20	35 - 80	T		
Aluminum	Pure Aluminum Aluminum alloys	N	-	-	50 - 65	-	T	○	○
	Aluminum alloy castings	N	-	-	40 - 65	45 - 90	T	○	○
Zinc		N	-	-	25 - 65	50 - 80	T		
Magnesium		N	-	-	-	45 - 100	T		
Nickel Alloys	718 & 625 INCOn / Waspaloy Hastelloyn / Invar Moneln / Incoloy	S	≤ 38	≤ 350	10 - 15	-	A		
	718 Inconel A286	S	> 38 ≤ 44	> 350 ≤ 420	10 - 12	-	A		
Titanium		S	≤ 38	≤ 350	3 - 15	-	A		

CARBIDE

YG

Being the best through innovation





SOLID CARBIDE THREAD MILL

SELECTION GUIDE

- For blind holes and through holes with one single tool.
- Higher cutting speed and feed than taps.

INCH

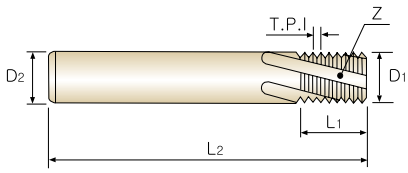
EDP No.	MODEL	Description	Page
TE		Solid Carbide Thread mill for Unified Internal Threads - ANSI B 1.1	327
TD		Solid Carbide Thread mill for Metric Internal Threads - DIN 13	328
TF TG		Solid Carbide Thread mill for Unified Internal Threads - ANSI B 1.20.1(NPT) / ANSI B1.20.3(NPTF)	329

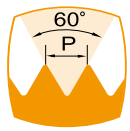
SOLID CARBIDE THREAD MILLS

TE SERIES

SOLID CARBIDE THREAD MILL FOR UNIFIED INTERNAL THREADS - ANSI B 1.1







▶ Material : Solid Carbide
▶ Shank : Plain Straight
▶ Spiral Angle : 15°

Unit : Inch

SIZE	Pitch	Cutter Diameter	Shank Diameter	Thread Length	Overall Length	No. of Flute	EDP No.
	TPI	D_1	D_2	L_1	L_2	Z	TiAlN
#2	56	**.065**	.125	.125	2.000	3	**TE080**
#3	48	**.075**	.125	.167	2.000	3	**TE120**
#5	44	**.095**	.125	.228	2.000	3	**TE220**
#4	40	**.085**	.125	.175	2.000	3	**TE160**
#8	36	**.115**	.125	.250	2.000	3	**TE300**
#6	32	**.100**	.125	.218	2.000	3	**TE240**
#8	32	**.115**	.125	.250	2.000	3	**TE280**
#10	32	**.120**	.125	.312	2.000	3	**TE340**
1/2	32	**.370**	.375	1.000	3.500	4	**TEF90**
#10	28	**.120**	.125	.312	2.000	3	**TEK90**
1/4	28	**.180**	.187	.500	2.500	3	**TE420**
1/2	28	**.370**	.375	1.000	3.500	4	**TE590**
#10	24	**.120**	.125	.312	2.000	3	**TE320**
5/16	24	**.235**	.250	.625	2.500	3	**TE460**
3/8	24	**.285**	.312	.750	3.000	4	**TE500**
1/2	24	**.370**	.375	1.000	3.500	4	**TE570**
1/4	20	**.180**	.187	.500	2.500	3	**TE400**
7/16	20	**.335**	.375	.875	3.500	4	**TE540**
1/2	20	**.370**	.375	1.000	3.500	4	**TE580**
5/16	18	**.235**	.250	.625	2.500	3	**TE440**
9/16	18	**.370**	.375	.875	3.500	4	**TE620**
3/8	16	**.285**	.312	.750	3.000	4	**TE480**
3/4	16	**.490**	.500	1.250	3.500	4	**TE720**
7/16	14	**.305**	.312	.750	3.000	4	**TE520**
7/8	14	**.490**	.500	1.250	3.500	4	**TE760**
1/2	13	**.350**	.375	.875	3.500	4	**TE560**
9/16	12	**.370**	.375	.875	3.500	4	**TE600**
3/4	12	**.495**	.500	1.250	3.500	4	**TE710**
5/8	11	**.470**	.500	1.250	3.500	4	**TE640**
3/4	10	**.495**	.500	1.250	3.500	4	**TE700**
7/8	9	**.620**	.625	1.375	4.000	4	**TE740**
1	8	**.620**	.625	1.375	4.000	4	**TE780**
1	12	**.745**	.750	1.500	4.000	5	**TE800**
1-1/8 & 1-1/4	7	**.745**	.750	1.572	4.500	5	**TE820**

◎ : Excellent ○: Good

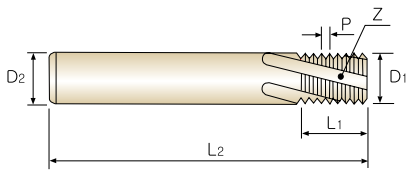
P			M	K	N	S	
Carbon Steels	Alloy Steels	Heat Treated Steels	Stainless Steels	Cast Iron	Non Ferrous Materials	Titanium Alloy	Chrome-Nickel Alloy
◎	◎	◎	○	◎	◎	○	○

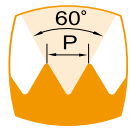
SOLID CARBIDE THREAD MILLS

TD SERIES

SOLID CARBIDE THREAD MILL FOR METRIC INTERNAL THREADS - DIN 13







▶ Material : Solid Carbide
▶ Shank : Plain Straight
▶ Spiral Angle : 15°

Unit : Inch

SIZE	Pitch (mm)	Cutter Diameter	Shank Diameter	Thread Length	Overall Length	No. of Flute	EDP No.
	P	D_1	D_2	L_1	L_2	Z	TiAlN
M3	0.50	**.085**	.125	.178	2.000	3	**TD200**
M4	0.70	**.115**	.125	.276	2.000	3	**TD240**
M4.5	0.75	**.120**	.125	.250	2.000	3	**TD260**
M8	0.75	**.235**	.250	.625	2.500	3	**TD380**
M5	0.80	**.120**	.125	.312	2.000	3	**TD280**
M6	1.00	**.170**	.187	.500	2.500	3	**TD310**
M12	1.00	**.360**	.375	.875	3.500	4	**TD530**
M8	1.25	**.235**	.250	.625	2.500	3	**TD360**
M10	1.50	**.300**	.312	.750	3.000	4	**TD420**
M14	1.50	**.370**	.375	.875	3.500	4	**TD550**
M18	1.50	**.490**	.500	1.250	3.500	4	**TD670**
M12	1.75	**.360**	.375	.875	3.500	4	**TD500**
M16	2.00	**.470**	.500	1.250	3.500	4	**TD600**
M20	2.50	**.495**	.500	1.250	3.500	4	**TD700**
M24	3.00	**.620**	.625	1.375	4.000	4	**TD780**

◎ : Excellent ○: Good

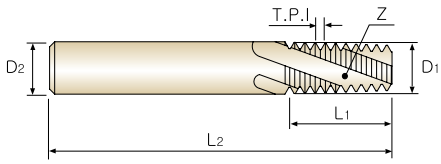
P			M	K	N	S	
Carbon Steels	Alloy Steels	Heat Treated Steels	Stainless Steels	Cast Iron	Non Ferrous Materials	Titanium Alloy	Chrome-Nickel Alloy
◎	◎	◎	○	◎	◎	○	○

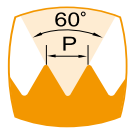
SOLID CARBIDE THREAD MILLS

TF/TG SERIES

SOLID CARBIDE THREAD MILL FOR UNIFIED INTERNAL THREADS - ANSI B 1.20.1(NPT) / ANSI B1.20.3(NPTF)







- ▶Material : Solid Carbide
- ▶Shank : Plain Straight
- ▶Spiral Angle : 15°

TF Series (NPT)

Unit : Inch

SIZE	Pitch	Cutter Diameter	Shank Diameter	Thread Length	Overall Length	No. of Flute	EDP No.
	T.P.I	D_1	D_2	L_1	L_2	Z	TiAlN
1/16 & 1/8	27	**.245**	.250	.437	2.500	3	**TF020**
1/4 & 3/8	18	**.305**	.312	.625	3.000	4	**TF400**
1/4 & 3/8	18	**.363**	.375	.680	3.500	4	**TF480**
1/2 & 3/4	14	**.495**	.500	.875	3.500	4	**TF560**
1" - 2"	11.5	**.620**	.625	1.125	4.000	4	**TF780**
2-1/2" - 6"	8	**.745**	.750	1.500	5.000	4	**TFF40**

TG Series (NPTF)

Unit : Inch

SIZE	Pitch	Cutter Diameter	Shank Diameter	Thread Length	Overall Length	No. of Flute	EDP No.
	T.P.I	D_1	D_2	L_1	L_2	Z	TiAlN
1/16 & 1/8	27	**.245**	.250	.437	2.500	3	**TG020**
1/4 & 3/8	18	**.305**	.312	.625	3.000	4	**TG400**
1/2 & 3/4	14	**.495**	.500	.875	3.500	4	**TG560**
1" - 2"	11.5	**.620**	.625	1.125	4.000	4	**TG780**
2-1/2" - 6"	8	**.745**	.750	1.500	5.000	4	**TGF40**

◎ : Excellent ○: Good

P			M	K	N	S	
Carbon Steels	Alloy Steels	Heat Treated Steels	Stainless Steels	Cast Iron	Non Ferrous Materials	Titanium Alloy	Chrome-Nickel Alloy
◎	◎	◎	○	◎	◎	○	○

SOLID CARBIDE THREAD MILLS

RECOMMENDED CUTTING SPEED

Application Program Available

Unit : Inch

Material	Cutting Speed (SFM)	Feed per Tooth (fz)	
		Cutter Diameter < 5/16	Cutter Diameter > 5/16
Low Carbon Steels Medium Carbon Steels	250 - 400	.0008 - .0016	.0016 - .0040
High Carbon Steels	250 - 350	.0008 - .0016	.0016 - .0040
Alloy Steels	250 - 300	.0008 - .0016	.0016 - .0040
Heat Treated Steels	200 - 300	.0008 - .0016	.0016 - .0040
Stainless Steels	150 - 250	.0004 - .0008	.0008 - .0024
Cast Iron	200 - 350	.0008 - .0016	.0016 - .0040
Chrome-Nickel Alloys Titanium Alloys	70 - 200	.0004 - .0008	.0008 - .0024
Non Ferrous Material	350 - 1000	.0012 - .0020	.0020 - .0040

RECOMMENDED CUTTING SPEED

Calculate R.P.M of cutter

$$N = \frac{12 \times SFM}{d \times \pi}$$

Calculate Feed per Revolution

$$F_1 = fz \times Z \times N$$

Calculate Feed at Tool Center Line

$$F_2 = \frac{F_1 \times (D - d)}{D}$$

N : R.P.M
SFM : Recommended Cutting Speed
d : Diameter of Cutter
fz : Recommended Feed per Tooth
Z : Number of Teeth
F_1 : Feed at Cutting Edge
F_2 : Feed at Center Line of Cutting
D : Major Diameter of Component

SOLID CARBIDE THREAD MILLS

RECOMMENDED CUTTING SPEED

Application Program Available

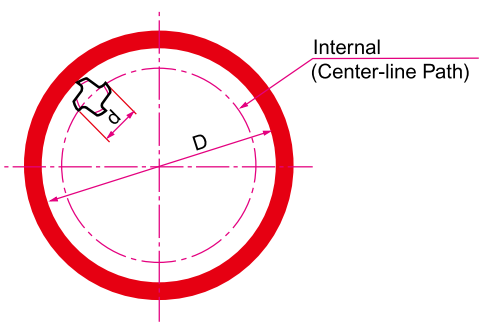
Program Data

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 inch/min

CNC Internal Thread Milling

N10	G54	G90	G00	X…	Y…	
N20	G43	H10	Z0.250	M0.3	S…	
N30	G91	G00	Z-…(A3+0.250)			
N40	G41	G01	D26	X…(A6)	Y…(A5)	F…
N50	G03	X-…(A6)	Y…(A6)	Z…(A4)	I-…(A6)	J0
N60	G03	X0	Y0	Z…(A2)	I0	J-…(A1)
N70	G03	X-…(A6)	Y-…(A6)	Z…(A4)	I0	J-…(A6)
N80	G00	G40	X…(A6)	Y-…(A5)		
N90	G00	Z…(A7)				
N100	G90	G49	G00	Z8.0	M5	
N110	M30					



<Explanation of Parameters>

A1 : 1/2 Nominal Thread Diameter (D/2)

A2 : Thread Pitch(P)

A3 : Thread Depth

A4 : P/4(for climb milling and right-hand thread)

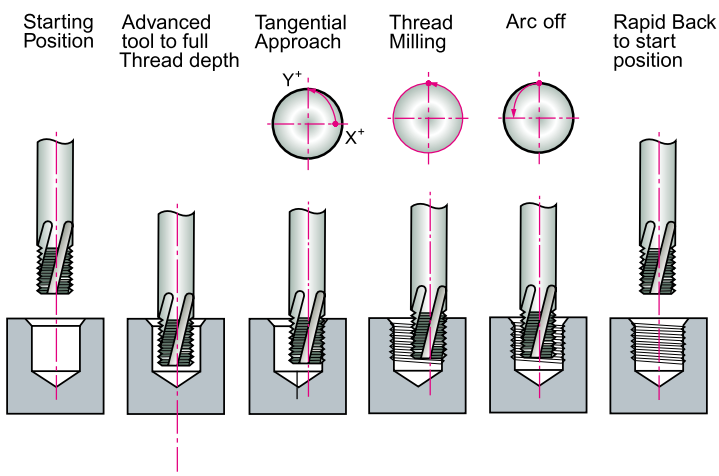
A5 : Beginning of Contour in Y (P/2)

A6 : Arc Off (A1 - A5)

A7 : A3 + 0.250 - P/2

H10 : Tool length compensation number

D26 : Tool radius compensation number



HARDslick

ULTIMATE TAP PERFORMANCE

Application Range

SOFT 70 BHN — HARD 340 BHN

STEEL • STAINLESS STEEL
NICKEL ALLOYS
ALUMINUM

- Reduces Galling & Seizing
- Extends Life with Minimal Coolant
- Reduces Tap Inventory



HSS

Being the best through innovation





COMBO TAPS

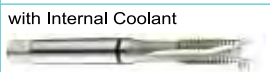
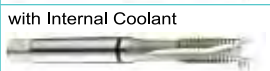
- Spiral Point and Spiral Flute Taps

Multi Purpose tapping / YG-1's Patent / Super HSS & HSS-E for Prevention of Oversized Threads

Spiral Point and Spiral Flute Taps

Multi Purpose tapping / YG-1's Patent / Super HSS & HSS-E for Prevention of Oversized Threads

INCH

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Thread Depth	Surface Treatment	Page
T2 T2-S T2-C		HSS-EX	UNC/UNF	MU	USCTI 302A	H2~H6	2 ~ 3P	2.5D	Bright Steam Oxide TiCN	335
T5 T5-S T5-C		HSS-EX	M	MU	USCTI 302A	D3~D8	2 ~ 3P		Bright Steam Oxide TiCN	337
T6 T6-N	with Internal Coolant 	HSS-EX	UNC/UNF	MU	USCTI 302A	H4~H6	2 ~ 3P		Bright TiN	338
T8 T8-N	with Internal Coolant 	HSS-EX	M	MU	USCTI 302A	D5~D7	2 ~ 3P		Bright TiN	339
T7 T7-C	Short Chamfer 	HSS-EX	UNC/UNF	MU	USCTI 302A	H2~H6	1 ~ 2P		Bright TiCN	340
T9 T9-C	Short Chamfer 	HSS-EX	M	MU	USCTI 302A	D3~D8	1 ~ 2P		Bright TiCN	342
T1-S T1-C		HSS-EX	UNC/UNF	MU	DIN-ANSI Shank	H2~H6	2 ~ 3P		Steam Oxide TiCN	343
TA-S TA-C		HSS-EX	M	MU	DIN-ANSI Shank	D3~D7	2 ~ 3P		Steam Oxide TiCN	344
TCA-S/C TCB-S/C		Super HSS HSS-EX	UNC/UNF	VA	USCTI 302A	H2~H6	2 ~ 3P		Steam Oxide TiCN	345
TCC-S/C TCD-S/C		Super HSS HSS-EX	M	VA	USCTI 302A	D3~D7	2 ~ 3P		Steam Oxide TiCN	347
T4 T4-S T4-C		HSS-EX	UNC/UNF	MU	USCTI 302A	H2~H6	4 ~ 5P	3.0D	Bright Steam Oxide TiCN	348
T3 T3-S T3-C		HSS-EX	M	MU	USCTI 302A	D3~D8	4 ~ 5P		Bright Steam Oxide TiCN	350
TB TB-N	with Internal Coolant 	HSS-EX	UNC/UNF	MU	USCTI 302A	H4~H6	4 ~ 5P		Bright TiN	351
TH TH-N	with Internal Coolant 	HSS-EX	M	MU	USCTI 302A	D5~D7	4 ~ 5P		Bright TiN	352
TC-S TC-C		HSS-EX	UNC/UNF	MU	DIN-ANSI Shank	H2~H6	4 ~ 5P		Steam Oxide TiCN	353
TK-S TK-C		HSS-EX	M	MU	DIN-ANSI Shank	D3~D7	4 ~ 5P		Steam Oxide TiCN	354
TCE-S/C TCF-S/C		Super HSS HSS-EX	UNC/UNF	VA	USCTI 302A	H2~H6	4P		Steam Oxide TiCN	355
TCG-S/C TCH-S/C		Super HSS HSS-EX	M	VA	USCTI 302A	D3~D7	4P		Steam Oxide TiCN	357

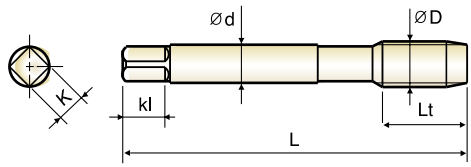
COMBO TAPS

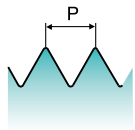
Combo TAP

T2/T2-S/T2-C SERIES

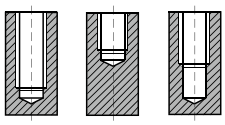
SPIRAL FLUTE TAPS for Multi-Purpose







Hole type
2.5×D



MU | HSS-EX | UNC UNF | USCTI 302A | H2~H6 | 60° | 2P~3P | Bright | Steam Oxide | TiCN | R40

Unit : Inch

SIZE & TPI	Limit	Overall Length	Thread Length	Shank Diameter	Square Size	Square Length	No. of Flute	EDP No.		
		L	Lt	D	K	kl		Bright	Steam Oxide	TiCN
#4 - 40 UNC	H2	1.88	.236	.141	.110	.188	2	T2162	T2162S	T2162C
#4 - 48 UNF	H2	1.88	.236	.141	.110	.188	2	T2182	T2182S	T2182C
#5 - 40 UNC	H2	1.94	.236	.141	.110	.188	3	T2202	T2202S	T2202C
#5 - 44 UNF	H2	1.94	.236	.141	.110	.188	3	T2222	T2222S	T2222C
#6 - 32 UNC	H3	2.00	.276	.141	.110	.188	3	T2243	T2243S	T2243C
#6 - 40 UNF	H2	2.00	.276	.141	.110	.188	3	T2262	T2262S	T2262C
#8 - 32 UNC	H3	2.13	.276	.168	.131	.250	3	T2283	T2283S	T2283C
#8 - 36 UNF	H2	2.13	.276	.168	.131	.250	3	T2302	T2302S	T2302C
#10 - 24 UNC	H3	2.38	.354	.194	.152	.250	3	T2323	T2323S	T2323C
#10 - 32 UNF	H3	2.38	.276	.194	.152	.250	3	T2343	T2343S	T2343C
#12 - 24 UNC	H3	2.38	.354	.220	.165	.281	3	T2363	T2363S	T2363C
#12 - 28 UNF	H3	2.38	.276	.220	.165	.281	3	T2383	T2383S	T2383C
1/4 - 20 UNC	H3	2.50	.433	.255	.191	.312	3	T2403	T2403S	T2403C
1/4 - 20 UNC	H5	2.50	.433	.255	.191	.312	3	T2405	T2405S	T2405C
1/4 - 28 UNF	H3	2.50	.354	.255	.191	.312	3	T2423	T2423S	T2423C
1/4 - 28 UNF	H4	2.50	.354	.255	.191	.312	3	T2424	T2424S	T2424C
5/16 - 18 UNC	H3	2.72	.472	.318	.238	.375	3	T2443	T2443S	T2443C
5/16 - 18 UNC	H5	2.72	.472	.318	.238	.375	3	T2445	T2445S	T2445C
5/16 - 24 UNF	H3	2.72	.394	.318	.238	.375	3	T2463	T2463S	T2463C
5/16 - 24 UNF	H5	2.72	.394	.318	.238	.375	3	T2465	T2465S	T2465C

▶ Coating(TiN, TiAlN or Hardslick) is available on your request.
▶ Coating Codes for Combo Tap
Bright Finish No. + N(TiN), F(TiAlN), H(Hardslick)

▶ NEXT PAGE

▶ Steam Oxide is not recommended for Aluminum and Aluminum alloys.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	◎	◎	◎	◎	◎	◎

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
◎	◎	◎	◎	◎	◎	◎	◎	○		○

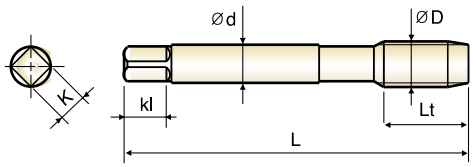
YG COMBO TAPS

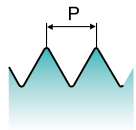
Combo TAP

T2/T2-S/T2-C SERIES

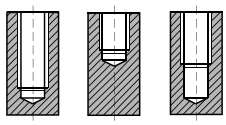
SPIRAL FLUTE TAPS for Multi-Purpose







Hole type
2.5×D



MU | HSS-EX | UNC UNF | USCTI 302A | H2~H6 | 60° | 2P~3P | Bright | Steam Oxide | TiCN | R40

Unit : Inch

SIZE & TPI	Limit	Overall Length	Thread Length	Shank Diameter	Square Size	Square Length	No. of Flute	EDP No.		
		L	Lt	D	K	kl		Bright	Steam Oxide	TiCN
3/8 - 16 UNC	H3	2.94	.551	.381	.286	.438	3	T2483	T2483S	T2483C
3/8 - 16 UNC	H5	2.94	.551	.381	.286	.438	3	T2485	T2485S	T2485C
3/8 - 24 UNF	H3	2.94	.394	.381	.286	.438	3	T2503	T2503S	T2503C
3/8 - 24 UNF	H4	2.94	.394	.381	.286	.438	3	T2504	T2504S	T2504C
7/16 - 14 UNC	H3	3.16	.591	.323	.242	.406	3	T2523	T2523S	T2523C
7/16 - 14 UNC	H5	3.16	.591	.323	.242	.406	3	T2525	T2525S	T2525C
7/16 - 20 UNF	H3	3.16	.472	.323	.242	.406	3	T2543	T2543S	T2543C
7/16 - 20 UNF	H5	3.16	.472	.323	.242	.406	3	T2545	T2545S	T2545C
1/2 - 13 UNC	H5	3.38	.630	.367	.275	.438	3	T2565	T2565S	T2565C
1/2 - 20 UNF	H5	3.38	.472	.367	.275	.438	3	T2585	T2585S	T2585C
9/16 - 12 UNC	H5	3.59	.709	.429	.322	.500	3	T2605	T2605S	T2605C
9/16 - 18 UNF	H5	3.59	.512	.429	.322	.500	3	T2625	T2625S	T2625C
5/8 - 11 UNC	H5	3.81	.748	.480	.360	.562	4	T2645	T2645S	T2645C
5/8 - 18 UNF	H5	3.81	.512	.480	.360	.562	4	T2665	T2665S	T2665C
3/4 - 10 UNC	H5	4.25	.827	.590	.442	.688	4	T2705	T2705S	T2705C
3/4 - 16 UNF	H5	4.25	.591	.590	.442	.688	4	T2725	T2725S	T2725C
7/8 - 9 UNC	H6	4.69	.827	.697	.523	.750	4	T2746	T2746S	T2746C
7/8 - 14 UNF	H6	4.69	.709	.697	.523	.750	4	T2766	T2766S	T2766C
1 - 8 UNC	H6	5.13	.984	.800	.600	.812	4	T2786	T2786S	T2786C
1 - 12 UNF	H6	5.13	.709	.800	.600	.812	4	T2806	T2806S	T2806C

▶ Coating(TiN, TiAlN or Hardslick) is available on your request.
▶ Coating Codes for Combo Tap
Bright Finish No. + N(TiN), F(TiAlN), H(Hardslick)

▶ Steam Oxide is not recommended for Aluminum and Aluminum alloys.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	◎	◎	◎	◎	◎	◎

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
◎	◎	◎	◎	◎	◎	◎	◎	○		○

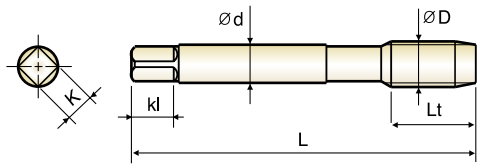
COMBO TAPS

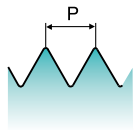
Combo TAP

T5/T5-S/T5-C SERIES

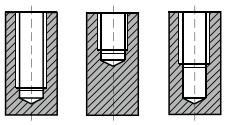
SPIRAL FLUTE TAPS for Multi-Purpose







Hole type
2.5×D



MU | HSS-EX | M | USCTI 302A | D3~D8 | 60° | 2P~3P | Bright | Steam Oxide | TiCN | R40

Unit : Inch

SIZE & TPI	Limit	Overall Length	Thread Length	Shank Diameter	Square Size	Square Length	No. of Flute	EDP No.		
		L	Lt	D	K	kl		Bright	Steam Oxide	TiCN
M3 x 0.5	D3	1.94	.197	.141	.110	.188	3	T5203	T5203S	T5203C
M3.5 x 0.6	D4	2.00	.276	.141	.110	.188	3	T5224	T5224S	T5224C
M4 x 0.7	D4	2.13	.276	.168	.131	.250	3	T5244	T5244S	T5244C
M5 x 0.8	D4	2.38	.354	.194	.152	.250	3	T5284	T5284S	T5284C
M6 x 1.0	D5	2.50	.433	.255	.191	.312	3	T5315	T5315S	T5315C
M7 x 1.0	D5	2.72	.433	.318	.238	.375	3	T5345	T5345S	T5345C
M8 x 1.25	D5	2.72	.472	.318	.238	.375	3	T5365	T5365S	T5365C
M8 x 1.0	D5	2.72	.433	.318	.238	.375	3	T5375	T5375S	T5375C
M10 x 1.5	D6	2.94	.512	.381	.286	.438	3	T5426	T5426S	T5426C
M10 x 1.25	D5	2.94	.472	.381	.286	.438	3	T5435	T5435S	T5435C
M12 x 1.75	D6	3.38	.591	.367	.275	.438	3	T5506	T5506S	T5506C
M12 x 1.25	D5	3.38	.551	.367	.275	.438	3	T5525	T5525S	T5525C
M14 x 2.0	D7	3.59	.709	.429	.322	.500	3	T5547	T5547S	T5547C
M14 x 1.5	D6	3.59	.551	.429	.322	.500	3	T5556	T5556S	T5556C
M16 x 2.0	D7	3.81	.709	.480	.360	.562	3	T5607	T5607S	T5607C
M16 x 1.5	D6	3.81	.551	.480	.360	.562	3	T5616	T5616S	T5616C
M18 x .5	D7	4.03	.787	.542	.406	.625	4	T5657	T5657S	T5657C
M18 x 1.5	D6	4.03	.551	.542	.406	.625	4	T5676	T5676S	T5676C
M20 x 2.5	D7	4.47	.787	.652	.489	.688	4	T5707	T5707S	T5707C
M20 x 1.5	D6	4.47	.551	.652	.489	.688	4	T5726	T5726S	T5726C
M22 x 2.5	D7	4.69	.787	.697	.523	.750	4	T5747	T5747S	T5747C
M22 x 1.5	D6	4.69	.551	.697	.523	.750	4	T5766	T5766S	T5766C
M24 x 3.0	D8	4.91	.945	.760	.570	.750	4	T5788	T5788S	T5788C

▶ Coating(TiN, TiAlN or Hardslick) is available on your request.
▶ Coating Codes for Combo Tap
Bright Finish No. + N(TiN), F(TiAlN), H(Hardslick)
▶ Steam Oxide is not recommended for Aluminum and Aluminum alloys.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	◎	◎	◎	◎	◎	◎

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
◎	◎	◎	◎	◎	◎	◎	◎	○		○

COMBO TAPS

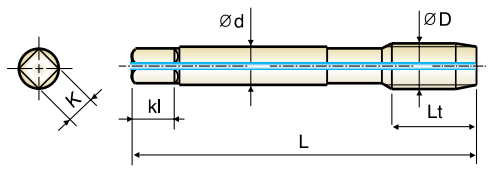
Combo TAP

T6/T6-N SERIES

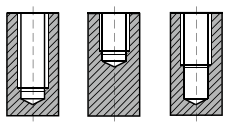
SPIRAL FLUTE TAPS for Multi-Purpose

with Internal Coolant





Hole type
2.5×D



MU | HSS-EX | UNC UNF | USCTI 302A | H4~H6 | 60° | 2P~3P | Bright | TiN | R40

Unit : Inch

SIZE & TPI	Limit	Overall Length L	Thread Length Lt	Shank Diameter D	Square Size K	Square Length kl	No. of Flute	EDP No. Bright	EDP No. TiN
1/4 - 20 UNC	H5	2.50	.433	.255	.191	.312	3	T6405	T6405N
1/4 - 28 UNF	H4	2.50	.354	.255	.191	.312	3	T6424	T6424N
5/16 - 18 UNC	H5	2.72	.472	.318	.238	.375	3	T6445	T6445N
5/16 - 24 UNF	H4	2.72	.394	.318	.238	.375	3	T6464	T6464N
3/8 - 16 UNC	H5	2.94	.551	.381	.286	.438	3	T6485	T6485N
3/8 - 24 UNF	H4	2.94	.394	.381	.286	.438	3	T6504	T6504N
7/16 - 14 UNC	H5	3.16	.591	.323	.242	.406	3	T6525	T6525N
7/16 - 20 UNF	H5	3.16	.472	.323	.242	.406	3	T6545	T6545N
1/2 - 13 UNC	H5	3.38	.630	.367	.275	.438	3	T6565	T6565N
1/2 - 20 UNF	H5	3.38	.472	.367	.275	.438	3	T6585	T6585N
9/16 - 12 UNC	H5	3.59	.709	.429	.322	.500	3	T6605	T6605N
9/16 - 18 UNF	H5	3.59	.512	.429	.322	.500	3	T6625	T6625N
5/8 - 11 UNC	H5	3.81	.748	.480	.360	.562	4	T6645	T6645N
5/8 - 18 UNF	H5	3.81	.512	.480	.360	.562	4	T6665	T6665N
3/4 - 10 UNC	H5	4.25	.827	.590	.442	.688	4	T6705	T6705N
3/4 - 16 UNF	H5	4.25	.591	.590	.442	.688	4	T6725	T6725N
7/8 - 9 UNC	H6	4.69	.827	.697	.523	.750	4	T6746	T6746N
7/8 - 14 UNF	H6	4.69	.709	.697	.523	.750	4	T6766	T6766N
1 - 8 UNC	H6	5.13	.984	.800	.600	.812	4	T6786	T6786N
1 - 12 UNF	H6	5.13	.709	.800	.600	.812	4	T6806	T6806N

▶Coating(TiCN, TiAlN or Hardslick) or Surface Treatment(Steam Oxide) is available on your request.
Coating Codes for Combo Tap
Bright Finish No. + C(TiCN), F(TiAlN), H(Hardslick), S(Steam Oxide)

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	◎	◎	◎	◎	◎	◎

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
◎	◎	◎	◎	◎	◎	◎	◎	○		○

COMBO TAPS

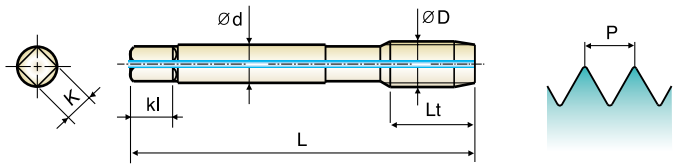
Combo TAP

T8/T8-N SERIES

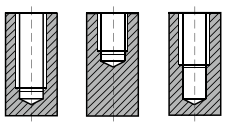
SPIRAL FLUTE TAPS for Multi-Purpose

with Internal Coolant





Hole type
2.5×D



MU | HSS-EX | M | USCTI 302A | D5~D7 | 60° | 2P~3P | Bright | TiN | R40

Unit : Inch

SIZE & TPI	Limit	Overall Length	Thread Length	Shank Diameter	Square Size	Square Length	No. of Flute	EDP No.	
		L	Lt	D	K	kl		Bright	TiN
M6 x 1.0	D5	2.50	.433	.255	.191	.312	3	**T8315**	**T8315N**
M8 x 1.25	D5	2.72	.472	.318	.238	.375	3	**T8365**	**T8365N**
M10 x 1.5	D6	2.94	.512	.381	.286	.438	3	**T8426**	**T8426N**
M12 x 1.75	D6	3.38	.591	.367	.275	.438	3	**T8506**	**T8506N**
M14 x 2.0	D7	3.59	.709	.429	.322	.500	3	**T8547**	**T8547N**
M16 x 2.0	D7	3.81	.709	.480	.360	.562	3	**T8607**	**T8607N**
M18 x 2.5	D7	4.03	.787	.542	.406	.625	4	**T8657**	**T8657N**
M20 x 2.5	D7	4.47	.787	.652	.489	.688	4	**T8707**	**T8707N**

▶ Coating(TiCN, TiAlN or Hardslick) or Surface Treatment(Steam Oxide) is available on your request.
Coating Codes for Combo Tap
Bright Finish No. + C(TiCN), F(TiAlN), H(Hardslick), S(Steam Oxide)

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	◎	◎	◎	◎	◎	◎

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
◎	◎	◎	◎	◎	◎	◎	◎	○		○

COMBO TAPS

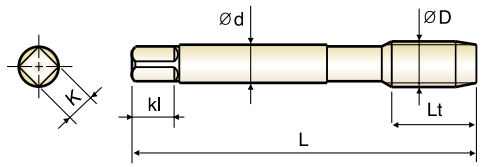
Combo TAP

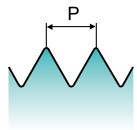
T7/T7-C SERIES

SPIRAL FLUTE TAPS for Multi-Purpose

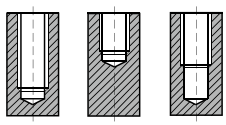


Short Chamfer





Hole type
2.5×D



MU | HSS-EX | UNC UNF | USCTI 302A | H2~H6 | 60° | 1P~2P | Bright | TiCN | R40

Unit : Inch

SIZE & TPI	Limit	Overall Length L	Thread Length Lt	Shank Diameter D	Square Size K	Square Length kl	No. of Flute	EDP No. Bright	EDP No. TiCN
#4 - 40 UNC	H2	1.88	.236	.141	.110	.188	2	T7162	T7162C
#4 - 48 UNF	H2	1.88	.236	.141	.110	.188	2	T7182	T7182C
#5 - 40 UNC	H2	1.94	.236	.141	.110	.188	3	T7202	T7202C
#5 - 44 UNF	H2	1.94	.236	.141	.110	.188	3	T7222	T7222C
#6 - 32 UNC	H3	2.00	.276	.141	.110	.188	3	T7243	T7243C
#6 - 40 UNF	H2	2.00	.276	.141	.110	.188	3	T7262	T7262C
#8 - 32 UNC	H3	2.13	.276	.168	.131	.250	3	T7283	T7283C
#8 - 36 UNF	H2	2.13	.276	.168	.131	.250	3	T7302	T7302C
#10 - 24 UNC	H3	2.38	.354	.194	.152	.250	3	T7323	T7323C
#10 - 32 UNF	H3	2.38	.276	.194	.152	.250	3	T7343	T7343C
#12 - 24 UNC	H3	2.38	.354	.220	.165	.281	3	T7363	T7363C
#12 - 28 UNF	H3	2.38	.276	.220	.165	.281	3	T7383	T7383C
1/4 - 20 UNC	H5	2.50	.433	.255	.191	.312	3	T7405	T7405C
1/4 - 28 UNF	H4	2.50	.354	.255	.191	.312	3	T7424	T7424C
5/16 - 18 UNC	H5	2.72	.472	.318	.238	.375	3	T7445	T7445C
5/16 - 24 UNF	H4	2.72	.394	.318	.238	.375	3	T7464	T7464C
3/8 - 16 UNC	H5	2.94	.551	.381	.286	.438	3	T7485	T7485C
3/8 - 24 UNF	H4	2.94	.394	.381	.286	.438	3	T7504	T7504C
7/16 - 14 UNC	H5	3.16	.591	.323	.242	.406	3	T7525	T7525C
7/16 - 20 UNF	H5	3.16	.472	.323	.242	.406	3	T7545	T7545C
1/2 - 13 UNC	H5	3.38	.630	.367	.275	.438	3	T7565	T7565C
1/2 - 20 UNF	H5	3.38	.472	.367	.275	.438	3	T7585	T7585C

▶ Coating(TiN, TiAlN or Hardslick) or Surface Treatment(Steam Oxide) is available on your request.
Coating Codes for Combo Tap
Bright Finish No. + N(TiN), F(TiAlN), H(Hardslick), S(Steam Oxide)

▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	◎	◎	◎	◎	◎	◎

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
◎	◎	◎	◎	◎	◎	◎	◎	○		○

COMBO TAPS

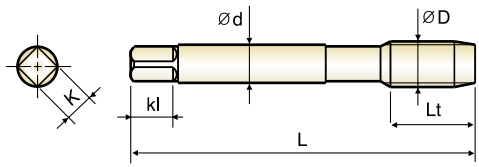
Combo TAP

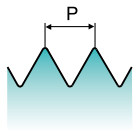
T7/T7-C SERIES

SPIRAL FLUTE TAPS for Multi-Purpose

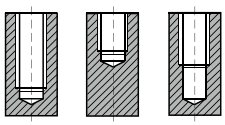


Short Chamfer





Hole type
2.5×D



MU | HSS-EX | UNC UNF | USCTI 302A | H2~H6 | 60° | 1P~2P | Bright | TiCN | R40

Unit : Inch

SIZE & TPI	Limit	Overall Length L	Thread Length Lt	Shank Diameter D	Square Size K	Square Length kl	No. of Flute	EDP No. Bright	EDP No. TiCN
9/16 - 12 UNC	H5	3.59	.709	.429	.322	.500	3	**T7605**	**T7605C**
9/16 - 18 UNF	H5	3.59	.512	.429	.322	.500	3	**T7625**	**T7625C**
5/8 - 11 UNC	H5	3.81	.748	.480	.360	.562	4	**T7645**	**T7645C**
5/8 - 18 UNF	H5	3.81	.512	.480	.360	.562	4	**T7665**	**T7665C**
3/4 - 10 UNC	H5	4.25	.827	.590	.442	.688	4	**T7705**	**T7705C**
3/4 - 16 UNF	H5	4.25	.591	.590	.442	.688	4	**T7725**	**T7725C**
7/8 - 9 UNC	H6	4.69	.827	.697	.523	.750	4	**T7746**	**T7746C**
7/8 - 14 UNF	H6	4.69	.709	.697	.523	.750	4	**T7766**	**T7766C**
1 - 8 UNC	H6	5.13	.984	.800	.600	.812	4	**T7786**	**T7786C**
1 - 12 UNF	H6	5.13	.709	.800	.600	.812	4	**T7806**	**T7806C**

▶Coating(TiN, TiAlN or Hardslick) or Surface Treatment(Steam Oxide) is available on your request.
Coating Codes for Combo Tap
Bright Finish No. + N(TiN), F(TiAlN), H(Hardslick), S(Steam Oxide)

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	◎	◎	◎	◎	◎	◎

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
◎	◎	◎	◎	◎	◎	◎	◎	○		○

COMBO TAPS

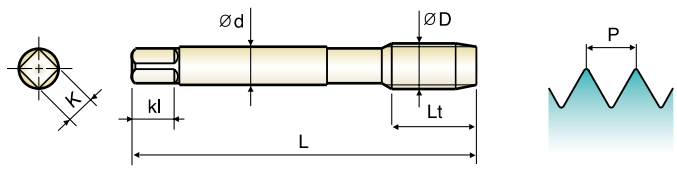
Combo TAP

T9 / T9-C SERIES

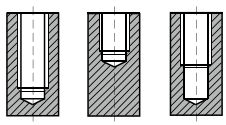
SPIRAL FLUTE TAPS for Multi-Purpose



Short Chamfer



Hole type
2.5×D



MU | HSS-EX | M | USCTI 302A | D3~D8 | 60° | 1P~2P | Bright | TiCN | R40

Unit : Inch

SIZE & TPI	Limit	Overall Length L	Thread Length Lt	Shank Diameter D	Square Size K	Square Length kl	No. of Flute	EDP No. Bright	EDP No. TiCN
M3 x 0.5	D3	1.94	.197	.141	.110	.188	3	T9203	T9203C
M3.5 x 0.6	D4	2.00	.276	.141	.110	.188	3	T9224	T9224C
M4 x 0.7	D4	2.13	.276	.168	.131	.250	3	T9244	T9244C
M5 x 0.8	D4	2.38	.354	.194	.152	.250	3	T9284	T9284C
M6 x 1.0	D5	2.50	.433	.255	.191	.312	3	T9315	T9315C
M7 x 1.0	D5	2.72	.433	.318	.238	.375	3	T9345	T9345C
M8 x 1.2	D5	2.72	.472	.318	.238	.375	3	T9365	T9365C
M8 x 1.0	D5	2.72	.433	.318	.238	.375	3	T9375	T9375C
M10 x 1.5	D6	2.94	.512	.381	.286	.438	3	T9426	T9426C
M10 x 1.25	D5	2.94	.472	.381	.286	.438	3	T9435	T9435C
M12 x 1.75	D6	3.38	.591	.367	.275	.438	3	T9506	T9506C
M12 x 1.25	D5	3.38	.551	.367	.275	.438	3	T9525	T9525C
M14 x 2.0	D7	3.59	.709	.429	.322	.500	3	T9547	T9547C
M14 x 1.5	D6	3.59	.551	.429	.322	.500	3	T9556	T9556C
M16 x 2.0	D7	3.81	.709	.480	.360	.562	3	T9607	T9607C
M16 x 1.5	D6	3.81	.551	.480	.360	.562	3	T9616	T9616C
M18 x 2.5	D7	4.03	.787	.542	.406	.625	4	T9657	T9657C
M18 x 1.5	D6	4.03	.551	.542	.406	.625	4	T9676	T9676C
M20 x 2.5	D7	4.47	.787	.652	.489	.688	4	T9707	T9707C
M20 x 1.5	D6	4.47	.551	.652	.489	.688	4	T9726	T9726C
M22 x 2.5	D7	4.69	.787	.697	.523	.750	4	T9747	T9747C
M22 x 1.5	D6	4.69	.551	.697	.523	.750	4	T9766	T9766C
M24 x 3.0	D8	4.91	.945	.760	.570	.750	4	T9788	T9788C

▶ Coating(TiN, TiAlN or Hardslick) or Surface Treatment(Steam Oxide) is available on your request.
Coating Codes for Combo Tap
Bright Finish No. + N(TiN), F(TiAlN), H(Hardslick), S(Steam Oxide)

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	◎	◎	◎	◎	◎	◎

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
◎	◎	◎	◎	◎	◎	◎	◎	○		○

COMBO TAPS

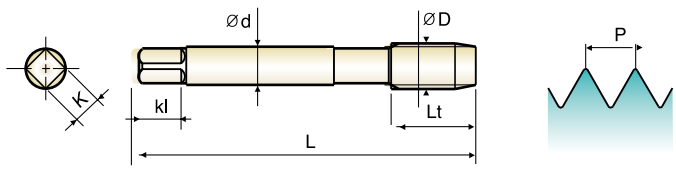
Combo TAP

T1-S / T1-C SERIES

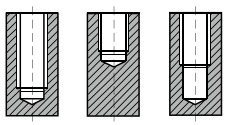
SPIRAL FLUTE TAPS for Multi-Purpose

DIN-ANSI Shank





Hole type
2.5×D



MU | HSS-EX | UNC UNF | H2~H6 | 60° | 2P~3P | Steam Oxide | TiCN | R40

Unit : Inch

SIZE & TPI	Limit	Overall Length L	Thread Length Lt	Shank Diameter D	Square Size K	Square Length kl	No. of Flute	EDP No. Steam Oxide	EDP No. TiCN
#4 - 40 UNC	H2	2.21	.236	.141	.110	.188	2	T1162S	T1162C
#5 - 40 UNC	H2	2.21	.236	.141	.110	.188	3	T1202S	T1202C
#6 - 32 UNC	H3	2.21	.276	.141	.110	.188	3	T1243S	T1243C
#8 - 32 UNC	H3	2.48	.276	.168	.131	.250	3	T1283S	T1283C
#10 - 24 UNC	H3	2.76	.354	.194	.152	.250	3	T1323S	T1323C
#10 - 32 UNF	H3	2.76	.276	.194	.152	.250	3	T1343S	T1343C
#12 - 24 UNC	H3	3.15	.354	.220	.165	.281	3	T1363S	T1363C
#12 - 28 UNF	H3	3.15	.276	.220	.165	.281	3	T1383S	T1383C
1/4 - 20 UNC	H5	3.15	.433	.255	.191	.312	3	T1405S	T1405C
1/4 - 28 UNF	H4	3.15	.354	.255	.191	.312	3	T1424S	T1424C
5/16 - 18 UNC	H5	3.54	.472	.318	.238	.375	3	T1445S	T1445C
5/16 - 24 UNF	H4	3.54	.394	.318	.238	.375	3	T1464S	T1464C
3/8 - 16 UNC	H5	3.94	.551	.381	.286	.438	3	T1485S	T1485C
3/8 - 24 UNF	H4	3.94	.394	.381	.286	.438	3	T1504S	T1504C
7/16 - 14 UNC	H5	3.94	.591	.323	.242	.406	3	T1525S	T1525C
7/16 - 20 UNF	H5	3.94	.472	.323	.242	.406	3	T1545S	T1545C
1/2 - 13 UNC	H5	4.33	.630	.367	.275	.438	3	T1565S	T1565C
1/2 - 20 UNF	H5	3.94	.472	.367	.275	.438	3	T1585S	T1585C
9/16 - 12 UNC	H5	4.33	.709	.429	.322	.500	3	T1605S	T1605C
9/16 - 18 UNF	H5	3.94	.512	.429	.322	.500	3	T1625S	T1625C
5/8 - 11 UNC	H5	4.33	.748	.480	.360	.562	4	T1645S	T1645C
5/8 - 18 UNF	H5	3.94	.512	.480	.360	.562	4	T1665S	T1665C
3/4 - 10 UNC	H5	4.92	.827	.590	.442	.688	4	T1705S	T1705C
3/4 - 16 UNF	H5	4.33	.591	.590	.442	.688	4	T1725S	T1725C
7/8 - 9 UNC	H6	5.51	.827	.697	.523	.750	4	T1746S	T1746C
7/8 - 14 UNF	H6	4.92	.709	.697	.523	.750	4	T1766S	T1766C
1" - 8 UNC	H6	6.30	.984	.800	.600	.812	4	T1786S	T1786C
1" - 12 UNF	H6	5.51	.709	.800	.600	.812	4	T1806S	T1806C

▶ Steam Oxide is not recommended for Aluminum and Aluminum alloys.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	◎	◎	◎	◎	◎	◎

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
◎	◎	◎	◎	◎	◎	◎	◎	○		○

COMBO TAPS

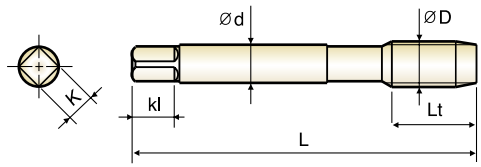
Combo TAP

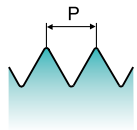
TA-S / TA-C SERIES

SPIRAL FLUTE TAPS for Multi-Purpose

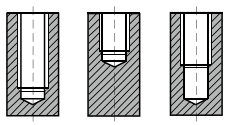
DIN-ANSI Shank







Hole type
2.5×D



MU | HSS-EX | M | D3~D7 | 60° | 2P~3P | Steam Oxide | TiCN | R40

Unit : Inch

SIZE & TPI	Limit	Overall Length L	Thread Length Lt	Shank Diameter D	Square Size K	Square Length kl	No. of Flute	EDP No. Steam Oxide	EDP No. TiCN
M3 x 0.5	D3	2.21	.197	.141	.110	.188	3	TA203S	TA203C
M3.5 x 0.6	D4	2.21	.276	.141	.110	.188	3	TA224S	TA224C
M4 x 0.7	D4	2.48	.276	.168	.131	.250	3	TA244S	TA244C
M5 x 0.8	D4	2.76	.354	.194	.152	.250	3	TA284S	TA284C
M6 x 1.0	D5	3.15	.433	.255	.191	.312	3	TA315S	TA315C
M8 x 1.25	D5	3.54	.472	.318	.238	.375	3	TA365S	TA365C
M10 x 1.5	D6	3.94	.512	.381	.286	.438	3	TA426S	TA426C
M10 x 1.25	D5	3.94	.472	.381	.286	.438	3	TA435S	TA435C
M12 x 1.75	D6	4.33	.591	.367	.275	.438	3	TA506S	TA506C
M12 x 1.25	D5	3.94	.551	.367	.275	.438	3	TA525S	TA525C
M14 x 2.0	D7	4.33	.709	.429	.322	.500	3	TA547S	TA547C
M14 x 1.5	D6	3.94	.551	.429	.322	.500	3	TA556S	TA556C
M16 x 2.0	D7	4.33	.709	.480	.360	.562	3	TA607S	TA607C
M16 x 1.5	D6	3.94	.551	.480	.360	.562	3	TA616S	TA616C
M18 x 2.5	D7	4.92	.787	.542	.406	.625	4	TA657S	TA657C
M18 x 1.5	D6	4.33	.551	.542	.406	.625	4	TA676S	TA676C

▶ Steam Oxide is not recommended for Aluminum and Aluminum alloys.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	◎	◎	◎	◎	◎	◎

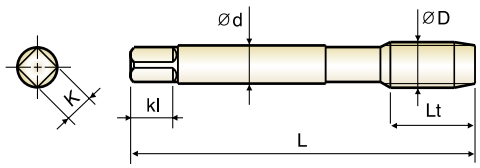
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
◎	◎	◎	◎	◎	◎	◎	◎	○		○

COMBO TAPS

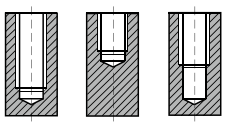
Combo TAP — TCA-S/TCB-S/TCA-C/TCB-C SERIES

SPIRAL FLUTE TAPS for Stainless Steels





Hole type
2.5×D



VA | Super HSS | HSS-EX | UNC UNF | USCTI 302A | H2~H6 | 60° | 2P~3P | Steam Oxide | TiCN | R45

Unit : Inch

SIZE & TPI	Limit	Overall Length L	Thread Length Lt	Shank Diameter D	Square Size K	Square Length kl	No. of Flute	EDP No. Steam Oxide	EDP No. TiCN
#5 - 40 UNC	H2	1.94	.236	.141	.110	.188	3	TCA202S	TCA202C
#6 - 32 UNC	H3	2.00	.276	.141	.110	.188	3	TCA243S	TCA243C
#8 - 32 UNC	H3	2.13	.276	.141	.131	.250	3	TCA283S	TCA283C
#10 - 24 UNC	H3	2.38	.354	.141	.152	.250	3	TCA323S	TCA323C
#10 - 32 UNF	H3	2.38	.276	.141	.152	.250	3	TCA343S	TCA343C
1/4 - 20 UNC	H3	2.50	.433	.141	.191	.312	3	TCA403S	TCA403C
1/4 - 20 UNC	H5	2.50	.433	.168	.191	.312	3	TCA405S	TCA405C
1/4 - 28 UNF	H3	2.50	.354	.168	.191	.312	3	TCA423S	TCA423C
5/16 - 18 UNC	H3	2.72	.472	.194	.238	.375	3	TCA443S	TCA443C
5/16 - 18 UNC	H5	2.72	.472	.194	.238	.375	3	TCA445S	TCA445C
5/16 - 24 UNF	H3	2.72	.394	.220	.238	.375	3	TCA463S	TCA463C
3/8 - 16 UNC	H3	2.94	.551	.220	.286	.438	3	TCA483S	TCA483C
3/8 - 16 UNC	H5	2.94	.551	.255	.286	.438	3	TCA485S	TCA485C
3/8 - 24 UNF	H3	2.94	.394	.255	.286	.438	3	TCA503S	TCA503C
7/16 - 14 UNC	H3	3.16	.591	.255	.242	.406	3	TCA523S	TCA523C
7/16 - 14 UNC	H5	3.16	.591	.255	.242	.406	3	TCA525S	TCA525C
7/16 - 20 UNF	H3	3.16	.472	.318	.242	.406	3	TCA543S	TCA543C
7/16 - 20 UNF	H5	3.16	.472	.318	.242	.406	3	TCA545S	TCA545C
1/2 - 13 UNC	H3	3.38	.630	.318	.275	.438	3	TCA563S	TCA563C
1/2 - 13 UNC	H5	3.38	.630	.318	.275	.438	3	TCA565S	TCA565C
1/2 - 20 UNF	H3	3.38	.472	.381	.275	.438	3	TCA583S	TCA583C
9/16 - 12 UNC	H3	3.59	.709	.381	.322	.500	3	TCB603S	TCB603C
9/16 - 18 UNF	H3	3.59	.512	.381	.322	.500	3	TCB623S	TCB623C

▶ Super HSS(#5~1/2) and HSS-EX(9/16~1")

▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	○			◎			

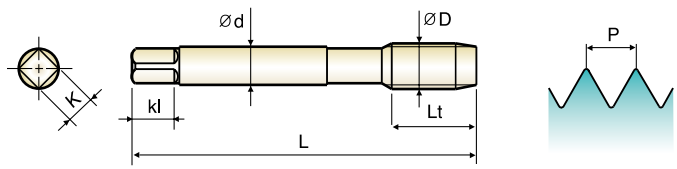
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium

COMBO TAPS

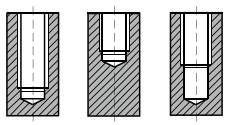
Combo TAP TCA-S/TCB-S/TCA-C/TCB-C SERIES

SPIRAL FLUTE TAPS for Stainless Steels





Hole type
2.5×D



VA | Super HSS | HSS-EX | UNC UNF | USCTI 302A | H2~H6 | 60° | 2P~3P | Steam Oxide | TiCN | R45

Unit : Inch

SIZE & TPI	Limit	Overall Length L	Thread Length Lt	Shank Diameter D	Square Size K	Square Length kl	No. of Flute	EDP No. Steam Oxide	EDP No. TiCN
9/16 - 18 UNF	H5	3.59	.512	.381	.322	.500	3	**TCB625S**	**TCB625C**
5/8 - 11UNC	H3	3.81	.748	.323	.360	.562	4	**TCB643S**	**TCB643C**
5/8 - 11 UNC	H5	3.81	.748	.323	.360	.562	4	**TCB645S**	**TCB645C**
5/8 - 18 UNF	H3	3.81	.512	.323	.360	.562	4	**TCB663S**	**TCB663C**
5/8 - 18 UNF	H5	3.81	.512	.323	.360	.562	4	**TCB665S**	**TCB665C**
3/4 - 10 UNC	H3	4.25	.827	.367	.442	.688	4	**TCB703S**	**TCB703C**
3/4 - 10 UNC	H5	4.25	.827	.367	.442	.688	4	**TCB705S**	**TCB705C**
3/4 - 16 UNF	H3	4.25	.591	.429	.442	.688	4	**TCB723S**	**TCB723C**
3/4 - 16 UNF	H5	4.25	.591	.429	.442	.688	4	**TCB725S**	**TCB725C**
7/8 - 9 UNC	H4	4.69	.827	.480	.523	.750	4	**TCB744S**	**TCB744C**
7/8 - 9 UNC	H6	4.69	.827	.480	.523	.750	4	**TCB746S**	**TCB746C**
7/8 - 14 UNF	H4	4.69	.709	.590	.523	.750	4	**TCB764S**	**TCB764C**
7/8 - 14 UNF	H6	4.69	.709	.590	.523	.750	4	**TCB766S**	**TCB766C**
1 - 8 UNC	H4	5.13	.984	.697	.600	.812	4	**TCB784S**	**TCB784C**
1 - 8 UNC	H6	5.13	.984	.697	.600	.812	4	**TCB786S**	**TCB786C**
1 - 12 UNF	H4	5.13	.709	.800	.600	.812	4	**TCB804S**	**TCB804C**
1 - 12 UNF	H6	5.13	.709	.800	.600	.812	4	**TCB806S**	**TCB806C**

▶Super HSS(#5~1/2) and HSS-EX(9/16~1")

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	○			◎			

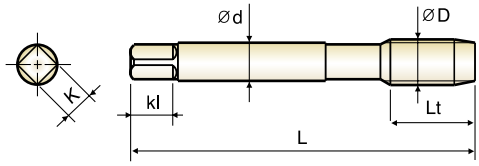
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium

COMBO TAPS

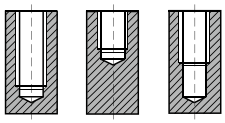
Combo TAP TCC-S/TCD-S/TCC-C/TCD-C SERIES

SPIRAL FLUTE TAPS for Stainless Steels





Hole type
2.5×D



VA | Super HSS | HSS-EX | M | USCTI 302A | D3~D7 | 60° | 2P~3P | Steam Oxide | TiCN | R45

Unit : Inch

SIZE & TPI	Limit	Overall Length L	Thread Length Lt	Shank Diameter D	Square Size K	Square Length kl	No. of Flute	EDP No. Steam Oxide	EDP No. TiCN
M3 x 0.5	D3	1.94	.197	.141	.110	.188	3	TCC203S	TCC203C
M3.5 x 0.6	D4	2.00	.276	.141	.110	.188	3	TCC224S	TCC224C
M4 x 0.7	D4	2.13	.276	.168	.131	.250	3	TCC244S	TCC244C
M5 x 0.8	D4	2.38	.354	.194	.152	.250	3	TCC284S	TCC284C
M6 x 1.0	D5	2.50	.433	.255	.191	.312	3	TCC315S	TCC315C
M7 x 1.0	D5	2.72	.433	.318	.238	.375	3	TCC345S	TCC345C
M8 x 1.25	D5	2.72	.472	.318	.238	.375	3	TCC365S	TCC365C
M8 x 1.0	D5	2.72	.433	.318	.238	.375	3	TCC375S	TCC375C
M10 x 1.5	D6	2.94	.512	.381	.286	.438	3	TCC426S	TCC426C
M10 x 1.25	D5	2.94	.472	.381	.286	.438	3	TCC435S	TCC435C
M12 x 1.75	D6	3.38	.591	.367	.275	.438	3	TCC506S	TCC506C
M12 x 1.25	D5	3.38	.551	.367	.275	.438	3	TCC525S	TCC525C
M14 x 2.0	D7	3.59	.709	.429	.322	.500	3	TCD547S	TCD547C
M14 x 1.5	D6	3.59	.551	.429	.322	.500	3	TCD556S	TCD556C
M16 x 2.0	D7	3.81	.709	.480	.360	.562	3	TCD607S	TCD607C
M16 x 1.5	D6	3.81	.551	.480	.360	.562	3	TCD616S	TCD616C
M18 x 2.5	D7	4.03	.787	.542	.406	.625	4	TCD657S	TCD657C
M18 x 1.5	D6	4.03	.551	.542	.406	.625	4	TCD676S	TCD676C

▶ Super HSS(M3~M12) and HSS-EX(M14~M18)

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	○			◎			

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium

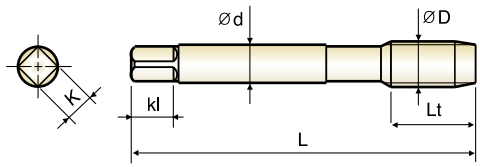
COMBO TAPS

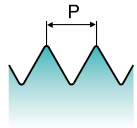
Combo TAP

T4/T4-S/T4-C SERIES

SPIRAL POINT TAPS for Multi-Purpose

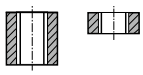






Hole type

3.0×D



MU | **HSS-EX** | **UNC UNF** | **USCTI 302A** | **H2~H6** | **60°** | **4P~5P** | **Bright** | **Steam Oxide** | **TiCN**

Unit : Inch

SIZE & TPI	Limit	Overall Length	Thread Length	Shank Diameter	Square Size	Square Length	No. of Flute	EDP No.		
		L	Lt	D	K	kl		Bright	Steam Oxide	TiCN
#4 - 40 UNC	H2	1.88	.335	.141	.110	.188	2	T4162	T4162S	T4162C
#4 - 48 UNF	H2	1.88	.335	.141	.110	.188	2	T4182	T4182S	T4182C
#5 - 40 UNC	H2	1.94	.374	.141	.110	.188	3	T4202	T4202S	T4202C
#5 - 44 UNF	H2	1.94	.374	.141	.110	.188	3	T4222	T4222S	T4222C
#6 - 32 UNC	H3	2.00	.413	.141	.110	.188	3	T4243	T4243S	T4243C
#6 - 40 UNF	H2	2.00	.413	.141	.110	.188	3	T4262	T4262S	T4262C
#8 - 32 UNC	H3	2.13	.453	.168	.131	.250	3	T4283	T4283S	T4283C
#8 - 36 UNF	H2	2.13	.453	.168	.131	.250	3	T4302	T4302S	T4302C
#10 - 24 UNC	H3	2.38	.531	.194	.152	.250	3	T4323	T4323S	T4323C
#10 - 32 UNF	H3	2.38	.531	.194	.152	.250	3	T4343	T4343S	T4343C
#12 - 24 UNC	H3	2.38	.571	.220	.165	.281	3	T4363	T4363S	T4363C
#12 - 28 UNF	H3	2.38	.571	.220	.165	.281	3	T4383	T4383S	T4383C
1/4 - 20 UNC	H3	2.50	.591	.255	.191	.312	3	T4403	T4403S	T4403C
1/4 - 20 UNC	H5	2.50	.591	.255	.191	.312	3	T4405	T4405S	T4405C
1/4 - 28 UNF	H3	2.50	.591	.255	.191	.312	3	T4423	T4423S	T4423C
1/4 - 28 UNF	H4	2.50	.591	.255	.191	.312	3	T4424	T4424S	T4424C
5/16 - 18 UNC	H3	2.72	.669	.318	.238	.375	3	T4443	T4443S	T4443C
5/16 - 18 UNC	H5	2.72	.669	.318	.238	.375	3	T4445	T4445S	T4445C
5/16 - 24 UNF	H3	2.72	.669	.318	.238	.375	3	T4463	T4463S	T4463C
5/16 - 24 UNF	H5	2.72	.669	.318	.238	.375	3	T4465	T4465S	T4465C
3/8 - 16 UNC	H3	2.94	.748	.381	.286	.438	3	T4483	T4483S	T4483C
3/8 - 16 UNC	H5	2.94	.748	.381	.286	.438	3	T4485	T4485S	T4485C

▶ Coating(TiN, TiAlN or Hardslick) is available on your request.
Coating Codes for Combo Tap
Bright Finish No. + N(TiN), F(TiAlN), H(Hardslick)

▶ NEXT PAGE

▶ Steam Oxide is not recommended for Aluminum and Aluminum alloys.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	◎	◎	◎	◎	◎	◎

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
◎	◎	◎	◎	◎	◎	◎	◎	○		○

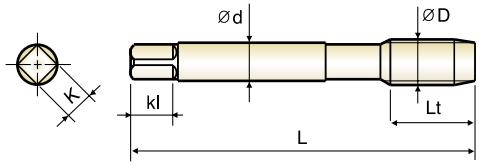
COMBO TAPS

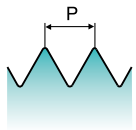
Combo TAP

T4/T4-S/T4-C SERIES

SPIRAL POINT TAPS for Multi-Purpose

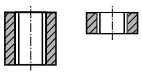






Hole type

3.0×D



MU | HSS-EX | UNC UNF | USCTI 302A | H2~H6 | 60° | 4P~5P | Bright | Steam Oxide | TiCN

Unit : Inch

SIZE & TPI	Limit	Overall Length L	Thread Length Lt	Shank Diameter D	Square Size K	Square Length kl	No. of Flute	EDP No. Bright	EDP No. Steam Oxide	EDP No. TiCN
3/8 - 24 UNF	H3	2.94	.748	.381	.286	.438	3	T4503	T4503S	T4503C
3/8 - 24 UNF	H4	2.94	.748	.381	.286	.438	3	T4504	T4504S	T4504C
7/16 - 14 UNC	H3	3.16	.866	.323	.242	.406	3	T4523	T4523S	T4523C
7/16 - 14 UNC	H5	3.16	.866	.323	.242	.406	3	T4525	T4525S	T4525C
7/16 - 20 UNF	H3	3.16	.866	.323	.242	.406	3	T4543	T4543S	T4543C
7/16 - 20 UNF	H5	3.16	.866	.323	.242	.406	3	T4545	T4545S	T4545C
1/2 - 13 UNC	H5	3.38	.984	.367	.275	.438	3	T4565	T4565S	T4565C
1/2 - 20 UNF	H5	3.38	.984	.367	.275	.438	3	T4585	T4585S	T4585C
9/16 - 12 UNC	H5	3.59	.984	.429	.322	.500	3	T4605	T4605S	T4605C
9/16 - 18 UNF	H5	3.59	.984	.429	.322	.500	3	T4625	T4625S	T4625C
5/8 - 11 UNC	H5	3.81	1.083	.480	.360	.562	3	T4645	T4645S	T4645C
5/8 - 18 UNF	H5	3.81	1.083	.480	.360	.562	3	T4665	T4665S	T4665C
3/4 - 10 UNC	H5	4.25	1.201	.590	.442	.688	3	T4705	T4705S	T4705C
3/4 - 16 UNF	H5	4.25	1.201	.590	.442	.688	3	T4725	T4725S	T4725C
7/8 - 9 UNC	H6	4.69	1.339	.697	.523	.750	3	T4746	T4746S	T4746C
7/8 - 14 UNF	H6	4.69	1.339	.697	.523	.750	3	T4766	T4766S	T4766C
1 - 8 UNC	H6	5.13	1.496	.800	.600	.812	3	T4786	T4786S	T4786C
1 - 12 UNF	H6	5.13	1.496	.800	.600	.812	3	T4806	T4806S	T4806C

▶ Coating(TiN, TiAlN or Hardslick) is available on your request.
Coating Codes for Combo Tap
Bright Finish No. + N(TiN), F(TiAlN), H(Hardslick)

▶ Steam Oxide is not recommended for Aluminum and Aluminum alloys.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	◎	◎	◎	◎	◎	◎

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
◎	◎	◎	◎	◎	◎	◎	◎	○		○

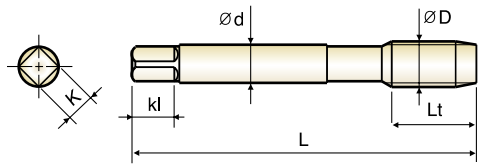
COMBO TAPS

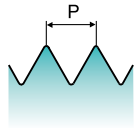
Combo TAP

T3 / T3-S / T3-C SERIES

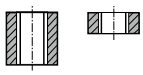
SPIRAL POINT TAPS for Multi-Purpose







Hole type
3.0×D



MU | HSS-EX | M | USCTI 302A | D3~D8 | 60° | 4P~5P | Bright | Steam Oxide | TiCN

Unit : Inch

SIZE & TPI	Limit	Overall Length	Thread Length	Shank Diameter	Square Size	Square Length	No. of Flute	EDP No.		
		L	Lt	D	K	kl		Bright	Steam Oxide	TiCN
M3 x 0.5	D3	1.94	.374	.141	.110	.188	3	T3203	T3203S	T3203C
M3.5x 0.6	D4	2.00	.413	.141	.110	.188	3	T3224	T3224S	T3224C
M4 x 0.7	D4	2.13	.453	.168	.131	.250	3	T3244	T3244S	T3244C
M5 x 0.8	D4	2.38	.531	.194	.152	.250	3	T3284	T3284S	T3284C
M6 x 1.0	D5	2.50	.591	.255	.191	.312	3	T3315	T3315S	T3315C
M7 x 1.0	D5	2.72	.669	.318	.238	.375	3	T3345	T3345S	T3345C
M8 x 1.25	D5	2.72	.669	.318	.238	.375	3	T3365	T3365S	T3365C
M8 x 1.0	D5	2.72	.669	.318	.238	.375	3	T3375	T3375S	T3375C
M10 x 1.5	D6	2.94	.748	.381	.286	.438	3	T3426	T3426S	T3426C
M10 x 1.25	D5	2.94	.748	.381	.286	.438	3	T3435	T3435S	T3435C
M12 x 1.75	D6	3.38	.984	.367	.275	.438	3	T3506	T3506S	T3506C
M12 x 1.25	D5	3.38	.984	.367	.275	.438	3	T3525	T3525S	T3525C
M14 x 2.0	D7	3.59	.984	.429	.322	.500	3	T3547	T3547S	T3547C
M14 x 1.5	D6	3.59	.984	.429	.322	.500	3	T3556	T3556S	T3556C
M16 x 2.0	D7	3.81	1.083	.480	.360	.562	3	T3607	T3607S	T3607C
M16 x 1.5	D6	3.81	1.083	.480	.360	.562	3	T3616	T3616S	T3616C
M18 x 2.5	D7	4.03	1.083	.542	.406	.625	3	T3657	T3657S	T3657C
M18 x 1.5	D6	4.03	1.083	.542	.406	.625	3	T3676	T3676S	T3676C
M20 x 2.5	D7	4.47	1.201	.652	.489	.688	3	T3707	T3707S	T3707C
M20 x 1.5	D6	4.47	1.201	.652	.489	.688	3	T3726	T3726S	T3726C
M22 x 2.5	D7	4.69	1.339	.697	.523	.750	3	T3747	T3747S	T3747C
M22 x 1.5	D6	4.69	1.339	.697	.523	.750	3	T3766	T3766S	T3766C
M24 x 3.0	D8	4.91	1.339	.760	.570	.750	3	T3788	T3788S	T3788C

▶Coating(TiN, TiAlN or Hardslick) is available on your request.
Coating Codes for Combo Tap
Bright Finish No. + N(TiN), F(TiAlN), H(Hardslick)

▶Steam Oxide is not recommended for Aluminum and Aluminum alloys.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	◎	◎	◎	◎	◎	◎

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
◎	◎	◎	◎	◎	◎	◎	◎	○		○

COMBO TAPS

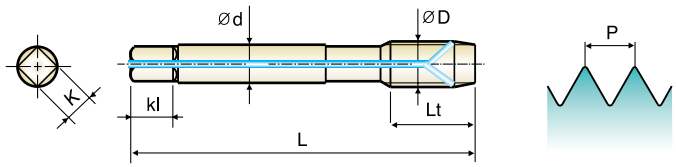
Combo TAP

TB / TB-N SERIES

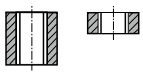
SPIRAL POINT TAPS for Multi-Purpose



with Internal Coolant



Hole type
3.0×D



MU | HSS-EX | UNC UNF | USCTI 302A | H4~H6 | 60° | 4P~5P | Bright | TiN

Unit : Inch

SIZE & TPI	Limit	Overall Length L	Thread Length Lt	Shank Diameter D	Square Size K	Square Length kl	No. of Flute	EDP No. Bright	EDP No. TiN
1/4 - 20 UNC	H5	2.50	.591	.255	.191	.312	2	**TB405**	**TB405N**
1/4 - 28 UNF	H4	2.50	.591	.255	.191	.312	2	**TB424**	**TB424N**
5/16- 18 UNC	H5	2.72	.669	.318	.238	.375	3	**TB445**	**TB445N**
5/16- 24 UNF	H4	2.72	.669	.318	.238	.375	3	**TB464**	**TB464N**
3/8 - 16 UNC	H5	2.94	.748	.381	.286	.438	3	**TB485**	**TB485N**
3/8 - 24 UNF	H4	2.94	.748	.381	.286	.438	3	**TB504**	**TB504N**
7/16- 14 UNC	H5	3.16	.866	.323	.242	.406	3	**TB525**	**TB525N**
7/16- 20 UNF	H5	3.16	.866	.323	.242	.406	3	**TB545**	**TB545N**
1/2 - 13 UNC	H5	3.38	.984	.367	.275	.438	3	**TB565**	**TB565N**
1/2 - 20 UNF	H5	3.38	.984	.367	.275	.438	3	**TB585**	**TB585N**
9/16- 12 UNC	H5	3.59	.984	.429	.322	.500	3	**TB605**	**TB605N**
9/16- 18 UNF	H5	3.59	.984	.429	.322	.500	3	**TB625**	**TB625N**
5/8 - 11 UNC	H5	3.81	1.083	.480	.360	.562	3	**TB645**	**TB645N**
5/8 - 18 UNF	H5	3.81	1.083	.480	.360	.562	3	**TB665**	**TB665N**
3/4 - 10 UNC	H5	4.25	1.201	.590	.442	.688	3	**TB705**	**TB705N**
3/4 - 16 UNF	H5	4.25	1.201	.590	.442	.688	3	**TB725**	**TB725N**
7/8 - 9 UNC	H6	4.69	1.339	.697	.523	.750	3	**TB746**	**TB746N**
7/8 - 14 UNF	H6	4.69	1.339	.697	.523	.750	3	**TB766**	**TB766N**
1 - 8 UNC	H6	5.13	1.496	.800	.600	.812	3	**TB786**	**TB786N**
1 - 12 UNF	H6	5.13	1.496	.800	.600	.812	3	**TB806**	**TB806N**

▶Coating(TiCN, TiAlN or Hardslick) or Surface Treatment(Steam Oxide) is available on your request.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	◎	◎	◎	◎	◎	◎

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
◎	◎	◎	◎	◎	◎	◎	◎	○		○

COMBO TAPS

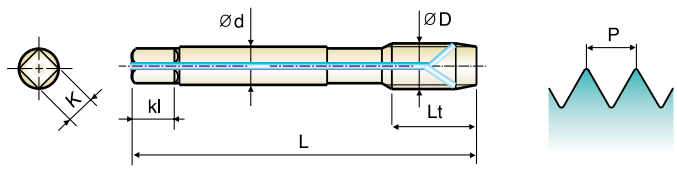
Combo TAP

TH / TH-N SERIES

SPIRAL POINT TAPS for Multi-Purpose

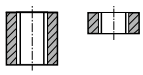
with Internal Coolant





Hole type

3.0×D



MU | **HSS-EX** | **M** | **USCTI 302A** | **D5~D7** | **60°** | **4P~5P** | **Bright** | **TiN**

Unit : Inch

SIZE & TPI	Limit	Overall Length L	Thread Length Lt	Shank Diameter D	Square Size K	Square Length kl	No. of Flute	EDP No. Bright	EDP No. TiN
M6 x 1.0	D5	2.50	.591	.255	.191	.312	3	**TH315**	**TH315N**
M8 x 1.25	D5	2.72	.669	.318	.238	.375	3	**TH365**	**TH365N**
M10 x 1.5	D6	2.94	.748	.381	.286	.438	3	**TH426**	**TH426N**
M12 x 1.75	D6	3.38	.984	.367	.275	.438	3	**TH506**	**TH506N**
M14 x 2.0	D7	3.59	.984	.429	.322	.500	3	**TH547**	**TH547N**
M16 x 2.0	D7	3.81	1.083	.480	.360	.562	3	**TH607**	**TH607N**
M18 x 2.5	D7	4.03	1.083	.542	.406	.625	3	**TH657**	**TH657N**
M20 x 2.5	D7	4.47	1.201	.652	.489	.688	3	**TH707**	**TH707N**

▶Coating(TiCN, TiAlN or Hardslick) or Surface Treatment(Steam Oxide) is available on your request.
Coating Codes for Combo Tap
Bright Finish No. + C(TiCN), F(TiAlN), H(Hardslick), S(Steam Oxide)

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	◎	◎	◎	◎	◎	◎

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
◎	◎	◎	◎	◎	◎	◎	◎	○		○

COMBO TAPS

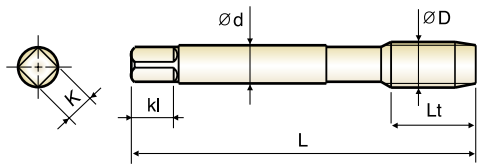
Combo TAP

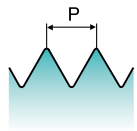
TC-S / TC-C SERIES

SPIRAL POINT TAPS for Multi-Purpose

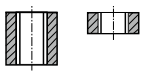
DIN-ANSI Shank







Hole type
3.0×D



MU | HSS-EX | UNC UNF | H2~H6 | 60° | 4P~5P | Steam Oxide | TiCN

Unit : Inch

SIZE & TPI	Limit	Overall Length L	Thread Length Lt	Shank Diameter D	Square Size K	Square Length kl	No. of Flute	EDP No. Steam Oxide	EDP No. TiCN
#4 - 40 UNC	H2	2.21	.335	.141	.110	.188	2	TC162S	TC162C
#5 - 40 UNC	H2	2.21	.374	.141	.110	.188	3	TC202S	TC202C
#6 - 32 UNC	H3	2.21	.413	.141	.110	.188	3	TC243S	TC243C
#8 - 32 UNC	H3	2.48	.453	.168	.131	.250	3	TC283S	TC283C
#10 - 24 UNC	H3	2.76	.531	.194	.152	.250	3	TC323S	TC323C
#10 - 32 UNF	H3	2.76	.531	.194	.152	.250	3	TC343S	TC343C
#12 - 24 UNC	H3	3.15	.571	.220	.165	.281	3	TC363S	TC363C
#12 - 28 UNF	H3	3.15	.571	.220	.165	.281	3	TC383S	TC383C
1/4 - 20 UNC	H5	3.15	.591	.255	.191	.312	3	TC405S	TC405C
1/4 - 28 UNF	H4	3.15	.591	.255	.191	.312	3	TC424S	TC424C
5/16 - 18 UNC	H5	3.54	.669	.318	.238	.375	3	TC445S	TC445C
5/16 - 24 UNF	H4	3.54	.669	.318	.238	.375	3	TC464S	TC464C
3/8 - 16 UNC	H5	3.94	.748	.381	.286	.438	3	TC485S	TC485C
3/8 - 24 UNF	H4	3.94	.748	.381	.286	.438	3	TC504S	TC504C
7/16 - 14 UNC	H5	3.94	.866	.323	.242	.406	3	TC525S	TC525C
7/16 - 20 UNF	H5	3.94	.866	.323	.242	.406	3	TC545S	TC545C
1/2 - 13 UNC	H5	4.33	.984	.367	.275	.438	3	TC565S	TC565C
1/2 - 20 UNF	H5	3.94	.984	.367	.275	.438	3	TC585S	TC585C
9/16 - 12 UNC	H5	4.33	.984	.429	.322	.500	3	TC605S	TC605C
9/16 - 18 UNF	H5	3.94	.984	.429	.322	.500	3	TC625S	TC625C
5/8 - 11 UNC	H5	4.33	1.083	.480	.360	.562	3	TC645S	TC645C
5/8 - 18 UNF	H5	3.94	1.083	.480	.360	.562	3	TC665S	TC665C
3/4 - 10 UNC	H5	4.92	1.201	.590	.442	.688	3	TC705S	TC705C
3/4 - 16 UNF	H5	4.33	1.201	.590	.442	.688	3	TC725S	TC725C
7/8 - 9 UNC	H6	5.51	1.339	.697	.523	.750	3	TC746S	TC746C
7/8 - 14 UNF	H6	4.92	1.339	.697	.523	.750	3	TC766S	TC766C
1 - 8 UNC	H6	6.30	1.496	.800	.600	.812	3	TC786S	TC786C
1 - 12 UNF	H6	5.51	1.496	.800	.600	.812	3	TC806S	TC806C

▶Steam Oxide is not recommended for Aluminum and Aluminum alloys.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	◎	◎	◎	◎	◎	◎

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
◎	◎	◎	◎	◎	◎	◎	◎	○		○

COMBO TAPS

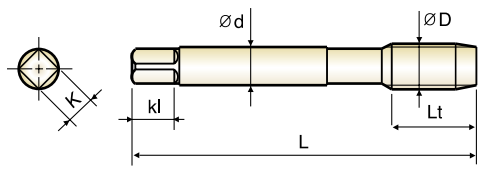
Combo TAP

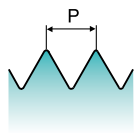
TK-S / TK-C SERIES

SPIRAL POINT TAPS for Multi-Purpose

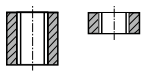
DIN-ANSI Shank







Hole type
3.0×D



MU | HSS-EX | M | D3~D7 | 60° | 4P~5P | Steam Oxide | TiCN

Unit : Inch

SIZE & TPI	Limit	Overall Length L	Thread Length Lt	Shank Diameter D	Square Size K	Square Length kl	No. of Flute	EDP No. Steam Oxide	EDP No. TiCN
M3 x 0.5	D3	.374	.374	.141	.110	.188	3	TK203S	TK203C
M3.5x 0.6	D4	.413	.413	.141	.110	.188	3	TK224S	TK224C
M4 x 0.7	D4	.453	.453	.168	.131	.250	3	TK244S	TK244C
M5 x 0.8	D4	.531	.531	.194	.152	.250	3	TK284S	TK284C
M6 x 1.0	D5	.591	.591	.255	.191	.312	3	TK315S	TK315C
M8 x 1.25	D5	.669	.669	.318	.238	.375	3	TK365S	TK365C
M10 x 1.5	D6	.748	.748	.381	.286	.438	3	TK426S	TK426C
M10 x 1.25	D5	.748	.748	.381	.286	.438	3	TK435S	TK435C
M12 x 1.75	D6	.984	.984	.367	.275	.438	3	TK506S	TK506C
M12 x 1.25	D5	.984	.984	.367	.275	.438	3	TK525S	TK525C
M14 x 2.0	D7	.984	.984	.429	.322	.500	3	TK547S	TK547C
M14 x 1.5	D6	.984	.984	.429	.322	.500	3	TK556S	TK556C
M16 x 2.0	D7	1.083	1.083	.480	.360	.562	3	TK607S	TK607C
M16 x 1.5	D6	1.083	1.083	.480	.360	.562	3	TK616S	TK616C
M18 x 2.5	D7	1.083	1.083	.542	.406	.625	3	TK657S	TK657C
M18 x 1.5	D6	1.083	1.083	.542	.406	.625	3	TK676S	TK676C

▶Steam Oxide is not recommended for Aluminum and Aluminum alloys.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	◎	◎	◎	◎	◎	◎

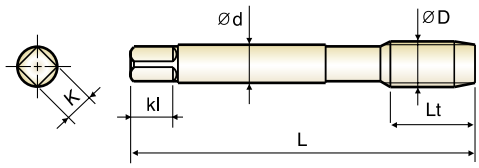
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
◎	◎	◎	◎	◎	◎	◎	◎	○		○

COMBO TAPS

Combo TAP TCE-S/TCF-S/TCE-C/TCF-C SERIES

SPIRAL POINT TAPS for Stainless Steels





Hole type
3.0 ×D

VA | Super HSS | HSS-EX | UNC UNF | USCTI 302A | H2~H6 | 60° | 4P | Steam Oxide | TiCN

Unit : Inch

SIZE & TPI	Limit	Overall Length L	Thread Length Lt	Shank Diameter D	Square Size K	Square Length kl	No. of Flute	EDP No. Steam Oxide	EDP No. TiCN
#5 - 40 UNC	H2	1.94	.374	.141	.110	.188	3	TCE202S	TCE202C
#5 - 40 UNC	H3	1.94	.374	.141	.110	.188	3	TCE203S	TCE203C
#6 - 32 UNC	H3	2.00	.413	.141	.110	.188	3	TCE243S	TCE243C
#8 - 32 UNC	H3	2.13	.453	.168	.131	.250	3	TCE283S	TCE283C
#10 - 24 UNC	H3	2.38	.531	.194	.152	.250	3	TCE323S	TCE323C
#10 - 32 UNF	H3	2.38	.531	.194	.152	.250	3	TCE343S	TCE343C
1/4 - 20 UNC	H3	2.50	.591	.255	.191	.312	3	TCE403S	TCE403C
1/4 - 20 UNC	H5	2.50	.591	.255	.191	.312	3	TCE405S	TCE405C
1/4 - 28 UNF	H3	2.50	.591	.255	.191	.312	3	TCE423S	TCE423C
5/16 - 18 UNC	H3	2.72	.669	.318	.238	.375	3	TCE443S	TCE443C
5/16 - 18 UNC	H5	2.72	.669	.318	.238	.375	3	TCE445S	TCE445C
5/16 - 24 UNF	H3	2.72	.669	.318	.238	.375	3	TCE463S	TCE463C
3/8 - 16 UNC	H3	2.94	.748	.381	.286	.438	3	TCE483S	TCE483C
3/8 - 16 UNC	H5	2.94	.748	.381	.286	.438	3	TCE485S	TCE485C
3/8 - 24 UNF	H3	2.94	.748	.381	.286	.438	3	TCE503S	TCE503C
7/16 - 14 UNC	H3	3.16	.866	.323	.242	.406	3	TCE523S	TCE523C
7/16 - 14 UNC	H5	3.16	.866	.323	.242	.406	3	TCE525S	TCE525C
7/16 - 20 UNF	H3	3.16	.866	.323	.242	.406	3	TCE543S	TCE543C
7/16 - 20 UNF	H5	3.16	.866	.323	.242	.406	3	TCE545S	TCE545C
1/2 - 13 UNC	H3	3.38	.984	.367	.275	.438	3	TCE563S	TCE563C
1/2 - 13 UNC	H5	3.38	.984	.367	.275	.438	3	TCE565S	TCE565C
1/2 - 20 UNF	H3	3.38	.984	.367	.275	.438	3	TCE583S	TCE583C

▶ Super HSS(#5~1/2) and HSS-EX(9/16~1")

▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	○			◎			

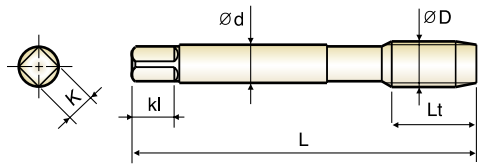
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium

COMBO TAPS

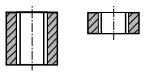
Combo TAP TCE-S/TCF-S/TCE-C/TCF-C SERIES

SPIRAL POINT TAPS for Stainless Steels





Hole type
3.0×D



VA | Super HSS | HSS-EX | UNC UNF | USCTI 302A | H2~H6 | 60° | 4P | Steam Oxide | TiCN

Unit : Inch

SIZE & TPI	Limit	Overall Length L	Thread Length Lt	Shank Diameter D	Square Size K	Square Length kl	No. of Flute	EDP No. Steam Oxide	EDP No. TiCN
9/16 - 12 UNC	H3	3.59	.984	.429	.322	.500	3	**TCF603S**	**TCF603C**
9/16 - 18 UNF	H3	3.59	.984	.429	.322	.500	3	**TCF623S**	**TCF623C**
5/8 - 11 UNC	H3	3.81	1.083	.480	.360	.562	3	**TCF643S**	**TCF643C**
5/8 - 11 UNC	H5	3.81	1.083	.480	.360	.562	3	**TCF645S**	**TCF645C**
5/8 - 18 UNF	H5	3.81	1.083	.480	.360	.562	3	**TCF665S**	**TCF665C**
3/4 - 10 UNC	H3	4.25	1.201	.590	.442	.688	3	**TCF703S**	**TCF703C**
3/4 - 10 UNC	H5	4.25	1.201	.590	.442	.688	3	**TCF705S**	**TCF705C**
7/8 - 9 UNC	H4	4.69	1.339	.697	.523	.750	3	**TCF744S**	**TCF744C**
7/8 - 9 UNC	H6	4.69	1.339	.697	.523	.750	3	**TCF746S**	**TCF746C**
7/8 - 14 UNF	H6	4.69	1.339	.697	.523	.750	3	**TCF766S**	**TCF766C**
1 - 8 UNC	H4	5.13	1.496	.800	.600	.812	3	**TCF784S**	**TCF784C**
1 - 8 UNC	H6	5.13	1.496	.800	.600	.812	3	**TCF786S**	**TCF786C**
1 - 12 UNF	H6	5.13	1.496	.800	.600	.812	3	**TCF806S**	**TCF806C**

▶ Super HSS(#5~1/2) and HSS-EX(9/16~1")

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	○			◎			

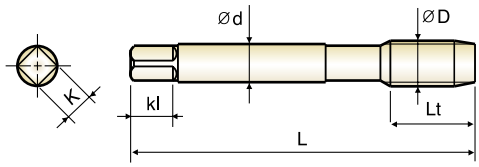
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium

COMBO TAPS

Combo TAP TCG-S/TCH-S/TCG-C/TCH-C SERIES

SPIRAL POINT TAPS for Stainless Steels





Hole type
3.0×D

VA | Super HSS | HSS-EX | M | USCTI 302A | D3~D7 | 60° | 4P | Steam Oxide | TiCN

Unit : Inch

SIZE & TPI	Limit	Overall Length L	Thread Length Lt	Shank Diameter D	Square Size K	Square Length kl	No. of Flute	EDP No. Steam Oxide	EDP No. TiCN
M3 x 0.5	D3	1.94	.374	.141	.110	.188	3	TCG203S	TCG203C
M3.5x 0.6	D4	2.00	.413	.141	.110	.188	3	TCG224S	TCG224C
M4 x 0.7	D4	2.13	.453	.168	.131	.250	3	TCG244S	TCG244C
M5 x 0.8	D4	2.38	.531	.194	.152	.250	3	TCG284S	TCG284C
M6 x 1.0	D5	2.50	.591	.255	.191	.312	3	TCG315S	TCG315C
M7 x 1.0	D5	2.72	.669	.318	.238	.375	3	TCG345S	TCG345C
M8 x 1.25	D5	2.72	.669	.318	.238	.375	3	TCG365S	TCG365C
M8 x 1.0	D5	2.72	.669	.318	.238	.375	3	TCG375S	TCG375C
M10 x 1.5	D6	2.94	.748	.381	.286	.438	3	TCG426S	TCG426C
M10 x 1.25	D5	2.94	.748	.381	.286	.438	3	TCG435S	TCG435C
M12 x 1.75	D6	3.38	.984	.367	.275	.438	3	TCG506S	TCG506C
M12 x 1.25	D5	3.38	.984	.367	.275	.438	3	TCG525S	TCG525C
M14 x 2.0	D7	3.59	.984	.429	.322	.500	3	TCH547S	TCH547C
M14 x 1.5	D6	3.59	.984	.429	.322	.500	3	TCH556S	TCH556C
M16 x 2.0	D7	3.81	1.083	.480	.360	.562	3	TCH607S	TCH607C
M16 x 1.5	D6	3.81	1.083	.480	.360	.562	3	TCH616S	TCH616C
M18 x 2.5	D7	4.03	1.083	.542	.406	.625	3	TCH657S	TCH657C
M18 x 1.5	D6	4.03	1.083	.542	.406	.625	3	TCH676S	TCH676C

▶ Super HSS(M3~M12) and HSS-EX(M14~M18)

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	○			◎			

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium

COMBO TAPS

Combo TAP

SPIRAL FLUTE COMBO TAP SETS



TAP SETS **SPIRAL FLUTE COMBO**

Series	Series	Standard	Surface Treatment	Size	Q'ty
T2836SET8	T2	UNC/F	Bright	1/4-20, 1/4-28, 5/16-18, 5-16-24, 3/8-16, 3/8-24, 7/16 -14, 7/16 -20	8 pcs
TG836SET8	T2-C	UNC/F	TiCN	1/4-20, 1/4-28, 5/16-18, 5-16-24, 3/8-16, 3/8-24, 7/16 -14, 7/16 -20	8 pcs
T2836SET8 -1	T2	UNC/F	Bright	1/4-20, 1/4-28, 5/16-18, 5-16-24, 3/8-16, 3/8-24, 1/2-13, 1/2-20	8 pcs
TG836SET8 -1	T2-C	UNC/F	TiCN	1/4-20, 1/4-28, 5/16-18, 5-16-24, 3/8-16, 3/8-24, 1/2-13, 1/2-20	8 pcs
T2805SET7	T5	M	Bright	M3, M4, M5, M6, M8, M10, M12	7 pcs
TG805SET7	T5-C	M	TiCN	M3, M4, M5, M6, M8, M10, M12	7 pcs

*Hardslick Coated Set available upon request

HSS

Being the best through innovation



SPIRAL FLUTE TAPS

- Tapping Blind Holes / Super HSS, HSS-E, HSS-PM, HSS-V & HSS

SPIRAL FLUTE TAPS

Tapping Blind Holes / Super HSS, HSS-E, HSS-PM, HSS-V & HSS

INCH

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Thread Depth	Surface Treatment	Page
BB/BI		Super HSS	UNC/UNF	VG	USCTI 302A	H2~H6	2 ~ 3P	2.5D	Steam Oxide Hardslick	362
BH/BM		Super HSS	M/MF	VG	USCTI 302A	D3~D7	2 ~ 3P		Steam Oxide Hardslick	364
BF/BK		Super HSS	UNC/UNF	VG	DIN-ANSI Shank	H2~H6	2 ~ 3P		Steam Oxide Hardslick	365
BD/BO		Super HSS	M/MF	VG	DIN-ANSI Shank	D3~D7	2 ~ 3P		Steam Oxide Hardslick	366
H5/H7/H8		P-HSS	UNC/UNF	HR	USCTI 302A	H2~H5	2 ~ 3P		Steam Oxide TiCN Hardslick	367
TQ858/ TK858/TR858		P-HSS	M/MF	HR	USCTI 302A	H2~H5	2 ~ 3P		Steam Oxide TiCN Hardslick	368
B3/B5/D6		P-HSS	UNC/UNF	Ti Ni	USCTI 302A	H2~H5	2 ~ 3P		Steam Oxide TiCN Hardslick	369
G9/H0		P-HSS	UNC/UNF	VA	USCTI Long Shank	H2~H3	2 ~ 3P		Hardslick	371
H2/H4		P-HSS	UNC/UNF	VA	USCTI Long Shank	H3	4 ~ 5P	3.0D	TiN Hardslick	372
BG/BG-GB		HSSE-V3	UNC/UN8	VG	DIN-ANSI Shank	2B	2 ~ 3P	2.5D	Hardslick Gold & Black	373
B1/B0/B2/D2		HSSE-V3	UNC/UNF	VA	USCTI 302A	H2~H7	2 ~ 3P		Bright Steam Oxide TiN/Hardslick	374
BS/BT		HSSE-V3	M/MF	VA	USCTI 302A	D3~D7	2 ~ 3P		Steam Oxide Hardslick	377
E6/E8/E9		HSSE-V3	M/MF	VA	DIN-ANSI Shank	D3~D7	2 ~ 3P		Steam Oxide TiCN Hardslick	378
D3/E0		HSSE-V3	UNC/UNF	VG	USCTI 302A	H2~H11	2 ~ 3P		Hardslick Steam Oxide	379
BU/BV		HSSE-V3	M/MF	VG	USCTI 302A	D3~D11	2 ~ 3P		Steam Oxide Hardslick	382
E2/E4/E5		HSSE-V3	M/MF	VG	DIN-ANSI Shank	D3~D7	2 ~ 3P		Steam Oxide TiCN Hardslick	384
C0/D8		HSSE-V3	UNC/UNF	Al	USCTI 302A	H2~H5	2 ~ 3P		Bright Hardslick	385
BW/BX		HSSE-V3	M/MF	Al	USCTI 302A	D3~D6	2 ~ 3P		Bright Hardslick	386

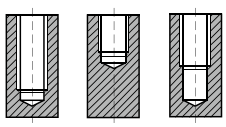
EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Thread Depth	Surface Treatment	Page
C2/C3/C4/D9		HSSE-V3	UNC/UNF	GS	USCTI 302	H2~H6	1.5 ~ 2P	2.5D	Steam Oxide Bright/TiN Hardslick	387
F4/F8/F6		HSS-V	UNC/UNF	GS	USCTI 302A	H2~H6	1.5 ~ 2P		Steam Oxide TiN Hardslick	388
G4/G5/G6		HSS-V	M/MF	GS	USCTI 302A	D3~D6	1.5 ~ 2P		Bright TiCN Hardslick	390
G0/G1/G2		HSS-V	UNC/UNF	GS	DIN-ANSI Shank	H2~H6	2 ~ 3P		Bright TiN Hardslick	391
T7A96/T6A96/ T8A96 T7295/T6295/ T8295		HSS	UNC/UNF	GS	USCTI 302	H2~H5	4 ~ 5P 1.5 ~ 2P		Bright Steam Oxide TiN	393
T7A86/T6A86/ T8A86 T7A85/T6A85/ T8A85		HSS	M/MF	GS	USCTI 302	D3~D6	4 ~ 5P 1.5 ~ 2P		Bright Steam Oxide TiN	394
T7D01/T8D01 T7D02/T8D02		HSS	UNC/UNF	GS	USCTI Long Shank	H3	4 ~ 5P 1.5 ~ 2P		Bright TiN	395

SPIRAL FLUTE TAPS

BB/BI SERIES

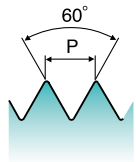
SPIRAL FLUTE TAPS MODIFIED BOTTOMING STYLE for Steels & Stainless Steels up to 35HRc

Hole type 2.5×D





USCTI



VG | Super HSS | UNC UNF | USCTI 302A | H2~H6 | 60° | 2P~3P | Steam Oxide | Hardslick | R40

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.	
	UNC	UNF			Steam Oxide	Hardslick
#2	56	—	H2	2	**BB082**	**BI082**
#4	40	—	H2	2	**BB162**	**BI162**
#4	40	—	H3	2	**BB163**	**BI163**
#4	40	—	H4	2	**BB164**	**BI164**
#5	40	—	H2	3	**BB202**	**BI202**
#6	32	—	H2	3	**BB242**	**BI242**
#6	32	—	H3	3	**BB243**	**BI243**
#6	32	—	H4	3	**BB244**	**BI244**
#6	32	—	H5	3	**BB245**	**BI245**
#8	32	—	H2	3	**BB282**	**BI282**
#8	32	—	H3	3	**BB283**	**BI283**
#8	32	—	H4	3	**BB284**	**BI284**
#8	32	—	H5	3	**BB285**	**BI285**
#8	32	—	H6	3	**BB286**	**BI286**
#10	24	—	H3	3	**BB323**	**BI323**
#10	24	—	H5	3	**BB325**	**BI325**
#10	—	32	H2	3	**BB342**	**BI342**
#10	—	32	H3	3	**BB343**	**BI343**
#10	—	32	H4	3	**BB344**	**BI344**
#10	—	32	H5	3	**BB345**	**BI345**
#10	—	32	H6	3	**BB346**	**BI346**
1/4	20	—	H3	3	**BB403**	**BI403**
1/4	20	—	H5	3	**BB405**	**BI405**
1/4	—	28	H3	3	**BB423**	**BI423**
1/4	—	28	H4	3	**BB424**	**BI424**
1/4	—	28	H5	3	**BB425**	**BI425**
1/4	—	28	H6	3	**BB426**	**BI426**
5/16	18	—	H3	3	**BB443**	**BI443**
5/16	18	—	H5	3	**BB445**	**BI445**
5/16	—	24	H3	3	**BB463**	**BI463**
5/16	—	24	H4	3	**BB464**	**BI464**
5/16	—	24	H5	3	**BB465**	**BI465**
5/16	—	24	H6	3	**BB466**	**BI466**

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 491.

▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	◎	◎		◎	◎		

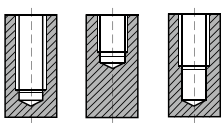
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	○	○		○		○	○			

SPIRAL FLUTE TAPS

BB/BI SERIES

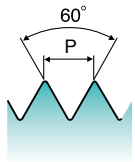
SPIRAL FLUTE TAPS MODIFIED BOTTOMING STYLE for Steels & Stainless Steels up to 35HRc

Hole type 2.5×D





USCTI



VG | Super HSS | UNC UNF | USCTI 302A | H2~H6 | 60° | 2P~3P | Steam Oxide | Hardslick | R40

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.	
	UNC	UNF			Steam Oxide	Hardslick
3/8	16	—	H3	3	**BB483**	**BI483**
3/8	16	—	H5	3	**BB485**	**BI485**
3/8	—	24	H3	3	**BB503**	**BI503**
3/8	—	24	H4	3	**BB504**	**BI504**
3/8	—	24	H5	3	**BB505**	**BI505**
3/8	—	24	H6	3	**BB506**	**BI506**
7/16	14	—	H3	3	**BB523**	**BI523**
7/16	14	—	H5	3	**BB525**	**BI525**
7/16	—	20	H3	3	**BB543**	**BI543**
7/16	—	20	H5	3	**BB545**	**BI545**
1/2	13	—	H3	3	**BB563**	**BI563**
1/2	13	—	H5	3	**BB565**	**BI565**
1/2	—	20	H3	3	**BB583**	**BI583**
1/2	—	20	H5	3	**BB585**	**BI585**
9/16	12	—	H5	3	**BB605**	**BI605**
9/16	—	18	H5	3	**BB625**	**BI625**
5/8	11	—	H3	4	**BB643**	**BI643**
5/8	11	—	H5	4	**BB645**	**BI645**
5/8	—	18	H3	4	**BB663**	**BI663**
5/8	—	18	H5	4	**BB665**	**BI665**
3/4	10	—	H3	4	**BB703**	**BI703**
3/4	10	—	H5	4	**BB705**	**BI705**
3/4	—	16	H3	4	**BB723**	**BI723**
3/4	—	16	H5	4	**BB725**	**BI725**
7/8	9	—	H6	4	**BB746**	**BI746**
7/8	—	14	H6	4	**BB766**	**BI766**
1	8	—	H6	4	**BB786**	**BI786**
1	—	12	H6	4	**BB806**	**BI806**
1-1/8	8	—	H6	4	**BB836**	**BI836**
1-1/4	8	—	H6	4	**BB876**	**BI876**
1-3/8	8	—	H6	4	**BB916**	**BI916**
1-1/2	8	—	H6	4	**BB956**	**BI956**

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 491.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	◎	◎		◎	◎		

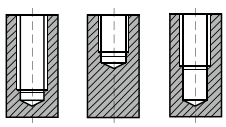
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	○	○		○		○	○			

SPIRAL FLUTE TAPS

BH / BM SERIES

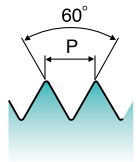
SPIRAL FLUTE TAPS MODIFIED BOTTOMING STYLE for Steels & Stainless Steels up to 35HRc

Hole type 2.5×D





USCTI



VG | Super HSS | M MF | USCTI 302A | D3~D7 | 60° | 2P~3P | Steam Oxide | Hardslick | R40

SIZE	Pitch	Limit	No. of Flute	EDP No.	
				Steam Oxide	Hardslick
M3	0.5	D3	3	**BH203**	**BM203**
M3.5	0.6	D4	3	**BH224**	**BM224**
M4	0.7	D4	3	**BH244**	**BM244**
M5	0.8	D4	3	**BH284**	**BM284**
M6	1.0	D5	3	**BH315**	**BM315**
M7	1.0	D5	3	**BH345**	**BM345**
M8	1.25	D5	3	**BH365**	**BM365**
M8	1.0	D5	3	**BH375**	**BM375**
M10	1.5	D6	3	**BH426**	**BM426**
M10	1.25	D5	3	**BH435**	**BM435**
M12	1.75	D6	3	**BH506**	**BM506**
M12	1.25	D5	3	**BH525**	**BM525**
M14	2.0	D7	3	**BH547**	**BM547**
M14	1.5	D6	3	**BH556**	**BM556**
M16	2.0	D7	3	**BH607**	**BM607**
M16	1.5	D6	3	**BH616**	**BM616**
M18	2.5	D7	4	**BH657**	**BM657**
M18	1.5	D6	4	**BH676**	**BM676**

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 492.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	◎	◎		◎	◎		

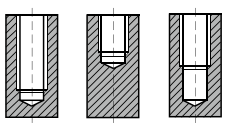
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	○	○		○		○	○			

SPIRAL FLUTE TAPS

BF / BK SERIES

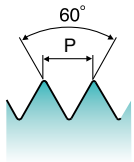
SPIRAL FLUTE TAPS MODIFIED BOTTOMING STYLE for Steels & Stainless Steels up to 35HRc

Hole type 2.5×D





DIN-ANSI Shank



VG | Super HSS | UNC UNF | H2~H6 | 60° | 2P~3P | Steam Oxide | Hardslick | R40

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.	
	UNC	UNF			Steam Oxide	Hardslick
#2	56	—	H2	2	**BF082**	**BK082**
#4	40	—	H2	2	**BF162**	**BK162**
#5	40	—	H2	3	**BF202**	**BK202**
#6	32	—	H3	3	**BF243**	**BK243**
#8	32	—	H3	3	**BF283**	**BK283**
#10	24	—	H3	3	**BF323**	**BK323**
#10	—	32	H3	3	**BF343**	**BK343**
1/4	20	—	H3	3	**BF403**	**BK403**
1/4	20	—	H5	3	**BF405**	**BK405**
1/4	—	28	H3	3	**BF423**	**BK423**
1/4	—	28	H4	3	**BF424**	**BK424**
5/16	18	—	H5	3	**BF445**	**BK445**
5/16	—	24	H4	3	**BF464**	**BK464**
3/8	16	—	H5	3	**BF485**	**BK485**
3/8	—	24	H4	3	**BF504**	**BK504**
7/16	14	—	H5	3	**BF525**	**BK525**
7/16	—	20	H5	3	**BF545**	**BK545**
1/2	13	—	H5	3	**BF565**	**BK565**
1/2	—	20	H5	3	**BF585**	**BK585**
9/16	12	—	H5	3	**BF605**	**BK605**
9/16	—	18	H5	3	**BF625**	**BK625**
5/8	11	—	H5	4	**BF645**	**BK645**
5/8	—	18	H5	4	**BF665**	**BK665**
3/4	10	—	H5	4	**BF705**	**BK705**
3/4	—	16	H5	4	**BF725**	**BK725**
7/8	9	—	H6	4	**BF746**	**BK746**
7/8	—	14	H6	4	**BF766**	**BK766**
1	8	—	H6	4	**BF786**	**BK786**
1	—	12	H6	4	**BF806**	**BK806**
1-1/8	8	—	H6	4	**BF836**	**BK836**
1-1/4	8	—	H6	4	**BF876**	**BK876**
1-3/8	8	—	H6	4	**BF916**	**BK916**
1-1/2	8	—	H6	4	**BF956**	**BK956**

▶For tapping depth on DIN / ANSI Shank Taps, refer to DIN Table on page 493 & 494.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	◎	◎		◎	◎		

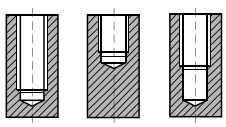
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	○	○		○		○	○			

SPIRAL FLUTE TAPS

BD / BO SERIES

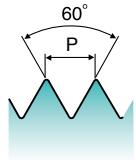
METRIC SPIRAL FLUTE TAPS MODIFIED BOTTOMING STYLE for Steels & Stainless Steels up to 35HRc

Hole type 2.5×D





DIN-ANSI Shank



VG | Super HSS | M MF | D3~D7 | 60° | 2P~3P | Steam Oxide | Hardslick | R40

SIZE	Pitch	Limit	No. of Flute	EDP No.	
				Steam Oxide	Hardslick
M3	0.5	D3	3	BD203	B0203
M3.5	0.6	D4	3	BD224	B0224
M4	0.7	D4	3	BD244	B0244
M5	0.8	D4	3	BD284	B0284
M6	1.0	D5	3	BD315	B0315
M7	1.0	D5	3	BD345	B0345
M8	1.25	D5	3	BD365	B0365
M8	1.0	D5	3	BD375	B0375
M10	1.5	D6	3	BD426	B0426
M10	1.25	D5	3	BD435	B0435
M12	1.75	D6	3	BD506	B0506
M12	1.25	D5	3	BD525	B0525
M14	2.0	D7	3	BD547	B0547
M14	1.5	D6	3	BD556	B0556
M16	2.0	D7	3	BD607	B0607
M16	1.5	D6	3	BD616	B0616
M18	2.5	D7	4	BD657	B0657
M18	1.5	D6	4	BD676	B0676

▶For tapping depth on DIN / ANSI Shank Taps, refer to DIN Table on page 493 & 494.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	◎	◎		◎	◎		

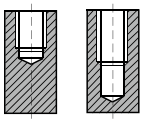
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	○	○		○		○	○			

SPIRAL FLUTE TAPS

H5 / H7 / H8 SERIES

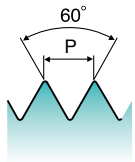
SPIRAL FLUTE TAPS MODIFIED BOTTOMING STYLE
Steels up to 45HRc

Hole type 2.5×D





USCTI



HR | P-HSS | UNC UNF | USCTI 302A | H2~H5 | 60° | 2P~3P | Steam Oxide | TiCN | Hardslick | R15

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.		
	UNC	UNF			Steam Oxide	TiCN	Hardslick
#2	56	—	H2	3	**H5082**	**H7082**	**H8082**
#4	40	—	H2	3	**H5162**	**H7162**	**H8162**
#5	40	—	H2	3	**H5202**	**H7202**	**H8202**
#6	32	—	H3	3	**H5243**	**H7243**	**H8243**
#8	32	—	H3	3	**H5283**	**H7283**	**H8283**
#10	24	—	H3	3	**H5323**	**H7323**	**H8323**
#10	—	32	H3	3	**H5343**	**H7343**	**H8343**
1/4	20	—	H5	3	**H5405**	**H7405**	**H8405**
1/4	—	28	H4	3	**H5424**	**H7424**	**H8424**
5/16	18	—	H5	3	**H5445**	**H7445**	**H8445**
5/16	—	24	H4	3	**H5464**	**H7464**	**H8464**
3/8	16	—	H5	3	**H5485**	**H7485**	**H8485**
3/8	—	24	H4	3	**H5504**	**H7504**	**H8504**
7/16	14	—	H5	3	**H5525**	**H7525**	**H8525**
7/16	—	20	H5	3	**H5545**	**H7545**	**H8545**
1/2	13	—	H5	3	**H5565**	**H7565**	**H8565**
1/2	—	20	H5	3	**H5585**	**H7585**	**H8585**
5/8	11	—	H5	4	**H5645**	**H7645**	**H8645**
5/8	—	18	H5	4	**H5665**	**H7665**	**H8665**
3/4	10	—	H5	4	**H5705**	**H7705**	**H8705**
3/4	—	16	H5	4	**H5725**	**H7725**	**H8725**

▶Bright Finish Available: H6 Series

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 491.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
		○	◎		○	◎	

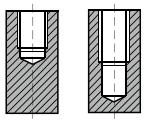
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
			◎					○	○	○

SPIRAL FLUTE TAPS

TQ858 / TK858 / TR858 SERIES

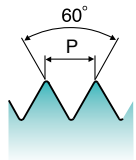
SPIRAL FLUTE TAPS MODIFIED BOTTOMING STYLE
Steels up to 45HRc

Hole type 2.5×D





USCTI



◇Call for Availability

HR | P-HSS | M MF | USCTI 302A | H2~H5 | 60° | 2P~3P | Steam Oxide | TiCN | Hardslick | R15

SIZE	Pitch	Limit	No. of Flute	EDP No.		
				Steam Oxide	TiCN	Hardslick
M3	0.50	D3	3	TQ858203	TK858203	TR858203HAR
M4	0.50	D3	3	TQ858253	TK858253	TR858253HAR
M4	0.70	D4	3	TQ858244	TK858244	TR858244HAR
M5	0.50	D3	3	TQ858293	TK858293	TR858293HAR
M5	0.80	D4	3	TQ858284	TK858284	TR858284HAR
M6	0.50	D3	3	TQ858333	TK858333	TR858333HAR
M6	0.75	D4	3	TQ858324	TK858324	TR858324HAR
M6	1.00	D5	3	TQ858315	TK858315	TR858315HAR
M8	1.00	D5	3	TQ858375	TK858375	TR858375HAR
M8	1.25	D5	3	TQ858365	TK858365	TR858365HAR
M10	1.00	D5	3	TQ858445	TK858445	TR858445HAR
M10	1.25	D5	3	TQ858435	TK858435	TR858435HAR
M10	1.50	D6	3	TQ858426	TK858426	TR858426HAR
M12	1.00	D5	3	TQ858535	TK858535	TR858535HAR
M12	1.25	D6	3	TQ858526	TK858526	TR858526HAR
M12	1.50	D6	3	TQ858516	TK858516	TR858516HAR
M12	1.75	D6	3	TQ858506	TK858506	TR858506HAR
M14	1.50	D6	3	TQ858556	TK858556	TR858556HAR
M14	2.00	D7	3	TQ858547	TK858547	TR858547HAR
M16	1.5	D6	4	TQ858616	TK858616	TR858616HAR
M16	2.0	D7	4	TQ858607	TK858607	TR858607HAR
M18	1.5	D6	4	TQ858676	TK858676	TR858676HAR
M18	2.5	D7	4	TQ858657	TK858657	TR858657HAR
M20	1.5	D6	4	TQ858726	TK858726	TR858726HAR
M20	2.5	D7	4	TQ858707	TK858707	TR858707HAR
M22	1.5	D6	4	TQ858766	TK858766	TR858766HAR
M22	2.5	D7	4	TQ858747	TK858747	TR858747HAR
M24	1.5	D6	4	TQ858806	TK858806	TR858806HAR
M24	3.0	D8	4	TQ858788	TK858788	TR858788HAR

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 492.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
		○	◎		○	◎	

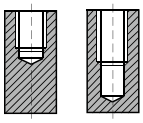
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
			◎					○	○	○

SPIRAL FLUTE TAPS

B3/B5/D6 SERIES

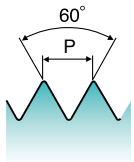
SPIRAL FLUTE TAPS MODIFIED BOTTOMING STYLE for Titanium Alloys & Nickel Base Alloys up to 44HRc

Hole type 2.5×D





USCTI



Ti Ni | P-HSS | UNC UNF | USCTI 302A | H2~H5 | 60° | 2P~3P | Steam Oxide | TiCN | Hardslick | R15

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.		
	UNC	UNF			Steam Oxide	TiCN	Hardslick
#2	56	—	H2	3	**B3082**	**B5082**	**D6082**
#4	40	—	H2	3	**B3162**	**B5162**	**D6162**
#5	40	—	H2	3	**B3202**	**B5202**	**D6202**
#6	32	—	H3	3	**B3243**	**B5243**	**D6243**
#8	32	—	H3	3	**B3283**	**B5283**	**D6283**
#10	24	—	H3	3	**B3323**	**B5323**	**D6323**
#10	—	32	H3	3	**B3343**	**B5343**	**D6343**
1/4	20	—	H3	3	**B3403**	**B5403**	**D6403**
1/4	20	—	H5	3	**B3405**	**B5405**	**D6405**
1/4	—	28	H3	3	**B3423**	**B5423**	**D6423**
1/4	—	28	H4	3	**B3424**	**B5424**	**D6424**
5/16	18	—	H3	3	**B3443**	**B5443**	**D6443**
5/16	18	—	H5	3	**B3445**	**B5445**	**D6445**
5/16	—	24	H3	3	**B3463**	**B5463**	**D6463**
3/8	16	—	H3	3	**B3483**	**B5483**	**D6483**
3/8	16	—	H5	3	**B3485**	**B5485**	**D6485**
3/8	—	24	H3	3	**B3503**	**B5503**	**D6503**
3/8	—	24	H4	3	**B3504**	**B5504**	**D6504**
7/16	14	—	H3	3	**B3523**	**B5523**	**D6523**
7/16	14	—	H5	3	**B3525**	**B5525**	**D6525**
7/16	—	20	H3	3	**B3543**	**B5543**	**D6543**
7/16	—	20	H5	3	**B3545**	**B5545**	**D6545**
1/2	13	—	H3	3	**B3563**	**B5563**	**D6563**
1/2	13	—	H5	3	**B3565**	**B5565**	**D6565**
1/2	—	20	H3	3	**B3583**	**B5583**	**D6583**
1/2	—	20	H5	3	**B3585**	**B5585**	**D6585**

▶TiN Coated Available: H9 Series
▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 491.

▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron

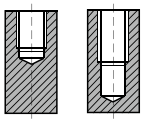
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
								◎	◎	◎

SPIRAL FLUTE TAPS

B3 / B5 / D6 SERIES

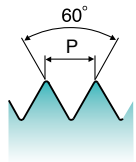
SPIRAL FLUTE TAPS MODIFIED BOTTOMING STYLE for Titanium Alloys & Nickel Base Alloys up to 44HRc

Hole type 2.5×D





USCTI



Ti Ni | P-HSS | UNC UNF | USCTI 302A | H2~H5 | 60° | 2P~3P | Steam Oxide | TiCN | Hardslick | R15

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.		
	UNC	UNF			Steam Oxide	TiCN	Hardslick
9/16	12	—	H3	3	**B3603**	**B5603**	**D6603**
9/16	12	—	H5	3	**B3605**	**B5605**	**D6605**
9/16	—	18	H3	3	**B3623**	**B5623**	**D6623**
9/16	—	18	H5	3	**B3625**	**B5625**	**D6625**
5/8	11	—	H3	4	**B3643**	**B5643**	**D6643**
5/8	11	—	H5	4	**B3645**	**B5645**	**D6645**
5/8	—	18	H3	4	**B3663**	**B5663**	**D6663**
5/8	—	18	H5	4	**B3665**	**B5665**	**D6665**
3/4	10	—	H3	4	**B3703**	**B5703**	**D6703**
3/4	10	—	H5	4	**B3705**	**B5705**	**D6705**
3/4	—	16	H3	4	**B3723**	**B5723**	**D6723**
3/4	—	16	H5	4	**B3725**	**B5725**	**D6725**

▶TiN Coated Available: H9 Series
▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 491.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
								◎	◎	◎

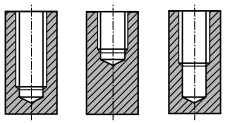
SPIRAL FLUTE TAPS

G9 / H0 SERIES

SPIRAL FLUTE TAPS MODIFIED BOTTOMING STYLE for Stainless Steels up to 28HRc

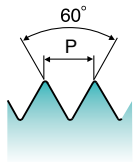
Maximum Tapping Depth is 50% Deeper than Standard USCTI Taps.

Hole type 2.5×D





USCTI-Long Shank



VA | P-HSS | UNC UNF | USCTI Long Shank | H2~H3 | 60° | 2P~3P | Hardslick | R45

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.	
	UNC	UNF			Hardslick 4" OAL	Hardslick 6" OAL
#4	40	—	H2	3	**G9162**	—
#6	32	—	H3	3	**G9243**	**H0243**
#8	32	—	H3	3	**G9283**	**H0283**
#10	24	—	H3	3	**G9323**	**H0323**
#10	—	32	H3	3	**G9343**	**H0343**
1/4	20	—	H3	3	**G9403**	**H0403**
1/4	—	28	H3	3	—	**H0423**
5/16	18	—	H3	3	—	**H0443**
5/16	—	24	H3	3	—	**H0463**
3/8	16	—	H3	3	—	**H0483**
3/8	—	24	H3	3	—	**H0503**
7/16	14	—	H3	3	—	**H0523**
7/16	—	20	H3	3	—	**H0543**
1/2	13	—	H3	3	—	**H0563**
1/2	—	20	H3	3	—	**H0583**
5/8	11	—	H3	4	—	**H0643**

▶TiN Coated Available: 4" OAL G7 Series & 6" OAL G8 Series
▶For tapping depth on DIN / ANSI Shank Taps, refer to DIN Table on page 493 & 494.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	◎			◎			

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	○	○		○		○	○			

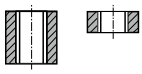
SPIRAL FLUTE TAPS

H2 / H4 SERIES

SPIRAL FLUTE TAPS MODIFIED BOTTOMING STYLE
Machining Center Tap (Left hand spiral)

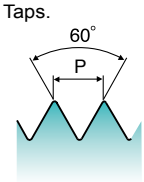
Left hand spiral, right hand cut. Reduces chip packing in deep holes Maximum. Tapping Depth is 50% Deeper than Standard USCTI Taps.

Hole type 3.0×D





USCTI Long Shank



VA | P-HSS | UNC UNF | USCTI Long Shank | H3 | 60° | 4P~5P | TiN | Hardslick | L15

SIZE	Thread Per Inch		Limit	Overall	No. of Flute	EDP No.	
	UNC	UNF				TiN	Hardslick
1/4	20	—	H3	6	2	**H2403**	**H4403**
1/4	—	28	H3	6	3	**H2423**	**H4423**
5/16	18	—	H3	6	3	**H2443**	**H4443**
3/8	16	—	H3	6	3	**H2483**	**H4483**
7/16	14	—	H3	6	3	**H2523**	**H4523**
1/2	13	—	H3	6	3	**H2563**	**H4563**
5/8	11	—	H3	6	3	**H2643**	**H4643**

▶For tapping depth on DIN / ANSI Shank Taps, refer to DIN Table on page 493 & 494.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	◎			◎			

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	○	○		○		○	○			

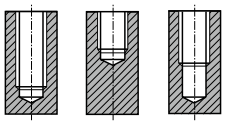
SPIRAL FLUTE TAPS

BG / BG-GB SERIES

SPIRAL FLUTE TAPS MODIFIED BOTTOMING STYLE for Stainless Steel up to 35HRc

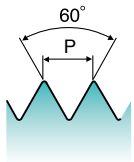
Oil Field

Hole type 2.5×D





DIN-ANSI Shank



VG | HSSE-V3 | UNC UN8 | 2B | 60° | 2P~3P | Hardslick | Gold& Black | R40

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.	
	UNC	UN			Hardslick	Gold-Black
1/2	13	—	2B	3	**BG562H**	**BG562GB**
5/8	11	—	2B	3	**BG642H**	**BG642GB**
3/4	10	—	2B	3	**BG702H**	**BG702GB**
7/8	9	—	2B	4	**BG742H**	**BG742GB**
1	—	8	2B	4	**BG782H**	**BG782GB**
1-1/8	7	—	2B	4	**BG822H**	**BG822GB**
1-1/8	—	8	2B	4	**BG832H**	**BG832GB**
1-1/4	7	—	2B	4	**BG862H**	**BG862GB**
1-1/4	—	8	2B	4	**BG872H**	**BG872GB**
1-3/8	—	8	2B	5	**BG912H**	**BG912GB**
1-1/2	—	8	2B	5	**BG952H**	**BG952GB**
1-5/8	—	8	2B	5	**BGB22H**	**BGB22GB**
1-3/4	—	8	2B	6	**BGC02H**	**BGC02GB**
1-7/8	—	8	2B	6	**BGC62H**	**BGC62GB**
2	—	8	2B	6	**BGD42H**	**BGD42GB**

▶For tapping depth on DIN / ANSI Shank Taps, refer to DIN Table on page 493 & 494.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
	○	◎		◎	◎		

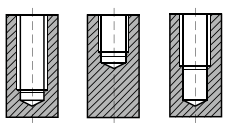
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
					◎					

SPIRAL FLUTE TAPS

B1/B0/B2/D2 SERIES

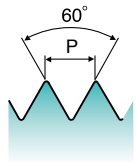
SPIRAL FLUTE TAPS MODIFIED BOTTOMING STYLE for Stainless Steels up to 28HRc

Hole type 2.5×D





USCTI



VA | HSSE-V3 | UNC UNF | USCTI 302A | H2~H7 | 60° | 2P~3P | Bright | Steam Oxide | TiN | Hardslick | R45

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.			
	UNC	UNF			Bright	Steam Oxide	TiN	Hardslick
#2	56	—	H2	2	B1082	B0082	B2082	D2082
#3	48	—	H2	2	—	B0122	—	D2122
#4	40	—	H2	2	B1162	B0162	B2162	D2162
#4	40	—	H3	2	—	B0163	—	D2163
#4	40	—	H4	2	—	B0164	—	D2164
#4	40	—	H5	2	B1162	B0162	B2162	D2162
#4	40	—	H6	2	B1162	B0162	B2162	D2162
#4	—	48	H2	2	—	B0182	—	D2182
#5	40	—	H2	3	B1202	B0202	B2202	D2202
#6	32	—	H2	3	—	B0242	—	D2242
#6	32	—	H3	3	B1243	B0243	B2243	D2243
#6	32	—	H4	3	—	B0244	—	D2244
#6	32	—	H5	3	—	B0245	—	D2245
#6	32	—	H7	3	—	B0247	—	D2247
#6	—	40	H2	3	—	B0262	—	D2262
#6	—	40	H3	3	—	B0263	—	D2263
#8	32	—	H2	3	—	B0282	—	D2282
#8	32	—	H3	3	B1283	B0283	B2283	D2283
#8	32	—	H4	3	—	B0284	—	D2284
#8	32	—	H5	3	—	B0285	—	D2285
#8	32	—	H6	3	—	B0286	—	D2286
#8	32	—	H7	3	—	B0287	—	D2287
#8	—	36	H3	3	—	B0303	—	D2303
#10	24	—	H2	3	—	B0322	—	D2322
#10	24	—	H3	3	B1323	B0323	B2323	D2323
#10	24	—	H5	3	—	B0325	—	D2325
#10	24	—	H7	3	—	B0327	—	D2327
#10	—	32	H2	3	—	B0342	—	D2342
#10	—	32	H3	3	B1343	B0343	B2343	D2343

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 491.

▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	◎			◎			

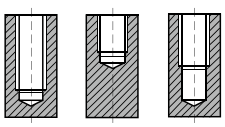
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	○	○		○		○	○			

SPIRAL FLUTE TAPS

B1/B0/B2/D2 SERIES

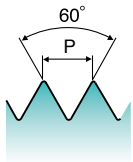
SPIRAL FLUTE TAPS MODIFIED BOTTOMING STYLE for Stainless Steels up to 28HRc

Hole type 2.5×D





USCTI



VA | HSSE-V3 | UNC UNF | USCTI 302A | H2~H7 | 60° | 2P~3P | Bright | Steam Oxide | TiN | Hardslick | R45

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.			
	UNC	UNF			Bright	Steam Oxide	TiN	Hardslick
#10	—	32	H4	3	—	B0344	—	D2344
#10	—	32	H5	3	—	B0345	—	D2345
#10	—	32	H6	3	—	B0346	—	D2346
#10	—	32	H7	3	—	B0347	—	D2347
#12	24	—	H3	3	—	B0363	—	D2363
#12	28	—	H3	3	—	B0383	—	D2383
1/4	20	—	H2	3	—	B0402	—	D2402
1/4	20	—	H3	3	B1403	B0403	B2403	D2403
1/4	20	—	H5	3	B1405	B0405	B2405	D2405
1/4	20	—	H7	3	—	B0407	—	D2407
1/4	—	28	H2	3	—	B0422	—	D2422
1/4	—	28	H3	3	B1423	B0423	B2423	D2423
1/4	—	28	H4	3	—	B0424	—	D2424
1/4	—	28	H5	3	—	B0425	—	D2425
1/4	—	28	H6	3	—	B0426	—	D2426
1/4	—	28	H7	3	—	B0427	—	D2427
5/16	18	—	H3	3	B1443	B0443	B2443	D2443
5/16	18	—	H5	3	B1445	B0445	B2445	D2445
5/16	18	—	H7	3	—	B0447	—	D2447
5/16	—	24	H3	3	B1463	B0463	B2463	D2463
5/16	—	24	H4	3	—	B0464	—	D2464
5/16	—	24	H5	3	—	B0465	—	D2465
5/16	—	24	H7	3	—	B0467	—	D2467
3/8	16	—	H3	3	B1483	B0483	B2483	D2483
3/8	16	—	H5	3	B1485	B0485	B2485	D2485
3/8	16	—	H7	3	—	B0487	—	D2487
3/8	—	24	H3	3	B1503	B0503	B2503	D2503
3/8	—	24	H4	3	—	B0504	—	D2504
3/8	—	24	H5	3	—	B0505	—	D2505

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 491.

▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	◎			◎			

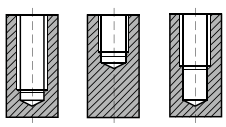
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	○	○		○		○	○			

SPIRAL FLUTE TAPS

B1/B0/B2/D2 SERIES

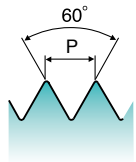
SPIRAL FLUTE TAPS MODIFIED BOTTOMING STYLE for Stainless Steels up to 28HRc

Hole type 2.5×D





USCTI



VA | HSSE-V3 | UNC UNF | USCTI 302A | H2~H7 | 60° | 2P~3P | Bright | Steam Oxide | TiN | Hardslick | R45

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.			
	UNC	UNF			Bright	Steam Oxide	TiN	Hardslick
7/16	14	—	H3	3	B1523	B0523	B2523	D2523
7/16	14	—	H5	3	B1525	B0525	B2525	D2525
7/16	14	—	H7	3	—	B0527	—	D2527
7/16	—	20	H3	3	B1543	B0543	B2543	D2543
7/16	—	20	H5	3	B1545	B0545	B2545	D2545
7/16	—	20	H7	3	—	B0547	—	D2547
1/2	13	—	H3	3	B1563	B0563	B2563	D2563
1/2	13	—	H5	3	B1565	B0565	B2565	D2565
1/2	13	—	H7	3	—	B0567	—	D2567
1/2	—	20	H3	3	B1583	B0583	B2583	D2583
1/2	—	20	H5	3	—	B0585	—	D2585
1/2	—	20	H6	3	—	B0586	—	D2586
1/2	—	20	H7	3	—	B0587	—	D2587
9/16	12	—	H3	3	B1603	B0603	B2603	D2603
9/16	—	18	H3	3	B1623	B0623	B2623	D2623
5/8	11	—	H3	4	B1643	B0643	B2643	D2643
5/8	11	—	H5	4	B1645	B0645	B2645	D2645
5/8	—	18	H3	4	B1663	B0663	B2663	D2663
5/8	—	18	H5	4	B1665	B0665	B2665	D2665
3/4	10	—	H3	4	B1703	B0703	B2703	D2703
3/4	10	—	H6	4	—	B0706	—	D2706
3/4	—	16	H3	4	B1723	B0723	B2723	D2723
3/4	—	16	H5	4	B1725	B0725	B2725	D2725
7/8	9	—	H4	4	B1744	B0744	B2744	D2744
7/8	—	14	H4	4	B1764	B0764	B2764	D2764
1	8	—	H4	4	B1784	B0784	B2784	D2784
1	—	12	H4	4	B1804	B0804	B2804	D2804

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 491.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	◎			◎			

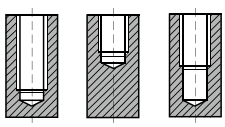
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	○	○		○		○	○			

SPIRAL FLUTE TAPS

BS/BT SERIES

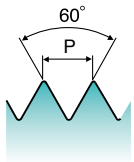
METRIC SPIRAL FLUTE TAPS MODIFIED BOTTOMING STYLE for Stainless Steels up to 28HRc

Hole type 2.5×D





USCTI



VA | HSSE-V3 | M MF | USCTI 302A | D3~D7 | 60° | 2P~3P | Steam Oxide | Hardslick | R45

SIZE	Pitch	Limit	No. of Flute	EDP No.	
				Steam Oxide	Hardslick
M3	0.5	D3	3	**BS203**	**BT203**
M3.5	0.6	D4	3	**BS224**	**BT224**
M4	0.7	D4	3	**BS244**	**BT244**
M5	0.8	D4	3	**BS284**	**BT284**
M6	1.0	D5	3	**BS315**	**BT315**
M7	1.0	D5	3	**BS345**	**BT345**
M8	1.25	D5	3	**BS365**	**BT365**
M8	1.0	D5	3	**BS375**	**BT375**
M10	1.5	D6	3	**BS426**	**BT426**
M10	1.25	D5	3	**BS435**	**BT435**
M12	1.75	D6	3	**BS506**	**BT506**
M12	1.25	D5	3	**BS525**	**BT525**
M14	2.0	D7	3	**BS547**	**BT547**
M14	1.5	D6	3	**BS556**	**BT556**
M16	2.0	D7	3	**BS607**	**BT607**
M16	1.5	D6	3	**BS616**	**BT616**
M18	2.5	D7	4	**BS657**	**BT657**
M18	1.5	D6	4	**BS676**	**BT676**

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 491.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	◎			◎			

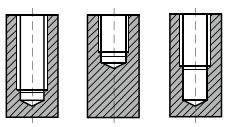
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	○	○		○		○	○			

SPIRAL FLUTE TAPS

E6/E8/E9 SERIES

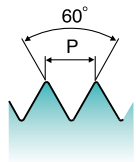
METRIC SPIRAL FLUTE TAPS MODIFIED BOTTOMING STYLE for Stainless Steels up to 28HRc

Hole type 2.5×D





DIN-ANSI Shank



VA | HSSE-V3 | M MF | D3~D7 | 60° | 2P~3P | Steam Oxide | TiCN | Hardslick | R45

SIZE	Pitch	Limit	No. of Flute	EDP No.		
				Steam Oxide	TiCN	Hardslick
M3	0.5	D3	3	**E6203**	**E8203**	**E9203**
M3.5	0.6	D4	3	**E6224**	**E8224**	**E9224**
M4	0.7	D4	3	**E6244**	**E8244**	**E9244**
M5	0.8	D4	3	**E6284**	**E8284**	**E9284**
M6	1.0	D5	3	**E6315**	**E8315**	**E9315**
M7	1.0	D5	3	**E6345**	**E8345**	**E9345**
M8	1.25	D5	3	**E6365**	**E8365**	**E9365**
M8	1.0	D5	3	**E6375**	**E8375**	**E9375**
M10	1.5	D6	3	**E6426**	**E8426**	**E9426**
M10	1.25	D5	3	**E6435**	**E8435**	**E9435**
M12	1.75	D6	3	**E6506**	**E8506**	**E9506**
M12	1.25	D5	3	**E6525**	**E8525**	**E9525**
M14	2.0	D7	3	**E6547**	**E8547**	**E9547**
M14	1.5	D6	3	**E6556**	**E8556**	**E9556**
M16	2.0	D7	3	**E6607**	**E8607**	**E9607**
M16	1.5	D6	4	**E6616**	**E8616**	**E9616**
M18	2.5	D7	4	**E6657**	**E8657**	**E9657**
M18	1.5	D6	4	**E6676**	**E8676**	**E9676**

▶For tapping depth on DIN / ANSI Shank Taps, refer to DIN Table on page 493 & 494.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	◎			◎			

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	○	○		○		○	○			

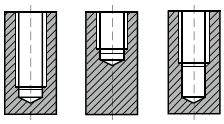
SPIRAL FLUTE TAPS

D3 / E0 SERIES

SPIRAL FLUTE TAPS MODIFIED BOTTOMING STYLE
Steels up to 38HRc

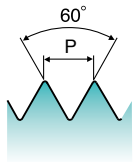
A variety of H Limit

Hole type 2.5×D





USCTI



VG | HSSE-V3 | UNC UNF | USCTI 302A | H2~H11 | 60° | 2P~3P | Steam Oxide | Hardslick | R45

SIZE	Thread Per Inch			Limit	No. of Flute	EDP No.	
	UNC	UNF	8 Pitch			Steam Oxide	Hardslick
#2	56	—	—	H2	2	**D3082**	**E0082**
#3	48	—	—	H2	2	**D3122**	**E0122**
#4	40	—	—	H2	3	**D3162**	**E0162**
#4	40	—	—	H3	3	**D3163**	**E0163**
#4	40	—	—	H4	3	**D3164**	**E0164**
#4	40	—	—	H5	3	**D3165**	**E0165**
#4	—	48	—	H2	3	**D3162**	**E0162**
#5	40	—	—	H2	3	**D3202**	**E0202**
#6	32	—	—	H2	3	**D3242**	**E0242**
#6	32	—	—	H3	3	**D3243**	**E0243**
#6	32	—	—	H5	3	**D3245**	**E0245**
#6	32	—	—	H7	3	**D3247**	**E0247**
#6	32	—	—	H11	3	**D324A**	**E024A**
#6	—	40	—	H2	3	**D3262**	**E0262**
#8	32	—	—	H2	3	**D3282**	**E0282**
#8	32	—	—	H3	3	**D3283**	**E0283**
#8	32	—	—	H5	3	**D3285**	**E0285**
#8	32	—	—	H7	3	**D3287**	**E0287**
#8	32	—	—	H11	3	**D328A**	**E028A**
#10	24	—	—	H3	3	**D3323**	**E0323**
#10	24	—	—	H5	3	**D3325**	**E0325**
#10	24	—	—	H11	3	**D332A**	**E032A**
#10	—	32	—	H2	3	**D3342**	**E0342**
#10	—	32	—	H3	3	**D3343**	**E0343**
#10	—	32	—	H5	3	**D3345**	**E0345**
#10	—	32	—	H7	3	**D3347**	**E0347**
#10	—	32	—	H11	3	**D334A**	**E034A**
#12	24	—	—	H3	3	**D3363**	**E0363**
#12	—	28	—	H3	3	**D3383**	**E0383**
1/4	20	—	—	H2	3	**D3402**	**E0402**
1/4	20	—	—	H3	3	**D3403**	**E0403**
1/4	20	—	—	H5	3	**D3405**	**E0405**
1/4	20	—	—	H7	3	**D3407**	**E0407**
1/4	20	—	—	H11	3	**D340A**	**E040A**

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 491.
▶Bright Finish Available: D4 Series
▶ NEXT PAGE

◎ : Excellent ○: Good

P				M		K	
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
	◎	◎		○	○		

K	N						S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
								○		

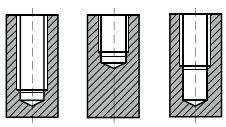
SPIRAL FLUTE TAPS

D3 / E0 SERIES

SPIRAL FLUTE TAPS MODIFIED BOTTOMING STYLE
Steels up to 38HRc

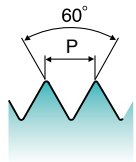
A variety of H Limit

Hole type 2.5×D





USCTI



VG | HSSE-V3 | UNC UNF | USCTI 302A | H2~H11 | 60° | 2P~3P | Steam Oxide | Hardslick | R45

SIZE	Thread Per Inch			Limit	No. of Flute	EDP No.	
	UNC	UNF	8 Pitch			Steam Oxide	Hardslick
1/4	—	28	—	H2	3	D3422	E0422
1/4	—	28	—	H3	3	D3423	E0423
1/4	—	28	—	H4	3	D3424	E0424
1/4	—	28	—	H5	3	D3425	E0425
1/4	—	28	—	H7	3	D3427	E0427
1/4	—	28	—	H11	3	D342A	E042A
5/16	18	—	—	H2	3	D3442	E0442
5/16	18	—	—	H3	3	D3443	E0443
5/16	18	—	—	H5	3	D3445	E0445
5/16	18	—	—	H7	3	D3447	E0447
5/16	18	—	—	H11	3	D344A	E044A
5/16	—	24	—	H2	3	D3462	E0462
5/16	—	24	—	H3	3	D3463	E0463
5/16	—	24	—	H4	3	D3464	E0464
5/16	—	24	—	H5	3	D3465	E0465
5/16	—	24	—	H6	3	D3466	E0466
5/16	—	24	—	H7	3	D3467	E0467
5/16	—	24	—	H11	3	D346A	E046A
3/8	16	—	—	H2	3	D3482	E0482
3/8	16	—	—	H3	3	D3483	E0483
3/8	16	—	—	H5	3	D3485	E0485
3/8	16	—	—	H7	3	D3487	E0487
3/8	16	—	—	H11	3	D348A	E048A
3/8	—	24	—	H2	3	D3502	E0502
3/8	—	24	—	H3	3	D3503	E0503
3/8	—	24	—	H4	3	D3504	E0504
3/8	—	24	—	H5	3	D3505	E0505
3/8	—	24	—	H7	3	D3507	E0507
3/8	—	24	—	H11	3	D350A	E050A
7/16	14	—	—	H3	3	D3523	E0523
7/16	14	—	—	H5	3	D3525	E0525
7/16	14	—	—	H7	3	D3527	E0527
7/16	14	—	—	H11	3	D352A	E052A
7/16	—	20	—	H3	3	D3543	E0543
7/16	—	20	—	H5	3	D3545	E0545

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 491.
▶ Bright Finish Available: D4 Series

▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
	◎	◎		○	○		

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
								○		

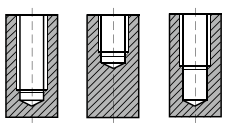
SPIRAL FLUTE TAPS

D3 / E0 SERIES

SPIRAL FLUTE TAPS MODIFIED BOTTOMING STYLE
Steels up to 38HRc

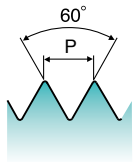
A variety of H Limit

Hole type 2.5×D





USCTI



VG | HSSE-V3 | UNC UNF | USCTI 302A | H2~H11 | 60° | 2P~3P | Steam Oxide | Hardslick | R45

SIZE	Thread Per Inch			Limit	No. of Flute	EDP No.	
	UNC	UNF	8 Pitch			Steam Oxide	Hardslick
7/16	—	20	—	H7	3	D3547	E0547
7/16	—	20	—	H11	3	D354A	E054A
1/2	13	—	—	H3	3	D3563	E0563
1/2	13	—	—	H5	3	D3565	E0565
1/2	13	—	—	H7	3	D3567	E0567
1/2	13	—	—	H11	3	D356A	E056A
1/2	—	20	—	H3	3	D3583	E0583
1/2	—	20	—	H5	3	D3585	E0585
1/2	—	20	—	H7	3	D3587	E0587
1/2	—	20	—	H11	3	D358A	E058A
9/16	12	—	—	H3	4	D3603	E0603
9/16	—	18	—	H3	4	D3623	E0623
5/8	11	—	—	H3	4	D3643	E0643
5/8	11	—	—	H5	4	D3645	E0645
5/8	—	18	—	H3	4	D3663	E0663
3/4	10	—	—	H3	4	D3703	E0703
3/4	10	—	—	H5	4	D3705	E0705
3/4	—	16	—	H3	4	D3723	E0723
3/4	—	16	—	H5	4	D3725	E0725
7/8	9	—	—	H5	4	D3745	E0745
7/8	—	14	—	H4	4	D3764	E0764
1	8	—	—	H5	4	D3785	E0785
1	—	12	—	H4	4	D3804	E0804
1-1/8	7	—	—	H6	4	D3826	E0826
1-1/8	—	12	—	H5	4	D3845	E0845
1-1/8	—	—	8	H6	4	D3836	E0836
1-1/4	7	—	—	H6	4	D3866	E0866
1-1/4	—	12	—	H5	4	D3885	E0885
1-1/4	—	—	8	H6	4	D3876	E0876
1-3/8	6	—	—	H6	4	D3906	E0906
1-3/8	—	12	—	H5	4	D3925	E0925
1-3/8	—	—	8	H6	4	D3916	E0916
1-1/2	6	—	—	H6	4	D3946	E0946
1-1/2	—	12	—	H5	4	D3965	E0965
1-1/2	—	—	8	H6	4	D3956	E0956

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 491.
▶ Bright Finish Available: D4 Series

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
	◎	◎		○	○		

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
								○		

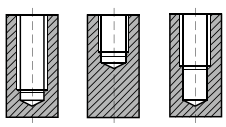
SPIRAL FLUTE TAPS

BU / BV SERIES

SPIRAL FLUTE TAPS MODIFIED BOTTOMING STYLE
Steels up to 38HRc

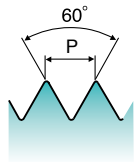
A variety of D Limit

Hole type 2.5×D





USCTI



VG | HSSE-V3 | M MF | USCTI 302A | D3~D11 | 60° | 2P~3P | Steam Oxide | Hardslick | R45

SIZE	Pitch	Limit	No. of Flute	EDP No.	
				Steam Oxide	Hardslick
M3	0.50	D3	3	**BU203**	**BV203**
M3	0.50	D11	3	**BU20A**	**BV20A**
M3.5	0.60	D4	3	**BU224**	**BV224**
M3.5	0.60	D11	3	**BU22A**	**BV22A**
M4	0.70	D4	3	**BU244**	**BV244**
M4	0.70	D11	3	**BU24A**	**BV24A**
M5	0.80	D4	3	**BU284**	**BV284**
M5	0.80	D11	3	**BU28A**	**BV28A**
M6	1.00	D5	3	**BU315**	**BV315**
M6	1.00	D11	3	**BU31A**	**BV31A**
M7	1.00	D5	3	**BU345**	**BV345**
M7	1.00	D11	3	**BU34A**	**BV34A**
M8	1.00	D5	3	**BU375**	**BV375**
M8	1.00	D11	3	**BU37A**	**BV37A**
M8	1.25	D5	3	**BU365**	**BV365**
M8	1.25	D11	3	**BU36A**	**BV36A**
M10	1.00	D5	3	**BU445**	**BV445**
M10	1.00	D11	3	**BU44A**	**BV44A**
M10	1.25	D5	3	**BU435**	**BV435**
M10	1.25	D11	3	**BU43A**	**BV43A**
M10	1.50	D6	3	**BU426**	**BV426**
M10	1.50	D11	3	**BU42A**	**BV42A**
M12	1.25	D5	3	**BU525**	**BV525**
M12	1.25	D11	3	**BU52A**	**BV52A**
M12	1.50	D6	3	**BU516**	**BV516**
M12	1.50	D11	3	**BU51A**	**BV51A**
M12	1.75	D6	3	**BU506**	**BV506**

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 492.

▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
	◎	◎		○	○		

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
								○		

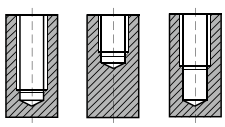
SPIRAL FLUTE TAPS

BU / BV SERIES

SPIRAL FLUTE TAPS MODIFIED BOTTOMING STYLE
Steels up to 38HRc

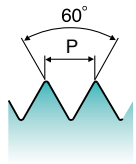
A variety of D Limit

Hole type 2.5×D





USCTI



VG | HSSE-V3 | M MF | USCTI 302A | D3~D11 | 60° | 2P~3P | Steam Oxide | Hardslick | R45

SIZE	Pitch	Limit	No. of Flute	EDP No.	
				Steam Oxide	Hardslick
M12	1.75	D11	3	**BU50A**	**BV50A**
M14	1.50	D6	3	**BU556**	**BV556**
M14	2.00	D7	3	**BU547**	**BV547**
M16	1.50	D6	3	**BU616**	**BV616**
M16	2.00	D7	3	**BU607**	**BV607**
M18	1.50	D6	4	**BU676**	**BV676**
M18	2.50	D7	4	**BU657**	**BV657**
M20	1.50	D6	4	**BU726**	**BV726**
M20	2.50	D8	4	**BU708**	**BV708**
M22	1.50	D6	4	**BU766**	**BV766**
M22	2.50	D8	4	**BU748**	**BV748**
M24	1.50	D6	4	**BU806**	**BV806**
M24	3.00	D8	4	**BU788**	**BV788**
M27	1.50	D6	4	**BU886**	**BV886**
M27	3.00	D8	4	**BU868**	**BV868**
M30	1.50	D6	4	**BU976**	**BV976**
M30	3.50	D9	4	**BU949**	**BV949**

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 492.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
	◎	◎		○	○		

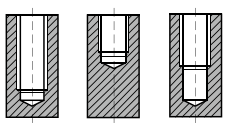
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
								○		

SPIRAL FLUTE TAPS

E2 / E4 / E5 SERIES

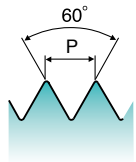
SPIRAL FLUTE TAPS MODIFIED BOTTOMING STYLE
Steels up to 38HRc

Hole type 2.5×D





DIN-ANSI Shank



VG | HSSE-V3 | M MF | D3~D7 | 60° | 2P~3P | Steam Oxide | TiCN | Hardslick | R45

SIZE	Pitch	Limit	No. of Flute	EDP No.		
				Steam Oxide	TiCN	Hardslick
M3	0.5	D3	3	**E2203**	**E4203**	**E5203**
M3.5	0.6	D4	3	**E2224**	**E4224**	**E5224**
M4	0.7	D4	3	**E2244**	**E4244**	**E5244**
M5	0.8	D4	3	**E2284**	**E4284**	**E5284**
M6	1.0	D5	3	**E2315**	**E4315**	**E5315**
M7	1.0	D5	3	**E2345**	**E4345**	**E5345**
M8	1.25	D5	3	**E2365**	**E4365**	**E5365**
M8	1.0	D5	3	**E2375**	**E4375**	**E5375**
M10	1.5	D6	3	**E2426**	**E4426**	**E5426**
M10	1.25	D5	3	**E2435**	**E4435**	**E5435**
M12	1.75	D6	3	**E2506**	**E4506**	**E5506**
M12	1.25	D5	3	**E2525**	**E4525**	**E5525**
M14	2.0	D7	3	**E2547**	**E4547**	**E5547**
M14	1.5	D6	3	**E2556**	**E4556**	**E5556**
M16	2.0	D7	3	**E2607**	**E4607**	**E5607**
M16	1.5	D6	3	**E2616**	**E4616**	**E5616**
M18	2.5	D7	4	**E2657**	**E4657**	**E5657**
M18	1.5	D6	4	**E2676**	**E4676**	**E5676**

▶For tapping depth on DIN / ANSI Shank Taps, refer to DIN Table on page 493 & 494.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
	◎	◎		○	○		

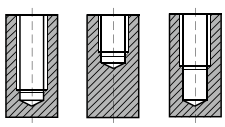
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
								○		

SPIRAL FLUTE TAPS

C0 / D8 SERIES

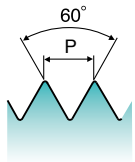
SPIRAL FLUTE TAPS MODIFIED BOTTOMING STYLE for Aluminum Alloys or Die Cast Aluminum

Hole type 2.5×D





USCTI



Al | HSSE-V3 | UNC UNF | USCTI 302A | H2~H5 | 60° | 2P~3P | Bright | Hardslick | R50

◇Call for Availability

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.	
	UNC	UNF			Bright	Hardslick
#4	40	—	H2	2	C0162	D8162
#4	40	—	H3	2	◇ C0163	D8163
#6	32	—	H2	2	C0242	D8242
#6	32	—	H3	2	C0243	D8243
#8	32	—	H2	2	◇ C0282	D8282
#8	32	—	H3	2	C0283	D8283
#10	24	—	H3	2	C0323	D8323
#10	32	—	H2	2	◇ C0342	D8342
#10	—	32	H3	2	C0343	D8343
#10	—	32	H5	2	◇ C0345	D8345
1/4	20	—	H3	2	C0403	D8403
1/4	20	—	H5	2	C0405	D8405
1/4	—	28	H3	2	C0423	D8423
5/16	18	—	H3	2	C0443	D8443
5/16	18	—	H5	2	C0445	D8445
5/16	—	24	H3	2	C0463	D8463
5/16	—	24	H5	2	C0465	D8465
3/8	16	—	H3	2	C0483	D8483
3/8	16	—	H5	2	C0485	D8485
3/8	—	24	H3	2	C0503	D8503
3/8	—	24	H5	2	C0505	D8505
1/2	13	—	H3	2	◇ C0563	D8563
1/2	13	—	H5	2	◇ C0565	D8565
1/2	—	20	H3	2	◇ C0583	D8583
5/8	11	—	H3	3	◇ C0643	D8643
5/8	—	18	H3	3	◇ C0663	D8663
3/4	10	—	H3	3	◇ C0703	D8703
3/4	—	16	H3	3	◇ C0723	D8723
7/8	9	—	H4	3	◇ C0744	D8744
7/8	—	14	H4	3	◇ C0764	D8764
1	8	—	H4	3	◇ C0784	D8784

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 491.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron

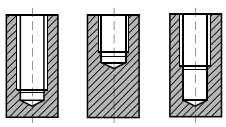
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
				◎	◎					

SPIRAL FLUTE TAPS

BW / BX SERIES

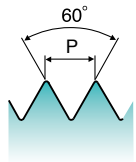
SPIRAL FLUTE TAPS MODIFIED BOTTOMING STYLE for Aluminum Alloys or Die Cast Aluminum

Hole type 2.5×D





USCTI



AI | HSSE-V3 | M MF | USCTI 302A | D3~D6 | 60° | 2P~3P | Bright | Hardslick | R50

◇ Call for Availability

SIZE	Pitch	Thread Limit	No. of Flute	EDP No.	
				Bright	Hardslick
M3	0.5	D3	2	**BW203**	**BX203**
M4	0.7	D4	2	**BW244**	**BX244**
M5	0.8	D5	2	**BW285**	**BX285**
M6	1.0	D5	2	**BW315**	**BX315**
M8	1.25	D5	2	**BW365**	**BX365**
M10	1.50	D6	2	**BW426**	**BX426**
M10	1.25	D5	2	**BW435**	**BX435**
M12	1.75	D6	2	**BW506**	◇ **BX506**
M12	1.50	D5	2	**BW515**	◇ **BX515**
M12	1.25	D5	2	**BW525**	◇ **BX525**

▶ DIN Length available: Bright Finish F1 Series & Hardslick coated F3 Series
▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 492.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron

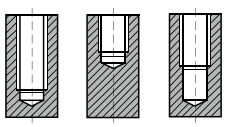
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
				◎	◎					

SPIRAL FLUTE TAPS

C2/C3/C4/D9 SERIES

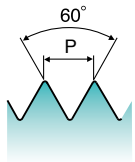
STANDARD TAPS : SPIRAL FLUTE TAPS BOTTOMING STYLE for General Purpose

Hole type 2.5×D





USCTI



GS | HSSE-V3 | UNC UNF | USCTI 302 | H2~H6 | 60° | 1.5P~2P | Steam Oxide | Bright | TiN | Hardslick | R45

SIZE	Thread Per Inch		Limit	No of Flute	EDP No.			
	UNC	UNF			Steam Oxide	Bright	TiN	Hardslick
#4	40	—	H2	2	C2162	C3162	C4162	D9162
#5	40	—	H2	3	C2202	C3202	C4202	D9202
#6	32	—	H3	3	C2243	C3243	C4243	D9243
#8	32	—	H3	3	C2283	C3283	C4283	D9283
#10	24	—	H3	3	C2323	C3323	C4323	D9323
#10	—	32	H3	3	C2343	C3343	C4343	D9343
1/4	20	—	H3	3	C2403	C3403	C4403	D9403
1/4	20	—	H5	3	C2405	C3405	C4405	D9405
1/4	—	28	H3	3	C2423	C3423	C4423	D9423
5/16	18	—	H3	3	C2443	C3443	C4443	D9443
5/16	18	—	H5	3	C2445	C3445	C4445	D9445
5/16	—	24	H3	3	C2463	C3463	C4463	D9463
3/8	16	—	H3	3	C2483	C3483	C4483	D9483
3/8	16	—	H5	3	C2485	C3485	C4485	D9485
3/8	—	24	H3	3	C2503	C3503	C4503	D9503
7/16	14	—	H3	3	C2523	C3523	C4523	D9523
7/16	14	—	H5	3	C2525	C3525	C4525	D9525
7/16	—	20	H3	3	C2543	C3543	C4543	D9543
7/16	—	20	H5	3	C2545	C3545	C4545	D9545
1/2	13	—	H3	3	C2563	C3563	C4563	D9563
1/2	13	—	H5	3	C2565	C3565	C4565	D9565
1/2	—	20	H3	3	C2583	C3583	C4583	D9583
1/2	—	20	H5	3	C2585	C3585	C4585	D9585
9/16	12	—	H5	3	C2605	C3605	C4605	D9605
9/16	—	18	H5	3	C2625	C3625	C4625	D9625
5/8	11	—	H3	4	C2643	C3643	C4643	D9643
5/8	11	—	H5	4	C2645	C3645	C4645	D9645
5/8	—	18	H3	4	C2663	C3663	C4663	D9663
3/4	10	—	H3	4	C2703	C3703	C4703	D9703
3/4	10	—	H5	4	C2705	C3705	C4705	D9705
3/4	—	16	H3	4	C2723	C3723	C4723	D9723
7/8	9	—	H4	4	C2744	C3744	C4744	D9744
7/8	—	14	H6	4	C2766	C3766	C4766	D9766
1	8	—	H4	4	C2784	C3784	C4784	D9784

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 495.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	○		○	○		

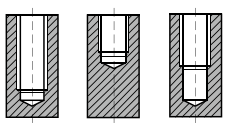
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
○					○					

SPIRAL FLUTE TAPS

F4/F8/F6 SERIES

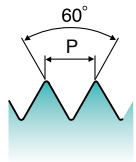
SPIRAL FLUTE TAPS BOTTOMING STYLE for General Purpose

Hole type 2.5×D





USCTI



GS | HSS-V | UNC UNF | USCTI 302A | H2~H6 | 60° | 1.5P~2P | Steam Oxide | TiN | Hardslick | R50

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.		
	UNC	UNF			Steam Oxide	TiN	Hardslick
#2	56	—	H2	2	F4082	F8082	F6082
#4	40	—	H2	2	F4162	F8162	F6162
#5	40	—	H2	2	F4202	F8202	F6202
#6	32	—	H3	3	F4243	F8243	F6243
#8	32	—	H3	3	F4283	F8283	F6283
#10	24	—	H3	3	F4323	F8323	F6323
#10	—	32	H3	3	F4343	F8343	F6343
1/4	20	—	H3	3	F4403	F8403	F6403
1/4	20	—	H5	3	F4405	F8405	F6405
1/4	—	28	H3	3	F4423	F8423	F6423
5/16	18	—	H3	3	F4443	F8443	F6443
5/16	18	—	H5	3	F4445	F8445	F6445
5/16	—	24	H3	3	F4463	F8463	F6463
3/8	16	—	H3	3	F4483	F8483	F6483
3/8	16	—	H5	3	F4485	F8485	F6485
3/8	—	24	H3	3	F4503	F8503	F6503
7/16	14	—	H3	3	F4523	F8523	F6523
7/16	14	—	H5	3	F4525	F8525	F6525
7/16	—	20	H3	3	F4543	F8543	F6543
7/16	—	20	H5	3	F4545	F8545	F6545
1/2	13	—	H3	3	F4563	F8563	F6563
1/2	13	—	H5	3	F4565	F8565	F6565
1/2	—	20	H3	3	F4583	F8583	F6583
1/2	—	20	H5	3	F4585	F8585	F6585
9/16	12	—	H3	3	F4603	F8603	F6603
9/16	12	—	H5	3	F4605	F8605	F6605
9/16	—	18	H3	3	F4623	F8623	F6623

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 491.

▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	○		○	○		

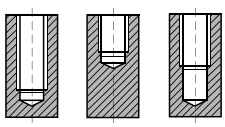
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
○					○					

SPIRAL FLUTE TAPS

F4/F8/F6 SERIES

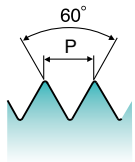
SPIRAL FLUTE TAPS BOTTOMING STYLE for General Purpose

Hole type 2.5×D





USCTI



GS | HSS-V | UNC UNF | USCTI 302A | H2~H6 | 60° | 1.5P~2P | Steam Oxide | TiN | Hardslick | R50

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.		
	UNC	UNF			Steam Oxide	TiN	Hardslick
9/16	—	18	H5	3	**F4625**	**F8625**	**F6625**
5/8	11	—	H3	4	**F4643**	**F8643**	**F6643**
5/8	11	—	H5	4	**F4645**	**F8645**	**F6645**
5/8	—	18	H3	4	**F4663**	**F8663**	**F6663**
5/8	—	18	H5	4	**F4665**	**F8665**	**F6665**
3/4	10	—	H3	4	**F4703**	**F8703**	**F6703**
3/4	10	—	H5	4	**F4705**	**F8705**	**F6705**
3/4	—	16	H3	4	**F4723**	**F8723**	**F6723**
3/4	—	16	H5	4	**F4725**	**F8725**	**F6725**
7/8	9	—	H4	4	**F4744**	**F8744**	**F6744**
7/8	9	—	H6	4	**F4746**	**F8746**	**F6746**
7/8	—	14	H4	4	**F4764**	**F8764**	**F6764**
7/8	—	14	H6	4	**F4766**	**F8766**	**F6766**
1	8	—	H4	4	**F4784**	**F8784**	**F6784**
1	8	—	H6	4	**F4786**	**F8786**	**F6786**
1	—	12	H6	4	**F4806**	**F8806**	**F6806**

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 491.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	○		○	○		

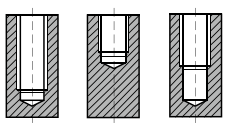
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
○					○					

SPIRAL FLUTE TAPS

G4 / G5 / G6 SERIES

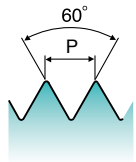
SPIRAL FLUTE TAPS BOTTOMING STYLE for General Purpose

Hole type 2.5×D





USCTI



GS | HSS-V | M MF | USCTI 302A | D3~D6 | 60° | 1.5P~2P | Bright | TiCN | Hardslick | R50

SIZE	Pitch	Limit	No. of Flute	EDP No.		
				Bright	TiCN	Hardslick
M3	0.5	D3	2	G4203	G5203	G6203
M3.5	0.6	D4	2	G4224	G5224	G6224
M4	0.7	D4	3	G4244	G5244	G6244
M5	0.8	D4	3	G4284	G5284	G6284
M6	1.0	D5	3	G4315	G5315	G6315
M7	1.0	D5	3	G4345	G5345	G6345
M8	1.25	D5	3	G4365	G5365	G6365
M8	1.0	D5	3	G4375	G5375	G6375
M10	1.5	D6	3	G4426	G5426	G6426
M10	1.25	D5	3	G4435	G5435	G6435
M12	1.75	D6	3	G4506	G5506	G6506
M12	1.25	D5	3	G4525	G5525	G6525

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 492.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	○		○	○		

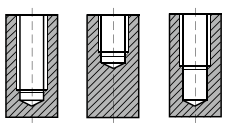
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
○					○					

SPIRAL FLUTE TAPS

G0 / G1 / G2 SERIES

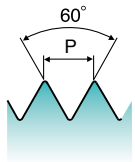
SPIRAL FLUTE TAPS BOTTOMING STYLE for General Purpose

Hole type 2.5×D





DIN-ANSI Shank



GS | HSS-V | UNC UNF | H2~H6 | 60° | 2P~3P | Bright | TiN | Hardslick | R45

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.		
	UNC	UNF			Bright	TiN	Hardslick
#2	56	—	H2	2	G0082	G1082	G2082
#4	40	—	H2	2	G0162	G1162	G2162
#5	40	—	H2	3	G0202	G1202	G2202
#6	32	—	H3	3	G0243	G1243	G2243
#8	32	—	H3	3	G0283	G1283	G2283
#10	24	—	H3	3	G0323	G1323	G2323
#10	—	32	H3	3	G0343	G1343	G2343
1/4	20	—	H3	3	G0403	G1403	G2403
1/4	20	—	H5	3	G0405	G1405	G2405
1/4	—	28	H3	3	G0423	G1423	G2423
5/16	18	—	H3	3	G0443	G1443	G2443
5/16	18	—	H5	3	G0445	G1445	G2445
5/16	—	24	H3	3	G0463	G1463	G2463
3/8	16	—	H3	3	G0483	G1483	G2483
3/8	16	—	H5	3	G0485	G1485	G2485
3/8	—	24	H3	3	G0503	G1503	G2503
7/16	14	—	H3	3	G0523	G1523	G2523
7/16	14	—	H5	3	G0525	G1525	G2525
7/16	—	20	H3	3	G0543	G1543	G2543
7/16	—	20	H5	3	G0545	G1545	G2545
1/2	13	—	H3	3	G0563	G1563	G2563
1/2	13	—	H5	3	G0565	G1565	G2565
1/2	—	20	H3	3	G0583	G1583	G2583
1/2	—	20	H5	3	G0585	G1585	G2585
9/16	12	—	H3	3	G0603	G1603	G2603
9/16	12	—	H5	3	G0605	G1605	G2605
9/16	—	18	H3	3	G0623	G1623	G2623

▶For tapping depth on DIN / ANSI Shank T aps, refer to DIN Table on page 493 & 494.

▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	○		○	○		

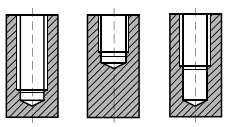
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
○					○					

SPIRAL FLUTE TAPS

G0 / G1 / G2 SERIES

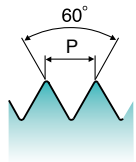
SPIRAL FLUTE TAPS BOTTOMING STYLE for General Purpose

Hole type 2.5×D





DIN-ANSI Shank



GS | HSS-V | UNC UNF | H2~H6 | 60° | 2P~3P | Bright | TiN | Hardslick | R45

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.		
	UNC	UNF			Bright	TiN	Hardslick
9/16	—	18	H5	3	G0625	G1625	G2625
5/8	11	—	H3	4	G0643	G1643	G2643
5/8	11	—	H5	4	G0645	G1645	G2645
5/8	—	18	H3	4	G0663	G1663	G2663
5/8	—	18	H5	4	G0665	G1665	G2665
3/4	10	—	H3	4	G0703	G1703	G2703
3/4	10	—	H5	4	G0705	G1705	G2705
3/4	—	16	H3	4	G0723	G1723	G2723
3/4	—	16	H5	4	G0725	G1725	G2725
7/8	9	—	H6	4	G0746	G1746	G2746
7/8	—	14	H4	4	G0764	G1764	G2764
7/8	—	14	H6	4	G0766	G1766	G2766
1	8	—	H6	4	G0786	G1786	G2786
1	—	12	H4	4	G0804	G1804	G2804
1	—	12	H6	4	G0806	G1806	G2806

▶ For tapping depth on DIN / ANSI Shank Taps, refer to DIN Table on page 493 & 494.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	○		○	○		

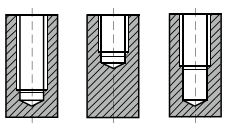
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
○					○					

SPIRAL FLUTE TAPS

T7A96 / T6A96 / T8A96 SERIES
T7295 / T6295 / T8295 SERIES

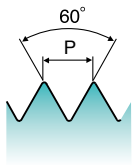
STANDARD TAPS : SPIRAL FLUTE TAPS for General Purpose

Hole type 2.5×D





USCTI



GS | HSS | UNC UNF | USCTI 302 | H2~H5 | 60° | 4P~5P Plug | 1.5P~2P Bottoming | Bright | Steam Oxide | TiN | R50

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.					
					Plug			Bottoming		
	UNC	UNF			Bright	Steam Oxide	TiN	Bright	Steam Oxide	TiN
#3	48	—	H2	2	T7A96122	T6A96122	T8A96122	T7295122	T6295122	T8295122
#4	40	—	H2	2	T7A96162	T6A96162	T8A96162	T7295162	T6295162	T8295162
#5	40	—	H2	2	T7A96202	T6A96202	T8A96202	T7295202	T6295202	T8295202
#6	32	—	H2	2	T7A96242	T6A96242	T8A96242	T7295242	T6295242	T8295242
#6	32	—	H3	2	T7A96243	T6A96243	T8A96243	T7295243	T6295243	T8295243
#8	32	—	H2	3	T7A96282	T6A96282	T8A96282	T7295282	T6295282	T8295282
#8	32	—	H3	3	T7A96283	T6A96283	T8A96283	T7295283	T6295283	T8295283
#10	24	—	H3	3	T7A96323	T6A96323	T8A96323	T7295323	T6295323	T8295323
#10	—	32	H2	3	T7A96342	T6A96342	T8A96342	T7295342	T6295342	T8295342
#10	—	32	H3	3	T7A96343	T6A96343	T8A96343	T7295343	T6295343	T8295343
#12	24	—	H3	3	T7A96363	T6A96363	T8A96363	T7295363	T6295363	T8295363
1/4	20	—	H3	3	T7A96403	T6A96403	T8A96403	T7295403	T6295403	T8295403
1/4	20	—	H5	3	T7A96405	T6A96405	T8A96405	T7295405	T6295405	T8295405
1/4	—	28	H3	3	T7A96423	T6A96423	T8A96423	T7295423	T6295423	T8295423
5/16	18	—	H3	3	T7A96443	T6A96443	T8A96443	T7295443	T6295443	T8295443
5/16	18	—	H5	3	T7A96445	T6A96445	T8A96445	T7295445	T6295445	T8295445
5/16	—	24	H3	3	T7A96463	T6A96463	T8A96463	T7295463	T6295463	T8295463
3/8	16	—	H3	3	T7A96483	T6A96483	T8A96483	T7295483	T6295483	T8295483
3/8	16	—	H5	3	T7A96485	T6A96485	T8A96485	T7295485	T6295485	T8295485
3/8	—	24	H3	3	T7A96503	T6A96503	T8A96503	T7295503	T6295503	T8295503
7/16	14	—	H3	3	T7A96523	T6A96523	T8A96523	T7295523	T6295523	T8295523
7/16	14	—	H5	3	—	—	—	T7295525	T6295525	T8295525
7/16	—	20	H3	3	T7A96543	T6A96543	T8A96543	T7295543	T6295543	T8295543
1/2	13	—	H3	3	T7A96563	T6A96563	T8A96563	T7295563	T6295563	T8295563
1/2	13	—	H5	3	T7A96565	T6A96565	T8A96565	T7295565	T6295565	T8295565
1/2	—	20	H3	3	T7A96583	T6A96583	T8A96583	T7295583	T6295583	T8295583
5/8	11	—	H3	4	T7A96643	T6A96643	T8A96643	T7295643	T6295643	T8295643
5/8	—	18	H3	4	T7A96663	T6A96663	T8A96663	T7295663	T6295663	T8295663
3/4	10	—	H3	4	T7A96703	T6A96703	T8A96703	T7295703	T6295703	T8295703
3/4	—	16	H3	4	T7A96723	T6A96723	T8A96723	T7295723	T6295723	T8295723

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 495.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	○		○	○		

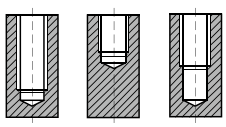
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
○					○					

SPIRAL FLUTE TAPS

T7A86 / T6A86 / T8A86 SERIES
T7A85 / T6A85 / T8A85 SERIES

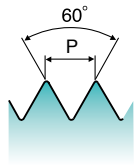
STANDARD TAPS : METRIC SPIRAL FLUTE TAPS for General Purpose

Hole type 2.5×D





USCTI



GS | **HSS** | **M MF** | **USCTI 302** | **D3~D6** | **60°** | **4P~5P** Plug | **1.5P~2P** Bottoming | **Bright** | **Steam Oxide** | **TiN** | **R50**

SIZE	Pitch	Limit	No. of Flute	EDP No.					
				Plug			Bottoming		
				Bright	Steam Oxide	TiN	Bright	Steam Oxide	TiN
M3	0.5	D3	2	T7A86203	T6A86203	T8A86203	T7A85203	T6A85203	T8A85203
M4	0.7	D4	3	T7A86244	T6A86244	T8A86244	T7A85244	T6A85244	T8A85244
M5	0.8	D4	3	T7A86284	T6A86284	T8A86284	T7A85284	T6A85284	T8A85284
M6	1.0	D5	3	T7A86315	T6A86315	T8A86315	T7A85315	T6A85315	T8A85315
M8	1.25	D5	3	T7A86365	T6A86365	T8A86365	T7A85365	T6A85365	T8A85365
M10	1.5	D6	3	T7A86426	T6A86426	T8A86426	T7A85426	T6A85426	T8A85426
M12	1.75	D6	3	T7A86506	T6A86506	T8A86506	T7A85506	T6A85506	T8A85506

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 495.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	○		○	○		

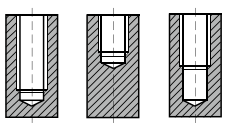
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
○					○					

SPIRAL FLUTE TAPS

T7D01/T8D01 SERIES
T7D02/T8D02 SERIES

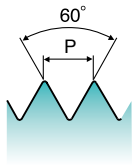
SPIRAL FLUTE TAP, 6" EXTENSION

Hole type 2.5×D





USCTI Long Shank



GS | HSS | UNC UNF | USCTI Long Shank | H3 | 60° | 4P~5P Plug | 1.5P~2P Bottoming | Bright | TiN | R50

SIZE	UNC	UNF	Thread Limit	Overall Length	No. of Flutes	EDP No.			
						Plug		Bottoming	
						Bright	TiN	Bright	TiN
#6	32	—	H3	6	2	T7D01243	T8D01243	T7D02243	T8D02243
#8	32	—	H3	6	3	T7D01283	T8D01283	T7D02283	T8D02283
#10	24	—	H3	6	3	T7D01323	T8D01323	T7D02323	T8D02323
#10	—	32	H3	6	3	T7D01343	T8D01343	T7D02343	T8D02343
1/4	20	—	H3	6	3	T7D01403	T8D01403	T7D02403	T8D02403
1/4	—	28	H3	6	3	T7D01423	T8D01423	T7D02423	T8D02423
5/16	18	—	H3	6	3	T7D01443	T8D01443	T7D02443	T8D02443
3/8	16	—	H3	6	3	T7D01483	T8D01483	T7D02483	T8D02483
7/16	14	—	H3	6	3	T7D01523	T8D01523	T7D02523	T8D02523
1/2	13	—	H3	6	3	T7D01563	T8D01563	T7D02563	T8D02563
5/8	11	—	H3	6	4	T7D01643	T8D01643	T7D02643	T8D02643

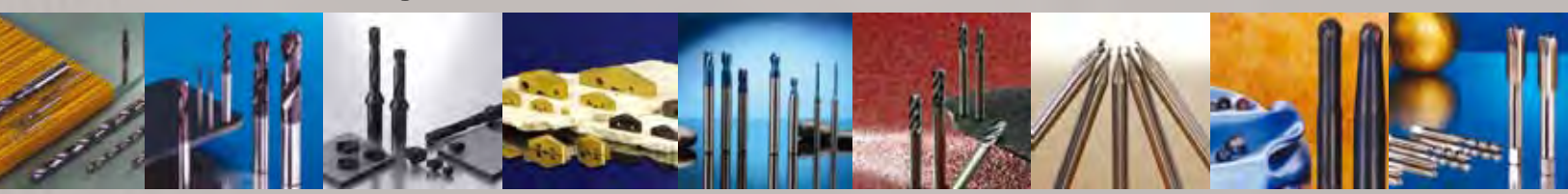
▶For tapping depth on DIN / ANSI Shank Taps, refer to DIN Table on page 493 & 494.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	○		○	○		

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
○					○					

Global Cutting Tool Leader **YG-1**



HSS

Being the best through innovation



SPIRAL POINT TAPS

- Tapping Through Holes / Super HSS, HSS-E, HSS-PM, HSS-V & HSS

SPIRAL POINT TAPS

Tapping Through Holes / Super HSS, HSS-E, HSS-PM, HSS-V & HSS

INCH

EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Thread Depth	Surface Treatment	Page
M9/O1		Super HSS	UNC/UNF	VG	USCTI 302A	H2~H6	4 ~ 5P		Steam Oxide Hardslick	400
N7/N8		Super HSS	M/MF	VG	USCTI 302A	D3~D7	4 ~ 5P		Steam Oxide Hardslick	402
N4/O5		Super HSS	UNC/UNF	VG	DIN-ANSI Shank	H2~H6	4 ~ 5P		Steam Oxide Hardslick	403
N3/O3		Super HSS	M/MF	VG	DIN-ANSI Shank	D3~D7	4 ~ 5P		Steam Oxide Hardslick	404
M4/M6/M7		P-HSS	UNC/UNF	HR	USCTI 302A	H2~H5	4 ~ 5P		Steam Oxide TiCN Hardslick	405
TQ808/ TK808/TR808		P-HSS	M/MF	HR	USCTI 302A	H2~H5	4 ~ 5P		Steam Oxide TiCN Hardslick	406
I3/I5/J6		P-HSS	UNC/UNF	Ti Ni	USCTI 302A	H2~H5	4 ~ 5P		Steam Oxide TiCN Hardslick	407
M2/M3		P-HSS	UNC/UNF	VA	USCTI Long Shank	H2~H3	4 ~ 5P		Hardslick	409
I0/I2/J2		HSSE-V3	UNC/UNF	VA	USCTI 302A	H2~H7	4 ~ 5P	3.0D	Steam Oxide TiN Hardslick	410
O9/IA		HSSE-V3	M/MF	VA	USCTI 302A	D3~D7	4 ~ 5P		Steam Oxide Hardslick	413
K3/K5/K6		HSSE-V3	M/MF	VA	DIN-ANSI Shank	D3~D7	4 ~ 5P		Steam Oxide TiCN Hardslick	414
J3/J8		HSSE-V3	UNC/UNF	VG	USCTI 302A	H2~H11	4 ~ 5P		Steam Oxide Hardslick	415
IB/IC		HSSE-V3	M/MF	VG	USCTI 302A	D3~D11	4 ~ 5P		Steam Oxide Hardslick	419
J9/K7/K2		HSSE-V3	M/MF	VG	DIN-ANSI Shank	D3~D7	4 ~ 5P		Steam Oxide TiCN Hardslick	421
T2496		HSSE-V3	UNC/UNF	Al	USCTI 302A	H2~H5	4 ~ 5P		Bright	422
T2K01		HSSE-V3	M/MF	Al	USCTI 302A	D3~D6	4 ~ 5P		Bright	423
I9/J0/J1/J7		HSSE-V3	UNC/UNF	GS	USCTI	H2~H6	4 ~ 5P		Steam Oxide Bright/TiN Hardslick	424
K9/L0/L1		HSS-V	UNC/UNF	GS	USCTI 302A	H2~H6	4 ~ 5P		Bright TiN Hardslick	425

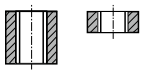
EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Thread Depth	Surface Treatment	Page
L7/L8/L9		HSS-V	M/MF	GS	USCTI 302A	D3~D6	4 ~ 5P	3.0D	Bright TiCN Hardslick	426
L3/L4/L5		HSS-V	UNC/UNF	GS	DIN-ANSI Shank	H2~H6	4 ~ 5P		Bright TiN Hardslick	427
T7216/T6216/ T8216T7C16/ T6C16/T8C16		HSS	UNC/UNF	GS	USCTI 302	H1~H7	4 ~ 5P		Bright Finish Steam Oxide TiN	428
T7256/ T6256		HSS	UNC/UNF	GS	USCTI 302	H1~H7	1.5 ~ 2P		Bright Finish Steam Oxide	432
T7217/ T6217/ T8217		HSS	M/MF	GS	USCTI 302	D3~D7	4 ~ 5P		Bright Finish Steam Oxide TiN	434
T7226/ T6226/ T8226		HSS	UNC/UNF	GS	USCTI 302	+.005" oversize	4 ~ 5P		Bright Finish Steam Oxide TiN	435
T7B17/ T6B17/ T8B17		HSS	M/MF	GS	USCTI 302	+.127mm oversize	4 ~ 5P		Bright Finish Steam Oxide TiN	436
T7236/T6236/ T8236T7G36/ T6G36T8G36		HSS	UNC/UNF	GS	USCTI Long Shank	H3	4 ~ 5P		Bright Finish Steam Oxide TiN	437

SPIRAL POINT TAPS

M9/01 SERIES

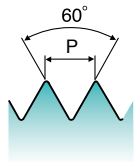
SPIRAL POINT TAPS PLUG STYLE
for Steels & Stainless Steels up to 35HRc

Hole type 3.0×D





USCTI



VG | Super HSS | UNC UNF | USCTI 302A | H2~H6 | 60° | 4P~5P | Steam Oxide | Hardslick

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.	
	UNC	UNF			Steam Oxide	Hardslick
#2	56	—	H2	2	M9082	01082
#4	40	—	H2	2	M9162	01162
#4	40	—	H3	2	M9163	01163
#4	40	—	H4	2	M9164	01164
#4	40	—	H5	2	M9165	01165
#5	40	—	H2	3	M9202	01202
#6	32	—	H2	3	M9242	01242
#6	32	—	H3	3	M9243	01243
#6	32	—	H4	3	M9244	01244
#6	32	—	H5	3	M9245	01245
#6	32	—	H6	3	M9246	01246
#8	32	—	H2	3	M9282	01282
#8	32	—	H3	3	M9283	01283
#8	32	—	H4	3	M9284	01284
#8	32	—	H5	3	M9285	01285
#8	32	—	H6	3	M9286	01286
#10	24	—	H3	3	M9323	01323
#10	24	—	H5	3	M9325	01325
#10	—	32	H2	3	M9342	01342
#10	—	32	H3	3	M9343	01343
#10	—	32	H4	3	M9344	01344
#10	—	32	H5	3	M9345	01345
#10	—	32	H6	3	M9346	01346
1/4	20	—	H3	3	M9403	01403
1/4	20	—	H5	3	M9405	01405
1/4	—	28	H3	3	M9423	01423
1/4	—	28	H4	3	M9424	01424
1/4	—	28	H5	3	M9425	01425
1/4	—	28	H6	3	M9426	01426
5/16	18	—	H3	3	M9443	01443
5/16	18	—	H5	3	M9445	01445
5/16	—	24	H3	3	M9463	01463
5/16	—	24	H4	3	M9464	01464

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 491.

▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	◎	◎		◎	◎		

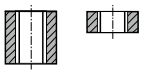
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	○	○		○		○	○			

SPIRAL POINT TAPS

M9/01 SERIES

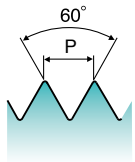
SPIRAL POINT TAPS PLUG STYLE
for Steels & Stainless Steels up to 35HRc

Hole type 3.0×D





USCTI



VG | Super HSS | UNC UNF | USCTI 302A | H2~H6 | 60° | 4P~5P | Steam Oxide | Hardslick

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.	
	UNC	UNF			Steam Oxide	Hardslick
5/16	—	24	H5	3	M9465	01465
5/16	—	24	H6	3	M9466	01466
3/8	16	—	H3	3	M9483	01483
3/8	16	—	H5	3	M9485	01485
3/8	—	24	H3	3	M9503	01503
3/8	—	24	H4	3	M9504	01504
3/8	—	24	H5	3	M9505	01505
3/8	—	24	H6	3	M9506	01506
7/16	14	—	H3	3	M9523	01523
7/16	14	—	H5	3	M9525	01525
7/16	—	20	H3	3	M9543	01543
7/16	—	20	H5	3	M9545	01545
1/2	13	—	H3	3	M9563	01563
1/2	13	—	H5	3	M9565	01565
1/2	—	20	H3	3	M9583	01583
1/2	—	20	H5	3	M9585	01585
9/16	12	—	H5	3	M9605	01605
9/16	—	18	H5	3	M9625	01625
5/8	11	—	H3	3	M9643	01643
5/8	11	—	H5	3	M9645	01645
5/8	—	18	H3	3	M9663	01663
5/8	—	18	H5	3	M9665	01665
3/4	10	—	H3	3	M9703	01703
3/4	10	—	H5	3	M9705	01705
3/4	—	16	H3	3	M9723	01723
3/4	—	16	H5	3	M9725	01725
7/8	9	—	H6	3	M9746	01746
7/8	—	14	H6	3	M9766	01766
1	8	—	H6	3	M9786	01786
1	—	12	H6	3	M9806	01806
1-1/8	8	—	H6	4	M9836	01836
1-1/4	8	—	H6	4	M9876	01876
1-3/8	8	—	H6	4	M9916	01916
1-1/2	8	—	H6	4	M9956	01956

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 491.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	◎	◎		◎	◎		

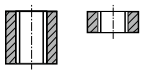
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	○	○		○		○	○			

SPIRAL POINT TAPS

N7/N8 SERIES

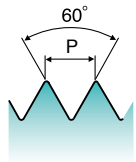
METRIC SPIRAL POINT TAPS PLUG STYLE for Steels & Stainless Steels up to 35HRc

Hole type 3.0×D





USCTI



VG | Super HSS | M MF | USCTI 302A | D3~D7 | 60° | 4P~5P | Steam Oxide | Hardslick

SIZE	Pitch	Limit	No. of Flute	EDP No.	
				Steam Oxide	Hardslick
M3	0.5	D3	3	**N7203**	**N8203**
M3.5	0.6	D4	3	**N7224**	**N8224**
M4	0.7	D4	3	**N7244**	**N8244**
M5	0.8	D4	3	**N7284**	**N8284**
M6	1.0	D5	3	**N7315**	**N8315**
M7	1.0	D5	3	**N7345**	**N8345**
M8	1.25	D5	3	**N7365**	**N8365**
M8	1.0	D5	3	**N7375**	**N8375**
M10	1.5	D6	3	**N7426**	**N8426**
M10	1.25	D5	3	**N7435**	**N8435**
M12	1.75	D6	3	**N7506**	**N8506**
M12	1.25	D5	3	**N7525**	**N8525**
M14	2.0	D7	3	**N7547**	**N8547**
M14	1.5	D6	3	**N7556**	**N8556**
M16	2.0	D7	3	**N7607**	**N8607**
M16	1.5	D6	3	**N7616**	**N8616**
M18	2.5	D7	3	**N7657**	**N8657**
M18	1.5	D6	3	**N7676**	**N8676**

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 492.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	◎	◎		◎	◎		

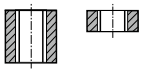
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	○	○		○		○	○			

SPIRAL POINT TAPS

N4/05 SERIES

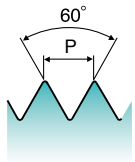
SPIRAL POINT TAPS PLUG STYLE
for Steels & Stainless Steels up to 35HRc

Hole type 3.0×D





DIN-ANSI Shank



VG | Super HSS | UNC UNF | H2~H6 | 60° | 4P~5P | Steam Oxide | Hardslick

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.	
	UNC	UNF			Steam Oxide	Hardslick
#2	56	—	H2	2	N4082	05082
#4	40	—	H2	2	N4162	05162
#5	40	—	H2	3	N4202	05202
#6	32	—	H3	3	N4243	05243
#8	32	—	H3	3	N4283	05283
#10	24	—	H3	3	N4323	05323
#10	—	32	H3	3	N4343	05343
1/4	20	—	H3	3	N4403	05403
1/4	20	—	H5	3	N4405	05405
1/4	—	28	H3	3	N4423	05423
5/16	18	—	H5	3	N4445	05445
5/16	—	24	H4	3	N4464	05464
3/8	16	—	H5	3	N4485	05485
3/8	—	24	H4	3	N4504	05504
7/16	14	—	H5	3	N4525	05525
7/16	—	20	H5	3	N4545	05545
1/2	13	—	H5	3	N4565	05565
1/2	—	20	H5	3	N4585	05585
9/16	12	—	H5	3	N4605	05605
9/16	—	18	H5	3	N4625	05625
5/8	11	—	H5	3	N4645	05645
5/8	—	18	H5	3	N4665	05665
3/4	10	—	H5	3	N4705	05705
3/4	—	16	H5	3	N4725	05725
7/8	9	—	H6	3	N4746	05746
7/8	—	14	H6	3	N4766	05766
1	8	—	H6	3	N4786	05786
1	—	12	H6	3	N4806	05806
1-1/8	8	—	H6	4	N4836	05836
1-1/4	8	—	H6	4	N4876	05876
1-3/8	8	—	H6	4	N4916	05916
1-1/2	8	—	H6	4	N4956	05956

▶ For tapping depth on DIN / ANSI Shank Taps, refer to DIN Table on page 493 & 494.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	◎	◎		◎	◎		

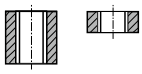
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	○	○		○		○	○			

SPIRAL POINT TAPS

N3/O3 SERIES

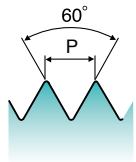
METRIC SPIRAL POINT TAPS PLUG STYLE for Steels & Stainless Steels up to 35HRc

Hole type 3.0×D





DIN-ANSI Shank



VG | Super HSS | M MF | D3~D7 | 60° | 4P~5P | Steam Oxide | Hardslick

SIZE	Pitch	Limit	No. of Flute	EDP No.	
				Steam Oxide	Hardslick
M3	0.5	D3	3	**N3203**	**03203**
M3.5	0.6	D4	3	**N3224**	**03224**
M4	0.7	D4	3	**N3244**	**03244**
M5	0.8	D4	3	**N3284**	**03284**
M6	1.0	D5	3	**N3315**	**03315**
M7	1.0	D5	3	**N3345**	**03345**
M8	1.25	D5	3	**N3365**	**03365**
M8	1.0	D5	3	**N3375**	**03375**
M10	1.5	D6	3	**N3426**	**03426**
M10	1.25	D5	3	**N3435**	**03435**
M12	1.75	D6	3	**N3506**	**03506**
M12	1.25	D5	3	**N3525**	**03525**
M14	2.0	D7	3	**N3547**	**03547**
M14	1.5	D6	3	**N3556**	**03556**
M16	2.0	D7	3	**N3607**	**03607**
M16	1.5	D6	3	**N3616**	**03616**
M18	2.5	D7	3	**N3657**	**03657**
M18	1.5	D6	3	**N3676**	**03676**

▶For tapping depth on DIN / ANSI Shank Taps, refer to DIN Table on page 493 & 494.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	◎	◎		◎	◎		

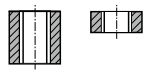
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	○	○		○		○	○			

SPIRAL POINT TAPS

M4/M6/M7 SERIES

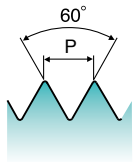
SPIRAL POINT TAPS PLUG STYLE
Steels up to 45HRc

Hole type 3.0×D





USCTI



HR | P-HSS | UNC UNF | USCTI 302A | H2~H5 | 60° | 4P~5P | Steam Oxide | TiCN | Hardslick

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.		
	UNC	UNF			Steam Oxide	TiCN	Hardslick
#2	56	—	H2	2	M4082	M6082	M7082
#4	40	—	H2	2	M4162	M6162	M7162
#5	40	—	H2	3	M4202	M6202	M7202
#6	32	—	H3	3	M4243	M6243	M7243
#8	32	—	H3	3	M4283	M6283	M7283
#10	24	—	H3	3	M4323	M6323	M7323
#10	—	32	H3	3	M4343	M6343	M7343
1/4	20	—	H5	3	M4405	M6405	M7405
1/4	—	28	H4	3	M4424	M6424	M7424
5/16	18	—	H5	3	M4445	M6445	M7445
5/16	—	24	H4	3	M4464	M6464	M7464
3/8	16	—	H5	3	M4485	M6485	M7485
3/8	—	24	H4	3	M4504	M6504	M7504
7/16	14	—	H5	3	M4525	M6525	M7525
7/16	—	20	H5	3	M4545	M6545	M7545
1/2	13	—	H5	3	M4565	M6565	M7565
1/2	—	20	H5	3	M4585	M6585	M7585
9/16	12	—	H5	3	M4605	M6605	M7605
9/16	—	18	H5	3	M4625	M6625	M7625
5/8	11	—	H5	3	M4645	M6645	M7645
5/8	—	18	H5	3	M4665	M6665	M7665
3/4	10	—	H5	3	M4705	M6705	M7705
3/4	—	16	H5	3	M4725	M6725	M7725

▶ Bright Finish Available : M5 series
▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 491.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
		○	◎		○	◎	

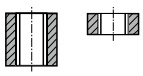
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
			◎					○	○	○

SPIRAL POINT TAPS

TQ808 / TK808 / TR808 SERIES

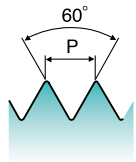
SPIRAL POINT TAPS PLUG STYLE
Steels up to 45HRc

Hole type 3.0×D





USCTI



HR | **P-HSS** | **M MF** | **USCTI 302A** | **H2~H5** | 60° | **4P~5P** | **Steam Oxide** | **TiCN** | **Hardslick**

◇Call for Availability

SIZE	Pitch	Limit	No. of Flute	EDP No.		
				Steam Oxide	TiCN	Hardslick
M3	0.5	D3	3	TQ808203	TK808203	TR808203HAR
M4	0.5	D3	3	TQ808253	TK808253	TR808253HAR
M4	0.7	D4	3	TQ808244	TK808244	TR808244HAR
M5	0.5	D3	3	TQ808293	TK808293	TR808293HAR
M5	0.8	D4	3	TQ808284	TK808284	TR808284HAR
M6	0.5	D3	3	TQ808333	TK808333	TR808333HAR
M6	0.75	D4	3	TQ808324	TK808324	TR808324HAR
M6	1	D5	3	TQ808315	TK808315	TR808315HAR
M8	1	D5	3	TQ808375	TK808375	TR808375HAR
M8	1.25	D5	3	TQ808365	TK808365	TR808365HAR
M10	1	D5	3	TQ808445	TK808445	TR808445HAR
M10	1.25	D5	3	TQ808435	TK808435	TR808435HAR
M10	1.5	D6	3	TQ808426	TK808426	TR808426HAR
M12	1	D5	3	TQ808535	TK808535	TR808535HAR
M12	1.25	D6	3	TQ808526	TK808526	TR808526HAR
M12	1.5	D6	3	TQ808516	TK808516	TR808516HAR
M12	1.75	D6	3	TQ808506	TK808506	TR808506HAR
M14	1.5	D6	3	TQ808556	TK808556	TR808556HAR
M14	2	D7	3	TQ808547	TK808547	TR808547HAR
M16	1.5	D6	4	TQ808616	TK808616	TR808616HAR
M16	2	D7	4	TQ808607	TK808607	TR808607HAR
M18	1.5	D6	4	TQ808676	TK808676	TR808676HAR
M18	2.5	D7	4	TQ808657	TK808657	TR808657HAR
M20	1.5	D6	4	TQ808726	TK808726	TR808726HAR
M20	2.5	D7	4	TQ808707	TK808707	TR808707HAR
M22	1.5	D6	4	TQ808766	TK808766	TR808766HAR
M22	2.5	D7	4	TQ808747	TK808747	TR808747HAR
M24	1.5	D6	4	TQ808806	TK808806	TR808806HAR
M24	3	D8	4	TQ808788	TK808788	TR808788HAR

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 492.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
		○	◎		○	◎	

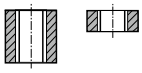
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
			◎					○	○	○

SPIRAL POINT TAPS

I3/I5/J6 SERIES

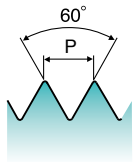
SPIRAL POINT TAPS PLUG STYLE
for Titanium Alloys & Nickel Base Alloys up to 44HRc

Hole type 3.0×D





USCTI



Ti Ni | P-HSS | UNC UNF | USCTI 302A | H2~H5 | 60° | 4P~5P | Steam Oxide | TiCN | Hardslick

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.		
	UNC	UNF			Steam Oxide	TiCN	Hardslick
#2	56	—	H2	2	I3082	I5082	J6082
#4	40	—	H2	2	I3162	I5162	J6162
#5	40	—	H2	3	I3202	I5202	J6202
#6	32	—	H3	3	I3243	I5243	J6243
#8	32	—	H3	3	I3283	I5283	J6283
#10	24	—	H3	3	I3323	I5323	J6323
#10	—	32	H3	3	I3343	I5343	J6343
1/4	20	—	H3	3	I3403	I5403	J6403
1/4	20	—	H5	3	I3405	I5405	J6405
1/4	—	28	H3	3	I3423	I5423	J6423
1/4	—	28	H4	3	I3424	I5424	J6424
5/16	18	—	H3	3	I3443	I5443	J6443
5/16	18	—	H5	3	I3445	I5445	J6445
5/16	—	24	H3	3	I3463	I5463	J6463
3/8	16	—	H3	3	I3483	I5483	J6483
3/8	16	—	H5	3	I3485	I5485	J6485
3/8	—	24	H3	3	I3503	I5503	J6503
3/8	—	24	H4	3	I3504	I5504	J6504
7/16	14	—	H3	3	I3523	I5523	J6523
7/16	14	—	H5	3	I3525	I5525	J6525
7/16	—	20	H3	3	I3543	I5543	J6543
7/16	—	20	H5	3	I3545	I5545	J6545
1/2	13	—	H3	3	I3563	I5563	J6563
1/2	13	—	H5	3	I3565	I5565	J6565
1/2	—	20	H3	3	I3583	I5583	J6583
1/2	—	20	H5	3	I3585	I5585	J6585

▶ TiN Coated Available: M8 Series

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 491.

▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron

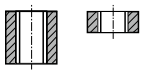
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
								◎	◎	◎

SPIRAL POINT TAPS

I3/I5/J6 SERIES

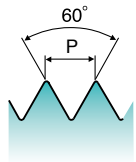
SPIRAL POINT TAPS PLUG STYLE
for Titanium Alloys & Nickel Base Alloys up to 44HRc

Hole type 3.0×D





USCTI



Ti Ni | P-HSS | UNC UNF | USCTI 302A | H2~H5 | 60° | 4P~5P | Steam Oxide | TiCN | Hardslick

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.		
	UNC	UNF			Steam Oxide	TiCN	Hardslick
9/16	12	—	H3	3	**I3603**	**I5603**	**J6603**
9/16	12	—	H5	3	**I3605**	**I5605**	**J6605**
9/16	—	18	H3	3	**I3623**	**I5623**	**J6623**
9/16	—	18	H5	3	**I3625**	**I5625**	**J6625**
5/8	11	—	H3	3	**I3643**	**I5643**	**J6643**
5/8	11	—	H5	3	**I3645**	**I5645**	**J6645**
5/8	—	18	H3	3	**I3663**	**I5663**	**J6663**
5/8	—	18	H5	3	**I3665**	**I5665**	**J6665**
3/4	10	—	H3	3	**I3703**	**I5703**	**J6703**
3/4	10	—	H5	3	**I3705**	**I5705**	**J6705**
3/4	—	16	H3	3	**I3723**	**I5723**	**J6723**
3/4	—	16	H5	3	**I3725**	**I5725**	**J6725**

▶TiN Coated Available : M8 Series
▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 491.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron

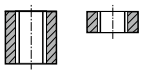
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
								◎	◎	◎

SPIRAL POINT TAPS

M2/M3 SERIES

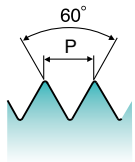
SPIRAL POINT TAPS PLUG STYLE for Stainless Steels up to 28HRc

Hole type 3.0×D





USCTI Long Shank



VA | P-HSS | UNC UNF | USCTI Long Shank | H2~H3 | 60° | 4P~5P | Hardslick

SIZE	Thread Per Inch		Limit	No. of Flute	Maximum Tapping Depth	EDP No.	
	UNC	UNF				Hardslick 4" OAL	Hardslick 6" OAL
#4	40	—	H2	2	0.844	**M2162**	—
#6	32	—	H3	2	1.031	**M2243**	**M3243**
#8	32	—	H3	3	1.125	**M2283**	**M3283**
#10	24	—	H3	3	1.312	**M2323**	**M3323**
#10	—	32	H3	3	1.312	**M2343**	**M3343**
1/4	20	—	H3	3	1.500	**M2403**	**M3403**
1/4	—	28	H3	3	1.500	—	**M3423**
5/16	18	—	H3	3	1.688	—	**M3443**
5/16	—	24	H3	3	1.688	—	**M3463**
3/8	16	—	H3	3	1.875	—	**M3483**
3/8	—	24	H3	3	—	—	**M3503**
7/16	14	—	H3	3	—	—	**M3523**
7/16	—	20	H3	3	—	—	**M3543**
1/2	13	—	H3	3	—	—	**M3563**
1/2	—	20	H3	3	—	—	**M3583**
9/16	12	—	H3	3	—	—	**M3603**
9/16	—	18	H3	3	—	—	**M3623**
5/8	11	—	H3	3	—	—	**M3643**

▶ TiN Coated Available: 4" OAL M0 Series & 6" OAL M1 Series
▶ For tapping depth on DIN / ANSI Shank Taps, refer to DIN Table on page 493 & 494.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	◎			◎			

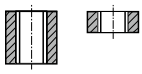
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	○	○		○		○	○			

SPIRAL POINT TAPS

I0/I2/J2 SERIES

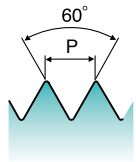
SPIRAL POINT TAPS PLUG STYLE for Stainless Steels up to 28HRc

Hole type 3.0×D





USCTI



VA | HSSE-V3 | UNC UNF | USCTI 302A | H2~H7 | 60° | 4P~5P | Steam Oxide | TiN | Hardslick

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.		
	UNC	UNF			Steam Oxide	TiN	Hardslick
#2	56	—	H2	2	I0082	I2082	J2082
#2	56	—	H3	2	I0083	—	J2083
#2	56	—	H4	2	I0084	—	J2084
#3	48	—	H2	2	I0122	—	J2122
#4	40	—	H2	2	I0162	I2162	J2162
#4	40	—	H3	2	I0163	—	J2163
#4	40	—	H4	2	I0164	—	J2164
#4	40	—	H5	2	I0165	—	J2165
#4	40	—	H6	2	I0166	—	J2166
#4	—	48	H2	2	I0182	—	J2182
#4	—	48	H4	2	I0184	—	J2184
#5	40	—	H2	3	I0202	I2202	J2202
#6	32	—	H3	3	I0243	I2243	J2243
#6	32	—	H3	3	I0244	—	J2244
#6	32	—	H4	3	I0245	—	J2245
#6	32	—	H7	3	I0247	—	J2247
#6	—	40	H2	3	I0262	—	J2262
#6	—	40	H3	3	I0263	—	J2263
#8	32	—	H2	3	I0282	—	J2282
#8	32	—	H3	3	I0283	I2283	J2283
#8	32	—	H4	3	I0284	—	J2284
#8	32	—	H5	3	I0285	—	J2286
#8	32	—	H7	3	I0287	—	J2287
#8	—	36	H2	3	I0302	—	J2302
#10	24	—	H3	3	I0323	I2323	J2323
#10	24	—	H4	3	I0324	—	J2324
#10	24	—	H5	3	I0325	—	J2325
#10	—	32	H2	3	I0342	—	J2342
#10	—	32	H3	3	I0343	I2343	J2343
#10	—	32	H4	3	I0344	—	J2344

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 491.

▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	◎			◎			

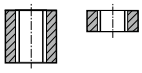
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	○	○		○		○	○			

SPIRAL POINT TAPS

I0/I2/J2 SERIES

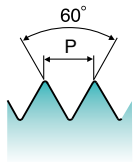
SPIRAL POINT TAPS PLUG STYLE for Stainless Steels up to 28HRc

Hole type 3.0×D





USCTI



VA | HSSE-V3 | UNC UNF | USCTI 302A | H2~H7 | 60° | 4P~5P | Steam Oxide | TiN | Hardslick

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.		
	UNC	UNF			Steam Oxide	TiN	Hardslick
#10	—	32	H5	3	I0345	—	J2345
#10	—	32	H6	3	I0346	—	J2346
#10	—	32	H7	3	I0347	—	J2347
#12	24	—	H3	3	I0363	—	J2363
#12	—	28	H3	3	I0383	—	J2383
1/4	20	—	H2	3	I0402	—	J2402
1/4	20	—	H3	3	I0403	I2403	J2403
1/4	20	—	H5	3	I0405	I2405	J2405
1/4	20	—	H7	3	I0407	—	J2407
1/4	—	28	H2	3	I0422	—	J2422
1/4	—	28	H3	3	I0423	I2423	J2423
1/4	—	28	H4	3	I0424	—	J2424
1/4	—	28	H5	3	I0425	—	J2425
1/4	—	28	H6	3	I0426	—	J2426
1/4	—	28	H7	3	I0427	—	J2427
5/16	18	—	H3	3	I0443	I2443	J2443
5/16	18	—	H5	3	I0445	I2445	J2445
5/16	18	—	H7	3	I0447	—	J2447
5/16	—	24	H3	3	I0463	I2463	J2463
5/16	—	24	H4	3	I0464	—	J2464
5/16	—	24	H5	3	I0465	—	J2465
5/16	—	24	H6	3	I0466	—	J2466
5/16	—	24	H7	3	I0467	—	J2467
3/8	16	—	H3	3	I0483	I2483	J2483
3/8	16	—	H5	3	I0485	I2485	J2485
3/8	16	—	H7	3	I0487	—	J2487
3/8	—	24	H3	3	I0503	I2503	J2503
3/8	—	24	H4	3	I0504	—	J2504
3/8	—	24	H5	3	I0505	—	J2505
3/8	—	24	H7	3	I0507	—	J2507

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 491.

▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	◎			◎			

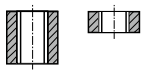
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	○	○		○		○	○			

SPIRAL POINT TAPS

I0/I2/J2 SERIES

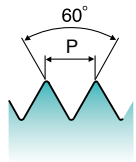
SPIRAL POINT TAPS PLUG STYLE for Stainless Steels up to 28HRc

Hole type 3.0×D





USCTI



VA | HSSE-V3 | UNC UNF | USCTI 302A | H2~H7 | 60° | 4P~5P | Steam Oxide | TiN | Hardslick

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.		
	UNC	UNF			Steam Oxide	TiN	Hardslick
7/16	14	—	H3	3	I0523	I2523	J2523
7/16	14	—	H5	3	I0525	I2525	J2525
7/16	—	20	H3	3	I0543	I2543	J2543
7/16	—	20	H5	3	I0545	I2545	J2545
1/2	13	—	H3	3	I0563	I2563	J2563
1/2	13	—	H5	3	I0565	I2565	J2565
1/2	13	—	H7	3	I0567	—	J2567
1/2	—	20	H3	3	I0583	I2583	J2583
1/2	—	20	H5	3	I0585	—	J2585
9/16	12	—	H3	3	I0603	I2603	J2603
9/16	—	18	H3	3	I0623	I2623	J2623
5/8	11	—	H3	3	I0643	I2643	J2643
5/8	11	—	H5	3	I0645	I2645	J2645
5/8	11	—	H7	3	I0647	—	J2647
5/8	—	18	H3	3	I0663	—	J2663
5/8	—	18	H5	3	I0665	I2665	J2665
5/8	—	18	H7	3	I0667	—	J2667
3/4	10	—	H3	3	I0703	I2703	J2703
3/4	—	16	H5	3	I0725	I2725	J2725
7/8	9	—	H4	3	I0744	I2744	J2744
7/8	—	14	H6	3	I0766	I2766	J2766
1	8	—	H4	3	I0784	I2784	J2784
1	—	12	H6	3	I0806	I2806	J2806

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 491.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	◎			◎			

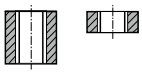
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	○	○		○		○	○			

SPIRAL POINT TAPS

09/IA SERIES

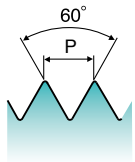
METRIC SPIRAL POINT TAPS PLUG STYLE
Stainless Steels up to 28HRc

Hole type 3.0×D





USCTI



VA | HSSE-V3 | M MF | USCTI 302A | D3~D7 | 60° | 4P~5P | Steam Oxide | Hardslick

SIZE	Pitch	Limit	No. of Flute	EDP No.	
				Steam Oxide	Hardslick
M3	0.5	D3	3	**09203**	**IA203**
M3.5	0.6	D4	3	**09224**	**IA224**
M4	0.7	D4	3	**09244**	**IA244**
M5	0.8	D4	3	**09284**	**IA284**
M6	1.0	D5	3	**09315**	**IA315**
M7	1.0	D5	3	**09345**	**IA345**
M8	1.25	D5	3	**09365**	**IA365**
M8	1.0	D5	3	**09375**	**IA375**
M10	1.5	D6	3	**09426**	**IA426**
M10	1.25	D5	3	**09435**	**IA435**
M12	1.75	D6	3	**09506**	**IA506**
M12	1.25	D5	3	**09525**	**IA525**
M14	2.0	D7	3	**09547**	**IA547**
M14	1.5	D6	3	**09556**	**IA556**
M16	2.0	D7	3	**09607**	**IA607**
M16	1.5	D6	3	**09616**	**IA616**
M18	2.5	D7	3	**09657**	**IA657**
M18	1.5	D6	3	**09676**	**IA676**

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 492.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	◎			◎			

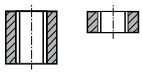
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	○	○		○		○	○			

SPIRAL POINT TAPS

K3/K5/K6 SERIES

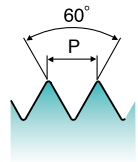
METRIC SPIRAL POINT TAPS PLUG STYLE
Stainless Steels up to 28HRc

Hole type 3.0×D





USCTI



VA | HSSE-V3 | M MF | D3~D7 | 60° | 4P~5P | Steam Oxide | TiCN | Hardslick

SIZE	Pitch	Limit	No. of Flute	EDP No.		
				Steam Oxide	TiCN	Hardslick
M3	0.5	D3	3	K3203	K5203	K6203
M3.5	0.6	D4	3	K3224	K5224	K6224
M4	0.7	D4	3	K3244	K5244	K6244
M5	0.8	D4	3	K3284	K5284	K6284
M6	1.0	D5	3	K3315	K5315	K6315
M7	1.0	D5	3	K3345	K5345	K6345
M8	1.25	D5	3	K3365	K5365	K6365
M8	1.0	D5	3	K3375	K5375	K6375
M10	1.5	D6	3	K3426	K5426	K6426
M10	1.25	D5	3	K3435	K5435	K6435
M12	1.75	D6	3	K3506	K5506	K6506
M12	1.25	D5	3	K3525	K5525	K6525
M14	2.0	D7	3	K3547	K5547	K6547
M14	1.5	D6	3	K3556	K5556	K6556
M16	2.0	D7	3	K3607	K5607	K6607
M16	1.5	D6	3	K3616	K5616	K6616
M18	2.5	D7	3	K3657	K5657	K6657
M18	1.5	D6	3	K3676	K5676	K6676

▶For tapping depth on DIN / ANSI Shank Taps, refer to DIN Table on page 493 & 494.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	◎			◎			

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	○	○		○		○	○			

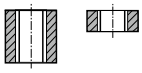
SPIRAL POINT TAPS

J3/J8 SERIES

SPIRAL POINT TAPS PLUG STYLE
Steels up to 38HRc

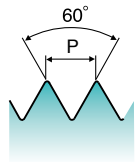
A variety of H Limit

Hole type 3.0×D





USCTI



VG | HSSE-V3 | UNC UNF | USCTI 302A | H2~H11 | 60° | 4P~5P | Steam Oxide | Hardslick

SIZE	Thread Per Inch			Limit	No. of Flute	EDP No.	
	UNC	UNF	8 Pitch			Steam Oxide	Hardslick
#2	56	—	—	H2	2	J3082	J8082
#3	48	—	—	H2	2	J3122	J8122
#4	40	—	—	H2	2	J3162	J8162
#4	40	—	—	H3	2	J3163	J8163
#4	40	—	—	H4	2	J3164	J8164
#4	40	—	—	H5	2	J3165	J8165
#4	—	48	—	H2	2	J3182	J8182
#5	40	—	—	H2	2	J3202	J8202
#6	32	—	—	H2	2	J3242	J8242
#6	32	—	—	H3	2	J3243	J8243
#6	32	—	—	H4	2	J3244	J8244
#6	32	—	—	H5	2	J3245	J8245
#6	32	—	—	H6	2	J3246	J8246
#6	32	—	—	H7	2	J3247	J8247
#6	32	—	—	H11	2	J324A	J824A
#6	—	40	—	H2	2	J3262	J8262
#8	32	—	—	H2	3	J3282	J8282
#8	32	—	—	H3	3	J3283	J8283
#8	32	—	—	H4	3	J3284	J8284
#8	32	—	—	H5	3	J3285	J8285
#8	32	—	—	H6	3	J3286	J8286
#8	32	—	—	H7	3	J3287	J8287
#8	32	—	—	H11	3	J328A	J828A
#8	—	36	—	H2	3	J3302	J8302
#10	24	—	—	H3	3	J3323	J8323
#10	24	—	—	H5	3	J3325	J8325
#10	24	—	—	H11	3	J332A	J832A
#10	—	32	—	H2	3	J3342	J8342
#10	—	32	—	H3	3	J3343	J8343
#10	—	32	—	H4	3	J3344	J8344

▶Bright Finish Available: J4 Series

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 491.

▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
	◎	◎		○	○		

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
								○		

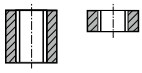
SPIRAL POINT TAPS

J3/J8 SERIES

SPIRAL POINT TAPS PLUG STYLE
Steels up to 38HRc

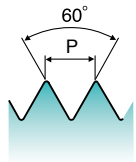
A variety of H Limit

Hole type 3.0×D





USCTI



VG | HSSE-V3 | UNC UNF | USCTI 302A | H2~H11 | 60° | 4P~5P | Steam Oxide | Hardslick

SIZE	Thread Per Inch			Limit	No. of Flute	EDP No.	
	UNC	UNF	8 Pitch			Steam Oxide	Hardslick
#10	—	32	—	H5	3	**J3345**	**J8345**
#10	—	32	—	H6	3	**J3346**	**J8346**
#10	—	32	—	H7	3	**J3347**	**J8347**
#10	—	32	—	H11	3	**J334A**	**J834A**
#12	24	—	—	H3	3	**J3363**	**J8363**
#12	—	28	—	H3	3	**J3383**	**J8383**
1/4	20	—	—	H2	3	**J3402**	**J8402**
1/4	20	—	—	H3	3	**J3403**	**J8403**
1/4	20	—	—	H5	3	**J3405**	**J8405**
1/4	20	—	—	H7	3	**J3407**	**J8407**
1/4	20	—	—	H11	3	**J340A**	**J840A**
1/4	—	28	—	H2	3	**J3422**	**J8422**
1/4	—	28	—	H3	3	**J3423**	**J8423**
1/4	—	28	—	H4	3	**J3424**	**J8424**
1/4	—	28	—	H5	3	**J3425**	**J8425**
1/4	—	28	—	H6	3	**J3426**	**J8426**
1/4	—	28	—	H7	3	**J3427**	**J8427**
1/4	—	28	—	H11	3	**J342A**	**J842A**
5/16	18	—	—	H3	3	**J3443**	**J8443**
5/16	18	—	—	H5	3	**J3445**	**J8445**
5/16	18	—	—	H7	3	**J3447**	**J8447**
5/16	18	—	—	H11	3	**J344A**	**J844A**
5/16	—	24	—	H2	3	**J3462**	**J8462**
5/16	—	24	—	H3	3	**J3463**	**J8463**
5/16	—	24	—	H4	3	**J3464**	**J8464**
5/16	—	24	—	H5	3	**J3465**	**J8465**
5/16	—	24	—	H6	3	**J3466**	**J8466**
5/16	—	24	—	H7	3	**J3467**	**J8467**
5/16	—	24	—	H11	3	**J346A**	**J846A**
3/8	16	—	—	H3	3	**J3483**	**J8483**

▶Bright Finish Available: J4 Series

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 491.

▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
	◎	◎		○	○		

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
								○		

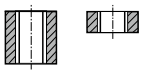
SPIRAL POINT TAPS

J3/J8 SERIES

SPIRAL POINT TAPS PLUG STYLE
Steels up to 38HRc

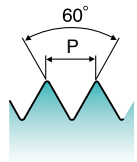
A variety of H Limit

Hole type 3.0×D





USCTI



VG | HSSE-V3 | UNC UNF | USCTI 302A | H2~H11 | 60° | 4P~5P | Steam Oxide | Hardslick

SIZE	Thread Per Inch			Limit	No. of Flute	EDP No.	
	UNC	UNF	8 Pitch			Steam Oxide	Hardslick
3/8	16	—	—	H5	3	J3485	J8485
3/8	16	—	—	H7	3	J3487	J8487
3/8	16	—	—	H11	3	J348A	J848A
3/8	—	24	—	H2	3	J3502	J8502
3/8	—	24	—	H3	3	J3503	J8503
3/8	—	24	—	H4	3	J3504	J8504
3/8	—	24	—	H5	3	J3505	J8505
3/8	—	24	—	H6	3	J3506	J8506
3/8	—	24	—	H7	3	J3507	J8507
3/8	—	24	—	H11	3	J350A	J850A
7/16	14	—	—	H3	3	J3523	J8523
7/16	14	—	—	H5	3	J3525	J8525
7/16	14	—	—	H7	3	J3527	J8527
7/16	14	—	—	H11	3	J352A	J852A
7/16	—	20	—	H3	3	J3543	J8543
7/16	—	20	—	H5	3	J3545	J8545
7/16	—	20	—	H7	3	J3547	J8547
7/16	—	20	—	H11	3	J354A	J854A
1/2	13	—	—	H3	3	J3563	J8563
1/2	13	—	—	H5	3	J3565	J8565
1/2	13	—	—	H7	3	J3567	J8567
1/2	13	—	—	H11	3	J356A	J856A
1/2	—	20	—	H2	3	J3582	J8582
1/2	—	20	—	H3	3	J3583	J8583
1/2	—	20	—	H5	3	J3585	J8585
1/2	—	20	—	H7	3	J3587	J8587
1/2	—	20	—	H11	3	J358A	J858A
9/16	12	—	—	H5	3	J3605	J8605
9/16	—	18	—	H5	3	J3625	J8625
5/8	11	—	—	H3	3	J3643	J8643

▶Bright Finish Available: J4 Series
▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 491.

▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
	◎	◎		○	○		

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
								○		

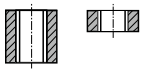
SPIRAL POINT TAPS

J3/J8 SERIES

SPIRAL POINT TAPS PLUG STYLE
Steels up to 38HRc

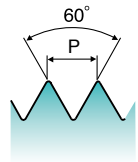
A variety of H Limit

Hole type 3.0×D





USCTI



VG | HSSE-V3 | UNC UNF | USCTI 302A | H2~H11 | 60° | 4P~5P | Steam Oxide | Hardslick

SIZE	Thread Per Inch			Limit	No. of Flute	EDP No.	
	UNC	UNF	8 Pitch			Steam Oxide	Hardslick
5/8	11	—	—	H5	3	J3645	J8645
5/8	—	18	—	H3	3	J3663	J8663
5/8	—	18	—	H5	3	J3665	J8665
5/8	—	18	—	H7	3	J3667	J8667
3/4	10	—	—	H3	3	J3703	J8703
3/4	10	—	—	H5	3	J3705	J8705
3/4	—	16	—	H3	3	J3723	J8723
3/4	—	16	—	H5	3	J3725	J8725
7/8	9	—	—	H5	3	J3745	J8745
7/8	—	14	—	H4	3	J3764	J8764
1	8	—	—	H4	4	J3784	J8784
1	—	12	—	H4	4	J3804	J8804
1-1/8	7	—	—	H6	4	J3826	J8826
1-1/8	—	12	—	H5	4	J3845	J8845
1-1/8	—	—	8	H6	4	J3836	J8836
1-1/4	7	—	—	H6	4	J3866	J8866
1-1/4	—	12	—	H5	4	J3885	J8885
1-1/4	—	—	8	H6	4	J3876	J8876
1-3/8	6	—	—	H6	4	J3906	J8906
1-3/8	—	12	—	H5	4	J3925	J8925
1-3/8	—	—	8	H6	4	J3916	J8916
1-1/2	6	—	—	H6	4	J3946	J8946
1-1/2	—	12	—	H5	4	J3965	J8965
1-1/2	—	—	8	H6	4	J3956	J8956

▶Bright Finish Available: J4 Series
▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 491.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
	◎	◎		○	○		

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
								○		

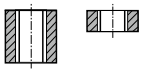
SPIRAL POINT TAPS

IB/IC SERIES

SPIRAL POINT TAPS PLUG STYLE
Steels up to 38HRc

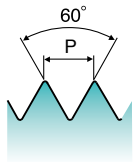
A variety of D Limit

Hole type 3.0×D





USCTI



VG | HSSE-V3 | M MF | USCTI 302A | D3~D11 | 60° | 4P~5P | Steam Oxide | Hardslick

SIZE	Pitch	Limit	No. of Flute	EDP No.	
				Steam Oxide	Hardslick
M3	0.5	D3	3	**IB203**	**IC203**
M3	0.5	D11	3	**IB20A**	**IC20A**
M3.5	0.6	D4	3	**IB224**	**IC224**
M3.5	0.6	D11	3	**IB22A**	**IC22A**
M4	0.7	D4	3	**IB244**	**IC244**
M4	0.7	D11	3	**IB24A**	**IC24A**
M5	0.8	D4	3	**IB284**	**IC284**
M5	0.8	D11	3	**IB28A**	**IC28A**
M6	1.0	D5	3	**IB315**	**IC315**
M6	1.0	D11	3	**IB31A**	**IC31A**
M7	1.0	D5	3	**IB345**	**IC345**
M7	1.0	D11	3	**IB34A**	**IC34A**
M8	1.0	D5	3	**IB375**	**IC375**
M8	1.0	D11	3	**IB37A**	**IC37A**
M8	1.25	D5	3	**IB365**	**IC365**
M8	1.25	D11	3	**IB36A**	**IC36A**
M10	1.0	D5	3	**IB445**	**IC445**
M10	1.0	D11	3	**IB44A**	**IC44A**
M10	1.25	D5	3	**IB435**	**IC435**
M10	1.25	D11	3	**IB43A**	**IC43A**
M10	1.5	D6	3	**IB426**	**IC426**
M10	1.5	D11	3	**IB42A**	**IC42A**
M12	1.25	D5	3	**IB525**	**IC525**
M12	1.25	D11	3	**IB52A**	**IC52A**
M12	1.5	D6	3	**IB516**	**IC516**
M12	1.5	D11	3	**IB51A**	**IC51A**
M12	1.75	D6	3	**IB506**	**IC506**
M12	1.75	D11	3	**IB50A**	**IC50A**
M14	1.5	D6	3	**IB556**	**IC556**
M14	2.0	D7	3	**IB547**	**IC547**

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 492.

▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
	◎	◎		○	○		

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
								○		

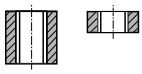
SPIRAL POINT TAPS

IB/IC SERIES

METRIC SPIRAL POINT TAPS PLUG STYLE
Steels up to 35HRc

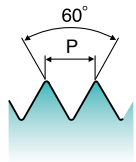
A variety of D Limit

Hole type 3.0×D





USCTI



VG | HSSE-V3 | M MF | USCTI 302A | D3~D11 | 60° | 4P~5P | Steam Oxide | Hardslick

SIZE	Pitch	Limit	No. of Flute	EDP No.	
				Steam Oxide	Hardslick
M16	1.5	D6	3	**IB616**	**IC616**
M16	2.0	D7	3	**IB607**	**IC607**
M18	1.5	D6	4	**IB676**	**IC676**
M18	2.5	D7	4	**IB657**	**IC657**
M20	1.5	D6	3	**IB726**	**IC726**
M20	2.5	D8	3	**IB708**	**IC708**
M22	1.5	D6	3	**IB766**	**IC766**
M22	2.5	D8	3	**IB748**	**IC748**
M24	1.5	D6	4	**IB806**	**IC806**
M24	3.0	D8	4	**IB788**	**IC788**
M27	1.5	D6	4	**IB886**	**IC886**
M27	3.0	D8	4	**IB868**	**IC868**
M30	1.5	D6	4	**IB976**	**IC976**
M30	3.5	D9	4	**IB949**	**IC949**

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 492.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
	◎	◎		○	○		

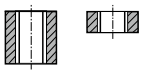
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
								○		

SPIRAL POINT TAPS

J9/K7/K2 SERIES

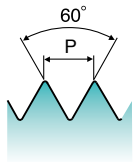
METRIC SPIRAL POINT TAPS PLUG STYLE
Steels up to 35HRc

Hole type 3.0×D





DIN-ANSI Shank



VG | HSSE-V3 | M MF | D3~D7 | 60° | 4P~5P | Steam Oxide | TiCN | Hardslick

SIZE	Pitch	Limit	No. of Flute	EDP No.		
				Steam Oxide	TiCN	Hardslick
M3	0.5	D3	3	J9203	K7203	K2203
M3.5	0.6	D4	3	J9224	K7224	K2224
M4	0.7	D4	3	J9244	K7244	K2244
M5	0.8	D4	3	J9284	K7284	K2284
M6	1.0	D5	3	J9315	K7315	K2315
M7	1.0	D5	3	J9345	K7345	K2345
M8	1.25	D5	3	J9365	K7365	K2365
M8	1.0	D5	3	J9375	K7375	K2375
M10	1.5	D6	3	J9426	K7426	K2426
M10	1.25	D5	3	J9435	K7435	K2435
M12	1.75	D6	3	J9506	K7506	K2506
M12	1.25	D5	3	J9525	K7525	K2525
M14	2.0	D7	3	J9547	K7547	K2547
M14	1.5	D6	3	J9556	K7556	K2556
M16	2.0	D7	3	J9607	K7607	K2607
M16	1.5	D6	3	J9616	K7616	K2616
M18	2.5	D7	4	J9657	K7657	K2657
M18	1.5	D6	4	J9676	K7676	K2676

▶For tapping depth on DIN / ANSI Shank Taps, refer to DIN Table on page 493 & 494.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
	◎	◎		○	○		

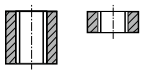
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
								○		

SPIRAL POINT TAPS

T2496 SERIES

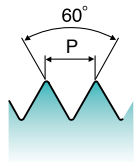
SPIRAL POINT TAPS PLUG STYLE
for Aluminum Alloy or Die Cast Aluminum

Hole type 3.0×D





USCTI



AI | HSSE-V3 | UNC UNF | USCTI 302A | H2~H5 | 60° | 4P~5P | Bright

◇Call for Availability

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.
	UNC	UNF			Bright
#4	40	—	H2	2	T2496162
#4	40	—	H3	2	T2496163
#6	32	—	H2	2	T2496242
#6	32	—	H3	2	T2496243
#8	32	—	H2	2	T2496282
#8	32	—	H3	2	T2496283
#10	24	—	H3	2	T2496323
#10	—	32	H2	2	T2496342
#10	—	32	H3	2	T2496343
#10	—	32	H5	2	T2496345
1/4	20	—	H3	2	T2496403
1/4	20	—	H5	2	T2496405
1/4	—	28	H3	2	T2496423
5/16	18	—	H3	2	T2496443
5/16	18	—	H5	2	T2496445
5/16	—	24	H3	2	T2496463
5/16	—	24	H5	2	T2496465
3/8	16	—	H3	3	T2496483
3/8	16	—	H5	3	T2496485
3/8	—	24	H3	3	T2496503
3/8	—	24	H5	3	T2496505
1/2	13	—	H3	3	T2496563
1/2	13	—	H5	3	T2496565
1/2	—	20	H3	3	T2496583
5/8	11	—	H3	3	T2496643
5/8	—	18	H3	3	T2496663
3/4	10	—	H3	3	T2496703
3/4	—	16	H3	3	T2496723
7/8	9	—	H4	3	T2496744
7/8	—	14	H4	3	T2496764
1	1	—	H4	3	T2496784

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 491.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron

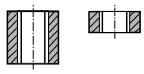
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
				◎	◎					

SPIRAL POINT TAPS

T2K01 SERIES

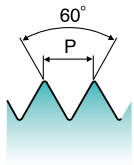
METRIC SPIRAL POINT TAPS PLUG STYLE for Aluminum Alloy or Die Cast Aluminum

Hole type 3.0×D





USCTI



Al | HSSE-V3 | M MF | USCTI 302A | D3~D6 | 60° | 4P~5P | Bright

◇Call for Availability

SIZE	Pitch	Thread Limit	No. of Flute	EDP No.
				Bright
M3	0.5	D3	2	T2K01203
M4	0.7	D4	2	T2K01244
M5	0.8	D4	2	T2K01284
M6	1.0	D5	2	T2K01315
M8	1.25	D5	2	T2K01365
M10	1.25	D5	3	T2K01435
M10	1.5	D6	3	T2K01426
M12	1.25	D5	3	T2K01525
M12	1.5	D5	3	T2K01515
M12	1.75	D6	3	T2K01506

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 492.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron

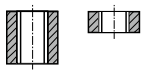
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
				◎	◎					

SPIRAL POINT TAPS

I9/J0/J1/J7 SERIES

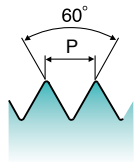
STANDARD TAPS : SPIRAL POINT PLUG STYLE for General Purpose

Hole type 3.0×D





USCTI



GS | HSSE-V3 | UNC UNF | USCTI | H2~H6 | 60° | 4P~5P | Steam Oxide | Bright | TiN | Hardslick

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.			
	UNC	UNF			Steam Oxide	Bright	TiN	Hardslick
#2	56	—	H2	2	I9082	J0082	J1082	J7082
#4	40	—	H2	2	I9162	J0162	J1162	J7162
#5	40	—	H2	2	I9202	J0202	J1202	J7202
#6	32	—	H3	2	I9243	J0243	J1243	J7243
#8	32	—	H3	2	I9283	J0283	J1283	J7283
#10	24	—	H3	2	I9323	J0323	J1323	J7323
#10	—	32	H3	2	I9343	J0343	J1343	J7343
1/4	20	—	H3	2	I9403	J0403	J1403	J7403
1/4	20	—	H5	2	I9405	J0405	J1405	J7405
1/4	—	28	H3	2	I9423	J0423	J1423	J7423
5/16	18	—	H3	2	I9443	J0443	J1443	J7443
5/16	18	—	H5	2	I9445	J0445	J1445	J7445
5/16	—	24	H3	2	I9463	J0463	J1463	J7463
3/8	16	—	H3	3	I9483	J0483	J1483	J7483
3/8	16	—	H5	3	I9485	J0485	J1485	J7485
3/8	—	24	H3	3	I9503	J0503	J1503	J7503
7/16	14	—	H3	3	I9523	J0523	J1523	J7523
7/16	14	—	H5	3	I9525	J0525	J1525	J7525
7/16	—	20	H3	3	I9543	J0543	J1543	J7543
7/16	—	20	H5	3	I9545	J0545	J1545	J7545
1/2	13	—	H3	3	I9563	J0563	J1563	J7563
1/2	13	—	H5	3	I9565	J0565	J1565	J7565
1/2	—	20	H3	3	I9583	J0583	J1583	J7583
1/2	—	20	H5	3	I9585	J0585	J1585	J7585
9/16	12	—	H3	3	I9603	J0603	J1603	J7603
9/16	—	18	H5	3	I9625	J0625	J1625	J7625
5/8	11	—	H3	3	I9643	J0643	J1643	J7643
5/8	11	—	H5	3	I9645	J0645	J1645	J7645
5/8	—	18	H5	3	I9665	J0665	J1665	J7665
3/4	10	—	H3	3	I9703	J0703	J1703	J7703
3/4	10	—	H5	3	I9705	J0705	J1705	J7705
3/4	—	16	H5	3	I9725	J0725	J1725	J7725
7/8	9	—	H4	3	I9744	J0744	J1744	J7744
7/8	—	14	H6	3	I9766	J0766	J1766	J7766
1	8	—	H4	3	I9784	J0784	J1784	J7784

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 495.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	○		○	○		

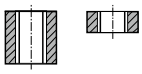
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
○					○					

SPIRAL POINT TAPS

K9/L0/L1 SERIES

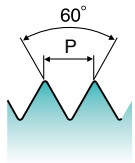
SPIRAL POINT TAPS PLUG STYLE for General Purpose

Hole type 3.0×D





USCTI



GS | **HSS-V** | **UNC UNF** | **USCTI 302A** | **H2~H6** | 60° | **4P~5P** | **Bright** | **TiN** | **Hardslick**

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.		
	UNC	UNF			Bright	TiN	Hardslick
#2	56	—	H2	2	K9082	L0082	L1082
#4	40	—	H2	2	K9162	L0162	L1162
#5	40	—	H2	2	K9202	L0202	L1202
#6	32	—	H3	2	K9243	L0243	L1243
#8	32	—	H3	2	K9283	L0283	L1283
#10	24	—	H3	2	K9323	L0323	L1323
#10	—	32	H3	2	K9343	L0343	L1343
1/4	20	—	H3	2	K9403	L0403	L1403
1/4	20	—	H5	2	K9405	L0405	L1405
1/4	—	28	H3	3	K9423	L0423	L1423
5/16	18	—	H3	2	K9443	L0443	L1443
5/16	18	—	H5	3	K9445	L0445	L1445
5/16	—	24	H3	3	K9463	L0463	L1463
3/8	16	—	H3	3	K9483	L0483	L1483
3/8	16	—	H5	3	K9485	L0485	L1485
3/8	—	24	H3	3	K9503	L0503	L1503
7/16	14	—	H3	3	K9523	L0523	L1523
7/16	14	—	H5	3	K9525	L0525	L1525
7/16	—	20	H3	3	K9543	L0543	L1543
7/16	—	20	H5	3	K9545	L0545	L1545
1/2	13	—	H3	3	K9563	L0563	L1563
1/2	13	—	H5	3	K9565	L0565	L1565
1/2	—	20	H3	3	K9583	L0583	L1583
1/2	—	20	H5	3	K9585	L0585	L1585
9/16	12	—	H3	3	K9603	L0603	L1603
9/16	—	18	H3	3	K9623	L0623	L1623
9/16	—	18	H5	3	K9625	L0625	L1625
5/8	11	—	H3	3	K9643	L0643	L1643
5/8	11	—	H5	3	K9645	L0645	L1645
5/8	—	18	H3	3	K9663	L0663	L1663
5/8	—	18	H5	3	K9665	L0665	L1665
3/4	10	—	H3	3	K9703	L0703	L1703
3/4	10	—	H5	3	K9705	L0705	L1705
3/4	—	16	H3	3	K9723	L0723	L1723
3/4	—	16	H5	3	K9725	L0725	L1725
7/8	9	—	H6	3	K9746	L0746	L1746
7/8	—	14	H4	3	K9764	L0764	L1764
7/8	—	14	H6	3	K9766	L0766	L1766
1	8	—	H6	3	K9786	L0786	L1786
1	—	12	H6	3	K9806	L0806	L1806

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 495.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	○		○	○		

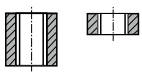
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
○					○					

SPIRAL POINT TAPS

L7/L8/L9 SERIES

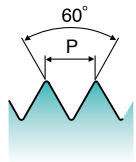
METRIC SPIRAL POINT TAPS PLUG STYLE for General Purpose

Hole type 3.0×D





USCTI



GS | HSS-V | M MF | USCTI 302A | D3~D6 | 60° | 4P~5P | Bright | TiCN | Hardslick

SIZE	Pitch	Limit	No. of Flute	EDP No.		
				Bright	TiCN	Hardslick
M3	0.5	D3	2	L7203	L8203	L9203
M3.5	0.6	D4	2	L7224	L8224	L9224
M4	0.7	D4	2	L7244	L8244	L9244
M5	0.8	D4	2	L7284	L8284	L9284
M6	1.0	D5	3	L7315	L8315	L9315
M7	1.0	D5	3	L7345	L8345	L9345
M8	1.25	D5	3	L7365	L8365	L9365
M8	1.0	D5	3	L7375	L8375	L9375
M10	1.5	D6	3	L7426	L8426	L9426
M10	1.25	D5	3	L7435	L8435	L9435
M12	1.75	D6	3	L7506	L8506	L9506
M12	1.25	D5	3	L7525	L8525	L9525

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 492.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	○		○	○		

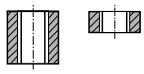
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
○					○					

SPIRAL POINT TAPS

L3/L4/L5 SERIES

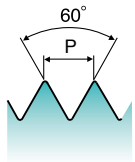
SPIRAL POINT TAPS PLUG STYLE for General Purpose

Hole type 3.0×D





DIN-ANSI Shank



GS | HSS-V | UNC UNF | H2~H6 | 60° | 4P~5P | Bright | TiN | Hardslick

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.		
	UNC	UNF			Bright	TiN	Hardslick
#2	56	—	H2	2	L3082	L4082	L5082
#4	40	—	H2	2	L3162	L4162	L5162
#5	40	—	H2	3	L3202	L4202	L5202
#6	32	—	H3	3	L3243	L4243	L5243
#8	32	—	H3	3	L3283	L4283	L5283
#10	24	—	H3	3	L3323	L4323	L5323
#10	—	32	H3	3	L3343	L4343	L5343
1/4	20	—	H3	3	L3403	L4403	L5403
1/4	20	—	H5	3	L3405	L4405	L5405
1/4	—	28	H3	3	L3423	L4423	L5423
5/16	18	—	H3	3	L3443	L4443	L5443
5/16	18	—	H5	3	L3445	L4445	L5445
5/16	—	24	H3	3	L3463	L4463	L5463
3/8	16	—	H3	3	L3483	L4483	L5483
3/8	16	—	H5	3	L3485	L4485	L5485
3/8	—	24	H3	3	L3503	L4503	L5503
7/16	14	—	H3	3	L3523	L4523	L5523
7/16	14	—	H5	3	L3525	L4525	L5525
7/16	—	20	H3	3	L3543	L4543	L5543
7/16	—	20	H5	3	L3545	L4545	L5545
1/2	13	—	H3	3	L3563	L4563	L5563
1/2	13	—	H5	3	L3565	L4565	L5565
1/2	—	20	H3	3	L3583	L4583	L5583
1/2	—	20	H5	3	L3585	L4585	L5585
9/16	12	—	H5	3	L3605	L4605	L5605
9/16	—	18	H5	3	L3625	L4625	L5625
5/8	11	—	H3	3	L3643	L4643	L5643
5/8	11	—	H5	3	L3645	L4645	L5645
3/4	10	—	H3	3	L3703	L4703	L5703
3/4	10	—	H5	3	L3705	L4705	L5705
3/4	—	16	H5	3	L3725	L4725	L5725
7/8	9	—	H6	3	L3746	L4746	L5746
7/8	—	14	H6	3	L3766	L4766	L5766
1	8	—	H6	3	L3786	L4786	L5786
1	—	12	H6	3	L3806	L4806	L5806

▶For tapping depth on DIN / ANSI Shank Taps, refer to DIN Table on page 493 & 494.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	○		○	○		

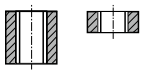
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
○					○					

SPIRAL POINT TAPS

T7216 / T6216 / T8216 SERIES
T7C16 / T6C16 / T8C16 SERIES

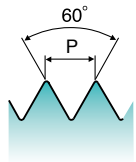
STANDARD TAPS : SPIRAL POINT PLUG STYLE for General Purpose

Hole type 3.0×D





USCTI



GS | HSS | UNC UNF | USCTI 302 | H1~H7 | 60° | 4P~5P | Bright | Steam Oxide | TiN

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.		
	UNC	UNF			Bright	Steam Oxide	TiN
#0	—	80	H1	2	T7216021	T6216021	T8216021
#0	—	80	H2	2	T7216022	T6216022	T8216022
#0	—	80	H3	2	T7216023	T6216023	T8216023
#1	64	—	H1	2	T7216041	T6216041	T8216041
#1	64	—	H2	2	T7216042	T6216042	T8216042
#1	—	72	H1	2	T7216061	T6216061	T8216061
#1	—	72	H2	2	T7216062	T6216062	T8216062
#2	56	—	H1	2	T7216081	T6216081	T8216081
#2	56	—	H2	2	T7216082	T6216082	T8216082
#2	56	—	H3	2	T7216083	T6216083	T8216083
#2	56	—	H5	2	T7216085	T6216085	T8216085
#2	—	64	H1	2	T7216101	T6216101	T8216101
#2	—	64	H2	2	T7216102	T6216102	T8216102
#3	48	—	H1	2	T7216121	T6216121	T8216121
#3	48	—	H2	2	T7216122	T6216122	T8216122
#3	48	—	H3	2	T7216123	T6216123	T8216123
#3	48	—	H5	2	T7216125	T6216125	T8216125
#3	—	56	H1	2	T7216141	T6216141	T8216141
#3	—	56	H2	2	T7216142	T6216142	T8216142
#4	40	—	H1	2	T7216161	T6216161	T8216161
#4	40	—	H2	2	T7216162	T6216162	T8216162
#4	40	—	H3	2	T7216163	T6216163	T8216163
#4	40	—	H5	2	T7216165	T6216165	T8216165
#4	40	—	H7	2	T7216167	T6216167	T8216167
#4	—	48	H1	2	T7216181	T6216181	T8216181
#4	—	48	H2	2	T7216182	T6216182	T8216182
#5	40	—	H1	2	T7216201	T6216201	T8216201
#5	40	—	H2	2	T7216202	T6216202	T8216202
#5	40	—	H5	2	T7216205	T6216205	T8216205
#5	—	44	H2	2	T7216222	T6216222	T8216222
#6	32	—	H1	2	T7216241	T6216241	T8216241
#6	32	—	H2	2	T7216242	T6216242	T8216242

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 495.
▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	○		○	○		

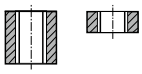
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
○					○					

SPIRAL POINT TAPS

T7216 / T6216 / T8216 SERIES
T7C16 / T6C16 / T8C16 SERIES

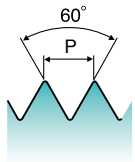
STANDARD TAPS : SPIRAL POINT PLUG STYLE for General Purpose

Hole type 3.0×D





USCTI



GS | HSS | UNC UNF | USCTI 302 | H1~H7 | 60° | 4P~5P | Bright | Steam Oxide | TiN

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.		
	UNC	UNF			Bright	Steam Oxide	TiN
#6	32	—	H3	2	T7216243	T6216243	T8216243
#6	32	—	H4	2	T7216244	T6216244	T8216244
#6	32	—	H5	2	T7216245	T6216245	T8216245
#6	32	—	H7	2	T7216247	T6216247	T8216247
#6	32	—	H3	3	T7C16243	T6C16243	T8C16243
#6	—	40	H1	2	T7216261	T6216261	T8216261
#6	—	40	H2	2	T7216262	T6216262	T8216262
#6	—	40	H5	2	T7216265	T6216265	T8216265
#8	32	—	H1	2	T7216281	T6216281	T8216281
#8	32	—	H2	2	T7216282	T6216282	T8216282
#8	32	—	H3	2	T7216283	T6216283	T8216283
#8	32	—	H4	2	T7216284	T6216284	T8216284
#8	32	—	H5	2	T7216285	T6216285	T8216285
#8	32	—	H7	2	T7216287	T6216287	T8216287
#8	32	—	H3	3	T7C16283	T6C16283	T8C16283
#8	—	36	H1	2	T7216301	T6216301	T8216301
#8	—	36	H2	2	T7216302	T6216302	T8216302
#10	24	—	H1	2	T7216321	T6216321	T8216321
#10	24	—	H2	2	T7216322	T6216322	T8216322
#10	24	—	H3	2	T7216323	T6216323	T8216323
#10	24	—	H4	2	T7216324	T6216324	T8216324
#10	24	—	H5	2	T7216325	T6216325	T8216325
#10	24	—	H7	2	T7216327	T6216327	T8216327
#10	24	—	H3	3	T7C16323	T6C16323	T8C16323
#10	—	32	H1	2	T7216341	T6216341	T8216341
#10	—	32	H2	2	T7216342	T6216342	T8216342
#10	—	32	H3	2	T7216343	T6216343	T8216343
#10	—	32	H4	2	T7216344	T6216344	T8216344
#10	—	32	H5	2	T7216345	T6216345	T8216345
#10	—	32	H7	2	T7216347	T6216347	T8216347
#10	—	32	H3	3	T7C16343	T6C16343	T8C16343
#12	24	—	H1	2	T7216361	T6216361	T8216361

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 495.

▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	○		○	○		

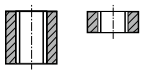
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
○					○					

SPIRAL POINT TAPS

T7216 / T6216 / T8216 SERIES
T7C16 / T6C16 / T8C16 SERIES

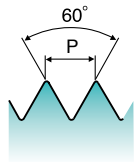
STANDARD TAPS : SPIRAL POINT PLUG STYLE for General Purpose

Hole type 3.0×D





USCTI



GS | HSS | UNC UNF | USCTI 302 | H1~H7 | 60° | 4P~5P | Bright | Steam Oxide | TiN

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.		
	UNC	UNF			Bright	Steam Oxide	TiN
#12	24	—	H3	2	T7216363	T6216363	T8216363
#12	—	28	H3	2	T7216383	T6216383	T8216383
1/4	20	—	H1	2	T7216401	T6216401	T8216401
1/4	20	—	H2	2	T7216402	T6216402	T8216402
1/4	20	—	H3	2	T7216403	T6216403	T8216403
1/4	20	—	H5	2	T7216405	T6216405	T8216405
1/4	20	—	H3	3	T7C16403	T6C16403	T8C16403
1/4	20	—	H5	3	T7C16405	T6C16405	T8C16405
1/4	—	28	H1	2	T7216421	T6216421	T8216421
1/4	—	28	H2	2	T7216422	T6216422	T8216422
1/4	—	28	H3	2	T7216423	T6216423	T8216423
1/4	—	28	H4	2	T7216424	T6216424	T8216424
1/4	—	28	H2	3	T7C16422	T6C16422	T8C16422
1/4	—	28	H4	3	T7C16424	T6C16424	T8C16424
5/16	18	—	H1	2	T7216441	T6216441	T8216441
5/16	18	—	H2	2	T7216442	T6216442	T8216442
5/16	18	—	H3	2	T7216443	T6216443	T8216443
5/16	18	—	H5	2	T7216445	T6216445	T8216445
5/16	18	—	H3	3	T7C16443	T6C16443	T8C16443
5/16	18	—	H5	3	T7C16445	T6C16445	T8C16445
5/16	—	24	H1	2	T7216461	T6216461	T8216461
5/16	—	24	H2	2	T7216462	T6216462	T8216462
5/16	—	24	H3	2	T7216463	T6216463	T8216463
5/16	—	24	H4	2	T7216464	T6216464	T8216464
5/16	—	24	H2	3	T7C16462	T6C16462	T8C16462
5/16	—	24	H4	3	T7C16464	T6C16464	T8C16464
3/8	16	—	H1	3	T7216481	T6216481	T8216481
3/8	16	—	H2	3	T7216482	T6216482	T8216482
3/8	16	—	H3	3	T7216483	T6216483	T8216483
3/8	16	—	H5	3	T7216485	T6216485	T8216485
3/8	—	24	H1	3	T7216501	T6216501	T8216501
3/8	—	24	H2	3	T7216502	T6216502	T8216502

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 495.

▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	○		○	○		

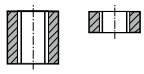
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
○					○					

SPIRAL POINT TAPS

T7216 / T6216 / T8216 SERIES
T7C16 / T6C16 / T8C16 SERIES

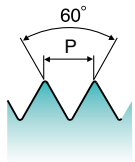
STANDARD TAPS : SPIRAL POINT PLUG STYLE for General Purpose

Hole type 3.0×D





USCTI



GS | HSS | UNC UNF | USCTI 302 | H1~H7 | 60° | 4P~5P | Bright | Steam Oxide | TiN

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.		
	UNC	UNF			Bright	Steam Oxide	TiN
3/8	—	24	H3	3	T7216503	T6216503	T8216503
3/8	—	24	H4	3	T7216504	T6216504	T8216504
7/16	14	—	H2	3	T7216522	T6216522	T8216522
7/16	14	—	H3	3	T7216523	T6216523	T8216523
7/16	14	—	H5	3	T7216525	T6216525	T8216525
7/16	—	20	H2	3	T7216542	T6216542	T8216542
7/16	—	20	H3	3	T7216543	T6216543	T8216543
7/16	—	20	H5	3	T7216545	T6216545	T8216545
1/2	13	—	H1	3	T7216561	T6216561	T8216561
1/2	13	—	H2	3	T7216562	T6216562	T8216562
1/2	13	—	H3	3	T7216563	T6216563	T8216563
1/2	13	—	H5	3	T7216565	T6216565	T8216565
1/2	—	20	H1	3	T7216581	T6216581	T8216581
1/2	—	20	H2	3	T7216582	T6216582	T8216582
1/2	—	20	H3	3	T7216583	T6216583	T8216583
1/2	—	20	H5	3	T7216585	T6216585	T8216585
9/16	12	—	H3	3	T7216603	T6216603	T8216603
9/16	12	—	H5	3	T7216605	T6216605	T8216605
9/16	—	18	H3	3	T7216623	T6216623	T8216623
9/16	—	18	H5	3	T7216625	T6216625	T8216625
5/8	11	—	H3	3	T7216643	T6216643	T8216643
5/8	11	—	H5	3	T7216645	T6216645	T8216645
5/8	—	18	H3	3	T7216663	T6216663	T8216663
5/8	—	18	H5	3	T7216665	T6216665	T8216665
3/4	10	—	H3	3	T7216703	T6216703	T8216703
3/4	10	—	H5	3	T7216705	T6216705	T8216705
3/4	—	16	H3	3	T7216723	T6216723	T8216723
3/4	—	16	H5	3	T7216725	T6216725	T8216725

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 495.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	○		○	○		

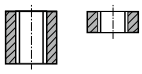
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
○					○					

SPIRAL POINT TAPS

T7256 / T6256 SERIES

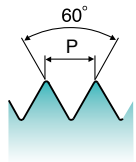
STANDARD TAPS : SPIRAL POINT PLUG STYLE for General Purpose

Hole type 3.0×D





USCTI



GS | HSS | UNC UNF | USCTI 302 | H1~H7 | 60° | 1.5P~2P | Bright | Steam Oxide

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.	
	UNC	UNF			Bright	Steam Oxide
#0	—	80	H1	2	T7256021	T6256021
#0	—	80	H2	2	T7256022	T6256022
#1	64	—	H2	2	T7256042	T6256042
#1	—	72	H1	2	T7256061	T6256061
#1	—	72	H2	2	T7256062	T6256062
#2	56	—	H1	2	T7256081	T6256081
#2	56	—	H2	2	T7256082	T6256082
#3	48	—	H2	2	T7256122	T6256122
#3	—	56	H2	2	T7256142	T6256142
#4	40	—	H2	2	T7256162	T6256162
#4	—	48	H2	2	T7256182	T6256182
#5	40	—	H2	2	T7256202	T6256202
#5	—	44	H2	2	T7256222	T6256222
#6	32	—	H2	2	T7256242	T6256242
#6	32	—	H3	2	T7256243	T6256243
#6	32	—	H7	2	T7256247	T6256247
#6	—	40	H2	2	T7256262	T6256262
#8	32	—	H2	2	T7256282	T6256282
#8	32	—	H3	2	T7256283	T6256283
#8	32	—	H7	2	T7256287	T6256287
#8	—	36	H2	2	T7256302	T6256302
#10	24	—	H2	2	T7256322	T6256322
#10	24	—	H3	2	T7256323	T6256323
#10	—	32	H1	2	T7256341	T6256341
#10	—	32	H2	2	T7256342	T6256342
#10	—	32	H3	2	T7256343	T6256343
#12	24	—	H3	2	T7256363	T6256363
#12	—	28	H3	2	T7256383	T6256383
1/4	20	—	H3	2	T7256403	T6256403

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 495.

▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	○		○	○		

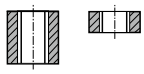
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
○					○					

SPIRAL POINT TAPS

T7256/T6256 SERIES

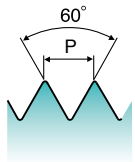
STANDARD TAPS : SPIRAL POINT BOTTOMING STYLE for General Purpose

Hole type 3.0×D





USCTI



GS | **HSS** | **UNC UNF** | **USCTI 302** | **H1~H7** | 60° | 1.5P~2P | **Bright** | **Steam Oxide**

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.	
	UNC	UNF			Bright	Steam Oxide
1/4	—	28	H2	2	**T7256422**	**T6256422**
1/4	—	28	H3	2	**T7256423**	**T6256423**
5/16	18	—	H3	2	**T7256443**	**T6256443**
5/16	—	24	H3	2	**T7256463**	**T6256463**
3/8	16	—	H3	3	**T7256483**	**T6256483**
3/8	—	24	H3	3	**T7256503**	**T6256503**
7/16	14	—	H3	3	**T7256523**	**T6256523**
7/16	—	20	H3	3	**T7256543**	**T6256543**
1/2	13	—	H3	3	**T7256563**	**T6256563**
1/2	—	20	H3	3	**T7256583**	**T6256583**
5/8	11	—	H3	3	**T7256643**	**T6256643**
5/8	—	18	H3	3	**T7256663**	**T6256663**
3/4	10	—	H3	3	**T7256703**	**T6256703**
3/4	—	16	H3	3	**T7256723**	**T6256723**

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 495.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	○		○	○		

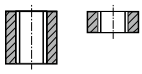
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
○					○					

SPIRAL POINT TAPS

T7217/T6217/T8217 SERIES

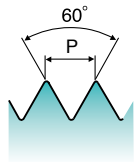
METRIC STANDARD TAPS : SPIRAL POINT PLUG STYLE for General Purpose

Hole type 3.0×D





USCTI



GS | HSS | M MF | USCTI 302 | D3~D7 | 60° | 4P~5P | Bright | Steam Oxide | TiN

SIZE	Pitch	Thread Limit	No. of Flute	EDP No.		
				Bright	Steam Oxide	TiN
M1.6	0.35	D3	2	T7217093	T6217093	T8217093
M2	0.40	D3	2	T7217133	T6217133	T8217133
M2.5	0.45	D3	2	T7217173	T6217173	T8217173
M3	0.50	D3	2	T7217203	T6217203	T8217203
M3.5	0.60	D4	2	T7217224	T6217224	T8217224
M4	0.70	D4	2	T7217244	T6217244	T8217244
M4.5	0.75	D4	2	T7217264	T6217264	T8217264
M5	0.80	D4	2	T7217284	T6217284	T8217284
M6	1.00	D5	2	T7217315	T6217315	T8217315
M7	1.00	D5	2	T7217345	T6217345	T8217345
M8	1.25	D5	2	T7217365	T6217365	T8217365
M8	1.00	D5	3	T7217375	T6217375	T8217375
M10	1.50	D6	3	T7217426	T6217426	T8217426
M10	1.25	D5	3	T7217435	T6217435	T8217435
M12	1.75	D6	3	T7217506	T6217506	T8217506
M12	1.25	D5	3	T7217525	T6217525	T8217525
M14	2.00	D7	3	T7217547	T6217547	T8217547
M14	1.50	D6	3	T7217556	T6217556	T8217556
M16	2.00	D7	3	T7217607	T6217607	T8217607
M16	1.50	D6	3	T7217616	T6217616	T8217616
M18	2.50	D7	3	T7217657	T6217657	T8217657
M20	2.50	D7	3	T7217707	T6217707	T8217707

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 495.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	○		○	○		

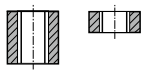
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
○					○					

SPIRAL POINT TAPS

T7226/T6226/T8226 SERIES

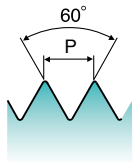
STANDARD TAPS : SPIRAL POINT PLUG STYLE
Oversize Tap

Hole type 3.0×D





USCTI



GS | HSS | UNC UNF | USCTI 302 | 60° | 4P~5P | Bright | Steam Oxide | TiN | +.005" oversize

SIZE	Thread Per Inch		No. of Flute	EDP No.		
	UNC	UNF		Bright	Steam Oxide	TiN
#6	32	—	2	T7226240	T6226240	T8226240
#8	32	—	2	T7226280	T6226280	T8226280
#10	24	—	2	T7226320	T6226320	T8226320
#10	—	32	2	T7226340	T6226340	T8226340
1/4	20	—	2	T7226400	T6226400	T8226400
1/4	—	28	2	T7226420	T6226420	T8226420
5/16	18	—	2	T7226440	T6226440	T8226440
5/16	—	24	2	T7226460	T6226460	T8226460
3/8	16	—	3	T7226480	T6226480	T8226480
3/8	—	24	3	T7226500	T6226500	T8226500
7/16	14	—	3	T7226520	T6226520	T8226520
7/16	—	20	3	T7226540	T6226540	T8226540
1/2	13	—	3	T7226560	T6226560	T8226560
1/2	—	20	3	T7226580	T6226580	T8226580
5/8	11	—	3	T7226640	T6226640	T8226640
3/4	10	—	3	T7226700	T6226700	T8226700

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 495.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	○		○	○		

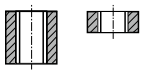
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
○					○					

SPIRAL POINT TAPS

T7B17/T6B17/T8B17 SERIES

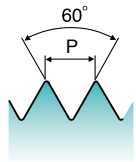
STANDARD TAPS : SPIRAL POINT PLUG STYLE
Oversize Tap

Hole type 3.0×D





USCTI



GS | **HSS** | **M MF** | **USCTI 302** | 60° | 4P~5P | **Bright** | **Steam Oxide** | **TiN** | **+.127mm oversize**

SIZE	Pitch	No. of Flute	EDP No.		
			Bright	Steam Oxide	TiN
M4	0.7	2	T7B17240	T6B17240	T8B17240
M5	0.8	2	T7B17280	T6B17280	T8B17280
M6	1	2	T7B17310	T6B17310	T8B17310
M8	1.25	2	T7B17360	T6B17360	T8B17360
M8	1	2	T7B17370	T6B17370	T8B17370
M10	1.5	3	T7B17420	T6B17420	T8B17420
M10	1.25	3	T7B17430	T6B17430	T8B17430
M12	1.75	3	T7B17500	T6B17500	T8B17500
M16	2	3	T7B17600	T6B17600	T8B17600

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 495.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	○		○	○		

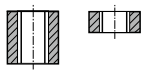
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
○					○					

SPIRAL POINT TAPS

T7236/T6236/T8236 SERIES
T7G36/T6G36/T8G36 SERIES

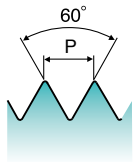
SPIRAL POINTED TAP, 6" EXTENSION

Hole type 3.0×D





USCTI Long Shank



GS | **HSS** | **UNC UNF** | **USCTI Long Shank** | **H3** | **60°** | **4P~5P** | **Bright** | **Steam Oxide** | **TiN**

SIZE	Thread Per Inch		Thread Limit	Overall Length	No. of Flutes	EDP No.		
	UNC	UNF				Bright	Steam Oxide	TiN
#6	32	—	H3	6	2	**T7236243**	**T6236243**	**T8236243**
#8	32	—	H3	6	2	**T7236283**	**T6236283**	**T8236283**
#10	24	—	H3	6	2	**T7236323**	**T6236323**	**T8236323**
#10	—	32	H3	6	2	**T7236343**	**T6236343**	**T8236343**
1/4	20	—	H3	6	2	**T7236403**	**T6236403**	**T8236403**
1/4	—	28	H3	6	2	**T7236423**	**T6236423**	**T8236423**
5/16	18	—	H3	6	2	**T7236443**	**T6236443**	**T8236443**
5/16	18	—	H3	6	3	**T7G36443**	**T6G36443**	**T8G36443**
5/16	—	24	H3	6	2	**T7236463**	**T6236463**	**T8236463**
5/16	—	24	H3	6	3	**T7G36463**	**T6G36463**	**T8G36463**
3/8	16	—	H3	6	3	**T7236483**	**T6236483**	**T8236483**
3/8	—	24	H3	6	3	**T7236503**	**T6236503**	**T8236503**
7/16	14	—	H3	6	3	**T7236523**	**T6236523**	**T8236523**
7/16	—	20	H3	6	3	**T7236543**	**T6236543**	**T8236543**
1/2	13	—	H3	6	3	**T7236563**	**T6236563**	**T8236563**
1/2	—	20	H3	6	3	**T7236583**	**T6236583**	**T8236583**
5/8	11	—	H3	6	3	**T7236643**	**T6236643**	**T8236643**

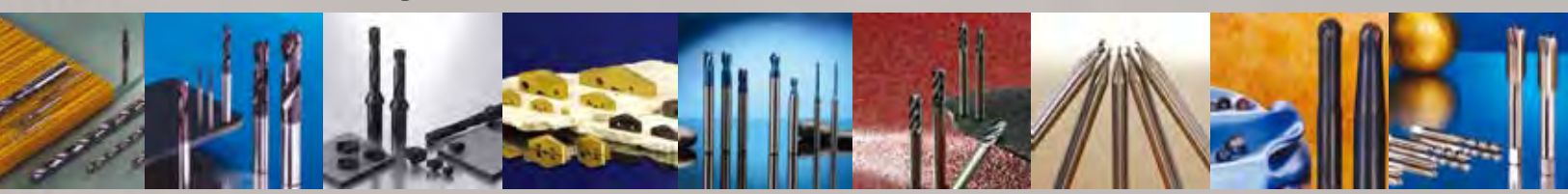
▶For tapping depth on DIN / ANSI Shank Taps, refer to DIN Table on page 493 & 494.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	○		○	○		

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
○					○					

Global Cutting Tool Leader **YG-1**



CARBIDE & HSS

Being the best through innovation





STRAIGHT FLUTE TAPS

- Tapping Through & Blind Holes / Carbide, Super HSS & HSS

STRAIGHT FLUTE TAPS

Tapping Through & Blind Holes / Carbide, Super HSS & HSS

INCH

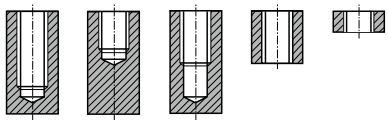
EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Thread Depth	Surface Treatment	Page
T0C01		Carbide	UNC/UNF	GG	USCTI 302A	2B	1.5 ~ 2P	2.0D	Bright	441
TR		Super HSS	UNC/UNF	GG	USCTI 302A	H3~H5	2 ~ 3P		TiAlN	442
			M	GG		D4~D6	2 ~ 3P			
TR-A, TR-R		Super HSS	UNC/UNF	GG	USCTI 302A	H3~H5	2 ~ 3P		TiAlN	444
			M	GG		D4~D6	2 ~ 3P			
T7316/T6316/ T8316/T7A16/ T7B16		HSS	UNC/ UNF/ UNS	GS	USCTI 302	H1~H7	9P/5P/2P		Bright Steam Oxide TiN	446
T7315/T6315/ T8315		HSS	M/MF	GS	USCTI 302	D3~D9	9P/5P/2P		Bright Steam Oxide TiN	452
T7326		HSS	UNC/UNF	GS	USCTI 302	+.005" oversize	5P/2P		Bright	453
T7B15		HSS	M/MF	GS	USCTI 302	+.127mm oversize	5P/2P		Bright	454
T7336		HSS	UNC/UNF	GS	USCTI 302 (Left Hand)	H2~H4	5P/2P		Bright	455
T7A15		HSS	UNC/UNF	GS	USCTI 302 (Left Hand)	D4~D8	5P/2P		Bright	456
T7616/T6616/ T8616		HSS	UNC/UNF	GS	USCTI Long Shank	H3	4 ~ 5P		Bright Steam Oxide TiN	457

STRAIGHT FLUTE TAPS

T0C01 SERIES

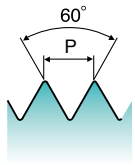
STRAIGHT FLUTE TAP BOTTOMING STYLE for ALUMINUM ALLOY & CAST IRON

Hole type 2.0×D





USCTI



GG | Carbide | UNC UNF | USCTI 302A | 2B | 60° | 1.5P~2P Bottoming | Bright

SIZE	Thread Per Inch		Thread Limit	No. of Flute	EDP No.
	UNC	UNF			Bright
#10	24	—	2B	4	**T0C01322**
#10	—	32	2B	4	**T0C01342**
#12	24	—	2B	4	**T0C01362**
1/4	20	—	2B	4	**T0C01402**
1/4	—	28	2B	4	**T0C01422**
5/16	18	—	2B	4	**T0C01442**
5/16	—	24	2B	4	**T0C01462**
3/8	16	—	2B	4	**T0C01482**
3/8	—	24	2B	4	**T0C01502**

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 495.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
							◎

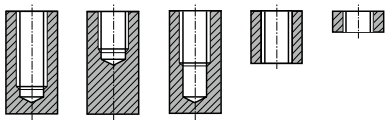
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
○	◎				○					

STRAIGHT FLUTE TAPS

TR SERIES

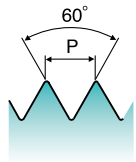
STRAIGHT FLUTE TAP MODIFIED BOTTOMING STYLE for CAST IRON

Hole type 2.0×D





USCTI



GG | Super HSS | UNC UNF | USCTI 302A | H3~H5 | 60° | 2P~3P Bottoming | TiAlN

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.
	UNC	UNF			TiAlN
#10	24	—	H3	4	**TR323**
#10	24	—	H5	4	**TR325**
#10	—	32	H3	4	**TR343**
1/4	20	—	H3	4	**TR403**
1/4	20	—	H5	4	**TR405**
1/4	—	28	H3	4	**TR423**
5/16	18	—	H3	4	**TR443**
5/16	18	—	H5	4	**TR445**
5/16	—	24	H3	4	**TR463**
3/8	16	—	H3	4	**TR483**
3/8	16	—	H5	4	**TR485**
3/8	—	24	H3	4	**TR503**
7/16	14	—	H3	4	**TR523**
7/16	14	—	H5	4	**TR525**
7/16	—	20	H3	4	**TR543**
7/16	—	20	H5	4	**TR545**
1/2	13	—	H3	4	**TR563**
1/2	13	—	H5	4	**TR565**
1/2	—	20	H3	4	**TR583**
1/2	—	20	H5	4	**TR585**
9/16	12	—	H3	4	**TR603**
9/16	12	—	H5	4	**TR605**
9/16	—	18	H3	4	**TR623**
9/16	—	18	H5	4	**TR625**
5/8	11	—	H3	4	**TR643**
5/8	11	—	H5	4	**TR645**
5/8	—	18	H3	4	**TR663**
5/8	—	18	H5	4	**TR665**
3/4	10	—	H3	4	**TR703**
3/4	10	—	H5	4	**TR705**
3/4	—	16	H3	4	**TR723**
3/4	—	16	H5	4	**TR725**

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 495.

▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
							◎

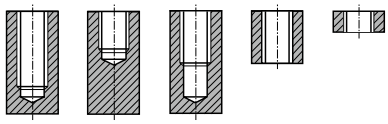
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
					◎					

STRAIGHT FLUTE TAPS

TR SERIES

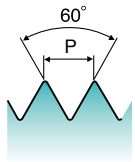
METRIC STRAIGHT FLUTE TAP MODIFIED BOTTOMING STYLE for CAST IRON

Hole type 2.0×D





USCTI



GG | Super HSS | M | USCTI 302A | D4~D6 | 60° | 2P~3P Bottoming | TiAlN

SIZE	Pitch	Limit	No. of Flute	EDP No.
				TiAlN
M5	0.8	D4	4	**TR284**
M6	1	D5	4	**TR315**
M8	1.25	D5	4	**TR365**
M10	1.5	D6	4	**TR426**
M12	1.25	D6	4	**TR526**
M12	1.75	D6	4	**TR506**
M14	1.25	D6	4	**TR566**
M14	1.5	D6	4	**TR556**
M16	1.5	D6	4	**TR616**
M18	1.5	D6	4	**TR676**

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 495.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
							◎

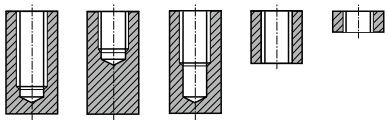
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
					◎					

STRAIGHT FLUTE TAPS

TR-A, TR-R SERIES

STRAIGHT FLUTE TAP MODIFIED BOTTOMING STYLE for CAST IRON

Hole type 2.0×D

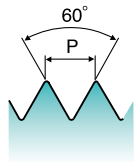


Through Coolant Hole

Radial Coolant Hole



USCTI



GG | Super HSS | UNC UNF | USCTI 302A | H3~H5 | 60° | 2P~3P Bottoming | TiAlN

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.	
	UNC	UNF			Through Coolant Hole	Radial Coolant Hole
#10	24	—	H3	4	TR323A	TR323R
#10	24	—	H5	4	TR325A	TR325R
#10	—	32	H3	4	TR343A	TR343R
1/4	20	—	H3	4	TR403A	TR403R
1/4	20	—	H5	4	TR405A	TR405R
1/4	—	28	H3	4	TR423A	TR423R
5/16	18	—	H3	4	TR443A	TR443R
5/16	18	—	H5	4	TR445A	TR445R
5/16	—	24	H3	4	TR463A	TR463R
3/8	16	—	H3	4	TR483A	TR483R
3/8	16	—	H5	4	TR485A	TR485R
3/8	—	24	H3	4	TR503A	TR503R
7/16	14	—	H3	4	TR523A	TR523R
7/16	14	—	H5	4	TR525A	TR525R
7/16	—	20	H3	4	TR543A	TR543R
7/16	—	20	H5	4	TR545A	TR545R
1/2	13	—	H3	4	TR563A	TR563R
1/2	13	—	H5	4	TR565A	TR565R
1/2	—	20	H3	4	TR583A	TR583R
1/2	—	20	H5	4	TR585A	TR585R
9/16	12	—	H3	4	TR603A	TR603R
9/16	12	—	H5	4	TR605A	TR605R
9/16	—	18	H3	4	TR623A	TR623R
9/16	—	18	H5	4	TR625A	TR625R
5/8	11	—	H3	4	TR643A	TR643R
5/8	11	—	H5	4	TR645A	TR645R
5/8	—	18	H3	4	TR663A	TR663R
5/8	—	18	H5	4	TR665A	TR665R
3/4	10	—	H3	4	TR703A	TR703R
3/4	10	—	H5	4	TR705A	TR705R
3/4	—	16	H3	4	TR723A	TR723R
3/4	—	16	H5	4	TR725A	TR725R

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 495.

▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
							◎

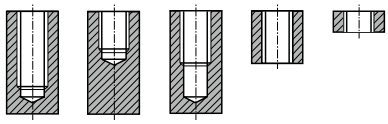
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
					◎					

STRAIGHT FLUTE TAPS

TR-A, TR-R SERIES

METRIC STRAIGHT FLUTE TAP MODIFIED BOTTOMING STYLE for CAST IRON

Hole type 2.0×D

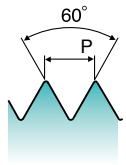


Through Coolant Hole

Radial Coolant Hole



USCTI



GG | Super HSS | M | USCTI 302A | D4~D6 | 60° | 2P~3P Bottoming | TiAlN

SIZE	Pitch	Limit	No. of Flute	EDP No.	
				Through Coolant Hole	Radial Coolant Hole
M5	0.8	D4	4	**TR284A**	**TR284R**
M6	1	D5	4	**TR315A**	**TR315R**
M8	1.25	D5	4	**TR365A**	**TR365R**
M10	1.5	D6	4	**TR426A**	**TR426R**
M12	1.25	D6	4	**TR526A**	**TR526R**
M12	1.75	D6	4	**TR506A**	**TR506R**
M14	1.25	D6	4	**TR566A**	**TR566R**
M14	1.5	D6	4	**TR556A**	**TR556R**
M16	1.5	D6	4	**TR616A**	**TR616R**
M18	1.5	D6	4	**TR676A**	**TR676R**

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 495.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
							◎

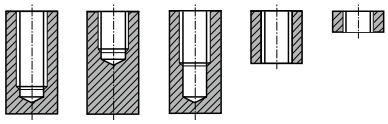
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
					◎					

STRAIGHT FLUTE TAPS

T7316/T6316/T8316 SERIES
T7A16/T7B16 SERIES

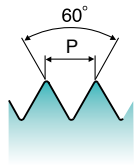
HAND TAP
TAPER, PLUG & BOTTOMING STYLE

Hole type 2.0×D





USCTI



GS | **HSS** | **UNC UNF UNS** | **USCTI 302** | **H1~H7** | **60°** | **9P/5P/2P** | **Bright** | **Steam Oxide** | **TiN**

SIZE	Thread Per Inch			Limit	No. of Flute	EDP No.							
						Bright			Steam Oxide			TiN	
	UNC	UNF	UNS			Taper	Plug	Bottoming	Taper	Plug	Bottoming	Plug	Bottoming
#0	—	80	—	H1	2	T7316026	T7316027	T7316028	T6316026	T6316027	T6316028	T8316027	T8316028
#0	—	80	—	H2	2	—	T7316027H2	T7316028H2	—	—	—	—	—
#1	64	—	—	H1	2	T7316046	T7316047	T7316048	T6316046	T6316047	T6316048	T8316047	T8316048
#1	64	—	—	H2	2	—	T7316047H2	T7316048H2	—	—	—	—	—
#1	—	72	—	H1	2	T7316066	T7316067	T7316068	T6316066	T6316067	T6316068	T8316067	T8316068
#1	—	72	—	H2	2	—	T7316067H2	T7316068H2	—	—	—	—	—
#2	56	—	—	H1	2	—	T7A16087H1	T7A16088H1	—	—	—	—	—
#2	56	—	—	H1	3	T7316086H1	T7316087H1	T7316088H1	—	—	—	—	—
#2	56	—	—	H2	2	—	T7A16087	T7A16088	—	—	—	—	—
#2	56	—	—	H2	3	T7316086	T7316087	T7316088	T6316086	T6316087	T6316088	T8316087	T8316088
#2	—	64	—	H2	3	T7316106	T7316107	T7316108	—	—	—	—	—
#3	48	—	—	H1	3	—	T7316127H1	—	—	—	—	—	—
#3	48	—	—	H2	2	—	T7A16127	T7A16128	—	—	—	—	—
#3	48	—	—	H2	3	T7316126	T7316127	T7316128	T6316126	T6316127	T6316128	—	—
#3	—	56	—	H2	3	T7316146	T7316147	T7316148	T6316146	T6316147	T6316148	—	—
#4	—	—	36	H2	3	T7316156	T7316157	T7316158	T6316156	T6316157	T6316158	—	—
#4	40	—	—	H1	2	—	T7A16167H1	T7A16168H1	—	—	—	—	—
#4	40	—	—	H1	3	T7316166H1	T7316167H1	T7316168H1	T6316166H1	T6316167H1	T6316168H1	—	—
#4	40	—	—	H2	2	—	T7A16167	T7A16168	—	—	—	—	—
#4	40	—	—	H2	3	T7316166	T7316167	T7316168	T6316166	T6316167	T6316168	T8316167	T8316168
#4	—	48	—	H1	3	—	T7316187H1	—	—	—	—	—	—
#4	—	48	—	H2	3	T7316186	T7316187	T7316188	—	—	—	—	—
#5	40	—	—	H1	3	—	T7316207H1	T7316208H1	—	—	—	—	—
#5	40	—	—	H2	2	—	T7A16207	T7A16208	—	—	—	—	—
#5	40	—	—	H2	3	T7316206	T7316207	T7316208	T6316206	T6316207	T6316208	T8316207	T8316208
#5	—	44	—	H2	3	T7316226	T7316227	T7316228	T6316226	T6316227	T6316228	—	—
#6	32	—	—	H1	2	—	T7A16247H1	T7A16248H1	—	—	—	—	—
#6	32	—	—	H1	3	T7316246H1	T7316247H1	T7316248H1	T6316246H1	T6316247H1	T6316248H1	—	—

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 495.

▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎			◎			

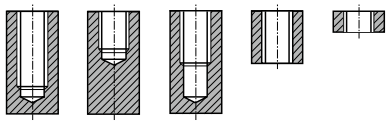
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	◎	◎		◎	◎	◎	◎			

STRAIGHT FLUTE TAPS

T7316/T6316/T8316 SERIES
T7A16/T7B16 SERIES

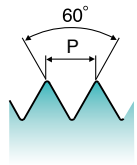
HAND TAP
TAPER, PLUG & BOTTOMING STYLE

Hole type 2.0×D





USCTI



GS | HSS | UNC UNF UNS | USCTI 302 | H1~H7 | 60° | 9P/5P/2P | Bright | Steam Oxide | TiN

SIZE	Thread Per Inch			Limit	No. of Flute	EDP No.							
						Bright			Steam Oxide			TiN	
	UNC	UNF	UNS			Taper	Plug	Bottoming	Taper	Plug	Bottoming	Plug	Bottoming
#6	32	—	—	H2	2	—	T7A16247H2	T7A16248H2	—	—	—	—	—
#6	32	—	—	H2	3	T7316246H2	T7316247H2	T7316248H2	T6316246H2	T6316247H2	T6316248H2	—	—
#6	32	—	—	H3	2	—	T7A16247	T7A16248	—	—	—	—	—
#6	32	—	—	H3	3	T7316246	T7316247	T7316248	T6316246	T6316247	T6316248	T8316247	T8316248
#6	32	—	—	H7	3	—	T7B16247H7	T7B16248H7	—	—	—	—	—
#6	—	40	—	H1	3	—	T7B16267H1	—	—	—	—	—	—
#6	—	40	—	H2	2	—	T7A16267	T7A16268	—	—	—	—	—
#6	—	40	—	H2	3	T7316266	T7316267	T7316268	T6316266	T6316267	T6316268	T8316267	T8316268
#8	32	—	—	H1	2	—	T7A16287H1	—	—	—	—	—	—
#8	32	—	—	H1	4	T7316286H1	T7316287H1	T7316288H1	T6316286H1	T6316287H1	T6316288H1	—	—
#8	32	—	—	H2	2	—	T7A16287H2	T7A16288H2	—	—	—	—	—
#8	32	—	—	H2	3	—	T7B16287H2	T7B16288H2	—	—	—	—	—
#8	32	—	—	H2	4	T7316286H2	T7316287H2	T7316288H2	T6316286H2	T6316287H2	T6316288H2	—	—
#8	32	—	—	H3	2	—	T7A16287	T7A16288	—	—	—	—	—
#8	32	—	—	H3	3	—	T7B16287	T7B16288	—	—	—	—	—
#8	32	—	—	H3	4	T7316286	T7316287	T7316288	T6316286	T6316287	T6316288	T8316287	T8316288
#8	32	—	—	H7	3	—	T7B16287H7	T7B16288H7	—	—	—	—	—
#8	32	—	—	H7	4	—	T7316287H7	T7316288H7	—	—	—	—	—
#8	—	36	—	H2	4	T7316306	T7316307	T7316308	T6316306	T6316307	T6316308	T8316307	T8316308
#10	24	—	—	H1	4	T7316326H1	T7316327H1	T7316328H1	T6316326H1	T6316327H1	T6316328H1	—	—
#10	24	—	—	H2	2	—	T7A16327H2	T7A16328H2	—	—	—	—	—
#10	24	—	—	H2	3	—	T7B16327H2	—	—	—	—	—	—
#10	24	—	—	H2	4	T7316326H2	T7316327H2	T7316328H2	T6316326H2	T6316327H2	T6316328H2	—	—
#10	24	—	—	H3	2	—	T7A16327	T7A16328	—	—	—	—	—
#10	24	—	—	H3	3	—	T7B16327	T7B16328	—	—	—	—	—
#10	24	—	—	H3	4	T7316326	T7316327	T7316328	T6316326	T6316327	T6316328	T8316327	T8316328
#10	24	—	—	H7	3	—	T7B16327H7	T7B16328H7	—	—	—	—	—
#10	24	—	—	H7	4	—	T7316327H7	T7316328H7	—	—	—	—	—

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 495.

▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎			◎			

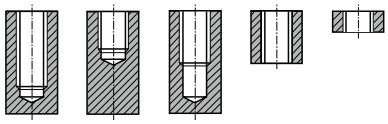
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	◎	◎		◎	◎	◎	◎			

STRAIGHT FLUTE TAPS

T7316/T6316/T8316 SERIES
T7A16/T7B16 SERIES

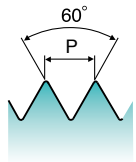
HAND TAP
TAPER, PLUG & BOTTOMING STYLE

Hole type 2.0×D





USCTI



GS | HSS | UNC UNF UNS | USCTI 302 | H1~H7 | 60° | 9P/5P/2P | Bright | Steam Oxide | TiN

SIZE	Thread Per Inch			Limit	No. of Flute	EDP No.							
						Bright			Steam Oxide			TiN	
	UNC	UNF	UNS			Taper	Plug	Bottoming	Taper	Plug	Bottoming	Plug	Bottoming
#10	—	32	—	H1	2	–	T7A16347H1	T7A16348H1	–	–	–	–	–
#10	—	32	—	H1	4	T7316346H1	T7316347H1	T7316348H1	T6316346H1	T6316347H1	T6316348H1	–	–
#10	—	32	—	H2	2	–	T7A16347H2	T7A16348H2	–	–	–	–	–
#10	—	32	—	H2	3	–	T7B16347H2	T7B16348H2	–	–	–	–	–
#10	—	32	—	H2	4	T7316346H2	T7316347H2	T7316348H2	T6316346H2	T6316347H2	T6316348H2	–	–
#10	—	32	—	H3	2	–	T7A16347	T7A16348	–	–	–	–	–
#10	—	32	—	H3	3	–	T7B16347	T7B16348	–	–	–	–	–
#10	—	32	—	H3	4	T7316346	T7316347	T7316348	T6316346	T6316347	T6316348	T8316347	T8316348
#10	—	32	—	H7	3	–	T7B16347H7	T7B16348H7	–	–	–	–	–
#10	—	32	—	H7	4	–	T7316347H7	T7316348H7	–	–	–	–	–
#12	24	—	—	H3	4	T7316366	T7316367	T7316368	T6316366	T6316367	T6316368	T8316367	T8316368
#12	—	28	—	H1	4	–	T7316387H1	–	–	–	–	–	–
# 12	—	28	—	H3	4	T7316386	T7316387	T7316388	T6316386	T6316387	T6316388	T8316387	T8316388
1/4	20	—	—	H1	3	–	T7B16407H1	–	–	–	–	–	–
1/4	20	—	—	H1	4	T7316406H1	T7316407H1	T7316408H1	–	–	–	–	–
1/4	20	—	—	H2	3	–	T7B16407H2	T7B16408H2	–	–	–	–	–
1/4	20	—	—	H2	4	T7316406H2	T7316407H2	T7316408H2	–	–	–	–	–
1/4	20	—	—	H3	2	–	T7A16407	T7A16408	–	–	–	–	–
1/4	20	—	—	H3	3	–	T7B16407	T7B16408	–	–	–	–	–
1/4	20	—	—	H3	4	T7316406	T7316407	T7316408	T6316406	T6316407	T6316408	T8316407	T8316408
1/4	20	—	—	H5	3	–	T7B16407H5	T7B16408H5	–	–	–	–	–
1/4	20	—	—	H5	4	–	T7316407H5	T7316408H5	–	–	–	–	–
1/4	—	28	—	H1	4	–	T7316427H1	T7316428H1	–	–	–	–	–
1/4	—	28	—	H2	4	–	T7316427H2	T7316428H2	–	–	–	–	–
1/4	—	28	—	H3	2	–	T7A16427	T7A16428	–	–	–	–	–
1/4	—	28	—	H3	3	–	T7B16427	T7B16428	–	–	–	–	–
1/4	—	28	—	H3	4	T7316426	T7316427	T7316428	T6316426	T6316427	T6316428	T8316427	T8316428
1/4	—	28	—	H4	4	–	T7316427H4	T7316428H4	–	–	–	–	–

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 495.

▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎			◎			

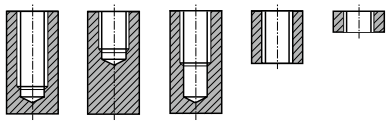
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	◎	◎		◎	◎	◎	◎			

STRAIGHT FLUTE TAPS

T7316/T6316/T8316 SERIES
T7A16/T7B16 SERIES

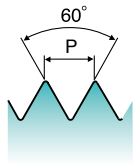
HAND TAP
TAPER, PLUG & BOTTOMING STYLE

Hole type 2.0×D





USCTI



GS | **HSS** | **UNC UNF UNS** | **USCTI 302** | **H1~H7** | **60°** | **9P/5P/2P** | **Bright** | **Steam Oxide** | **TiN**

SIZE	Thread Per Inch			Limit	No. of Flute	EDP No.							
						Bright			Steam Oxide			TiN	
	UNC	UNF	UNS			Taper	Plug	Bottoming	Taper	Plug	Bottoming	Plug	Bottoming
5/16	18	—	—	H1	4	—	T7316447H1	T7316448H1	—	—	—	—	—
5/16	18	—	—	H2	4	T7316446H2	T7316447H2	T7316448H2	T6316446H2	T6316447H2	T6316448H2	—	—
5/16	18	—	—	H3	2	—	T7A16447	T7A16448	—	—	—	—	—
5/16	18	—	—	H3	3	—	T7B16447	T7B16448	—	—	—	—	—
5/16	18	—	—	H3	4	T7316446	T7316447	T7316448	T6316446	T6316447	T6316448	T8316447	T8316448
5/16	18	—	—	H5	3	—	T7B16447H5	T7B16448H5	—	—	—	—	—
5/16	18	—	—	H5	4	—	T7316447H5	T7316448H5	—	—	—	—	—
5/16	—	24	—	H1	4	—	T7316467H1	T7316468H1	—	—	—	—	—
5/16	—	24	—	H2	4	—	T7316467H2	T7316468H2	—	—	—	—	—
5/16	—	24	—	H3	3	—	T7B16467	T7B16468	—	—	—	—	—
5/16	—	24	—	H3	4	T7316466	T7316467	T7316468	T6316466	T6316467	T6316468	T8316467	T8316468
5/16	—	24	—	H4	4	—	T7316467H4	T7316468H4	—	—	—	—	—
3/8	16	—	—	H1	3	—	T7B16487H1	T7B16488H1	—	—	—	—	—
3/8	16	—	—	H1	4	—	T7316487H1	T7316488H1	—	—	—	—	—
3/8	16	—	—	H2	4	—	T7316487H2	T7316488H2	—	—	—	—	—
3/8	16	—	—	H3	3	—	T7B16487	T7B16488	—	—	—	—	—
3/8	16	—	—	H3	4	T7316486	T7316487	T7316488	T6316486	T6316487	T6316488	T8316487	T8316488
3/8	16	—	—	H5	3	—	T7B16487H5	T7B16488H5	—	—	—	—	—
3/8	16	—	—	H5	4	—	T7316487H5	T7316488H5	—	—	—	—	—
3/8	—	24	—	H1	4	—	T7316507H1	T7316508H1	—	—	—	—	—
3/8	—	24	—	H2	4	—	T7316507H2	T7316508H2	—	—	—	—	—
3/8	—	24	—	H3	3	—	T7B16507	T7B16508	—	—	—	—	—
3/8	—	24	—	H3	4	T7316506	T7316507	T7316508	T6316506	T6316507	T6316508	T8316507	T8316508
3/8	—	24	—	H4	4	—	T7316507H4	T7316508H4	—	—	—	—	—
7/16	14	—	—	H2	4	—	T7316527H2	—	—	—	—	—	—
7/16	14	—	—	H3	3	—	T7B16527	T7B16528	—	—	—	—	—
7/16	14	—	—	H3	4	T7316526	T7316527	T7316528	T6316526	T6316527	T6316528	T8316527	T8316528
7/16	14	—	—	H5	4	—	T7316527H5	T7316528H5	—	—	—	—	—

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 495.

▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎			◎			

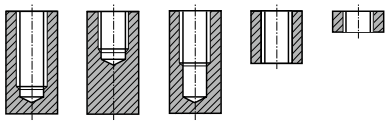
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	◎	◎		◎	◎	◎	◎			

STRAIGHT FLUTE TAPS

T7316/T6316/T8316 SERIES
T7A16/T7B16 SERIES

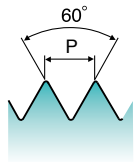
HAND TAP
TAPER, PLUG & BOTTOMING STYLE

Hole type 2.0×D





USCTI



GS | HSS | UNC UNF UNS | USCTI 302 | H1~H7 | 60° | 9P/5P/2P | Bright | Steam Oxide | TiN

SIZE	Thread Per Inch			Limit	No. of Flute	EDP No.							
						Bright			Steam Oxide			TiN	
	UNC	UNF	UNS			Taper	Plug	Bottoming	Taper	Plug	Bottoming	Plug	Bottoming
7/16	—	20	—	H2	4	–	T7316547H2	–	–	–	–	–	–
7/16	—	20	—	H3	3	–	T7B16547	T7B16548	–	–	–	–	–
7/16	—	20	—	H3	4	T7316546	T7316547	T7316548	T6316546	T6316547	T6316548	T8316547	T8316548
7/16	—	20	—	H5	4	–	T7316547H5	T7316548H5	–	–	–	–	–
1/2	13	—	—	H1	4	–	T7316567H1	T7316568H1	–	–	–	–	–
1/2	13	—	—	H2	4	–	T7316567H2	T7316568H2	–	–	–	–	–
1/2	13	—	—	H3	3	–	T7B16567	T7B16568	–	–	–	–	–
1/2	13	—	—	H3	4	T7316566	T7316567	T7316568	T6316566	T6316567	T6316568	T8316567	T8316568
1/2	13	—	—	H5	4	–	T7316567H5	T7316568H5	–	–	–	–	–
1/2	—	20	—	H1	4	–	T7316587H1	T7316588H1	–	–	–	–	–
1/2	—	20	—	H3	3	–	T7B16587	T7B16588	–	–	–	–	–
1/2	—	20	—	H3	4	T7316586	T7316587	T7316588	T6316586	T6316587	T6316588	T8316587	T8316588
1/2	—	20	—	H5	4	–	T7316587H5	T7316588H5	–	–	–	–	–
9/16	12	—	—	H3	4	T7316606	T7316607	T7316608	T6316606	T6316607	T6316608	T8316607	T8316608
9/16	12	—	—	H5	4	–	T7316607H5	T7316608H5	–	–	–	–	–
9/16	—	18	—	H2	4	–	T7316627H2	–	–	–	–	–	–
9/16	—	18	—	H3	4	T7316626	T7316627	T7316628	T6316626	T6316627	T6316628	T8316627	T8316628
9/16	—	18	—	H5	4	–	T7316627H5	T7316628H5	–	–	–	–	–
5/8	11	—	—	H1	4	–	T7316647H1	–	–	–	–	–	–
5/8	11	—	—	H2	4	–	T7316647H2	T7316648H2	–	–	–	–	–
5/8	11	—	—	H3	4	T7316646	T7316647	T7316648	T6316646	T6316647	T6316648	T8316647	T8316648
5/8	11	—	—	H5	4	–	T7316647H5	T7316648H5	–	–	–	–	–
5/8	—	18	—	H1	4	–	T7316667H1	–	–	–	–	–	–
5/8	—	18	—	H2	4	–	T7316667H2	–	–	–	–	–	–
5/8	—	18	—	H3	4	T7316666	T7316667	T7316668	T6316666	T6316667	T6316668	T8316667	T8316668
5/8	—	18	—	H5	4	–	T7316667H5	T7316668H5	–	–	–	–	–
11/16	—	—	11	H3	4	T7316A06	T7316A07	T7316A08	T6316A06	T6316A07	T6316A08	–	–
11/16	—	—	16	H3	4	T7316A26	T7316A27	T7316A28	T6316A26	T6316A27	T6316A28	–	–

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 495.

▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎			◎			

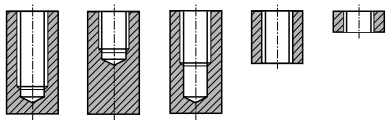
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	◎	◎		◎	◎	◎	◎			

STRAIGHT FLUTE TAPS

T7316/T6316/T8316 SERIES
T7A16/T7B16 SERIES

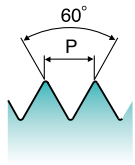
HAND TAP
TAPER, PLUG & BOTTOMING STYLE

Hole type 2.0×D





USCTI



GS | HSS | UNC UNF UNS | USCTI 302 | H1~H7 | 60° | 9P/5P/2P | Bright | Steam Oxide | TiN

SIZE	Thread Per Inch			Limit	No. of Flute	EDP No.							
						Bright			Steam Oxide			TiN	
	UNC	UNF	UNS			Taper	Plug	Bottoming	Taper	Plug	Bottoming	Plug	Bottoming
3/4	10	—	—	H1	4	—	T7316707H1	T7316708H1	—	—	—	—	—
3/4	10	—	—	H2	4	—	T7316707H2	—	—	—	—	—	—
3/4	10	—	—	H3	4	T7316706	T7316707	T7316708	T6316706	T6316707	T6316708	T8316707	T8316708
3/4	10	—	—	H5	4	—	T7316707H5	T7316708H5	—	—	—	—	—
3/4	—	16	—	H1	4	—	T7316727H1	—	—	—	—	—	—
3/4	—	16	—	H2	4	—	T7316727H2	—	—	—	—	—	—
3/4	—	16	—	H3	4	T7316726	T7316727	T7316728	T6316726	T6316727	T6316728	T8316727	T8316728
3/4	—	16	—	H5	4	—	T7316727H5	T7316728H5	—	—	—	—	—
7/8	9	—	—	H4	4	T7316746	T7316747	T7316748	T6316746	T6316747	T6316748	T8316747	T8316748
7/8	9	—	—	H6	4	—	T7316747H6	—	—	—	—	—	—
7/8	—	14	—	H2	4	—	T7316767H2	—	—	—	—	—	—
7/8	—	14	—	H4	4	T7316766	T7316767	T7316768	T6316766	T6316767	T6316768	T8316767	T8316768
7/8	—	14	—	H6	4	—	T7316767H6	—	—	—	—	—	—
1	8	—	—	H1	4	—	T7316787H1	T7316788H1	—	—	—	—	—
1	8	—	—	H2	4	—	T7316787H2	—	—	—	—	—	—
1	8	—	—	H4	4	T7316786	T7316787	T7316788	T6316786	T6316787	T6316788	T8316787	T8316788
1	8	—	—	H6	4	—	T7316787H6	—	—	—	—	—	—
1	—	12	—	H4	4	T7316806	T7316807	T7316808	T6316806	T6316807	T6316808	T8316807	T8316808
1	—	—	14	H2	4	—	T7316817H2	—	—	—	—	—	—
1	—	—	14	H4	4	T7316816	T7316817	T7316818	—	—	—	T8316817	T8316818
1-1/8	7	—	—	H4	4	T7316826	T7316827	T7316828	—	—	—	T8316827	T8316828
1-1/8	—	12	—	H4	4	T7316846	T7316847	T7316848	—	—	—	T8316847	T8316848
1-1/4	7	—	—	H4	4	T7316866	T7316867	T7316868	—	—	—	T8316867	T8316868
1-1/4	—	12	—	H4	6	T7316886	T7316887	T7316888	—	—	—	T8316887	T8316888
1-3/8	6	—	—	H4	4	T7316906	T7316907	T7316908	—	—	—	T8316907	T8316908
1-3/8	—	12	—	H4	6	T7316926	T7316927	T7316928	—	—	—	T8316927	T8316928
1-1/2	6	—	—	H4	4	T7316946	T7316947	T7316948	—	—	—	T8316947	T8316948
1-1/2	—	12	—	H4	6	T7316966	T7316967	T7316968	—	—	—	T8316967	T8316968

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 495.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎			◎			

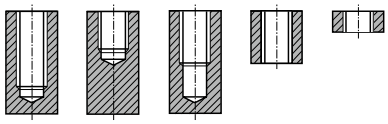
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	◎	◎		◎	◎	◎	◎			

STRAIGHT FLUTE TAPS

T7315/T6315/T8315 SERIES

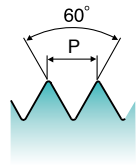
METRIC HAND TAP
TAPER, PLUG & BOTTOMING STYLE

Hole type 2.0×D





USCTI



GS | **HSS** | **M MF** | **USCTI 302** | **D3~D9** | **60°** | **9P/5P/2P** | **Bright** | **Steam Oxide** | **TiN**

SIZE	Pitch	Limit	No. of Flute	EDP No.							
				Bright			Steam Oxide			TiN	
				Taper	Plug	Bottoming	Taper	Plug	Bottoming	Plug	Bottoming
M1.6	0.35	D3	3	—	T7315097	—	—	—	—	—	—
M2	0.40	D3	3	—	T7315137	T7315138	—	T6315137	T6315138	T8315137	T8315138
M2.5	0.45	D3	3	—	T7315177	T7315178	—	T6315177	T6315178	T8315177	T8315178
M3	0.50	D3	3	T7315206	T7315207	T7315208	T6315206	T6315207	T6315208	T8315207	T8315208
M3.5	0.60	D4	3	—	T7315227	T7315228	—	—	—	—	—
M4	0.70	D4	4	T7315246	T7315247	T7315248	T6315246	T6315247	T6315248	T8315247	T8315248
M4.5	0.75	D4	4	—	T7315267	T7315268	—	T6315267	T6315268	T8315267	T8315268
M5	0.80	D4	4	T7315286	T7315287	T7315288	T6315286	T6315287	T6315288	T8315287	T8315288
M6	1.00	D5	4	T7315316	T7315317	T7315318	T6315316	T6315317	T6315318	T8315317	T8315318
M7	1.00	D5	4	—	T7315347	T7315348	—	T6315347	T6315348	T8315347	T8315348
M8	1.25	D5	4	T7315366	T7315367	T7315368	T6315366	T6315367	T6315368	T8315367	T8315368
M8	1.00	D5	4	—	T7315377	T7315378	—	T6315377	T6315378	T8315377	T8315378
M10	1.00	D5	4	—	T7315447	T7315448	—	—	—	—	—
M10	1.50	D6	4	T7315426	T7315427	T7315428	T6315426	T6315427	T6315428	T8315427	T8315428
M10	1.25	D5	4	T7315436	T7315437	T7315438	T6315436	T6315437	T6315438	T8315437	T8315438
M12	1.50	D6	4	—	T7315517	T7315518	—	—	—	—	—
M12	1.75	D6	4	T7315506	T7315507	T7315508	T6315506	T6315507	T6315508	T8315507	T8315508
M12	1.25	D5	4	T7315526	T7315527	T7315528	T6315526	T6315527	T6315528	T8315527	T8315528
M14	2.00	D7	4	T7315546	T7315547	T7315548	T6315546	T6315547	T6315548	T8315547	T8315548
M14	1.50	D6	4	—	T7315557	T7315558	—	—	—	—	—
M14	1.25	D5	4	—	T7315567	T7315568	—	—	—	—	—
M16	2.00	D7	4	T7315606	T7315607	T7315608	T6315606	T6315607	T6315608	T8315607	T8315608
M16	1.50	D6	4	T7315616	T7315617	T7315618	T6315616	T6315617	T6315618	T8315617	T8315618
M18	2.50	D7	4	—	T7315657	T7315658	—	—	—	—	—
M18	1.50	D6	4	T7315676	T7315677	T7315678	T6315676	T6315677	T6315678	T8315677	T8315678
M20	2.50	D7	4	T7315706	T7315707	T7315708	T6315706	T6315707	T6315708	T8315707	T8315708
M20	1.50	D6	4	T7315726	T7315727	T7315728	T6315726	T6315727	T6315728	T8315727	T8315728
M24	3.00	D8	4	T7315786	T7315787	T7315788	T6315786	T6315787	T6315788	T8315787	T8315788
M30	3.50	D9	4	T7315946	T7315947	T7315948	T6315946	T6315947	T6315948	—	—
M36	4.00	D9	4	—	T7315B37	T7315B38	—	—	—	—	—

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 495.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎			◎			

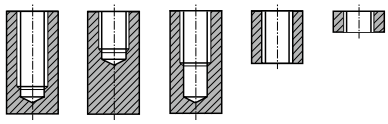
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	◎	◎		◎	◎	◎	◎			

STRAIGHT FLUTE TAPS

T7326 SERIES

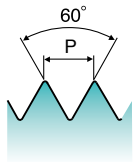
METRIC HAND TAP
Oversize Tap

Hole type 2.0×D





USCTI



GS | **HSS** | **UNC UNF** | **USCTI 302** | **60°** | **5P/2P** | **Bright** | **+.005" oversize**

SIZE	Thread Per Inch		No. of Flute	EDP No. Bright	
	UNC	UNF		Plug	Bottoming
#6	32	—	3	T7326247	—
#8	32	—	4	T7326287	—
#10	24	—	4	T7326327	—
#10	—	32	4	T7326347	—
1/4	20	—	4	T7326407	T7326408
1/4	—	28	4	T7326427	—
5/16	18	—	4	T7326447	T7326448
5/16	—	24	4	T7326467	—
3/8	16	—	4	T7326487	T7326488
3/8	—	24	4	T7326507	—
7/16	14	—	4	T7326527	—
1/2	13	—	4	T7326567	—
1/2	—	20	4	T7326587	—
5/8	11	—	4	T7326647	—
3/4	10	—	4	T7326707	—

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 495.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎			◎			

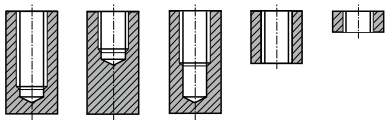
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	◎	◎		◎	◎	◎	◎			

STRAIGHT FLUTE TAPS

T7B15 SERIES

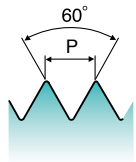
METRIC HAND TAP Oversize Tap

Hole type 2.0×D





USCTI



GS | HSS | M MF | USCTI 302 | 60° | 5P/2P | Bright | +.127mm oversize

SIZE	Pitch	No. of Flute	EDP No. Bright	
			Plug	Bottoming
M4	0.70	4	T7B15247	T7B15248
M4.5	0.75	4	T7B15267	T7B15268
M5	0.80	4	T7B15287	T7B15288
M6	1.00	4	T7B15317	T7B15318
M7	1.00	4	T7B15347	T7B15348
M8	1.25	4	T7B15367	T7B15368
M8	1.00	4	T7B15377	T7B15378
M10	1.50	4	T7B15427	T7B15428
M10	1.25	4	T7B15437	T7B15438
M12	1.75	4	T7B15507	T7B15508
M12	1.25	4	T7B15527	T7B15528
M16	2.00	4	T7B15607	T7B15608
M20	2.50	4	T7B15707	T7B15708
M24	3.00	4	T7B15787	T7B15788

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 495.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎			◎			

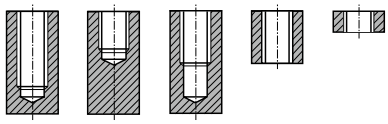
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	◎	◎		◎	◎	◎	◎			

STRAIGHT FLUTE TAPS

T7336 SERIES

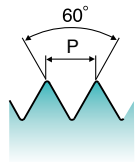
LEFT HAND TAP

Hole type 2.0×D





USCTI



GS | HSS | UNC UNF | USCTI 302 | H2~H4 | 60° | 5P/2P | Bright

SIZE	Thread Per Inch		Thread Limit	No. of Flute	EDP No. Bright	
	UNC	UNF			Plug	Bottoming
#6	32	—	H3	3	T7336247	T7336248
#6	—	40	H2	3	T7336267	T7336268
#8	32	—	H3	4	T7336287	T7336288
#8	—	36	H2	4	T7336307	T7336308
#10	24	—	H3	4	T7336327	T7336328
#10	—	32	H3	4	T7336347	T7336348
1/4	20	—	H3	4	T7336407	T7336408
1/4	—	28	H3	4	T7336427	T7336428
5/16	18	—	H3	4	T7336447	T7336448
5/16	—	24	H3	4	T7336467	T7336468
3/8	16	—	H3	4	T7336487	T7336488
3/8	—	24	H3	4	T7336507	T7336508
7/16	14	—	H3	4	T7336527	T7336528
7/16	—	20	H3	4	T7336547	T7336548
1/2	13	—	H3	4	T7336567	T7336568
1/2	—	20	H3	4	T7336587	T7336588
9/16	12	—	H3	4	T7336607	T7336608
9/16	—	18	H3	4	T7336627	T7336628
5/8	11	—	H3	4	T7336647	T7336648
5/8	—	18	H3	4	T7336667	T7336668
3/4	10	—	H3	4	T7336707	T7336708
3/4	—	16	H3	4	T7336727	T7336728
7/8	9	—	H4	4	T7336747	T7336748
7/8	—	14	H4	4	T7336767	T7336768
1	8	—	H4	4	T7336787	T7336788
1	—	12	H4	4	T7336807	T7336808

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 495.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎			◎			

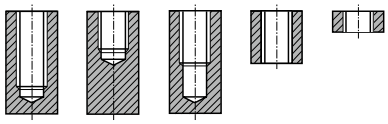
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	◎	◎		◎	◎	◎	◎			

STRAIGHT FLUTE TAPS

T7A15 SERIES

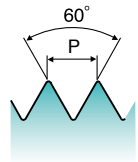
METRIC LEFT HAND TAP

Hole type 2.0×D





USCTI



GS | HSS | UNC UNF | USCTI 302 | D4~D8 | 60° | 5P/2P | Bright

SIZE	Pitch	Limit	No. of Flute	EDP No. Bright Plug	EDP No. Bright Bottoming
M3.5	0.6	D4	3	T7A15227	T7A15228
M4	0.7	D4	4	T7A15247	T7A15248
M4.5	0.75	D4	4	T7A15267	T7A15268
M5	0.8	D4	4	T7A15287	T7A15288
M6	1.0	D5	4	T7A15317	T7A15318
M7	1.0	D5	4	T7A15347	T7A15348
M8	1.25	D5	4	T7A15367	T7A15368
M8	1.0	D5	4	T7A15377	T7A15378
M10	1.5	D6	4	T7A15427	T7A15428
M10	1.25	D5	4	T7A15437	T7A15438
M12	1.75	D6	4	T7A15507	T7A15508
M12	1.25	D5	4	T7A15527	T7A15528
M14	2.0	D7	4	T7A15547	T7A15548
M14	1.5	D6	4	T7A15557	T7A15558
M16	2.0	D7	4	T7A15607	T7A15608
M16	1.5	D6	4	T7A15617	T7A15618
M18	2.5	D7	4	T7A15657	T7A15658
M18	1.5	D6	4	T7A15677	T7A15678
M20	2.5	D7	4	T7A15707	T7A15708
M20	1.5	D6	4	T7A15727	T7A15728
M22	2.5	D7	4	T7A15747	T7A15748
M22	1.5	D6	4	T7A15767	T7A15768
M24	3.0	D8	4	T7A15787	T7A15788
M24	2.0	D7	4	T7A15797	T7A15798

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 495.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎			◎			

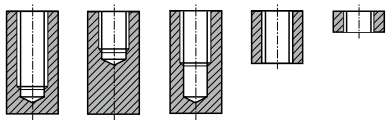
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	◎	◎		◎	◎	◎	◎			

STRAIGHT FLUTE TAPS

T7616/T6616/T8616 SERIES

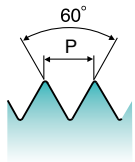
PULLEY TAPS, 6" EXTENSION PLUG STYLE

Hole type 2.0×D





USCTI Long Shank



GS | HSS | UNC UNF | USCTI Long Shank | H3 | 60° | 4P~5P | Bright | Steam Oxide | TiN

SIZE	UNC	Overall Length	Limit	No. of Flute	EDP No.		
					Bright	Steam Oxide	TiN
1/4	20	6	H3	4	**T7616403**	**T6616403**	**T8616403**
5/16	18	6	H3	4	**T7616443**	**T6616443**	**T8616443**
3/8	16	6	H3	4	**T7616483**	**T6616483**	**T8616483**
7/16	14	6	H3	4	**T7616523**	**T6616523**	**T8616523**
1/2	13	6	H3	4	**T7616563**	**T6616563**	**T8616563**
5/8	11	6	H3	4	**T7616643**	**T6616643**	**T8616643**

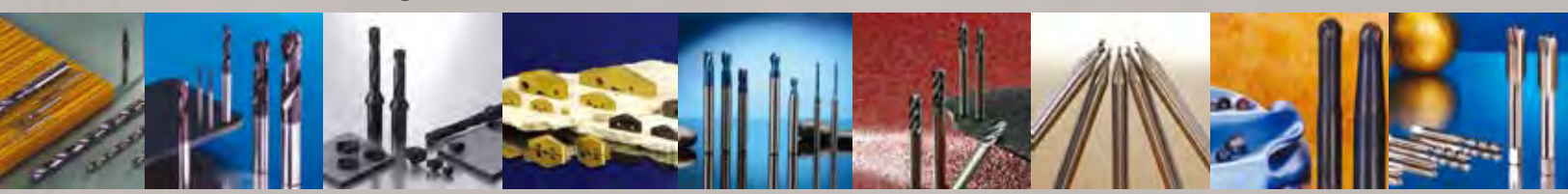
▶For tapping depth on DIN / ANSI Shank Taps, refer to DIN Table on page 493 & 494.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎			◎			

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	◎	◎		◎	◎	◎	◎			

Global Cutting Tool Leader **YG-1**



HSS

YG

Being the best through innovation







FORMING TAPS

- Tapping by Forming Soft Materials (No Chips)

FORMING TAPS
Tapping by Forming Soft Materials

INCH

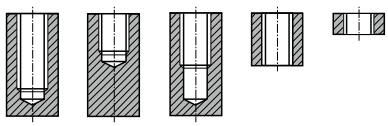
EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Thread Depth	Surface Treatment	Page
TKR03		Super HSS	UNC/UNF	**GV**	USCTI 302A	H3~H7	2 ~ 3P	3.0D	TiCN	**461**
ZF		HSSE-V3	UNC/UNF	**GV**	USCTI 302	H2~H5	2 ~ 3P		Bright	**462**
Z0/Z1/Z2/Z3		HSSE-V3	UNC/UNF	**GV**	USCTI 302A	H2~H12	4 ~ 5P 1.5 ~ 2P		Bright TiN	**463**
Z4/Z5/Z6/Z7		HSSE-V3	UNC/UNF	**GV**	USCTI 302A	H3~H12	4 ~ 5P 1.5 ~ 2P		Bright TiN	**465**
Z8/ZA/ZC Z9/ZB/ZD		HSSE-V3	M/MF	**GV**	USCTI 302A	D3~D11	4 ~ 5P 1.5 ~ 2P		Bright TiN / TiCN	**467**
T7R01/T8R01/ THR01 T7R02/T8R02/ THR02		HSS	UNC/UNF	**GV**	USCTI 302A	H2~H5	4 ~ 5P 1.5 ~ 2P		Bright TiN / TiCN	**468**

FORMING TAPS

TKR03 SERIES

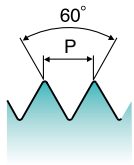
FORMING TAPS BOTTOMING STYLE

Hole type 3.0×D





USCTI



GV | Super HSS | UNC UNF | USCTI 302A | H3~H7 | 60° | 2P~3P | TiCN

SIZE	Thread Per Inch		No. of Lobe	EDP No. Class of fit			
	UNC	UNF		2B (TiCN)		3B (TiCN)	
#4	40	—	4	**TKR03165**	H5	**TKR03163**	H3
#5	40	—	4	**TKR03205**	H5	**TKR03203**	H3
#6	32	—	4	**TKR03245**	H5	**TKR03243**	H3
#8	32	—	4	**TKR03285**	H5	**TKR03283**	H3
#10	24	—	4	**TKR03326**	H6	**TKR03324**	H4
#10	—	32	4	**TKR03346**	H6	**TKR03344**	H4
1/4	20	—	4	**TKR03406**	H6	**TKR03404**	H4
1/4	—	28	4	**TKR03426**	H6	**TKR03424**	H4
5/16	18	—	4	**TKR03447**	H7	**TKR03445**	H5
5/16	—	24	4	**TKR03467**	H7	**TKR03465**	H5
3/8	16	—	4	**TKR03487**	H7	**TKR03485**	H5
3/8	—	24	4	**TKR03507**	H7	**TKR03505**	H5

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 497.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎			◎			

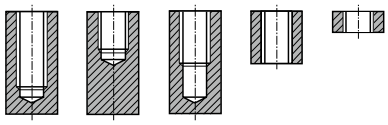
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	◎	◎		◎	◎	◎	◎			

FORMING TAPS

ZF SERIES

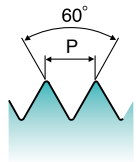
MINIATURE FORMING TAPS BOTTOMING STYLE

Hole type 3.0×D





USCTI



GV | HSSE-V3 | UNC UNF | USCTI 302 | H2~H5 | 60° | 2P~3P | Bright

SIZE	Nominal Size (mm)	Pitch		Limit	No. of Lobe	EDP No.
		UNC	UNF			
#00	1.1938	90	—	H2	4	ZFM52
#00	1.1938	90	—	H3	4	ZFM53
#00	1.1938	—	96	H2	4	ZFM82
#00	1.1938	—	96	H3	4	ZFM83
#0	1.5240	—	80	H2	4	ZF022
#0	1.5240	—	80	H3	4	ZF023
#0	1.5240	—	80	H4	4	ZF024
#1	1.8540	64	—	H2	4	ZF042
#1	1.8540	64	—	H3	4	ZF043
#1	1.8540	64	—	H4	4	ZF044
#1	1.8540	—	72	H2	4	ZF062
#1	1.8540	—	72	H3	4	ZF063
#1	1.8540	—	72	H4	4	ZF064
#2	2.1844	56	—	H2	4	ZF082
#2	2.1844	56	—	H3	4	ZF083
#2	2.1844	56	—	H4	4	ZF084
#2	2.1844	—	64	H2	4	ZF102
#2	2.1844	—	64	H3	4	ZF103
#2	2.1844	—	64	H4	4	ZF104
#3	2.5146	48	—	H2	4	ZF122
#3	2.5146	48	—	H3	4	ZF123
#3	2.5146	48	—	H4	4	ZF124
#3	2.5146	48	—	H5	4	ZF125
#3	2.5146	—	56	H2	4	ZF142
#3	2.5146	—	56	H3	4	ZF143
#3	2.5146	—	56	H4	4	ZF144
#3	2.5146	—	56	H5	4	ZF145

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎				◎			

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
				◎	◎					

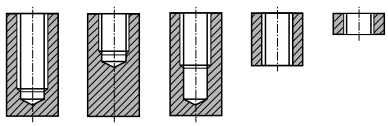
FORMING TAPS

Z0/Z1/Z2/Z3 SERIES

FORMING TAPS PLUG & BOTTOMING STYLE

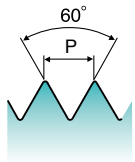
A variety of H Limit

Hole type 3.0×D





USCTI



GV | HSSE-V3 | UNC UNF | USCTI 302A | H2~H12 | 60° | 4P~5P Plug | 1.5P~2P Bottoming | Bright | TiN

SIZE	Thread Per Inch		Limit	No. of Lobe	EDP No.			
					Plug		Bottoming	
	UNC	UNF			Bright	TiN	Bright	TiN
#0	—	80	H2	4	—	—	Z2022	Z3022
#0	—	80	H3	4	—	—	Z2023	Z3023
#1	64	—	H2	4	—	—	Z2042	Z3042
#1	—	72	H2	4	—	—	Z2062	Z3062
#1	—	72	H3	4	—	—	Z2063	Z3063
#2	56	—	H2	4	—	—	Z2082	Z3082
#2	56	—	H3	4	—	—	Z2083	Z3083
#2	—	64	H2	4	—	—	Z2102	Z3102
#3	48	—	H2	4	—	—	Z2122	Z3122
#3	48	—	H3	4	—	—	Z2123	Z3123
#3	—	56	H3	4	—	—	Z2143	Z3143
#4	40	—	H3	4	Z0163	Z1163	Z2163	Z3163
#4	40	—	H5	4	Z0165	Z1165	Z2165	Z3165
#4	—	48	H3	4	Z0183	Z1183	Z2183	Z3183
#4	—	48	H5	4	Z0185	Z1185	Z2185	Z3185
#5	40	—	H3	4	Z0203	Z1203	Z2203	Z3203
#5	40	—	H5	4	Z0205	Z1205	Z2205	Z3205
#5	—	44	H5	4	Z0225	Z1225	Z2225	Z3225
#6	32	—	H3	4	Z0243	Z1243	Z2243	Z3243
#6	32	—	H5	4	Z0245	Z1245	Z2245	Z3245
#6	—	40	H3	4	Z0263	Z1263	Z2263	Z3263
#6	—	40	H5	4	Z0265	Z1265	Z2265	Z3265
#8	32	—	H3	4	Z0283	Z1283	Z2283	Z3283
#8	32	—	H5	4	Z0285	Z1285	Z2285	Z3285
#8	—	36	H3	4	Z0303	Z1303	Z2303	Z3303
#8	—	36	H5	4	Z0305	Z1305	Z2305	Z3305
#10	24	—	H4	4	Z0324	Z1324	Z2324	Z3324
#10	24	—	H6	4	Z0326	Z1326	Z2326	Z3326
#10	—	32	H4	4	Z0344	Z1344	Z2344	Z3344
#10	—	32	H6	4	Z0346	Z1346	Z2346	Z3346
#12	24	—	H4	4	Z0364	Z1364	Z2364	Z3364

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 497.
▶ Hardslck coating is available on your request (Bright Finish EDP No + H)

▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎			◎			

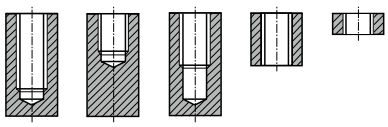
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	◎	◎		◎	◎	◎	◎			

FORMING TAPS

Z0/Z1/Z2/Z3 SERIES

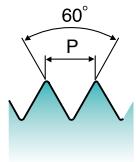
FORMING TAPS PLUG & BOTTOMING STYLE

Hole type 3.0×D





USCTI



GV | HSSE-V3 | UNC UNF | USCTI 302A | H2~H12 | 60° | 4P~5P Plug | 1.5P~2P Bottoming | Bright | TiN

SIZE	Thread Per Inch		Limit	No. of Lobe	EDP No.			
					Plug		Bottoming	
	UNC	UNF			Bright	TiN	Bright	TiN
#12	24	—	H6	4	Z0366	Z1366	Z2366	Z3366
1/4	20	—	H4	4	Z0404	Z1404	Z2404	Z3404
1/4	20	—	H6	4	Z0406	Z1406	Z2406	Z3406
1/4	—	28	H4	4	Z0424	Z1424	Z2424	Z3424
1/4	—	28	H6	4	Z0426	Z1426	Z2426	Z3426
5/16	18	—	H5	4	Z0445	Z1445	Z2445	Z3445
5/16	18	—	H7	4	Z0447	Z1447	Z2447	Z3447
5/16	—	24	H5	4	Z0465	Z1465	Z2465	Z3465
5/16	—	24	H7	4	Z0467	Z1467	Z2467	Z3467
3/8	16	—	H5	4	Z0485	Z1485	Z2485	Z3485
3/8	16	—	H7	4	Z0487	Z1487	Z2487	Z3487
3/8	—	24	H5	4	Z0505	Z1505	Z2505	Z3505
3/8	—	24	H7	4	Z0507	Z1507	Z2507	Z3507
7/16	14	—	H8	4	Z0528	Z1528	Z2528	Z3528
7/16	—	20	H8	4	Z0548	Z1548	Z2548	Z3548
1/2	13	—	H8	4	Z0568	Z1568	Z2568	Z3568
1/2	13	—	H5	4	Z0565	Z1565	Z2565	Z3565
1/2	—	20	H5	4	Z0585	Z1585	Z2585	Z3585
1/2	—	20	H8	4	Z0588	Z1588	Z2588	Z3588
9/16	12	—	H7	4	Z0607	Z1607	Z2607	Z3607
9/16	12	—	H10	4	Z0600	Z1600	Z2600	Z3600
9/16	—	18	H8	4	Z0628	Z1628	Z2628	Z3628
9/16	—	18	H10	4	Z0620	Z1620	Z2620	Z3620
5/8	11	—	H8	4	Z0648	Z1648	Z2648	Z3648
5/8	11	—	H10	4	Z0640	Z1640	Z2640	Z3640
5/8	—	18	H10	4	Z0660	Z1660	Z2660	Z3660
3/4	10	—	H10	4	Z0700	Z1700	Z2700	Z3700
3/4	10	—	H12	4	Z070B	Z170B	Z270B	Z370B
3/4	—	16	H8	4	Z0728	Z1728	Z2728	Z3728
3/4	—	16	H10	4	Z0720	Z1720	Z2720	Z3720

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 497.
▶Hardslck coating is available on your request (Bright Finish EDP No + H)

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎			◎			

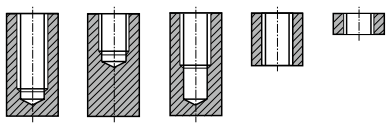
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	◎	◎		◎	◎	◎	◎			

FORMING TAPS

Z4/Z5/Z6/Z7 SERIES

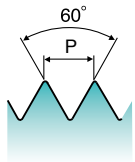
FORMING TAPS WITH OIL GROOVE PLUG & BOTTOMING STYLE

Hole type 3.0×D





USCTI



GV | HSSE-V3 | UNC UNF | USCTI 302A | H3~H12 | 60° | 4P~5P Plug | 1.5P~2P Bottoming | Bright | TiN

SIZE	Thread Per Inch		Limit	No. of Lobe	EDP No.			
					Plug		Bottoming	
	UNC	UNF			Bright	TiN	Bright	TiN
#4	40	—	H3	4	Z4163	Z5163	Z6163	Z7163
#4	40	—	H5	4	Z4165	Z5165	Z6165	Z7165
#4	—	48	H3	4	Z4183	Z5183	Z6183	Z7183
#4	—	48	H5	4	Z4185	Z5185	Z6185	Z7185
#5	40	—	H3	4	Z4203	Z5203	Z6203	Z7203
#5	40	—	H5	4	Z4205	Z5205	Z6205	Z7205
#5	—	44	H5	4	Z4225	Z5225	Z6225	Z7225
#6	32	—	H3	4	Z4243	Z5243	Z6243	Z7243
#6	32	—	H5	4	Z4245	Z5245	Z6245	Z7245
#6	—	40	H3	4	Z4263	Z5263	Z6263	Z7263
#6	—	40	H5	4	Z4265	Z5265	Z6265	Z7265
#8	32	—	H3	4	Z4283	Z5283	Z6283	Z7283
#8	32	—	H5	4	Z4285	Z5285	Z6285	Z7285
#8	—	36	H3	4	Z4303	Z5303	Z6303	Z7303
#8	—	36	H5	4	Z4305	Z5305	Z6305	Z7305
#10	24	—	H4	4	Z4324	Z5324	Z6324	Z7324
#10	24	—	H6	4	Z4326	Z5326	Z6326	Z7326
#10	—	32	H4	4	Z4344	Z5344	Z6344	Z7344
#10	—	32	H6	4	Z4346	Z5346	Z6346	Z7346
#12	24	—	H4	4	Z4364	Z5364	Z6364	Z7364
#12	24	—	H6	4	Z4366	Z5366	Z6366	Z7366
1/4	20	—	H4	4	Z4404	Z5404	Z6404	Z7404
1/4	20	—	H6	4	Z4406	Z5406	Z6406	Z7406
1/4	—	28	H4	4	Z4424	Z5424	Z6424	Z7424
1/4	—	28	H6	4	Z4426	Z5426	Z6426	Z7426
5/16	18	—	H5	4	Z4445	Z5445	Z6445	Z7445
5/16	18	—	H7	4	Z4447	Z5447	Z6447	Z7447

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 497.
▶Hardslck coating is available on your request (Bright Finish EDP No + H)

▶ NEXT PAGE

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎			◎			

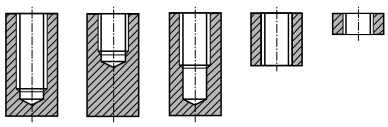
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	◎	◎		◎	◎	◎	◎			

FORMING TAPS

Z4/Z5/Z6/Z7 SERIES

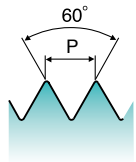
FORMING TAPS WITH OIL GROOVE PLUG & BOTTOMING STYLE for General Purpose

Hole type 3.0×D





USCTI



GV | HSSE-V3 | UNC UNF | USCTI 302A | H3~H12 | 60° | 4P~5P Plug | 1.5P~2P Bottoming | Bright | TiN

SIZE	Thread Per Inch		Limit	No. of Lobe	EDP No.			
					Plug		Bottoming	
	UNC	UNF			Bright	TiN	Bright	TiN
5/16	—	24	H5	4	Z4465	Z5465	Z6465	Z7465
5/16	—	24	H7	4	Z4467	Z5467	Z6467	Z7467
3/8	16	—	H5	4	Z4485	Z5485	Z6485	Z7485
3/8	16	—	H7	4	Z4487	Z5487	Z6487	Z7487
3/8	—	24	H5	4	Z4505	Z5505	Z6505	Z7505
3/8	—	24	H7	4	Z4507	Z5507	Z6507	Z7507
7/16	14	—	H8	4	Z4528	Z5528	Z6528	Z7528
7/16	—	20	H8	4	Z4548	Z5548	Z6548	Z7548
1/2	13	—	H8	4	Z4568	Z5568	Z6568	Z7568
1/2	13	—	H5	4	Z4565	Z5565	Z6565	Z7565
1/2	—	20	H5	4	Z4585	Z5585	Z6585	Z7585
1/2	—	20	H8	4	Z4588	Z5588	Z6588	Z7588
9/16	12	—	H7	4	Z4607	Z5607	Z6607	Z7607
9/16	12	—	H10	4	Z4600	Z5600	Z6600	Z7600
9/16	—	18	H8	4	Z4628	Z5628	Z6628	Z7628
9/16	—	18	H10	4	Z4620	Z5620	Z6620	Z7620
5/8	11	—	H8	4	Z4648	Z5648	Z6648	Z7648
5/8	11	—	H10	4	Z4640	Z5640	Z6640	Z7640
5/8	—	18	H10	4	Z4660	Z5660	Z6660	Z7660
3/4	10	—	H10	4	Z4700	Z5700	Z6700	Z7700
3/4	10	—	H12	4	Z470B	Z570B	Z670B	Z770B
3/4	—	16	H8	4	Z4728	Z5728	Z6728	Z7728
3/4	—	16	H10	4	Z4720	Z5720	Z6720	Z7720

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 497.
▶Hardslck coating is available on your request (Bright Finish EDP No + H)

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎			◎			

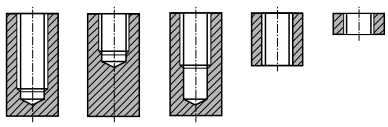
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	◎	◎		◎	◎	◎	◎			

FORMING TAPS

Z8/ZA/ZC SERIES
Z9/ZB/ZD SERIES

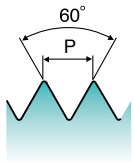
FORMING TAPS WITH OIL GROOVE PLUG & BOTTOMING STYLE for General Purpose

Hole type 3.0×D





USCTI



GV | HSSE-V3 | M MF | USCTI 302A | D3~D11 | 60° | 4P~5P Plug | 1.5P~2P Bottoming | Bright | TiN | TiCN

SIZE	Pitch	Limit	No. of Lobe	EDP No.					
				Plug			Bottoming		
				Bright	TiN	TiCN	Bright	TiN	TiCN
M2	0.4	D3	4	—	—	—	Z9133	ZB133	ZD133
M3	0.5	D5	4	Z8205	ZA205	ZC205	Z9205	ZB205	ZD205
M4	0.7	D6	4	Z8246	ZA246	ZC246	Z9246	ZB246	ZD246
M5	0.8	D7	4	Z8287	ZA287	ZC287	Z9287	ZB287	ZD287
M6	1.0	D8	4	Z8318	ZA318	ZC318	Z9318	ZB318	ZD318
M8	1.25	D9	4	Z8369	ZA369	ZC369	Z9369	ZB369	ZD369
M10	1.5	D10	4	Z8420	ZA420	ZC420	Z9420	ZB420	ZD420
M12	1.75	D11	4	Z850A	ZA50A	ZC50A	Z950A	ZB50A	ZD50A

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 497.
▶ Hardslck coating is available on your request (Bright Finish EDP No + H)

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎			◎			

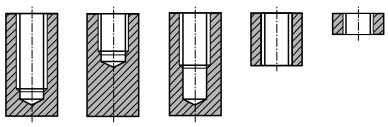
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	◎	◎		◎	◎	◎	◎			

FORMING TAPS

T7R01/T8R01/THR01 SERIES
T7R02/T8R02/THR02 SERIES

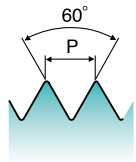
FORMING TAPS PLUG & BOTTOMING STYLE

Hole type 3.0×D





USCTI



GV | HSS | UNC UNF | USCTI 302A | H2~H5 | 60° | 4P~5P Plug | 1.5P~2P Bottoming | Bright | TiN | TiCN

SIZE	Thread Per Inch		Limit	EDP No.					
				Plug			Bottoming		
	UNC	UNF		Bright	TiN	TiCN	Bright	TiN	TiCN
#0	—	80	H2	—	—	—	T7R02022	T8R02022	THR02022
#2	56	—	H2	—	—	—	T7R02082	T8R02082	THR02082
#3	48	—	H3	—	—	—	T7R02123	T8R02123	THR02123
#4	40	—	H3	T7R01163	T8R01163	THR01163	T7R02163	T8R02163	THR02163
#5	40	—	H3	T7R01203	T8R01203	THR01203	T7R02203	T8R02203	THR02203
#6	32	—	H3	T7R01243	T8R01243	THR01243	T7R02243	T8R02243	THR02243
#8	32	—	H3	T7R01283	T8R01283	THR01283	T7R02283	T8R02283	THR02283
#10	24	—	H4	T7R01324	T8R01324	THR01324	T7R02324	T8R02324	THR02324
#10	—	32	H4	T7R01344	T8R01344	THR01344	T7R02344	T8R02344	THR02344
1/4	20	—	H4	T7R01404	T8R01404	THR01404	T7R02404	T8R02404	THR02404
1/4	—	28	H4	T7R01424	T8R01424	THR01424	T7R02424	T8R02424	THR02424
5/16	18	—	H5	T7R01445	T8R01445	THR01445	T7R02445	T8R02445	THR02445
3/8	16	—	H5	T7R01485	T8R01485	THR01485	T7R02485	T8R02485	THR02485

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 497.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎			◎			

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
	◎	◎		◎	◎	◎	◎			

HSS

YG

Being the best through innovation





SCREW THREAD INSERT TAPS

- Tapping STI Threads of Soft Materials (HSS-E)

SCREW THREAD INSERT TAPS

Tapping STI Threads of Soft Materials (HSS-E)

INCH

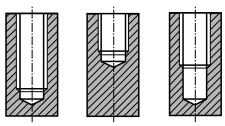
EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Thread Depth	Surface Treatment	Page
ST/SI		HSSE-V3	UNC/UNF	GS	USCTI 322	2B	1.5 ~ 2P	2.5D	Hardslick	471
T7406		HSS	UNC/UNF	GS	USCTI 322	H2~H4	1.5 ~ 2P		Bright	472
T7425		HSS	M/MF	GS	USCTI 322A	D2~D4	1.5 ~ 2P		Bright	473
ST/SI		HSSE-V3	UNC/UNF	GS	USCTI 322	2B	4 ~ 5P	3.0D	Hardslick	474
T7436		HSS	UNC/UNF	GS	USCTI 322	H1~H4	4 ~ 5P		Bright	475
T7415		HSS	M/MF	GS	USCTI 322A	D2~D4	4 ~ 5P		Bright	476
T7426		HSS	UNC/UNF	GS	USCTI 322	H1~H4	4 ~ 5P 1.5 ~ 2P	2.0D	Bright	477
T7405		HSS	M/MF	GS	USCTI 322A	D2~D4	4 ~ 5P 1.5 ~ 2P		Bright	478

SCREW THREAD INSERT TAPS

ST/SI SERIES

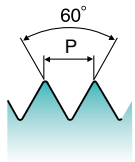
SPIRAL FLUTE TAPS SCREW THREAD INSERT for General Purpose

Hole type 2.5×D





USCTI



GS | HSSE-V3 | UNC UNF | USCTI 322 | 2B | 60° | 1.5P~2P | Hardslick | R40

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.
	UNC	UNF			Hardslick
#4	40	—	2B	3	ST162
#4	—	48	2B	3	SI182
#5	40	—	2B	3	ST202
#5	—	44	2B	3	SI222
#6	32	—	2B	3	ST242
#6	—	40	2B	3	SI262
#8	32	—	2B	3	ST282
#8	—	36	2B	3	SI302
#10	24	—	2B	3	ST322
#10	—	32	2B	3	SI342
#12	24	—	2B	3	ST362
#12	—	28	2B	3	SI382
1/4	20	—	2B	3	ST402
1/4	—	28	2B	3	SI422
5/16	18	—	2B	3	ST442
5/16	—	24	2B	3	SI462
3/8	16	—	2B	3	ST482
3/8	—	24	2B	3	SI502
7/16	14	—	2B	3	ST522
7/16	—	20	2B	3	SI542
1/2	13	—	2B	3	ST562
1/2	—	20	2B	3	SI582
9/16	12	—	2B	4	ST602
9/16	—	18	2B	4	SI622
5/8	11	—	2B	4	ST642
5/8	—	18	2B	4	SI662
3/4	10	—	2B	4	ST702
3/4	—	16	2B	4	SI722

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 499.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	○					○

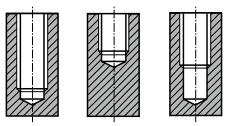
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
				○	○					

SCREW THREAD INSERT TAPS

T7406 SERIES

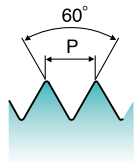
SPIRAL FLUTE TAPS SCREW THREAD INSERT for General Purpose

Hole type 2.5×D





USCTI



GS | HSS | UNC UNF | USCTI 322 | H2~H4 | 60° | 1.5P~2P | Bright | R50

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.
	UNC	UNF			Bright
#2	56	—	H2	2	T7406082
#3	48	—	H2	2	T7406122
#4	40	—	H2	2	T7406162
#4	—	48	H2	3	T7406182
#6	32	—	H2	3	T7406242
#6	32	—	H3	3	T7406243
#6	—	40	H2	3	T7406262
#8	32	—	H2	3	T7406282
#8	32	—	H3	3	T7406283
#8	—	36	H2	3	T7406302
#10	24	—	H2	3	T7406322
#10	24	—	H3	3	T7406323
#10	—	32	H2	3	T7406342
#10	—	32	H3	3	T7406343
1/4	20	—	H2	3	T7406402
1/4	20	—	H3	3	T7406403
1/4	—	28	H2	3	T7406422
1/4	—	28	H3	3	T7406423
5/16	18	—	H3	3	T7406443
5/16	18	—	H4	3	T7406444
5/16	—	24	H2	3	T7406462
5/16	—	24	H3	3	T7406463
3/8	16	—	H3	3	T7406483
3/8	16	—	H4	3	T7406484
3/8	—	24	H2	3	T7406502
3/8	—	24	H3	3	T7406503
7/16	14	—	H3	4	T7406523
7/16	14	—	H4	4	T7406524
7/16	—	20	H3	3	T7406543
7/16	—	20	H4	3	T7406544
1/2	13	—	H3	4	T7406563
1/2	13	—	H4	4	T7406564
1/2	—	20	H3	4	T7406583
1/2	—	20	H4	4	T7406584

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 499.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	○						○

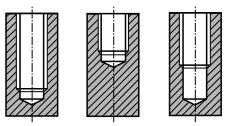
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
				○	○					

SCREW THREAD INSERT TAPS

T7425 SERIES

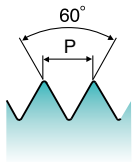
METRIC SPIRAL FLUTE TAPS SCREW THREAD INSERT for General Purpose

Hole type 2.5×D





USCTI



GS | HSS | M MF | USCTI 322A | D2~D4 | 60° | 1.5P~2P | Bright | R50

SIZE	Pitch	Limit	No. of Flute	EDP No.
				Bright
M2	0.40	D2	2	**T7425132**
M2.5	0.45	D2	2	**T7425172**
M3	0.50	D2	3	**T7425202**
M4	0.70	D3	3	**T7425243**
M5	0.80	D3	3	**T7425283**
M6	1.00	D3	3	**T7425313**
M8	1.25	D3	3	**T7425363**
M10	1.50	D4	3	**T7425424**
M12	1.75	D4	3	**T7425504**

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 499.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	○						○

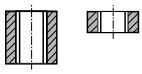
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
				○	○					

SCREW THREAD INSERT TAPS

ST/SI SERIES

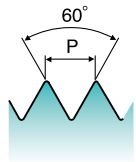
SPIRAL POINT TAPS SCREW THREAD INSERT for General Purpose

Hole type 3.0×D





USCTI



GS | HSSE-V3 | UNC UNF | USCTI 322 | 2B | 60° | 4P~5P | Hardslick

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.
	UNC	UNF			Hardslick
#4	40	—	2B	3	SI162
#4	—	48	2B	3	ST182
#6	32	—	2B	3	SI242
#6	—	40	2B	3	ST262
#8	32	—	2B	3	SI282
#8	—	36	2B	3	ST302
#10	24	—	2B	3	SI322
#10	—	32	2B	3	ST342
1/4	20	—	2B	3	SI402
1/4	—	28	2B	3	ST422
5/16	18	—	2B	3	SI442
5/16	—	24	2B	3	ST462
3/8	16	—	2B	3	SI482
3/8	—	24	2B	3	ST502
7/16	14	—	2B	3	SI522
7/16	—	20	2B	3	ST542
1/2	13	—	2B	3	SI562
1/2	—	20	2B	3	ST582
9/16	12	—	2B	3	SI602
9/16	—	18	2B	3	ST622
5/8	11	—	2B	3	SI642
5/8	—	18	2B	3	ST662
3/4	10	—	2B	3	SI702
3/4	—	16	2B	3	ST722

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 499.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	○					○

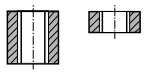
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
				○	○					

SCREW THREAD INSERT TAPS

T7436 SERIES

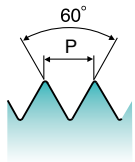
SPIRAL POINT TAPS SCREW THREAD INSERT for General Purpose

Hole type 3.0×D





USCTI



GS | HSS | UNC UNF | USCTI 322 | H1~H4 | 60° | 4P~5P | Bright

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.
	UNC	UNF			Bright
#2	56	—	H2	2	T7436082
#3	48	—	H2	2	T7436122
#4	40	—	H1	2	T7436161
#4	40	—	H2	2	T7436162
#4	—	48	H2	2	T7436182
#5	40	—	H2	2	T7436202
#6	32	—	H2	2	T7436242
#6	32	—	H3	2	T7436243
#6	—	40	H2	2	T7436262
#8	32	—	H2	2	T7436282
#8	32	—	H3	2	T7436283
#8	—	36	H2	2	T7436302
#10	24	—	H2	2	T7436322
#10	24	—	H3	2	T7436323
#10	—	32	H2	2	T7436342
#10	—	32	H3	2	T7436343
1/4	20	—	H2	3	T7436402
1/4	20	—	H3	3	T7436403
1/4	—	28	H2	3	T7436422
1/4	—	28	H3	3	T7436423
5/16	18	—	H3	3	T7436443
5/16	18	—	H4	3	T7436444
5/16	—	24	H2	3	T7436462
5/16	—	24	H3	3	T7436463
3/8	16	—	H3	3	T7436483
3/8	16	—	H4	3	T7436484
3/8	—	24	H2	3	T7436502
3/8	—	24	H3	3	T7436503
7/16	14	—	H3	3	T7436523
7/16	14	—	H4	3	T7436524
7/16	—	20	H3	3	T7436543
7/16	—	20	H4	3	T7436544
1/2	13	—	H3	4	T7436563
1/2	13	—	H4	4	T7436564
1/2	—	20	H3	4	T7436583
1/2	—	20	H4	4	T7436584

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 499.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	○						○

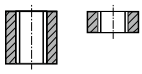
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
				○	○					

SCREW THREAD INSERT TAPS

T7415 SERIES

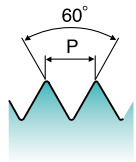
METRIC SPIRAL POINT TAPS SCREW THREAD INSERT for General Purpose

Hole type 3.0×D





USCTI



GS | HSS | M MF | USCTI 322A | D2~D4 | 60° | 4P~5P | Bright

SIZE	Pitch	Limit	No. of Flute	EDP No.
				Bright
M2	0.4	D2	2	T7415132
M2.5	0.45	D2	2	T7415172
M3	0.5	D2	3	T7415202
M4	0.7	D3	3	T7415243
M5	0.8	D3	3	T7415283
M6	1.0	D3	3	T7415313
M8	1.25	D3	3	T7415363
M10	1.5	D4	3	T7415424
M12	1.75	D4	3	T7415504

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 499.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	○						○

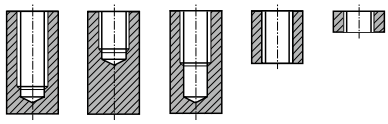
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
				○	○					

SCREW THREAD INSERT TAPS

T7426 SERIES

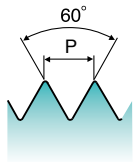
STRAIGHT FLUTE TAPS SCREW THREAD INSERT for General Purpose

Hole type 2 .0×D





USCTI



GS | HSS | UNC UNF | USCTI 322 | H1~H4 | 60° | 4P~5P Plug | 1.5P~2P Bottoming | Bright

SIZE	Thread Per Inch		Limit	No. of Flute	EDP No.	
	UNC	UNF			Plug	Bottoming
#2	56	—	H2	3	T7426087	T7426088
#3	48	—	H2	3	T7426127	T7426128
#4	40	—	H1	3	T7426167H1	T7426168H1
#4	40	—	H2	3	T7426167	T7426168
#4	—	48	H2	3	T7426187	T7426188
#5	40	—	H2	3	T7426207	T7426208
#6	32	—	H2	3	T7426247H2	T7426248H2
#6	32	—	H3	3	T7426247	T7426248
#6	—	40	H2	3	T7426267	T7426268
#8	32	—	H2	3	T7426287H2	T7426288H2
#8	32	—	H3	3	T7426287	T7426288
#8	—	36	H2	3	T7426307	T7426308
#10	24	—	H2	3	T7426327H2	T7426328H2
#10	24	—	H3	3	T7426327	T7426328
#10	—	32	H2	3	T7426347H2	T7426348H2
#10	—	32	H3	3	T7426347	T7426348
1/4	20	—	H2	3	T7426407H2	T7426408H2
1/4	20	—	H3	3	T7426407	T7426408
1/4	—	28	H2	3	T7426427H2	T7426428H2
1/4	—	28	H3	3	T7426427	T7426428
5/16	18	—	H3	4	T7426447	T7426448
5/16	18	—	H4	4	T7426447H4	T7426448H4
5/16	—	24	H2	4	T7426467H2	T7426468H2
5/16	—	24	H3	4	T7426467	T7426468
3/8	16	—	H3	4	T7426487	T7426488
3/8	16	—	H4	4	T7426487H4	T7426488H4
3/8	—	24	H2	4	T7426507H2	T7426508H2
3/8	—	24	H3	4	T7426507	T7426508
7/16	14	—	H3	4	T7426527	T7426528
7/16	14	—	H4	4	T7426527H4	T7426528H4
7/16	—	20	H3	4	T7426547	T7426548
7/16	—	20	H4	4	T7426547H4	T7426548H4
1/2	13	—	H3	4	T7426567	T7426568
1/2	13	—	H4	4	T7426567H4	T7426568H4
1/2	—	20	H3	4	T7426587	T7426588
1/2	—	20	H4	4	T7426587H4	T7426588H4

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 498.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	○						○

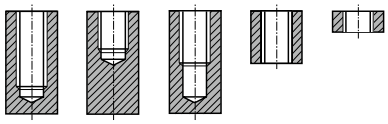
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
				○	○					

SCREW THREAD INSERT TAPS

T7405 SERIES

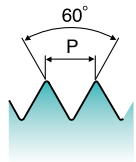
METRIC STRAIGHT FLUTE TAPS SCREW THREAD INSERT for General Purpose

Hole type 2.0×D





USCTI



GS | **HSS** | **M** | **USCTI 322A** | **D2~D4** | **4P~5P** Plug | **1.5P~2P** Bottoming | **60°** | **Bright**

SIZE	Pitch	Limit	No. of Flute	EDP No.	
				Plug	Bottoming
M2	0.4	D2	2	T7405137	T7405138
M2.5	0.45	D2	2	T7405177	T7405178
M3	0.5	D2	3	T7405207	T7405208
M4	0.7	D3	3	T7405247	T7405248
M5	0.8	D3	3	T7405287	T7405288
M6	1.0	D3	3	T7405317	T7405318
M8	1.25	D3	3	T7405367	T7405368
M10	1.5	D4	3	T7405427	T7405428
M12	1.75	D4	3	T7405507	T7405508

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 498.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	○						○

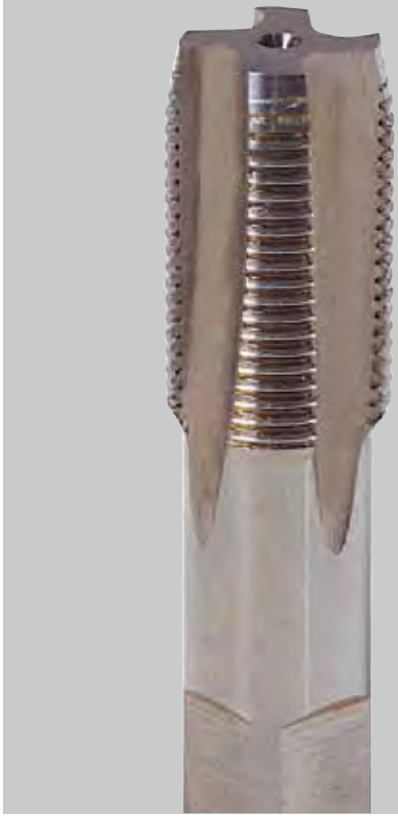
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
				○	○					

HSS

YG

Being the best through innovation







PIPE TAPS

- Tapping NPT, NPTF, NPS & NPSF threads

PIPE TAPS

Tapping NPT, NPTF, NPS & NPSF threads

INCH

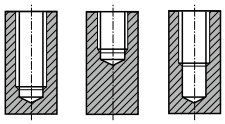
EDP No.	MODEL	Tool Material	Standard	Work Material	Dimensions	Tolerance	Chamfer	Thread Depth	Surface Treatment	Page
Q1/Q0/Q6		HSSE-V3	NPTF	VA	USCTI 311		2 ~ 3P	2.5D	Bright Steam Oxide Hardslick	481
Q9/R0/R1		HSSE-V3	NPTF	GG	USCTI 311		2 ~ 3P		Bright TiN Hardslick	482
R7/R8/R9/S0		HSSE-V3	NPTF	GG	USCTI 311		2 ~ 3P	2.0D	Bright TiN Hardslick Nitrided-Steam Oxide	483
S1/S2		HSSE-V3	NPTF	GG	USCTI 311		2 ~ 3P		Bright TiCN	484
T7L36/T6L36 T7536/T6536		HSS	NPS/NPSF	GS	USCTI 311		4 ~ 5P		Bright Steam Oxide	485
T7505/T6505/ TH505		HSS	NPT	GS	USCTI 311		2 ~ 3P		Bright Steam Oxide TiCN	486
T7546/T8546		HSS	NPTF	GS	USCTI 311		2 ~ 3P		Bright TiN	487

PIPE TAPS

Q1/Q0/Q6 SERIES

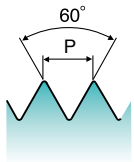
TAPER PIPE TAPS : SPIRAL FLUTE for Steels & Stainless Steels

Hole type 2.5×D





USCTI



VA | HSSE-V3 | NPTF | USCTI 311 | 60° | 2P~3P | Bright | Steam Oxide | Hardslick | R15

SIZE	Thread Per Inch	No. of Flute	EDP No.		
			Bright	Steam Oxide	Hardslick
1/16	27	4	Q1020	Q0020	Q6020
1/8(Lg.)	27	4	Q1200	Q0200	Q6200
1/8(Sm.)	27	4	Q1210	Q0210	Q6210
1/4	18	4	Q1400	Q0400	Q6400
3/8	18	4	Q1480	Q0480	Q6480
1/2	14	4	Q1560	Q0560	Q6560
3/4	14	4	Q1700	Q0700	Q6700
1	11-1/2	4	Q1780	Q0780	Q6780
1-1/4	11-1/2	5	Q1860	Q0860	Q6860
1-1/2	11-1/2	7	Q1960	Q0960	Q6960
2	11-1/2	7	Q1D20	Q0D20	Q6D20

▶These Taps meet both NPT and NPTF Standards.
▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 496.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	◎	○		◎	○		

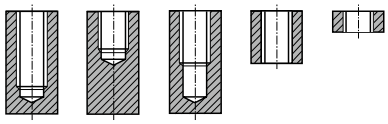
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
○					○					

PIPE TAPS

Q9/R0/R1 SERIES

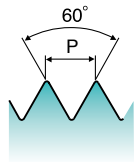
TAPER PIPE TAPS : SPIRAL FLUTE for Cast Irons & Steels

Hole type 2.5×D





USCTI



GG | HSSE-V3 | NPTF | USCTI 311 | 60° | 2P~3P | Bright | TiN | Hardslick | R15

SIZE	Thread Per Inch	No. of Flute	EDP No.		
			Bright	TiN	Hardslick
1/16	27	4	Q9020	R0020	R1020
1/8(Lg.)	27	4	Q9200	R0200	R1200
1/8(Sm.)	27	4	Q9210	R0210	R1210
1/4	18	4	Q9400	R0400	R1400
3/8	18	4	Q9480	R0480	R1480
1/2	14	4	Q9560	R0560	R1560
3/4	14	4	Q9700	R0700	R1700
1	11-1/2	4	Q9780	R0780	R1780
1-1/4	11-1/2	5	Q9860	R0860	R1860
1-1/2	11-1/2	7	Q9960	R0960	R1960
2	11-1/2	7	Q9D20	R0D20	R1D20

▶ These Taps meet both NPT and NPTF Standards.
▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 496.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	○					◎

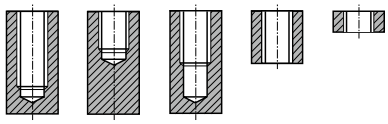
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
◎										

PIPE TAPS

R7/R8/R9/S0 SERIES

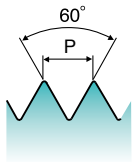
TAPER PIPE TAPS : STRAIGHT FLUTE for Cast Irons & Steels

Hole type 2.0×D





USCTI



GG | HSSE-V3 | NPTF | USCTI 311 | 60° | 2P~3P | Bright | TiN | Hardslick | Nitrided Steam Oxide

SIZE	Thread Per Inch	No. of Flute	EDP No.			
			Bright	TiN	Hardslick	Nitrided Steam Oxide
1/16	27	4	R7020	R8020	R9020	S0020
1/8(Lg.)	27	4	R7200	R8200	R9200	S0200
1/8(Sm.)	27	4	R7210	R8210	R9210	S0210
1/4	18	4	R7400	R8400	R9400	S0400
3/8	18	4	R7480	R8480	R9480	S0480
1/2	14	4	R7560	R8560	R9560	S0560
3/4	14	5	R7700	R8700	R9700	S0700
1	11-1/2	5	R7780	R8780	R9780	S0780
1-1/4	11-1/2	5	R7860	R8860	R9860	S0860
1-1/2	11-1/2	7	R7960	R8960	R9960	S0960
2	11-1/2	7	R7D20	R8D20	R9D20	S0D20

▶These Taps meet both NPT and NPTF Standards.
▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 496.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	○					◎

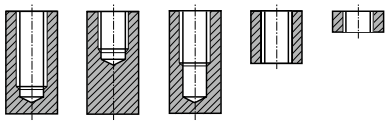
K	N						S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
◎										

PIPE TAPS

S1/S2 SERIES

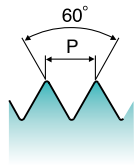
TAPER PIPE TAPS : STRAIGHT FLUTE INTERRUPTED THREAD for Cast Irons & Steels

Hole type 2.0×D





USCTI



GG | HSSE-V3 | NPTF | USCTI 311 | 60° | 2P~3P | Bright | TiCN

SIZE	Thread Per Inch	No. of Flute	EDP No.	
			Bright	TiCN
1/16	27	5	S1020	S2020
1/8(Lg.)	27	5	S1200	S2200
1/8(Sm.)	27	5	S1210	S2210
1/4	18	5	S1400	S2400
3/8	18	5	S1480	S2480
1/2	14	5	S1560	S2560
3/4	14	5	S1700	S2700
1	11-1/2	5	S1780	S2780

▶These Taps meet both NPT and NPTF Standards.
▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 496.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
◎	◎	○					◎

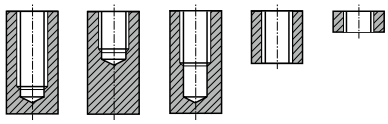
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
◎										

PIPE TAPS

T7L36/T6L36 SERIES
T7536/T6536 SERIES

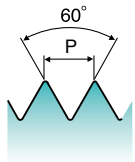
STRAIGHT PIPE TAPS for General Purpose

Hole type 2.0×D





USCTI



GS | HSS | NPS NPSF | USCTI 311 | 60° | 4P~5P | Bright | Steam Oxide

T7L36 / T6L36 Series (NPS)

SIZE	Thread Per Inch	No. of Flute	EDP No.	
			Bright	Steam Oxide
1/8 (Lg.)	27	4	T7L36200	T6L36200
1/8 (Sm.)	27	4	T7L36210	T6L36210
1/4	18	4	T7L36400	T6L36400
3/8	18	4	T7L36480	T6L36480
1/2	14	4	T7L36560	T6L36560
3/4	14	5	T7L36700	T6L36700
1	11-1/2	5	T7L36780	T6L36780

T7536 / T6536 Series (NPSF)

SIZE	Thread Per Inch	No. of Flute	EDP No.	
			Bright	Steam Oxide
1/8 (Lg.)	27	4	T7536200	T6536200
1/8 (Sm.)	27	4	T7536210	T6536210
1/4	18	4	T7536400	T6536400
3/8	18	4	T7536480	T6536480
1/2	14	4	T7536560	T6536560
3/4	14	5	T7536700	T6536700
1	11-1/2	5	T7536780	T6536780

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 496.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	○						○

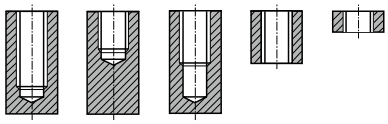
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
				○	○					

PIPE TAPS

T7505/T6505/TH505 SERIES

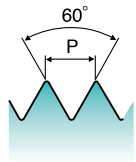
TAPER PIPE TAPS INTERRUPTED THREAD for General Purpose

Hole type 2.0×D





USCTI



GS | HSS | NPT | USCTI 311 | 60° | 2P~3P | Bright | Steam Oxide | TiCN

SIZE	Thread Per Inch	No. of Flute	EDP No.		
			Bright	Steam Oxide	TiCN
1/8 (Lg.)	27	5	T7505200	T6505200	TH505200
1/8 (Sm.)	27	5	T7505210	T6505210	TH505210
1/4	18	5	T7505400	T6505400	TH505400
3/8	18	5	T7505480	T6505480	TH505480
1/2	14	5	T7505560	T6505560	TH505560
3/4	14	5	T7505700	T6505700	TH505700
1	11-1/2	5	T7505780	T6505780	TH505780

▶For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 496.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	○						○

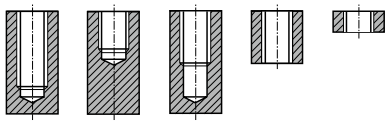
K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
				○	○					

PIPE TAPS

T7546/T8546 SERIES

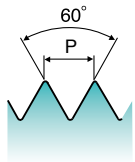
TAPER PIPE TAPS 6" EXTENSION

Hole type 2.0×D





USCTI



GS | HSS | NPTF | USCTI 311 | 60° | 2P~3P | Bright | TiN

SIZE	Threads Per Inch	Overall Length L	Thread Length Lt	Shank Diameter D	No. of Flute	EDP No. Bright	EDP No. TiN
1/8	27	6.0	3/4	.4375	4	T7546200	T8546200
1/4	18	6.0	1-1/16	.5625	4	T7546400	T8546400
3/8	18	6.0	1-1/16	.7000	4	T7546480	T8546480
1/2	14	6.0	1-3/8	.6875	4	T7546560	T8546560
3/4	14	6.0	1-3/8	.9063	5	T7546700	T8546700
1	11-1/2	6.0	1-3/4	1.1250	5	T7546780	T8546780

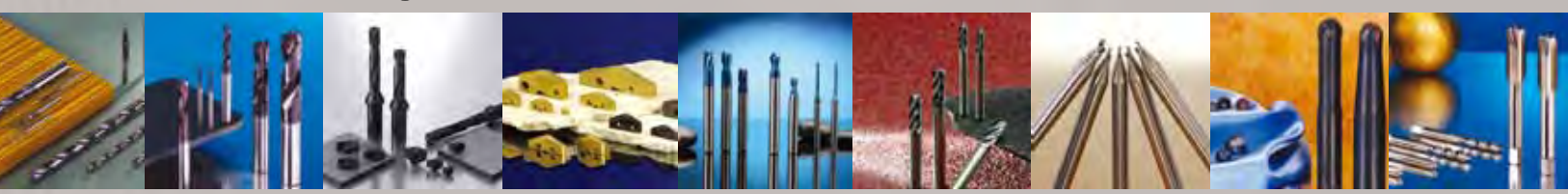
▶For tapping depth on DIN / ANSI Shank Taps, refer to DIN Table on page 493 & 494.

◎ : Excellent ○: Good

P				M			K
Low carbon steels/ Free machining carbon steels	Medium to high carbon steels/ Low alloyed steels	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steels	Heat-and corrosionresistant stainless steels / Valve stainless steels	Stainless steel castings / Precipitation hardening stainless steels	Grey cast iron
○	○						○

K	N							S		
Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Pure Aluminum/ Aluminum alloy	Aluminum alloy castings	Zinc	Magnesium	718 & 625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium
				○	○					

Global Cutting Tool Leader **YG-1**



TAPS

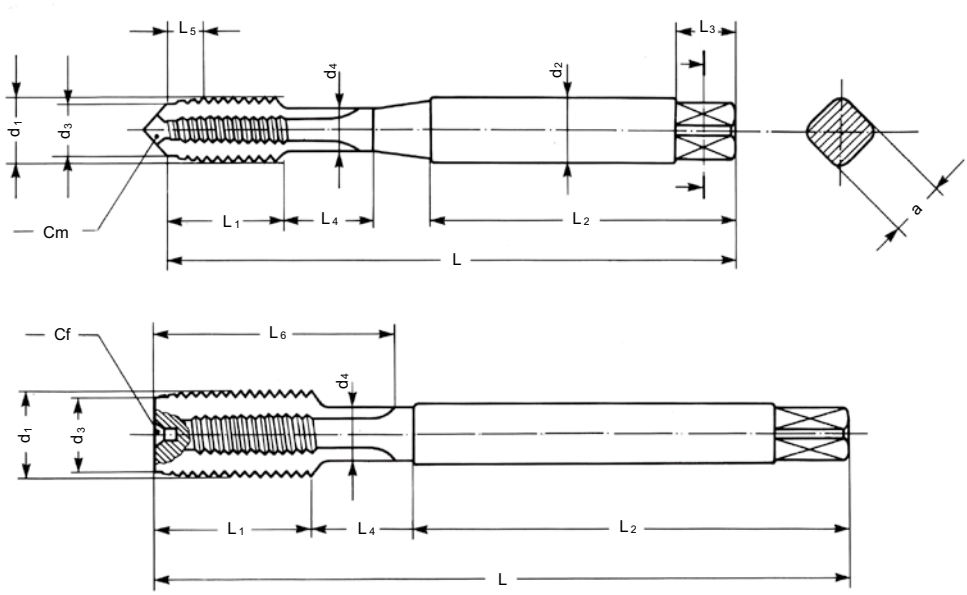
Being the best through innovation



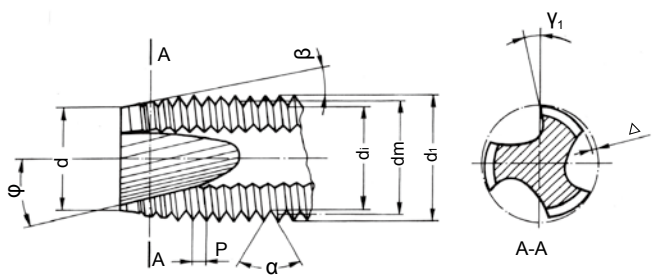
TECHNICAL DATA

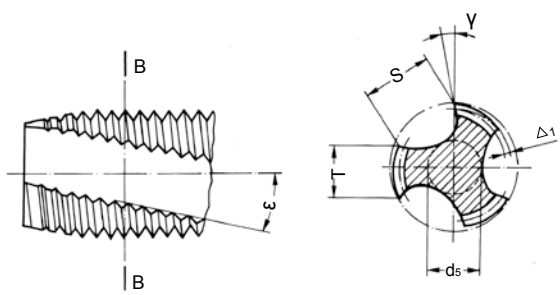
TECHNICAL DATA

TAPS TERMINOLOGY



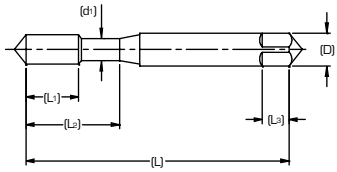
d_1	Major diameter
d_2	Shank diameter
d_3	Chamfer diameter
d_4	Neck diameter
L	Total length
L_1	Thread length
L_2	Shank length
L_3	Square length
L_4	Neck length
L_5	Chamfer length
L_6	Flutes length
a	Square size
Cm	Center male
Cf	Center female



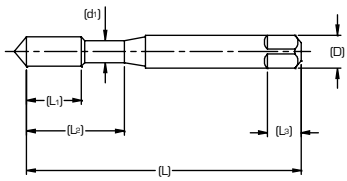


d_1	Major diameter
d_m	Flank diameter
d_i	Minor diameter
d_3	Chamfer diameter
P	Pitch
a	Flank angle
β	Chamfer angle
φ	Gun nose angle
γ	Gun nose rake angle in front
Δ	Chamfer relief
Δ_1	Pitch diameter relief on the land
γ	Rake angle
T	Width of land
S	Flute width
d_5	Web tickness
ε	Angle of spiral flute

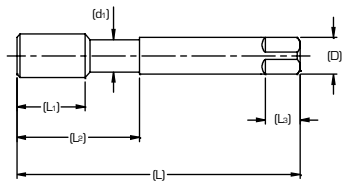
MODI TAP BLANK DIMENSION



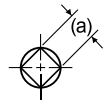
Blank Design (1)



Blank Design (2)



Blank Design (3)



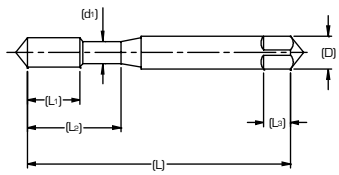
Unified Tap Blank

Nominal Size	Overall Length	Thread Length		Length to neck		Shank Diameter	Neck Diameter	Square Length	Square Size	Blank Design No.
		SF	SP	SF	SP					
	(L)	(L1)		(L2)		(D)	(d1)	(L3)	(a)	
#2	1.75	.157	.256	.433		.141	.061	.19	.110	1
#3	1.81	.197	.295	.492		.141	.069	.19	.110	1
#4	1.88	.236	.335	.563		.141	.077	.19	.110	1
#5	1.94	.236	.374	.626		.141	.090	.19	.110	1
#6	2.00	.276	.413	.689		.141	.094	.19	.110	1
#8	2.13	.276	.453	.752		.168	.120	.25	.131	1
#10-24	2.38	.354	.531	.906		.194	.131	.25	.152	1
#10-32		.276					.146			1
#12-24	2.38	.354	.571	.906		.220	.157	.28	.165	1
#12-28		.276					.166			1
1/4-20	2.50	.433	.591	1.000		.255	.180	.31	.191	2
1/4-28		.354					.200			2
5/16-18	2.72	.472	.669	1.126		.318	.234	.38	.238	2
5/16-24		.394					.254			2
3/8-16	2.94	.551	.748	1.252		.381	.287	.44	.286	2
3/8-24		.394					.316			2
7/16-14	3.16	.591	.866	1.850	1.437	.323	.311	.41	.242	3
7/16-20		.472								3
1/2-13	3.38	.630	.984	2.067	1.657	.367	.354	.44	.275	3
1/2-20		.472								3
9/16-12	3.59	.709	.984	2.067	1.657	.429	.417	.50	.322	3
9/16-18		.512								3
5/8-11	3.81	.748	1.083	2.205	1.811	.480	.469	.56	.360	3
5/8-18		.512								3
3/4-10	4.25	.827	1.201	2.480	2.000	.590	.577	.69	.442	3
3/4-10		.591								3
7/8-9	4.69	.827	1.339	2.815	2.220	.697	.685	.75	.523	3
7/8-14		.709								3
1-8	5.13	.984	1.496	3.091	2.500	.800	.787	.81	.600	3
1-12		.709								3
1-1/8-7	5.44	1.024	1.535	3.15	2.563	.896	.878	.88	.672	3
1-1/8-12		.787								3
1-1/4-7	5.75	1.024	1.535	3.15	2.563	1.021	1.002	1.00	.766	3
1-1/4-12		.787								3
1-3/8-6	6.06	1.181	1.791	3.583	3.000	1.108	1.089	1.06	.831	3
1-3/8-12		.866								3
1-1/2-6	6.38	1.181	1.791	3.583	3.000	1.233	1.213	1.13	.925	3
1-1/2-12		.866								3

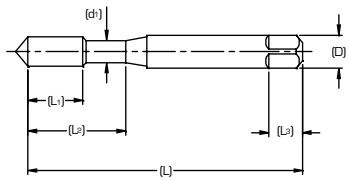
***SF** : Spiral Fluted Taps
***SP** : Spiral Pointed Taps

TECHNICAL DATA

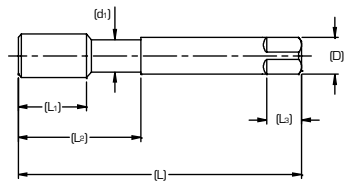
MODI TAP BLANK DIMENSION - METRIC



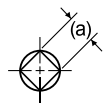
Blank Design (1)



Blank Design (2)



Blank Design (3)

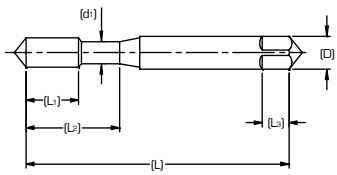


Metric Tap Blank

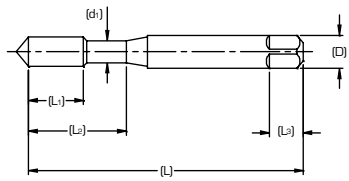
Nominal Size	Overall Length	Thread Length		Length to neck		Shank Diameter	Neck Diameter	Square Length	Square Size	Blank Design No.
		SF	SP	SF	SP					
	(L)	(L1)		(L2)		(D)	(d1)	(L3)	(a)	
M3	1.94	.197	.374	.646		.141	.090	.19	.110	1
M3.5	2.00	.276	.413	.646		.141	.104	.19	.110	1
M4	2.13	.276	.453	.768		.168	.119	.25	.131	1
M4.5	2.38	.354	.531	.933		.194	.135	.25	.152	1
M5	2.38	.354	.531	.933		.194	.152	.25	.152	1
M5.5	2.38	.354	.571	1.000		.220	.189	.28	.165	2
M6	2.50	.433	.591	1.000		.255	.181	.31	.191	2
M7	2.72	.433	.669	1.126		.318	.220	.38	.238	2
M8x 1.25	2.72	.472	.669	1.126		.318	.246	.38	.238	2
M8x 1.0		.433								2
M10x 1.5	2.94	.512	.748	1.252		.381	.310	.44	.286	2
M10x 1.25		.472								2
M12x 1.75	3.38	.591	.984	2.067	1.657	.367	.354	.44	.275	3
M12x 1.25		.551								3
M14x 2.0	3.59	.709	.984	2.067	1.657	.429	.417	.50	.322	3
M14x 1.5		.551								3
M16x 2.0	3.81	.709	1.083	2.205	1.811	.480	.469	.56	.360	3
M16x 1.5		.551								3
M18x 2.5	4.03	.787	1.083	2.205	1.811	.542	.530	.63	.406	3
M18x 1.5		.551								3
M20x 1.5	4.47	.551	1.201	2.48	2.000	.652	.64	.69	.489	3
M20x 2.5		.787								3
M22x 1.5	4.69	.551	1.339	2.815	2.220	.697	.685	.75	.523	3
M22x 2.5		.787								3
M24x 1.5	4.91	.551	1.339	2.815	2.220	.760	.748	.75	.57	3
M24x 3		.945								3
M27x 1.5	5.13	.591	1.496	3.091	2.500	.896	.878	.88	.672	3
M27x 3		.945								3
M30x 1.5	5.44	.591	1.713	3.15	2.854	1.021	1.002	1.00	.766	3
M30x 3.5		1.102								3

***SF** : Spiral Fluted Taps
***SP** : Spiral Pointed Taps

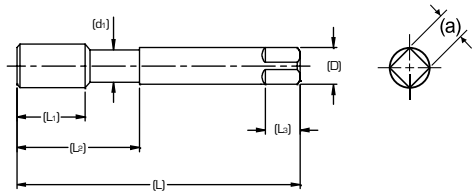
HIGH PERFORMANCE TAPS DIN LENGTH / ANSI SHANK - INCH



Blank Design (1)



Blank Design (2)



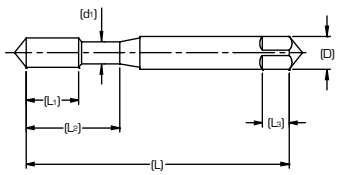
Blank Design (3)

Nominal Size	Overall Length	Thread Length		Length to neck		Shank Diameter	Neck Diameter	Square Length	Square Size	Blank Design No.
		SF	SP	SF	SP					
	(L)	(L1)		(L2)		(D)	(d1)	(L3)	(a)	
#2	1.772	.157	.256	.433		.141	.061	.19	.110	1
#3	1.969	.197	.295	.492		.141	.069	.19	.110	1
#4	2.205	.236	.335	.563		.141	.077	.19	.110	1
#5	2.205	.236	.374	.626		.141	.090	.19	.110	1
#6	2.205	.276	.413	.689		.141	.094	.19	.110	1
#8	2.480	.276	.453	.752		.168	.120	.25	.131	1
#10-24	2.756	.354	.531	.906		.194	.131	.25	.152	1
#10-32		.276					.146			1
#12-24	3.150	.354	.571	.906		.220	.157	.28	.165	1
#12-28		.276					.166			1
1/4-20	3.150	.433	.591	1.000		.255	.180	.31	.191	2
1/4-28		.354					.200			2
5/16-18	3.543	.472	.669	1.126		.318	.234	.38	.238	2
5/16-24		.394					.254			2
3/8-16	3.937	.551	.748	1.252		.381	.287	.44	.286	2
3/8-24		.394					.316			2
7/16-14	3.937	.591	.866	1.850	1.437	.323	.311	.41	.242	3
7/16-20		.472								3
1/2-13	4.331	.630	.984	2.067	1.657	.367	.354	.44	.275	3
1/2-20	3.937	.472								3
9/16-12	4.331	.709	.984	2.067	1.657	.429	.417	.50	.322	3
9/16-18	3.937	.512								3
5/8-11	4.331	.748	1.083	2.205	1.811	.480	.469	.56	.360	3
5/8-18	3.937	.512								3
3/4-10	4.921	.827	1.201	2.480	2.000	.590	.577	.69	.442	3
3/4-10	4.331	.591								3
7/8-9	5.512	.827	1.339	2.815	2.220	.697	.685	.75	.523	3
7/8-14	4.921	.709								3
1-8	6.299	.984	1.496	3.091	2.500	.800	.787	.81	.600	3
1-12	5.512	.709								3

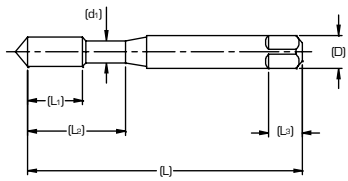
***SF** : Spiral Fluted Taps
***SP** : Spiral Pointed Taps

TECHNICAL DATA

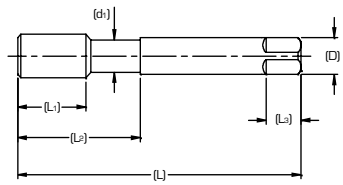
HIGH PERFORMANCE TAPS DIN LENGTH / ANSI SHANK - METRIC



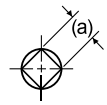
Blank Design (1)



Blank Design (2)



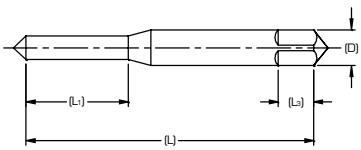
Blank Design (3)



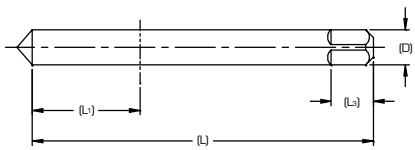
Nominal Size	Overall Length	Thread Length		Length to neck		Shank Diameter	Neck Diameter	Square Length	Square Size	Blank Design No.
		SF	SP	SF	SP					
	(L)	(L1)		(L2)		(D)	(d1)	(L3)	(a)	
M3	2.205	.197	.374	.646		.141	.090	.19	.110	1
M3.5	2.205	.276	.413	.646		.141	.104	.19	.110	1
M4	2.480	.276	.453	.768		.168	.119	.25	.131	1
M5	2.756	.354	.531	.933		.194	.152	.25	.152	1
M6	3.150	.433	.591	1.000		.255	.181	.28	.191	2
M8x 1.25	3.543	.472	.669	1.126		.318	.246	.38	.238	2
M8x 1.0		.433								2
M10x 1.5	3.937	.512	.748	1.252		.381	.310	.44	.286	2
M10x 1.25		.472								2
M12x 1.75	4.331	.591	.984	2.067	1.657	.367	.354	.44	.275	3
M12x 1.25	3.937	.551								3
M14x 2.0	4.331	.709	.984	2.067	1.657	.429	.417	.50	.322	3
M14x 1.5	3.937	.551								3
M16x 2.0	4.331	.709	1.083	2.205	1.811	.480	.469	.56	.360	3
M16x 1.5	3.937	.551								3
M18x 2.5	4.921	.787	1.083	2.205	1.811	.542	.530	.63	.406	3
M18x 1.5	4.331	.551								3

***SF :** Spiral Fluted Taps
***SP :** Spiral Pointed Taps

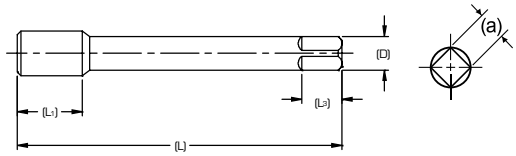
YG-1 USCTI 302 TAP BLANK DIMENSION



Blank Design (1)



Blank Design (2)



Blank Design (3)

Unified Tap Blank

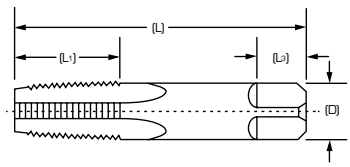
Nominal Size	Overall Length (L)	Thread Length (L_1)	Shank Diameter (D)	Square Length (L_3)	Square Size (a)	Blank Design No.
#0	1.63	.31	.141	.19	.110	1
#1	1.69	.38	.141	.19	.110	1
#2	1.75	.44	.141	.19	.110	1
#3	1.81	.50	.141	.19	.110	1
#4	1.88	.56	.141	.19	.110	1
#5	1.94	.63	.141	.19	.110	1
#6	2.00	.69	.141	.19	.110	1
#8	2.13	.75	.168	.25	.131	1
#10	2.38	.88	.194	.25	.152	1
#12	2.38	.94	.220	.28	.165	1
1/4	2.50	1.00	.255	.31	.191	2
5/16	2.72	1.13	.318	.38	.238	2
3/8	2.94	1.25	.381	.44	.286	2
7/16	3.16	1.44	.323	.41	.242	3
1/2	3.38	1.66	.367	.44	.275	3
9/16	3.59	1.66	.429	.50	.322	3
5/8	3.81	1.81	.480	.56	.360	3
11/16	4.03	1.81	.542	.63	.406	3
3/4	4.25	2.00	.590	.69	.442	3
13/16	4.47	2.00	.652	.69	.489	3
7/8	4.69	2.22	.697	.75	.523	3
15/16	4.91	2.22	.760	.75	.570	3
1	5.13	2.50	.800	.81	.600	3
1-1/8	5.44	2.56	.896	.88	.672	3
1-1/4	5.75	2.56	1.021	1.00	.766	3
1-3/8	6.06	3.00	1.108	1.06	.831	3
1-1/2	6.38	3.00	1.233	1.13	.925	3

Metric Tap Blank

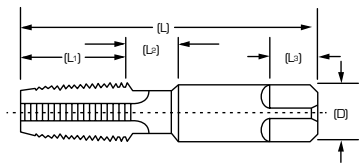
Nominal Size	Overall Length (L)	Thread Length (L_1)	Shank Diameter (D)	Square Length (L_3)	Square Size (a)	Blank Design No.
M1.6	1.63	.310	.141	.19	.110	1
M1.8	1.69	.380	.141	.19	.110	1
M2	1.75	.440	.141	.19	.110	1
M2.5	1.81	.500	.141	.19	.110	1
M3	1.94	.630	.141	.19	.110	1
M3.5	2.00	.690	.141	.19	.110	1
M4	2.13	.750	.168	.25	.131	1
M4.5	2.38	.880	.194	.25	.152	1
M5	2.38	.880	.194	.25	.152	1
M6	2.50	1.00	.255	.31	.191	2
M7	2.72	1.13	.318	.38	.238	2
M8	2.72	1.13	.318	.38	.238	2
M10	2.94	1.25	.381	.44	.286	2
M12	3.38	1.66	.367	.44	.275	3
M14	3.59	1.66	.429	.50	.322	3
M16	3.81	1.81	.480	.56	.360	3
M18	4.03	1.81	.542	.63	.406	3
M20	4.47	2.00	.652	.69	.489	3
M22	4.69	2.22	.697	.75	.523	3
M24	4.91	2.22	.760	.75	.570	3
M30	5.44	2.56	1.021	1.00	.766	3
M33	5.75	2.56	1.108	1.06	.831	3
M36	6.06	3.00	1.233	1.13	.925	3

TECHNICAL DATA

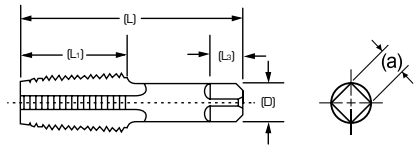
STANDARD PIPE TAP DIMENSION (STRAIGHT AND TAPER, GROUND THREAD)



Blank Design (1)



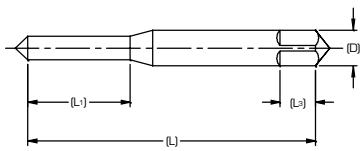
Blank Design (2)



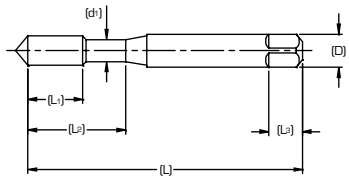
Blank Design (3)

Nominal Size	Overall Length	Thread Length	Shank Diameter	Square Length	Square Size	Optional Neck Length
	(L)	(L_1)	(D)	(L_3)	(a)	(L_2)
1/16	2.13	.69	.3125	.38	.234	.375
1/8	2.13	.75	.3125	.38	.234	...
1/8	2.13	.75	.4375	.38	.328	.375
1/4	2.44	1.06	.5625	.44	.421	.375
3/8	2.56	1.06	.7000	.50	.531	.375
1/2	3.13	1.38	.6875	.63	.515	...
3/4	3.25	1.38	.9063	.69	.679	...
1	3.75	1.75	1.1250	.81	.843	...
1-1/4	4.00	1.75	1.3125	.94	.984	...
1-1/2	4.25	1.75	1.5000	1.00	1.125	...
2	4.25	1.75	1.8750	1.13	1.406	...
2-1/2	5.50	2.56	2.2500	1.25	1.687	...
3	6.00	2.63	2.6250	1.38	1.968	...
3-1/2	6.50	2.69	2.8125	1.50	2.108	...
4	6.75	2.75	3.0000	1.56	2.250	...

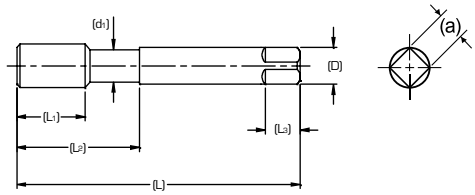
STANDARD FORMING TAP DIMENSION



Blank Design (1)



Blank Design (2)



Blank Design (3)

Forming Tap Blank (Inch)

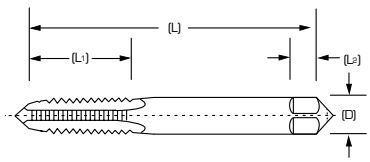
Nominal Size	Overall Length (L)	Thread Length (L_1)	Neck Length (L_2)	Shank Diameter (D)	Square Length (L_3)	Square Size (a)	Blank Design No.
#0	1.63	.31	–	.141	.19	.110	1
#1	1.69	.38	–	.141	.19	.110	1
#2	1.75	.44	–	.141	.19	.110	1
#3	1.81	.50	–	.141	.19	.110	1
#4	1.88	.56	–	.141	.19	.110	1
#5	1.94	.63	–	.141	.19	.110	1
#6	2.00	.48	.69	.141	.19	.110	1
#8	2.13	.50	.75	.168	.25	.131	1
#10	2.38	.63	.88	.194	.25	.152	1
#12	2.38	.63	.94	.220	.28	.165	1
1/4	2.50	.86	1.00	.255	.31	.191	2
5/16	2.72	.93	1.13	.318	.38	.238	2
3/8	2.94	.98	1.25	.381	.44	.286	2
7/16	3.16	.95	1.44	.323	.41	.242	3
1/2	3.38	1.00	1.60	.367	.44	.275	3
9/16	3.59	1.00	1.66	.429	.50	.322	3
5/8	3.81	1.00	1.81	.480	.56	.360	3
3/4	4.25	1.00	2.0	.590	.69	.442	3

Forming Tap Blank (Metric)

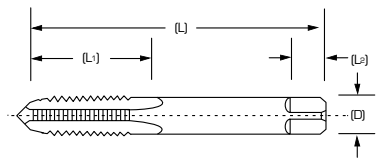
Nominal Size	Overall Length (L)	Thread Length (L_1)	Neck Length (L_2)	Shank Diameter (D)	Square Length (L_3)	Square Size (a)	Blank Design No.
M2	1.75	.40	–	.141	.19	.110	1
M3	1.94	.63	–	.141	.19	.110	1
M4	2.13	.50	.75	.168	.25	.131	1
M5	2.38	.63	.88	.194	.25	.152	1
M6	2.50	.86	1.0	.255	.31	.191	2
M8	2.72	.93	1.13	.318	.38	.238	2
M10	2.94	.98	1.25	.381	.44	.286	2
M12	3.38	1.00	1.60	.367	.44	.275	3

TECHNICAL DATA

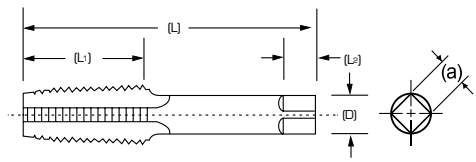
STI STRAIGHT TAP DIMENSION



Blank Design (1)



Blank Design (2)



Blank Design (3)

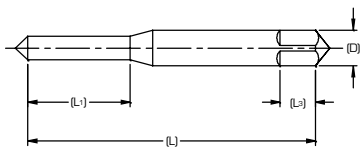
STI Tap blank (Inch)

Nominal Size (STI)	Threads per Inch		Overall Length	Thread Length	Shank Diameter	Square Length	Square Size	Blank Design No.	Table 302 Blank Equivalent
	UNC	UNF	(L)	(L_2)	(D)	(L_3)	(a)		
#2	56	–	1.88	.560	.141	.190	.110	1	No.4
#2		64	1.88	.560	.141	.190	.110	1	No.4
#3	48	–	1.94	.630	.141	.190	.110	1	No.5
#3		56	1.94	.630	.141	.190	.110	1	No.5
#4	40	–	2.00	.690	.141	.190	.110	1	No.6
#4		48	2.00	.690	.141	.190	.110	1	No.6
#5	40	–	2.13	.750	.168	.250	.131	1	No.8
#6	32	–	2.38	.880	.194	.250	.152	1	No.10
#6		40	2.13	.750	.168	.250	.131	1	No.8
#8	32	–	2.38	.940	.220	.280	.165	1	No.12
#8		36	2.38	.940	.220	.280	.165	1	No.12
#10	24	–	2.50	1.000	.255	.310	.191	2	1/4
#10		32	2.50	1.000	.255	.310	.191	2	1/4
#12	24	–	2.72	1.130	.318	.380	.238	2	5/16
1/4	20	–	2.72	1.130	.318	.380	.238	2	5/16
1/4		28	2.72	1.130	.318	.380	.238	2	5/16
5/16	18	–	2.94	1.250	.381	.440	.286	2	3/8
5/16		24	2.94	1.250	.381	.440	.286	2	3/8
3/8	16	–	3.38	1.660	.367	.440	.275	3	1/2
3/8		24	3.16	1.440	.323	.410	.242	3	7/16
7/16	14	–	3.59	1.660	.429	.500	.322	3	9/16
7/16		20	3.38	1.660	.367	.440	.275	3	1/2
1/2	13	–	3.81	1.810	.480	.560	.360	3	5/8
1/2		20	3.59	1.660	.429	.500	.322	3	9/16

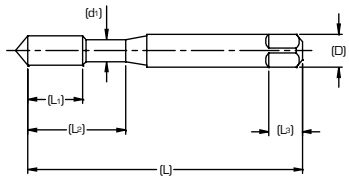
STI Tap blank (Metric)

Nominal Size (STI)	Thread Pitch (mm)	Overall Length	Thread Length	Shank Diameter	Square Length	Square Size	Blank Design No.	Table 302 Blank Equivalent
		(L)	(L_2)	(D)	(L_3)	(a)		
M2	0.4	1.81	.50	.141	.190	.110	1	No.3
M2.5	0.45	1.94	.630	.141	.190	.110	1	No.5
M3	0.5	2.00	.690	.141	.190	.110	1	No.6
M4	0.7	2.38	.880	.194	.250	.152	1	No.10
M5	0.8	2.50	1.000	.255	.310	.191	2	1/4
M6	1	2.72	1.130	.318	.380	.238	2	5/16
M8	1.25	2.94	1.250	.381	.440	.286	2	3/8
M10	1.5	3.38	1.660	.367	.440	.275	3	1/2
M12	1.75	3.59	1.660	.429	.500	.322	3	9/16

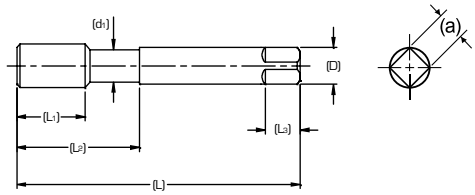
STI SPIRAL FLUTE & SPIRAL POINT TAP DIMENSION



Blank Design (1)



Blank Design (2)



Blank Design (3)

STI Tap blank (Inch)

Nominal Size (STI)	Threads per Inch		Overall Length	Thread Length		Neck Length	Shank Diameter	Square Length	Square Size	Blank Design No.	Table 302 Blank Equivalent
	UNC	UNF	(L)	SP	SF	(L_2)	(D)	(L_3)	(a)		
#2	56	–	1.88	.335	.236	.56	.141	.190	.110	1	No.4
#2		64	1.88	.335	.236	.56	.141	.190	.110	1	No.4
#3	48	–	1.94	.374	.236	.63	.141	.190	.110	1	No.5
#3		56	1.94	.374	.236	.63	.141	.190	.110	1	No.5
#4	40	–	2.00	.413	.276	.68	.141	.190	.110	1	No.6
#4		48	2.00	.413	.276	.68	.141	.190	.110	1	No.6
#5	40	–	2.13	.453	.276	.75	.168	.250	.131	1	No.8
#6	32	–	2.38	.531	.354	.88	.194	.250	.152	1	No.10
#6		40	2.13	.453	.276	.75	.168	.250	.131	1	No.8
#8	32	–	2.38	.571	.354	.94	.220	.280	.165	1	No.12
#8		36	2.38	.571	.354	.94	.220	.280	.165	1	No.12
#10	24	–	2.50	.591	.433	1.0	.255	.310	.191	2	1/4
#10		32	2.50	.591	.433	1.0	.255	.310	.191	2	1/4
#12	24	–	2.72	.669	.472	1.13	.318	.380	.238	2	5/16
1/4	20	–	2.72	.669	.472	1.13	.318	.380	.238	2	5/16
1/4		28	2.72	.669	.472	1.13	.318	.380	.238	2	5/16
5/16	18	–	2.94	.748	.551	1.25	.381	.440	.286	2	3/8
5/16		24	2.94	.748	.551	1.25	.381	.440	.286	2	3/8
3/8	16	–	3.38	.984	.630	1.66	.367	.440	.275	3	1/2
3/8		24	3.16	.866	.591	1.44	.323	.410	.242	3	7/16
7/16	14	–	3.59	.984	.709	1.66	.429	.500	.322	3	9/16
7/16		20	3.38	.984	.630	1.66	.367	.440	.275	3	1/2
1/2	13	–	3.81	1.083	.748	1.81	.480	.560	.360	3	5/8
1/2		20	3.59	.984	.709	1.66	.429	.500	.322	3	9/16

STI Tap blank (Metric)

Nominal Size (STI)	Thread Pitch (mm)	Overall Length	Thread Length		Neck Length	Shank Diameter	Square Length	Square Size	Blank Design No.	Table 302 Blank Equivalent
		(L)	SP	SF	(L_2)	(D)	(L_3)	(a)		
M2	0.4	1.81	.295	.236	.56	.141	.190	.110	1	No.3
M2.5	0.45	1.94	.374	.197	.63	.141	.190	.110	1	No.5
M3	0.5	2.00	.413	.276	.69	.141	.190	.110	1	No.6
M4	0.7	2.38	.531	.354	.93	.194	.250	.152	1	No.10
M5	0.8	2.50	.591	.433	1.0	.255	.310	.191	2	1/4
M6	1	2.72	.669	.433	1.13	.318	.380	.238	2	5/16
M8	1.25	2.94	.748	.512	1.25	.381	.440	.286	2	3/8
M10	1.5	3.38	.984	.591	2.07	.367	.440	.275	3	1/2
M12	1.75	3.59	.984	.709	2.07	.429	.500	.322	3	9/16

TECHNICAL DATA

TAP RECOMMENDATIONS FOR CLASSES OF THREAD - INCH

Internal Screw Thread Classes and Tap Recommendations

Size	Threads per Inch		Recommended Tap for Class of Thread				Pitch Diameter Limits for Class of Thread				
			Unified Class of Thread		American National Class of Thread		Min. All Class (Basic)	Unified Class of Thread		American National Class of Thread	
	UNC	UNF	Class 2	Class 3	Class 2B	Class 3B		Max. Class 2	Max. Class 3	Max. Class 2B	Max. Class 3B
#0	–	80	GH1	GH1	GH2	GH1	.0519	.0536	.0532	.0542	.0536
#1	64	–	GH1	GH1	GH2	GH1	.0629	.0648	.0643	.0655	.0648
#1	–	72	GH1	GH1	GH2	GH1	.0640	.0658	.0653	.0665	.0659
#2	56	–	GH1	GH1	GH2	GH1	.0744	.0764	.0759	.0772	.0765
#2	–	64	GH1	GH1	GH2	GH1	.0759	.0778	.0773	.0786	.0779
#3	48	–	GH1	GH1	GH2	GH1	.0855	.0877	.0871	.0885	.0877
#3	–	56	GH1	GH1	GH2	GH1	.0874	.0894	.8890	.0902	.0895
#4	40	–	GH2	GH1	GH2	GH2	.0958	.0982	.0975	.0991	.0982
#4	–	48	GH1	GH1	GH2	GH1	.0985	.1007	.1001	.1016	.1008
#5	40	–	GH2	GH1	GH2	GH2	.1088	.1112	.1105	.1121	.1113
#5	–	44	GH1	GH1	GH2	GH1	.1102	.1125	.1118	.1134	.1126
#6	32	–	GH2	GH1	GH3	GH2	.1177	.1204	.1196	.1214	.1204
#6	–	40	GH2	GH1	GH2	GH2	.1218	.1242	.1235	.1252	.1243
#8	32	–	GH2	GH1	GH3	GH2	.1437	.1464	.1456	.1475	.1465
#8	–	36	GH2	GH1	GH2	GH2	.1460	.1485	.1478	.1496	.1487
#10	24	–	GH3	GH1	GH3	GH3	.1629	.1662	.1653	.1672	.1661
#10	–	32	GH2	GH1	GH3	GH2	.1697	.1724	.1716	.1736	.1726
#12	24	–	GH3	GH1	GH3	GH3	.1889	.1922	.1913	.1933	.1922
#12	–	28	GH3	GH1	GH3	GH3	.1928	.1959	.1950	.1970	.1959
1/4	20	–	GH3	GH2	GH5	GH3	.2175	.2211	.2201	.2223	.2211
1/4	–	28	GH3	GH1	GH4	GH3	.2268	.2299	.2290	.2311	.2300
5/16	18	–	GH3	GH2	GH5	GH3	.2764	.2805	.2794	.2817	.2803
5/16	—	24	GH3	GH1	GH4	GH3	.2854	.2887	.2878	.2902	.2890
3/8	16	–	GH3	GH2	GH5	GH3	.3344	.3389	.3376	.3401	.3387
3/8	–	24	GH3	GH1	GH4	GH3	.3479	.3512	.3503	.3528	.3516
7/16	14	–	GH5	GH3	GH5	GH3	.3911	.3960	.3947	.3972	.3957
7/16	–	20	GH3	GH1	GH5	GH3	.4050	.4086	.4076	.4104	.4091
1/2	13	–	GH5	GH3	GH5	GH3	.4500	.4552	.4537	.4565	.4548
1/2	–	20	GH3	GH1	GH5	GH3	.4675	.4711	.4701	.4731	.4717
9/16	12	–	GH5	GH3	GH5	GH3	.5084	.5140	.5124	.5152	.5135
9/16	–	18	GH3	GH2	GH5	GH3	.5264	.5305	.5294	.5323	.5308
5/8	11	–	GH5	GH3	GH5	GH3	.5660	.5719	.5702	.5732	.5714
5/8	–	18	GH3	GH2	GH5	GH3	.5889	.5930	.5919	.5949	.5934
3/4	10	–	GH5	GH3	GH5	GH3	.6850	.6914	.6895	.6927	.6907
3/4	–	16	GH3	GH2	GH5	GH3	.7094	.7139	.7126	.7159	.7143
7/8	9	–	GH6	GH4	GH6	GH4	.8028	.8098	.8077	.8110	.8089
7/8	–	14	GH4	GH2	GH6	GH4	.8286	.8335	.8322	.8356	.8339
1	8	–	GH6	GH4	GH6	GH4	.9188	.9264	.9242	.9276	.9254
1	–	12	GH4	GH2	GH6	GH4	.9459	.9515	.9499	.9535	.9516

The above recommended taps normally produce the Class of Thread indicated in average materials when used with reasonable care. However, if the tap specified does not give a satisfactory gage fit in the work, a choice of some other limit tap will be necessary.

12 TAP RECOMMENDATIONS FOR CLASSES OF THREAD -METRIC

Size	Pitch	Recommended Tap for Class of Thread		Pitch Diameter Limits for Class of Thread (mm)			Pitch Diameter Limits for Class of Thread (inch)		
		4H	6H	Min. (Basic)	Max. 4H	Max. 6H	Min. (Basic)	Max. 4H	Max. 6H
M1.6	0.35	D1	D3	1.373	1.426	1.458	.05406	.05614	.05740
M2	0.40	D1	D3	1.740	1.796	1.830	.06850	.07071	.07205
M2.5	0.45	D1	D3	2.208	2.268	2.303	.08693	.08929	.09067
M3	0.50	D1	D3	2.675	2.738	2.775	.10531	.10780	.10925
M3.5	0.60	D1	D4	3.110	3.181	3.222	.12244	.12524	.12685
M4	0.70	D2	D4	3.545	3.620	3.663	.13957	.14252	.14421
M4.5	0.75	D2	D4	4.013	4.088	4.131	.15789	.16094	.16264
M5	0.80	D2	D4	4.480	4.560	4.605	.17638	.17953	.18130
M6	1.00	D3	D5	5.350	5.445	5.500	.21063	.21437	.21654
M7	1.00	D3	D5	6.350	6.445	6.500	.25000	.25374	.25591
M8	1.25	D3	D5	7.188	7.288	7.348	.28299	.28693	.28929
M10	1.50	D3	D6	9.026	9.138	9.206	.35535	.35976	.36244
M12	1.75	D3	D6	10.863	10.988	11.063	.42768	.43260	.43555
M14	2.00	D3	D7	12.701	12.833	12.913	.50004	.50524	.50839
M16	2.00	D4	D7	14.701	14.833	14.913	.57878	.58398	.58713
M20	2.50	D4	D7	18.376	18.516	18.600	.72346	.72898	.73228
M24	3.00	D4	D8	22.051	22.221	22.316	.86815	.87484	.87858
M30	3.50	D5	D9	27.727	27.907	28.007	1.09161	1.0987	1.10264
M36	4.00	D5	D9	33.402	33.592	33.702	1.31504	1.32252	1.32685

13 TOLERANCE CHART - USCTI

Element	Nominal Diameter Range in Inches		Direction	Tolerance (Inches)
	Over	To (Inc.)		
Overall Length - L	.0520	1.0100	Plus or Minus	.031
	1.0100	4.0100	Plus or Minus	.063
Thread Length - L1	.0520	.2230	Plus or Minus	.047
	.2230	.5100	Plus or Minus	.063
	.5100	1.5100	Plus or Minus	.094
	1.5100	4.0100	Plus or Minus	.125
Square Length - L3	.0520	1.0100	Plus or Minus	.031
	1.0100	4.0100	Plus or Minus	.063
Shank Diameter - D	.0520	.2230	Minus	.0015
	.2230	.6350	Minus	.0015
	.6350	1.0100	Minus	.0020
	1.0100	1.5100	Minus	.0020
	1.5100	2.0100	Minus	.0030
	2.0100	4.0100	Minus	.0030
Square Size - a	.0520	.5100	Minus	.004
	.5100	1.0100	Minus	.006
	1.0100	2.0100	Minus	.008
	2.0100	4.0100	Minus	.010

TECHNICAL DATA

14 THREAD LIMITS

Unified Thread, Machine Screw Size - Ground Thread

Size	Thread per Inch			Major Diameter (Inches)			Pitch Diameter Limits (Inches)								
	UNC	UNF	UNS	Basic	Min.	Max.	Basic Pitch Dia.	H1 Limit		H2 Limit		H3 Limit		H7 Limit	
								Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
#0	–	80	–	.0600	.0605	.0615	.0519	.0519	.0524	.0524	.0529	–	–	–	–
#1	64	–	–	.0730	.0735	.0745	.0629	.0629	.0634	.0634	.0639	–	–	–	–
	–	72	–	.0730	.0735	.0745	.0640	.0640	.0645	.0645	.0650	–	–	–	–
#2	56	–	–	.0860	.0865	.0875	.0744	.0744	.0749	.0749	.0754	–	–	–	–
	–	64	–	.0860	.0865	.0875	.0759	–	–	.0764	.0769	–	–	–	–
#3	48	–	–	.0990	.0100	.1010	.0855	.0855	.0860	.0860	.0865	–	–	–	–
	–	56	–	.0990	.0995	.1005	.0874	.0874	.0879	.0879	.0884	–	–	–	–
#4	–	–	36	.1120	.1135	.1145	.0940	–	–	.0945	.0950	–	–	–	–
	40	–	–	.1120	.1135	.1145	.0958	.0958	.0963	.0963	.0968	–	–	–	–
	–	48	–	.1120	.1130	.1140	.0985	.0985	.0990	.0990	.0995	–	–	–	–
#5	40	–	–	.1250	.1265	.1275	.1088	.1088	.1093	.1093	.1098	–	–	–	–
	–	44	–	.1250	.1260	.1270	.1102	–	–	.1107	.1112	–	–	–	–
#6	32	–	–	.1380	.1400	.1410	.1177	.1177	.1182	.1182	.1187	.1187	.1192	.1207	.1212
	–	40	–	.1380	.1395	.1405	.1218	.1218	.1223	.1223	.1228	—	—	—	—
#8	32	–	–	.1640	.1660	.1670	.1437	.1437	.1442	.1442	.1447	.1447	.1452	.1467	.1472
	–	36	–	.1640	.1655	.1665	.1460	–	–	.1465	.1470	—	—	—	—
#10	24	–	–	.1900	.1930	.1940	.1629	.1629	.1634	.1634	.1639	.1639	.1644	.1659	.1664
	–	32	–	.1900	.1920	.1930	.1697	.1697	.1702	.1702	.1707	.1707	.1712	.1727	.1732
#12	24	–	–	.2160	.2190	.2200	.1889	–	–	–	–	.1899	.1904	–	–
	–	28	–	.2160	.2185	.2195	.1928	–	–	–	–	.1938	.1943	–	–

Lead Tolerance

A maximum lead deviation of plus or minus .0005" within any two threads not farther apart than 1" is permitted

Pitch Diameter Limits

H1 = Basic to basic plus .0005"

H2 = Basic plus .0005" to basic plus .001"

H3 = Basic plus .001" to basic plus .0015"

H7 = Basic plus .003" to basic plus .0035"

Angle Tolerance

24 to 80 threads per inch incl. = 30 plus or minus in 1/2 angle.

Unified Thread, Machine Screw Size - Ground Thread

Size	Thread per Inch			Major Diameter (Inches)			Pitch Diameter Limits (Inches)													
	UNC	UNF	UNS	Basic	Min.	Max.	Basic Pitch Dia.	H1 Limit		H2 Limit		H3 Limit		H4 Limit		H5 Limit		H6 Limit	
								Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
1/4	20	–	–	.2500	.2540	.2550	.2175	.2175	.2180	.2180	.2185	.2185	.2190	–	–	.2195	.2200	–	–
	–	28	–	.2500	.2525	.2535	.2268	.2268	.2273	.2273	.2278	.2278	.2283	.2283	.2288	–	–	–	–
5/16	18	–	–	.3125	.3170	.3180	.2764	.2764	.2769	.2769	.2774	.2774	.2779	–	–	.2784	.2789	–	–
	–	24	–	.3125	.3155	.3165	.2854	.2854	.2859	.2859	.2864	.2864	.2869	.2869	.2874	–	–	–	–
3/8	16	–	–	.3750	.3800	.3810	.3344	.3344	.3349	.3349	.3354	.3354	.3359	–	–	.3364	.3369	–	–
	–	24	–	.3750	.3780	.3790	.3479	.3479	.3484	.3484	.3489	.3489	.3494	.3494	.3499	–	–	–	–
7/16	14	–	–	.4375	.4435	.4445	.3911	–	–	.3916	.3921	.3921	.3926	–	–	.3931	.3936	–	–
	–	20	–	.4375	.4415	.4425	.4050	–	–	–	–	.4060	.4065	–	–	.4070	.4075	–	–
1/2	13	–	–	.5000	.5065	.5075	.4500	.4500	.4505	.4505	.4510	.4510	.4515	–	–	.4520	.4525	–	–
	–	20	–	.5000	.5040	.5050	.4675	.4675	.4680	.4680	.4685	.4685	.4690	–	–	.4695	.4700	–	–
9/16	12	–	–	.5625	.5690	.5700	.5084	–	–	.5089	.5094	.5094	.5099	–	–	.5104	.5109	–	–
	–	18	–	.5625	.5670	.5680	.5264	–	–	.5269	.5274	.5274	.5279	–	–	.5284	.5289	–	–
5/8	11	–	–	.6250	.6320	.6330	.5660	–	–	.5665	.5670	.5670	.5675	–	–	.5680	.5685	–	–
	–	18	–	.6250	.6295	.6305	.5889	–	–	.5894	.5899	.5899	.5904	–	–	.5909	.5914	–	–
11/16	–	–	11	.6875	.6945	.6955	.6285	–	–	–	–	.6295	.6300	–	–	–	–	–	–
	–	–	16	.6875	.6925	.6935	.6469	–	–	.6855	.6860	.6479	.6484	–	–	–	–	–	–
3/4	10	–	–	.7500	.7525	.7590	.6850	.6850	.6855	.7099	.7104	.6860	.6865	–	–	.6870	.6875	–	–
	–	16	–	.7500	.7550	.7560	.7094	.7094	.7099	–	–	.7104	.7109	–	–	.7114	.7119	.8053	–
7/8	9	–	–	.8750	.8835	.8850	.8028	–	–	.8291	.8296	–	–	.8043	.8048	–	–	.8311	.8058
	–	14	–	.8750	.8810	.8820	.8286	–	–	.9193	.9198	–	–	.8301	.8306	–	–	.9213	.8318
1	8	–	–	1.0000	1.0095	1.0110	.9188	–	–	–	–	–	–	.9203	.9208	–	–	–	.9218
	–	12	–	1.0000	1.0065	1.0075	.9459	–	–	–	–	–	–	.9474	.9479	–	–	–	–
	–	–	14	1.0000	1.0060	1.0070	.9536	–	–			–	–	.9551	.9556	–	–		–

Lead Tolerance

A maximum lead deviation of plus or minus .0005" within any two threads not farther apart than 1" is permitted

Pitch Diameter Limits

H1 = Basic to basic plus .0005"
H2 = Basic plus .0005" to basic plus .001"
H3 = Basic plus .001" to basic plus .0015"
H4 = Basic plus .0015" to basic plus .0020"
H5 = Basic plus .0020" to basic plus .0025"
H6 = Basic plus .0025" to basic plus .0030"

Angle Tolerance

Threads per Inch	Deviation in Half Angle
6 to 9 Incl. 10 to 28 Incl.	25' Plus or Minus 30' Plus or Minus

TECHNICAL DATA

Metric Thread - Ground Thread

Size	Pitch		Major Diameter (Inches)			Pitch Diameter Limits (Inches)										
	Coarse	Fine	Basic	Min.	Max.	Basic Pitch Dia.	D2 Limit		D3 Limit		D4 Limit		D5 Limit		D6 Limit	
							Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
M2	0.4	–	.0787	.0801	.0811	.0685	.0690	.0696	.0695	.0701	.0700	.0706	–	–	–	–
M2.2	0.45	–	.0866	.0881	.0891	.0751	.0756	.0762	.0761	.0767	.0766	.0772	–	–	–	–
M2.3	0.4	–	.0906	.0919	.0929	.0803	.0808	.0814	.0813	.0819	.0818	.0824	–	–	–	–
M2.6	0.45	–	.1024	.1038	.1048	.0909	.0913	.0919	.0918	.0924	.0923	.0929	–	–	–	–
M3	0.5	–	.1181	.1198	.1208	.1053	.1058	.1064	.1063	.1069	.1068	.1074	.1073	.1079	–	–
	–	0.35	.1181	.1193	.1203	.1092	.1096	.1102	.1101	.1107	.1106	.1112	.1111	.1117	–	–
M3.5	0.6	–	.1378	.1397	.1407	.1225	.1227	.1235	.1232	.1240	.1237	.1245	.1242	.1250	–	–
	–	0.35	.1378	.1389	.1399	.1289	.1293	.1299	.1298	.1304	.1303	.1309	.1308	.1314	–	–
M4	0.7	—	.1575	.1597	.1613	.1396	.1398	.1406	.1403	.1411	.1408	.1416	.1413	.1421	–	–
	–	0.5	.1575	.1591	.1601	.1447	.1451	.1457	.1456	.1462	.1461	.1467	.1466	.1472	–	–
M5	0.8	–	.1969	.1994	.2010	.1764	.1766	.1774	.1771	.1779	.1776	.1784	.1781	.1789	–	–
	–	0.5	.1969	.1985	.1995	.1841	.1845	.1851	.1850	.1856	.1855	.1861	.1861	.1866	–	–
M6	1	—	.2362	.2395	.2411	.2106	.2107	.2117	.2112	.2122	.2117	.2127	.2122	.2132	.2127	.2137
	–	0.75	.2362	.2387	.2403	.2170	.2173	.2181	.2178	.2186	.2183	.2191	.2188	.2196	.2193	.2201
M7	1	–	.2756	.2788	.2804	.2500	.2501	.2511	.2506	.2516	.2511	.2521	.2516	.2526	.2521	.2531
	–	0.75	.2756	.2780	.2796	.2564	.2565	.2575	.2570	.2580	.2575	.2585	.2580	.2590	.2585	.2595
M8	1.25	–	.3150	.3189	.3214	.2830	.2828	.2840	.2833	.2845	.2838	.2850	.2843	.2855	.2848	.2860
	–	1	.3150	.3182	.3198	.2894	.2894	.2904	.2899	.2909	.2904	.2914	.2909	.2919	.2914	.2924
M10	1.5	–	.3937	.3984	.4009	.3553	.3552	.3564	.3557	.3569	.3562	.3574	.3567	.3579	.3572	.3584
	–	1.25	.3937	.3976	.4001	.3617	.3616	.3628	.3621	.3633	.3626	.3638	.3631	.3643	.3636	.3648
		1	.3937	.3969	.3985	.3681	.3682	.3692	.3687	.3697	.3692	.3702	.3697	.3707	.3702	.3712
M12	1.75	–	.4724	.4780	.4805	.4277	.4275	.4287	.4280	.4292	.4285	.4297	.4290	.4302	.4295	.4307
	–	1.5	.4724	.4772	.4797	.4341	.4339	.4351	.4344	.4356	.4349	.4361	.4354	.4366	.4359	.4371
	–	1.25	.4724	.4764	.4789	.4405	.4403	.4415	.4408	.4420	.4413	.4425	.4418	.4430	.4423	.4435

Lead Tolerance

The tap major and pitch diameter conversions have been rounded upward.

A maximum lead deviation of +/- .0005˝ within any two threads not further apart than 1˝ is permitted

Angle Tolerance

Pitch(mm)	Deviation in Half Angle
Over 0.25 to 2.5 Incl. Over 2.5 to 4.0 Incl.	30' Plus or Minus 25' Plus or Minus

Metric Thread - Ground Thread

Size	Pitch		Major Diameter (Inches)			Pitch Diameter Limits (Inches)								
						Basic Pitch Dia.	D2 Limit		D3 Limit		D4 Limit		D5 Limit	
	Coarse	Fine	Basic	Min.	Max.		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
M14	2	–	.5512	.5575	.5600	.5000	.5015	.5031	.5020	.5036	.5025	.5041	–	–
	–	1.5	.5512	.5559	.5584	.5128	.5147	.5159	.5152	.5164	.5157	.5169	–	–
	–	1.25	.5512	.5551	.5576	.5192	.5211	.5223	.5216	.5228	.5221	.5233	–	–
M16	2	–	.6299	.6363	.6388	.5788	.5802	.5818	.5807	.5823	.5812	.5828	–	–
	–	1.5	.6299	.6347	.6372	.5916	.5934	.5946	.5939	.5951	.5944	.5956	–	–
M18	2.5	–	.7087	.7166	.7191	.6448	.6462	.6478	.6467	.6483	.6472	.6488	–	–
	–	2	.7087	.7150	.7175	.6576	.6590	.6606	.6595	.6611	.6600	.6616	–	–
	–	1.5	.7087	.7134	.7159	.6703	.6722	.6734	.6727	.6739	.6732	.6744	–	–
M20	2.5	–	.7874	.7953	.7976	.7235	.7249	.7265	.7254	.7270	.7259	.7275	–	–
	–	2	.7874	.7937	.7962	.7363	.7377	.7393	.7382	.7398	.7387	.7403	–	–
	–	1.5	.7874	.7921	.7946	.7490	.7509	.7521	.7514	.7526	.7519	.7531	–	–
	–	1	.7874	.7906	.7922	.7618	.7639	.7649	.7644	.7654	.7649	.7659	–	–
M22	2.5	–	.8661	.8741	.8766	.8022	.8037	.8053	.8042	.8058	.8047	.8063	–	–
	–	2	.8661	.8725	.8750	.8150	.8164	.8180	.8169	.8185	.8174	.8190	–	–
	–	1.5	.8661	.8709	.8734	.8278	.8296	.8308	.8301	.8313	.8306	.8318	–	–
	–	1	.8661	.8694	.8710	.8406	.8426	.8436	.8431	.8441	.8436	.8446	–	–
M24	3	–	.9449	.9544	.9583	.8682	.8696	.8712	.8701	.8717	.8706	.8722	.8711	.8727
	–	2	.9449	.9512	.9537	.8938	.8952	.8968	.8957	.8973	.8962	.8978	–	–
	–	1.5	.9449	.9496	.9521	.9065	.9084	.9096	.9089	.9101	.9094	.9106	–	–
	–	1	.9449	.9481	.9497	.9193	.9214	.9224	.9219	.9229	.9224	.9234	–	–
M27	3	–	1.0630	1.0725	1.0764	.9863	.9873	.9893	.9878	.9898	.9883	.9903	.9888	.9908
	–	2	1.0630	1.0693	1.0718	1.0118	1.0133	1.0149	1.0138	1.0154	1.0143	1.0159	–	–
	–	1.5	1.0630	1.0677	1.0702	1.0246	1.0265	1.0277	1.0270	1.0282	1.0275	1.0287	–	–
	–	1	1.0630	1.0662	1.0678	1.0374	1.0393	1.0405	1.0398	1.0410	1.0403	1.0415	–	–
M28	–	2	1.1024	1.1087	1.1112	1.0512	1.0527	1.0543	1.0532	1.0548	1.0537	1.0553	–	–
	–	1.5	1.1024	1.1071	1.1096	1.0640	1.0659	1.0671	1.0664	1.0676	1.0669	1.0681	–	–
	–	1	1.1024	1.1056	1.1072	1.0768	1.0786	1.0798	1.0791	1.0803	1.0796	1.0808	–	–
M30	3.5	–	1.1811	1.1921	1.1961	1.0916	1.0926	1.0946	1.0931	1.0951	1.0936	1.0956	1.0941	1.0961
	–	3	1.1811	1.1906	1.1945	1.1044	1.1054	1.1074	1.1059	1.1079	1.1064	1.1084	1.1069	1.1089
	–	2	1.1811	1.1874	1.1899	1.1300	1.1314	1.1330	1.1319	1.1335	1.1324	1.1340	–	–
	–	1.5	1.1811	1.1858	1.1883	1.1427	1.1446	1.1458	1.1451	1.1463	1.1456	1.1468	–	–
M33	3.5	–	1.2992	1.3103	1.3142	1.2097	1.2108	1.2128	1.2113	1.2133	1.2118	1.2138	1.2123	1.2143
	–	3	1.2992	1.3088	1.3127	1.2225	1.2235	1.2255	1.2240	1.2260	1.2245	1.2265	1.2250	1.2270
	–	2	1.2992	1.3056	1.3081	1.2481	1.2495	1.2511	1.2500	1.2516	1.2505	1.2521	–	–
	–	1.5	1.2992	1.3040	1.3065	1.2609	1.2627	1.2639	1.2632	1.2644	1.2637	1.2649	–	–

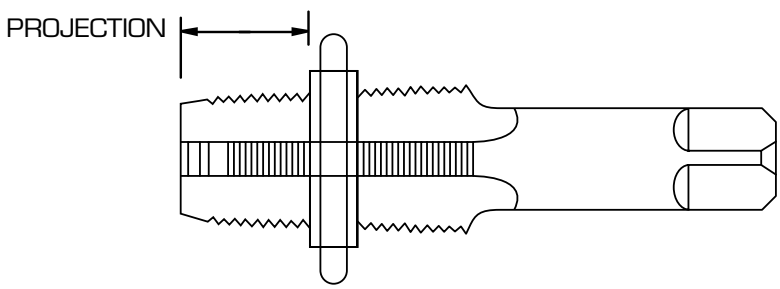
TECHNICAL DATA

Pipe Tap (Limit)

Tap Thread Limits						Reference Dimensions	
Nominal Size Inches	Threads per Inch	Projection* Inches	Projection Tolerance + or -	Taper per Foot Limits		Length	Tap Drill Size** NPT, ANPT, NPTF
				Min.	Max.	(L_1)	
1/16	27	.312	.063	.719	.781	.160	C
1/8	27	.312	.063	.719	.781	.1615	Q
1/8	18	.459	.063	.719	.781	.2278	7/16
3/8	18	.454	.063	.719	.781	.240	9/16
1/2	14	.579	.063	.719	.781	.320	45/64
3/4	14	.565	.063	.719	.781	.339	29/32
1	11-1/2	.678	.094	.719	.781	.400	1-9/64
1-1/4	11-1/2	.686	.094	.719	.781	.420	1-31/64
1-1/2	11-1/2	.699	.094	.719	.781	.420	1-23/32
2	11-1/2	.667	.094	.719	.781	.436	2-3/16
2-1/2	8	.925	.094	.734	.781	.682	2-39/64
3	8	.925	.094	.734	.781	.766	3-15/64
3-1/2	8	.938	.125	.734	.781	.821	...
4	8	.950	.125	.734	.781	.844	...

*** Distance small end of tap projects through L1 Taper Thread Ring Gage.**

**** Recommended size given permit direct tapping without reaming the hole, but only give a full thread for approx. the L1 length.**



TAP DRILL SIZES - UNIFIED THREAD

Size	Threads Per Inch				Minor Diameter			Tap Drill Diameter (Cutting Tap)				
	UNC	UNF	UNEF	UN	Min. 2B&3B	Max. 2B	Max. 3B	80% Thread	75% Thread	70% Thread	65% Thread	60% Thread
#0	-	80	-	-	.0465	.0514	.0514	.0470	.0478	.0486	.0494	.0503
#1	64	-	-	-	.0561	.0623	.0623	.0568	.0578	.0588	.0598	.0608
	-	72	-	-	.0580	.0635	.0635	.0586	.0595	.0604	.0613	.0622
#2	56	-	-	-	.0667	.0737	.0737	.0674	.0686	.0698	.0709	.0721
	-	64	-	-	.0691	.0753	.0753	.0698	.0708	.0718	.0728	.0738
#3	48	-	-	-	.0764	.0845	.0845	.0774	.0787	.0801	.0814	.0828
	-	56	-	-	.0797	.0865	.0865	.0804	.0816	.0828	.0839	.0851
#4	40	-	-	-	.0849	.0939	.0939	.0860	.0876	.0893	.0909	.0925
	-	48	-	-	.0894	.0968	.0968	.0904	.0917	.0931	.0944	.0958
#5	40	-	-	-	.0979	.1062	.1062	.0990	.1006	.1023	.1039	.1055
	-	44	-	-	.1004	.1079	.1079	.1014	.1029	.1043	.1058	.1073
#6	32	-	-	-	.1040	.1140	.1140	.1055	.1076	.1096	.1116	.1136
	-	40	-	-	.1110	.1190	.1186	.1120	.1136	.1153	.1169	.1185
#8	32	-	-	-	.1300	.1390	.1389	.1315	.1336	.1356	.1376	.1396
	-	36	-	-	.1340	.1420	.1416	.1351	.1369	.1387	.1405	.1424
#10	24	-	-	-	.1450	.1560	.1555	.1467	.1494	.1521	.1548	.1575
	-	32	-	-	.1560	.1640	.1641	.1575	.1596	.1616	.1636	.1656
#12	24	-	-	-	.1710	.1810	.1807	.1727	.1754	.1781	.1808	.1835
	-	28	-	-	.1770	.1860	.1857	.1789	.1812	.1835	.1858	.1882
	-	-	32	-	.1820	.1900	.1895	.1835	.1856	.1876	.1896	.1916
1/4	20	-	-	-	.1960	.2070	.2067	.1980	.2013	.2045	.2078	.2110
	-	28	-	-	.2110	.2200	.2190	.2129	.2152	.2175	.2198	.2222
	-	-	32	-	.2160	.2240	.2229	.2175	.2196	.2216	.2236	.2256
5/16	18	-	-	-	.2520	.2650	.2630	.2548	.2584	.2620	.2656	.2692
	-	-	-	20	.2580	.2700	.2680	.2605	.2638	.2670	.2703	.2735
	-	24	-	-	.2670	.2770	.2754	.2692	.2719	.2746	.2773	.2800
	-	-	-	28	.2740	.2820	.2807	.2754	.2777	.2800	.2823	.2847
	-	-	32	-	.2790	.2860	.2847	.2800	.2821	.2841	.2861	.2881
3/8	16	-	-	-	.3070	.3210	.3182	.3101	.3141	.3182	.3222	.3263
	-	-	-	20	.3210	.3320	.3297	.3230	.3263	.3295	.3328	.3360
	-	24	-	-	.3300	.3400	.3372	.3317	.3344	.3371	.3398	.3425
	-	-	-	28	.3360	.3450	.3426	.3379	.3402	.3425	.3448	.3472
	-	-	32	-	.3410	.3490	.3469	.3425	.3446	.3466	.3486	.3506
7/16	14	-	-	-	.3600	.3760	.3717	.3633	.3679	.3726	.3772	.3818
	-	-	-	16	.3700	.3840	.3800	.3726	.3766	.3807	.3847	.3888
	-	20	-	-	.3830	.3950	.3916	.3855	.3888	.3920	.3953	.3985
	-	-	28	-	.3990	.4070	.4051	.4004	.4027	.4050	.4073	.4097
	-	-	-	32	.4040	.4110	.4094	.4050	.4071	.4091	.4111	.4131
1/2	13	-	-	-	.4170	.4340	.4284	.4201	.4251	.4301	.4351	.4400
	-	-	-	16	.4320	.4460	.4419	.4351	.4391	.4432	.4472	.4513
	-	20	-	-	.4460	.4570	.4537	.4480	.4513	.4545	.4578	.4610
	-	-	28	-	.4610	.4700	.4676	.4629	.4652	.4675	.4698	.4722
	-	-	-	32	.4660	.4740	.4719	.4675	.4696	.4716	.4736	.4756
9/16	12	-	-	-	.4720	.4900	.4843	.4759	.4813	.4867	.4921	.4976
	-	-	-	16	.4950	.5090	.5040	.4976	.5016	.5057	.5097	.5138
	-	18	-	-	.5020	.5150	.5106	.5048	.5084	.5120	.5156	.5192
	-	-	-	20	.5080	.5200	.5162	.5105	.5138	.5170	.5203	.5235
	-	-	24	-	.5170	.5270	.5244	.5192	.5219	.5246	.5273	.5300
	-	-	-	28	.5240	.5320	.5301	.5254	.5277	.5300	.5323	.5347
	-	-	-	32	.5290	.5360	.5344	.5300	.5321	.5341	.5361	.5381
5/8	11	-	-	-	.5270	.5460	.5391	.5305	.5364	.5423	.5482	.5541

TECHNICAL DATA

Size	Threads Per Inch				Minor Diameter			Tap Drill Diameter (Cutting Tap)				
	UNC	UNF	UNEF	UN	Min. 2B&3B	Max. 2B	Max. 3B	80% Thread	75% Thread	70% Thread	65% Thread	60% Thread
5/8	-	-	-	12	.5350	.5530	.5463	.5384	.5438	.5492	.5546	.5601
	-	-	-	16	.5570	.5710	.5662	.5601	.5641	.5682	.5722	.5763
	-	18	-	-	.5650	.5780	.5730	.5673	.5709	.5745	.5781	.5817
	-	-	-	20	.5710	.5820	.5787	.5730	.5763	.5795	.5828	.5860
	-	-	24	-	.5800	.5900	.5869	.5817	.5844	.5871	.5898	.5925
	-	-	-	28	.5860	.5950	.5926	.5879	.5902	.5925	.5948	.5972
	-	-	-	32	.5910	.5980	.5969	.5925	.5946	.5966	.5986	.6006
11/16	-	-	-	12	.5970	.6150	.6085	.6009	.6063	.6117	.6171	.6226
	-	-	-	16	.6200	.6340	.6284	.6226	.6266	.6307	.6347	.6388
	-	-	-	20	.6330	.6450	.6412	.6355	.6388	.6420	.6453	.6485
	-	-	24	-	.6420	.6520	.6494	.6442	.6469	.6496	.6523	.6550
	-	-	-	28	.6490	.6570	.6551	.6504	.6527	.6550	.6573	.6597
	-	-	-	32	.6540	.6610	.6594	.6550	.6571	.6591	.6611	.6631
3/4	10	-	-	-	.6420	.6630	.6545	.6461	.6526	.6591	.6656	.6721
	-	-	-	12	.6600	.6780	.6707	.6634	.6688	.6742	.6796	.6851
	-	16	-	-	.6820	.6960	.6908	.6851	.6891	.6932	.6972	.7013
	-	-	20	-	.6960	.7070	.7037	.6980	.7013	.7045	.7078	.7110
	-	-	-	28	.7110	.7200	.7176	.7129	.7152	.7175	.7198	.7222
	-	-	-	32	.7160	.7240	.7219	.7175	.7196	.7216	.7236	.7256
13/16	-	-	-	12	.7220	.7400	.7329	.7259	.7313	.7367	.7421	.7476
	-	-	-	16	.7450	.7590	.7533	.7476	.7516	.7557	.7597	.7638
	-	-	20	-	.7580	.7700	.7662	.7605	.7638	.7670	.7703	.7735
	-	-	-	28	.7740	.7820	.7801	.7754	.7777	.7800	.7823	.7847
	-	-	-	32	.7790	.7860	.7844	.7800	.7821	.7841	.7861	.7881
7/8	9	-	-	-	.7550	.7780	.7681	.7595	.7668	.7740	.7812	.7884
	-	-	-	12	.7850	.8030	.7948	.7884	.7938	.7992	.8046	.8101
	-	14	-	-	.7980	.8140	.8068	.8008	.8054	.8101	.8147	.8193
	-	-	-	16	.8070	.8210	.8158	.8101	.8141	.8182	.8222	.8263
	-	-	20	-	.8210	.8320	.8287	.8230	.8263	.8295	.8328	.8360
	-	-	-	28	.8360	.8450	.8426	.8379	.8402	.8425	.8448	.8472
	-	-	-	32	.8410	.8490	.8469	.8425	.8446	.8466	.8486	.8506
15/16	-	-	-	12	.8470	.8650	.8575	.8509	.8563	.8617	.8671	.8726
	-	-	-	16	.8700	.8840	.8783	.8726	.8766	.8807	.8847	.8888
	-	-	20	-	.8830	.8950	.8912	.8855	.8888	.8920	.8953	.8985
	-	-	-	28	.8990	.9070	.9051	.9004	.9027	.9050	.9073	.9097
	-	-	-	32	.9040	.9110	.9094	.9050	.9071	.9091	.9111	.9131
1	8	-	-	-	.8650	.8900	.8797	.8701	.8782	.8863	.8945	.9026
	-	12	-	-	.9100	.9280	.9198	.9134	.9188	.9242	.9296	.9351
	-	-	-	16	.9320	.9460	.9408	.9351	.9391	.9432	.9472	.9513
	-	-	20	-	.9460	.9570	.9537	.9480	.9513	.9545	.9578	.9610
	-	-	-	28	.9610	.9700	.9676	.9629	.9652	.9675	.9698	.9722
	-	-	-	32	.9660	.9740	.9719	.9675	.9696	.9716	.9736	.9756
1-1/16	-	-	-	8	.9270	.9520	.9422	.9326	.9407	.9488	.9570	.9651
	-	-	-	12	.9720	.9900	.9823	.9759	.9813	.9867	.9921	.9976
	-	-	-	16	.9950	1.0090	1.0033	.9976	1.0016	1.0057	1.0097	1.0138
	-	-	18	-	1.0020	1.0150	1.0105	1.0048	1.0084	1.0120	1.0156	1.0192
	-	-	-	20	1.0080	1.0200	1.0162	1.0105	1.0138	1.0170	1.0203	1.0235
	-	-	-	28	1.0240	1.0320	1.0301	1.0254	1.0277	1.0300	1.0323	1.0347
1-1/8	7	-	-	-	.9700	.9980	.9875	.9765	.9858	.9951	1.0044	1.0137
	-	-	-	8	.9900	1.0150	1.0047	.9951	1.0032	1.0113	1.0195	1.0276
	-	12	-	-	1.0350	1.0530	1.0448	1.0384	1.0438	1.0492	1.0546	1.0601
	-	-	-	16	1.0570	1.0710	1.0658	1.0601	1.0641	1.0682	1.0722	1.0763
	-	-	18	-	1.0650	1.0780	1.0730	1.0673	1.0709	1.0745	1.0781	1.0817
	-	-	-	20	1.0710	1.0820	1.0787	1.0730	1.0763	1.0795	1.0828	1.0860

TECHNICAL DATA

Size	Threads Per Inch				Minor Diameter			Tap Drill Diameter (Cutting Tap)				
	UNC	UNF	UNEF	UN	Min. 2B&3B	Max. 2B	Max. 3B	80% Thread	75% Thread	70% Thread	65% Thread	60% Thread
1-1/8	-	-	-	28	1.0860	1.0950	1.0926	1.0879	1.0902	1.0925	1.0948	1.0972
1-3/16	-	-	-	8	1.0520	1.0770	1.0672	1.0576	1.0657	1.0738	1.0820	1.0901
	-	-	-	12	1.0970	1.1150	1.1073	1.1009	1.1063	1.1117	1.1171	1.1226
	-	-	-	16	1.1200	1.1340	1.1283	1.1226	1.1266	1.1307	1.1347	1.1388
	-	-	18	-	1.1270	1.1400	1.1355	1.1298	1.1334	1.1370	1.1406	1.1442
	-	-	-	20	1.1330	1.1450	1.1412	1.1355	1.1388	1.1420	1.1453	1.1485
	-	-	-	28	1.1490	1.1570	1.1551	1.1504	1.1527	1.1550	1.1573	1.1597
1-1/4	7	-	-	-	1.0950	1.1230	1.1125	1.1015	1.1108	1.1201	1.1294	1.1387
	-	-	-	8	1.1150	1.1400	1.1297	1.1201	1.1282	1.1363	1.1445	1.1526
	-	12	-	-	1.1600	1.1780	1.1698	1.1634	1.1688	1.1742	1.1796	1.1851
	-	-	-	16	1.1820	1.1960	1.1908	1.1851	1.1891	1.1932	1.1972	1.2013
	-	-	18	-	1.1900	1.2030	1.1980	1.1923	1.1959	1.1995	1.2031	1.2067
	-	-	-	20	1.1960	1.2070	1.2037	1.1980	1.2013	1.2045	1.2078	1.2110
	-	-	-	28	1.2110	1.2200	1.2176	1.2129	1.2152	1.2175	1.2198	1.2222
1-5/16	-	-	-	8	1.1770	1.2020	1.2176	1.1826	1.1907	1.1988	1.2070	1.2151
	-	-	-	12	1.2220	1.2400	1.2323	1.2259	1.2313	1.2367	1.2421	1.2476
	-	-	-	16	1.2450	1.2590	1.2533	1.2476	1.2516	1.2557	1.2597	1.2638
	-	-	18	-	1.2520	1.2650	1.2605	1.2548	1.2584	1.2620	1.2656	1.2692
	-	-	-	20	1.2580	1.2700	1.2662	1.2605	1.2638	1.2670	1.2703	1.2735
	-	-	-	28	1.2740	1.2820	1.2801	1.2754	1.2777	1.2800	1.2823	1.2847
1-3/8	6	-	-	-	1.1950	1.2250	1.2146	1.2018	1.2126	1.2235	1.2343	1.2451
	-	-	-	8	1.2400	1.2650	1.2547	1.2451	1.2532	1.2613	1.2695	1.2776
	-	12	-	-	1.2850	1.3030	1.2948	1.2884	1.2938	1.2992	1.3046	1.3101
	-	-	-	16	1.3070	1.3210	1.3158	1.3101	1.3141	1.3182	1.3222	1.3263
	-	-	18	-	1.3150	1.3280	1.3230	1.3173	1.3209	1.3245	1.3281	1.3317
	-	-	-	20	1.3210	1.3320	1.3287	1.3230	1.3263	1.3295	1.3328	1.3360
	-	-	-	28	1.3360	1.3450	1.3426	1.3379	1.3402	1.3425	1.3448	1.3472
1-7/16	-	-	-	6	1.2570	1.2880	1.2770	1.2643	1.2751	1.2860	1.2968	1.3076
	-	-	-	8	1.3020	1.3270	1.3172	1.3076	1.3157	1.3238	1.3320	1.3401
	-	-	-	12	1.3470	1.3650	1.3573	1.3509	1.3563	1.3617	1.3671	1.3726
	-	-	-	16	1.3700	1.3840	1.3783	1.3726	1.3766	1.3807	1.3847	1.3888
	-	-	18	-	1.3770	1.3900	1.3855	1.3798	1.3834	1.3870	1.3906	1.3942
	-	-	-	20	1.3830	1.3950	1.3912	1.3855	1.3888	1.3920	1.3953	1.3985
	-	-	-	28	1.3990	1.4070	1.4051	1.4004	1.4027	1.4050	1.4073	1.4097
1-1/2	6	-	-	-	1.3200	1.3500	1.3396	1.3268	1.3376	1.3485	1.3593	1.3701
	-	-	-	8	1.3650	1.3900	1.3797	1.3701	1.3782	1.3863	1.3945	1.4026
	-	12	-	-	1.4100	1.4280	1.4198	1.4134	1.4188	1.4242	1.4296	1.4351
	-	-	-	16	1.4320	1.4460	1.4408	1.4351	1.4391	1.4432	1.4472	1.4513
	-	-	18	-	1.4400	1.4520	1.4480	1.4423	1.4459	1.4495	1.4531	1.4567
	-	-	-	20	1.4460	1.4570	1.4537	1.4480	1.4513	1.4545	1.4578	1.4610
	-	-	-	28	1.4610	1.4700	1.4676	1.4629	1.4652	1.4675	1.4698	1.4722
1-9/16	-	-	-	6	1.3820	1.4130	1.4021	1.3893	1.4001	1.4110	1.4218	1.4326
	-	-	-	8	1.4270	1.4520	1.4422	1.4326	1.4407	1.4488	1.4570	1.4651
	-	-	-	12	1.4720	1.4900	1.4823	1.4759	1.4813	1.4867	1.4921	1.4976
	-	-	-	16	1.4950	1.5090	1.5033	1.4976	1.5016	1.5057	1.5097	1.5138
	-	-	18	-	1.5020	1.5150	1.5105	1.5048	1.5084	1.5120	1.5156	1.5192
	-	-	-	20	1.5080	1.5200	1.5162	1.5105	1.5138	1.5170	1.5203	1.5235
1-5/8	-	-	-	6	1.4450	1.4750	1.4646	1.4518	1.4626	1.4735	1.4843	1.4951
	-	-	-	8	1.4900	1.5150	1.5047	1.4951	1.5032	1.5113	1.5195	1.5276
	-	-	-	12	1.5350	1.5530	1.5448	1.5384	1.5438	1.5492	1.5546	1.5601
	-	-	-	16	1.5570	1.5710	1.5658	1.5601	1.5641	1.5682	1.5722	1.5763
	-	-	18	-	1.5650	1.5780	1.5730	1.5673	1.5709	1.5745	1.5781	1.5817
	-	-	-	20	1.5710	1.5820	1.5787	1.5730	1.5763	1.5795	1.5828	1.5860
1-11/16	-	-	-	6	1.5070	1.5380	1.5271	1.5143	1.5251	1.5360	1.5468	1.5576

TECHNICAL DATA

Size	Threads Per Inch				Minor Diameter			Tap Drill Diameter (Cutting Tap)				
	UNC	UNF	UNEF	UN	Min. 2B&3B	Max. 2B	Max. 3B	80% Thread	75% Thread	70% Thread	65% Thread	60% Thread
1-11/16	-	-	-	8	1.5520	1.5770	1.5672	1.5576	1.5657	1.5738	1.5820	1.5901
	-	-	-	12	1.5970	1.6150	1.6073	1.6009	1.6063	1.6117	1.6171	1.6226
	-	-	-	16	1.6200	1.6340	1.6283	1.6226	1.6266	1.6307	1.6347	1.6388
	-	-	18	-	1.6270	1.6400	1.6355	1.6298	1.6334	1.6370	1.6406	1.6442
	-	-	-	20	1.6330	1.6450	1.6412	1.6355	1.6388	1.6420	1.6453	1.6485
1-3/4	5	-	-	-	1.5340	1.5680	1.5575	1.5422	1.5552	1.5681	1.5811	1.5941
	-	-	-	6	1.5700	1.6000	1.5896	1.5768	1.5876	1.5985	1.6093	1.6201
	-	-	-	8	1.6150	1.6400	1.6297	1.6201	1.6282	1.6363	1.6445	1.6526
	-	-	-	12	1.6600	1.6780	1.6698	1.6634	1.6688	1.6742	1.6796	1.6851
	-	-	-	16	1.6820	1.6960	1.6908	1.6851	1.6891	1.6932	1.6972	1.7013
	-	-	-	20	1.6960	1.7070	1.7037	1.6980	1.7013	1.7045	1.7078	1.7110
1-13/16	-	-	-	6	1.6320	1.6630	1.6521	1.6393	1.6501	1.6610	1.6718	1.6826
	-	-	-	8	1.6770	1.7020	1.6922	1.6826	1.6907	1.6988	1.7070	1.7151
	-	-	-	12	1.7220	1.7400	1.7323	1.7259	1.7313	1.7367	1.7421	1.7476
	-	-	-	16	1.7450	1.7590	1.7533	1.7476	1.7516	1.7557	1.7597	1.7638
	-	-	-	20	1.7580	1.7700	1.7662	1.7605	1.7638	1.7670	1.7703	1.7735
1-7/8	-	-	-	6	1.6950	1.7250	1.7146	1.7018	1.7126	1.7235	1.7343	1.7451
	-	-	-	8	1.7400	1.7650	1.7547	1.7451	1.7532	1.7613	1.7695	1.7776
	-	-	-	12	1.7850	1.8030	1.7948	1.7884	1.7938	1.7992	1.8046	1.8101
	-	-	-	16	1.8070	1.8210	1.8158	1.8101	1.8141	1.8182	1.8222	1.8263
	-	-	-	20	1.8210	1.8320	1.8287	1.8230	1.8263	1.8295	1.8328	1.8360
1-15/16	-	-	-	6	1.7570	1.7880	1.7771	1.7643	1.7751	1.7860	1.7968	1.8076
	-	-	-	8	1.8020	1.8270	1.8172	1.8076	1.8157	1.8238	1.8320	1.8401
	-	-	-	12	1.8470	1.8650	1.8573	1.8509	1.8563	1.8617	1.8671	1.8726
	-	-	-	16	1.8700	1.8840	1.8783	1.8726	1.8766	1.8807	1.8847	1.8888
	-	-	-	20	1.8830	1.8950	1.8912	1.8855	1.8888	1.8920	1.8953	1.8985
2	4 1/2	-	-	-	1.7590	1.7950	1.7861	1.7691	1.7835	1.7979	1.8124	1.8268
	-	-	-	6	1.8200	1.8500	1.8396	1.8268	1.8376	1.8485	1.8593	1.8701
	-	-	-	8	1.8650	1.8900	1.8797	1.8701	1.8782	1.8863	1.8945	1.9026
	-	-	-	12	1.9100	1.9280	1.9198	1.9134	1.9188	1.9242	1.9296	1.9351
	-	-	-	16	1.9320	1.9460	1.9408	1.9351	1.9391	1.9432	1.9472	1.9513
	-	-	-	20	1.9460	1.9570	1.9537	1.9480	1.9513	1.9545	1.9578	1.9610
2-1/8	-	-	-	6	1.9450	1.9750	1.9646	1.9518	1.9626	1.9735	1.9843	1.9951
	-	-	-	8	1.9900	2.0150	2.0047	1.9951	2.0032	2.0113	2.0195	2.0276
	-	-	-	12	2.0350	2.0530	2.0448	2.0384	2.0438	2.0492	2.0546	2.0601
	-	-	-	16	2.0570	2.0710	2.0658	2.0601	2.0641	2.0682	2.0722	2.0763
	-	-	-	20	2.0710	2.0820	2.0787	2.0730	2.0763	2.0795	2.0828	2.0860
2-1/4	4 1/2	-	-	-	2.0090	2.0450	2.0361	2.0191	2.0335	2.0479	2.0624	2.0768
	-	-	-	6	2.0700	2.1000	2.0896	2.0768	2.0876	2.0985	2.1093	2.1201
	-	-	-	8	2.1150	2.1400	2.1297	2.1201	2.1282	2.1363	2.1445	2.1526
	-	-	-	12	2.1600	2.1780	2.1698	2.1634	2.1688	2.1742	2.1796	2.1851
	-	-	-	16	2.1820	2.1960	2.1908	2.1851	2.1891	2.1932	2.1972	2.2013
	-	-	-	20	2.1960	2.2070	2.2037	2.1980	2.2013	2.2045	2.2078	2.2110
2-3/8	-	-	-	6	2.1950	2.2260	2.2146	2.2018	2.2126	2.2235	2.2343	2.2451
	-	-	-	8	2.2400	2.2650	2.2547	2.2451	2.2532	2.2613	2.2695	2.2776
	-	-	-	12	2.2850	2.3030	2.2948	2.2884	2.2938	2.2992	2.3046	2.3101
	-	-	-	16	2.3070	2.3210	2.3158	2.3101	2.3141	2.3182	2.3222	2.3263
	-	-	-	20	2.3210	2.3320	2.3287	2.3230	2.3263	2.3295	2.3328	2.3360
2-1/2	4	-	-	-	2.2290	2.2670	2.2594	2.2402	2.2564	2.2727	2.2889	2.3052
	-	-	-	6	2.3200	2.3500	2.3396	2.3268	2.3376	2.3485	2.3593	2.3701
	-	-	-	8	2.3650	2.3900	2.3797	2.3701	2.3782	2.3863	2.3945	2.4026
	-	-	-	12	2.4100	2.4280	2.4198	2.4134	2.4188	2.4242	2.4296	2.4351
	-	-	-	16	2.4320	2.4460	2.4408	2.4351	2.4391	2.4432	2.4472	2.4513
	-	-	-	20	2.4460	2.4570	2.4537	2.4480	2.4513	2.4545	2.4578	2.4610

TAP DRILL SIZES - METRIC THREAD

Size	Pitch		Minor dia.		Tap Drill Diameter									
	M	MF	Min. 6H	Max. 6H	80% Thread		75% Thread		70% Thread		65% Thread		60% Thread	
					mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch
M1	0.25	–	.729	.798	0.74	.0291	0.76	.0298	0.77	.0304	0.79	.0311	0.81	.0317
	–	0.2	.783	.841	0.79	.0312	0.81	.0317	0.82	.0322	0.83	.0327	0.84	.0332
M1.1	0.25	–	.829	.898	0.84	.0331	0.86	.0337	0.87	.0344	0.89	.0350	0.91	.0356
	–	0.2	.883	.941	0.89	.0351	0.91	.0356	0.92	.0361	0.93	.0367	0.94	.0372
M1.2	0.25	–	.929	.998	0.94	.0370	0.96	.0377	0.97	.0383	0.99	.0389	1.01	.0396
	–	0.2	.983	1.041	0.99	.0391	1.01	.0396	1.02	.0401	1.03	.0406	1.04	.0411
M1.4	0.3	–	1.075	1.159	1.09	.0428	1.11	.0436	1.13	.0444	1.15	.0451	1.17	.0459
	–	0.2	1.183	1.241	1.19	.0469	1.21	.0474	1.22	.0480	1.23	.0485	1.24	.0490
M1.6	0.35	–	1.221	1.321	1.24	.0487	1.26	.0496	1.28	.0505	1.30	.0514	1.33	.0523
	–	0.2	1.383	1.441	1.39	.0548	1.41	.0553	1.42	.0558	1.43	.0563	1.44	.0569
M1.7	0.35	–	1.321	1.421	1.34	.0526	1.36	.0535	1.38	.0544	1.40	.0553	1.43	.0562
	–	0.3	1.375	1.459	1.39	.0547	1.41	.0554	1.43	.0562	1.45	.0570	1.47	.0577
	–	0.25	1.429	1.498	1.44	.0567	1.46	.0573	1.47	.0580	1.49	.0586	1.51	.0593
	–	0.2	1.483	1.541	1.49	.0587	1.51	.0593	1.52	.0598	1.53	.0603	1.54	.0608
M1.8	0.35	–	1.421	1.521	1.44	.0565	1.46	.0574	1.48	.0583	1.50	.0592	1.53	.0601
	–	0.2	1.583	1.641	1.59	.0627	1.61	.0632	1.62	.0637	1.63	.0642	1.64	.0647
M2	0.4	–	1.567	1.679	1.58	.0624	1.61	.0634	1.64	.0644	1.66	.0654	1.69	.0665
	–	0.25	1.729	1.798	1.74	.0685	1.76	.0692	1.77	.0698	1.79	.0704	1.81	.0711
M2.2	0.45	–	1.713	1.838	1.73	.0682	1.76	.0694	1.79	.0705	1.82	.0717	1.85	.0728
	–	0.25	1.929	1.998	1.94	.0764	1.96	.0770	1.97	.0777	1.99	.0783	2.01	.0789
M2.3	0.4	–	1.867	1.979	1.88	.0742	1.91	.0752	1.94	.0762	1.96	.0773	1.99	.0783
	–	0.35	1.921	2.021	1.94	.0762	1.96	.0771	1.98	.0780	2.00	.0789	2.03	.0798
	–	0.25	2.029	2.098	2.04	.0803	2.06	.0810	2.07	.0816	2.09	.0822	2.11	.0829
M2.5	0.45	–	2.013	2.138	2.03	.0800	2.06	.0812	2.09	.0823	2.12	.0835	2.15	.0846
	–	0.35	2.121	2.221	2.14	.0841	2.16	.0850	2.18	.0859	2.20	.0868	2.23	.0877
M2.6	0.45	–	2.113	2.238	2.13	.0840	2.16	.0851	2.19	.0863	2.22	.0874	2.25	.0886
	–	0.35	2.221	2.321	2.24	.0880	2.26	.0889	2.28	.0898	2.30	.0907	2.33	.0916
M3	0.5	–	2.459	2.599	2.48	.0977	2.51	.0989	2.55	.1002	2.58	.1015	2.61	.1028
	–	0.35	2.621	2.721	2.64	.1038	2.66	.1047	2.68	.1056	2.70	.1065	2.73	.1074
M3.5	0.6	–	2.850	3.010	2.88	.1132	2.92	.1148	2.95	.1163	2.99	.1178	3.03	.1194
	–	0.35	3.121	3.221	3.14	.1235	3.16	.1244	3.18	.1253	3.20	.1262	3.23	.1271
M4	0.7	–	3.242	3.422	3.27	.1288	3.32	.1306	3.36	.1324	3.41	.1342	3.45	.1360
	–	0.5	3.459	3.599	3.48	.1370	3.51	.1383	3.55	.1396	3.58	.1409	3.61	.1421
M4.5	0.75	–	3.688	3.878	3.72	.1465	3.77	.1484	3.82	.1503	3.87	.1522	3.92	.1542
	–	0.5	3.959	4.099	3.98	.1567	4.01	.1580	4.05	.1593	4.08	.1605	4.11	.1618
M5	0.9	–	4.026	4.226	4.06	.1600	4.12	.1623	4.18	.1646	4.24	.1669	4.30	.1692
	0.8	–	4.134	4.334	4.17	.1641	4.22	.1662	4.27	.1682	4.32	.1703	4.38	.1723
	–	0.5	4.459	4.599	4.48	.1764	4.51	.1777	4.55	.1790	4.58	.1802	4.61	.1815
M5.5	–	0.9	4.526	4.726	4.56	.1797	4.62	.1820	4.68	.1843	4.74	.1866	4.80	.1889
	–	0.75	4.688	4.878	4.72	.1858	4.77	.1878	4.82	.1897	4.87	.1916	4.92	.1935
	–	0.5	4.959	5.099	4.98	.1961	5.01	.1974	5.05	.1986	5.08	.1999	5.11	.2012
M6	1	–	4.917	5.153	4.96	.1953	5.03	.1979	5.09	.2004	5.16	.2030	5.22	.2055
	–	0.75	5.188	5.378	5.22	.2055	5.27	.2075	5.32	.2094	5.37	.2113	5.42	.2132
	–	0.5	5.459	5.599	5.48	.2158	5.51	.2170	5.55	.2183	5.58	.2196	5.61	.2209
M7	1	–	5.917	6.153	5.96	.2347	6.03	.2372	6.09	.2398	6.16	.2423	6.22	.2449
	–	0.75	6.188	6.378	6.22	.2449	6.27	.2468	6.32	.2487	6.37	.2507	6.42	.2526
	–	0.5	6.459	6.599	6.48	.2551	6.51	.2564	6.55	.2577	6.58	.2590	6.61	.2602
M8	1.25	–	6.647	6.912	6.70	.2638	6.78	.2670	6.86	.2702	6.94	.2734	7.03	.2766
	–	1	6.917	7.153	6.96	.2740	7.03	.2766	7.09	.2792	7.16	.2817	7.22	.2843
	–	0.75	7.188	7.378	7.22	.2843	7.27	.2862	7.32	.2881	7.37	.2900	7.42	.2919
	–	0.5	7.459	7.599	7.48	.2945	7.51	.2958	7.55	.2971	7.58	.2983	7.61	.2996

TECHNICAL DATA

Size	Pitch		Minor dia.		Tap Drill Diameter									
	M	MF	Min. 6H	Max. 6H	80% Thread		75% Thread		70% Thread		65% Thread		60% Thread	
					mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch
M9	1.25	–	7.647	7.912	7.70	.3032	7.78	.3064	7.86	.3096	7.94	.3128	8.03	.3160
	–	1	7.917	8.153	7.96	.3134	8.03	.3160	8.09	.3185	8.16	.3211	8.22	.3236
	–	0.75	8.188	8.378	8.22	.3236	8.27	.3256	8.32	.3275	8.37	.3294	8.42	.3313
	–	0.5	8.459	8.599	8.48	.3339	8.51	.3352	8.55	.3364	8.58	.3377	8.61	.3390
M10	1.5	–	8.376	8.676	8.44	.3323	8.54	.3362	8.64	.3400	8.73	.3438	8.83	.3477
	–	1.25	8.647	8.912	8.70	.3426	8.78	.3458	8.86	.3490	8.94	.3521	9.03	.3553
	–	1	8.917	9.153	8.96	.3528	9.03	.3553	9.09	.3579	9.16	.3605	9.22	.3630
	–	0.75	9.188	9.378	9.22	.3630	9.27	.3649	9.32	.3669	9.37	.3688	9.42	.3707
	–	0.5	9.459	9.599	9.48	.3732	9.51	.3745	9.55	.3758	9.58	.3771	9.61	.3784
M11	1.5	–	9.376	9.676	9.44	.3717	9.54	.3755	9.64	.3794	9.73	.3832	9.83	.3870
	–	1	9.917	10.153	9.96	.3922	10.03	.3947	10.09	.3973	10.16	.3998	10.22	.4024
	–	0.75	10.188	10.378	10.22	.4024	10.27	.4043	10.32	.4062	10.37	.4081	10.42	.4101
	–	0.5	10.459	10.599	10.48	.4126	10.51	.4139	10.55	.4152	10.58	.4164	10.61	.4177
M12	1.75	–	10.106	10.441	10.18	.4008	10.30	.4053	10.41	.4098	10.52	.4143	10.64	.4187
	–	1.5	10.376	10.676	10.44	.4111	10.54	.4149	10.64	.4187	10.73	.4226	10.83	.4264
	–	1.25	10.647	10.912	10.70	.4213	10.78	.4245	10.86	.4277	10.94	.4309	11.03	.4341
	–	1	10.917	11.153	10.96	.4315	11.03	.4341	11.09	.4366	11.16	.4392	11.22	.4418
	–	0.75	11.188	11.378	11.22	.4418	11.27	.4437	11.32	.4456	11.37	.4475	11.42	.4494
	–	0.5	11.459	11.599	11.48	.4520	11.51	.4533	11.55	.4545	11.58	.4558	11.61	.4571
M13	–	1.75	11.106	11.441	11.18	.4402	11.30	.4447	11.41	.4492	11.52	.4536	11.64	.4581
	–	1.5	11.376	11.676	11.44	.4504	11.54	.4543	11.64	.4581	11.73	.4619	11.83	.4658
	–	1.25	11.647	11.912	11.70	.4607	11.78	.4639	11.86	.4671	11.94	.4703	12.03	.4735
	–	1	11.917	12.153	11.96	.4709	12.03	.4735	12.09	.4760	12.16	.4786	12.22	.4811
	–	0.75	12.188	12.378	12.22	.4811	12.27	.4830	12.32	.4850	12.37	.4869	12.42	.4888
	–	0.5	12.459	12.599	12.48	.4914	12.51	.4926	12.55	.4939	12.58	.4952	12.61	.4965
M14	2	–	11.835	12.210	11.92	.4694	12.05	.4745	12.18	.4796	12.31	.4847	12.44	.4898
	–	1.5	12.376	12.676	12.44	.4898	12.54	.4936	12.64	.4975	12.73	.5013	12.83	.5052
	–	1.25	12.647	12.912	12.70	.5000	12.78	.5032	12.86	.5064	12.94	.5096	13.03	.5128
	–	1	12.917	13.153	12.96	.5103	13.03	.5128	13.09	.5154	13.16	.5179	13.22	.5205
	–	0.75	13.188	13.378	13.22	.5205	13.27	.5224	13.32	.5243	13.37	.5262	13.42	.5282
	–	0.5	13.459	13.599	13.48	.5307	13.51	.5320	13.55	.5333	13.58	.5346	13.61	.5358
M15	–	2	12.835	13.210	12.92	.5087	13.05	.5138	13.18	.5190	13.31	.5241	13.44	.5292
	–	1.5	13.376	13.676	13.44	.5292	13.54	.5330	13.64	.5369	13.73	.5407	13.83	.5445
	–	1.25	13.647	13.912	13.70	.5394	13.78	.5426	13.86	.5458	13.94	.5490	14.03	.5522
	–	1	13.917	14.153	13.96	.5496	14.03	.5522	14.09	.5548	14.16	.5573	14.22	.5599
	–	0.75	14.188	14.378	14.22	.5599	14.27	.5618	14.32	.5637	14.37	.5656	14.42	.5675
	–	0.5	14.459	14.599	14.48	.5701	14.51	.5714	14.55	.5727	14.58	.5739	14.61	.5752
M16	2	–	13.835	14.210	13.92	.5481	14.05	.5532	14.18	.5583	14.31	.5634	14.44	.5685
	–	1.5	14.376	14.676	14.44	.5685	14.54	.5724	14.64	.5762	14.73	.5801	14.83	.5839
	–	1	14.917	15.153	14.96	.5890	15.03	.5916	15.09	.5941	15.16	.5967	15.22	.5992
M17	–	2	14.835	15.210	14.92	.5875	15.05	.5926	15.18	.5977	15.31	.6028	15.44	.6079
	–	1.5	15.376	15.676	15.44	.6079	15.54	.6118	15.64	.6156	15.73	.6194	15.83	.6233
	–	1.25	15.647	15.912	15.70	.6181	15.78	.6213	15.86	.6245	15.94	.6277	16.03	.6309
	–	1	15.917	16.153	15.96	.6284	16.03	.6309	16.09	.6335	16.16	.6360	16.22	.6386
	–	0.75	16.188	16.378	16.22	.6386	16.27	.6405	16.32	.6424	16.37	.6444	16.42	.6463
	–	0.5	16.459	16.599	16.48	.6488	16.51	.6501	16.55	.6514	16.58	.6527	16.61	.6539
M18	2.5	–	15.294	15.744	15.40	.6064	15.56	.6128	15.73	.6192	15.89	.6256	16.05	.6319
	–	2	15.835	16.210	15.92	.6268	16.05	.6319	16.18	.6371	16.31	.6422	16.44	.6473
	–	1.5	16.376	16.676	16.44	.6473	16.54	.6511	16.64	.6550	16.73	.6588	16.83	.6626
	–	1	16.917	17.153	16.96	.6677	17.03	.6703	17.09	.6729	17.16	.6754	17.22	.6780
M19	–	2.5	16.294	16.744	16.40	.6457	16.56	.6521	16.73	.6585	16.89	.6649	17.05	.6713
	–	2	16.835	17.210	16.92	.6662	17.05	.6713	17.18	.6764	17.31	.6815	17.44	.6867

Size	Pitch		Minor dia.		Tap Drill Diameter									
	M	MF	Min. 6H	Max. 6H	80% Thread		75% Thread		70% Thread		65% Thread		60% Thread	
					mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch
M19	–	1.5	17.376	17.676	17.44	.6867	17.54	.6905	17.64	.6943	17.73	.6982	17.83	.7020
	–	1.25	17.647	17.912	17.70	.6969	17.78	.7001	17.86	.7033	17.94	.7065	18.03	.7097
	–	1	17.917	18.153	17.96	.7071	18.03	.7097	18.09	.7122	18.16	.7148	18.22	.7173
	–	0.75	18.188	18.378	18.22	.7173	18.27	.7193	18.32	.7212	18.37	.7231	18.42	.7250
	–	0.5	18.459	18.599	18.48	.7276	18.51	.7289	18.55	.7301	18.58	.7314	18.61	.7327
M20	2.5	–	17.294	17.744	17.40	.6851	17.56	.6915	17.73	.6979	17.89	.7043	18.05	.7107
	–	2	17.835	18.210	17.92	.7056	18.05	.7107	18.18	.7158	18.31	.7209	18.44	.7260
	–	1.5	18.376	18.676	18.44	.7260	18.54	.7299	18.64	.7337	18.73	.7375	18.83	.7414
	–	1	18.917	19.153	18.96	.7465	19.03	.7490	19.09	.7516	19.16	.7542	19.22	.7567
M21	–	2.5	18.294	18.744	18.40	.7245	18.56	.7309	18.73	.7373	18.89	.7437	19.05	.7501
	–	1.5	19.376	19.676	19.44	.7654	19.54	.7692	19.64	.7731	19.73	.7769	19.83	.7807
	–	1	19.917	20.153	19.96	.7859	20.03	.7884	20.09	.7910	20.16	.7935	20.22	.7961
M22	2.5	–	19.294	19.744	19.40	.7639	19.56	.7702	19.73	.7766	19.89	.7830	20.05	.7894
	–	2	19.835	20.210	19.92	.7843	20.05	.7894	20.18	.7945	20.31	.7997	20.44	.8048
	–	1.5	20.376	20.676	20.44	.8048	20.54	.8086	20.64	.8124	20.73	.8163	20.83	.8201
	–	1	20.917	21.153	20.96	.8252	21.03	.8278	21.09	.8303	21.16	.8329	21.22	.8355
M23	–	2.5	20.294	20.744	20.40	.8032	20.56	.8096	20.73	.8160	20.89	.8224	21.05	.8288
	–	2	20.835	21.210	20.92	.8237	21.05	.8288	21.18	.8339	21.31	.8390	21.44	.8441
	–	1.5	21.376	21.676	21.44	.8441	21.54	.8480	21.64	.8518	21.73	.8556	21.83	.8595
	–	1	21.917	22.153	21.96	.8646	22.03	.8672	22.09	.8697	22.16	.8723	22.22	.8748
M24	3	–	20.752	21.252	20.88	.8221	21.08	.8298	21.27	.8375	21.47	.8452	21.66	.8528
	–	2	21.835	22.210	21.92	.8631	22.05	.8682	22.18	.8733	22.31	.8784	22.44	.8835
	–	1.5	22.376	22.676	22.44	.8835	22.54	.8873	22.64	.8912	22.73	.8950	22.83	.8989
	–	1	22.917	23.153	22.96	.9040	23.03	.9065	23.09	.9091	23.16	.9116	23.22	.9142
M25	–	3	21.752	22.252	21.88	.8615	22.08	.8692	22.27	.8769	22.47	.8845	22.66	.8922
	–	2	22.835	23.210	22.92	.9024	23.05	.9075	23.18	.9127	23.31	.9178	23.44	.9229
	–	1.5	23.376	23.676	23.44	.9229	23.54	.9267	23.64	.9306	23.73	.9344	23.83	.9382
	–	1	23.917	24.153	23.96	.9433	24.03	.9459	24.09	.9485	24.16	.9510	24.22	.9536
M26	–	3	22.752	23.252	22.88	.9009	23.08	.9085	23.27	.9162	23.47	.9239	23.66	.9316
	–	2	23.835	24.210	23.92	.9418	24.05	.9469	24.18	.9520	24.31	.9571	24.44	.9623
	–	1.5	24.376	24.676	24.44	.9623	24.54	.9661	24.64	.9699	24.73	.9738	24.83	.9776
M27	3	–	23.752	24.252	23.88	.9402	24.08	.9479	24.27	.9556	24.47	.9633	24.66	.9709
	–	2.5	24.294	24.744	24.40	.9607	24.56	.9671	24.73	.9735	24.89	.9799	25.05	.9863
	–	2	24.835	25.210	24.92	.9812	25.05	.9863	25.18	.9914	25.31	.9965	25.44	1.0016
	–	1.5	25.376	25.676	25.44	1.0016	25.54	1.0055	25.64	1.0093	25.73	1.0131	25.83	1.0170
	–	1	25.917	26.153	25.96	1.0221	26.03	1.0246	26.09	1.0272	26.16	1.0297	26.22	1.0323
M28	–	3	24.752	25.252	24.88	.9796	25.08	.9873	25.27	.9950	25.47	1.0026	25.66	1.0103
	–	2	25.835	26.210	25.92	1.0205	26.05	1.0256	26.18	1.0308	26.31	1.0359	26.44	1.0410
	–	1.5	26.376	26.676	26.44	1.0410	26.54	1.0448	26.64	1.0487	26.73	1.0525	26.83	1.0563
	–	1	26.917	27.153	26.96	1.0614	27.03	1.0640	27.09	1.0666	27.16	1.0691	27.22	1.0717
M30	3.5	–	26.211	26.771	26.36	1.0379	26.59	1.0469	26.82	1.0558	27.04	1.0648	27.27	1.0737
	–	3	26.752	27.252	26.88	1.0584	27.08	1.0660	27.27	1.0737	27.47	1.0814	27.66	1.0890
	–	2	27.835	28.210	27.92	1.0993	28.05	1.1044	28.18	1.1095	28.31	1.1146	28.44	1.1197
	–	1.5	28.376	28.676	28.44	1.1197	28.54	1.1236	28.64	1.1274	28.73	1.1312	28.83	1.1351
	–	1	28.917	29.153	28.96	1.1402	29.03	1.1427	29.09	1.1453	29.16	1.1479	29.22	1.1504
M32	–	3	28.752	29.252	28.88	1.1371	29.08	1.1448	29.27	1.1524	29.47	1.1601	29.66	1.1678
	–	2	29.835	30.210	29.92	1.1780	30.05	1.1831	30.18	1.1882	30.31	1.1934	30.44	1.1985
	–	1.5	30.376	30.676	30.44	1.1985	30.54	1.2023	30.64	1.2061	30.73	1.2100	30.83	1.2138
M33	3.5	–	29.211	29.771	29.36	1.1560	29.59	1.1650	29.82	1.1739	30.04	1.1829	30.27	1.1918
	–	3	29.752	30.252	29.88	1.1765	30.08	1.1841	30.27	1.1918	30.47	1.1995	30.66	1.2072
	–	2	30.835	31.210	30.92	1.2174	31.05	1.2225	31.18	1.2276	31.31	1.2327	31.44	1.2378
	–	1.5	31.376	31.676	31.44	1.2378	31.54	1.2417	31.64	1.2455	31.73	1.2493	31.83	1.2532
	–	1	31.917	32.153	31.96	1.2583	32.03	1.2609	32.09	1.2634	32.16	1.2660	32.22	1.2685

TECHNICAL DATA

Size	Pitch		Minor dia.		Tap Drill Diameter									
	M	MF	Min. 6H	Max. 6H	80% Thread		75% Thread		70% Thread		65% Thread		60% Thread	
					mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch
M34	–	3	30.752	31.252	30.88	1.2158	31.08	1.2235	31.27	1.2312	31.47	1.2389	31.66	1.2465
	–	2	31.835	32.210	31.92	1.2568	32.05	1.2619	32.18	1.2670	32.31	1.2721	32.44	1.2772
	–	1.5	32.376	32.676	32.44	1.2772	32.54	1.2810	32.64	1.2849	32.73	1.2887	32.83	1.2926
	–	1	32.917	33.153	32.96	1.2977	33.03	1.3002	33.09	1.3028	33.16	1.3053	33.22	1.3079
M35	–	3	31.752	32.252	31.88	1.2552	32.08	1.2629	32.27	1.2706	32.47	1.2782	32.66	1.2859
	–	1.5	33.376	33.676	33.44	1.3166	33.54	1.3204	33.64	1.3243	33.73	1.3281	33.83	1.3319
	–	1	33.917	34.153	33.96	1.3370	34.03	1.3396	34.09	1.3422	34.16	1.3447	34.22	1.3473
M36	4	–	31.670	32.270	31.84	1.2537	32.10	1.2639	32.36	1.2741	32.62	1.2844	32.88	1.2946
	–	3	32.752	33.252	32.88	1.2946	33.08	1.3023	33.27	1.3099	33.47	1.3176	33.66	1.3253
	–	2	33.835	34.210	33.92	1.3355	34.05	1.3406	34.18	1.3457	34.31	1.3508	34.44	1.3560
	–	1.5	34.376	34.676	34.44	1.3560	34.54	1.3598	34.64	1.3636	34.73	1.3675	34.83	1.3713
	–	1	34.917	35.153	34.96	1.3764	35.03	1.3790	35.09	1.3815	35.16	1.3841	35.22	1.3866
M37	–	1.5	35.376	35.676	35.44	1.3953	35.54	1.3992	35.64	1.4030	35.73	1.4068	35.83	1.4107
	–	1	35.917	36.153	35.96	1.4158	36.03	1.4183	36.09	1.4209	36.16	1.4234	36.22	1.4260
M38	–	4	33.670	34.270	33.84	1.3324	34.10	1.3426	34.36	1.3529	34.62	1.3631	34.88	1.3733
	–	3	34.752	35.252	34.88	1.3733	35.08	1.3810	35.27	1.3887	35.47	1.3963	35.66	1.4040
	–	2	35.835	36.210	35.92	1.4142	36.05	1.4193	36.18	1.4245	36.31	1.4296	36.44	1.4347
	–	1.5	36.376	36.676	36.44	1.4347	36.54	1.4385	36.64	1.4424	36.73	1.4462	36.83	1.4500
M39	4	–	34.670	35.270	34.84	1.3718	35.10	1.3820	35.36	1.3922	35.62	1.4025	35.88	1.4127
	–	3	35.752	36.252	35.88	1.4127	36.08	1.4204	36.27	1.4280	36.47	1.4357	36.66	1.4434
	–	2	36.835	37.210	36.92	1.4536	37.05	1.4587	37.18	1.4638	37.31	1.4689	37.44	1.4741
	–	1.5	37.376	37.676	37.44	1.4741	37.54	1.4779	37.64	1.4817	37.73	1.4856	37.83	1.4894
	–	1	37.917	38.153	37.96	1.4945	38.03	1.4971	38.09	1.4996	38.16	1.5022	38.22	1.5047
M40	–	4	35.670	36.270	35.84	1.4111	36.10	1.4214	36.36	1.4316	36.62	1.4418	36.88	1.4521
	–	3	36.752	37.252	36.88	1.4521	37.08	1.4597	37.27	1.4674	37.47	1.4751	37.66	1.4827
	–	2	37.835	38.210	37.92	1.4930	38.05	1.4981	38.18	1.5032	38.31	1.5083	38.44	1.5134
	–	1.5	38.376	38.676	38.44	1.5134	38.54	1.5173	38.64	1.5211	38.73	1.5249	38.83	1.5288
	–	1	38.917	39.153	38.96	1.5339	39.03	1.5364	39.09	1.5390	39.16	1.5416	39.22	1.5441
M42	4.5	–	37.129	37.799	37.32	1.4694	37.62	1.4809	37.91	1.4924	38.20	1.5039	38.49	1.5155
	–	4	37.670	38.270	37.84	1.4899	38.10	1.5001	38.36	1.5103	38.62	1.5206	38.88	1.5308
	–	3	38.752	39.252	38.88	1.5308	39.08	1.5385	39.27	1.5461	39.47	1.5538	39.66	1.5615
	–	2	39.835	40.210	39.92	1.5717	40.05	1.5768	40.18	1.5819	40.31	1.5871	40.44	1.5922
	–	1.5	40.376	40.676	40.44	1.5922	40.54	1.5960	40.64	1.5998	40.73	1.6037	40.83	1.6075
M45	4.5	–	40.129	40.799	40.32	1.5875	40.62	1.5990	40.91	1.6106	41.20	1.6221	45.00	1.7717
	–	4	40.670	41.270	40.84	1.6080	41.10	1.6182	41.36	1.6285	41.62	1.6387	41.88	1.6489
	–	3	41.752	42.252	41.88	1.6489	42.08	1.6566	42.27	1.6643	42.47	1.6719	42.66	1.6796
	–	2	42.835	43.210	42.92	1.6898	43.05	1.6949	43.18	1.7001	43.31	1.7052	43.44	1.7103
	–	1.5	43.376	43.676	43.44	1.7103	43.54	1.7141	43.64	1.7180	43.73	1.7218	43.83	1.7256
	–	1	43.917	44.153	43.96	1.7307	44.03	1.7333	44.09	1.7359	44.16	1.7384	44.22	1.7410
M46	–	1.5	44.376	44.676	44.44	1.7497	44.54	1.7535	44.64	1.7573	44.73	1.7612	44.83	1.7650
M48	5	–	42.587	43.297	42.80	1.6852	43.13	1.6980	43.45	1.7108	43.78	1.7235	44.10	1.7363
	–	4	43.670	44.270	43.84	1.7261	44.10	1.7363	44.36	1.7466	44.62	1.7568	44.88	1.7670
	–	3	44.752	45.252	44.88	1.7670	45.08	1.7747	45.27	1.7824	45.47	1.7900	45.66	1.7977
	–	2	45.835	46.210	45.92	1.8079	46.05	1.8130	46.18	1.8182	46.31	1.8233	46.44	1.8284
	–	1.5	46.376	46.676	46.44	1.8284	46.54	1.8322	46.64	1.8361	46.73	1.8399	46.83	1.8437
	–	1	46.917	47.153	46.96	1.8488	47.03	1.8514	47.09	1.8540	47.16	1.8565	47.22	1.8591
M50	–	5	44.587	45.297	44.80	1.7639	45.13	1.7767	45.45	1.7895	45.78	1.8023	46.10	1.8151
	–	3	46.752	47.252	46.88	1.8458	47.08	1.8534	47.27	1.8611	47.47	1.8688	47.66	1.8764
	–	2	47.835	48.210	47.92	1.8867	48.05	1.8918	48.18	1.8969	48.31	1.9020	48.44	1.9071
	–	1.5	48.376	48.676	48.44	1.9071	48.54	1.9110	48.64	1.9148	48.73	1.9186	48.83	1.9225
	–	1	48.917	49.153	48.96	1.9276	49.03	1.9301	49.09	1.9327	49.16	1.9353	49.22	1.9378

Size	Pitch		Minor dia.		Tap Drill Diameter									
	M	MF	Min. 6H	Max. 6H	80% Thread		75% Thread		70% Thread		65% Thread		60% Thread	
					mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch
M52	5	–	46.587	47.297	46.80	1.8427	47.13	1.8555	47.45	1.8682	47.78	1.8810	48.10	1.8938
	–	4	47.670	48.270	47.84	1.8836	48.10	1.8938	48.36	1.9040	48.62	1.9143	48.88	1.9245
	–	3	48.752	49.252	48.88	1.9245	49.08	1.9322	49.27	1.9398	49.47	1.9475	49.66	1.9552
	–	2	49.835	50.210	49.92	1.9654	50.05	1.9705	50.18	1.9756	50.31	1.9808	50.44	1.9859
	–	1.5	50.376	50.676	50.44	1.9859	50.54	1.9897	50.64	1.9935	50.73	1.9974	50.83	2.0012
M55	–	4	50.670	51.270	50.84	2.0017	51.10	2.0119	51.36	2.0222	51.62	2.0324	51.88	2.0426
	–	3	51.752	52.252	51.88	2.0426	52.08	2.0503	52.27	2.0580	52.47	2.0656	52.66	2.0733
	–	2	52.835	53.210	52.92	2.0835	53.05	2.0886	53.18	2.0938	53.31	2.0989	53.44	2.1040
	–	1.5	53.376	53.676	53.44	2.1040	53.54	2.1078	53.64	2.1117	53.73	2.1155	53.83	2.1193
M56	5.5	–	50.046	50.796	50.28	1.9797	50.64	1.9938	51.00	2.0078	51.36	2.0219	51.71	2.0360
	–	4	51.670	52.270	51.84	2.0411	52.10	2.0513	52.36	2.0615	52.62	2.0718	52.88	2.0820
	–	3	52.752	53.252	52.88	2.0820	53.08	2.0897	53.27	2.0973	53.47	2.1050	53.66	2.1127
	–	2	53.835	54.210	53.92	2.1229	54.05	2.1280	54.18	2.1331	54.31	2.1382	54.44	2.1434
	–	1.5	54.376	54.676	54.44	2.1434	54.54	2.1472	54.64	2.1510	54.73	2.1549	54.83	2.1587
M58	–	4	53.670	54.270	53.84	2.1198	54.10	2.1300	54.36	2.1403	54.62	2.1505	54.88	2.1607
	–	3	54.752	55.252	54.88	2.1607	55.08	2.1684	55.27	2.1761	55.47	2.1837	55.66	2.1914
	–	2	55.835	56.210	55.92	2.2016	56.05	2.2067	56.18	2.2119	56.31	2.2170	56.44	2.2221
	–	1.5	56.376	56.676	56.44	2.2221	56.54	2.2259	56.64	2.2298	56.73	2.2336	56.83	2.2374
M60	5.5	–	54.046	54.796	54.28	2.1372	54.64	2.1512	55.00	2.1653	55.36	2.1794	55.71	2.1934
	–	4	55.670	56.270	55.84	2.1985	56.10	2.2088	56.36	2.2190	56.62	2.2292	56.88	2.2395
	–	3	56.752	57.252	56.88	2.2395	57.08	2.2471	57.27	2.2548	57.47	2.2625	57.66	2.2701
	–	2	57.835	58.210	57.92	2.2804	58.05	2.2855	58.18	2.2906	58.31	2.2957	58.44	2.3008
	–	1.5	58.376	58.676	58.44	2.3008	58.54	2.3047	58.64	2.3085	58.73	2.3123	58.83	2.3162
M62	–	4	57.670	58.270	57.84	2.2773	58.10	2.2875	58.36	2.2977	58.62	2.3080	58.88	2.3182
	–	3	58.752	59.252	58.88	2.3182	59.08	2.3259	59.27	2.3335	59.47	2.3412	59.66	2.3489
	–	1	60.917	61.153	60.96	2.4000	61.03	2.4026	61.09	2.4051	61.16	2.4077	61.22	2.4103
	–	1.5	60.376	60.676	60.44	2.3796	60.54	2.3834	60.64	2.3872	60.73	2.3911	60.83	2.3949
M64	6	–	57.505	58.305	57.76	2.2742	58.15	2.2895	58.54	2.3049	58.93	2.3202	59.32	2.3356
	–	4	59.670	60.270	59.84	2.3560	60.10	2.3663	60.36	2.3765	60.62	2.3867	60.88	2.3969
	–	3	60.752	61.252	60.88	2.3969	61.08	2.4046	61.27	2.4123	61.47	2.4200	61.66	2.4276
	–	2	61.835	62.210	61.92	2.4379	62.05	2.4430	62.18	2.4481	62.31	2.4532	62.44	2.4583
	–	1.5	62.376	62.676	62.44	2.4583	62.54	2.4621	62.64	2.4660	62.73	2.4698	62.83	2.4737
M65	–	4	60.670	61.270	60.84	2.3954	61.10	2.4056	61.36	2.4159	61.62	2.4261	61.88	2.4363
	–	3	61.752	62.252	61.88	2.4363	62.08	2.4440	62.27	2.4517	62.47	2.4593	62.66	2.4670
	–	2	62.835	63.210	62.92	2.4772	63.05	2.4823	63.18	2.4875	63.31	2.4926	63.44	2.4977
	–	1.5	63.376	63.676	63.44	2.4977	63.54	2.5015	63.64	2.5054	63.73	2.5092	63.83	2.5130

TECHNICAL DATA

TAP DRILL SIZES - UNIFIED THREAD / FORMING TAPS

Size	Threads Per Inch			Minor Diameter			Tap Drill Diameter (Cutting Tap)				
	UNC	UNF	UNEF	Min. 2B&3B	Max. 2B	Max. 3B	75% Thread	70% Thread	65% Thread	60% Thread	55% Thread
#0	-	80	-	.0465	.0514	.0514	.0536	.0541	.0545	.0549	.0553
#1	64	-	-	.0561	.0623	.0623	.0650	.0656	.0661	.0666	.0672
	-	72	-	.0580	.0635	.0635	.0659	.0664	.0669	.0673	.0678
#2	56	-	-	.0667	.0737	.0737	.0769	.0775	.0781	.0787	.0793
	-	64	-	.0691	.0753	.0753	.0780	.0786	.0791	.0796	.0802
#3	48	-	-	.0764	.0845	.0845	.0884	.0891	.0898	.0905	.0912
	-	56	-	.0797	.0865	.0865	.0899	.0905	.0911	.0917	.0923
#4	40	-	-	.0849	.0939	.0939	.0993	.1001	.1010	.1018	.1027
	-	48	-	.0894	.0968	.0968	.1014	.1021	.1028	.1035	.1042
#5	40	-	-	.0979	.1062	.1062	.1123	.1131	.1140	.1148	.1157
	-	44	-	.1004	.1079	.1079	.1134	.1142	.1150	.1157	.1165
#6	32	-	-	.1040	.1140	.1140	.1221	.1231	.1242	.1253	.1263
	-	40	-	.1110	.1190	.1186	.1253	.1261	.1270	.1278	.1287
#8	32	-	-	.1300	.1390	.1389	.1481	.1491	.1502	.1513	.1523
	-	36	-	.1340	.1420	.1416	.1498	.1508	.1517	.1527	.1536
#10	24	-	-	.1450	.1560	.1555	.1688	.1702	.1716	.1730	.1744
	-	32	-	.1560	.1640	.1641	.1741	.1751	.1762	.1773	.1783
#12	24	-	-	.1710	.1810	.1807	.1948	.1962	.1976	.1990	.2004
	-	28	-	.1770	.1860	.1857	.1978	.1990	.2002	.2014	.2026
	-	-	32	.1820	.1900	.1895	.2001	.2011	.2022	.2033	.2043
1/4	20	-	-	.1960	.2070	.2067	.2245	.2262	.2279	.2296	.2313
	-	28	-	.2110	.2200	.2190	.2318	.2330	.2342	.2354	.2366
	-	-	32	.2160	.2240	.2229	.2341	.2351	.2362	.2373	.2383
5/16	18	-	-	.2520	.2650	.2630	.2842	.2861	.2879	.2898	.2917
	-	24	-	.2670	.2770	.2754	.2913	.2927	.2941	.2955	.2969
	-	-	-	.2740	.2820	.2807	.2943	.2955	.2967	.2979	.2991
	-	-	32	.2790	.2860	.2847	.2966	.2976	.2987	.2998	.3008
3/8	16	-	-	.3070	.3210	.3182	.3431	.3453	.3474	.3495	.3516
	-	24	-	.3300	.3400	.3372	.3538	.3552	.3566	.3580	.3594
	-	-	-	.3360	.3450	.3426	.3568	.3580	.3592	.3604	.3616
	-	-	32	.3410	.3490	.3469	.3591	.3601	.3612	.3623	.3633
7/16	14	-	-	.3600	.3760	.3717	.4011	.4035	.4059	.4084	.4108
	-	20	-	.3830	.3950	.3916	.4120	.4137	.4154	.4171	.4188
	-	-	28	.3990	.4070	.4051	.4193	.4205	.4217	.4229	.4241
1/2	13	-	-	.4170	.4340	.4284	.4608	.4634	.4660	.4686	.4712
	-	20	-	.4460	.4570	.4537	.4745	.4762	.4779	.4796	.4813
	-	-	28	.4610	.4700	.4676	.4818	.4830	.4842	.4854	.4866
9/16	12	-	-	.4720	.4900	.4843	.5200	.5228	.5257	.5285	.5313
	-	18	-	.5020	.5150	.5106	.5342	.5361	.5379	.5398	.5417
	-	-	24	.5170	.5270	.5244	.5413	.5427	.5441	.5455	.5469
5/8	11	-	-	.5270	.5460	.5391	.5786	.5817	.5848	.5879	.5910
	-	-	-	.5570	.5710	.5662	.5931	.5953	.5974	.5995	.6016
	-	18	-	.5650	.5780	.5730	.5967	.5986	.6004	.6023	.6042
	-	-	24	.5800	.5900	.5869	.6038	.6052	.6066	.6080	.6094
3/4	10	-	-	.6420	.6630	.6545	.6990	.7024	.7058	.7092	.7126
	-	16	-	.6820	.6960	.6908	.7181	.7203	.7224	.7245	.7266
	-	-	20	.6960	.7070	.7037	.7245	.7262	.7279	.7296	.7313

Size	Threads Per Inch			Minor Diameter			Tap Drill Diameter (Cutting Tap)				
	UNC	UNF	UNEF	Min. 2B&3B	Max. 2B	Max. 3B	75% Thread	70% Thread	65% Thread	60% Thread	55% Thread
7/8	9	-	-	.7550	.7780	.7681	.8183	.8221	.8259	.8297	.8334
	-	14	-	.7980	.8140	8068	.8386	.8410	.8434	.8459	.8483
	-	-	20	.8210	.8320	.8287	.8495	.8512	.8529	.8546	.8563
1	8	-	-	.8650	.8900	.8797	.9363	.9405	.9448	.9490	.9533
	-	12	-	.9100	.9280	.9198	.9575	.9603	.9632	.9660	.9688
	-	-	20	.9460	.9570	.9537	.9745	.9762	.9779	.9796	.9813
1-1/8	7	-	-	.9700	.9980	.9875	1.0521	1.0570	1.0619	1.0667	1.0716
	-	12	-	1.0350	1.0530	1.0448	1.0825	1.0853	1.0882	1.0910	1.0938
	-	-	18	1.0650	1.0780	1.0730	1.0967	1.0986	1.1004	1.1023	1.1042
1-1/4	7	-	-	1.0950	1.1230	1.1125	1.1771	1.1820	1.1869	1.1917	1.1966
	-	12	-	1.1600	1.1780	1.1698	1.2075	1.2103	1.2132	1.2160	1.2188
	-	-	18	1.1900	1.2030	1.1980	1.2217	1.2236	1.2254	1.2273	1.2292

TECHNICAL DATA

18 TAP DRILL SIZES - METRIC THREAD / FORMING TAPS

Size	Pitch		Minor dia.		Tap Drill Diameter									
	M	MF	Min. 6H	Max. 6H	75% Thread		70% Thread		65% Thread		60% Thread		55% Thread	
					mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch
M1	0.25	–	0.729	0.798	0.87	.0344	0.88	.0347	0.89	.0350	0.90	.0354	0.91	.03569
	–	0.2	0.783	0.841	0.90	.0354	0.90	.0356	0.91	.0359	0.92	.0362	0.93	.03643
M1.1	0.25	–	0.829	0.898	0.97	.0383	0.98	.0386	0.99	.0390	1.00	.0393	1.01	.03963
	–	0.2	0.883	0.941	1.00	.0393	1.00	.0396	1.01	.0398	1.02	.0401	1.03	.04036
M1.2	0.25	–	0.929	0.998	1.07	.0422	1.08	.0426	1.09	.0429	1.10	.0432	1.11	.04356
	–	0.2	0.983	1.041	1.10	.0432	1.10	.0435	1.11	.0438	1.12	.0440	1.13	.04430
M1.4	0.3	–	1.075	1.159	1.25	.0491	1.26	.0495	1.27	.0499	1.28	.0503	1.29	.05070
	–	0.2	1.183	1.241	1.30	.0511	1.30	.0514	1.31	.0516	1.32	.0519	1.33	.05217
M1.6	0.35	–	1.221	1.321	1.42	.0560	1.43	.0564	1.45	.0569	1.46	.0574	1.47	.05784
	–	0.2	1.383	1.441	1.50	.0590	1.50	.0592	1.51	.0595	1.52	.0598	1.53	.06005
M1.7	0.35	–	1.321	1.421	1.52	.0599	1.53	.0604	1.55	.0608	1.56	.0613	1.57	.06178
	–	0.3	1.375	1.459	1.55	.0609	1.56	.0613	1.57	.0617	1.58	.0621	1.59	.06251
	–	0.25	1.429	1.498	1.57	.0619	1.58	.0622	1.59	.0626	1.60	.0629	1.61	.06325
	–	0.2	1.483	1.541	1.60	.0629	1.60	.0632	1.61	.0634	1.62	.0637	1.63	.06398
M1.8	0.35	–	1.421	1.521	1.62	.0638	1.63	.0643	1.65	.0648	1.66	.0652	1.67	.06571
	–	0.2	1.583	1.641	1.70	.0669	1.70	.0671	1.71	.0674	1.72	.0677	1.73	.06792
M2	0.4	–	1.567	1.679	1.80	.0707	1.81	.0712	1.82	.0718	1.84	.0723	1.85	.07285
	–	0.25	1.729	1.798	1.87	.0737	1.88	.0741	1.89	.0744	1.90	.0747	1.91	.07506
M2.2	0.45	–	1.713	1.838	1.97	.0776	1.99	.0782	2.00	.0788	2.02	.0794	2.03	.07999
	–	0.25	1.929	1.998	2.07	.0816	2.08	.0819	2.09	.0823	2.10	.0826	2.11	.08293
M2.3	0.4	–	1.867	1.979	2.10	.0825	2.11	.0831	2.12	.0836	2.14	.0841	2.15	.08466
	–	0.35	1.921	2.021	2.12	.0835	2.13	.0840	2.15	.0845	2.16	.0849	2.17	.08540
	–	0.25	2.029	2.098	2.17	.0855	2.18	.0859	2.19	.0862	2.20	.0865	2.21	.08687
M2.5	0.45	–	2.013	2.138	2.27	.0894	2.29	.0900	2.30	.0906	2.32	.0912	2.33	.09180
	–	0.35	2.121	2.221	2.32	.0914	2.33	.0919	2.35	.0923	2.36	.0928	2.37	.09327
M2.6	0.45	–	2.113	2.238	2.37	.0933	2.39	.0939	2.40	.0945	2.42	.0951	2.43	.09574
	–	0.35	2.221	2.321	2.42	.0953	2.43	.0958	2.45	.0963	2.46	.0967	2.47	.09721
M3	0.5	–	2.459	2.599	2.75	.1081	2.76	.1087	2.78	.1094	2.80	.1101	2.81	.11075
	–	0.35	2.621	2.721	2.82	.1111	2.83	.1116	2.85	.1120	2.86	.1125	2.87	.11296
M3.5	0.6	–	2.850	3.010	3.19	.1257	3.21	.1266	3.23	.1274	3.26	.1282	3.28	.12896
	–	0.35	3.121	3.221	3.32	.1308	3.33	.1312	3.35	.1317	3.36	.1322	3.37	.13264
M4	0.7	–	3.242	3.422	3.64	.1434	3.67	.1444	3.69	.1453	3.71	.1462	3.74	.14717
	–	0.5	3.459	3.599	3.75	.1474	3.76	.1481	3.78	.1488	3.80	.1494	3.81	.15012
M4.5	0.75	–	3.688	3.878	4.12	.1621	4.14	.1631	4.17	.1641	4.19	.1651	4.22	.16612
	–	0.5	3.959	4.099	4.25	.1671	4.26	.1678	4.28	.1685	4.30	.1691	4.31	.16980
M5	0.9	–	4.026	4.226	4.54	.1788	4.57	.1800	4.60	.1812	4.63	.1824	4.66	.18360
	0.8	–	4.134	4.334	4.59	.1808	4.62	.1819	4.65	.1829	4.67	.1840	4.70	.18507
	–	0.5	4.459	4.599	4.75	.1868	4.76	.1875	4.78	.1881	4.80	.1888	4.81	.18949
M6	1	–	4.917	5.153	5.49	.2161	5.52	.2175	5.56	.2188	5.59	.2202	5.63	.22150
	–	0.75	5.188	5.378	5.62	.2212	5.64	.2222	5.67	.2232	5.69	.2242	5.72	.22518
	–	0.5	5.459	5.599	5.75	.2262	5.76	.2269	5.78	.2275	5.80	.2282	5.81	.22886
M7	1	–	5.917	6.153	6.49	.2555	6.52	.2569	6.56	.2582	6.59	.2595	6.63	.26087
	–	0.75	6.188	6.378	6.62	.2605	6.64	.2615	6.67	.2625	6.69	.2635	6.72	.26455
	–	0.5	6.459	6.599	6.75	.2656	6.76	.2662	6.78	.2669	6.80	.2676	6.81	.26823
M8	1.25	–	6.647	6.912	7.36	.2899	7.41	.2915	7.45	.2932	7.49	.2949	7.53	.29656
	–	1	6.917	7.153	7.49	.2949	7.52	.2962	7.56	.2976	7.59	.2989	7.63	.30024
	–	0.75	7.188	7.378	7.62	.2999	7.64	.3009	7.67	.3019	7.69	.3029	7.72	.30392
	–	0.5	7.459	7.599	7.75	.3049	7.76	.3056	7.78	.3063	7.80	.3069	7.81	.30760
M9	1.25	–	7.647	7.912	8.36	.3292	8.41	.3309	8.45	.3326	8.49	.3343	8.53	.33593
	–	1	7.917	8.153	8.49	.3343	8.52	.3356	8.56	.3369	8.59	.3383	8.63	.33961
	–	0.75	8.188	8.378	8.62	.3393	8.64	.3403	8.67	.3413	8.69	.3423	8.72	.34329
	–	0.5	8.459	8.599	8.75	.3443	8.76	.3450	8.78	.3456	8.80	.3463	8.81	.34697

TECHNICAL DATA

Size	Pitch		Minor dia.		Tap Drill Diameter									
	M	MF	Min. 6H	Max. 6H	75% Thread		70% Thread		65% Thread		60% Thread		55% Thread	
					mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch
M10	1.5	–	8.376	8.676	9.24	.3636	9.29	.3656	9.34	.3676	9.39	.3696	9.44	.37161
	–	1.25	8.647	8.912	9.36	.3686	9.41	.3703	9.45	.3719	9.49	.3736	9.53	.37530
	–	1	8.917	9.153	9.49	.3736	9.52	.3750	9.56	.3763	9.59	.3776	9.63	.37898
	–	0.75	9.188	9.378	9.62	.3786	9.64	.3796	9.67	.3806	9.69	.3817	9.72	.38266
	–	0.5	9.459	9.599	9.75	.3837	9.76	.3843	9.78	.3850	9.80	.3857	9.81	.38634
M12	1.75	–	10.106	10.441	11.11	.4373	11.17	.4396	11.23	.4420	11.29	.4443	11.35	.44667
	–	1.5	10.376	10.676	11.24	.4423	11.29	.4443	11.34	.4463	11.39	.4483	11.44	.45035
	–	1.25	10.647	10.912	11.36	.4473	11.41	.4490	11.45	.4507	11.49	.4524	11.53	.45404
	–	1	10.917	11.153	11.49	.4524	11.52	.4537	11.56	.4550	11.59	.4564	11.63	.45772
	–	0.75	11.188	11.378	11.62	.4574	11.64	.4584	11.67	.4594	11.69	.4604	11.72	.46140
	–	0.5	11.459	11.599	11.75	.4624	11.76	.4631	11.78	.4637	11.80	.4644	11.81	.46508
M14	2	–	11.835	12.210	12.98	.5110	13.05	.5137	13.12	.5164	13.18	.5191	13.25	.52173
	–	1.5	12.376	12.676	13.24	.5211	13.29	.5231	13.34	.5251	13.39	.5271	13.44	.52909
	–	1.25	12.647	12.912	13.36	.5261	13.41	.5278	13.45	.5294	13.49	.5311	13.53	.53278
	–	1	12.917	13.153	13.49	.5311	13.52	.5324	13.56	.5338	13.59	.5351	13.63	.53646
	–	0.75	13.188	13.378	13.62	.5361	13.64	.5371	13.67	.5381	13.69	.5391	13.72	.54014
	–	0.5	13.459	13.599	13.75	.5411	13.76	.5418	13.78	.5425	13.80	.5431	13.81	.54382
M16	2	–	13.835	14.210	14.98	.5898	15.05	.5924	15.12	.5951	15.18	.5978	15.25	.60047
	–	1.5	14.376	14.676	15.24	.5998	15.29	.6018	15.34	.6038	15.39	.6058	15.44	.60783
	–	1	14.917	15.153	15.49	.6098	15.52	.6112	15.56	.6125	15.59	.6139	15.63	.61520
M18	2.5	–	15.294	15.744	16.73	.6585	16.81	.6618	16.90	.6652	16.98	.6685	17.07	.67185
	–	2	15.835	16.210	16.98	.6685	17.05	.6712	17.12	.6739	17.18	.6765	17.25	.67921
	–	1.5	16.376	16.676	17.24	.6785	17.29	.6806	17.34	.6826	17.39	.6846	17.44	.68657
	–	1	16.917	17.153	17.49	.6886	17.52	.6899	17.56	.6913	17.59	.6926	17.63	.69394
M20	2.5	–	17.294	17.744	18.73	.7372	18.81	.7406	18.90	.7439	18.98	.7472	19.07	.75059
	–	2	17.835	18.210	18.98	.7472	19.05	.7499	19.12	.7526	19.18	.7553	19.25	.75795
	–	1.5	18.376	18.676	19.24	.7573	19.29	.7593	19.34	.7613	19.39	.7633	19.44	.76531
	–	1	18.917	19.153	19.49	.7673	19.52	.7687	19.56	.7700	19.59	.7713	19.63	.77268
M22	2.5	–	19.294	19.744	20.73	.8159	20.81	.8193	20.90	.8226	20.98	.8260	21.07	.82933
	–	2	19.835	20.210	20.98	.8260	21.05	.8287	21.12	.8313	21.18	.8340	21.25	.83669
	–	1.5	20.376	20.676	21.24	.8360	21.29	.8380	21.34	.8400	21.39	.8420	21.44	.84406
	–	1	20.917	21.153	21.49	.8461	21.52	.8474	21.56	.8487	21.59	.8501	21.63	.85142
M24	3	–	20.752	21.252	22.47	.8846	22.57	.8887	22.67	.8927	22.78	.8967	22.88	.90071
	–	2	21.835	22.210	22.98	.9047	23.05	.9074	23.12	.9101	23.18	.9128	23.25	.91543
	–	1.5	22.376	22.676	23.24	.9148	23.29	.9168	23.34	.9188	23.39	.9208	23.44	.92280
	–	1	22.917	23.153	23.49	.9248	23.52	.9261	23.56	.9275	23.59	.9288	23.63	.93016
M26	–	3	22.752	23.252	24.47	.9634	24.57	.9674	24.67	.9714	24.78	.9754	24.88	.97945
	–	2	23.835	24.210	24.98	.9835	25.05	.9861	25.12	.9888	25.18	.9915	25.25	.99417
	–	1.5	24.376	24.676	25.24	.9935	25.29	.9955	25.34	.9975	25.39	.9995	25.44	1.00154
M27	3	–	23.752	24.252	25.47	1.0028	25.57	1.0068	25.67	1.0108	25.78	1.0148	25.88	1.01882
	–	2.5	24.294	24.744	25.73	1.0128	25.81	1.0161	25.90	1.0195	25.98	1.0228	26.07	1.02618
	–	2	24.835	25.210	25.98	1.0228	26.05	1.0255	26.12	1.0282	26.18	1.0309	26.25	1.03354
	–	1.5	25.376	25.676	26.24	1.0329	26.29	1.0349	26.34	1.0369	26.39	1.0389	26.44	1.04091
	–	1	25.917	26.153	26.49	1.0429	26.52	1.0443	26.56	1.0456	26.59	1.0469	26.63	1.04827
M30	3.5	–	26.211	26.771	28.22	1.1108	28.33	1.1155	28.45	1.1202	28.57	1.1249	28.69	1.12957
	–	3	26.752	27.252	28.47	1.1209	28.57	1.1249	28.67	1.1289	28.78	1.1329	28.88	1.13693
	–	2	27.835	28.210	28.98	1.1409	29.05	1.1436	29.12	1.1463	29.18	1.1490	29.25	1.15165
	–	1.5	28.376	28.676	29.24	1.1510	29.29	1.1530	29.34	1.1550	29.39	1.1570	29.44	1.15902
	–	1	28.917	29.153	29.49	1.1610	29.52	1.1624	29.56	1.1637	29.59	1.1650	29.63	1.16638

19 TAP DRILL SIZES - METRIC THREAD / FORMING TAPS

Metric

Size	RECOMMENDATION Drill Size	
	Inch	metric (mm)
M2 × 0.4	.0827	2.10
M2.2 × 0.45	.0906	2.30
M2.5 × 0.45	.1024	2.60
M3 × 0.5	.1240	3.15
M3.5 × 0.6	.1457	3.70
M4 × 0.7	.1654	4.20
M5 × 0.8	.2047	5.20
M6 × 1.0	.2480	6.30
M7 × 1.0	.2874	7.30
M8 × 1.0	.3268	8.30
M8 × 1.25	.3307	8.40
M9 × 1.25	.3701	9.40
M10 × 1.25	.4094	10.40
M10 × 1.5	.4134	10.50
M11 × 1.5	.4528	11.50
M12 × 1.25	.4882	12.40
M12 × 1.5	.4921	12.50
M12 × 1.75	.4921	12.50
M14 × 1.5	.5709	14.50
M14 × 2.0	.5709	14.50
M16 × 1.5	.6496	16.50
M16 × 2.0	.6496	16.50
M18 × .5	.7283	18.50
M18 × 2.0	.7283	18.50
M18 × 2.5	.7382	18.75
M20 × 1.5	.8071	20.50
M20 × 2.0	.8071	20.50
M20 × 2.5	.8169	20.75
M22 × 1.5	.8858	22.50
M22 × 2.0	.8858	22.50
M22 × 2.5	.8957	22.75
M24 × 2.0	.9646	24.50
M24 × 3.0	.9843	25.00
M27 × 3.0	1.1024	28.00
M30 × 3.5	1.2205	31.00

Unified

Size	RECOMMENDATION Drill Size	
	Inch	metric (mm)
#2 - 56 UNC	.0906	2.30
#3 - 48 UNC	.1063	2.70
#3 - 56 UNF	.1043	2.65
#4 - 40 UNC	.1181	3.00
#4 - 48 UNF	.1181	3.00
#5 - 40 UNC	.1339	3.40
#5 - 44 UNF	.1299	3.30
#6 - 32 UNC	.1457	3.70
#6 - 40 UNF	.1457	3.70
#8 - 32 UNC	.1732	4.40
#8 - 36 UNF	.1732	4.40
#10 - 24 UNC	.2008	5.10
#10 - 32 UNF	.2008	5.10
#12 - 24 UNC	.2283	5.80
1/4 - 20 UNC	.2638	6.70
1/4 - 28 UNF	.2598	6.60
5/16 - 18 UNC	.3307	8.40
5/16 - 24 UNF	.3228	8.20
3/8 - 16 UNC	.3937	10.00
3/8 - 24 UNF	.3858	9.80
7/16 - 14 UNC	.4528	11.50
7/16 - 20 UNF	.4528	11.50
1/2 - 13 UNC	.5236	13.30
1/2 - 20 UNF	.5157	13.10
9/16 - 12 UNC	.5866	14.90
9/16 - 18 UNF	.5787	14.70
5/8 - 11 UNC	.6496	16.50
5/8 - 18 UNF	.6417	16.30
3/4 - 10 UNC	.7795	19.80
3/4 - 16 UNF	.7677	19.50
7/8 - 9 UNC	.9055	23.00
7/8 - 14 UNF	.8858	22.50
1 - 8 UNC	1.0433	26.50
1 - 12 UNF	1.0236	26.00
1-1/8 - 7 UNC	1.1713	29.75
1-1/8 - 8 UN	1.1417	29.00
1-1/8 - 12 UNF	1.1516	29.25
1-1/4 - 7 UNC	1.2992	33.00
1-1/4 - 8 UN	1.2795	32.50
1-1/4 - 12 UNF	1.2795	32.50
1-3/8 - 6 UNC	1.4173	36.00
1-3/8 - 8 UN	1.3976	35.50
1-3/8 - 12 UNF	1.4173	36.00
1-1/2 - 6 UNC	1.5354	39.00
1-1/2 - 8 UN	1.5354	39.00
1-1/2 - 12 UNF	1.5354	39.00

CONVERSION TABLE

SURFACE FEET PER MINUTE TO REVOLUTIONS PER MINUTE

Surface Feet Per Minute	20	25	30	40	50	60	70	80	90	100	110	120	130	140	150
Tap Size	**Revolutions Per Minute**														
#0	1273	1592	1910	2546	3183	3820	4456	5093	5730	6366	7003	7639	8276	8913	9549
#1	1047	1308	1570	2093	2617	3140	3663	4186	4710	5233	5756	6279	6808	7326	7849
#2	888	1110	1333	1777	2221	2665	3109	3554	3999	4222	4886	5330	5774	6218	6662
#3	772	964	1157	1543	1929	2315	2701	3086	3472	3858	4244	4629	5015	5401	5787
#4	682	853	1023	1364	1705	2046	2387	2728	3069	3411	3751	4092	4434	4775	5116
#5	611	764	917	1222	1528	1833	2139	2445	2750	3056	3361	3367	3973	4278	4584
#6	553	691	829	1106	1382	1658	1934	2211	2487	2764	3040	3316	3592	3869	4145
#8	466	583	699	932	1165	1398	1631	1864	2097	2330	2563	2796	3029	3262	3495
#10	402	502	603	804	1005	1205	1406	1607	1808	2009	2210	2411	2612	2813	3014
#12	354	442	531	707	884	1061	1238	1415	1592	1769	1945	2122	2300	2476	2653
1/4	306	382	458	611	764	917	1070	1222	1375	1528	1681	1833	1986	2139	2292
5/16	245	306	367	486	611	733	856	978	1100	1222	1345	1467	1589	1711	1833
3/8	204	255	306	407	509	611	713	815	917	1019	1120	1222	1324	1426	1528
7/16	175	219	262	349	437	524	611	698	786	873	960	1048	1135	1222	1310
1/2	153	191	229	306	382	458	535	611	688	764	840	917	993	1070	1146
9/16	137	172	206	275	344	412	481	550	619	687	756	825	893	963	1031
5/8	122	153	183	244	306	367	428	489	550	611	672	733	794	856	917
3/4	102	128	153	203	255	306	357	407	458	509	560	611	662	713	764
7/8	87	109	131	175	218	252	306	350	392	437	480	524	568	611	655
1	76	96	115	153	191	230	268	306	344	382	420	458	497	535	573

TECHNICAL DATA

TROUBLE SHOOTING GUIDE

Specific Problem	Cause	Solution
Dimensional Accuracy		
Oversize Pitch Diameter	**Tap**	1. Use proper limits of taps 2. Use longer chamfered taps
	Chip Packing	1. Use spiral point or spiral fluted taps 2. Reduce number of flutes to provied extra chip room 3. Use larger hole size 4. If tapping a hole, allow deeper hole where applicable or shorten the thread length of the parts 5. Use proper lubricant
	Galling	1. Apply proper surface treatment such as Hardslick or chrome 2. Use proper cutting lubricant 3. Reduce tapping speed 4. Use proper cutting angle in accordance with material being tapped 5. Use large hole size
	Operating Conditions	1. Apply proper tapping speed 2. Correct alignment of tap and drill hole 3. Free cutting either tap or workpiece 4. Use proper tapping speed to avoid torn or rough threads 5. Use lead screw tapper 6. Use proper tapping machine with suitable power 7. Avoid misalignment of the tap and drill hole from loose spindle or worn holder
	Tool Condition	1. Obtain proper indexing angle for the flutes at the cutting edge 2. Grind proper cutting angle and chamfer angle 3. Avoid too narrow a land width 4. Remove burrs from regrinding
Oversize Internal Diameter	**Hole Size**	1. Use minimum hole size 2. Avoid tapered hole 3. Use proper chamfered taps
	Galling	1. Galling solutions 1 through 4 above can be applied to this specific problem
Undersize Pitch Diameter	**Incorrect Tap**	1. Use oversize taps 2. Apply proper chamfer angle 3. Increase cutting angle
	Damaged Thread	1. Use proper reversing speed to avoid damaging tapped thread on the way out of the hole
	Left-over Chips	1. Increase cutting performance to avoid any left over chips in the hole 2. Remove left over chips from the hole for gage checking
Undersize Internal Diameter	**Hole Size**	1. Use maximum drill size

Specific Problem	Cause	Solution
Tool Life		
Breakage	**Incorrect Tap Selection**	1. Avoid chip packing in the flutes or the bottom of the hole. Use spiral pointed or spiral fluted taps or fluteless taps. 2. Apply correct surface treatment such as Hardslick or bright
	Excessive Tapping Torque	1. Use larger drill size 2. Try to shorten thread length 3. Increase cutting angle 4. Apply a tap with more thread relief and reduced land width 5. Apply correct surface treatment such as Hardslick
	Operating Conditions	1. Reduce tapping speed 2. Avoid misalignment between tap and the hole and tapered hole 3. Use floating type of tapping holder 4. Use tapping holder with torque adjustment 5. Avoid hitting bottom of the hole with tap
	Tool Condition	1. Do not grind the bottom of the flute 2. Avoid too narrow a land width 3. Remove all worn sections when regrindig the flutes 4. Regrind tool more frequently
Chipping	**Incorrect Tap Selection**	1. Reduce cutting angle 2. Use a different kind of high-speed steel tap 3. Reduce hardness of the tap 4. Increase chamfer length 5. Avoid chip packing in the flutes or in the bottom of the hole by using spiral fluted or spiral pointed taps
	Wear	1. Reduce tapping speed 2. Avoid misalignment between tap and hole 3. Avoid sudden return of reverse in blind hole tapping 4. Avoid galling 5. Use larger hole size
Wearx	**Incorrect Tap Selection**	1. Apply specially designed tap for tapping heat treated materal 2. Change to a type of high-speed steel tap that contains vanadium 3. Apply special surface treatment such as TiCN or Hardslick 4. Increase chamfer length
	Operating Conditions	1. Reduce tapping speed 2. Apply proper cutting lubricants 3. Avoid work hardened hole 4. Use larger hole size
	Tool Condition	1. Grind proper cutting angle 2. Avoid hardness reduction from grinding process
Torn or Rough Thread	**Chamfer Too Short**	1. Increase chamfer length
	Wrong Cutting Angle	1. Apply proper cutting angle

TECHNICAL DATA

Specific Problem	Cause	Solution
Surface Finish		
Torn or Rough Thread	**Galling**	1. Use thread relieved taps 2. Reduce land width 3. Apply surface treatment such as Hardslick or chrome 4. Use proper cutting lubricant 5. Reduce tapping speed 6. Use larger hole size 7. Obtain proper alignment between tap and work
	Chip Packing	1. Use spiral pointed or spiral fluted taps 2. Use larger drill size
Chattering on Tapped Thread	**Tool Free Cutting**	1. Reduce cutting angle 2. Reduce amount of thread relief
	Tool Condition	1. Do not grind the bottom of the flute 2. Avoid too narrow a land width

MILLING TOOLS

CBN END MILLS
i-Xmills, CARBIDE INSERT END MILLS
i-SMART MODULAR TYPE END MILLS
X5070 NANO SOLID CARBIDE END MILLS
4G MILL SOLID CARBIDE END MILLS
X-POWER SOLID CARBIDE END MILLS
JET-POWER SOLID CARBIDE & HSS-PM END MILLS
TitaNox-POWER SOLID CARBIDE END MILLS
V7 PLUS A SOLID CARBIDE END MILLS
V7 Mill INOX SOLID CARBIDE END MILLS
ALU-POWER SOLID CARBIDE & HSS-PM END MILLS
D-POWER GRAPHITE DIAMOND COATED SOLID CARBIDE END MILLS
D-POWER CFRP DIAMOND COATED SOLID CARBIDE END MILLS
SOLID CARBIDE ROUTERS
STANDARD CARBIDE END MILLS
ONLY ONE COATED PM60 END MILLS
SINE-POWER HSS END MILLS
TANK-POWER HSS-PM END MILLS
COBALT & HSS END MILLS
TECHNICAL DATA

YG-1 CO., LTD.

Contents

MILLING TOOLS

CBN END MILLS

CARBIDE INSERTEND MILLS

SOLID CARBIDE END MILLS

HSS END MILLS

TECHNICAL DATA

YG-1 CO., LTD.

Contents / MILLING TOOLS

CBN END MILLS
Machining High Hardened Steels up to HRc70 / Mirror Finish — CBN END MILLS

i-Xmills, CARBIDE INSERT END MILLS
Available for General Steels(~HRc50), Hardened Steels(up to HRc65) and Graphite — i-Xmill END MILLS

i-Smart MODULAR TYPE END MILLS
Indexable Modular Head for Semi-finishing and finishing on Pre-Hardened Steels up to HRc55 — i-SMART MODULAR TYPE END MILLS

X5070 NANO SOLID CARBIDE END MILLS
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-POWER SOLID CARBIDE END MILLS
Medium Steels to High Hardened Steels up to HRc70 — X-POWER END MILLS

JET-POWER SOLID CARBIDE & HSS-PM END MILLS
Exotic materials like Stainless Steels, Nickel alloys and Titanium — JET-POWER END MILLS

TitaNox-POWER SOLID CARBIDE END MILLS
High Speed Machining for Exotic Materials:Titanium, Inconel and Stainless Steels — TitaNox -POWER END MILLS

V7 PLUS A SOLID CARBIDE END MILLS
Silent Cutting of Steels up to HRc40 / Designed as Unequal Leads — V7 PLUS A END MILLS

V7 Mill INOX SOLID CARBIDE END MILLS
Stainless Steels in Heavy and Silent Cutting Materials up to HRc40
Designed as Variable Leads / YG-1's Patent — V7 MILL INOX END MILLS

ALU-POWER SOLID CARBIDE & HSS-PM END MILLS
Aluminium Alloys and Silent Cutting / Mirror Surface — ALU-POWER END MILLS

D-POWER GRAPHITE DIAMOND COATED SOLID CARIDE END MILLS
Diamond Coated Carbide End Mills for Graphite — D-POWER GRAPHITE END MILLS

D-POWER CFRP DIAMOND COATED SOLID CARBIDE END MILLS
Diamond Coated Carbide End Mills for composite materials including CFRP, GFRP — D-POWER CFRP END MILLS

SOLID CARBIDE ROUTERS
For composite materials including CFRP, GFRP — ROUTERS

STANDARD CARBIDE END MILLS
General Purpose / Any Coating Available — STANDARD CARBIDE END MILLS

ONLY ONE COATED PM60 END MILLS
The optimal solution for unstable cutting condition — ONLY ONE COATED PM60 END MILLS

SINE-POWER HSS END MILLS
High Performance HSS Rougher for Titanium and Titanium Alloys — SINE -POWER END MILLS

TANK-POWER HSS-PM END MILLS
Next Generation of Powdered Metal End Mills / Higher Edge Strength & Feed Rates — TANK-POWER END MILLS

COBALT & HSS END MILLS
General Purpose / Non-coated / Any Coating Available — STANDARD COBALT & HSS END MILLS

TECHNICAL DATA — TECHNICAL DATA

	ITEM	MODEL	DESCRIPTION	SIZE RANGE MIN	SIZE RANGE MAX	PAGE
i-Xmill	XB1A XB1N		i-Xmill Ball Insert for General Purpose	R5/32 (R4)	R5/8 (R16)	**566** **571**
	XB2C XB2N		i-Xmill Ball Insert for Hardened Steels			
	XB1D XBAD		i-Xmill Ball Insert for Graphite			
	XR1A XRAA		i-Xmill Corner Radius Insert for General Purpose	Ø5/16 (Ø8)	Ø1-1/4 (Ø32)	**569** **574**
	XR2A XRBA		i-Xmill Corner Radius Insert for Hardened Steels			
	XR1D XRAD		i-Xmill Corner Radius Insert for Graphite			

	ITEM	MODEL	DESCRIPTION	SIZE RANGE MIN	SIZE RANGE MAX	PAGE
i-Smart	XGMF15		CARBIDE MODULAR HEAD, 2 FLUTE BALL NOSE	R3/16	R5/8	**584**
	XGMF17		CARBIDE MODULAR HEAD, 4 FLUTE BALL NOSE	R3/16	R5/8	**585**
	XGMF20		CARBIDE MODULAR HEAD, 4 FLUTE MULTIPLE HELIX CORNER RADIUS	D3/8	D1-1/4	**586**
	XGMF25		CARBIDE MODULAR HEAD, 4 FLUTE MULTIPLE HELIX	D3/8	D1-1/4	**587**
	XGMF29		CARBIDE MODULAR HEAD, 6 FLUTE 45° HELIX	D3/8	D1-1/4	**588**

◎ : Excellent ○ : Good

P							M	K	N	
Carbon Steels		Alloy Steels		Tool Steels		Hardened Steels	Stainless Steels	Cast Iron	Aluminum	Graphite
~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~	HRc50~	~HRc28	~HRc35	~HRc8	
◎	○	◎	○	◎	○		○	○	○	
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Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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MILLING TOOLS **APPLICATION TABLE**

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
CBN	ESB94		2Flute	30°	Metric	Ball	R0.2	R1.5	**560**
	ESD02		2Flute	0°	Metric	Radius	D0.5	D2.0	**561**
X5070	G826	High Feed End Mill 	4Flute	0°	Inch	Radius	D1/8	D1/2	**598**
	G8A43		2Flute	30°	Inch	Ball	R1/64	R1/4	**599**
	G850		4Flute	30°	Inch	Radius	D1/16	D3/4	**600**
	G851		6&8Flute	45°	Inch	Radius	D1/4	D1	**601**
	G859	High Feed End Mill 	4Flute	0°	Metric	Radius	D2.0	D16.0	**602**
	G854	High Feed End Mill 	4Flute	0°	Metric	Radius	D2.0	D16.0	**603**
	G8A46		2Flute	30°	Metric	Ball for Rib	R0.05	R2.0	**604**
	G8A54		2Flute	30°	Metric	Ball for Rib	R0.25	R1.0	**608**
	G8A28		2Flute	30°	Metric	Ball	R0.05	R6.0	**609**
	G8A38		2Flute	30°	Metric	Stub Ball with Extended Neck	R0.5	R12.5	**610**
	G8A53		2Flute	30°	Metric	Miniature Ball	R0.2	R1.0	**611**
	G8A59		3Flute	30°	Metric	Ball	R1.5	R10.0	**612**
	G8A36		2Flute	30°	Metric	Stub Radius with Extended Neck	D0.3	D20.0	**613**
	G8A50		2Flute	30°	Metric	Miniature Radius	D0.3	D2.0	**615**
	G8A47		4Flute	30°	Metric	Radius	D3.0	D12.0	**616**
	G8A37		4Flute	30°	Metric	Stub Radius with Extended Neck	D1.0	D20.0	**617**
	G8A39		6Flute	45°	Metric	Radius	D6.0	D20.0	**618**
4G Mill	GMF15		2Flute	30°	Inch	Ball	R.002	R3/8	**634**
	GMF16		2Flute	30°	Inch	Ball with Neck	R.004	R1/4	**636**
	GMF17		4Flute	30°	Inch	Ball	R.1/16	R1/4	**639**
	GMF18		2Flute	30°	Inch	Radius	D3/64	D3/4	**640**
	GMF19		2Flute	30°	Inch	Radius with Neck	D.008	D3/4	**643**
	GMF20		4Flute	M-Helix	Inch	Radius	D3/64	D3/4	**649**
	GMF21		4Flute	M-Helix	Inch	Radius with Neck	D3/64	D3/4	**651**
	GMF22		2Flute	30°	Inch	with Neck	D.008	D1/2	**656**
	GMF23		2Flute	30°	Inch	Square	D.004	D3/4	**659**

◎ : Excellent ○ : Good

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Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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MILLING TOOLS **APPLICATION TABLE**

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
4G Mill	GMF24		2Flute	30°	Inch	Long Square	D3/64	D3/4	**662**
	GMF25		4Flute	M-Helix	Inch	Square	D3/64	D3/4	**664**
	GMF26		4Flute	M-Helix	Inch	Square	D3/64	D3/4	**665**
	GMF27		4Flute	30°	Inch	Long Square	D3/64	D1	**666**
	GMF28		4Flute	30°	Inch	with Neck	D3/64	D1/2	**668**
	GMF29		6Flute	45°	Inch	Square	D1/4	D3/4	**669**
	G907 G928		4&5Flute	M-Helix	Inch	Stub Roughing Radius	D1/4	D1	**670**
	G908 G929		4&5Flute	M-Helix	Inch	Regular Roughing Radius	D1/4	D1	**671**
	G909 G930		4&5Flute	M-Helix	Inch	Extended Reach Roughing Radius	D1/4	D3/4	**672**
	SEMD98		2Flute	30°	Metric	Ball	R0.05	R12.5	**673**
	SEM846		2Flute	30°	Metric	Long Neck Ball	R0.05	R6.0	**678**
	SEM846		2Flute	30°	Metric	Long Neck Ball (6mm Shank)	R0.25	R1.0	**686**
	SEMD99		2Flute	30°	Metric	Radius	D0.2	D20.0	**689**
	SEME61		2Flute	30°	Metric	Long Neck Radius	D0.2	D20.0	**695**
	SEME01		4Flute	M-Helix	Metric	Radius	D1.0	D20.0	**710**
	SEME64		4Flute	M-Helix	Metric	Long Neck Radius	D1.0	D20.0	**715**
	SEME35		2Flute	30°	Metric	Square	D0.03	D25.0	**727**
	SEME70		2Flute	30°	Metric	Long Square	D1.0	D25.0	**732**
	SEM845		2Flute	30°	Metric	Long Neck Square	D0.1	D12.0	**737**
	SEME36		4Flute	M-Helix	Metric	Square	D0.8	D25.0	**744**
	SEME71		4Flute	M-Helix	Metric	Square	D1.0	D20.0	**746**
	SEME72		4Flute	30°	Metric	Long Square	D1.0	D25.0	**749**
	SEME73		4Flute	30°	Metric	Long Neck Square	D1.0	D12.0	**754**
	SEME75		6Flute	45°	Metric	Square	D6.0	D20.0	**758**
	G9D75 G9D67		4&5Flute	M-Helix	Metric	Short Radius	D6.0	D20.0	**759**
	G9D76 G9D68		4&5Flute	M-Helix	Metric	Long Radius	D6.0	D20.0	**760**
	G9D77 G9D69		4&5Flute	M-Helix	Metric	Long Reach Radius	D6.0	D20.0	**761**
	GAE53		4&5Flute	M-Helix	Metric	Short Radius	D6.0	D20.0	**762**

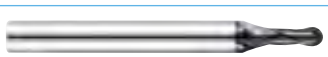
◎ : Excellent ○ : Good

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Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
X-POWER	EM154		2Flute	30°	Inch	Regular	D1/16	D1	**824**
	EM206		2Flute	30°	Inch	Long	D1/8	D1	**824**
	EM959		2Flute	30°	Inch	Miniature	D.016	D.062	**825**
	EM153		4Flute	30°	Inch	Regular	D1/16	D1	**826**
	EM207		4Flute	30°	Inch	Long	D1/8	D1	**826**
	EM636		2Flute	30°	Inch	Short Radius	D1/16	D1/2	**827**
	EM639		4Flute	30°	Inch	Short Radius	D1/16	D1/2	**827**
	EM637		2Flute	30°	Inch	Regular Radius	D1/16	D1/2	**828**
	EM649		4Flute	30°	Inch	Regular Radius	D1/16	D1/2	**828**
	EM211		2Flute	30°	Inch	Long Radius	D1/4	D1/2	**829**
	EM212		4Flute	30°	Inch	Long Radius	D1/4	D1/2	**829**
	EM102		4Flute	45°	Inch	Long	D3/8	D7/8	**830**
	EM103		4Flute	45°	Inch	Long Reach Radius	D3/8	D7/8	**831**
	EM965		4Flute	55°	Inch	Stub Radius	D1/4	D1/2	**832**
	EM208		6&8Flute	45°	Inch	Long	D1/4	D1	**833**
	EM218		6&8Flute	45°	Inch	Extra Long	D1/4	D1	**833**
	EM668		6&8Flute	45°	Inch	Long Radius	D1/4	D3/4	**834**
	EM209		2Flute	30°	Inch	Long Ball	R1/64	R1/2	**835**
	EM210		4Flute	30°	Inch	Long Ball	R1/16	R1/2	**835**
	EM961		2Flute	30°	Inch	Medium Ball	R1/16	R1/2	**836**
	EM962		2Flute	30°	Inch	Long Reach Ball	R3/64	R3/8	**837**
	EM960		2Flute	30°	Inch	Miniature Ball	R.012	R.031	**838**
	EM109		2Flute	15°	Inch	Stub Ball	R1/64	R1/4	**839**
	EM963		2Flute	30°	Inch	Ball with Taper Neck	R1/32	R1/4	**840**
	EM979		2Flute	30°	Inch	Ball with Pencil Neck	R3/32	R1/4	**841**
	EM084		2Flute	30°	Inch	Long Ball	R1/16	R5/16	**843**
	EM093		4Flute	30°	Inch	Long Ball	R1/16	R5/16	**844**
	EM096		2Flute	30°	Inch	Long Ball	R1/16	R5/16	**845**

◎ : Excellent ○ : Good

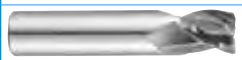
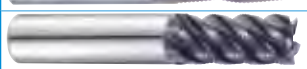
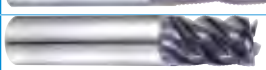
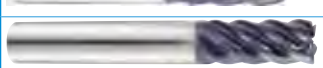
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Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
X-POWER	EM097		4Flute	30°	Inch	Long Ball	R1/16	R5/16	**846**
	EM666		3~5Flute	20°	Inch	Stub Roughing	D1/4	D1	**847**
	EM156		3~5Flute	20°	Inch	Long Roughing	D1/4	D1	**847**
	EM662		3~5Flute	20°	Inch	Long Roughing Ball	R1/8	R1/2	**848**
	EM966		2Flute	30°	Inch	Rib	D1/32	D1/8	**849**
	EM967		2Flute	30°	Inch	Ball for Rib	R1/64	R1/16	**850**
	EM810		2Flute	30°	Metric	Short	D1.0	D25.0	**851**
	EM816		2Flute	30°	Metric	Long	D2.0	D25.0	**852**
	EM811		4Flute	30°	Metric	Short	D2.0	D25.0	**853**
	EM817		4Flute	30°	Metric	Long	D2.0	D25.0	**854**
	EM895		3Flute	38°	Metric	Short	D1.0	D20.0	**855**
	EM810		2Flute	30°	Metric	Miniature	D0.4	D1.5	**856**
	EM818		2Flute	30°	Metric	Long Radius	D3.0	D20.0	**857**
	EM819		4Flute	30°	Metric	Long Radius	D3.0	D20.0	**857**
	EM905		4Flute	45°	Metric	Short Radius	D10.0	D22.0	**858**
	EM839		4Flute	30°	Metric	Stub Radius	D2.0	D16.0	**859**
	EM812		6&8Flute	45°	Metric	Long	D6.0	D25.0	**860**
	EM834		6&8Flute	45°	Metric	Extra Long	D6.0	D25.0	**860**
	EM835		6Flute	45°	Metric	Long Radius	D6.0	D20.0	**861**
	EM897		6Flute	45°	Metric	Stub Radius	D6.0	D12.0	**862**
	EM876		2Flute	30°	Metric	Long Ball	R0.5	R12.5	**863**
	EM813 EM823		2Flute	30°	Metric	Long Ball	R0.5	R12.5	**864**
	EM815 EM825		4Flute	30°	Metric	Long Ball	R0.5	R12.5	**864**
	EM899		2Flute	30°	Metric	Medium Ball	R1.5	R12.5	**865**
	EM838		2Flute	30°	Metric	Long Reach Ball	R1.0	R10.0	**866**
	EM865		2Flute	30°	Metric	Miniature Ball	R0.3	R0.75	**867**
	EM868		2Flute	15°	Metric	Stub Ball	R0.5	R12.5	**868**
	EM902		2Flute	30°	Metric	Ball with Taper Neck	R0.5	R6.0	**869**

◎ : Excellent ○ : Good

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Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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MILLING TOOLS **APPLICATION TABLE**

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
X-POWER	EM669		2Flute	30°	Metric	Long Ball	R1.5	R8.0	**870**
	EM673		4Flute	30°	Metric	Long Ball	R2.5	R8.0	**871**
	EM863		2Flute	30°	Metric	Long Ball	R1.5	R8.0	**872**
	EM864		4Flute	30°	Metric	Long Ball	R2.5	R8.0	**873**
	EM832		3~5Flute	20°	Metric	Short Roughing	D6.0	D25.0	**874**
	EM814		3~5Flute	20°	Metric	Long Roughing	D6.0	D25.0	**875**
	EM833		3&4Flute	20°	Metric	Long Roughing Ball	R3.0	R10.0	**876**
	EM837		2Flute	30°	Metric	Taper	D2.0	D8.0	**877**
	EM883		2Flute	30°	Metric	Rib	D0.8	D3.0	**878**
	EM886		2Flute	30°	Metric	Ball for Rib	R0.3	R2.0	**879**
JET-POWER	EH108		3&4Flute	50°	Inch	Regular	D1/8	D1	**906**
	EE882		6Flute	35°	Inch	Regular	D3/4	D1-1/2	**907**
	E5075 E5105		3Flute	35°	Inch	Stub Radius	D1/8	D1	**908**
	E5074 E5104		3Flute	35°	Inch	Regular Radius	D1/8	D1	**909**
	EH094		3~5Flute	30°	Inch	Stub Roughing	D1/4	D1	**910**
	EH095		3~5Flute	30°	Inch	Long Roughing	D1/4	D1	**911**
	EH969		3~6Flute	45°	Inch	Long Roughing	D3/16	D1	**912**
	EH970		4~6Flute	45°	Inch	Long Reach Roughing	D1/4	D3/4	**913**
	EH830		3&4Flute	50°	Metric	Long Square	D6.0	D25.0	**914**
	EE515		4&6Flute	30°	Metric	Short Square	D3.0	D25.0	**915**
	EH852		3&5Flute	30°	Metric	Short Roughing	D6.0	D25.0	**916**
	EH831		3&5Flute	30°	Metric	Long Roughing	D6.0	D25.0	**917**
	EH917		4&6Flute	45°	Metric	Short Roughing	D6.0	D20.0	**918**
	EH919		3&6Flute	45°	Metric	Long Roughing	D4.0	D25.0	**919**
	EH921		4&6Flute	45°	Metric	Long Reach Roughing	D6.0	D20.0	**920**
TitaNox-POWER	UGMG42		4Flute	M-Helix	Inch	Radius with Double Core	D1/4	D1	**928**
	UGMG34		5Flute	M-Helix	Inch	Square	D1/8	D1	**930**
	UGMG32		5Flute	M-Helix	Inch	Radius	D1/8	D1	**933**

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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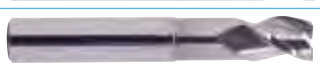
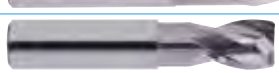
MILLING TOOLS **APPLICATION TABLE**

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
TitaNox-POWER	GMG40		4Flute	M-Helix	Metric	Radius with Double Core	D6.0	D25.0	**934**
	GMG24		5Flute	M-Helix	Metric	Short	D6.0	D25.0	**936**
	GMG26		5Flute	M-Helix	Metric	Long	D6.0	D25.0	**937**
	GMG28		5Flute	M-Helix	Metric	Short Radius	D6.0	D25.0	**938**
	GMG30		5Flute	M-Helix	Metric	Long Radius	D6.0	D25.0	**939**
V7 PLUS A	UGMG53 UGMG54		4Flute	M-Helix	Inch	Ball	1/8 11/32	1	**950**
	UGMF70 UGMF71		4Flute	M-Helix	Inch	Radius	1/8 3/8	1	**951**
	UGMF74 UGMF75		4Flute	M-Helix	Inch	Radius with Neck	1/4 3/8	1	**954**
	UGMF68 UGMF69		4Flute	M-Helix	Inch	Square	1/8 11/32	1	**955**
	UGMF76 UGMF77		4Flute	M-Helix	Inch	Square	3/8	1	**956**
	UGMF72 UGMF73		4Flute	M-Helix	Inch	with Neck	1/4 3/8	1	**957**
	UGMG22 UGMG23		6Flute	45°	Inch	Radius	1/4 3/8	1	**958**
	UGMG20 UGMG21		6Flute	45°	Inch	Square	1/4 3/8	1	**961**
	GMG55 GMG56		4Flute	M-Helix	Metric	Ball	R1.5	R12.5	**962**
	GMF54 GMF55		4Flute	M-Helix	Metric	Short Radius	D3.0	D20.0	**963**
	GMF58 GMF59		4Flute	M-Helix	Metric	Long Radius	D3.0	D25.0	**964**
	GMF62 GMF63		4Flute	M-Helix	Metric	Radius with Neck	D3.0	D20.0	**965**
	GMF52 GMF53		4Flute	M-Helix	Metric	Short	D3.0	D20.0	**968**
	GMF56 GMF57		4Flute	M-Helix	Metric	Long	D3.0	D25.0	**969**
	GMF60 GMF61		4Flute	M-Helix	Metric	with Neck	R3.0	R20.0	**970**
	GMG16 GMG17		6Flute	45°	Metric	Long Radius	D6.0	D25.0	**972**
	GMG18 GMG19		6Flute	45°	Metric	Extra Long Radius	D6.0	D25.0	**973**
	GMG12 GMG13		6Flute	45°	Metric	Long Square	D6.0	D25.0	**975**
	GMG14 GMG15		6Flute	45°	Metric	Extra Long Square	D6.0	D25.0	**975**
V7 Mill INOX	EMC75 EMD60		4Flute	Sinusoidal	Inch	Stub Square	D1/8	D1	**988**
	EMC76 EMD61		4Flute	Sinusoidal	Inch	Stub Radius	D1/8	D1	**989**
	EMB12 EMB37		4Flute	Sinusoidal	Inch	Regular Square	D1/8	D1	**990**
	EMB13 EMB38		4Flute	Sinusoidal	Inch	Regular Radius	D1/8	D1	**991**

◎ : Excellent ○ : Good

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Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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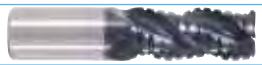
MILLING TOOLS **APPLICATION TABLE**

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
V7 Mill INOX	EMB20		4Flute	Sinusoidal	Inch	Extended Long Reach	D1/4	D1	**992**
	EMB78 EMB79		4Flute	Sinusoidal	Inch	Regular Ball	R1/16	R1/2	**993**
	EMB76 EMB77		5Flute	Sinusoidal	Inch	Regular Square	D1/4	D1	**994**
	EMB41 EMB42		4Flute	Sinusoidal	Metric	Short Square	D3.0	D20.0	**995**
	EMB43 EMB44		4Flute	Sinusoidal	Metric	Short Radius	D3.0	D20.0	**996**
	EMB14 EMB39		4Flute	Sinusoidal	Metric	Regular Square	D3.0	D25.0	**997**
	EMB15 EMB40		4Flute	Sinusoidal	Metric	Regular Radius	D3.0	D25.0	**998**
	EMB74 EMB75		4Flute	Sinusoidal	Metric	Regular Ball	R1.5	R12.5	**999**
	EMB72 EMB73		5Flute	Sinusoidal	Metric	Regular Square	D6.0	D25.0	**1000**
ALU-POWER	E5253		2Flute	42°	Inch	Regular	D1/4	D1	**1008**
	E5254		2Flute	42°	Inch	Regular	D1/16	D1	**1009**
	E5976		2Flute	37°	Inch	with Extended Neck	D1/4	D1	**1010**
	E5980		3Flute	45°	Inch	Stub Square	D1/8	D1	**1011**
	E5981		3Flute	45°	Inch	Regular Square	D1/8	D1	**1012**
	E5983		3Flute	45°	Inch	Regular Radius	D1/2	D1	**1012**
	E5982		3Flute	45°	Inch	Long Square	D1/4	D1	**1013**
	E5984		3Flute	45°	Inch	Long Radius	D1/2	D1	**1013**
	E5E44		3Flute	30°	Inch	Roughing	D1/4	D1	**1014**
	E5E98		3Flute	30°	Inch	Roughing with Neck	D1/4	D1	**1014**
	E5E45		3Flute	30°	Inch	Roughing Ball	D1/4	D1	**1015**
	E5977		3Flute	37°	Inch	with Extended Neck	D1/4	D1	**1016**
	E5985		3Flute	37°	Inch	Radius with Extended Neck	D1/2	D1	**1017**
	E5973		2Flute	30°	Inch	Radius with Neck	D5/32	D3/4	**1018**
	E5974		3Flute	50°	Inch	Stub Ball with Neck	R1/8	R3/8	**1019**
	E5978		2Flute	37°	Inch	Long Reach Ball	R1/8	R1/2	**1020**
	E5975		3Flute	40°	Inch	Long Ball with Neck	R3/64	R5/16	**1021**
	E5522 EG522		2Flute	45°	Metric	Long Square	D3.0	D20.0	**1022**
	EG930		2Flute	25°	Metric	Stub Radius	D2.0	D20.0	**1023**

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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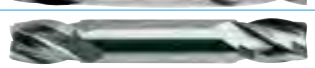
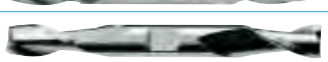
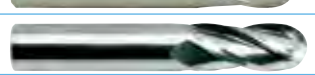
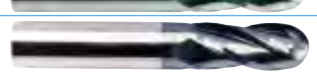
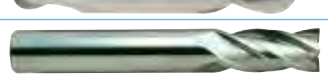
MILLING TOOLS **APPLICATION TABLE**

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
ALU-POWER	EG909		2Flute	30°	Metric	Stub Radius with Extended Neck	D4.0	D20.0	**1024**
	EG910		2Flute	50°	Metric	Stub Ball with Extended Neck	R3.0	R10.0	**1025**
	EG908		3Flute	40°	Metric	Stub Ball with Extended Neck	R1.0	R8.0	**1026**
	EK191		3Flute	42°	Inch	Regular Roughing	D1/2	D2	**1027**
	EK191		3Flute	42°	Inch	Regular Radius Roughing	D3/4	D1-1/4	**1027**
	EK226		3Flute	42°	Inch	Medium Roughing	D3/4	D2	**1028**
	EK226		3Flute	42°	Inch	Medium Radius Roughing	D3/4	D1-1/4	**1028**
	EK192		3Flute	42°	Inch	Long Roughing	D1/2	D2	**1029**
	EK192		3Flute	42°	Inch	Long Radius Roughing	D3/4	D1-1/4	**1030**
	EK196		3Flute	42°	Inch	Regular Ball Roughing	R1/4	R5/8	**1031**
	EK193 EK132		3Flute	42°	Inch	Regular, Medium & Long Radius	D1/2	D1-1/2	**1032**
	EP922		3Flute	42°	Metric	Short Roughing	D12.0	D32.0	**1034**
	EP924		3Flute	42°	Metric	Long Roughing	D12.0	D32.0	**1035**
D-POWER GRAPHITE	EI107		4(2)Flute	30°	Inch	Regular Square	D1/64	D1/2	**1050**
	EI099		2Flute	30°	Inch	Regular Ball	R.0391	R1/4	**1051**
	EI106		4Flute	30°	Inch	Regular Ball	R.0391	R1/4	**1051**
	EI971		2Flute	30°	Inch	Long Ball	R.0391	R1/4	**1052**
	EI972		2Flute	30°	Inch	Long Reach Ball	R.0391	R5/32	**1053**
	EIB07		4Flute	30°	Inch	Regular Ball with Extended Neck	R.0156	R.0625	**1054**
	EIB05		4Flute	30°	Inch	Regular Radius	D1/16	D1/2	**1055**
	EIB06		4Flute	30°	Inch	Regular Radius with Extended Neck	D1/32	D3/8	**1056**
	EI880		2Flute	30°	Metric	Short Ball	R1.0	R6.0	**1057**
	EI881		3Flute	30°	Metric	Short Ball	R1.0	R6.0	**1057**
	EI451		2Flute	30°	Metric	Long Ball	R1.0	R6.0	**1058**
	EI450		2Flute	30°	Metric	Long Reach Ball	R1.0	R4.0	**1059**
D-POWER CFRP	GUG82		4&8Flute	20°/20°	Inch	-	D1/4	D1/2	**1066**
	GUG83		4Flute	15°	Inch	-	D1/4	D1/2	**1067**
ROUTERS	RTI105		-	-	Inch	-	D1/4	D1/2	**1072**

◎ : Excellent ○ : Good

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Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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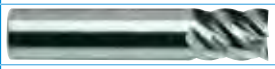
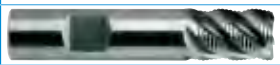
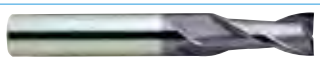
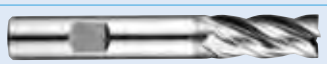
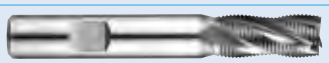
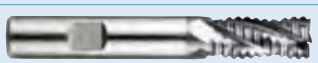
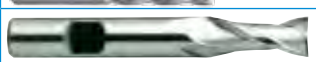
MILLING TOOLS **APPLICATION TABLE**

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
CARBIDE	UGMF90		2Flute	30°	Inch	Regular Square	D1/8	D1	**1080**
	E5020		2Flute	30°	Inch	Regular Square	D1/32	D1	**1081**
	UGMF89		4Flute	30°	Inch	Square	D1/16	D1	**1082**
	E5021		4Flute	30°	Inch	Regular Square	D1/16	D1	**1083**
	E5244		2Flute	30°	Inch	Stub Square	D1/16	D3/4	**1084**
	UGMGF57		4Flute	30°	Inch	Square	D1/16	D3/4	**1085**
	E5245		4Flute	30°	Inch	Stub Square	D1/16	D3/4	**1086**
	E5011		2Flute	30°	Inch	Long Square	D1/8	D1	**1087**
	E5012		4Flute	30°	Inch	Long Square	D1/8	D1	**1087**
	UGMGF58		4Flute	30°	Inch	Long Square	D1/8	D1	**1088**
	E5026		2Flute	30°	Inch	Extra Long Square	D1/8	D1	**1089**
	UGMGF59		4Flute	30°	Inch	Extra Long Square	D1/8	D1	**1090**
	E5065		4Flute	30°	Inch	Extra Long Square	D1/8	D1	**1091**
	E5022		2Flute	30°	Inch	Stub Double	D1/32	D1/2	**1092**
	E5023		4Flute	30°	Inch	Stub Double	D1/16	D1/2	**1093**
	E5025		2Flute	30°	Inch	Regular Double	D1/8	D1/2	**1094**
	E5024		4Flute	30°	Inch	Regular Double	D1/8	D1/2	**1094**
	E5249		2Flute	30°	Inch	Regular Ball	R1/16	R1/2	**1095**
	E5250		4Flute	30°	Inch	Regular Ball	R1/16	R1/2	**1095**
	UGMF91		4Flute	30°	Inch	Regular Ball	R1/16	R1/2	**1096**
	E5014		2Flute	45°	Inch	Long Ball	R1/16	R1/2	**1097**
	E5060		4Flute	30°	Inch	Long Ball	R1/16	R1/2	**1097**
	E5018		2Flute	30°	Inch	Extra Long Ball	R1/16	R1/2	**1098**
	E5062		4Flute	30°	Inch	Extra Long Ball	R1/16	R1/2	**1099**
	E5251 E5252		2&4Flute	30°	Inch	Stub Ball Double	R7/64	R1/4	**1100**
	E5216		4Flute	30°	Inch	Regular Radius	D1/8	D1	**1101**
	E5069		5Flute	45°	Inch	Regular Radius	D1/4	D1	**1103**
	E5243		3Flute	45°	Inch	Regular	D1/8	D1	**1104**

◎ : Excellent ○ : Good

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Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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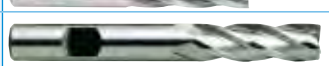
MILLING TOOLS **APPLICATION TABLE**

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
CARBIDE	E5059		3Flute	50°	Inch	Stub	D1/4	D3/4	**1105**
	E5246		3Flute	60°	Inch	Regular	D1/8	D1	**1106**
	E5066		5Flute	45°	Inch	Stub	D1/8	D1	**1107**
	E5067		5Flute	45°	Inch	Regular	D1/8	D1	**1108**
	E5068		5Flute	45°	Inch	Long Square	D1/4	D1	**1109**
	E5073		5Flute	45°	Inch	Extra Long Square	D5/16	D1	**1110**
	E5058		6Flute	40°	Inch	Regular Square	D3/16	D3/4	**1111**
	E5056 E5057		5Flute	45°	Inch	Stub & Regular Roughing	D3/8	D1	**1112**
	E5077		3Flute	30°	Inch	Taper	D3/32	D1/4	**1113**
	E5078		3Flute	30°	Inch	Taper Ball	R.047	R.125	**1114**
	EH527		2Flute	30°	Metric	Long	D3.5	D20.0	**1115**
	EH540		4Flute	30°	Metric	Long	D3.5	D20.0	**1116**
	EH882		3Flute	35°	Metric	Radius	D3.0	D20.0	**1117**
ONLY ONE	GYG64		2Flute	30°	Inch	Square	D1/8	D1	**1130**
	GYG67		4Flute	30°	Inch	Ball	R1/16	R1/2	**1131**
	GYG65		4Flute	30°	Inch	Square	D1/8	D1	**1132**
	GYG66		4Flute	M-Helix	Inch	Square	D1/8	D1	**1133**
	GYG69		4&5Flute	M-Helix	Inch	Roughing Radius	D1/4	D1	**1134**
	GYG68		3-6Flute	30°	Inch	Roughing	D1/4	D1-1/4	**1135**
	GYG70		3-6Flute	30°	Inch	Roughing	D1/4	D1-1/4	**1136**
SINE-POWER	E2F64		4&6Flute	35°	Inch	Square	D3/4	D2	**1146**
TANK-POWER	E9983		2Flute	30°	Inch	Regular Square	D1/8	D1	**1152**
	E9984		2Flute	30°	Inch	Regular Double Square	D1/8	D1	**1153**
	E9985		4Flute	30°	Inch	Regular Square	D1/8	D1	**1154**
	E9986		4Flute	30°	Inch	Regular Double Square	D1/8	D1	**1155**
	E9988		3&4Flute	60°	Inch	Regular Square	D1/4	D1	**1156**
	E9992		2Flute	30°	Inch	Regular Ball	R1/16	R1/2	**1157**
	E9990		3~6Flute	30°	Inch	Regular Roughing	D1/4	D1-1/4	**1158**

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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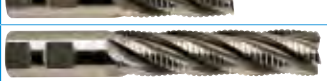
MILLING TOOLS **APPLICATION TABLE**

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
TANK-POWER	E9991		3~6Flute	30°	Inch	Regular Roughing	D1/4	D1-1/4	**1159**
	E9A86		3~6Flute	30°	Inch	Long Roughing	D5/16	D1-1/4	**1160**
	E9A87		3~6Flute	30°	Inch	Long Roughing	D5/16	D1-1/4	**1161**
	E9921		5~6Flute	35°	Inch	Long Roughing with Neck	D1/2	D1-1/4	**1162**
COBALT & HSS	E2030 E1030		2Flute	30°	Inch	Regular Square	D1/8	D2	**1175**
	E2080 E1080		2Flute	30°	Inch	Long Square	D1/4	D2	**1177**
	E2033 E1033		2Flute	30°	Inch	Extended Square	D1/8	D1-1/4	**1178**
	E2050 E1050		2Flute	30°	Inch	Regular Double Square	D1/8	D1	**1179**
	E2110 E1110		2Flute	30°	Inch	Regular Ball	R1/16	R1	**1181**
	E2111 E1111		2Flute	30°	Inch	Extended Ball	R1/16	R1/2	**1182**
	E2112 E1112		2Flute	30°	Inch	Regular Ball Double	R1/16	R1/2	**1183**
	E2031 E1031		4Flute	30°	Inch	Regular Square	D1/8	D1	**1184**
	E2032 E1032		6Flute	30°	Inch	Regular Square	D5/8	D2	**1186**
	E2034 E1034		4Flute	30°	Inch	Long Square	D1/4	D1	**1187**
	E2035 E1035		6Flute	30°	Inch	Long Square	D1-1/8	D2	**1187**
	E2036 E1036		4Flute	30°	Inch	Extra Long Square	D1/4	D1	**1188**
	E2037 E1037		6Flute	30°	Inch	Extra Long Square	D1-1/4	D2	**1188**
	E2051 E1051		4Flute	30°	Inch	Regular Double Square	D1/8	D1	**1189**
	E2031 E1031		4Flute	30°	Inch	Regular Square	D3/4	D1	**1191**
	E2032 E1032		6&8Flute	30°	Inch	Regular Square	D1-1/8	D2	**1191**
	E2020		4Flute	30°	Inch	Regular Ball	R1/16	R1	**1192**
	E2021		4Flute	30°	Inch	Long Ball	R1/8	R1/2	**1193**
	E2069		4Flute	30°	Inch	Regular Ball Double	R1/16	R1/2	**1194**
	E2039 E1039		4Flute	30°	Inch	Regular Square	D1/8	D1-1/2	**1195**
	E2042 E1042		6Flute	30°	Inch	Regular Square	D1/2	D2	**1197**
	E2039 E2042		4~8Flute	30°	Inch	Medium Square	D1	D2	**1198**
	E2040 E1040		4Flute	30°	Inch	Long Square	D1/4	D1-1/2	**1199**
	E2162 E1162		6Flute	30°	Inch	Long Square	D1/2	D2	**1199**

◎ : Excellent ○ : Good

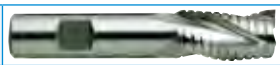
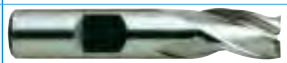
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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MILLING TOOLS **APPLICATION TABLE**

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
COBALT & HSS	E2041 E1041		4Flute	30°	Inch	Extra Long Square	D1/4	D1-1/4	**1200**
	E2175 E1175		6Flute	30°	Inch	Extra Long Square	D1/2	D2	**1200**
	E2053 E1053		4Flute	30°	Inch	Regular Double Square	D1/8	D1	**1201**
	E2100 E1100		6Flute	30°	Inch	Regular with Combination	D2	D2	**1203**
	E2001 E1001		2Flute	30° & 39°	Inch	Miniature Stub Double	D1/32	D3/16	**1204**
	E2003 E1003		2Flute	30° & 39°	Inch	Miniature Regular Double	D1/32	D3/16	**1205**
	E2005 E1005		2Flute	30° & 39°	Inch	Miniature Long Double	D1/16	D3/16	**1206**
	E2002 E1002		4Flute	30° & 39°	Inch	Miniature Stub Double	D1/16	D3/16	**1207**
	E2004 E1004		4Flute	30° & 39°	Inch	Miniature Regular Double	D1/16	D3/16	**1208**
	E2006 E1006		4Flute	30° & 39°	Inch	Miniature Long Double	D1/16	D3/16	**1209**
	E2008 E1008		2Flute	30° & 39°	Inch	Miniature Stub Ball Double	R1/32	R3/32	**1210**
	E2013 E1013		2Flute	30° & 39°	Inch	Miniature Regular Ball Double	R1/64	R3/32	**1211**
	E2015 E1015		2Flute	30° & 39°	Inch	Miniature Long Ball Double	R1/32	R3/32	**1212**
	E1070		2Flute	42°	Inch	Regular & Medium Square	D1/4	D2	**1213**
	E1071		2Flute	42°	Inch	Long Square	D1/4	D2	**1214**
	E1072		2Flute	42°	Inch	Extra Long Square	D1/4	D1-1/2	**1214**
	E2086		4~5Flute	30°	Inch	Stub Roughing	D1/4	D1	**1215**
	E2085		3~5Flute	30°	Inch	Regular Roughing	D1/4	D1	**1216**
	E2079		3~6Flute	30°	Inch	Regular Roughing	D1/4	D2	**1217**
	E2077		4~6Flute	30°	Inch	Long Roughing	D1/2	D2	**1218**
	E2086		3Flute	30°	Inch	Stub Roughing	D1/4	D1	**1219**
	E2170		3~8Flute	30°	Inch	Regular Roughing	D1/4	D2	**1220**
	E2171		5~8Flute	30°	Inch	Medium Roughing	D1	D2	**1221**
	E2172		4~8Flute	30°	Inch	Long Roughing	D1/2	D2	**1222**
	E2241		3Flute	30°	Inch	Stub Roughing	D1/4	D1	**1223**
	E2195		4~6Flute	30°	Inch	Regular Roughing	D1/2	D1-1/2	**1244**
	E2197		4~6Flute	30°	Inch	Long Roughing	D1/2	D1-1/2	**1224**
	E2193 E2125		3~6Flute	30°	Inch	Regular & Long Roughing	R1/8	R3/4	**1225**

◎ : Excellent ○ : Good

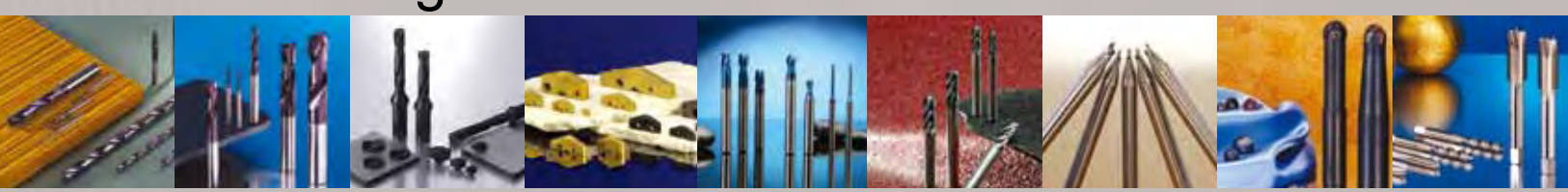
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				
◎	◎	○						○						
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◎	◎	○						○		○				
◎	◎	○						○		○				

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
COBALT & HSS	E2248		4~8Flute	30°	Inch	Regular Roughing&Finishing	D1/4	D2	**1226**
	E2191		3Flute	37°	Inch	Regular Roughing	D1/4	D1-1/2	**1227**
	E2226 E2192		3Flute	37°	Inch	Medium & Long Roughing	D1/2	D1-1/2	**1228**
	E2163 E1163		2Flute	15°	Inch	Keyway	D1/8	D1	**1229**
	E2120 E2121		3&4Flute	60°	Inch	Regular Square	D1/4 D7/8	D3/4 D2	**1230**
	E2160		3Flute	30°	Inch	Short Square	D1/16	D1/4	**1231**
	E2161		3Flute	30°	Inch	Long Square	D1/16	D1/4	**1231**
	E2237 E1237		4Flute	0°	Inch	Corner Rounding	D1/4	D5/8	**1232**
	E2482 E1482		4Flute	30°	Inch	Regular Square	D2.0 (.0787)	D45.0 (1.772)	**1233**
	E2483 E1483		2Flute	30°	Inch	Regular Square	D2.0 (.0787)	D45.0 (1.772)	**1234**

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				
◎	◎	○						○		◎				
◎	◎	○						○		◎				
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◎	◎	○						○		○				
◎	◎	○						○		○				

Global Cutting Tool Leader **YG-1**



YG

Being the best through innovation



CBN (Cubic Boron Nitride) END MILLS

- Cubic Boron Nitride, Machining High Hardened Steels up to HRc70, Mirror Finish

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
ESB94		CBN, 2 FLUTE BALL NOSE	R0.2	R1.5	**560**
ESD02		CBN, 2 FLUTE CORNER RADIUS	D0.5	D2.0	**561**
		RECOMMENDED CUTTING CONDITIONS			**562**

◎ : Excellent ○ : Good

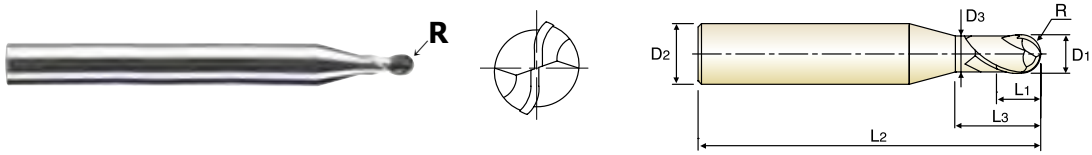
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
				◎	◎									
				◎	◎									

CBN END MILLS

ESB94 SERIES PLAIN SHANK

CBN, 2 FLUTE BALL NOSE

- Higher accuracy, better finishes, longer tool life.
- Special geometry improves tool rigidity at high Speed.
- Tighter radius tolerance (±0.005mm) assures higher accuracy.



CBN | 2 | 30° | R ±0.005 | PLAIN

P.562

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.005)	D1		D2	L1	L3	L2	D3
ESB94004012	R0.2	0.4	.0157	4	0.3	1.2	50	0.37
ESB94005015	R0.25	0.5	.0197	4	0.4	1.5	50	0.46
ESB94006015	R0.3	0.6	.0236	4	0.5	1.5	50	0.56
ESB94008020	R0.4	0.8	.0315	4	0.6	2	50	0.76
ESB94010025	R0.5	1.0	.0394	4	0.6	2.5	50	0.95
ESB94010040	R0.5	1.0	.0394	4	0.6	4	50	0.95
ESB94010060	R0.5	1.0	.0394	4	0.6	6	50	0.95
ESB94012030	R0.6	1.2	.0472	4	0.8	3	50	1.15
ESB94015030	R0.75	1.5	.0591	4	0.95	3	50	1.45
ESB94015040	R0.75	1.5	.0591	4	0.95	4	50	1.45
ESB94015060	R0.75	1.5	.0591	4	0.95	6	50	1.45
ESB94020050	R1.0	2.0	.0787	4	1.2	5	50	1.95
ESB94020060	R1.0	2.0	.0787	4	1.2	6	50	1.95
ESB94030060	R1.5	3.0	.1181	4	1.8	6	50	2.85

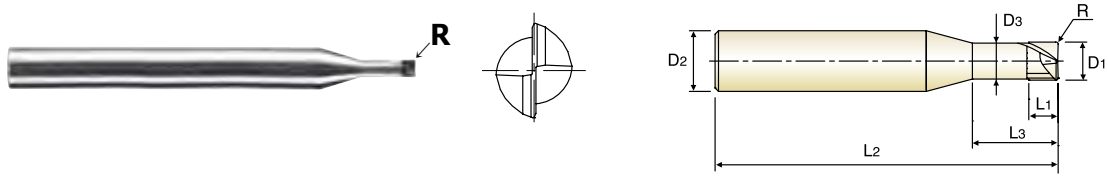
Radius Tolerance(mm)	Shank Dia. Tolerance
±0.005	h5

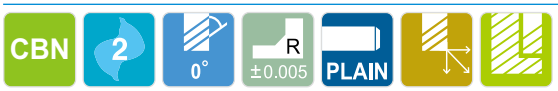
◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
				◎	◎									

CBN, 2 FLUTE CORNER RADIUS

- Higher accuracy, better finishes, longer tool life.
- Special geometry improves tool rigidity at high Speed.
- Tighter radius tolerance (±0.005mm) assures higher accuracy.





P.562

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.005)	D1		D2	L1	L3	L2	D3
ESD02005052	R0.05	0.5	.0197	4	0.3	2	50	0.46
ESD02005053	R0.05	0.5	.0197	4	0.3	3	50	0.46
ESD02010053	R0.05	1.0	.0394	4	0.7	3	50	0.95
ESD02010055	R0.05	1.0	.0394	4	0.7	5	50	0.95
ESD02010103	R0.1	1.0	.0394	4	0.7	3	50	0.95
ESD02010105	R0.1	1.0	.0394	4	0.7	5	50	0.95
ESD02015105	R0.1	1.5	.0591	4	1.0	5	50	1.45
ESD02015108	R0.1	1.5	.0591	4	1.0	8	50	1.45
ESD02015205	R0.2	1.5	.0591	4	1.0	5	50	1.45
ESD02015208	R0.2	1.5	.0591	4	1.0	8	50	1.45
ESD02020106	R0.1	2.0	.0787	4	1.2	6	50	1.95
ESD02020100	R0.1	2.0	.0787	4	1.2	10	50	1.95
ESD02020206	R0.2	2.0	.0787	4	1.2	6	50	1.95
ESD02020200	R0.2	2.0	.0787	4	1.2	10	50	1.95

Corner Radius Tolerance(mm)	Shank Dia. Tolerance
±0.005	h5

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
				◎	◎									

CBN END MILLS

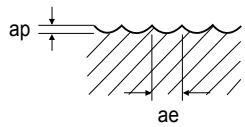
RECOMMENDED CUTTING CONDITIONS

CBN, 2 FLUTE BALL NOSE

ESB94 SERIES

MATERIAL	P		H	
	HARDENED STEELS		HIGH HARDENED STEELS	
HARDNESS	HRc50 ~ HRc60		HRc60 ~ HRc70	
DIAMETER	RPM	FEED	RPM	FEED
R0.2 × 0.4	50,000	47.2	50,000	47.2
R0.25 × 0.5	50,000	59.1	50,000	59.1
R0.3 × 0.6	50,000	78.7	50,000	78.7
R0.4 × 0.8	50,000	78.7	50,000	78.7
R0.5 × 1.0	50,000	118.1	50,000	118.1
R0.6 × 1.2	50,000	118.1	50,000	118.1
R0.75 × 1.5	50,000	118.1	50,000	118.1
R1.0 × 2.0	40,000	126.0	32,000	98.4
R1.5 × 3.0	26,500	82.7	21,500	66.9

ap : R0.2 ~ R0.4 =0.005mm
R0.5 ~ R1.5 =0.01mm
ae : R0.2 ~ R0.4 =0.005mm
R0.5 ~ R1.5 =0.01 mm

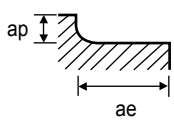


RPM = rev./min.
FEED = inch/min.

CBN, 2 FLUTE CORNER RADIUS

ESD02 SERIES

MATERIAL	P				H			
	HARDENED STEELS				HIGH HARDENED STEELS			
HARDNESS	HRc50 ~ HRc60				HRc60 ~ HRc70			
DIAMETER	RPM	FEED	DEPTH OF CUT ae[mm]	DEPTH OF CUT ap[mm]	RPM	FEED	DEPTH OF CUT ae[mm]	DEPTH OF CUT ap[mm]
0.5	50,000	27.6	0.10	0.01	50,000	21.7	0.06	0.005
1.0	43,000	39.4	0.20	0.01	30,000	27.6	0.10	0.10
1.5	30,000	39.4	0.40	0.02	19,000	27.6	0.20	0.20
2.0	22,000	35.4	0.60	0.03	14,000	31.5	0.30	0.30



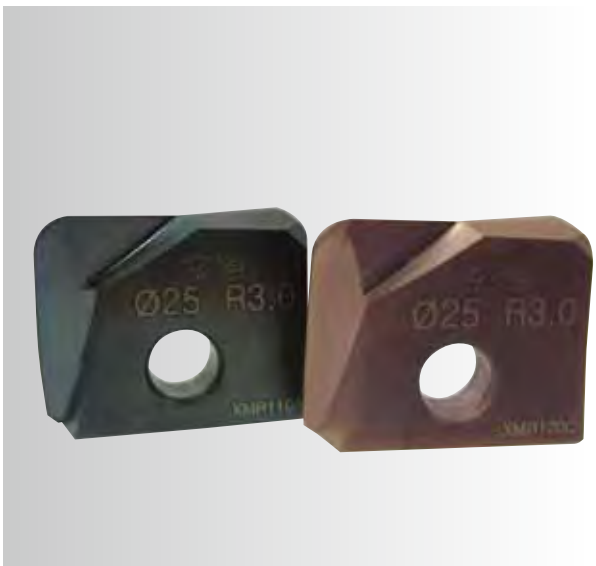
RPM = rev./min.
FEED = inch/min.

CARBIDE INSERT & HOLDER

Being the best through innovation









i-Xmill

- Available for General Steels(~HRc50) Hardened Steels (up to HRc65) and Graphite

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	PAGE
INCH			
XB1A		i-Xmill BALL INSERT FOR GENERAL PURPOSE	**566**
XB2C		i-Xmill BALL INSERT FOR HARDENED STEEL	
XB1D		i-Xmill BALL INSERT FOR GRAPHITE	
ZBT / ZBS		i-Xmill BALL HOLDERS - STEEL	**567**
ZBC		i-Xmill BALL HOLDERS - CARBIDE	**568**
XR1A		i-Xmill CORNER RADIUS INSERTS FOR GENERAL PURPOSE	**569**
XR2A		i-Xmill CORNER RADIUS INSERTS FOR HARDENED STEEL	
XR1D		i-Xmill CORNER RADIUS INSERTS FOR GRAPHITE	
ZRT / ZRS		i-Xmill CORNER RADIUS HOLDERS - STEEL	**570**
METRIC			
XB1N		i-Xmill BALL INSERT FOR GENERAL PURPOSE	**571**
XB2N		i-Xmill BALL INSERT FOR HARDENED STEEL	
XBAD		i-Xmill BALL INSERT FOR GRAPHITE	
ZBT / ZBS		i-Xmill BALL HOLDERS - STEEL	**572**
ZBC		i-Xmill BALL HOLDERS - CARBIDE	**573**
XRAA		i-Xmill CORNER RADIUS INSERTS FOR GENERAL PURPOSE	**574**
XRBA		i-Xmill CORNER RADIUS INSERTS FOR HARDENED STEEL	
XRAD		i-Xmill CORNER RADIUS INSERTS FOR GRAPHITE	
ZRT / ZRS		i-Xmill CORNER RADIUS HOLDERS - STEEL	**576**
		ASSEMBLY RECOMMENDATIONS	**577**
		RECOMMENDED CUTTING CONDITIONS	**578**

◎ : Excellent ○ : Good

P							M	K	N	
Carbon Steels		Alloy Steels		Tool Steels		Hardened Steels	Stainless Steels	Cast Iron	Aluminum	Graphite
~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~	HRc50~	~HRc28	~HRc35	~HRc8	
◎	○	◎	○	◎	○		○	○	○	
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○		○		○					○	◎

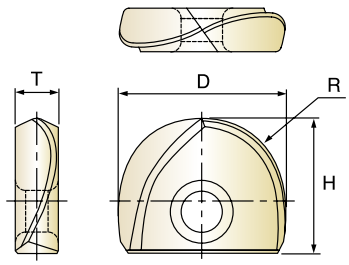
i-Xmill END MILLS

XB1A SERIES
XB2C SERIES
XB1D SERIES

i-Xmill BALL INSERTS

- 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 extremely abrasive resistant Coating for Excellent Performance





cutting conditions : p.578

Unit : Inch

EDP No. For General Material	EDP No. For Hardened Material	EDP No. For Graphite	Radius of Ball Nose R	Mill Diameter D	Height H	Thickness T
XB1A020	**XB2C020**	**XB1D020**	R5/32	**5/16**	5/16	.094
XB1A024	**XB2C024**	**XB1D024**	R3/16	**3/8**	3/8	.106
XB1A032	**XB2C032**	**XB1D032**	R1/4	**1/2**	7/16	.126
XB1A040	**XB2C040**	**XB1D040**	R5/16	**5/8**	1/2	.165
XB1A048	**XB2C048**	**XB1D048**	R3/8	**3/4**	5/8	.205
XB1A100	**XB2C100**	**XB1D100**	R1/2	**1**	3/4	.244
XB1A116	**XB2C116**	**XB1D116**	R5/8	**1-1/4**	31/32	.283

- The ball radius tolerance is ±.0004″ and the set-up accuracy is ±.0008″

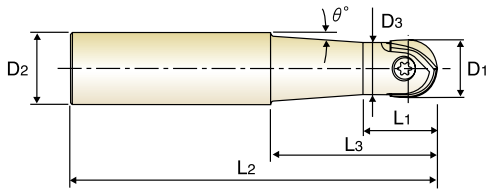
◎ : Excellent ○ : Good

	P							M	K	N		
	Carbon Steels		Alloy Steels		Tool Steels		Hardened Steels	Stainless Steels	Cast Iron	Aluminum	Graphite	
	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~	HRc50~	~HRc28	~HRc35	~HRc8		
XB1A	◎	○	◎	○	◎	○		○	○	○		
XB2C	○	◎	○	◎	○	◎	◎		◎			
XB1D	○		○		○					○	◎	

i-Xmill BALL HOLDERS - STEEL

- Premium alloy steel with excellent strength.
- Precise shank, Tolerance (h6).
- Nickel plated, to prevent corrosion and improve lubricity.





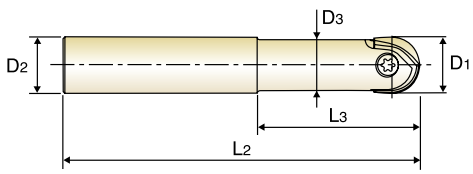
Taper neck Type

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Interference Angle	Length Type	Wrench No.	Screw No.
	D1	D2	L1	L3	L2	D3	θ °			
ZBT1020	5/16	1/2	1/2	1-5/8	3-5/8	9/32	4° 33'	Short	TWF07	TX0807
ZBT2020			1	2-1/2	4-3/8		3° 25'	Regular		
ZBT1024	3/8	1/2	5/8	1-1/2	3-9/16	11/32	3° 49'	Short	TWF08	TX1008
ZBT2024			1-1/4	2-5/16	4-3/8		3° 08'	Regular		
ZBT1032	1/2	5/8	11/16	2-3/16	4-3/8	7/16	2° 49'	Short	TWF10	TX1210
ZBT1040	5/8	3/4	13/16	2-9/16	5	9/16	2° 25'	Short	TWF15	TX1615
ZBT1048	3/4	1	1	3-1/8	6	43/64	3° 53'	Short	● TWB20	TX2020
ZBT1100	1	1-1/4	1-1/4	3-9/16	7	29/32	3° 45'	Short	● TWB25	TX2525
ZBT1116	1-1/4	1-1/4	1-9/16	4-3/8	8	1-1/16	1° 30'	Short	● TWB30	TX3030

● Need to use T Handle : TWH600 (See page 52)





Straight neck Type

Unit :Inch

EDP No.	Mill Diameter	Shank Diameter	Length Below Shank	Overall Length	Neck Diameter	Length Type	Wrench No.	Screw No.
	D1	D2	L3	L2	D3			
ZBS1032	1/2	1/2	1-3/8	3-1/2	7/16	Short	TWF10	TX1210
ZBS2032			2-3/16	4-3/8		Regular		
ZBS1040	5/8	5/8	1-3/8	3-3/4	9/16	Short	TWF15	TX1615
ZBS2040			2-9/16	5		Regular		
ZBS1048	3/4	3/4	1-9/16	4-3/8	43/64	Short	● TWB20	TX2020
ZBS2048			3	6		Regular		
ZBS1100	1	1	1-3/4	5	29/32	Short	● TWB25	TX2525
ZBS2100			3-9/16	6-3/4		Regular		
ZBS1116	1-1/4	1-1/4	2-1/4	5-1/2	1-1/16	Short	● TWB30	TX3030
ZBS2116			4-3/8	7-3/4		Regular		

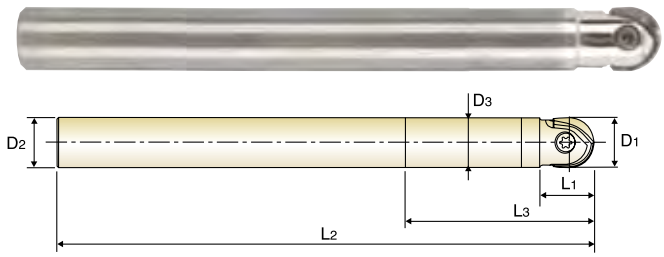
● Need to use T Handle : TWH600 (See page 52)

i-Xmill END MILLS

ZBC SERIES

i-Xmill BALL HOLDERS - CARBIDE

- Equal tool rigidity like solid carbide end mill that makes the stable and high finishing machining with 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 regenerated.



Unit : Inch

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.
ZBCB020	5/16	5/16	1/2	1-9/16	5-1/8	19/64	Long	TWF07	TX0807
ZBCB024	3/8	3/8	5/8	2	5-1/2	23/64	Long	TWF08	TX1008
ZBCB032	1/2	1/2	11/16	2-3/8	5-15/16	31/64	Long	TWF10	TX1210
ZBCB040	5/8	5/8	13/16	3-3/16	7-15/16	39/64	Long	TWF15	TX1615
ZBCD040					9-7/8				
ZBCB048	3/4	3/4	1	3-3/16	7-15/16	47/64	Long	● TWB20	TX2020
ZBCC048				4	9-7/8				
ZBCB100	1	1	1-3/16	4-3/4	9-7/8	63/64	Long	● TWB25	TX2525
ZBCB116	1-1/4	1-1/4	1-9/16	5-15/16	11-7/8	1-15/64	Long	● TWB30	TX3030

● Need to use T Handle : TWH600 (See page 52)

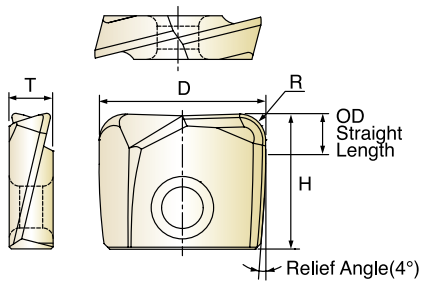
i-Xmill END MILLS

XR1A SERIES
XR2A SERIES
XR1D SERIES

i-Xmill CORNER RADIUS INSERTS

- 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





cutting conditions : p.579

Unit : Inch

EDP No.			Radius of Ball Nose	Mill Diameter	Height	Thickness	Thickness
For General Material	For Hardened Material	For Graphite	R	D	H	T	
XR1A020 01	XR2A020 01	XR1D020 01	R1/64	5/16	5/16	.094	2
XR1A020 02	XR2A020 02	XR1D020 02	R1/32				
XR1A024 01	XR2A024 01	XR1D024 01	R1/64	3/8	3/8	.106	3
XR1A024 02	XR2A024 02	XR1D024 02	R1/32				
XR1A024 04	XR2A024 04	XR1D024 04	R1/16				
XR1A032 01	XR2A032 01	XR1D032 01	R1/64	1/2	7/16	.126	3
XR1A032 02	XR2A032 02	XR1D032 02	R1/32				
XR1A032 04	XR2A032 04	XR1D032 04	R1/16				
XR1A040 01	XR2A040 01	XR1D040 01	R1/64	5/8	1/2	.165	4
XR1A040 02	XR2A040 02	XR1D040 02	R1/32				
XR1A040 04	XR2A040 04	XR1D040 04	R1/16				
XR1A040 08	XR2A040 08	XR1D040 08	R1/8				
XR1A048 01	XR2A048 01	XR1D048 01	R1/64	3/4	5/8	.205	4
XR1A048 02	XR2A048 02	XR1D048 02	R1/32				
XR1A048 04	XR2A048 04	XR1D048 04	R1/16				
XR1A048 08	XR2A048 08	XR1D048 08	R1/8				
XR1A100 01	XR2A100 01	XR1D100 01	R1/64	1	3/4	.244	4
XR1A100 02	XR2A100 02	XR1D100 02	R1/32				
XR1A100 04	XR2A100 04	XR1D100 04	R1/16				
XR1A100 08	XR2A100 08	XR1D100 08	R1/8				
XR1A116 01	XR2A116 01	XR1D116 01	R1/64	1-1/4	29/32	.283	4
XR1A116 02	XR2A116 02	XR1D116 02	R1/32				
XR1A116 04	XR2A116 04	XR1D116 04	R1/16				
XR1A116 08	XR2A116 08	XR1D116 08	R1/8				

- The other corner radius values are available on request.
- The corner radius tolerance is ±.0006″ and the set-up accuracy is ±.0008″

◎ : Excellent ○ : Good

	P							M	K	N		
	Carbon Steels		Alloy Steels		Tool Steels		Hardened Steels	Stainless Steels	Cast Iron	Aluminum	Graphite	
	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~	HRc50~	~HRc28	~HRc35	~HRc8		
XR1A	◎	○	◎	○	◎	○		○	○	○		
XR2A	○	◎	○	◎	○	◎	◎		◎			
XR1D	○		○		○					○	◎	

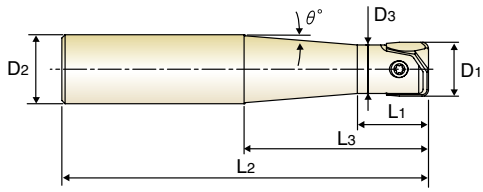
i-Xmill END MILLS

ZRT SERIES
ZRS SERIES

i-Xmill CORNER RADIUS HOLDERS - STEEL

- Premium alloy steel with excellent strength.
- Precise shank, Tolerance (h6).
- Nickel plated, to prevent corrosion and improve lubricity.



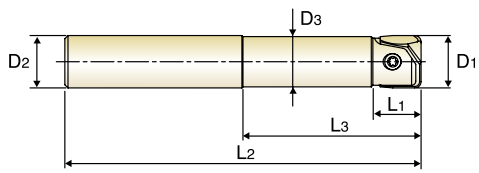


Taper neck Type

Unit : Inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Interference Angle θ °	Length Type	Wrench No.	Screw No.
ZRT1032	5/16	1/2	13/32	7/8	4	17/64	13° 58'	Regular	TWF07	TX0807
ZRT2032				2	5-1/8		4° 12'	Long		
ZRT2410	3/8	1/2	17/32	1	4	5/16	9° 27'	Regular	TWF08	TX1008
ZRT2420				2	5-15/16		3° 6'	Long		
ZRT3220	1/2	5/8	5/8	2-3/8	6-5/16	27/64	3° 19'	Long	TWF10	TX1210





Straight neck Type

Unit :Inch

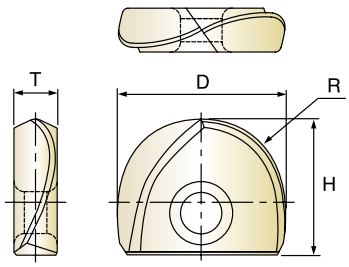
EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Length Type	Wrench No.	Screw No.
ZRS1032	1/2	1/2	17/32	1-3/16	4-3/8	7/16	Regular	TWF10	TX1210
ZRS1040	5/8	5/8	5/8	2	5-1/8	19/32	Regular	TWF15	TX1615
ZRS2040				2-9/16	6-1/2		Intermediate		
ZRS1048	3/4	3/4	23/32	2-3/8	5-1/2	23/32	Regular	● TWB20	TX2020
ZRS2048				3-1/8	7-1/8		Intermediate		
ZRS1100	1	1	29/32	2-3/4	5-15/16	31/32	Regular	● TWB25	TX2525
ZRS2100				3-9/16	8		Intermediate		
ZRS1116	1-1/4	1-1/4	1-1/8	3-1/8	6-5/16	1-7/32	Regular	● TWB30	TX3030
ZRS2116				4	8-11/16		Intermediate		

● Need to use T Handle : TWH600 (See page 52)

i-Xmill BALL INSERTS

- ▶ 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 extremely abrasive resistant Coating for Excellent Performance





cutting conditions : p.578

Unit : mm

EDP No.			Radius of Ball Nose	Mill Diameter	Height	Thickness
For General Material	For Hardened Material	For Graphite	R	D	H	T
XB1N080	XB2N080	XBAD080	R4.0	8.0	8	2.4
XB1N100	XB2N100	XBAD100	R5.0	10.0	9.5	2.7
XB1N120	XB2N120	XBAD120	R6.0	12.0	11	3.2
XB1N160	XB2N160	XBAD160	R8.0	16.0	13	4.2
XB1N200	XB2N200	XBAD200	R10.0	20.0	16	5.2
XB1N250	XB2N250	XBAD250	R12.5	25.0	19.5	6.2
XB1N300	XB2N300	XBAD300	R15.0	30.0	23.5	7.2
XB1N320	XB2N320	XBAD320	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

	P							M	K	N		
	Carbon Steels		Alloy Steels		Tool Steels		Hardened Steels	Stainless Steels	Cast Iron	Aluminum	Graphite	
	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~	HRc50~	~HRc28	~HRc35	~HRc8		
XB1N	◎	○	◎	○	◎	○		○	○	○		
XB2N	○	◎	○	◎	○	◎	◎		◎			
XBAD	○		○		○					○	◎	

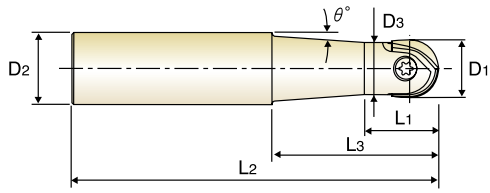
i-Xmill END MILLS

ZBT SERIES
ZBS SERIES

i-Xmill BALL HOLDERS - STEEL

- Premium alloy steel with excellent strength.
- Precise shank, Tolerance (h6).
- Nickel plated, to prevent corrosion and improve lubricity.





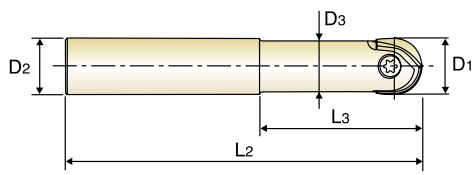
Taper neck Type

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Interference Angle θ °	Length Type	Wrench No.	Screw No.
ZBT0801	8.0	12	12	35	90	7.2	4° 43′	Short	TWF07	TX0807
ZBT0802			25	55	110		3° 37′	Regular		
ZBT1001	10.0	12	15	35	90	9	2° 51′	Short	TWF08	TX1008
ZBT1002			30	55	110		2° 17′	Regular		
ZBT1201	12.0	16	17	55	110	10.5	3° 23′	Short	TWF10	TX1210
ZBT1601	16.0	20	20	65	125	14.5	2° 51′	Short	TWF15	TX1615
ZBT2001	20.0	25	25	75	145	18	3° 26′	Short	● TWB20	TX2020
ZBT2501	25.0	32	30	90	170	22.5	4° 03′	Short	● TWB25	TX2525
ZBT3001	30.0 32.0	32	40	110	195	27	1° 38′	Short	● TWB30	TX3030

● Need to use T Handle : TWH600 (See page 52)





Straight neck Type

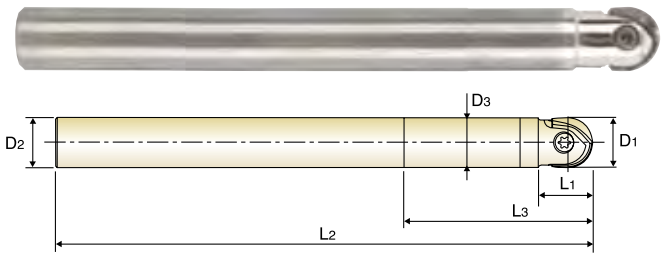
Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Length Type	Wrench No.	Screw No.
ZBS1201	12.0	12	35	90	10.5	Short	TWF10	TX1210
ZBS1202			55	110		Regular		
ZBS1601	16.0	16	35	95	14.5	Short	TWF15	TX1615
ZBS1602			65	125		Regular		
ZBS2001	20.0	20	40	110	18	Short	● TWB20	TX2020
ZBS2002			75	145		Regular		
ZBS2501	25.0	25	45	125	22.5	Short	● TWB25	TX2525
ZBS2502			90	170		Regular		
ZBS3001	30.0	32	55	140	27	Short	● TWB30	TX3030
ZBS3002	32.0		110	195		Regular		

● Need to use T Handle : TWH600 (See page 52)

i-Xmill BALL HOLDERS - CARBIDE

- Equal tool rigidity like solid carbide end mill that makes the stable and high finishing machining with 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 regenerated.



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			
ZBC1080	8.0	8	12	25	130	7.7	Long	TWF07	TX0807
ZBC1100	10.0	10	15	30	140	9.7	Long	TWF08	TX1008
ZBC1120	12.0	12	17	35	150	11.7	Long	TWF10	TX1210
ZBC1160	16.0	16	20	50	200	15.7	Long	TWF15	TX1615
ZBC1200	20.0	20	25	60	200	19.7	Long	● TWB20	TX2020
ZBC1250	25.0	25	30	75	200	24.7	Long	● TWB25	TX2525
ZBC1320	30.0 32.0	32	40	90	250	29.7	Long	● TWB30	TX3030

● Need to use T Handle : TWH600 (See page 52)

i-Xmill END MILLS

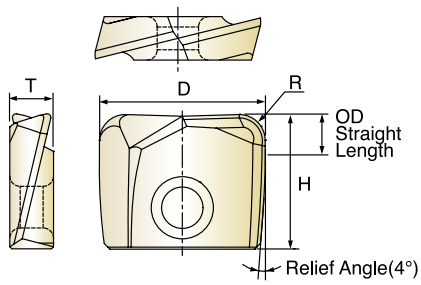
XRAA SERIES
XRBA SERIES
XRAD SERIES

i-Xmill CORNER RADIUS INSERTS

- 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



cutting conditions : p.579



Unit : mm

EDP No. For General Material	EDP No. For Hardened Material	EDP No. For Graphite	Corner Radius R	Mill Diameter D	Height H	Thickness T	OD Straight Length
XRAA080 03	XRBA080 03	XRAD080 03	R0.3	8.0	8	2.4	2
XRAA080 05	XRBA080 05	XRAD080 05	R0.5				
XRAA080 10	XRBA080 10	XRAD080 10	R1.0				
XRAA100 05	XRBA100 05	XRAD100 05	R0.5	10.0	9.5	2.7	3
XRAA100 10	XRBA100 10	XRAD100 10	R1.0				
XRAA100 20	XRBA100 20	XRAD100 20	R2.0				
XRAA120 05	XRBA120 05	XRAD120 05	R0.5	12.0	11	3.2	3
XRAA120 10	XRBA120 10	XRAD120 10	R1.0				
XRAA120 20	XRBA120 20	XRAD120 20	R2.0				
XRAA130 05	XRBA130 05	XRAD130 05	R0.5	13.0	11.2	3.2	3
XRAA130 10	XRBA130 10	XRAD130 10	R1.0				
XRAA130 20	XRBA130 20	XRAD130 20	R2.0				
XRAA160 05	XRBA160 05	XRAD160 05	R0.5	16.0	13	4.2	4
XRAA160 10	XRBA160 10	XRAD160 10	R1.0				
XRAA160 20	XRBA160 20	XRAD160 20	R2.0				
XRAA170 05	XRBA170 05	XRAD170 05	R0.5	17.0	13	4.2	4
XRAA170 10	XRBA170 10	XRAD170 10	R1.0				
XRAA170 20	XRBA170 20	XRAD170 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

▶ NEXT PAGE

◎ : Excellent ○ : Good

	P							M	K	N		
	Carbon Steels		Alloy Steels		Tool Steels		Hardened Steels	Stainless Steels	Cast Iron	Aluminum	Graphite	
	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~	HRc50~	~HRc28	~HRc35	~HRc8		
XRAA	◎	○	◎	○	◎	○		○	○	○		
XRBA	○	◎	○	◎	○	◎	◎		◎			
XRAD	○		○		○					○	◎	

i-Xmill END MILLS

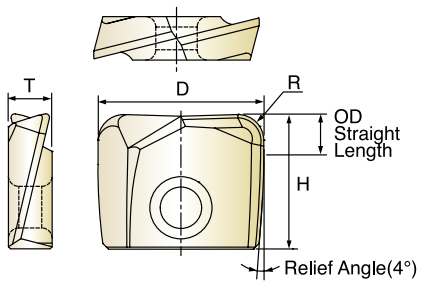
XRAA SERIES XRBA SERIES XRAD SERIES

i-Xmill CORNER RADIUS INSERTS

- 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 Mat erial (HRc40~HRc65)
  - For Graphite



cutting conditions : p.579



Unit : mm

EDP No.			Corner Radius	Mill Diameter	Height	Thickness	OD Straight Length
For General Material	For Hardened Material	For Graphite	R	D	H	T	
XRAA200 05	XRBA200 05	XRAD200 05	R0.5	20.0	16	5.2	4
XRAA200 10	XRBA200 10	XRAD200 10	R1.0				
XRAA200 20	XRBA200 20	XRAD200 20	R2.0				
XRAA210 05	XRBA210 05	XRAD210 05	R0.5	21.0	16	5.2	4
XRAA210 10	XRBA210 10	XRAD210 10	R1.0				
XRAA210 20	XRBA210 20	XRAD210 20	R2.0				
XRAA250 05	XRBA250 05	XRAD250 05	R0.5	25.0	19.5	6.2	4
XRAA250 10	XRBA250 10	XRAD250 10	R1.0				
XRAA250 20	XRBA250 20	XRAD250 20	R2.0				
XRAA260 05	XRBA260 05	XRAD260 05	R0.5	26.0	19.5	6.2	4
XRAA260 10	XRBA260 10	XRAD260 10	R1.0				
XRAA260 20	XRBA260 20	XRAD260 20	R2.0				
XRAA300 05	XRBA300 05	XRAD300 05	R0.5	30.0	23.5	7.2	4
XRAA300 10	XRBA300 10	XRAD300 10	R1.0				
XRAA300 20	XRBA300 20	XRAD300 20	R2.0				
XRAA320 05	XRBA320 05	XRAD320 05	R0.5	32.0	23.5	7.2	4
XRAA320 10	XRBA320 10	XRAD320 10	R1.0				
XRAA320 20	XRBA320 20	XRAD320 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

	P							M	K	N		
	Carbon Steels		Alloy Steels		Tool Steels		Hardened Steels	Stainless Steels	Cast Iron	Aluminum	Graphite	
	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~	HRc50~	~HRc28	~HRc35	~HRc8		
XRAA	◎	○	◎	○	◎	○		○	○	○		
XRBA	○	◎	○	◎	○	◎	◎		◎			
XRAD	○		○		○					○	◎	

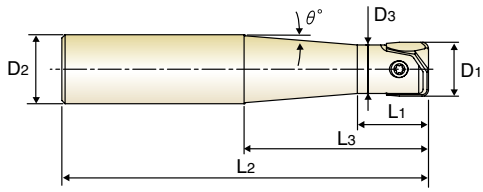
YG i-Xmill END MILLS

ZRT SERIES
ZRS SERIES

i-Xmill CORNER RADIUS HOLDERS - STEEL

- Premium alloy steel with excellent strength.
- Precise shank, Tolerance (h6).
- Nickel plated, to prevent corrosion and improve lubricity.



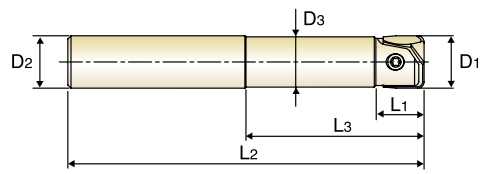


Taper neck Type

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Interference Angle θ °	Length Type	Wrench No.	Screw No.
ZRT8011	8.0	12	10	22	100	6.7	9°	Regular	TWF07	TX0807
ZRT8021				50	130		2° 43'	Long		
ZRT1001	10.0	12	13	25	100	8.6	4° 45'	Regular	TWF08	TX1008
ZRT1002				50	150		1° 32'	Long		
ZRT1202	12.0 13.0	16	15	60	160	10.2	2° 32'	Long	TWF10	TX1210





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.
ZRS1120	12.0 13.0	12	13	30	110	11	Regular	TWF10	TX1210
ZRS1160	16.0	16	15	50	130	15	Regular	TWF15	TX1615
ZRS2160	17.0			65	165		Intermediate		
ZRS1200	20.0	20	18	60	140	19	Regular	● TWB20	TX2020
ZRS2200	21.0			80	180		Intermediate		
ZRS1250	25.0	25	23	70	150	24	Regular	● TWB25	TX2525
ZRS2250	26.0			90	200		Intermediate		
ZRS1300	30.0	32	27	80	160	29	Regular	● TWB30	TX3030
ZRS2300				100	220		Intermediate		
ZRS1320	32.0	32	28	80	160	31	Regular	● TWB30	TX3030
ZRS2320				100	220		Intermediate		

● Need to use T Handle : TWH600 (See page 52)

ASSEMBLY OF *i*-Xmill



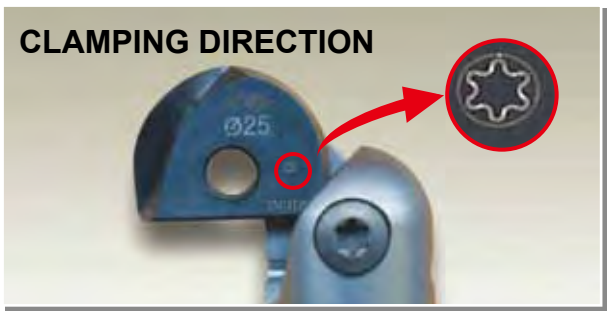

◀ Make sure to clean the insert and insert seat.



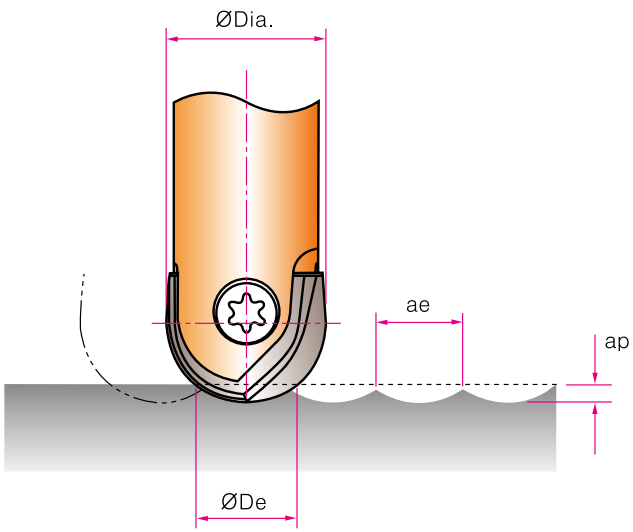

◀ Slide the insert into the slot of the holder.
Tighten the screw using anti-seize compound.

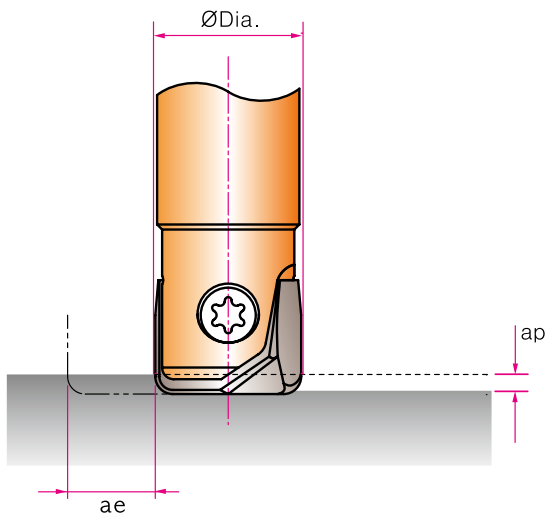
SIZE ØD	CLAMPING TORQUE [in · lbs]
Ø5/16 (Ø8)	9.0
Ø3/8 (Ø10)	13.5
Ø1/2 (Ø12~Ø13)	22.5
Ø5/8 (Ø16~Ø17)	31.5
Ø3/4 (Ø20~Ø21)	44.5
Ø1 (Ø25~Ø26)	53.0
Ø1-1/4 (Ø30~Ø32)	58.0

* When the screw is worn out, please change the new screw.
* Please tighten up the screw with recommended torque. (Please refer to the table)
* Don't press down the insert, when the screw is tightened.



CUTTING CONDITION





RPM = revolution per minute (rev/min)
SFM = surface feet per minute (ft/min)
Dia. = diameter of insert (inch)
IPR = feed rate (inch/rev)
IPM = inch per minute penetration rate
De = effective tool diameter (inch)
ap = axial depth of cut (inch)
ae = radial depth of cut (inch)

$$\text{SFM [ft/min]} = \frac{(\text{RPM}) \cdot (\pi) \cdot (\text{Dia.})}{12}$$

$$\text{IPM [inch/min]} = (\text{RPM}) \cdot (\text{IPR})$$

$$\text{RPM [rev/min]} = \frac{(\text{SFM}) \cdot (12)}{(\pi) \cdot (\text{Dia.})}$$

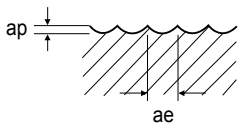
$$\text{De [inch]} = 2\sqrt{(\text{ap}) \cdot (\text{Dia.-ap})}$$

i-Xmill BALL INSERTS

XB1A, XB2C, XB1N, XB2N SERIES

WORK MATERIAL		P				P			
		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		XB1A, XB1N				XB1A, XB1N			
CUTTING CONDITION Roughing~Finishing		RPM [rev/min]	Feed (IPM) [inch/min]	Vc (SFM) [ft/min]	fz [inch/t]	RPM [rev/min]	Feed (IPM) [inch/min]	Vc (SFM) [ft/min]	fz [inch/t]
Ø5/16(Ø8)		6370~12730	100~200	525~1050	.008~.008	4770~11140	80~180	394~919	.008~.008
Ø3/8(Ø10)		5090~11460	80~180	525~1181	.008~.008	3820~9550	60~150	394~984	.008~.008
Ø1/2(Ø12, Ø13)		4240~10080	70~160	525~1247	.008~.008	3180~9280	50~150	394~1148	.008~.008
Ø5/8(Ø16, Ø17)		3180~9550	60~230	525~1575	.010~.012	2390~7560	50~180	394~1247	.010~.012
Ø3/4(Ø20, Ø21)		2550~9230	50~290	525~1903	.010~.016	1910~6680	40~210	394~1378	.010~.016
Ø1(Ø25, Ø26)		2040~7640	40~300	525~1969	.010~.020	1530~6110	30~240	394~1575	.010~.020
Ø1-1/4(Ø30, Ø32)		1700~7430	30~350	525~2297	.010~.024	1270~5840	30~280	394~1804	.010~.024

P				P				N			
DIE TOOL STEELS PRE-HARDENED				HARDENED STEELS				GRAPHITE			
380~480				480~740							
40~50				50~65							
1250~1500				1500~							
XB1A, XB1N XB2C, XB2N				XB2C, XB2N				XB1D, XBAD			
RPM [rev/min]	Feed (IPM) [inch/min]	Vc (SFM) [ft/min]	fz [inch/t]	RPM [rev/min]	Feed (IPM) [inch/min]	Vc (SFM) [ft/min]	fz [inch/t]	RPM [rev/min]	Feed (IPM) [inch/min]	Vc (SFM) [ft/min]	fz [inch/t]
3980~8750	50~140	328~722	.006~.008	3180~7160	30~110	262~591	.004~.008	11940~15920	190~250	984~1312	.008~.008
3180~8280	40~130	328~853	.006~.008	2550~6370	20~100	262~656	.004~.008	9550~12730	150~200	984~1312	.008~.008
2650~7430	30~120	328~919	.006~.008	2120~5840	20~90	262~722	.004~.008	7960~10610	130~170	984~1312	.008~.008
1990~6960	30~160	328~1148	.008~.012	1590~5170	20~120	262~853	.006~.012	5970~7960	120~190	984~1312	.010~.012
1590~6370	30~200	328~1312	.008~.016	1270~5090	20~160	262~1050	.006~.016	4770~7640	110~210	984~1575	.012~.014
1270~5730	20~230	328~1476	.008~.020	1020~4580	10~180	262~1181	.006~.020	3820~7130	110~220	984~1837	.014~.016
1060~5310	20~250	328~1640	.008~.024	850~4240	10~200	262~1312	.006~.024	3180~6900	100~270	984~2133	.016~.020



ae : Roughing - 0.1 x D
Finishing - Under Ø1/2 : 0.01
Under Ø3/4 : 0.012
From Ø3/4 : 0.016

ap : Roughing - Under Ø5/8 : 0.025 x D
From Ø5/8 : 0.05 x D
Finishing - 0.004

▶ Recommend to reduce the feed rate to 70 ~ 85% when you use long (long & intermediate Type Holder)

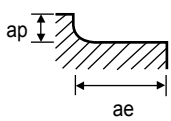
RPM = rev./min.
FEED = inch/min.

i-Xmill CORNER RADIUS INSERTS

XR1A, XR2A, XRAA, XRBA SERIES

WORK MATERIAL		P							
		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		XR1A, XRAA				XR1A, XRAA			
CUTTING CONDITION Roughing~Finishing		RPM [rev/min]	Feed (IPM) [inch/min]	Vc (SFM) [ft/min]	fz [inch/t]	RPM [rev/min]	Feed (IPM) [inch/min]	Vc (SFM) [ft/min]	fz [inch/t]
Ø5/16(Ø8)		6370~11940	100~140	525~984	.008~.006	4770~11140	80~130	394~919	.008~.006
Ø3/8(Ø10)		5090~9550	80~110	525~984	.008~.006	3820~8910	60~110	394~919	.008~.006
Ø1/2(Ø12,Ø13)		4240~7960	70~90	525~984	.008~.006	3180~7430	50~90	394~919	.008~.006
Ø5/8(Ø16,Ø17)		3180~5970	60~90	525~984	.010~.008	2390~5570	50~90	394~919	.010~.008
Ø3/4(Ø20,Ø21)		2550~4770	50~80	525~984	.010~.008	1910~4460	40~70	394~919	.010~.008
Ø1(Ø25,Ø26)		2040~3820	40~60	525~984	.010~.008	1530~3570	30~60	394~919	.010~.008
Ø1-1/4(Ø30,Ø32)		1700~3180	30~50	525~984	.010~.008	1270~2970	30~50	394~919	.010~.008

P								N			
DIE TOOL STEELS PRE-HARDENED				HARDENED STEELS				GRAPHITE			
380~480				480~740							
40~50				50~65							
1250~1500				1500~							
XR1A, XRAA XR2A, XRBA				XR2A, XRBA				XR1D, XRAD			
RPM [rev/min]	Feed (IPM) [inch/min]	Vc (SFM) [ft/min]	fz [inch/t]	RPM [rev/min]	Feed (IPM) [inch/min]	Vc (SFM) [ft/min]	fz [inch/t]	RPM [rev/min]	Feed (IPM) [inch/min]	Vc (SFM) [ft/min]	fz [inch/t]
3980~11140	40~52	328~919	.005~.002	3180~7160	25~34	262~722	.004~.002	11940~15920	190~250	984~1312	.008~.008
3180~8910	30~42	328~919	.005~.002	2550~6370	20~28	262~722	.004~.002	9550~12730	150~200	984~1312	.008~.008
2650~7430	25~35	328~919	.005~.002	2120~5840	18~24	262~722	.004~.002	7960~10610	130~170	984~1312	.008~.008
1990~5570	24~34	328~919	.006~.003	1590~5170	18~22	262~722	.006~.002	5970~7960	90~130	984~1312	.008~.008
1590~4460	20~26	328~919	.006~.003	1270~5090	15~18	262~722	.006~.002	4770~6370	90~130	984~1312	.010~.010
1270~3570	15~20	328~919	.006~.003	1020~4580	12~14	262~722	.006~.002	3820~5090	80~100	984~1312	.010~.010
1060~2970	14~18	328~919	.006~.003	850~4240	10~12	262~722	.006~.002	3180~4240	60~80	984~1312	.010~.010

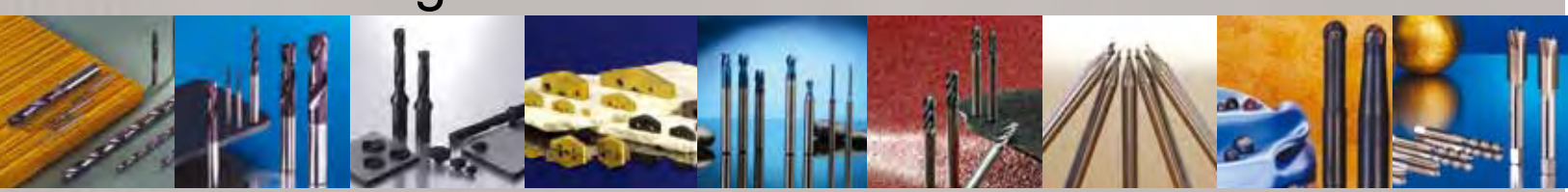


ae : Roughing - 0.1 x D
Finishing - 0.008

ap : Roughing - Under Ø5/8 : 0.025 x D
From Ø5/8 : 0.05 x D
Finishing - Under Ø5/8 : 0.004
From Ø5/8 : 0.008

▶ Recommend to reduce the feed rate to 70 ~ 85% when you use long (long & intermediate Type Holder)

Global Cutting Tool Leader **YG-1**



CARBIDE MODULAR HEAD & HOLDER

YG

Being the best through innovation



i-Smart
MODULAR TYPE END MILLS

- Exchangeable Modular Head for Semi-finishing and finishing on Pre-Hardened Steels up to HRc55

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
XGMF15		CARBIDE MODULAR HEAD, 2 FLUTE BALL NOSE	R3/16	R5/8	584
XGMF17		CARBIDE MODULAR HEAD, 4 FLUTE BALL NOSE	R3/16	R5/8	585
XGMF20		CARBIDE MODULAR HEAD, 4 FLUTE MULTIPLE HELIX CORNER RADIUS	D3/8	D1-1/4	586
XGMF25		CARBIDE MODULAR HEAD, 4 FLUTE MULTIPLE HELIX	D3/8	D1-1/4	587
XGMF29		CARBIDE MODULAR HEAD, 6 FLUTE 45° HELIX	D3/8	D1-1/4	588
ZMC		CARBIDE HOLDER, STRAIGHT NECK TYPE			589
ZMS		STEEL HOLDER, STRAIGHT NECK TYPE			590
ZMT		STEEL HOLDER, TAPER NECK TYPE			591
		RECOMMENDED CUTTING CONDITIONS			592

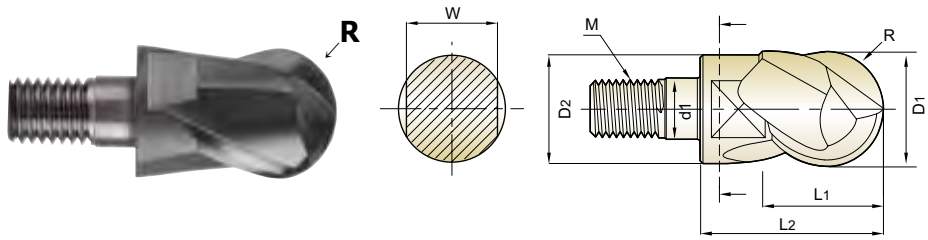
◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							
○	◎	◎	◎	○			○							
◎	◎	◎	◎	○			○							
◎	◎	◎	◎	○		○	○							
◎	◎	◎	◎	○			○							

i-Smart END MILLS

XGMF15 SERIES

CARBIDE MODULAR HEAD, 2 FLUTE BALL NOSE



MG | 2 | 30° | R ±.0004 | P.592

Unit: Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Neck Diameter	Length of Cut	Length Below Shank	Coupling Diameter	Wrench Width	Thread	Wrench
	R	D1	D2	L1	L2	d1	W	M	
XGMF15024	R3/16	**3/8**	.354	.394	.689	.256	.315	M6	SPIS0810
XGMF15032	R1/4	**1/2**	.461	.500	.835	.256	.394	M6	SPIS0810
XGMF15040	R5/16	**5/8**	.591	.630	1.004	.335	.512	M8	SPIS1300
XGMF15048	R3/8	**3/4**	.711	.750	1.144	.413	.669	M10	SPIS1700
XGMF15100	R1/2	**1**	.961	1.000	1.472	.492	.866	M12	SPIS2200
XGMF15116	R5/8	**1-1/4**	1.220	1.260	1.772	.669	1.063	M16	SPIS2700

Radius Tolerance(Inch)	Mill Dia. Tolerance(Inch)
±.0004	0~−.0008

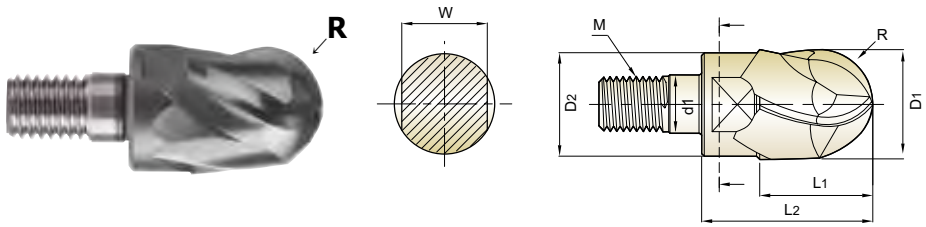
◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

i-Smart END MILLS

XGMF17 SERIES

CARBIDE MODULAR HEAD, 4 FLUTE BALL NOSE



MG | 4 | 30° | R ±.0004 | P.592

Unit: Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Neck Diameter	Length of Cut	Length Below Shank	Coupling Diameter	Wrench Width	Thread	Wrench
	R	D_1	D_2	L_1	L_2	d_1	W	M	
XGMF17024	R3/16	**3/8**	.354	.394	.689	.256	M6	.315	SPIS0810
XGMF17032	R1/4	**1/2**	.461	.500	.835	.256	M6	.394	SPIS0810
XGMF17040	R5/16	**5/8**	.591	.630	1.004	.335	M8	.512	SPIS1300
XGMF17048	R3/8	**3/4**	.711	.750	1.144	.413	M10	.669	SPIS1700
XGMF17100	R1/2	**1**	.961	1.000	1.472	.492	M12	.866	SPIS2200
XGMF17116	R5/8	**1-1/4**	1.220	1.260	1.772	.669	M16	1.063	SPIS2700

Radius Tolerance(Inch)	Mill Dia. Tolerance(Inch)
±.0004	0~−.0008

◎ : Excellent ○ : Good

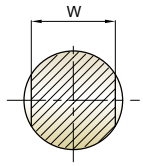
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

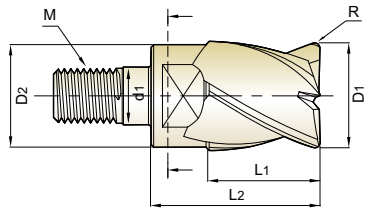
i-Smart END MILLS

XGMF20 SERIES

CARBIDE MODULAR HEAD, 4 FLUTE MULTIPLE HELIX CORNER RADIUS







MG | 4 | M-Helix | R ±.0008 | P.593

Unit: Inch

EDP No.	Corner Radius	Mill Diameter	Neck Diameter	Length of Cut	Length Below Shank	Coupling Diameter	Wrench Width	Thread	Wrench
	R	D_1	D_2	L_1	L_2	d_1	W	M	
XGMF20024 012	R.012	3/8	.354	.394	.689	.256	.315	M6	SPIS0810
XGMF20024 020	R.020	3/8	.354	.394	.689	.256	.315	M6	SPIS0810
XGMF20024 030	R.030	3/8	.354	.394	.689	.256	.315	M6	SPIS0810
XGMF20024 040	R.040	3/8	.354	.394	.689	.256	.315	M6	SPIS0810
XGMF20024 050	R.050	3/8	.354	.394	.689	.256	.315	M6	SPIS0810
XGMF20024 060	R.060	3/8	.354	.394	.689	.256	.315	M6	SPIS0810
XGMF20024 080	R.080	3/8	.354	.394	.689	.256	.315	M6	SPIS0810
XGMF20032 020	R.020	1/2	.461	.500	.835	.256	.394	M6	SPIS0810
XGMF20032 030	R.030	1/2	.461	.500	.835	.256	.394	M6	SPIS0810
XGMF20032 040	R.040	1/2	.461	.500	.835	.256	.394	M6	SPIS0810
XGMF20032 060	R.060	1/2	.461	.500	.835	.256	.394	M6	SPIS0810
XGMF20032 080	R.080	1/2	.461	.500	.835	.256	.394	M6	SPIS0810
XGMF20040 020	R.020	5/8	.591	.630	1.004	.335	.512	M8	SPIS1300
XGMF20040 030	R.030	5/8	.591	.630	1.004	.335	.512	M8	SPIS1300
XGMF20040 040	R.040	5/8	.591	.630	1.004	.335	.512	M8	SPIS1300
XGMF20040 060	R.060	5/8	.591	.630	1.004	.335	.512	M8	SPIS1300
XGMF20040 080	R.080	5/8	.591	.630	1.004	.335	.512	M8	SPIS1300
XGMF20048 030	R.030	3/4	.711	.750	1.144	.413	.669	M10	SPIS1700
XGMF20048 040	R.040	3/4	.711	.750	1.144	.413	.669	M10	SPIS1700
XGMF20048 080	R.080	3/4	.711	.750	1.144	.413	.669	M10	SPIS1700
XGMF20100 030	R.030	1	.961	1.000	1.472	.492	.866	M12	SPIS2200
XGMF20100 040	R.040	1	.961	1.000	1.472	.492	.866	M12	SPIS2200
XGMF20100 080	R.080	1	.961	1.000	1.472	.492	.866	M12	SPIS2200
XGMF20116 030	R.030	1-1/4	1.220	1.260	1.772	.669	1.063	M16	SPIS2700
XGMF20116 040	R.040	1-1/4	1.220	1.260	1.772	.669	1.063	M16	SPIS2700
XGMF20116 080	R.080	1-1/4	1.220	1.260	1.772	.669	1.063	M16	SPIS2700

Corner Radius Tolerance(Inch)	Mill Dia. Tolerance(Inch)
±.0008	0~−.0012

◎ : Excellent ○ : Good

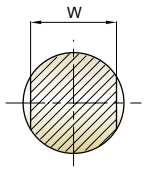
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○				○							

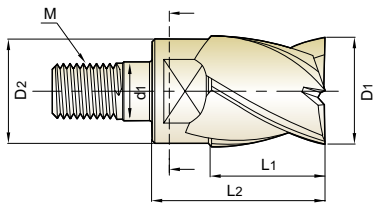
i-Smart END MILLS

XGMF25 SERIES

CARBIDE MODULAR HEAD, 4 FLUTE MULTIPLE HELIX







MG 4 M-Helix P.593

Unit: Inch

EDP No.	Mill Diameter	Neck Diameter	Length of Cut	Length Below Shank	Coupling Diameter	Wrench Width	Thread	Wrench
	D_1	D_2	L_1	L_2	d_1	W	M	
XGMF25024	3/8	.354	.394	.689	.256	M6	.315	SPIS0810
XGMF25032	1/2	.461	.500	.835	.256	M6	.394	SPIS0810
XGMF25040	5/8	.591	.630	1.004	.335	M8	.512	SPIS1300
XGMF25048	3/4	.711	.750	1.144	.413	M10	.669	SPIS1700
XGMF25100	1	.961	1.000	1.472	.492	M12	.866	SPIS2200
XGMF25116	1-1/4	1.220	1.260	1.772	.669	M16	1.063	SPIS2700

Mill Dia. Tolerance(Inch)
0~−.0012

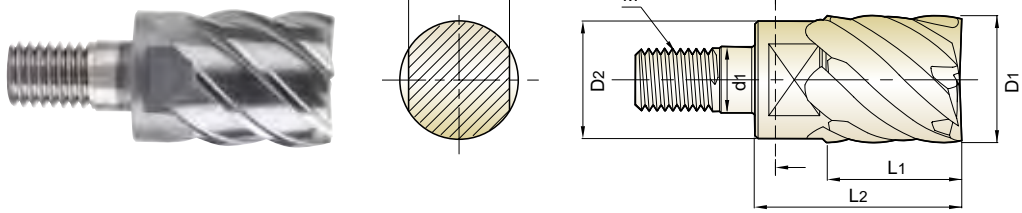
◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

i-Smart END MILLS

XGMF29 SERIES

CARBIDE MODULAR HEAD, 6 FLUTE 45º HELIX



MG 6 45° P.594

Unit: Inch

EDP No.	Mill Diameter	Neck Diameter	Length of Cut	Length Below Shank	Coupling Diameter	Wrench Width	Thread	Wrench
	D1	D2	L1	L2	d1	W	M	
XGMF29024	3/8	.354	.394	.689	.256	.315	M6	SPIS0810
XGMF29032	1/2	.461	.500	.835	.256	.394	M6	SPIS0810
XGMF29040	5/8	.591	.630	1.004	.335	.512	M8	SPIS1300
XGMF29048	3/4	.711	.750	1.144	.413	.669	M10	SPIS1700
XGMF29100	1	.961	1.000	1.472	.492	.866	M12	SPIS2200
XGMF29116	1-1/4	1.220	1.260	1.772	.669	1.063	M16	SPIS2700

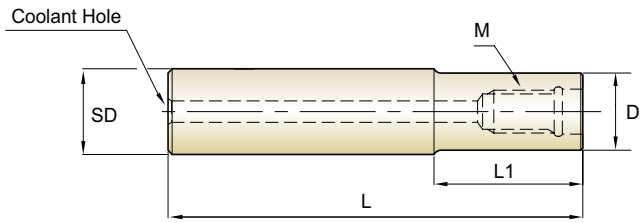
Mill Dia. Tolerance(Inch)
0~−.0012

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

CARBIDE HOLDER, STRAIGHT NECK TYPE





Unit: Inch

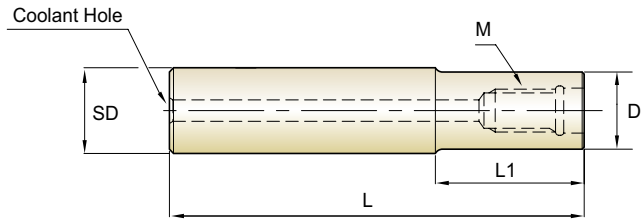
EDP No.	Mill Diameter	Shank Diameter	Overall Length	Neck Length	Neck Diameter	Thread Size	Wrench No.	Coolant Hole
		SD	L	L_1	D	M		
ZMC024A024	3/8	3/8	2-3/4	25/32	23/64	M6	SPIS0810	5/64
ZMC024B024			3-15/16	1-37/64				
ZMC024C024			5-1/8	2-3/4				
ZMC032A032	1/2	1/2	3-1/8	25/32	29/64	M6	SPIS0810	5/64
ZMC032B032			3-15/16	1-37/64				
ZMC032C032			5-1/8	2-3/4				
ZMC040A040	5/8	5/8	3-15/16	1-37/64	19/32	M8	SPIS1300	1/8
ZMC040B040			5-7/8	3-5/32				
ZMC040C040			7-7/8	4-23/32				
ZMC048A048	3/4	3/4	3-15/16	1-37/64	45/64	M10	SPIS1700	5/32
ZMC048B048			5-7/8	3-5/32				
ZMC048C048			7-7/8	4-23/32				
ZMC048D048			9-13/16	6-19/64				
ZMC100A100	1	1	5-7/8	2-3/4	61/64	M12	SPIS2200	13/64
ZMC100B100			7-7/8	3-15/16				
ZMC100C100			9-13/16	5-29/32				
ZMC100D100			11-13/16	7-7/8				
ZMC116A116	1-1/4	1-1/4	5-7/8	2-3/4	1-9/64	M16	SPIS2700	15/64
ZMC116B116			7-7/8	4-23/32				
ZMC116C116			9-13/16	5-29/32				
ZMC116D116			11-13/16	7-7/8				
ZMC116E116			13-3/4	9-27/32				

i-Smart END MILLS

ZMS SERIES

STEEL HOLDER, STRAIGHT NECK TYPE

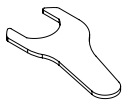
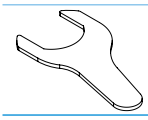




Unit: Inch

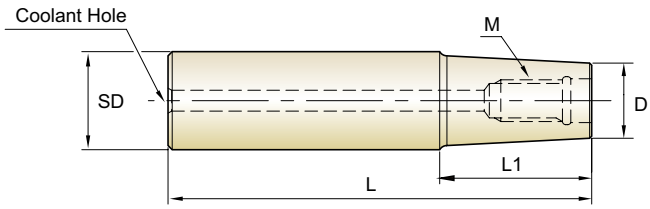
EDP No.	Mill Diameter	Shank Diameter	Overall Length	Neck Length	Neck Diameter	Thread Size	Coolant Hole
		SD	L	L_1	D	M	
ZMS024A024	3/8	3/8	2-3/4	25/32	23/64	M6	1/8
ZMS032A032	1/2	1/2	3-35/64	1-3/16	29/64	M6	1/8
ZMS040A040	5/8	5/8	3-15/16	1-3/16	19/32	M8	5/32
ZMS048A048	3/4	3/4	3-15/16	1-3/16	45/64	M10	13/64
ZMS100A100	1	1	4-17/32	1-37/64	61/64	M12	13/64
ZMS116A116	1-1/4	1-1/4	4-59/64	1-37/64	1-9/64	M16	15/64

Wrench

Model	Wrench No.	Wrench Width	Mill Diameter	Clamping Torque [in•lbs]
	SPIS0810	.315	3/8	57.6
		.394	1/2	57.6
	SPIS1300	.335	5/8	88.6
	SPIS1700	.413	3/4	106.3
	SPIS2200	.492	1	132.9
	SPIS2700	.669	1-1/4	177.1

STEEL HOLDER, TAPER NECK TYPE

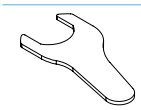
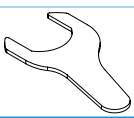




Unit: Inch

EDP No.	Mill Diameter	Shank Diameter	Overall Length	Neck Length	Neck Diameter	Thread Size	Coolant Hole
		SD	L	L_1	D	M	
ZMT024A032	3/8	1/2	3-15/16	1-31/32	23/64	M6	1/8
ZMT032A040	1/2	5/8	5-1/8	2-3/4	29/64	M6	1/8
ZMT040A048	5/8	3/4	5-29/32	3-35/64	19/32	M8	5/32
ZMT048A100	3/4	1	6-11/16	3-15/16	45/64	M10	13/64
ZMT100A116	1	1-1/4	7-14/16	4-21/64	61/64	M12	13/64
ZMT116A116	1-1/4	1-1/4	7-14/16	4-21/64	1-9/64	M16	15/64

Wrench

Model	Wrench No.	Wrench Width	Mill Diameter	Clamping Torque [in•lbs]
	SPIS0810	.315	3/8	57.6
		.394	1/2	57.6
	SPIS1300	.335	5/8	88.6
	SPIS1700	.413	3/4	106.3
	SPIS2200	.492	1	132.9
	SPIS2700	.669	1-1/4	177.1

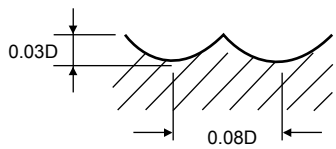
i-Smart END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE MODULAR HEAD, 2 FLUTE BALL NOSE

XGMF15 SERIES

MATERIAL	P											
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS	~ HRc35				HRc35~ HRc45				HRc45~ HRc55			
STRENGTH	~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²			
DIAMETER	RPM	Feed (IPM)	Vc (SFM)	fz	RPM	Feed (IPM)	Vc (SFM)	fz	RPM	Feed (IPM)	Vc (SFM)	fz
R3/16 ×3/8	5860	91.7	575	.008	5610	77.0	551	.007	4720	59.5	463	.006
R1/4 ×1/2	4200	65.8	550	.008	4050	55.7	530	.007	3390	42.3	444	.006
R5/16 ×5/8	3370	63.2	551	.009	3240	52.4	530	.008	2720	40.6	445	.007
R3/8 ×3/4	2800	58.3	550	.010	2710	48.4	532	.009	2270	37.2	446	.008
R1/2 ×1	2100	46.5	550	.011	2020	42.5	529	.011	1700	32.5	445	.010
R1-1/8×1-1/4	1680	38.0	550	.011	1620	36.5	530	.011	1360	28.5	445	.010

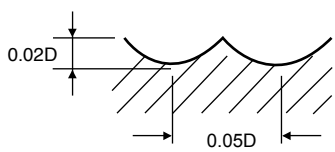


RPM = rev./min. FEED = inch/min.
Vc = ft/min. fz = inch/tooth

CARBIDE MODULAR HEAD, 4 FLUTE BALL NOSE

XGMF17 SERIES

MATERIAL	P											
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS	~ HRc35				HRc35~ HRc45				HRc45~ HRc55			
STRENGTH	~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²			
DIAMETER	RPM	Feed (IPM)	Vc (SFM)	fz	RPM	Feed (IPM)	Vc (SFM)	fz	RPM	Feed (IPM)	Vc (SFM)	fz
R3/16 ×3/8	9600	189.8	942	.005	7720	142.5	758	.005	6990	118.7	686	.004
R1/4 ×1/2	7200	158.5	942	.006	5790	118.7	758	.005	5230	89.4	685	.004
R5/16 ×5/8	5760	138.2	942	.006	4630	92.6	758	.005	4180	66.9	684	.004
R3/8 ×3/4	4800	134.4	942	.007	3860	92.6	758	.006	3480	69.6	683	.005
R1/2 ×1	3600	115.2	942	.008	2890	69.4	757	.006	2610	52.2	683	.005
R1-1/8×1-1/4	2880	103.7	942	.009	2310	64.7	756	.007	2090	50.2	684	.006

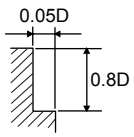


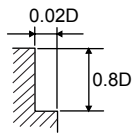
RPM = rev./min. FEED = inch/min.
Vc = ft/min. fz = inch/tooth

CARBIDE MODULAR HEAD, 4 FLUTE MULTIPLE HELIX CORNER RADIUS

XGMF20 SERIES

MATERIAL	P											
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS	~ HRc35				HRc35~ HRc45				HRc45~ HRc55			
STRENGTH	~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²			
RPM	RPM	Feed (IPM)	Vc (SFM)	fz	RPM	Feed (IPM)	Vc (SFM)	fz	RPM	Feed (IPM)	Vc (SFM)	fz
3/8	5300	19.1	520	.001	3440	15	338	.001	2120	7.1	208	.001
1/2	3900	13.4	511	.001	2630	11.8	344	.001	1590	5.1	208	.001
5/8	3100	11.0	507	.001	2120	9.1	347	.001	1290	4.5	211	.001
3/4	2600	9.5	511	.001	1720	7.5	338	.001	1050	3.7	206	.001
1	1950	11.7	511	.002	1290	7.7	338	.002	780	4.7	204	.002
1-1/4	1560	9.4	511	.002	1030	6.2	337	.002	620	3.7	203	.002





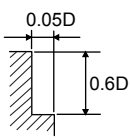
* 1.5xD Axial cutting depth should be for DIA over 5/8inch

RPM = rev./min. FEED = inch/min.
Vc = ft/min. fz = inch/tooth

CARBIDE MODULAR HEAD, 4 FLUTE MULTIPLE HELIX

XGMF25 SERIES

MATERIAL	P												M			
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS				STAINLESS STEELS			
HARDNESS	~ HRc35				HRc35~ HRc45				HRc45~ HRc55							
STRENGTH	~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²							
DIAMETER	RPM	Feed (IPM)	Vc (SFM)	fz	RPM	Feed (IPM)	Vc (SFM)	fz	RPM	Feed (IPM)	Vc (SFM)	fz	RPM	Feed (IPM)	Vc (SFM)	fz
3/8	4280	26.5	420	.002	2620	13	257	.001	1780	3.9	175	.001	2200	13	216	.001
1/2	3240	20.7	424	.002	1980	9.9	259	.001	1370	3.2	179	.001	1610	9.5	211	.001
5/8	2770	17.6	453	.002	1710	8.5	280	.001	1140	2.5	187	.001	1390	8.3	227	.001
3/4	2200	13.9	432	.002	1400	7	275	.001	890	1.8	175	.001	1100	6.4	216	.001
1	1650	16.5	432	.003	1050	6.3	275	.002	680	1.6	178	.001	820	4.9	215	.002
1-1/4	1320	13.2	432	.003	835	5.0	273	.002	530	1.5	173	.001	655	3.9	214	.002



RPM = rev./min. FEED = inch/min.
Vc = ft/min. fz = inch/tooth

i-Smart END MILLS

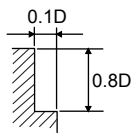
RECOMMENDED CUTTING CONDITIONS

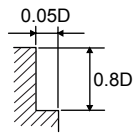
CARBIDE MODULAR HEAD, 6 FLUTE 45º HELIX

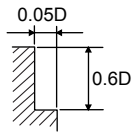
XGMF29 SERIES

NORMAL SPEED

MATERIAL	P											
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS	~ HRc35				HRc35~ HRc45				HRc45~ HRc55			
STRENGTH	~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²			
DIAMETER	RPM	Feed (IPM)	Vc (SFM)	fz	RPM	Feed (IPM)	Vc (SFM)	fz	RPM	Feed (IPM)	Vc (SFM)	fz
3/8	3705	86.8	364	.004	2560	59.5	251	.004	1105	9.1	108	.001
1/2	2780	58.5	364	.004	1950	40.7	255	.003	840	6.3	110	.001
5/8	2225	44.7	364	.003	1565	31.2	256	.003	670	4.6	110	.001
3/4	1850	37.2	363	.003	1280	25.4	251	.003	545	4.1	107	.001
1	1390	33.4	364	.004	960	23.0	251	.004	420	3.8	110	.002
1-1/4	1110	26.6	363	.004	770	18.5	252	.004	330	3.0	108	.002



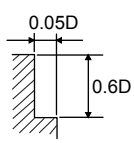


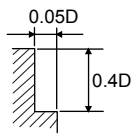


RPM = rev./min.
FEED = inch/min.
Vc = ft/min.
fz = inch/tooth

HIGH SPEED

MATERIAL	P							
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				HARDENED STEELS			
HARDNESS	~ HRc50				HRc50~ HRc60			
STRENGTH	1750N/mm²				1750 ~ 2080N/mm²			
DIAMETER	RPM	Feed (IPM)	Vc (SFM)	fz	RPM	Feed (IPM)	Vc (SFM)	fz
3/8	11005	260.0	1080	.004	5555	132.3	545	.004
1/2	8330	175.4	1090	.004	4180	87.7	547	.003
5/8	6670	133.9	1091	.003	3340	67.0	547	.003
3/4	5555	112.4	1091	.003	2785	54.2	547	.003
1	4165	100.0	1090	.004	2090	50.2	547	.004
1-1/4	3330	79.9	1090	.004	1670	40.1	547	.004





RPM = rev./min.
FEED = inch/min.
Vc = ft/min.
fz = inch/tooth

CARBIDE

YG

Being the best through innovation



X5070 END MILLS

- High Hardened Steels HRc45 to HRc70, High Speed Machining, Dry Cutting

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
INCH					
G826	High Feed End Mill 	CARBIDE, 4FLUTE STUB LENGTH CORNER RADIUS HIGH FEED ◆	D1/8	D1/2	**598**
G8A43		CARBIDE, 2 FLUTE STUB LENGTH BALL NOSE with EXTENDED NECK ◆	R1/64	R1/4	**599**
G850		CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS with EXTENDED NECK ◆	D1/16	D3/4	**600**
G851		CARBIDE, 6&8 FLUTE 45° HELIX CORNER RADIUS ◆	D1/4	D1	**601**
METRIC					◆ U.S.A Stock
G859	High Feed End Mill 	CARBIDE, 4FLUTE STUB LENGTH CORNER RADIUS HIGH FEED ◇	D2.0	D16.0	**602**
G854	High Feed End Mill 	CARBIDE, 4FLUTE STUB LENGTH CORNER RADIUS HIGH FEED ◇	D2.0	D16.0	**603**
G8A46		CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING ◇	R0.05	R2.0	**604**
G8A54		CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING ◇	R0.25	R1.0	**608**
G8A28		CARBIDE, 2 FLUTE BALL NOSE ◇	R0.05	R6.0	**609**
G8A38		CARBIDE, 2 FLUTE STUB LENGTH BALL NOSE with EXTENDED NECK ◇	R0.5	R12.5	**610**
G8A53		CARBIDE, 2 FLUTE MINIATURE BALL NOSE ◇	R0.2	R1.0	**611**
G8A59		CARBIDE, 3 FLUTE BALL NOSE ◇	R1.5	R10.0	**612**
G8A36		CARBIDE, 2 FLUTE STUB LENGTH CORNER RADIUS with EXTENDED NECK ◇	D0.3	D20.0	**613**
G8A50		CARBIDE, 2 FLUTE MINIATURE CORNER RADIUS ◇	D0.3	D2.0	**615**
G8A47		CARBIDE, 4 FLUTE CORNER RADIUS with EXTENDED NECK ◇	D3.0	D12.0	**616**
G8A37		CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS with EXTENDED NECK ◇	D1.0	D20.0	**617**
G8A39		CARBIDE, 6 FLUTE 45° HELIX CORNER RADIUS with EXTENDED NECK ◇	D6.0	D20.0	**618**
		RECOMMENDED CUTTING CONDITIONS			**619**

◇ Call for Availability

◎ : Excellent ○ : Good

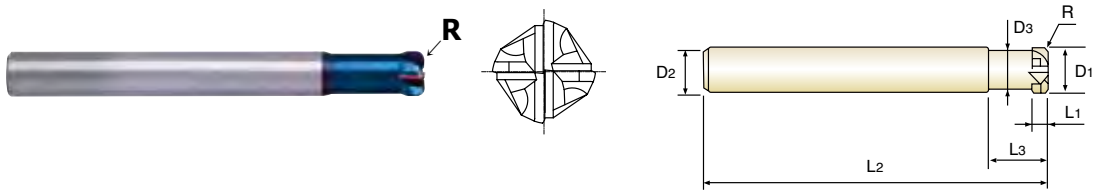
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									
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		○	○	◎	◎									

X5070 END MILLS

G826 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS HIGH FEED

- 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.



NG | 4 | BLUE | PLAIN | R ±.0002 | P.619

High Feed End Mill

◆ U.S.A Stock

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R	D1	D2	L1	L3	L2	D3
G826082	R1/32	1/8	1/4	.050	3/8	2-1/4	.110
G826124	R1/16	3/16	1/4	.075	3/8	2-1/4	.180
G826164	R1/16	1/4	1/4	.100	1/2	2-1/2	.220
G826206	R3/32	5/16	5/16	.130	5/8	2-1/2	.280
G826246	R3/32	3/8	3/8	.150	3/4	2-3/4	.330
G826328	R1/8	1/2	1/2	.200	1	3-1/4	.460

The original bright blue color may discolor during use, however, the performance will not be negatively affected

Mill Dia. Tolerance (inch)	Corner Radius Tolerance (inch)	Shank Dia. Tolerance
0~−.0008	±.0002	h6

◎ : Excellent ○ : Good

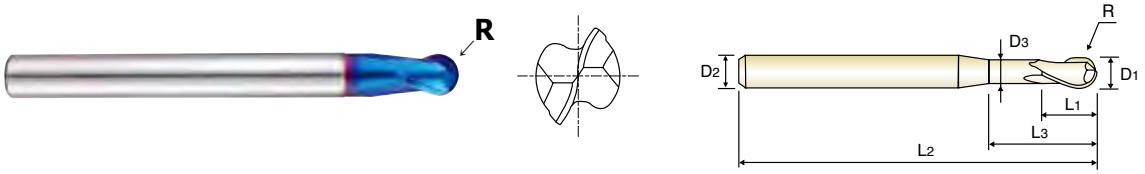
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

G8A43 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE STUB CUT LENGTH BALL NOSE with EXTENDED NECK

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting due to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Designed for high precision milling operation.
- Higher wear-resistance.



NG | 2 | BLUE | 30° | R ±.0002 | R ±.0004 | PLAIN

R1/64~R1/8 R5/32~R1/4

P.620

◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R	D1	D2	L1	L3	L2	D3
G8A43002	R1/64	1/32	1/4	1/32	1/16	2	.029
G8A43004	R1/32	1/16	1/4	1/16	1/8	2	.059
G8A43006	R3/64	3/32	1/4	3/32	3/16	2	.090
G8A43008	R1/16	1/8	1/4	1/8	1/4	2-1/2	.121
G8A43012	R3/32	3/16	1/4	3/16	3/8	3	.184
G8A43016	R1/8	1/4	1/4	1/4	1/2	3-1/2	.246
G8A43020	R5/32	5/16	5/16	5/16	5/8	4	.309
G8A43024	R3/16	3/8	3/8	3/8	3/4	4	.371
G8A43032	R1/4	1/2	1/2	1/2	1	4-1/2	.496

The original bright blue color may discolor during use, however, the performance will not be negatively affected

Size	Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	±.0002	0~−.0005	h6
over Ø1/4	±.0004	0~−.0006	

◎ : Excellent ○ : Good

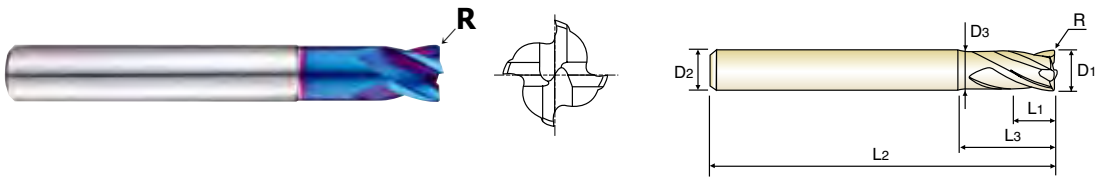
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

G850 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS with EXTENDED NECK

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting due 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.



NG | 4 | BLUE | 30° | R ±.0002 | PLAIN

P.621

◆ U.S.A Stock

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R	D1	D2	L1	L3	L2	D3
G85004	R.004	1/16	1/8	3/32	-	1-1/2	-
G85008	R.004	1/8	1/4	5/32	1/4	2	.119
G85012	R.004	3/16	1/4	1/4	3/8	2	.181
G85016	R.008	1/4	1/4	5/16	9/16	2	.238
G85020	R.008	5/16	5/16	3/8	3/4	2-1	.301
G85024	R.008	3/8	3/8	1/2	1	3	.363
G85032	R.012	1/2	1/2	5/16	1-3/16	3	.488
G85040	R.012	5/8	5/8	3/4	1-1/2	3-1	.613
G85048	R.012	3/4	3/4	1	1-3/4	4	.738

The original bright blue color may discolor during use, however, the performance will not be negatively affected

Size	Corner Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	±.0002	0~−.0005	h6
over Ø1/4	±.0004	0~−.0006	

◎ : Excellent ○ : Good

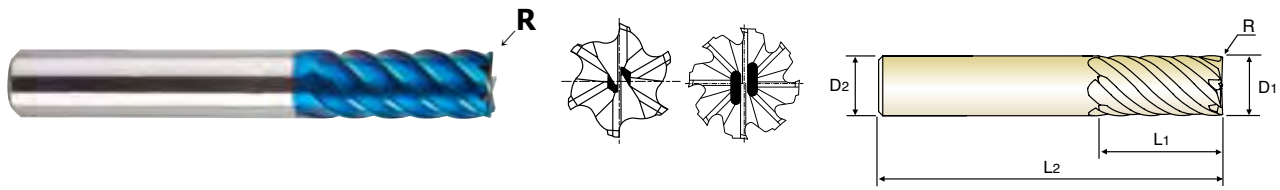
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

G851 SERIES PLAIN SHANK

CARBIDE, 6&8 FLUTE 45° HELIX CORNER RADIUS

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting due 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.



NG | 6&8 | BLUE | 45° | R ±.0002 | PLAIN

P.621

◆ U.S.A Stock

Unit : Inch

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	No. of Flute
G85116	R.02	1/4	1/4	1/2	2-1/4	6
G85120	R.02	5/16	5/16	3/4	2-1/2	6
G85125	R.03	3/8	3/8	7/8	2-7/8	6
G85133	R.03	1/2	1/2	1	3-1/4	6
G85140	R.03	5/8	5/8	1-1/4	3-5/8	6
G85141	R.06	5/8	5/8	1-1/4	3-5/8	6
G85148	R.03	3/4	3/4	1-1/2	4-1/8	8
G85149	R.06	3/4	3/4	1-1/2	4-1/8	8
G85164	R.03	1	1	1-3/4	4-1/4	8
G85165	R.06	1	1	1-3/4	4-1/4	8
G85167	R.03	1	1	4-1/8	7	8
G85168	R.06	1	1	4-1/8	7	8

The original bright blue color may discolor during use, however, the performance will not be negatively affected

Size	Corner Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	±.0002	0~−.0005	h6
over Ø1/4	±.0004	0~−.0006	

◎ : Excellent ○ : Good

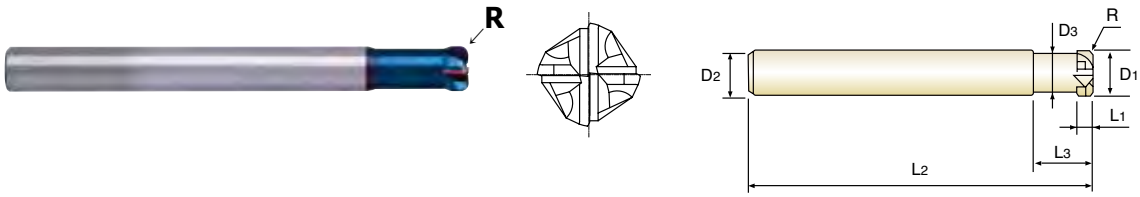
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

G859 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS HIGH FEED

- 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.



NG | 4 | BLUE | PLAIN | R ±0.005 | P.622

High Feed End Mill

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R	D1		D2	L1	L3	L2	D3
G859020	R0.5	2.0	.0787	6	1	6	50	1.8
G859030	R0.5	3.0	.1181	6	1.2	8	50	2.8
G859040	R0.5	4.0	.1575	6	1.5	10	50	3.8
G859060	R0.5	6.0	.2362	6	2.5	12	60	5.4
G859061	R1.0	6.0	.2362	6	2.5	12	60	5.4
G859081	R1.0	8.0	.3150	8	3.5	16	60	7.2
G859082	R2.0	8.0	.3150	8	3.5	16	60	7.2
G859101	R1.0	10.0	.3937	10	4	20	70	9
G859102	R2.0	10.0	.3937	10	4	20	70	9
G859122	R2.0	12.0	.4724	12	5	25	80	11
G859123	R3.0	12.0	.4724	12	5	25	80	11
G859163	R3.0	16.0	.6299	16	6.5	30	90	15

The original bright blue color may discolor during use, however, the performance will not be negatively affected

Mill Dia. Tolerance (inch)	Corner Radius Tolerance (inch)	Shank Dia. Tolerance
0 ~ −.0008	±.0002	h6

◎ : Excellent ○ : Good

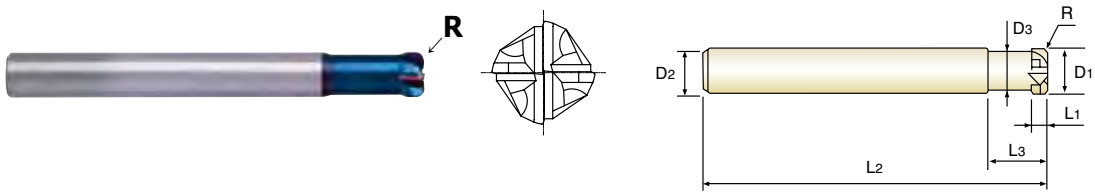
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

G854 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS HIGH FEED

- 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.



NG | 4 | BLUE | PLAIN | R ±0.005 | P.622

High Feed End Mill

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter Metric	Mill Diameter Inch	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R	D1		D2	L1	L3	L2	D3
G854020	R0.5	2.0	.0787	6	1	6	70	1.8
G854030	R0.5	3.0	.1181	6	1.2	8	70	2.8
G854040	R0.5	4.0	.1575	6	1.5	10	70	3.8
G854050	R1.0	5.0	.1969	6	2	10	70	4.6
G854060	R0.5	6.0	.2362	6	2.5	12	90	5.4
G854061	R1.0	6.0	.2362	6	2.5	12	90	5.4
G854062	R1.5	6.0	.2362	6	2.5	12	90	5.4
G854081	R1.0	8.0	.3150	8	3.5	16	100	7.2
G854082	R2.0	8.0	.3150	8	3.5	16	100	7.2
G854101	R1.0	10.0	.3937	10	4	20	100	9
G854102	R2.0	10.0	.3937	10	4	20	100	9
G854122	R2.0	12.0	.4724	12	5	25	110	11
G854123	R3.0	12.0	.4724	12	5	25	110	11
G854163	R3.0	16.0	.6299	16	6.5	30	130	15

The original bright blue color may discolor during use, however, the performance will not be negatively affected

Mill Dia. Tolerance (inch)	Corner Radius Tolerance (inch)	Shank Dia. Tolerance
0 ~ −.0008	±.0002	h6

◎ : Excellent ○ : Good

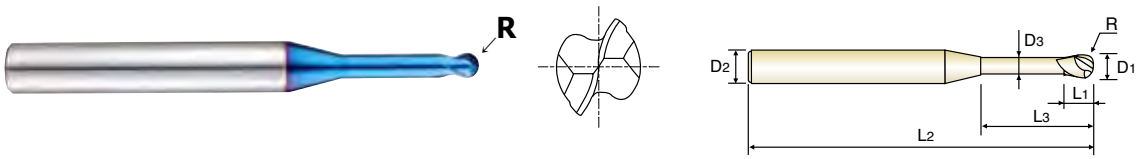
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

G8A46 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING

- 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.



NG | 2 | BLUE | 30° | R ±0.005 | PLAIN

P.623

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.005)	D1		D2	L1	L3	L2	D3
G8A46805	R0.05	0.1	.0039	4	0.1	0.3	45	0.085
G8A46806	R0.05	0.1	.0039	4	0.1	0.5	45	0.085
G8A46002	R0.1	0.2	.0079	4	0.2	0.5	45	0.17
G8A46977	R0.1	0.2	.0079	4	0.2	1	45	0.17
G8A46958	R0.1	0.2	.0079	4	0.2	1.5	45	0.17
G8A46003	R0.15	0.3	.0118	4	0.3	1	45	0.27
G8A46959	R0.15	0.3	.0118	4	0.3	2	45	0.27
G8A46986	R0.15	0.3	.0118	4	0.3	3	45	0.27
G8A46004	R0.2	0.4	.0157	4	0.4	1	45	0.37
G8A46960	R0.2	0.4	.0157	4	0.4	2	45	0.37
G8A46961	R0.2	0.4	.0157	4	0.4	3	45	0.37
G8A46981	R0.2	0.4	.0157	4	0.4	4	45	0.37
G8A46987	R0.2	0.4	.0157	4	0.4	5	45	0.37
G8A46005	R0.25	0.5	.0197	4	0.4	2	45	0.45
G8A46804	R0.25	0.5	.0197	4	0.4	2.5	45	0.45
G8A46962	R0.25	0.5	.0197	4	0.4	4	45	0.45
G8A46963	R0.25	0.5	.0197	4	0.4	6	45	0.45
G8A46964	R0.25	0.5	.0197	4	0.4	8	45	0.45
G8A46957	R0.3	0.6	.0236	4	0.5	2	45	0.55
G8A46988	R0.3	0.6	.0236	4	0.5	3	45	0.55
G8A46915	R0.3	0.6	.0236	4	0.5	4	45	0.55
G8A46989	R0.3	0.6	.0236	4	0.5	5	45	0.55

The original bright blue color may discolor during use, however, the performance will not be negatively affected

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

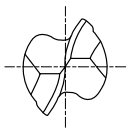
X5070 END MILLS

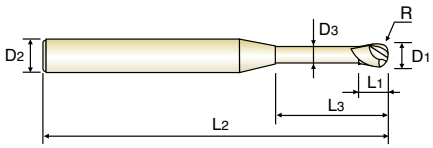
G8A46 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING

- 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.







NG | 2 | BLUE | 30° | R ±0.005 | PLAIN

P.623

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.005)	D1		D2	L1	L3	L2	D3
G8A46916	R0.3	0.6	.0236	4	0.5	6	45	0.55
G8A46917	R0.3	0.6	.0236	4	0.5	8	45	0.55
G8A46990	R0.3	0.6	.0236	4	0.5	10	45	0.55
G8A46918	R0.4	0.8	.0315	4	0.6	2	45	0.75
G8A46919	R0.4	0.8	.0315	4	0.6	4	45	0.75
G8A46008	R0.4	0.8	.0315	4	0.6	6	45	0.75
G8A46901	R0.4	0.8	.0315	4	0.6	8	45	0.75
G8A46965	R0.4	0.8	.0315	4	0.6	10	45	0.75
G8A46920	R0.5	1.0	.0394	4	0.8	3	45	0.95
G8A46921	R0.5	1.0	.0394	4	0.8	4	45	0.95
G8A46923	R0.5	1.0	.0394	4	0.8	5	45	0.95
G8A46010	R0.5	1.0	.0394	4	0.8	6	45	0.95
G8A46924	R0.5	1.0	.0394	4	0.8	7	45	0.95
G8A46902	R0.5	1.0	.0394	4	0.8	8	45	0.95
G8A46925	R0.5	1.0	.0394	4	0.8	9	45	0.95
G8A46903	R0.5	1.0	.0394	4	0.8	10	45	0.95
G8A46904	R0.5	1.0	.0394	4	0.8	12	45	0.95
G8A46926	R0.5	1.0	.0394	4	0.8	14	50	0.95
G8A46927	R0.5	1.0	.0394	4	0.8	16	50	0.95
G8A46966	R0.5	1.0	.0394	4	0.8	20	55	0.95
G8A46982	R0.6	1.2	.0472	4	1.0	6	45	1.15
G8A46012	R0.6	1.2	.0472	4	1.0	8	45	1.15

The original bright blue color may discolor during use, however, the performance will not be negatively affected

▶ NEXT PAGE

◎ : Excellent ○ : Good

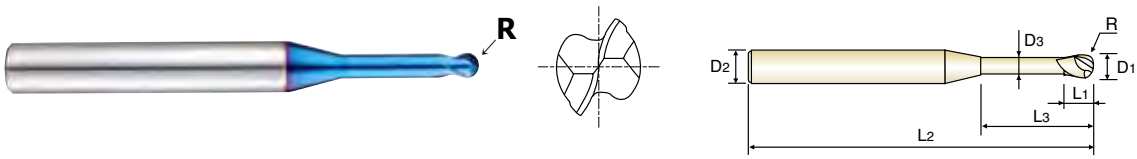
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

G8A46 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING

- 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.



NG | 2 | BLUE | 30° | R ±0.005 | PLAIN

P.623

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.005)	D1		D2	L1	L3	L2	D3
G8A46983	R0.6	1.2	.0472	4	1.0	10	45	1.15
G8A46905	R0.6	1.2	.0472	4	1.0	12	45	1.15
G8A46930	R0.75	1.5	.0472	4	1.2	6	45	1.45
G8A46015	R0.75	1.5	.0472	4	1.2	8	45	1.45
G8A46931	R0.75	1.5	.0472	4	1.2	10	45	1.45
G8A46906	R0.75	1.5	.0472	4	1.2	12	45	1.45
G8A46992	R0.75	1.5	.0472	4	1.2	14	50	1.45
G8A46907	R0.75	1.5	.0472	4	1.2	16	50	1.45
G8A46932	R0.75	1.5	.0472	4	1.2	20	55	1.45
G8A46939	R1.0	2.0	.0787	4	1.6	4	45	1.95
G8A46940	R1.0	2.0	.0787	4	1.6	6	45	1.95
G8A46020	R1.0	2.0	.0787	4	1.6	8	45	1.95
G8A46941	R1.0	2.0	.0787	4	1.6	10	45	1.95
G8A46942	R1.0	2.0	.0787	4	1.6	12	50	1.95
G8A46943	R1.0	2.0	.0787	4	1.6	14	50	1.95
G8A46909	R1.0	2.0	.0787	4	1.6	16	50	1.95
G8A46993	R1.0	2.0	.0787	4	1.6	18	55	1.95
G8A46910	R1.0	2.0	.0787	4	1.6	20	55	1.95
G8A46944	R1.0	2.0	.0787	4	1.6	22	60	1.95
G8A46945	R1.0	2.0	.0787	4	1.6	25	60	1.95
G8A46967	R1.0	2.0	.0787	4	1.6	30	70	1.95
G8A46948	R1.5	3.0	.1181	6	2.4	12	50	2.85

The original bright blue color may discolor during use, however, the performance will not be negatively affected

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

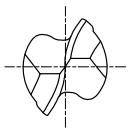
X5070 END MILLS

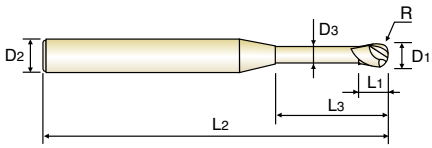
G8A46 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING

- 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.







NG | 2 | BLUE | 30° | R ±0.005 | PLAIN

P.623

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.005)	D1		D2	L1	L3	L2	D3
G8A46984	R1.5	3.0	.1181	6	2.4	14	55	2.85
G8A46030	R1.5	3.0	.1181	6	2.4	16	55	2.85
G8A46985	R1.5	3.0	.1181	6	2.4	18	60	2.85
G8A46911	R1.5	3.0	.1181	6	2.4	20	60	2.85
G8A46968	R1.5	3.0	.1181	6	2.4	25	65	2.85
G8A46969	R1.5	3.0	.1181	6	2.4	30	70	2.85
G8A46970	R1.5	3.0	.1181	6	2.4	35	80	2.85
G8A46950	R2.0	4.0	.1575	6	3.2	12	60	3.85
G8A46040	R2.0	4.0	.1575	6	3.2	16	60	3.85
G8A46912	R2.0	4.0	.1575	6	3.2	20	65	3.85
G8A46913	R2.0	4.0	.1575	6	3.2	25	70	3.85
G8A46971	R2.0	4.0	.1575	6	3.2	30	70	3.85
G8A46972	R2.0	4.0	.1575	6	3.2	35	80	3.85
G8A46973	R2.0	4.0	.1575	6	3.2	40	90	3.85
G8A46974	R2.0	4.0	.1575	6	3.2	45	90	3.85
G8A46975	R2.0	4.0	.1575	6	3.2	50	100	3.85

The original bright blue color may discolor during use, however, the performance will not be negatively affected

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.012	h6

◎ : Excellent ○ : Good

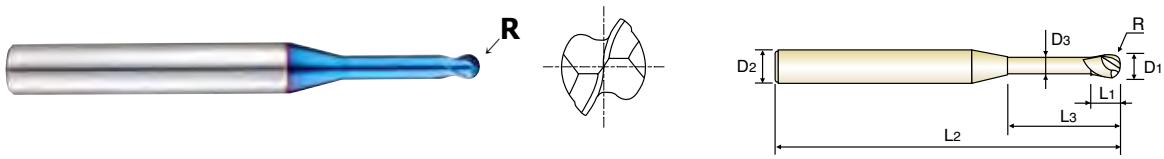
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

G8A54 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING

- 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.



NG | 2 | BLUE | 30° | R ±0.005 | PLAIN

P.623

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.005)	D1		D2	L1	L3	L2	D3
G8A54005	R0.25	0.5	.0197	6	0.5	1.5	50	0.45
G8A54901	R0.25	0.5	.0197	6	0.5	3.3	50	0.45
G8A54006	R0.3	0.6	.0236	6	0.6	2	50	0.55
G8A54902	R0.3	0.6	.0236	6	0.6	4	50	0.55
G8A54008	R0.4	0.8	.0315	6	0.8	2.5	50	0.75
G8A54903	R0.4	0.8	.0315	6	0.8	5.5	50	0.75
G8A54010	R0.5	1.0	.0394	6	1	3.3	50	0.95
G8A54904	R0.5	1.0	.0394	6	1	6.7	50	0.95
G8A54905	R0.5	1.0	.0394	6	1	12	50	0.95
G8A54012	R0.6	1.2	.0472	6	1.2	4.4	50	1.15
G8A54906	R0.6	1.2	.0472	6	1.2	8	50	1.15
G8A54015	R0.75	1.5	.0591	6	1.5	5	50	1.45
G8A54907	R0.75	1.5	.0591	6	1.5	9.7	50	1.45
G8A54908	R0.75	1.5	.0591	6	1.5	15	50	1.45
G8A54020	R1.0	2.0	.0787	6	2	6	50	1.95
G8A54909	R1.0	2.0	.0787	6	2	13	50	1.95
G8A54910	R1.0	2.0	.0787	6	2	20	60	1.95

The original bright blue color may discolor during use, however, the performance will not be negatively affected

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.012	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

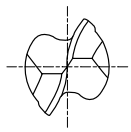
X5070 END MILLS

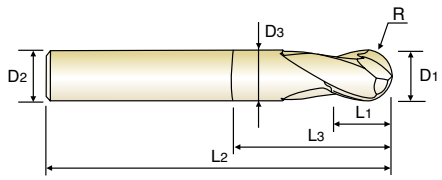
G8A28 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE

- 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.







NG | 2 | BLUE | 30° | R ±0.005 (R0.5~R3) | R ±0.010 (R3.5~R6) | PLAIN

P.626

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter Metric	Mill Diameter Inch	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R	D1		D2	L1	L3	L2	D3
G8A28001	R0.05	0.1	.0039	4	0.2	-	40	-
G8A28002	R0.1	0.2	.0079	4	0.3	-	40	-
G8A28003	R0.15	0.3	.0118	4	0.5	-	40	-
G8A28004	R0.2	0.4	.0157	4	0.6	-	40	-
G8A28005	R0.25	0.5	.0197	4	0.7	-	40	-
G8A28006	R0.3	0.6	.0236	4	0.9	-	40	-
G8A28007	R0.35	0.7	.0276	4	1.1	-	40	-
G8A28008	R0.4	0.8	.0315	4	1.2	-	40	-
G8A28009	R0.45	0.9	.0354	4	1.4	-	40	-
G8A28010	R0.5	1.0	.0394	6	1.5	3	50	0.95
G8A28015	R0.75	1.5	.0591	6	2	4	50	1.45
G8A28020	R1.0	2.0	.0787	6	2.5	5	50	1.95
G8A28025	R1.25	2.5	.0984	6	3	7	50	2.4
G8A28030	R1.5	3.0	.1181	6	4	10	60	2.85
G8A28035	R1.75	3.5	.1378	6	4.5	10	60	3.35
G8A28040	R2.0	4.0	.1575	6	5	10	60	3.85
G8A28045	R2.25	4.5	.1772	6	5.5	10	60	4.35
G8A28050	R2.5	5.0	.1969	6	6	12	60	4.85
G8A28055	R2.75	5.5	.2165	6	6.5	12	60	5.35
G8A28060	R3.0	6.0	.2362	6	7	15	60	5.85
G8A28903	R3.0	6.0	.2362	6	9	30	90	5.85
G8A28901	R4.0	8.0	.3150	8	9	15	60	7.7
G8A28080	R4.0	8.0	.3150	8	9	15	80	7.7
G8A28904	R4.0	8.0	.3150	8	12	30	100	7.7
G8A28902	R5.0	10.0	.3937	10	11	25	60	9.7
G8A28100	R5.0	10.0	.3937	10	11	25	80	9.7
G8A28905	R5.0	10.0	.3937	10	15	30	100	9.7
G8A28120	R6.0	12.0	.4724	12	14	25	80	11.7

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	

The original bright blue color may discolor during use, however, the performance will not be negatively affected

◎ : Excellent ○ : Good

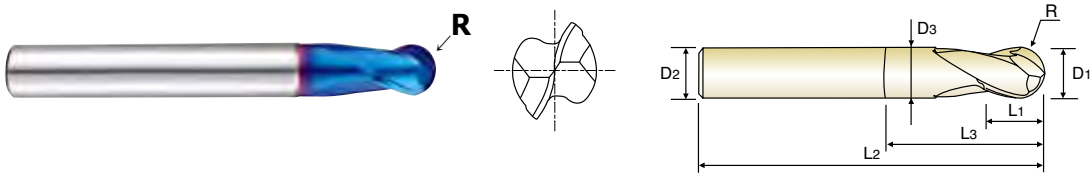
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

G8A38 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE STUB LENGTH BALL NOSE with EXTENDED NECK

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting due to newly developed raw-material and new coating.
- Excellent workpiece finish.
- Designed for high precision milling operation.
- Higher wear-resistance.



NG | 2 | BLUE | 30° | R ±0.005 (R0.5~R3) | R ±0.010 (R3.5~R12.5) | PLAIN | P.626

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R	D1		D2	L1	L3	L2	D3
G8A38010	R0.5	1.0	.0394	4	1	2.2	50	0.95
G8A38012	R0.6	1.2	.0472	4	1.2	2.6	50	1.15
G8A38015	R0.75	1.5	.0591	4	1.5	3	50	1.45
G8A38020	R1.0	2.0	.0787	6	2	4	50	1.95
G8A38030	R1.5	3.0	.1181	6	3	6	60	2.85
G8A38040	R2.0	4.0	.1575	6	4	8	70	3.85
G8A38050	R2.5	5.0	.1969	6	5	10	80	4.85
G8A38060	R3.0	6.0	.2362	6	6	12	90	5.85
G8A38070	R3.5	7.0	.2756	8	7	14	90	6.7
G8A38080	R4.0	8.0	.3150	8	8	16	100	7.7
G8A38090	R4.5	9.0	.3543	10	9	18	100	8.7
G8A38100	R5.0	10.0	.3937	10	10	20	100	9.7
G8A38120	R6.0	12.0	.4724	12	12	24	110	11.7
G8A38140	R7.0	14.0	.5512	14	14	28	110	13.7
G8A38160	R8.0	16.0	.6299	16	16	32	140	15.7
G8A38180	R9.0	18.0	.7087	18	18	36	140	17.7
G8A38200	R10.0	20.0	.7874	20	20	40	160	19.7
G8A38250	R12.5	25.0	.9843	25	25	50	180	24.7

The original bright blue color may discolor during use, however, the performance will not be negatively affected

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

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

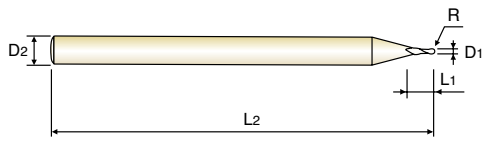
X5070 END MILLS

G8A53 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE MINIATURE BALL NOSE

- 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.





NG | 2 | BLUE | 30° | R ±0.005 | PLAIN

P.626

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
		Metric	Inch			
	R (±0.005)	D_1		D_2	L_1	L_2
G8A53004	R0.2	0.4	.0157	6	0.4	50
G8A53005	R0.25	0.5	.0197	6	0.5	50
G8A53006	R0.3	0.6	.0236	6	0.6	50
G8A53008	R0.4	0.8	.0315	6	0.8	50
G8A53010	R0.5	1.0	.0394	6	1.0	50
G8A53012	R0.6	1.2	.0472	6	1.2	50
G8A53015	R0.75	1.5	.0591	6	1.5	50
G8A53020	R1.0	2.0	.0787	6	2.0	50

The original bright blue color may discolor during use, however, the performance will not be negatively affected

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.012	h6

◎ : Excellent ○ : Good

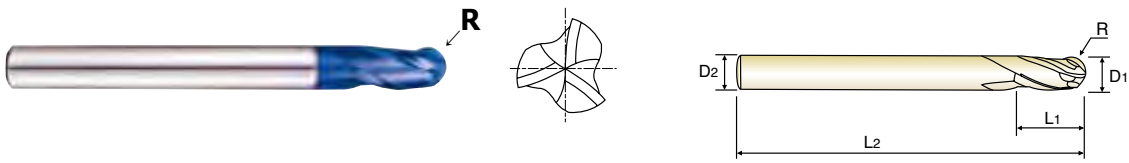
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

G8A59 SERIES PLAIN SHANK

CARBIDE, 3 FLUTE BALL NOSE

- 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.



NG | 3 | BLUE | 30° | R ±0.005 (R1.5~R3) | R ±0.010 (R4~R10) | PLAIN

P.623

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
		Metric	Inch			
	R	D_1		D_2	L_1	L_2
G8A59030	R1.5	3.0	.1181	6	8	60
G8A59040	R2.0	4.0	.1575	6	8	70
G8A59050	R2.5	5.0	.1969	6	10	80
G8A59060	R3.0	6.0	.2362	6	12	90
G8A59080	R4.0	8.0	.3150	8	14	100
G8A59100	R5.0	10.0	.3937	10	18	100
G8A59120	R6.0	12.0	.4724	12	22	110
G8A59160	R8.0	16.0	.6299	16	30	140
G8A59200	R10.0	20.0	.7874	20	38	160

The original bright blue color may discolor during use, however, the performance will not be negatively affected

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

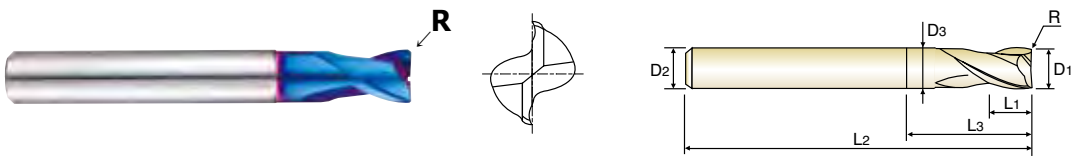
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

G8A36 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE STUB LENGTH CORNER RADIUS with EXTENDED NECK

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting due 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.



NG | 2 | BLUE | 30° | R ±0.010 Ø0.3~Ø6 | R ±0.015 Ø8~Ø20 | PLAIN

P.624, 625

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter Metric	Mill Diameter Inch	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R	D1		D2	L1	L3	L2	D3
G8A36003	-	0.3	.0118	3	0.45	-	40	-
G8A36004	-	0.4	.0157	3	0.6	-	40	-
G8A36005	R0.05	0.5	.0197	3	0.7	-	40	-
G8A36907	R0.05	0.5	.0197	4	1	-	40	-
G8A36006	R0.05	0.6	.0236	3	0.9	-	40	-
G8A36908	R0.05	0.6	.0236	4	1.2	-	40	-
G8A36909	R0.05	0.7	.0276	4	1.4	-	40	-
G8A36008	R0.05	0.8	.0315	3	1.2	-	40	-
G8A36910	R0.05	0.8	.0315	4	1.6	-	40	-
G8A36911	R0.05	0.9	.0354	4	2	-	40	-
G8A36010	R0.1	1.0	.0394	3	1.5	-	40	-
G8A36901	R0.1	1.0	.0394	4	1.5	-	40	-
G8A36903	R0.1	1.0	.0394	6	1.5	-	40	-
G8A36015	R0.1	1.5	.0591	3	2.2	-	40	-
G8A36904	R0.1	1.5	.0591	6	2.2	-	40	-
G8A36020	R0.1	2.0	.0787	3	3	6	40	1.95
G8A36902	R0.1	2.0	.0787	4	3	6	40	1.95
G8A36905	R0.1	2.0	.0787	6	3	6	40	1.95
G8A36025	R0.1	2.5	.0984	3	4	6	40	2.4
G8A36906	R0.1	2.5	.0984	6	4	6	40	2.4

The original bright blue color may discolor during use, however, the performance will not be negatively affected

▶ NEXT PAGE

◎ : Excellent ○ : Good

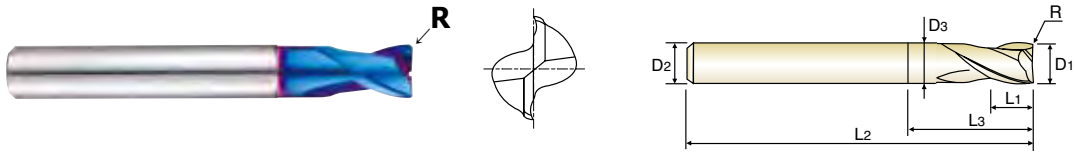
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

G8A36 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE STUB LENGTH CORNER RADIUS with EXTENDED NECK

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting due 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.



NG | 2 | BLUE | 30° | R ±0.010 Ø0.3~Ø6 | R ±0.015 Ø8~Ø20 | PLAIN

P.624

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R	D1		D2	L1	L3	L2	D3
G8A36030	R0.1	3.0	.1181	6	4	7	45	2.85
G8A36035	R0.1	3.5	.1378	6	5	9	45	3.35
G8A36040	R0.1	4.0	.1575	6	5	9	45	3.85
G8A36045	R0.1	4.5	.1772	6	6	10	45	4.35
G8A36050	R0.2	5.0	.1969	6	6	11	50	4.85
G8A36060	R0.2	6.0	.2362	6	7	14	50	5.85
G8A36080	R0.2	8.0	.3150	8	9	18	60	7.7
G8A36100	R0.2	10.0	.3937	10	12	25	75	9.7
G8A36120	R0.3	12.0	.4724	12	15	30	75	11.7
G8A36160	R0.3	16.0	.6299	16	18	38	90	15.7
G8A36200	R0.3	20.0	.7874	20	24	45	100	19.7

The original bright blue color may discolor during use, however, the performance will not be negatively affected

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

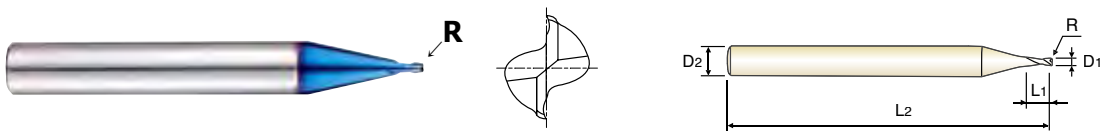
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

G8A50 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE MINIATURE CORNER RADIUS

- 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.



NG | 2 | BLUE | 30° | R ±0.010 | PLAIN

P.627

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
		Metric	Inch			
	R (±0.010)	D_1		D_2	L_1	L_2
G8A50003	-	0.3	.0118	6	0.45	50
G8A50004	-	0.4	.0157	6	0.6	50
G8A50005	R0.05	0.5	.0197	6	0.7	50
G8A50006	R0.05	0.6	.0236	6	0.9	50
G8A50008	R0.05	0.8	.0315	6	1.2	50
G8A50010	R0.1	1.0	.0394	6	1.5	50
G8A50012	R0.1	1.2	.0472	6	1.8	50
G8A50015	R0.15	1.5	.0591	6	2.2	50
G8A50020	R0.15	2.0	.0787	6	2.2	50

The original bright blue color may discolor during use, however, the performance will not be negatively affected

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.012	h6

◎ : Excellent ○ : Good

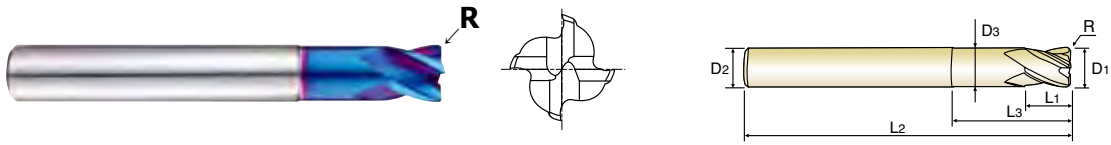
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

G8A47 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE CORNER RADIUS with EXTENDED NECK

- 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.



NG | 4 | BLUE | 30° | R ±0.010 Ø1~Ø6 | R ±0.015 Ø8~Ø12 | PLAIN

P.627

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R	D1		D2	L1	L3	L2	D3
G8A47916	R0.3	3.0	.1181	6	4	12	55	2.85
G8A47917	R0.3	3.0	.1181	6	4	16	55	2.85
G8A47918	R0.3	3.0	.1181	6	4	20	55	2.85
G8A47030	R0.5	3.0	.1181	6	4	10	55	2.85
G8A47901	R0.5	3.0	.1181	6	4	16	55	2.85
G8A47902	R0.5	3.0	.1181	6	4	20	55	2.85
G8A47919	R0.3	4.0	.1575	6	5	12	55	3.85
G8A47920	R0.3	4.0	.1575	6	5	16	55	3.85
G8A47921	R0.3	4.0	.1575	6	5	20	55	3.85
G8A47040	R0.5	4.0	.1575	6	5	12	55	3.85
G8A47903	R0.5	4.0	.1575	6	5	16	55	3.85
G8A47904	R0.5	4.0	.1575	6	5	20	55	3.85
G8A47922	R1.0	4.0	.1575	6	5	12	55	3.85
G8A47060	R0.5	6.0	.2362	6	7	20	60	5.85
G8A47905	R1.0	6.0	.2362	6	7	20	60	5.85
G8A47906	R1.5	6.0	.2362	6	7	20	60	5.85
G8A47910	R0.5	8.0	.3150	8	9	25	60	7.7
G8A47080	R1.0	8.0	.3150	8	9	25	60	7.7
G8A47907	R1.5	8.0	.3150	8	9	25	60	7.7
G8A47913	R2.0	8.0	.3150	8	9	25	60	7.7
G8A47911	R0.5	10.0	.3937	10	11	32	70	9.7
G8A47100	R1.0	10.0	.3937	10	11	32	70	9.7
G8A47908	R1.5	10.0	.3937	10	11	32	70	9.7
G8A47914	R2.0	10.0	.3937	10	11	32	70	9.7
G8A47912	R0.5	12.0	.4724	12	12	38	80	11.7
G8A47120	R1.0	12.0	.4724	12	12	38	80	11.7
G8A47909	R1.5	12.0	.4724	12	12	38	80	11.7
G8A47915	R2.0	12.0	.4724	12	12	38	80	11.7

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	

The original bright blue color may discolor during use, however, the performance will not be negatively affected

◎ : Excellent ○ : Good

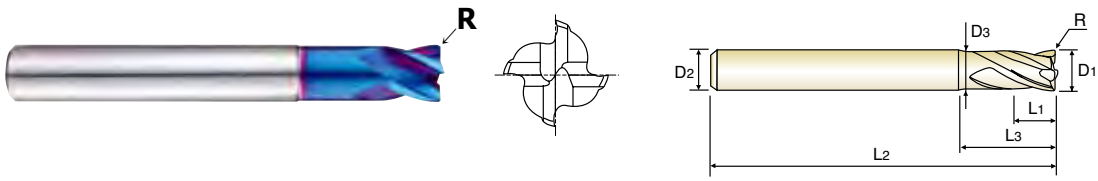
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

G8A37 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS with EXTENDED NECK

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting due 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.



NG | 4 | BLUE | 30° | R ±0.010 Ø1~Ø6 | R ±0.015 Ø8~Ø20 | PLAIN

P.628

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter Metric	Mill Diameter Inch	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R	D1		D2	L1	L3	L2	D3
G8A37010	RO.1	1.0	.0394	3	1.5	-	40	-
G8A37901	RO.1	1.0	.0394	6	1.5	-	40	-
G8A37015	RO.1	1.5	.0591	3	2.2	-	40	-
G8A37902	RO.1	1.5	.0591	6	2.2	-	40	-
G8A37020	RO.1	2.0	.0787	3	3	6	40	1.95
G8A37903	RO.1	2.0	.0787	6	3	6	40	1.95
G8A37025	RO.1	2.5	.0984	3	4	6	40	2.4
G8A37904	RO.1	2.5	.0984	6	4	6	40	2.4
G8A37030	RO.1	3.0	.1181	6	4	7	45	2.85
G8A37035	RO.1	3.5	.1378	6	5	9	45	3.35
G8A37040	RO.1	4.0	.1575	6	5	9	45	3.85
G8A37045	RO.1	4.5	.1772	6	6	10	45	4.35
G8A37050	RO.2	5.0	.1969	6	6	11	50	4.85
G8A37060	RO.2	6.0	.2362	6	7	14	50	5.85
G8A37080	RO.2	8.0	.3150	8	9	18	60	7.7
G8A37100	RO.2	10.0	.3937	10	12	25	75	9.7
G8A37120	RO.3	12.0	.4724	12	15	30	75	11.7
G8A37160	RO.3	16.0	.6299	16	18	38	90	15.7
G8A37200	RO.3	20.0	.7874	20	24	45	100	19.7

The original bright blue color may discolor during use, however, the performance will not be negatively affected

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

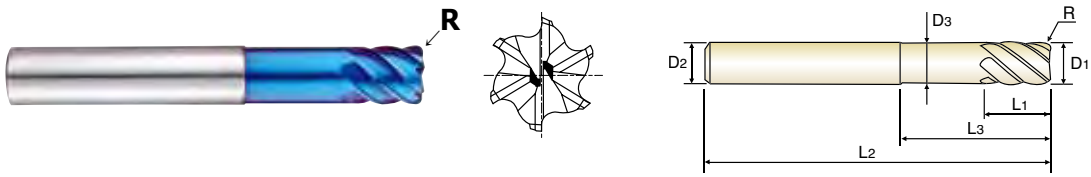
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

X5070 END MILLS

G8A39 SERIES PLAIN SHANK

CARBIDE, 6 FLUTE 45° HELIX CORNER RADIUS with EXTENDED NECK

- Designed to machine high hardened materials
- Suitable for dry cutting, high speed cutting due 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.



NG | 6 | BLUE | 45° | R ±0.010 Ø6 | R ±0.015 Ø8~Ø20 | PLAIN | P.628

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter Metric	Mill Diameter Inch	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R	D1		D2	L1	L3	L2	D3
G8A39916	R0.25	6.0	.2362	6	6	14	50	5.85
G8A39060	R0.5	6.0	.2362	6	6	14	50	5.85
G8A39901	R0.5	6.0	.2362	6	13	-	70	-
G8A39910	R0.5	6.0	.2362	✻ 6	26	-	70	-
G8A39080	R0.5	8.0	.3150	8	8	24	60	7.7
G8A39902	R0.5	8.0	.3150	8	19	-	90	-
G8A39911	R0.5	8.0	.3150	✻ 8	36	-	90	-
G8A39903	R0.5	10.0	.3937	10	22	-	100	-
G8A39100	R1.0	10.0	.3937	10	10	30	70	9.7
G8A39904	R1.0	10.0	.3937	10	22	-	100	-
G8A39912	R1.0	10.0	.3937	✻ 10	46	-	100	-
G8A39905	R0.5	12.0	.4724	12	26	-	110	-
G8A39120	R1.0	12.0	.4724	12	12	30	75	11.7
G8A39906	R1.0	12.0	.4724	12	26	-	110	-
G8A39913	R1.0	12.0	.4724	✻ 12	56	-	110	-
G8A39160	R1.0	16.0	.6299	16	32	-	130	-
G8A39907	R1.5	16.0	.6299	16	32	-	130	-
G8A39914	R1.5	16.0	.6299	✻ 16	66	-	130	-
G8A39200	R1.0	20.0	.7874	20	38	-	140	-
G8A39908	R1.5	20.0	.7874	20	38	-	140	-
G8A39909	R2.0	20.0	.7874	20	38	-	140	-
G8A39915	R2.0	20.0	.7874	✻ 20	76	-	140	-

The original bright blue color may discolor during use, however, the performance will not be negatively affected

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

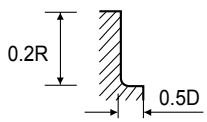
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
		○	○	◎	◎									

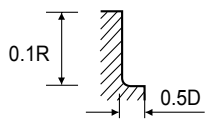
CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS HIGH FEED

G826 SERIES

■ NORMAL SPEED

MATERIAL	P						H			
	HARDENED STEELS						HIGH HARDENED STEELS			
HARDNESS	~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8 × R1/32	9000	245	6500	155	4300	100	2700	43	1800	23
3/16 × R1/16	7500	310	5100	200	3800	140	2350	70	1650	30
1/4 × R1/16	5500	310	3900	200	2800	140	1750	70	1250	30
5/16 × R3/32	4500	310	3100	200	2200	140	1400	70	1000	30
3/8 × R3/32	3800	310	2600	200	1850	140	1170	70	840	30
1/2 × R1/8	2800	310	1950	200	1400	140	880	70	630	30

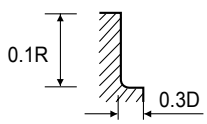


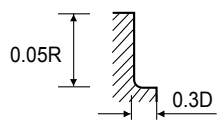


RPM = rev./min.
FEED = inch/min.

■ HIGH SPEED

MATERIAL	P						H			
	HARDENED STEELS						HIGH HARDENED STEELS			
HARDNESS	~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8 × R1/32	21000	600	16000	380	12000	300	9000	170	6500	92
3/16 × R1/16	16500	720	13500	550	11500	420	8000	250	5700	150
1/4 × R1/16	12500	720	10000	550	8500	420	6000	250	4300	150
5/16 × R3/32	10000	720	8000	550	6800	420	4800	250	3400	150
3/8 × R3/32	8500	720	6700	550	5700	420	4000	250	2850	150
1/2 × R1/8	6500	720	5000	550	4300	420	3000	250	2150	150





RPM = rev./min.
FEED = inch/min.

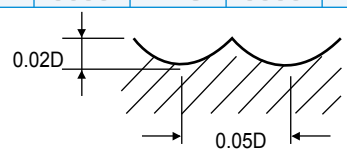
X5070 END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE BALL NOSE with EXTENDED NECK

G8A43 SERIES

MATERIAL	P						H					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS				HIGH HARDENED STEELS					
HARDNESS	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc65 ~ HRc70	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/64 × 1/32	50000	189.0	50000	165.4	45000	149.6	40000	118.1	35000	102.4	35000	90.6
R1/32 × 1/16	49700	224.4	47800	189.0	40000	157.5	35000	124.0	32000	110.2	28500	90.6
R3/64 × 3/32	49700	224.4	47800	189.0	40000	157.5	35000	124.0	32000	110.2	28500	90.6
R1/16 × 1/8	33100	236.2	31800	208.7	26500	157.5	23500	124.0	21000	110.2	19000	90.6
R3/32 × 3/16	18600	228.4	17800	192.9	15000	147.6	13500	120.1	11500	100.4	10500	82.7
R1/8 × 1/14	13900	190.9	13400	161.4	11000	122.1	10000	98.4	8800	84.7	8000	68.9
R5/32 × 5/16	11100	165.4	10700	137.8	9000	106.3	8000	84.7	7000	72.8	6500	61.0
R3/16 × 3/8	9300	145.7	8900	122.1	7500	94.5	6600	74.8	5800	65.0	5300	54.3
R1/4 × 1/2	6950	116.1	6680	98.4	5600	74.8	5000	61.0	4400	49.2	4000	41.3



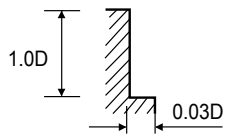
※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS

G850 SERIES

MATERIAL	P						H					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS				HIGH HARDENED STEELS					
HARDNESS	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc65 ~ HRc70	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/16	41950	69.4	32750	49.6	22050	33.3	18250	20.6	13850	12.7	11950	9.1
1/8	20600	52.1	16350	37.2	10850	25.0	9000	15.5	7100	9.5	6050	6.9
3/16	16500	66.2	13100	49.5	8700	33.0	6700	19.1	5350	12.2	4650	8.9
1/4	12400	58.1	9800	41.8	6500	28.2	5000	16.6	3950	10.4	3500	7.8
5/16	9950	59.6	7850	42.8	5250	28.6	4050	16.6	3250	10.6	2800	7.6
3/8	8200	57.9	6450	41.6	4300	27.8	3350	15.8	2700	10.3	2300	7.2
1/2	6300	52.2	4950	37.4	3300	24.9	2500	14.3	2000	9.0	1750	6.5
5/8	4950	47.7	3950	35.1	2600	23.0	2000	13.2	1600	8.5	1400	6.3
3/4	4100	43.0	3250	32.0	2150	21.5	1700	12.7	1350	8.2	1150	5.9

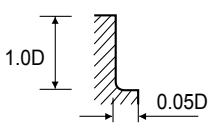


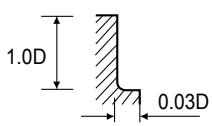
RPM = rev./min.
FEED = inch/min.

CARBIDE, 6&8 FLUTE 45° HELIX CORNER RADIUS

G851 SERIES

MATERIAL	P						H					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS				HIGH HARDENED STEELS					
HARDNESS	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc65 ~ HRc70	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	23450	199.2	22200	182.2	15100	182.1	12750	122.7	9900	78.0	7550	53.9
5/16	20650	191.3	19600	174.8	13200	171.8	11150	115.3	8700	73.3	6600	51.2
3/8	17900	183.4	17000	167.3	11350	161.6	9500	108.0	7450	68.7	5700	48.5
1/2	12300	167.6	11800	152.4	7550	141.2	6250	93.2	5000	59.4	3800	43.0
5/8	10100	159.1	9800	147.2	6050	135.0	5050	91.5	4050	49.8	3000	34.3
3/4	8850	140.7	8600	133.3	5300	123.2	4400	82.7	3550	43.7	2650	30.0
1	6300	103.9	6150	105.5	3800	99.7	3150	65.1	2500	31.4	1900	21.5





※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

X5070 END MILLS

RECOMMENDED CUTTING CONDITIONS

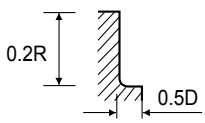
CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS HIGH FEED

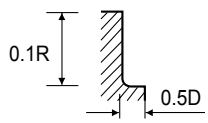
G859, G854 SERIES

■ NORMAL SPEED

MATERIAL		P						H			
		HARDENED STEELS						HIGH HARDENED STEELS			
HARDNESS		~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65	
DIAMETER		RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0 ×	R0.5	13500	255.9	9550	149.6	5500	86.6	3200	39.4	2200	21.7
3.0 ×	R0.5	9550	255.9	6900	163.4	4550	108.3	2850	45.3	1900	24.0
4.0 ×	R0.5	7950	275.6	5750	181.1	4000	126.0	2550	53.2	1750	27.6
5.0 ×	R0.5	6500	287.4	4800	189.0	3400	126.0	2200	63.0	1500	27.6
6.0 ×	R0.5	5800	301.2	4100	192.9	2900	137.8	1850	72.8	1350	31.3
6.0 ×	R1.0	5800	301.2	4100	192.9	2900	137.8	1850	72.8	1350	31.3
8.0 ×	R1.0	4350	301.2	3050	192.9	2200	137.8	1400	72.8	995	31.3
8.0 ×	R2.0	4350	301.2	3050	192.9	2200	137.8	1400	72.8	995	31.3
10.0 ×	R1.0	3500	301.2	2450	192.9	1750	137.8	1100	72.8	795	31.3
10.0 ×	R2.0	3500	301.2	2450	192.9	1750	137.8	1100	72.8	795	31.3
12.0 ×	R2.0	2900	301.2	2050	192.9	1450	137.8	925	72.8	665	31.3
12.0 ×	R3.0	2900	301.2	2050	192.9	1450	137.8	925	72.8	665	31.3
16.0 ×	R3.0	2200	301.2	1550	192.9	1100	137.8	700	72.8	500	31.3

RPM = rev./min.
FEED = inch/min.

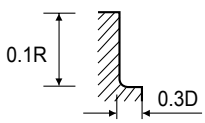


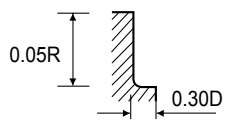


■ HIGH SPEED

MATERIAL		P						H			
		HARDENED STEELS						HIGH HARDENED STEELS			
HARDNESS		~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65	
DIAMETER		RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0 ×	R0.5	29000	590.6	22000	385.8	15000	309.1	11000	175.2	8700	96.5
3.0 ×	R0.5	22000	629.9	17000	393.7	12500	315.0	9500	181.1	6900	98.4
4.0 ×	R0.5	17000	689.0	13000	472.4	11000	362.2	8000	216.5	5600	114.2
5.0 ×	R0.5	15000	708.7	11000	192.1	10000	393.7	7000	236.2	4900	122.1
6.0 ×	R0.5	13500	728.4	10500	543.3	9000	433.1	6400	252.0	4500	141.7
6.0 ×	R1.0	13500	728.4	10500	543.3	9000	433.1	6400	252.0	4500	141.7
8.0 ×	R1.0	10000	728.4	8000	551.2	6800	433.1	4800	263.8	3400	161.4
8.0 ×	R2.0	10000	728.4	8000	551.2	6800	433.1	4800	263.8	3400	161.4
10.0 ×	R1.0	8000	728.4	6400	551.2	5400	433.1	3800	267.7	2700	149.6
10.0 ×	R2.0	8000	728.4	6400	551.2	5400	433.1	3800	267.7	2700	149.6
12.0 ×	R2.0	6600	728.4	5300	551.2	4500	433.1	3200	275.6	2250	141.7
12.0 ×	R3.0	6600	728.4	5300	551.2	4500	433.1	3200	275.6	2250	141.7
16.0 ×	R3.0	5000	728.4	3900	551.2	3300	433.1	2400	275.6	1650	129.9

RPM = rev./min.
FEED = inch/min.

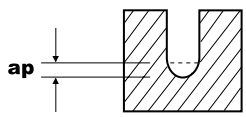




CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING

G8A46, G8A54 SERIES

MATERIAL	P						H			N		
	ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS			HIGH HARDENED STEELS			COPPER		
HARDNESS	HRc30 ~ HRc45			HRc45 ~ HRc55			HRc55 ~ HRc65					
DIAMETER	RPM	FEED	ap (mm)	RPM	FEED	ap (mm)	RPM	FEED	ap (mm)	RPM	FEED	ap (mm)
R0.1 × 0.2	50000	11.8~13.8	0.006~0.016	50000	10.4~12.2	0.005~0.013	50000	8.9~10.4	0.005~0.012	50000	17.9~20.9	0.010~0.022
R0.15 × 0.3	48000~50000	18.9~20.5	0.010~0.017	48000~50000	17.3~18.1	0.008~0.014	46000~50000	15..4~16.5	0.007~0.013	48000~50000	27.2~31.1	0.002~0.023
R0.2 × 0.4	48000~50000	28.4~31.1	0.013~0.032	48000~50000	17.7~21.7	0.011~0.026	46000~50000	15.8~18.1	0.010~0.024	48000~50000	39.4~45.3	0.019~0.048
R0.25 × 0.5	34100~49500	23.6~34.3	0.007~0.028	31900~35200	19.3~21.3	0.005~0.023	31900~35200	17.3~18.9	0.005~0.021	49000~50000	39.4~55.1	0.010~0.042
R0.3 × 0.6	28600~40700	23.2~33.5	0.007~0.034	26400~29700	18.9~21.3	0.006~0.028	26400~29700	15.8~18.9	0.006~0.025	42000~50000	43.3~66.9	0.011~0.050
R0.4 × 0.8	22000~30800	25.2~35.0	0.016~0.064	19800~22000	19.3~21.7	0.013~0.052	19800~22000	17.3~19.7	0.012~0.048	31000~50000	43.3~88.6	0.024~0.096
R0.5 × 1.0	17600~24200	23.6~33.5	0.008~0.080	15400~17600	18.5~21.3	0.007~0.065	15400~17600	17.3~19.7	0.006~0.060	24000~49500	43.3~86.6	0.012~0.120
R0.6 × 1.2	14300~18700	23.2~30.7	0.024~0.032	12000~14000	18.9~21.3	0.020~0.026	12000~14000	16.5~18.9	0.018~0.024	28500~38500	58.3~76.8	0.036~0.048
R0.75 × 1.5	11000~14300	22.8~29.9	0.031~0.048	10000~11500	18.9~21.3	0.025~0.039	10000~11500	16.5~18.9	0.023~0.036	17000~28500	43.3~76.8	0.046~0.072
R1.0 × 2.0	8500~11000	23.2~31.5	0.024~0.160	7900~8800	18.5~20.9	0.020~0.130	7900~8800	17.3~18.9	0.018~0.120	12600~24000	43.3~84.7	0.036~0.240
R1.5 × 3.0	5700~8200	28.7~39.4	0.064~0.240	5300~5800	23.2~25.6	0.052~0.195	5300~5800	21.7~24.4	0.048~0.120	11900~17000	72.8~106.3	0.096~0.360
R2.0 × 4.0	4300~6200	26.8~39.0	0.080~0.320	3950~4400	21.7~24.4	0.065~0.026	3850~4400	20.9~22.4	0.060~0.240	6600~12500	49.6~98.4	0.120~0.480

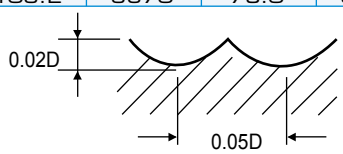


RPM = rev./min.
FEED = inch/min.

CARBIDE, 3 FLUTE BALL NOSE

G8A59 SERIES

MATERIAL	P				H					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HIGH HARDENED STEELS					
HARDNESS	HRc30 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc65 ~ HRc70	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1.5 × 3.0	32000	338.6	26840	228.4	19840	168.5	18680	159.1	12780	108.7
R2.0 × 4.0	24080	303.2	20130	213.8	14880	152.8	14220	143.7	9580	98.4
R2.5 × 5.0	20000	285.4	16780	213.8	12400	145.3	11670	136.6	8000	93.3
R3.0 × 6.0	18000	337.4	15200	244.9	12200	177.2	11100	150.8	7590	96.9
R4.0 × 8.0	13500	289.4	11300	206.7	9200	156.7	8320	131.9	5690	83.9
R5.0 × 10.0	10800	257.1	9100	180.7	7350	135.8	6660	113.0	4550	77.2
R6.0 × 12.0	9050	240.2	7590	167.7	6130	125.6	5530	94.5	3800	64.6
R8.0 × 16.0	6700	181.1	5690	128.0	4600	97.6	4160	70.9	2850	48.4
R10.0×20.0	5400	141.7	4550	103.2	3670	78.0	3300	56.7	2280	38.6



RPM = rev./min.
FEED = inch/min.

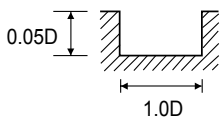
X5070 END MILLS

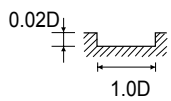
RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE - SLOTTING

G8A36 SERIES

MATERIAL	P						H					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS				HIGH HARDENED STEELS					
HARDNESS	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc65 ~ HRc70	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
0.2	50000	5.1	45000	4.5	40000	3.7	33000	2.4	33000	1.8	26400	1.2
0.3	50000	7.5	45000	5.5	40000	4.5	33000	2.8	25000	2.0	20000	1.4
0.4	50000	9.3	45000	7.1	40000	5.5	33000	3.5	25000	2.2	20000	1.6
0.5	50000	14.6	45000	11.0	40000	8.7	33000	5.5	25000	3.4	20000	2.4
0.6	50000	18.5	45000	14.2	40000	11.2	30000	6.3	25000	4.1	20000	3.0
0.8	50000	23.6	40000	17.3	30000	11.6	25000	7.3	19000	4.3	15200	3.2
0.9	49000	25.8	39000	20.5	27800	13.0	22700	8.1	17500	4.9	14000	3.5
1.0	48000	29.5	38000	22.4	25500	14.2	20500	8.5	16000	5.3	12500	3.4
2.0	33300	33.5	26000	26.8	17500	16.5	14500	10.2	11000	6.3	9500	4.5
3.0	21800	33.5	17300	26.8	11500	16.5	9500	10.2	7500	6.3	6400	4.5
4.0	16700	34.7	13200	27.6	8800	17.3	7200	10.6	5600	6.7	4750	4.7
5.0	15700	39.4	12500	31.7	8300	19.7	6400	11.2	5100	7.1	4450	5.2
6.0	13100	37.4	10350	30.3	6900	18.9	5300	11.0	4200	7.1	3700	5.1
8.0	9880	36.6	7800	28.4	5200	17.5	4000	10.0	3200	6.5	2800	4.7
10.0	7800	33.5	6150	26.8	4100	16.3	3200	9.5	2550	6.1	2200	4.4
12.0	6650	33.5	5250	26.8	3500	16.3	2650	9.5	2100	6.1	1860	4.4
16.0	4900	28.7	3900	22.8	2600	14.4	2000	8.3	1600	5.3	1400	3.7
20.0	3900	26.0	3100	20.7	2050	14.4	1600	7.7	1300	4.9	1100	3.4



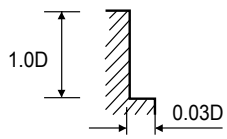


RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE - SIDE CUTTING

G8A36 SERIES

MATERIAL	P						H					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS				HIGH HARDENED STEELS					
HARDNESS	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc65 ~ HRc70	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1.0	48000	41.3	38000	32.3	25500	20.1	20500	12.2	16000	7.5	12500	4.9
2.0	33300	47.2	26000	38.2	17500	23.6	14500	14.6	11000	9.1	9500	6.5
3.0	21800	47.2	17300	38.2	11500	23.6	9500	14.6	7500	9.1	6400	6.5
4.0	16700	49.2	13200	39.4	8800	24.6	7200	15.2	5600	9.5	4750	6.7
5.0	15700	57.1	12500	45.3	8300	28.0	6400	16.1	5100	10.2	4450	7.5
6.0	13100	53.2	10350	43.3	6900	27.2	5300	15.8	4200	10.0	3700	7.3
8.0	9880	52.0	7800	40.6	5200	25.0	4000	14.4	3200	9.3	2800	6.7
10.0	7800	47.2	6150	38.2	4100	23.2	3200	13.4	2550	8.7	2200	6.3
12.0	6650	47.2	5250	38.2	3500	23.2	2650	13.4	2100	8.7	1860	6.3
16.0	4900	41.3	3900	33.1	2600	20.5	2000	11.8	1600	7.5	1400	5.5
20.0	3900	37.4	3100	29.5	2050	18.7	1600	10.8	1300	6.9	1100	4.2



RPM = rev./min.
FEED = inch/min.

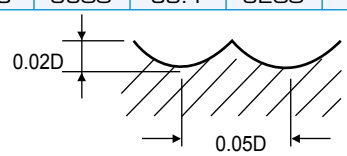
X5070 END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE BALL NOSE

G8A38, G8A28, G8A53 SERIES

MATERIAL	P						H					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS				HIGH HARDENED STEEl					
HARDNESS	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc65 ~ HRc70	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R0.1 x 0.2	50000	47.2	50000	41.3	45000	37.8	40000	30.3	35000	26.54	31500	22.4
R0.15 x 0.3	50000	59.1	50000	53.6	45000	47.2	40000	37.9	35000	33.1	31500	27.6
R0.2 x 0.4	50000	74.8	50000	66.9	45000	59.1	40000	47.2	35000	41.3	31500	35.0
R0.25 x 0.5	50000	94.5	50000	82.7	45000	74.8	40000	59.1	35000	51.2	31500	43.3
R0.3 x 0.6	50000	114.2	50000	98.4	45000	86.6	40000	70.9	35000	63.0	31500	55.1
R0.4 x 0.8	50000	153.5	50000	129.9	45000	118.1	40000	94.5	35000	82.7	31500	70.9
R0.5 x 1.0	50000	189.0	50000	165.4	45000	149.6	40000	118.1	35000	102.4	35000	90.6
R0.6 x 1.2	50000	200.8	48000	169.3	43000	151.6	38000	118.1	34000	106.3	30600	90.6
R0.75 x 1.5	50000	212.6	48000	177.2	43000	157.5	37000	122.1	33000	106.3	29700	90.6
R1.0 x 2.0	49700	224.4	47800	189.0	40000	157.5	35000	124.0	32000	110.2	28500	90.6
R1.5 x 3.0	33100	236.2	31800	208.7	26500	157.5	23500	124.0	21000	110.2	19000	90.6
R2.0 x 4.0	24900	236.2	23900	208.7	20000	157.5	17500	124.0	16000	110.2	14500	90.6
R2.5 x 5.0	18600	228.4	17800	192.9	15000	147.6	13500	120.1	11500	100.4	10500	82.7
R3.0 x 6.0	13900	190.9	13400	161.4	11000	122.1	10000	98.4	8800	84.7	8000	68.9
R4.0 x 8.0	11100	165.4	10700	137.8	9000	106.3	8000	84.7	7000	72.8	6500	61.0
R5.0 x 10.0	9300	145.7	8900	122.1	7500	94.5	6600	74.8	5800	65.0	5300	54.3
R6.0 x 12.0	6950	116.1	6680	98.4	5600	74.8	5000	61.0	4400	49.2	4000	41.3
R8.0 x 16.0	5570	104.3	5350	86.6	4500	66.9	4000	53.2	3500	39.4	3200	33.5
R10.0 x 20.0	4450	92.5	4300	76.8	3600	59.1	3200	47.2	2800	31.5	2550	26.0

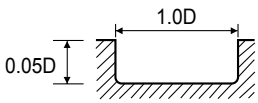


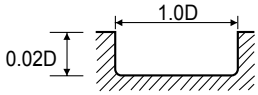
RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE MINIATURE CORNER RADIUS - SLOTTING

G8A50 SERIES

MATERIAL	P						H			
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS				HIGH HARDENED STEELS			
HARDNESS	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
0.3	50000	7.5	45000	5.5	40000	4.5	33000	2.8	25000	1.6
0.4	50000	9.3	45000	7.1	40000	5.5	33000	3.5	25000	2.2
0.5	50000	14.6	45000	11.0	40000	8.7	33000	5.5	25000	3.4
0.6	50000	18.5	45000	14.2	40000	11.2	30000	6.3	25000	4.1
0.8	50000	23.6	40000	17.3	30000	11.6	25000	7.3	19000	4.3
1.0	48000	29.5	38000	22.4	25500	14.2	20500	8.5	16000	5.3
1.2	42000	31.1	34000	25.2	22500	15.0	20000	9.8	14500	5.7
1.5	37000	31.0	30500	26.4	21000	16.1	17000	9.8	13000	6.2
2.0	33300	33.5	26000	26.8	17500	16.5	14500	10.2	11000	6.3



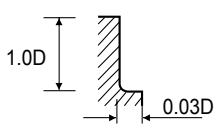


RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE CORNER RADIUS

G8A47 SERIES

MATERIAL	P						H					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS				HIGH HARDENED STEELS					
HARDNESS	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc65 ~ HRc70	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1.0	48000	46.6	38000	33.1	25500	22.4	20500	13.5	16000	8.5	12500	5.5
2.0	33300	55.1	26000	39.4	17500	26.5	14500	16.4	11000	10.1	9500	7.2
3.0	21800	55.1	17300	39.4	11500	26.5	9500	16.4	7500	10.1	6400	7.2
4.0	16700	56.7	13200	40.9	8800	27.7	7200	17.0	5600	10.6	4750	7.6
5.0	15700	63.0	12500	47.2	8300	31.5	6400	18.3	5100	11.7	4450	8.5
6.0	13100	61.4	10350	44.1	6900	29.9	5300	17.6	4200	11.0	3700	8.2
8.0	9880	59.2	7800	42.5	5200	28.4	4000	16.4	3200	10.4	2800	7.6
10.0	7800	55.1	6150	39.7	4100	26.5	3200	15.1	2550	9.8	2200	6.9
12.0	6650	55.1	5250	39.7	3500	26.5	2650	15.1	2100	9.5	1860	6.9
16.0	4900	47.2	3900	34.7	2600	23.0	2000	13.2	1600	8.5	1400	6.3
20.0	3900	40.9	3100	30.6	2050	20.5	1600	12.0	1300	7.9	1100	5.7



RPM = rev./min. FEED = inch/min.

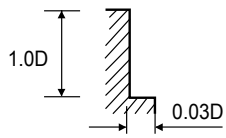
X5070 END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS with EXTENDED NECK

G8A37 SERIES

MATERIAL	P						H					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS				HIGH HARDENED STEELS					
HARDNESS	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc65 ~ HRc70	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1.0	48000	58.3	38000	41.3	25500	28.0	20500	16.9	16000	10.6	12500	6.9
2.0	33300	68.9	26000	49.2	17500	33.1	14500	20.5	11000	12.6	9500	9.1
3.0	21800	68.9	17300	49.2	11500	33.1	9500	20.5	7500	12.6	6400	9.1
4.0	16700	70.9	13200	51.2	8800	34.7	7200	21.3	5600	13.2	4750	9.5
5.0	15700	78.7	12500	59.1	8300	39.4	6400	22.8	5100	14.6	4450	10.6
6.0	13100	76.8	10350	55.1	6900	37.4	5300	22.1	4200	13.8	3700	10.2
8.0	9880	74.0	7800	53.2	5200	35.4	4000	20.5	3200	13.0	2800	9.5
10.0	7800	68.9	6150	49.6	4100	33.1	3200	18.9	2550	12.2	2200	8.7
12.0	6650	68.9	5250	49.6	3500	33.1	2650	18.9	2100	11.8	1860	8.7
16.0	4900	59.1	3900	43.3	2600	28.7	2000	16.5	1600	10.6	1400	7.9
20.0	3900	51.2	3100	38.2	2050	25.6	1600	15.0	1300	9.8	1100	7.1

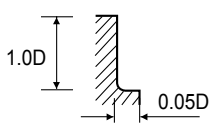


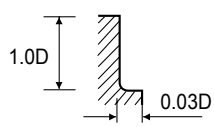
RPM = rev./min.
FEED = inch/min.

CARBIDE, 6 FLUTE 45° HELIX CORNER RADIUS

G8A39 SERIES

MATERIAL	P						H					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS				HIGH HARDENED STEELS					
HARDNESS	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc65		HRc65 ~ HRc70	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6.0	24800	210.6	23500	192.9	16000	192.9	13500	129.9	10500	82.7	8000	57.1
8.0	20000	216.5	19000	196.9	12000	181.1	10000	122.1	8000	78.7	6000	55.1
10.0	16000	192.9	15500	177.2	9500	161.4	8000	114.2	6400	70.9	4800	51.2
12.0	13000	177.2	12500	161.4	8000	149.6	6600	98.4	5300	63.0	4000	45.3
16.0	10000	157.5	9700	145.7	6000	133.9	5000	90.6	4000	49.2	3000	34.3
20.0	8000	131.9	7800	133.9	4800	126.0	4000	82.7	3200	40.2	2400	27.2





※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

CARBIDE

Being the best through innovation



4G MILLS

- High Speed Cutting for Pre-Hardened Steels up to HRc55

SELECTION GUIDE

INCH

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
GMF15		CARBIDE, 2 FLUTE BALL NOSE	R.002	R3/8	634
GMF16		CARBIDE, 2 FLUTE BALL NOSE WITH NECK	R.004	R1/4	636
GMF17		CARBIDE, 4 FLUTE BALL NOSE	R1/16	R1/4	639
GMF18		CARBIDE, 2 FLUTE CORNER RADIUS	D3/64	D3/4	640
GMF19		CARBIDE, 2 FLUTE CORNER RADIUS WITH NECK	D.008	D3/4	643
GMF20		CARBIDE, 4 FLUTE CORNER RADIUS	D3/64	D3/4	649
GMF21		CARBIDE, 4 FLUTE CORNER RADIUS WITH NECK	D3/64	D3/4	651
GMF22		CARBIDE, 2 FLUTE WITH NECK	D.008	D1/2	656
GMF23		CARBIDE, 2 FLUTE	D.004	D3/4	659
GMF24		CARBIDE, 2 FLUTE LONG	D3/64	D3/4	662
GMF25		CARBIDE, 4 FLUTE	D3/64	D3/4	664
GMF26		CARBIDE, 4 FLUTE	D3/64	D3/4	665
GMF27		CARBIDE, 4 FLUTE LONG	D3/64	D1	666
GMF28		CARBIDE, 4 FLUTE WITH NECK	D3/64	D1/2	668
GMF29		CARBIDE, 6 FLUTE 45° HELIX	D1/4	D3/4	669

X-SPEED ROUGHER

G907 G928		CARBIDE, 4&5 FLUTE STUB LENGTH ROUGHING CORNER RADIUS	D1/4	D1	670
G908 G929		CARBIDE, 4&5 FLUTE REGULAR LENGTH ROUGHING CORNER RADIUS	D1/4	D1	671
G909 G930		CARBIDE, 4&5 FLUTE EXTENDED REACH ROUGHING CORNER RADIUS	D1/4	D3/4	672

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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SELECTION GUIDE

METRIC

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
SEMD98		CARBIDE, 2 FLUTE BALL NOSE ◇	R0.05	R12.5	673
SEM846		CARBIDE, 2 FLUTE LONG NECK BALL NOSE ◇	R0.05	R6.0	678
SEM846		CARBIDE, 2 FLUTE LONG NECK BALL NOSE (6mm shank) ◇	R0.25	R1.0	686
SEMD99		CARBIDE, 2 FLUTE CORNER RADIUS ◇	D0.2	D20.0	689
SEME61		CARBIDE, 2 FLUTE LONG NECK CORNER RADIUS ◇	D0.2	D20.0	695
SEME01		CARBIDE, 4 FLUTE CORNER RADIUS ◇	D1.0	D20.0	710
SEME64		CARBIDE, 4 FLUTE LONG NECK CORNER RADIUS ◇	D1.0	D20.0	715
SEME35		CARBIDE, 2 FLUTE ◇	D0.03	D25.0	727
SEME70		CARBIDE, 2 FLUTE LONG LENGTH ◇	D1.0	D25.0	732
SEM845		CARBIDE, 2 FLUTE LONG NECK ◇	D0.1	D12.0	737
SEME36		CARBIDE, 4 FLUTE ◇	D0.8	D25.0	744
SEME71		CARBIDE, 4 FLUTE ◇	D1.0	D20.0	746
SEME72		CARBIDE, 4 FLUTE LONG LENGTH ◇	D1.0	D25.0	749
SEME73		CARBIDE, 4 FLUTE LONG NECK ◇	D1.0	D12.0	754
SEME75		CARBIDE, 6 FLUTE 45° HELIX ◇	D6.0	D20.0	758

X-SPEED ROUGHER

G9D75 G9D67		CARBIDE, 4&5 FLUTE MULTIPLE HELIX SHORT LENGTH ROUGHING CORNER RADIUS ◇	D6.0	D20.0	759
G9D76 G9D68		CARBIDE, 4&5 FLUTE MULTIPLE HELIX LONG LENGTH ROUGHING CORNER RADIUS ◇	D6.0	D20.0	760
G9D77 G9D69		CARBIDE, 4&5 FLUTE MULTIPLE HELIX LONG REACH ROUGHING CORNER RADIUS ◇	D6.0	D20.0	761
GAE53		HSS-PM, 4&5 FLUTE MULTIPLE HELIX SHORT LENGTH CORNER RADIUS ◇	D6.0	D20.0	762
		RECOMMENDED CUTTING CONDITIONS			763

◇ Call for Availability

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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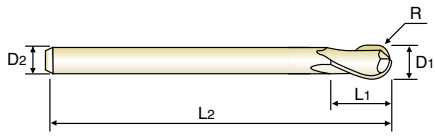
4G MILL END MILLS

GMF15 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE

- New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- Unique ball nose geometry with superior cutting edges result in decreased cutting forces.
- Excellent performance when cutting steels, up to HRc55





NG | 2 | 30° | R ±.0002 (R≤1/8) | R ±.0004 (R>1/8) | PLAIN

P.763

Unit : Inch

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF15901	R.002	.004	3/16	.008	1-1/2
GMF15902	R.004	.008	3/16	1/64	1-1/2
GMF15903	R.006	.012	3/16	1/32	1-1/2
GMF15904	R.075	.015	3/16	1/32	1-1/2
GMF15905	R.010	.020	3/16	3/64	1-1/2
GMF15906	R.012	.024	3/16	3/64	1-1/2
GMF15907	R.014	.028	3/16	1/16	1-1/2
GMF15908	R.0155	.031	3/16	1/16	1-1/2
GMF15909	R.0175	.035	3/16	5/64	1-1/2
GMF15003	R.0234	3/64	3/16	3/32	2
GMF15910	R.0234	3/64	1/4	3/32	2
GMF15911	R.0234	3/64	1/4	3/32	2-3/4
GMF15004	R1/32	1/16	3/16	5/32	2
GMF15912	R1/32	1/16	1/4	5/32	2
GMF15913	R1/32	1/16	1/4	5/32	2-3/4
GMF15005	R.0391	5/64	1/4	1/8	1-1/2
GMF15914	R.0391	5/64	3/16	3/16	2
GMF15915	R.0391	5/64	1/4	3/16	2
GMF15916	R.0391	5/64	1/4	3/16	3-1/8
GMF15006	R3/64	3/32	1/4	1/4	2-3/8
GMF15917	R3/64	3/32	1/4	1/4	3-1/8
GMF15008	R1/16	1/8	1/4	3/16	1-1/2
GMF15918	R1/16	1/8	3/16	1/4	2-3/8
GMF15919	R1/16	1/8	1/4	1/4	2-3/8
GMF15920	R1/16	1/8	1/4	1/4	3-1/8
GMF15921	R1/16	1/8	1/4	1/4	4
GMF15012	R3/32	3/16	1/4	1/4	2
GMF15922	R3/32	3/16	3/16	5/16	2-3/4
GMF15923	R3/32	3/16	1/4	5/16	2-3/4
GMF15924	R3/32	3/16	3/16	5/16	4
GMF15925	R3/32	3/16	1/4	5/16	4
GMF15926	R3/32	3/16	1/4	5/16	4-1/2
GMF15013	R.102	13/64	1/4	5/16	2-3/8

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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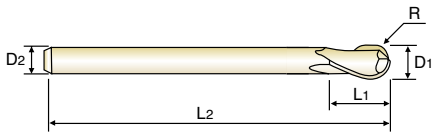
4G MILL END MILLS

GMF15 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE

- New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- Unique ball nose geometry with superior cutting edges result in decreased cutting forces.
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NG | 2 | 30° | R ±.0002 (R≤1/8) | R ±.0004 (R>1/8) | PLAIN | P.763

Unit : Inch

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF15927	R.102	13/64	1/4	3/8	3-1/8
GMF15016	R1/8	1/4	1/4	3/8	2
GMF15928	R1/8	1/4	1/4	3/8	3-1/8
GMF15929	R1/8	1/4	1/4	1/2	3-1/2
GMF15930	R1/8	1/4	1/4	1/2	5
GMF15018	R9/64	9/32	5/16	9/16	3-1/2
GMF15020	R5/32	5/16	5/16	1/2	2
GMF15931	R5/32	5/16	5/16	1/2	3-1/2
GMF15932	R5/32	5/16	5/16	9/16	4
GMF15933	R5/32	5/16	5/16	9/16	6
GMF15024	R3/16	3/8	3/8	5/8	2-3/8
GMF15934	R3/16	3/8	3/8	5/8	3-1/2
GMF15935	R3/16	3/8	3/8	11/16	4
GMF15936	R3/16	3/8	3/8	11/16	5
GMF15937	R3/16	3/8	3/8	11/16	6
GMF15938	R3/16	3/8	3/8	11/16	7
GMF15032	R1/4	1/2	1/2	11/16	3-1/8
GMF15939	R1/4	1/2	1/2	11/16	4
GMF15940	R1/4	1/2	1/2	7/8	4-1/4
GMF15941	R1/4	1/2	1/2	7/8	6
GMF15942	R1/4	1/2	1/2	7/8	8
GMF15036	R9/32	9/16	9/16	1	4
GMF15040	R5/16	5/8	5/8	1	4
GMF15943	R5/16	5/8	5/8	1-3/16	6
GMF15048	R3/8	3/4	3/4	1-3/16	4
GMF15944	R3/8	3/4	3/4	1-1/2	6

Size	Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	±.0002	0~−.0005	h6
over Ø1/4	±.0004	0~−.0006	

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

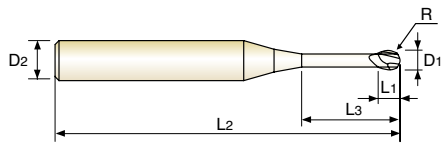
4G MILL END MILLS

GMF16 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE WITH NECK

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- Unique ball nose geometry with superior cutting edges result in decreased cutting forces.
- Excellent performance when cutting steels, up to HRc55





NG | 2 | 30° | R ±.0002 (R≤1/8) | R ±.0004 (R>1/8) | PLAIN

P.764~766

Unit : Inch

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
GMF16901	R.004	.008	3/16	.008	1/64	1-1/2
GMF16902	R.004	.008	3/16	.008	3/64	1-1/2
GMF16903	R.006	.012	3/16	.010	3/64	1-1/2
GMF16904	R.006	.012	3/16	.010	5/64	1-1/2
GMF16905	R.006	.012	3/16	.010	1/8	1-1/2
GMF16906	R.0075	.015	3/16	1/64	3/64	1-1/2
GMF16907	R.0075	.015	3/16	1/64	5/64	1-1/2
GMF16908	R.0075	.015	3/16	1/64	1/8	1-1/2
GMF16909	R.0075	.015	3/16	1/64	5/32	1-1/2
GMF16910	R.010	.020	3/16	1/64	3/64	1-3/4
GMF16911	R.010	.020	3/16	1/64	5/64	1-3/4
GMF16912	R.010	.020	3/16	1/64	1/8	1-3/4
GMF16913	R.010	.020	3/16	1/64	5/32	1-3/4
GMF16914	R.010	.020	3/16	1/64	3/16	1-3/4
GMF16915	R.010	.020	3/16	1/64	1/4	1-3/4
GMF16916	R.010	.020	3/16	1/64	5/16	1-3/4
GMF16917	R.010	.020	3/16	1/64	3/8	1-3/4
GMF16918	R.012	.024	3/16	1/32	5/64	1-3/4
GMF16919	R.012	.024	3/16	1/32	1/8	1-3/4
GMF16920	R.012	.024	3/16	1/32	5/32	1-3/4
GMF16921	R.012	.024	3/16	1/32	3/16	1-3/4
GMF16922	R.012	.024	3/16	1/32	1/4	1-3/4
GMF16923	R.012	.024	3/16	1/32	5/16	1-3/4
GMF16924	R.012	.024	3/16	1/32	3/8	1-3/4
GMF16925	R.012	.024	3/16	1/32	1/2	1-3/4
GMF16002	R1/64	1/32	3/16	1/32	5/64	1-3/4
GMF16926	R1/64	1/32	3/16	1/32	1/8	1-3/4
GMF16927	R1/64	1/32	3/16	1/32	5/32	1-3/4
GMF16928	R1/64	1/32	3/16	1/32	3/16	1-3/4
GMF16929	R1/64	1/32	3/16	1/32	1/4	1-3/4
GMF16930	R1/64	1/32	3/16	1/32	5/16	1-3/4
GMF16931	R1/64	1/32	3/16	1/32	3/8	1-3/4

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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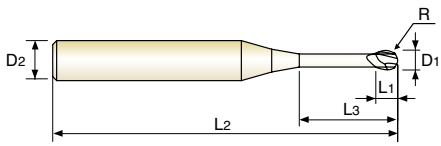
4G MILL END MILLS

GMF16 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE WITH NECK

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NG | 2 | 30° | R ±.0002 (R≤1/8) | R ±.0004 (R>1/8) | PLAIN

P.764~766

Unit : Inch

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
GMF16003	R.0234	3/64	3/16	3/64	1/8	2
GMF16932	R.0234	3/64	3/16	3/64	5/32	2
GMF16933	R.0234	3/64	3/16	3/64	3/16	2
GMF16934	R.0234	3/64	3/16	3/64	1/4	2
GMF16935	R.0234	3/64	3/16	3/64	5/16	2
GMF16936	R.0234	3/64	3/16	3/64	3/8	2
GMF16937	R.0234	3/64	3/16	3/64	1/2	2
GMF16938	R.0234	3/64	3/16	3/64	9/16	2
GMF16939	R.0234	3/64	3/16	3/64	5/8	2
GMF16940	R.0234	3/64	3/16	3/64	3/4	2
GMF16004	R1/32	1/16	3/16	1/16	5/32	2
GMF16941	R1/32	1/16	3/16	1/16	1/4	2
GMF16942	R1/32	1/16	3/16	1/16	5/16	2
GMF16943	R1/32	1/16	3/16	1/16	3/8	2
GMF16944	R1/32	1/16	3/16	1/16	1/2	2
GMF16945	R1/32	1/16	3/16	1/16	9/16	2
GMF16946	R1/32	1/16	3/16	1/16	5/8	2
GMF16947	R1/32	1/16	3/16	1/16	3/4	2
GMF16005	R.0391	5/64	3/16	5/64	1/4	2
GMF16948	R.0391	5/64	3/16	5/64	5/16	2
GMF16949	R.0391	5/64	3/16	5/64	3/8	2
GMF16950	R.0391	5/64	3/16	5/64	1/2	2
GMF16951	R.0391	5/64	3/16	5/64	9/16	2
GMF16952	R.0391	5/64	3/16	5/64	5/8	2
GMF16953	R.0391	5/64	3/16	5/64	11/16	2
GMF16954	R.0391	5/64	3/16	5/64	3/4	2
GMF16955	R.0391	5/64	3/16	5/64	1	2-3/8
GMF16956	R.0391	5/64	3/16	5/64	1-3/16	2-3/4
GMF16006	R3/64	3/32	3/16	3/32	3/8	2
GMF16957	R3/64	3/32	3/16	3/32	3/4	2
GMF16008	R1/16	1/8	1/4	1/8	5/16	2
GMF16958	R1/16	1/8	1/4	1/8	3/8	2

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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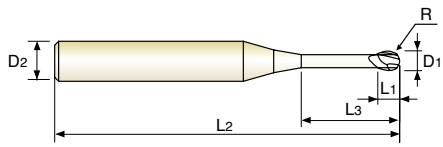
4G MILL END MILLS

GMF16 SERIES PLAIN SHANK

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NG | 2 | 30° | R ±.0002 (R≤1/8) | R ±.0004 (R>1/8) | PLAIN

P.764~766

Unit : Inch

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
GMF16959	R1/16	1/8	1/4	1/8	1/2	2
GMF16960	R1/16	1/8	1/4	1/8	9/16	2-3/8
GMF16961	R1/16	1/8	1/4	1/8	5/8	2-3/8
GMF16962	R1/16	1/8	1/4	1/8	11/16	2-3/8
GMF16963	R1/16	1/8	1/4	1/8	3/4	2-3/8
GMF16964	R1/16	1/8	1/4	1/8	1	2-3/4
GMF16965	R1/16	1/8	1/4	1/8	1-3/16	2-3/4
GMF16966	R1/16	1/8	1/4	1/8	1-3/8	2-3/4
GMF16012	R3/32	3/16	1/4	5/32	3/8	2
GMF16967	R3/32	3/16	1/4	5/32	1/2	2
GMF16968	R3/32	3/16	1/4	5/32	9/16	2-3/8
GMF16969	R3/32	3/16	1/4	5/32	5/8	2-3/8
GMF16970	R3/32	3/16	1/4	5/32	11/16	2-3/8
GMF16971	R3/32	3/16	1/4	5/32	3/4	2-3/8
GMF16972	R3/32	3/16	1/4	5/32	1	2-3/4
GMF16973	R3/32	3/16	1/4	5/32	1-3/16	2-3/4
GMF16974	R3/32	3/16	1/4	5/32	1-3/8	2-3/4
GMF16975	R3/32	3/16	1/4	5/32	1-1/2	3-1/8
GMF16013	R.102	13/64	1/4	1/4	1-3/16	2-3/4
GMF16016	R1/8	1/4	1/4	5/16	3/4	2-3/8
GMF16976	R1/8	1/4	1/4	5/16	1-3/16	2-3/8
GMF16020	R5/32	5/16	5/16	3/8	1	2-3/4
GMF16977	R5/32	5/16	5/16	9/16	1-3/8	4
GMF16024	R3/16	3/8	3/8	1/2	1-3/16	3
GMF16978	R3/16	3/8	3/8	11/16	1-3/16	4
GMF16979	R3/16	3/8	3/8	11/16	1-1/2	4
GMF16032	R1/4	1/2	1/2	9/16	1-1/4	3-1/8
GMF16980	R1/4	1/2	1/2	7/8	1-1/4	4-1/4

Size	Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	±.0002	0~−.0005	h6
over Ø1/4	±.0004	0~−.0006	

◎ : Excellent ○ : Good

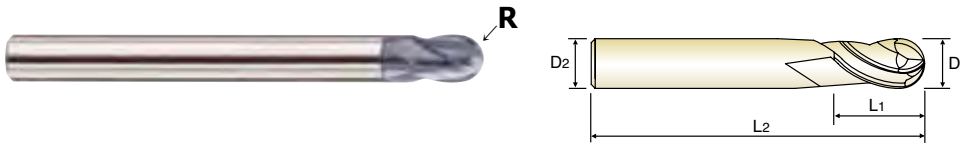
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

4G MILL END MILLS

GMF17 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE BALL NOSE

- New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- Unique ball nose geometry with superior cutting edges result in decreased cutting forces.
- Excellent performance when cutting steels, up to HRc55
- Cutting edge strength is increased and part finish is improved due to new End Geometry



NG | 4 | 30° | R ±.0002 (R≤1/8) | R ±.0004 (R>1/8) | PLAIN

P.766

Unit : Inch

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF17008	R1/16	1/8	1/4	1/8	2-3/8
GMF17012	R3/32	3/16	1/4	5/32	2-3/4
GMF17016	R1/8	1/4	1/4	1/4	3-1/2
GMF17020	R5/32	5/16	5/16	5/16	4
GMF17024	R3/16	3/8	3/8	3/8	4
GMF17032	R1/4	1/2	1/2	1/2	4-1/4

Size	Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	±.0002	0~−.0008	h6
over Ø1/4	±.0004		

◎ : Excellent ○ : Good

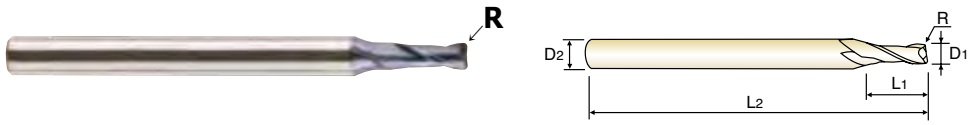
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

4G MILL END MILLS

GMF18 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE CORNER RADIUS

- New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- Excellent performance when cutting steels, up to HRc55
- Available in various length shanks and corner radiuses.



MG | 2 | 30° | R ±.0004 (D≤1/4) | R ±.0006 (D>1/4) | PLAIN

P.767

Unit : Inch

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF18003	R.008	3/64	1/4	3/32	2
GMF18901	R.012	3/64	1/4	3/32	2
GMF18004	R.008	1/16	1/4	5/32	2
GMF18902	R.012	1/16	1/4	5/32	2
GMF18903	R.020	1/16	1/4	5/32	2
GMF18005	R.008	5/64	1/4	1/4	2
GMF18904	R.012	5/64	1/4	1/4	2
GMF18905	R.020	5/64	1/4	1/4	2
GMF18008	R.008	1/8	1/4	5/16	2-3/8
GMF18906	R.012	1/8	1/4	5/16	2-3/8
GMF18907	R.020	1/8	1/4	5/16	2-3/8
GMF18940	R.030	1/8	1/4	5/16	2-3/8
GMF18009	R.008	9/64	1/4	3/8	2-3/4
GMF18908	R.012	9/64	1/4	3/8	2-3/4
GMF18909	R.020	9/64	1/4	3/8	2-3/4
GMF18941	R.030	9/64	1/4	3/8	2-3/4
GMF18910	R.040	9/64	1/4	3/8	2-3/4
GMF18013	R.008	13/64	1/4	1/2	3-1/2
GMF18911	R.012	13/64	1/4	1/2	3-1/2
GMF18912	R.020	13/64	1/4	1/2	3-1/2
GMF18942	R.030	13/64	1/4	1/2	3-1/2
GMF18913	R.040	13/64	1/4	1/2	3-1/2
GMF18016	R.008	1/4	1/4	5/8	2-3/8
GMF18914	R.012	1/4	1/4	5/8	2-3/8
GMF18915	R.020	1/4	1/4	5/8	2-3/8
GMF18943	R.030	1/4	1/4	5/8	2-3/8
GMF18916	R.040	1/4	1/4	5/8	2-3/8
GMF18917	R.008	1/4	1/4	5/8	3-1/2
GMF18918	R.012	1/4	1/4	5/8	3-1/2

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◎ : Excellent ○ : Good

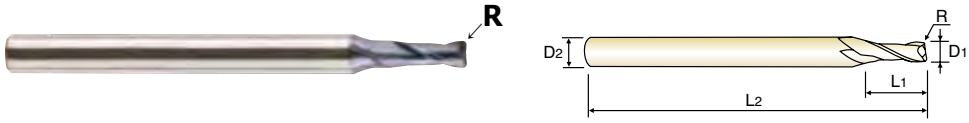
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

GMF18 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE CORNER RADIUS

- New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- Excellent performance when cutting steels, up to HRc55
- Available in various length shanks and corner radiuses.



MG | 2 | 30° | R ±.0004 (D≤1/4) | R ±.0006 (D>1/4) | PLAIN

P.767

Unit : Inch

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF18919	R.020	1/4	1/4	5/8	3-1/2
GMF18944	R.030	1/4	1/4	5/8	3-1/2
GMF18920	R.040	1/4	1/4	5/8	3-1/2
GMF18020	R.020	5/16	5/16	3/4	2-3/4
GMF18945	R.030	5/16	5/16	3/4	2-3/4
GMF18921	R.040	5/16	5/16	3/4	2-3/4
GMF18922	R.020	5/16	5/16	3/4	4
GMF18946	R.030	5/16	5/16	3/4	4
GMF18923	R.040	5/16	5/16	3/4	4
GMF18924	R.060	5/16	5/16	3/4	4
GMF18925	R.080	5/16	5/16	3/4	4
GMF18024	R.020	3/8	3/8	1	3
GMF18947	R.030	3/8	3/8	1	3
GMF18926	R.040	3/8	3/8	1	3
GMF18927	R.020	3/8	3/8	1	4
GMF18948	R.030	3/8	3/8	1	4
GMF18928	R.040	3/8	3/8	1	4
GMF18929	R.060	3/8	3/8	1	4
GMF18930	R.080	3/8	3/8	1	4
GMF18032	R.020	1/2	1/2	1-3/16	3-1/8
GMF18949	R.030	1/2	1/2	1-3/16	3-1/8
GMF18931	R.040	1/2	1/2	1-3/16	3-1/8
GMF18932	R.020	1/2	1/2	1-3/16	4-1/4
GMF18950	R.030	1/2	1/2	1-3/16	4-1/4
GMF18933	R.040	1/2	1/2	1-3/16	4-1/4
GMF18934	R.060	1/2	1/2	1-3/16	4-1/4
GMF18935	R.080	1/2	1/2	1-3/16	4-1/4
GMF18936	R.100	1/2	1/2	1-3/16	4-1/4
GMF18937	R.118	1/2	1/2	1-3/16	4-1/4

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

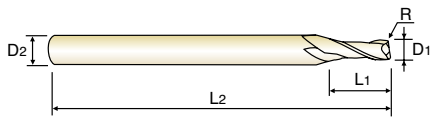
4G MILL END MILLS

GMF18 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE CORNER RADIUS

- New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- Excellent performance when cutting steels, up to HRc55
- Available in various length shanks and corner radiuses.





MG | 2 | 30° | R ±.0004 (D≤1/4) | R ±.0006 (D>1/4) | PLAIN P.767

Unit : Inch

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF18951	R.030	9/16	5/8	1-3/8	6
GMF18036	R.040	9/16	5/8	1-3/8	6
GMF18952	R.030	5/8	5/8	1-1/4	6
GMF18040	R.040	5/8	5/8	1-1/4	6
GMF18938	R.080	5/8	5/8	1-1/4	6
GMF18953	R.030	3/4	3/4	1-1/2	6
GMF18048	R.040	3/4	3/4	1-1/2	6
GMF18939	R.080	3/4	3/4	1-1/2	6

Size	Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	±.0004	0~−.0005	h6
over Ø1/4	±.0006	0~−.0006	

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

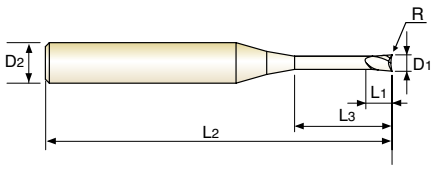
4G MILL END MILLS

GMF19 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE CORNER RADIUS WITH NECK

- New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- Excellent performance when cutting steels, up to HRc55
- Available in many more various length shanks and corner radiuses.





MG | 2 | 30° | R ±.0004 (D≤1/4) | R ±.0006 (D>1/4) | PLAIN

P.768, 769

Unit : Inch

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
GMF19901	R.001	.008	3/16	.010	3/64	1-1/2
GMF19902	R.002	.008	3/16	.010	3/64	1-1/2
GMF19903	R.001	.012	3/16	1/64	3/64	1-1/2
GMF19904	R.001	.012	3/16	1/64	5/64	1-1/2
GMF19905	R.002	.012	3/16	1/64	3/64	1-1/2
GMF19906	R.002	.012	3/16	1/64	5/64	1-1/2
GMF19907	R.002	.015	3/16	1/32	3/64	1-1/2
GMF19908	R.002	.015	3/16	1/32	1/16	1-1/2
GMF19909	R.002	.015	3/16	1/32	5/64	1-1/2
GMF19910	R.002	.015	3/16	1/32	3/32	1-1/2
GMF19911	R.004	.015	3/16	1/32	3/64	1-1/2
GMF19912	R.004	.015	3/16	1/32	5/64	1-1/2
GMF19913	R.002	.020	3/16	1/32	3/64	1-3/4
GMF19914	R.002	.020	3/16	1/32	1/16	1-3/4
GMF19915	R.002	.020	3/16	1/32	5/64	1-3/4
GMF19916	R.002	.020	3/16	1/32	5/32	1-3/4
GMF19917	R.004	.020	3/16	1/32	5/64	1-3/4
GMF19918	R.004	.020	3/16	1/32	1/8	1-3/4
GMF19919	R.002	.024	3/16	1/32	1/8	1-3/4
GMF19920	R.002	.024	3/16	1/32	1/4	1-3/4
GMF19921	R.004	.024	3/16	1/32	5/64	1-3/4
GMF19922	R.004	.024	3/16	1/32	5/32	1-3/4
GMF19923	R.004	.024	3/16	1/32	1/4	1-3/4
GMF19924	R.008	.024	3/16	1/32	5/64	1-3/4
GMF19925	R.008	.024	3/16	1/32	5/32	1-3/4
GMF19926	R.008	.024	3/16	1/32	1/4	1-3/4
GMF19927	R.002	.031	3/16	3/64	5/64	1-3/4
GMF19928	R.002	.031	3/16	3/64	5/32	1-3/4
GMF19929	R.002	.031	3/16	3/64	1/4	1-3/4
GMF19930	R.004	.031	3/16	3/64	5/64	1-3/4
GMF19931	R.004	.031	3/16	3/64	5/32	1-3/4

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◎ : Excellent ○ : Good

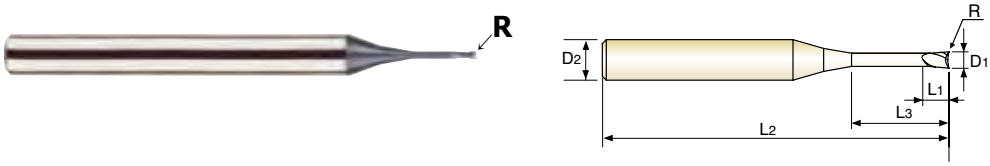
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

GMF19 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE CORNER RADIUS WITH NECK

- New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- Excellent performance when cutting steels, up to HRc55
- Available in many more various length shanks and corner radiuses.



MG | 2 | 30° | R ±.0004 (D≤1/4) | R ±.0006 (D>1/4) | PLAIN

P.768, 769

Unit : Inch

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
GMF19932	R.004	.031	3/16	3/64	1/4	1-3/4
GMF19933	R.004	.031	3/16	3/64	5/16	1-3/4
GMF19934	R.008	.031	3/16	3/64	5/32	1-3/4
GMF19935	R.008	.031	3/16	3/64	1/4	1-3/4
GMF19936	R.008	.031	3/16	3/64	5/16	1-3/4
GMF19003	R.002	3/64	3/16	1/16	1/8	2
GMF19937	R.002	3/64	3/16	1/16	5/32	2
GMF19938	R.002	3/64	3/16	1/16	1/4	2
GMF19939	R.004	3/64	3/16	1/16	1/8	2
GMF19940	R.004	3/64	3/16	1/16	5/32	2
GMF19941	R.004	3/64	3/16	1/16	1/4	2
GMF19942	R.004	3/64	3/16	1/16	5/16	2
GMF19943	R.004	3/64	3/16	1/16	3/8	2
GMF19944	R.008	3/64	3/16	1/16	1/8	2
GMF19945	R.008	3/64	3/16	1/16	5/32	2
GMF19946	R.008	3/64	3/16	1/16	1/4	2
GMF19947	R.008	3/64	3/16	1/16	5/16	2
GMF19948	R.008	3/64	3/16	1/16	3/8	2
GMF19949	R.012	3/64	3/16	1/16	5/32	2
GMF19950	R.012	3/64	3/16	1/16	1/4	2
GMF19951	R.012	3/64	3/16	1/16	5/16	2
GMF19952	R.012	3/64	3/16	1/16	3/8	2
GMF19004	R.002	1/16	3/16	3/32	5/32	2
GMF19953	R.002	1/16	3/16	3/32	1/4	2
GMF19954	R.002	1/16	3/16	3/32	5/16	2
GMF19955	R.004	1/16	3/16	3/32	5/32	2
GMF19956	R.004	1/16	3/16	3/32	1/4	2
GMF19957	R.004	1/16	3/16	3/32	5/16	2
GMF19958	R.008	1/16	3/16	3/32	5/32	2
GMF19959	R.008	1/16	3/16	3/32	1/4	2
GMF19960	R.008	1/16	3/16	3/32	5/16	2

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

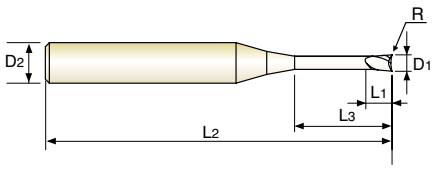
4G MILL END MILLS

GMF19 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE CORNER RADIUS WITH NECK

- New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- Excellent performance when cutting steels, up to HRc55
- Available in many more various length shanks and corner radiuses.





MG | 2 | 30° | R ±.0004 (D≤1/4) | R ±.0006 (D>1/4) | PLAIN

P.768, 769

Unit : Inch

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
GMF19961	R.008	1/16	3/16	3/32	3/8	2
GMF19962	R.008	1/16	3/16	3/32	1/2	2
GMF19963	R.012	1/16	3/16	3/32	5/32	2
GMF19964	R.012	1/16	3/16	3/32	1/4	2
GMF19965	R.012	1/16	3/16	3/32	5/16	2
GMF19966	R.012	1/16	3/16	3/32	3/8	2
GMF19967	R.012	1/16	3/16	3/32	1/2	2
GMF19005	R.004	5/64	3/16	1/8	1/4	2
GMF19968	R.004	5/64	3/16	1/8	5/16	2
GMF19969	R.004	5/64	3/16	1/8	3/8	2
GMF19970	R.004	5/64	3/16	1/8	1/2	2
GMF19971	R.008	5/64	3/16	1/8	1/4	2
GMF19972	R.008	5/64	3/16	1/8	5/16	2
GMF19973	R.008	5/64	3/16	1/8	3/8	2
GMF19974	R.008	5/64	3/16	1/8	1/2	2
GMF19975	R.008	5/64	3/16	1/8	5/8	2
GMF19976	R.012	5/64	3/16	1/8	1/4	2
GMF19977	R.012	5/64	3/16	1/8	5/16	2
GMF19978	R.012	5/64	3/16	1/8	3/8	2
GMF19979	R.012	5/64	3/16	1/8	1/2	2
GMF19980	R.012	5/64	3/16	1/8	5/8	2
GMF19981	R.020	5/64	3/16	1/8	1/4	2
GMF19982	R.020	5/64	3/16	1/8	5/16	2
GMF19983	R.020	5/64	3/16	1/8	3/8	2
GMF19984	R.020	5/64	3/16	1/8	1/2	2
GMF19985	R.020	5/64	3/16	1/8	9/16	2
GMF19008	R.004	1/8	1/4	3/16	3/8	2
GMF19986	R.004	1/8	1/4	3/16	1/2	2
GMF19987	R.004	1/8	1/4	3/16	5/8	2-3/8
GMF19988	R.008	1/8	1/4	3/16	5/16	2
GMF19989	R.008	1/8	1/4	3/16	3/8	2

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◎ : Excellent ○ : Good

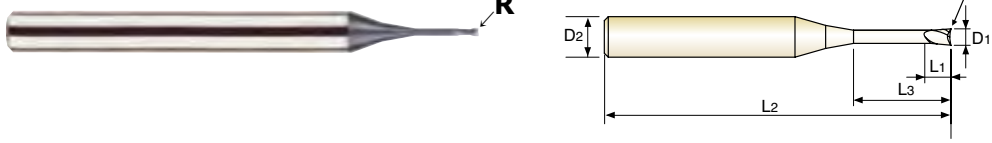
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Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

GMF19 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE CORNER RADIUS WITH NECK

- New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- Excellent performance when cutting steels, up to HRc55
- Available in many more various length shanks and corner radiuses.



MG | 2 | 30° | R ±.0004 (D≤1/4) | R ±.0006 (D>1/4) | PLAIN

P.768, 769

Unit : Inch

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
GMF19990	R.008	1/8	1/4	3/16	1/2	2
GMF19991	R.008	1/8	1/4	3/16	5/8	2-3/8
GMF19992	R.008	1/8	1/4	3/16	3/4	2-3/8
GMF19993	R.008	1/8	1/4	3/16	1	2-3/4
GMF19994	R.012	1/8	1/4	3/16	5/16	2
GMF19995	R.012	1/8	1/4	3/16	3/8	2
GMF19996	R.012	1/8	1/4	3/16	1/2	2
GMF19997	R.012	1/8	1/4	3/16	5/8	2-3/8
GMF19998	R.012	1/8	1/4	3/16	3/4	2-3/8
GMF19999	R.020	1/8	1/4	3/16	5/16	2
GMF19801	R.020	1/8	1/4	3/16	3/8	2
GMF19802	R.020	1/8	1/4	3/16	1/2	2
GMF19803	R.020	1/8	1/4	3/16	5/8	2-3/8
GMF19804	R.020	1/8	1/4	3/16	3/4	2-3/8
GMF19805	R.020	1/8	1/4	3/16	1	2-3/4
GMF19845	R.030	1/8	1/4	3/16	3/8	2
GMF19846	R.030	1/8	1/4	3/16	1/2	2
GMF19847	R.030	1/8	1/4	3/16	5/16	2
GMF19848	R.030	1/8	1/4	3/16	3/4	2-3/8
GMF19849	R.030	1/8	1/4	3/16	5/8	2-3/8
GMF19850	R.030	1/8	1/4	3/16	1	2-3/4
GMF19806	R.040	1/8	1/4	3/16	5/16	2
GMF19807	R.040	1/8	1/4	3/16	3/8	2
GMF19808	R.040	1/8	1/4	3/16	1/2	2
GMF19809	R.040	1/8	1/4	3/16	5/8	2-3/8
GMF19810	R.040	1/8	1/4	3/16	3/4	2-3/8
GMF19012	R.004	3/16	1/4	1/4	3/8	2
GMF19811	R.004	3/16	1/4	1/4	1/2	2
GMF19812	R.004	3/16	1/4	1/4	5/8	2-3/8
GMF19813	R.008	3/16	1/4	1/4	3/8	2
GMF19814	R.008	3/16	1/4	1/4	1/2	2

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

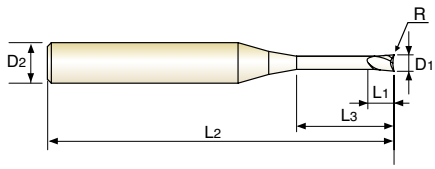
4G MILL END MILLS

GMF19 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE CORNER RADIUS WITH NECK

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MG | 2 | 30° | R ±.0004 (D≤1/4) | R ±.0006 (D>1/4) | PLAIN

P.768, 769

Unit : Inch

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
GMF19815	R.008	3/16	1/4	1/4	5/8	2-3/8
GMF19816	R.008	3/16	1/4	1/4	3/4	2-3/8
GMF19817	R.008	3/16	1/4	1/4	1	2-3/4
GMF19818	R.012	3/16	1/4	1/4	1/2	2
GMF19819	R.012	3/16	1/4	1/4	5/8	2-3/8
GMF19820	R.012	3/16	1/4	1/4	3/4	2-3/8
GMF19821	R.012	3/16	1/4	1/4	1	2-3/4
GMF19822	R.020	3/16	1/4	1/4	3/8	2
GMF19823	R.020	3/16	1/4	1/4	1/2	2
GMF19824	R.020	3/16	1/4	1/4	5/8	2-3/8
GMF19825	R.020	3/16	1/4	1/4	3/4	2-3/8
GMF19826	R.020	3/16	1/4	1/4	1	2-3/4
GMF19827	R.020	3/16	1/4	1/4	1-3/16	2-3/4
GMF19851	R.030	3/16	1/4	1/4	3/8	2
GMF19852	R.030	3/16	1/4	1/4	1/2	2
GMF19853	R.030	3/16	1/4	1/4	5/8	2-3/8
GMF19854	R.030	3/16	1/4	1/4	3/4	2-3/8
GMF19855	R.030	3/16	1/4	1/4	1	2-3/4
GMF19856	R.030	3/16	1/4	1/4	1-3/16	2-3/4
GMF19828	R.040	3/16	1/4	1/4	3/8	2
GMF19829	R.040	3/16	1/4	1/4	1/2	2
GMF19830	R.040	3/16	1/4	1/4	5/8	2-3/8
GMF19831	R.040	3/16	1/4	1/4	3/4	2-3/8
GMF19016	R.008	1/4	1/4	3/8	3/4	2-3/8
GMF19832	R.012	1/4	1/4	3/8	3/4	2-3/8
GMF19833	R.020	1/4	1/4	3/8	3/4	2-3/8
GMF19834	R.040	1/4	1/4	3/8	3/4	2-3/8
GMF19835	R.020	1/4	1/4	5/8	1-3/16	3-1/2
GMF19857	R.030	1/4	1/4	3/8	3/4	2-3/8
GMF19858	R.030	1/4	1/4	5/8	1-3/16	3-1/2
GMF19020	R.008	5/16	5/16	1/2	1	2-3/4

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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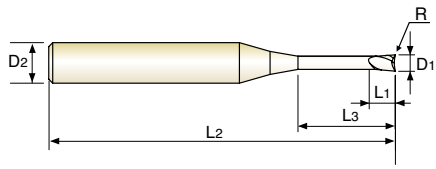
4G MILL END MILLS

GMF19 SERIES PLAIN SHANK

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MG | 2 | 30° | R ±.0004 (D≤1/4) | R ±.0006 (D>1/4) | PLAIN

P.768, 769

Unit : Inch

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
GMF19836	R.012	**5/16**	5/16	1/2	1	2-3/4
GMF19837	R.020	**5/16**	5/16	1/2	1	2-3/4
GMF19859	R.030	**5/16**	5/16	1/2	1	2-3/4
GMF19838	R.040	**5/16**	5/16	1/2	1	2-3/4
GMF19024	R.012	**3/8**	3/8	5/8	1-3/16	3
GMF19839	R.020	**3/8**	3/8	5/8	1-3/16	3
GMF19860	R.030	**3/8**	3/8	5/8	1-3/16	3
GMF19840	R.040	**3/8**	3/8	5/8	1-3/16	3
GMF19032	R.020	**1/2**	1/2	11/16	1-1/4	3-1/8
GMF19861	R.030	**1/2**	1/2	11/16	1-1/4	3-1/8
GMF19841	R.040	**1/2**	1/2	11/16	1-1/4	3-1/8
GMF19842	R.060	**1/2**	1/2	11/16	1-1/4	3-1/8
GMF19040	R.020	**5/8**	5/8	3/4	1-3/8	4
GMF19862	R.030	**5/8**	5/8	3/4	1-3/8	4
GMF19843	R.040	**5/8**	5/8	3/4	1-3/8	4
GMF19048	R.020	**3/4**	3/4	1	1-1/2	4
GMF19863	R.030	**3/4**	3/4	1	1-1/2	4
GMF19844	R.040	**3/4**	3/4	1	1-1/2	4

Size	Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	±.0004	0~−.0005	h6
over Ø1/4	±.0006	0~−.0006	

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

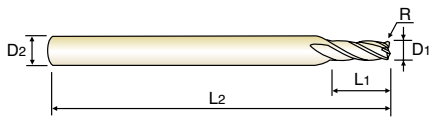
4G MILL END MILLS

GMF20 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE CORNER RADIUS

- New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- Excellent performance when cutting steels, up to HRc55
- Available in many more various length shanks and corner radiuses.
- Due to Multiple Helix on 1/8" and over diameter end mills, vibration is minimized and tool life increased.
- 4 flute series has new designs to reduce vibrations





MG | 4 | M-Helix | R ±.0008 | PLAIN

P.769

Unit : Inch

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF20003	R.004	3/64	1/4	3/32	2
GMF20005	R.004	5/64	1/4	1/4	2
GMF20901	R.008	5/64	1/4	1/4	2
GMF20008	R.008	1/8	1/4	5/16	2-3/8
GMF20902	R.012	1/8	1/4	5/16	2-3/8
GMF20903	R.020	1/8	1/4	5/16	2-3/8
GMF20933	R.030	1/8	1/4	5/16	2-3/8
GMF20012	R.008	3/16	1/4	3/8	2-3/4
GMF20904	R.012	3/16	1/4	3/8	2-3/4
GMF20905	R.020	3/16	1/4	3/8	2-3/4
GMF20934	R.030	3/16	1/4	3/8	2-3/4
GMF20906	R.040	3/16	1/4	3/8	2-3/4
GMF20013	R.012	13/64	1/4	1/2	3-1/2
GMF20907	R.020	13/64	1/4	1/2	3-1/2
GMF20935	R.030	13/64	1/4	1/2	3-1/2
GMF20016	R.008	1/4	1/4	5/8	3-1/2
GMF20908	R.012	1/4	1/4	5/8	3-1/2
GMF20909	R.020	1/4	1/4	5/8	3-1/2
GMF20936	R.030	1/4	1/4	5/8	3-1/2
GMF20910	R.040	1/4	1/4	5/8	3-1/2
GMF20020	R.012	5/16	5/16	3/4	2-3/4
GMF20911	R.020	5/16	5/16	3/4	2-3/4
GMF20937	R.030	5/16	5/16	3/4	2-3/4
GMF20912	R.040	5/16	5/16	3/4	2-3/4
GMF20913	R.008	5/16	5/16	3/4	4
GMF20914	R.012	5/16	5/16	3/4	4
GMF20915	R.020	5/16	5/16	3/4	4
GMF20938	R.030	5/16	5/16	3/4	4
GMF20916	R.040	5/16	5/16	3/4	4
GMF20917	R.060	5/16	5/16	3/4	4
GMF20918	R.080	5/16	5/16	3/4	4

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

4G MILL END MILLS

GMF20 SERIES PLAIN SHANK

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MG | 4 | M-Helix | R ±.0008 | PLAIN

P.769

Unit : Inch

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF20024	R.020	3/8	3/8	1	3
GMF20939	R.030	3/8	3/8	1	3
GMF20919	R.012	3/8	3/8	1	4
GMF20920	R.020	3/8	3/8	1	4
GMF20940	R.030	3/8	3/8	1	4
GMF20921	R.040	3/8	3/8	1	4
GMF20922	R.060	3/8	3/8	1	4
GMF20923	R.080	3/8	3/8	1	4
GMF20032	R.020	1/2	1/2	1-3/16	3-1/8
GMF20924	R.040	1/2	1/2	1-3/16	3-1/8
GMF20925	R.020	1/2	1/2	1-3/16	4-1/4
GMF20941	R.030	1/2	1/2	1-3/16	3-1/8
GMF20942	R.030	1/2	1/2	1-3/16	4-1/4
GMF20926	R.040	1/2	1/2	1-3/16	4-1/4
GMF20927	R.060	1/2	1/2	1-3/16	4-1/4
GMF20928	R.080	1/2	1/2	1-3/16	4-1/4
GMF20040	R.020	5/8	5/8	1-1/4	6
GMF20943	R.030	5/8	5/8	1-1/4	6
GMF20929	R.040	5/8	5/8	1-1/4	6
GMF20930	R.060	5/8	5/8	1-1/4	6
GMF20931	R.080	5/8	5/8	1-1/4	6
GMF20944	R.030	3/4	3/4	1-1/2	6
GMF20048	R.040	3/4	3/4	1-1/2	6
GMF20932	R.080	3/4	3/4	1-1/2	6

Mill Dia. Tolerance (Inch)	Corner Radius Tolerance (Inch)	Shank Dia. Tolerance
0~−.0012	±.0008	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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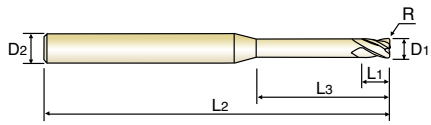
4G MILL END MILLS

GMF21 SERIES PLAIN SHANK

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- 4 flute series has new designs to reduce vibrations





MG | 4 | M-Helix | R ±.0008 | PLAIN

P.770

Unit : Inch

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
GMF21003	R.004	3/64	3/16	1/16	5/32	2
GMF21901	R.004	3/64	3/16	1/16	1/4	2
GMF21902	R.004	3/64	3/16	1/16	5/16	2
GMF21903	R.008	3/64	3/16	1/16	5/32	2
GMF21904	R.008	3/64	3/16	1/16	1/4	2
GMF21905	R.008	3/64	3/16	1/16	5/16	2
GMF21906	R.012	3/64	3/16	1/16	5/32	2
GMF21907	R.012	3/64	3/16	1/16	1/4	2
GMF21908	R.012	3/64	3/16	1/16	5/16	2
GMF21004	R.004	1/16	3/16	3/32	1/4	2
GMF21909	R.004	1/16	3/16	3/32	5/16	2
GMF21910	R.004	1/16	3/16	3/32	3/8	2
GMF21911	R.004	1/16	3/16	3/32	1/2	2
GMF21912	R.008	1/16	3/16	3/32	1/4	2
GMF21913	R.008	1/16	3/16	3/32	5/16	2
GMF21914	R.008	1/16	3/16	3/32	3/8	2
GMF21915	R.008	1/16	3/16	3/32	1/2	2
GMF21916	R.012	1/16	3/16	3/32	1/4	2
GMF21917	R.012	1/16	3/16	3/32	5/16	2
GMF21918	R.012	1/16	3/16	3/32	3/8	2
GMF21919	R.012	1/16	3/16	3/32	1/2	2
GMF21920	R.020	1/16	3/16	3/32	1/4	2
GMF21921	R.020	1/16	3/16	3/32	5/16	2
GMF21922	R.020	1/16	3/16	3/32	3/8	2
GMF21923	R.020	1/16	3/16	3/32	1/2	2
GMF21005	R.004	5/64	3/16	1/8	1/4	2
GMF21924	R.004	5/64	3/16	1/8	5/16	2
GMF21925	R.004	5/64	3/16	1/8	3/8	2
GMF21926	R.004	5/64	3/16	1/8	1/2	2
GMF21927	R.008	5/64	3/16	1/8	1/4	2
GMF21928	R.008	5/64	3/16	1/8	5/16	2

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

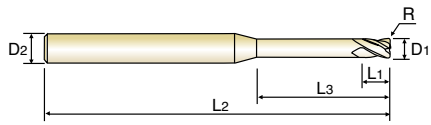
4G MILL END MILLS

GMF21 SERIES PLAIN SHANK

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- Excellent performance when cutting steels, up to HRc55
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- 4 flute series has new designs to reduce vibrations





MG | 4 | M-Helix | R ±.0008 | PLAIN P.770

Unit : Inch

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
GMF21929	R.008	5/64	3/16	1/8	3/8	2
GMF21930	R.008	5/64	3/16	1/8	1/2	2
GMF21931	R.012	5/64	3/16	1/8	1/4	2
GMF21932	R.012	5/64	3/16	1/8	5/16	2
GMF21933	R.012	5/64	3/16	1/8	3/8	2
GMF21934	R.012	5/64	3/16	1/8	1/2	2
GMF21935	R.020	5/64	3/16	1/8	1/4	2
GMF21936	R.020	5/64	3/16	1/8	5/16	2
GMF21937	R.020	5/64	3/16	1/8	3/8	2
GMF21938	R.020	5/64	3/16	1/8	1/2	2
GMF21008	R.004	1/8	1/4	3/16	5/16	2
GMF21939	R.004	1/8	1/4	3/16	3/8	2
GMF21940	R.004	1/8	1/4	3/16	1/2	2
GMF21941	R.004	1/8	1/4	3/16	5/8	2-3/8
GMF21942	R.008	1/8	1/4	3/16	3/8	2
GMF21943	R.008	1/8	1/4	3/16	1/2	2
GMF21944	R.008	1/8	1/4	3/16	5/8	2-3/8
GMF21945	R.008	1/8	1/4	3/16	3/4	2-3/8
GMF21946	R.012	1/8	1/4	3/16	5/16	2
GMF21947	R.012	1/8	1/4	3/16	3/8	2
GMF21948	R.012	1/8	1/4	3/16	1/2	2
GMF21949	R.012	1/8	1/4	3/16	5/8	2-3/8
GMF21950	R.012	1/8	1/4	3/16	3/4	2-3/8
GMF21951	R.020	1/8	1/4	3/16	5/16	2
GMF21952	R.020	1/8	1/4	3/16	3/8	2
GMF21953	R.020	1/8	1/4	3/16	1/2	2
GMF21954	R.020	1/8	1/4	3/16	5/8	2-3/8
GMF21955	R.020	1/8	1/4	3/16	3/4	2-3/8
GMF21956	R.020	1/8	1/4	3/16	1	2-3/4
GMF21999	R.030	1/8	1/4	3/16	5/16	2
GMF21801	R.030	1/8	1/4	3/16	3/8	2

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

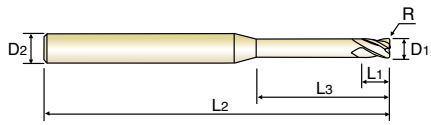
4G MILL END MILLS

GMF21 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE CORNER RADIUS WITH NECK

- New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- Excellent performance when cutting steels, up to HRc55
- Due to Multiple Helix on 1/8" and over diameter end mills, vibration is minimized and tool life increased.
- 4 flute series has new designs to reduce vibrations





MG | 4 | M-Helix | R ±.0008 | PLAIN

P.770

Unit : Inch

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
GMF21802	R.030	1/8	1/4	3/16	1/2	2
GMF21803	R.030	1/8	1/4	3/16	5/8	2-3/8
GMF21804	R.030	1/8	1/4	3/16	3/4	2-3/8
GMF21805	R.030	1/8	1/4	3/16	1	2-3/4
GMF21957	R.040	1/8	1/4	3/16	5/16	2-3/4
GMF21958	R.040	1/8	1/4	3/16	3/8	2
GMF21959	R.040	1/8	1/4	3/16	1/2	2
GMF21960	R.040	1/8	1/4	3/16	5/8	2-3/8
GMF21012	R.004	3/16	1/4	1/4	3/8	2
GMF21961	R.004	3/16	1/4	1/4	1/2	2
GMF21962	R.004	3/16	1/4	1/4	5/8	2-3/8
GMF21963	R.004	3/16	1/4	1/4	3/4	2-3/8
GMF21964	R.008	3/16	1/4	1/4	3/8	2
GMF21965	R.008	3/16	1/4	1/4	1/2	2
GMF21966	R.008	3/16	1/4	1/4	5/8	2-3/8
GMF21967	R.008	3/16	1/4	1/4	3/4	2-3/8
GMF21968	R.008	3/16	1/4	1/4	1	2-3/4
GMF21969	R.012	3/16	1/4	1/4	3/8	2
GMF21970	R.012	3/16	1/4	1/4	1/2	2
GMF21971	R.012	3/16	1/4	1/4	5/8	2-3/8
GMF21972	R.012	3/16	1/4	1/4	3/4	2-3/8
GMF21973	R.012	3/16	1/4	1/4	1	2-3/4
GMF21974	R.020	3/16	1/4	1/4	3/8	2
GMF21975	R.020	3/16	1/4	1/4	1/2	2
GMF21976	R.020	3/16	1/4	1/4	5/8	2-3/8
GMF21977	R.020	3/16	1/4	1/4	3/4	2-3/8
GMF21978	R.020	3/16	1/4	1/4	1	2-3/4
GMF21806	R.030	3/16	1/4	1/4	3/8	2
GMF21807	R.030	3/16	1/4	1/4	1/2	2
GMF21808	R.030	3/16	1/4	1/4	5/8	2-3/8
GMF21809	R.030	3/16	1/4	1/4	3/4	2-3/8

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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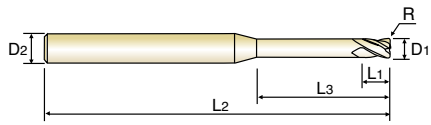
4G MILL END MILLS

GMF21 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE CORNER RADIUS WITH NECK

- New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- Excellent performance when cutting steels, up to HRc55
- Due to Multiple Helix on 1/8" and over diameter end mills, vibration is minimized and tool life increased.
- 4 flute series has new designs to reduce vibrations





MG | 4 | M-Helix | R ±.0008 | PLAIN

P.770

Unit : Inch

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
GMF21810	R.030	3/16	1/4	1/4	1	2-3/4
GMF21979	R.040	3/16	1/4	1/4	3/8	2
GMF21980	R.040	3/16	1/4	1/4	1/2	2
GMF21981	R.040	3/16	1/4	1/4	5/8	2-3/8
GMF21982	R.040	3/16	1/4	1/4	3/4	2-3/8
GMF21983	R.040	3/16	1/4	1/4	1	2-3/4
GMF21016	R.012	1/4	1/4	3/8	3/4	2-3/8
GMF21984	R.020	1/4	1/4	3/8	3/4	2-3/8
GMF21811	R.030	1/4	1/4	3/8	3/4	2-3/8
GMF21985	R.040	1/4	1/4	3/8	3/4	2-3/8
GMF21020	R.008	5/16	5/16	1/2	1	2-3/4
GMF21986	R.012	5/16	5/16	1/2	1	2-3/4
GMF21987	R.020	5/16	5/16	1/2	1	2-3/4
GMF21988	R.040	5/16	5/16	1/2	1	2-3/4
GMF21989	R.020	5/16	5/16	3/4	1-3/8	4
GMF21812	R.030	5/16	5/16	1/2	1	2-3/4
GMF21813	R.030	5/16	5/16	3/4	1-3/8	4
GMF21024	R.020	3/8	3/8	5/8	1-3/16	3
GMF21990	R.040	3/8	3/8	5/8	1-3/16	3
GMF21991	R.060	3/8	3/8	5/8	1-3/16	3
GMF21992	R.020	3/8	3/8	1	1-1/2	4
GMF21814	R.030	3/8	3/8	5/8	1-3/16	3
GMF21815	R.030	3/8	3/8	1	1-1/2	4
GMF21032	R.020	1/2	1/2	11/16	1-1/4	3-1/8
GMF21816	R.030	1/2	1/2	11/16	1-1/4	3-1/8
GMF21817	R.030	1/2	1/2	1-3/16	1-3/4	4-1/4
GMF21993	R.040	1/2	1/2	11/16	1-1/4	3-1/8
GMF21994	R.060	1/2	1/2	11/16	1-1/4	3-1/8
GMF21995	R.080	1/2	1/2	11/16	1-1/4	3-1/8

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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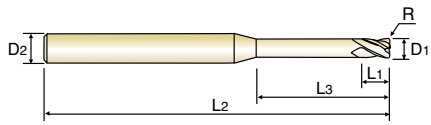
4G MILL END MILLS

GMF21 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE CORNER RADIUS WITH NECK

- New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- Excellent performance when cutting steels, up to HRc55
- Due to Multiple Helix on 1/8" and over diameter end mills, vibration is minimized and tool life increased.
- 4 flute series has new designs to reduce vibrations





MG | 4 | M-Helix | R ±.0008 | PLAIN

P.770

Unit : Inch

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
GMF21996	R.020	**1/2**	1/2	1-3/16	1-3/4	4-1/4
GMF21040	R.020	**5/8**	5/8	3/4	1-3/8	4
GMF21818	R.030	**5/8**	5/8	3/4	1-3/8	4
GMF21997	R.040	**5/8**	5/8	3/4	1-3/8	4
GMF21048	R.020	**3/4**	3/4	1	1-1/2	4
GMF21819	R.030	**3/4**	3/4	1	1-1/2	4
GMF21998	R.040	**3/4**	3/4	1	1-1/2	4

Mill Dia. Tolerance (Inch)	Corner Radius Tolerance (Inch)	Shank Dia. Tolerance
0~−.0012	±.0008	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

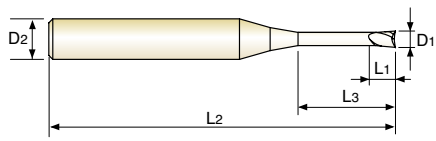
4G MILL END MILLS

GMF22 SERIES PLAIN SHANK

CARBIDE, 2FLUTE WITH NECK

- New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- Excellent performance when cutting steels, up to HRc55
- Due to Multiple Helix on 1/8" and over diameter end mills, vibration is minimized and tool life increased.
- For 1/32" and under 1/32" diameter sizes, double neck increases tool rigidity and minimizes vibration.
- Excellent for Rib Processing of various depths





MG | 2 | 30° | PLAIN

P.771, 772

Unit : Inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
GMF22901	.008	3/16	.010	3/64	1-1/2
GMF22902	.015	3/16	1/32	3/64	1-1/2
GMF22903	.015	3/16	1/32	5/64	1-1/2
GMF22904	.015	3/16	1/32	1/8	1-1/2
GMF22905	.015	3/16	1/32	5/32	1-1/2
GMF22906	.015	3/16	1/32	3/16	1-1/2
GMF22907	.020	3/16	1/32	5/64	1-3/4
GMF22908	.020	3/16	1/32	1/8	1-3/4
GMF22909	.020	3/16	1/32	5/32	1-3/4
GMF22910	.020	3/16	1/32	3/16	1-3/4
GMF22911	.020	3/16	1/32	1/4	1-3/4
GMF22912	.024	3/16	1/32	5/64	1-3/4
GMF22913	.024	3/16	1/32	1/8	1-3/4
GMF22914	.024	3/16	1/32	5/32	1-3/4
GMF22915	.024	3/16	1/32	3/16	1-3/4
GMF22916	.024	3/16	1/32	1/4	1-3/4
GMF22917	.024	3/16	1/32	5/16	1-3/4
GMF22918	.024	3/16	1/32	3/8	1-3/4
GMF22002	1/32	3/16	3/64	5/64	1-3/4
GMF22919	1/32	3/16	3/64	1/8	1-3/4
GMF22920	1/32	3/16	3/64	5/32	1-3/4
GMF22921	1/32	3/16	3/64	3/16	1-3/4
GMF22922	1/32	3/16	3/64	1/4	1-3/4
GMF22923	1/32	3/16	3/64	5/16	1-3/4
GMF22924	1/32	3/16	3/64	3/8	1-3/4
GMF22003	3/64	3/16	1/16	1/8	2
GMF22925	3/64	3/16	1/16	5/32	2
GMF22926	3/64	3/16	1/16	3/16	2
GMF22927	3/64	3/16	1/16	1/4	2
GMF22928	3/64	3/16	1/16	5/16	2
GMF22929	3/64	3/16	1/16	3/8	2

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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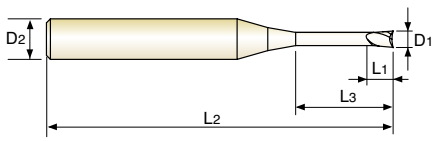
4G MILL END MILLS

GMF22 SERIES PLAIN SHANK

CARBIDE, 2FLUTE WITH NECK

- New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- Excellent performance when cutting steels, up to HRc55
- Due to Multiple Helix on 1/8" and over diameter end mills, vibration is minimized and tool life increased.
- For 1/32" and under 1/32" diameter sizes, double neck increases tool rigidity and minimizes vibration.
- Excellent for Rib Processing of various depths





MG | 2 | 30° | PLAIN

P.771, 772

Unit : Inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
GMF22930	3/64	3/16	1/16	1/2	2
GMF22931	3/64	3/16	1/16	9/16	2
GMF22932	3/64	3/16	1/16	5/8	2
GMF22933	3/64	3/16	1/16	3/4	2
GMF22004	1/16	3/16	3/32	5/32	2
GMF22934	1/16	3/16	3/32	1/4	2
GMF22935	1/16	3/16	3/32	5/16	2
GMF22936	1/16	3/16	3/32	3/8	2
GMF22937	1/16	3/16	3/32	1/2	2
GMF22938	1/16	3/16	3/32	9/16	2
GMF22939	1/16	3/16	3/32	5/8	2
GMF22940	1/16	3/16	3/32	3/4	2
GMF22005	5/64	3/16	1/8	1/4	2
GMF22941	5/64	3/16	1/8	5/16	2
GMF22942	5/64	3/16	1/8	3/8	2
GMF22943	5/64	3/16	1/8	1/2	2
GMF22944	5/64	3/16	1/8	9/16	2
GMF22945	5/64	3/16	1/8	5/8	2
GMF22946	5/64	3/16	1/8	3/4	2
GMF22006	3/32	3/16	5/32	5/16	2
GMF22947	3/32	3/16	5/32	1/2	2
GMF22948	3/32	3/16	5/32	5/8	2
GMF22949	3/32	3/16	5/32	3/4	2
GMF22008	1/8	1/4	3/16	5/16	2
GMF22950	1/8	1/4	3/16	3/8	2
GMF22951	1/8	1/4	3/16	1/2	2
GMF22952	1/8	1/4	3/16	9/16	2-3/8
GMF22953	1/8	1/4	3/16	5/8	2-3/8
GMF22954	1/8	1/4	3/16	11/16	2-3/8
GMF22955	1/8	1/4	3/16	3/4	2-3/8
GMF22956	1/8	1/4	3/16	1	2-3/4

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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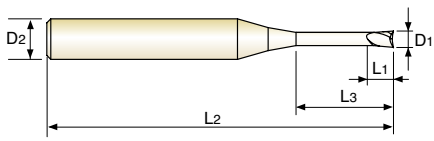
4G MILL END MILLS

GMF22 SERIES PLAIN SHANK

CARBIDE, 2FLUTE WITH NECK

- New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- Excellent performance when cutting steels, up to HRc55
- Due to Multiple Helix on 1/8" and over diameter end mills, vibration is minimized and tool life increased.
- For 1/32" and under 1/32" diameter sizes, double neck increases tool rigidity and minimizes vibration.
- Excellent for Rib Processing of various depths





MG | 2 | 30° | PLAIN

P.771, 772

Unit : Inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
GMF22012	3/16	1/4	1/4	3/8	2
GMF22957	3/16	1/4	1/4	1/2	2
GMF22958	3/16	1/4	1/4	5/8	2-3/8
GMF22959	3/16	1/4	1/4	11/16	2-3/8
GMF22960	3/16	1/4	1/4	3/4	2-3/8
GMF22961	3/16	1/4	1/4	1	2-3/4
GMF22962	3/16	1/4	1/4	1-3/16	2-3/4
GMF22013	13/64	1/4	5/16	3/4	2-3/8
GMF22963	13/64	1/4	5/16	1-3/16	2-3/4
GMF22964	13/64	1/4	5/16	1-3/8	3
GMF22965	13/64	1/4	5/16	1-1/2	3-1/8
GMF22966	13/64	1/4	5/16	2	3-1/2
GMF22016	1/4	1/4	3/8	5/8	2-3/8
GMF22967	1/4	1/4	3/8	3/4	2-3/8
GMF22968	1/4	1/4	3/8	1-3/16	2-3/4
GMF22020	5/16	5/16	1/2	1	2-3/4
GMF22024	3/8	3/8	5/8	1-3/16	3
GMF22969	3/8	3/8	5/8	1-3/4	4
GMF22032	1/2	1/2	3/4	1-3/8	3-1/8
GMF22970	1/2	1/2	3/4	2	4-1/4

Size	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	0~−.0005	h6
over Ø1/4	0~−.0006	

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

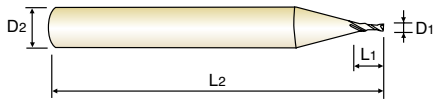
4G MILL END MILLS

GMF23 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE

- New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- Excellent performance when cutting steels, up to HRc55
- Sharp End tooth geometry allows more efficient cutting





MG | 2 | 30° | PLAIN

P.773

Unit : Inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF23901	.004	3/16	.008	1-1/2
GMF23902	.008	3/16	1/64	1-1/2
GMF23903	.012	3/16	1/32	1-1/2
GMF23904	.015	3/16	1/32	1-1/2
GMF23905	.020	3/16	3/64	1-1/2
GMF23906	.024	3/16	3/64	1-1/2
GMF23907	.028	3/16	1/16	1-1/2
GMF23908	.031	3/16	1/16	1-1/2
GMF23909	.035	3/16	5/64	1-1/2
GMF23910	.040	1/4	3/32	2
GMF23911	.047	1/4	1/8	2
GMF23004	1/16	1/4	5/32	2
GMF23005	5/64	1/4	1/4	2
GMF23006	3/32	1/4	1/4	2
GMF23008	1/8	1/4	5/16	2
GMF23009	9/64	1/4	3/8	2
GMF23012	3/16	1/4	3/8	2
GMF23013	13/64	1/4	5/8	2-3/8
GMF23016	1/4	1/4	5/8	2-3/8
GMF23017	17/64	5/16	11/16	2-3/8
GMF23018	9/32	5/16	3/4	2-3/8
GMF23020	5/16	5/16	3/4	2-3/4
GMF23022	11/32	3/8	7/8	2-3/4
GMF23023	23/64	3/8	7/8	2-3/4
GMF23024	3/8	3/8	1	3
GMF23026	13/32	1/2	1	3
GMF23028	7/16	1/2	1-3/16	3
GMF23032	1/2	1/2	1-3/16	3-1/8
GMF23036	9/16	9/16	1-3/8	4
GMF23912	9/16	5/8	1-3/8	4
GMF23040	5/8	5/8	1-1/2	4
GMF23048	3/4	3/4	1-3/4	4

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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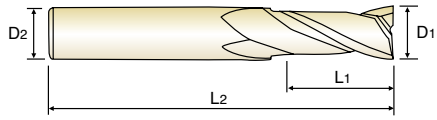
4G MILL END MILLS

GMF23 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE (3/16 SHANK)

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRc55
- ▶ Sharp End tooth geometry allows more efficient cutting





MG | 2 | 30° | PLAIN

P.773

Unit : Inch

EDP No.	Mill Diameter D_1	Shank Diameter D_2	Length of Cut L_1	Overall Length L_2
GMF23913	.040	3/16	3/32	2
GMF23914	.047	3/16	1/8	2
GMF23915	.050	3/16	1/8	2
GMF23916	.055	3/16	5/32	2
GMF23917	.060	3/16	5/32	2
GMF23918	.063	3/16	5/32	2
GMF23919	.070	3/16	3/16	2
GMF23920	.079	3/16	1/4	2
GMF23921	.087	3/16	1/4	2
GMF23922	.094	3/16	1/4	2
GMF23923	.098	3/16	5/16	2
GMF23924	.102	3/16	5/16	2
GMF23925	.106	3/16	5/16	2
GMF23926	.110	3/16	5/16	2
GMF23927	.120	3/16	5/16	2

▶ NEXT PAGE

Size	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	0~−.0005	h6
over Ø1/4	0~−.0006	

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

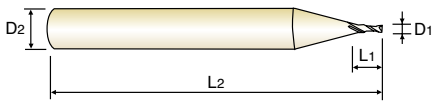
4G MILL END MILLS

GMF23 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE (1/8 Shank)

- New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- Excellent performance when cutting steels, up to HRc55
- Sharp End tooth geometry allows more efficient cutting





MG 2 30° PLAIN P.773

Unit : Inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF23928	.004	1/8	.008	1-1/2
GMF23929	.008	1/8	1/64	1-1/2
GMF23930	.012	1/8	1/32	1-1/2
GMF23931	.015	1/8	1/32	1-1/2
GMF23932	.020	1/8	3/64	1-1/2
GMF23933	.024	1/8	3/64	1-1/2
GMF23934	.028	1/8	1/16	1-1/2
GMF23935	.031	1/8	1/16	1-1/2
GMF23936	.035	1/8	5/64	1-1/2
GMF23937	.040	1/8	3/32	2
GMF23938	.047	1/8	1/8	2
GMF23939	.060	1/8	5/32	2
GMF23940	.079	1/8	1/4	2
GMF23941	.098	1/8	1/4	2
GMF23942	.120	1/8	5/16	2

Size	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	0~−.0005	h6
over Ø1/4	0~−.0006	

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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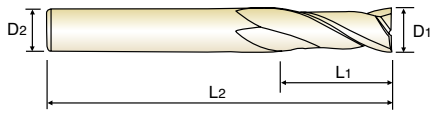
4G MILL END MILLS

GMF24 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG LENGTH

▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
▶ Excellent performance when cutting steels, up to HRc55
▶ Various length of cut and overall length end mills.





MG | 2 | 30° | PLAIN

P.774, 775

Unit : Inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF24003	3/64	1/4	1/8	2-3/8
GMF24901	3/64	1/4	5/32	2-3/8
GMF24902	3/64	1/4	1/4	2-3/8
GMF24903	3/64	1/4	5/16	2-3/8
GMF24904	3/64	1/4	3/8	2-3/8
GMF24004	1/16	1/4	1/4	2-3/8
GMF24905	1/16	1/4	5/16	2-3/8
GMF24906	1/16	1/4	3/8	2-3/8
GMF24907	1/16	1/4	1/2	2-3/8
GMF24908	1/16	1/4	5/8	2-3/8
GMF24005	5/64	1/4	5/16	2-3/8
GMF24909	5/64	1/4	3/8	2-3/8
GMF24910	5/64	1/4	1/2	2-3/8
GMF24911	5/64	1/4	5/8	2-3/8
GMF24006	3/32	1/4	5/8	2-3/8
GMF24008	1/8	1/4	3/8	2-3/4
GMF24912	1/8	1/4	1/2	2-3/4
GMF24913	1/8	1/4	5/8	2-3/4
GMF24914	1/8	1/4	3/4	2-3/4
GMF24915	1/8	1/4	1	2-3/4
GMF24012	3/16	1/4	1/2	2-3/4
GMF24916	3/16	1/4	5/8	2-3/4
GMF24917	3/16	1/4	3/4	2-3/4
GMF24918	3/16	1/4	1	2-3/4
GMF24919	3/16	1/4	1-3/16	2-3/4
GMF24013	13/64	1/4	3/4	2-3/4
GMF24920	13/64	1/4	1	2-3/4
GMF24921	13/64	1/4	1-3/16	3-1/8
GMF24922	13/64	1/4	1-1/2	4
GMF24016	1/4	1/4	5/8	2-3/8
GMF24923	1/4	1/4	5/8	3-1/8
GMF24924	1/4	1/4	3/4	2-3/4
GMF24925	1/4	1/4	3/4	3-1/2
GMF24926	1/4	1/4	1	3

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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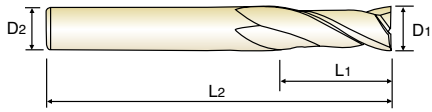
4G MILL END MILLS

GMF24 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG LENGTH

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRc55
- ▶ Various length of cut and overall length end mills.





MG | 2 | 30° | PLAIN

P.774, 775

Unit : Inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF24927	1/4	1/4	1-3/16	3-1/8
GMF24928	1/4	1/4	1-3/16	4
GMF24929	1/4	1/4	1-3/16	6
GMF24930	1/4	1/4	1-3/8	3-1/2
GMF24931	1/4	1/4	1-1/2	3-1/2
GMF24932	1/4	1/4	1-3/4	6
GMF24020	5/16	5/16	1	3-1/8
GMF24933	5/16	5/16	1-3/16	3-1/8
GMF24934	5/16	5/16	1-3/8	3-1/2
GMF24935	5/16	5/16	1-1/2	3-1/2
GMF24936	5/16	5/16	1-1/2	4-1/2
GMF24937	5/16	5/16	1-3/4	4
GMF24938	5/16	5/16	2	4
GMF24024	3/8	3/8	1-3/16	3-1/8
GMF24939	3/8	3/8	1-3/16	4
GMF24940	3/8	3/8	1-3/8	3-1/2
GMF24941	3/8	3/8	1-1/2	3-1/2
GMF24942	3/8	3/8	1-1/2	4-1/2
GMF24943	3/8	3/8	1-3/4	4
GMF24944	3/8	3/8	2	4
GMF24945	3/8	3/8	2-3/8	4-1/4
GMF24032	1/2	1/2	1-3/8	3-1/2
GMF24946	1/2	1/2	1-1/2	4
GMF24947	1/2	1/2	1-1/2	4-1/2
GMF24948	1/2	1/2	1-3/4	5
GMF24949	1/2	1/2	2	4
GMF24950	1/2	1/2	2-1/8	4-1/4
GMF24951	1/2	1/2	2-3/8	4-1/4
GMF24952	1/2	1/2	2-3/8	6
GMF24040	5/8	5/8	1-1/2	6
GMF24048	3/4	3/4	3-1/2	8
GMF24953	3/4	3/4	4-1/4	8

Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
0~−.0012	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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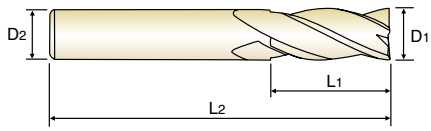
4G MILL END MILLS

GMF25 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE

▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
▶ Excellent performance when cutting steels, up to HRc55
▶ Due to Multiple Helix on 1/8" and over diameter end mills, vibration will be minimized and tool life increased.





MG 4 M-Helix PLAIN  P.776

Unit : Inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF25003	3/64	1/4	3/32	2
GMF25004	1/16	1/4	5/32	2
GMF25005	5/64	1/4	1/4	2
GMF25006	3/32	1/4	1/4	2
GMF25008	1/8	1/4	5/16	2
GMF25009	9/64	1/4	3/8	2
GMF25012	3/16	1/4	3/8	2
GMF25013	13/64	1/4	5/8	2-3/8
GMF25014	7/32	1/4	5/8	2-3/8
GMF25016	1/4	1/4	5/8	2-3/8
GMF25017	17/64	5/16	11/16	2-3/8
GMF25018	9/32	5/16	3/4	2-3/8
GMF25019	19/64	5/16	3/4	2-3/8
GMF25020	5/16	5/16	3/4	2-3/4
GMF25022	11/32	3/8	7/8	2-3/4
GMF25023	23/64	3/8	7/8	2-3/4
GMF25024	3/8	3/8	1	3
GMF25028	7/16	1/2	1-3/16	3
GMF25032	1/2	1/2	1-3/16	3-1/8
GMF25036	9/16	9/16	1-3/8	4
GMF25901	9/16	5/8	1-3/8	4
GMF25040	5/8	5/8	1-1/2	4
GMF25044	11/16	5/8	1-3/4	4
GMF25048	3/4	3/4	1-3/4	4

Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
0~−.0012	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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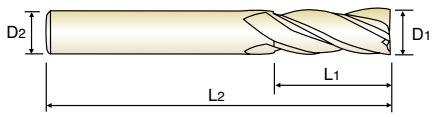
4G MILL END MILLS

GMF26 SERIES

CARBIDE, 4 FLUTE

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRc55
- ▶ Due to Multiple Helix on 1/8″ and over diameter end mills, vibration will be minimized and tool life increased.
- ▶ Due to gash land geometry used at end tooth, heavy duty cutting can be achieved.
  Various length products Available





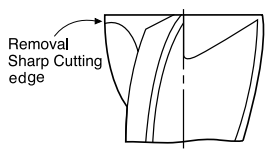
MG | 4 | M-Helix | PLAIN

P.776

Unit : Inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF26003	3/64	1/4	3/32	2
GMF26004	1/16	1/4	5/32	2
GMF26005	5/64	1/4	1/4	2
GMF26006	3/32	1/4	1/4	2
GMF26008	1/8	1/4	5/16	2
GMF26012	3/16	1/4	3/8	2
GMF26013	13/64	1/4	5/8	2-3/8
GMF26016	1/4	1/4	5/8	2-3/8
GMF26020	5/16	5/16	3/4	2-3/4
GMF26024	3/8	3/8	1	3
GMF26032	1/2	1/2	1-3/16	3-1/8
GMF26040	5/8	5/8	1-1/4	4
GMF26048	3/4	3/4	1-3/4	4

Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
0~−.0012	h6



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

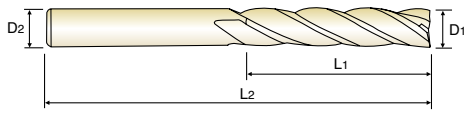
4G MILL END MILLS

GMF27 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG LENGTH

- New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- Excellent performance when cutting steels, up to HRc55
- Various length of cut and overall length products available





MG | 4 | 30° | PLAIN

P.777, 778

Unit : Inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF27003	3/64	1/4	1/8	2-3/8
GMF27901	3/64	1/4	5/32	2-3/8
GMF27902	3/64	1/4	3/16	2-3/8
GMF27903	3/64	1/4	1/4	2-3/8
GMF27004	1/16	1/4	1/4	2-3/8
GMF27005	5/64	1/4	5/16	2-3/8
GMF27904	5/64	1/4	3/8	2-3/8
GMF27905	5/64	1/4	1/2	2-3/8
GMF27906	5/64	1/4	9/16	2-3/8
GMF27006	3/32	1/4	3/8	2-3/8
GMF27907	3/32	1/4	1/2	2-3/8
GMF27008	1/8	1/4	3/8	2-3/4
GMF27908	1/8	1/4	1/2	2-3/4
GMF27909	1/8	1/4	5/8	2-3/4
GMF27910	1/8	1/4	3/4	2-3/4
GMF27911	1/8	1/4	1	2-3/4
GMF27912	1/8	1/4	1-3/16	2-3/4
GMF27012	3/16	1/4	1/2	2-3/4
GMF27913	3/16	1/4	5/8	2-3/4
GMF27914	3/16	1/4	3/4	2-3/4
GMF27915	3/16	1/4	1	2-3/4
GMF27916	3/16	1/4	1-3/16	2-3/4
GMF27013	13/64	1/4	3/4	2-3/4
GMF27917	13/64	1/4	1	2-3/4
GMF27918	13/64	1/4	1-3/16	3-1/8
GMF27016	1/4	1/4	5/8	2-3/8
GMF27919	1/4	1/4	3/4	2-3/4
GMF27920	1/4	1/4	3/4	3-1/2
GMF27921	1/4	1/4	1	3
GMF27922	1/4	1/4	1-3/16	3-1/8
GMF27923	1/4	1/4	1-3/16	4
GMF27924	1/4	1/4	1-3/8	3-1/2
GMF27925	1/4	1/4	1-1/2	3-1/2

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

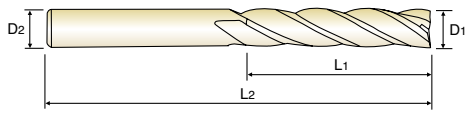
4G MILL END MILLS

GMF27 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG LENGTH

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRc55
- ▶ Various length of cut and overall length products available





MG | 4 | 30° | PLAIN

P.777, 778

Unit : Inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF27926	1/4	1/4	1-1/2	4-1/2
GMF27927	1/4	1/4	1-3/4	6
GMF27020	5/16	5/16	1	3-1/8
GMF27928	5/16	5/16	1-3/16	3-1/8
GMF27929	5/16	5/16	1-3/8	3-1/2
GMF27930	5/16	5/16	1-1/2	3-1/2
GMF27931	5/16	5/16	1-3/4	4
GMF27932	5/16	5/16	2	4
GMF27933	5/16	5/16	2	6
GMF27024	3/8	3/8	1-3/16	3-1/8
GMF27934	3/8	3/8	1-3/16	4
GMF27935	3/8	3/8	1-3/8	3-1/2
GMF27936	3/8	3/8	1-1/2	3-1/2
GMF27937	3/8	3/8	1-3/4	4
GMF27938	3/8	3/8	2	4
GMF27032	1/2	1/2	1-3/8	3-1/2
GMF27939	1/2	1/2	1-1/2	4
GMF27940	1/2	1/2	1-3/4	5
GMF27941	1/2	1/2	2	4
GMF27942	1/2	1/2	2-1/8	4-1/4
GMF27943	1/2	1/2	2-3/8	4-1/4
GMF27944	1/2	1/2	2-3/8	6
GMF27036	9/16	5/8	2	4-1/4
GMF27040	5/8	5/8	2	4-1/4
GMF27945	5/8	5/8	2-3/8	4-1/2
GMF27946	5/8	5/8	2-3/4	5
GMF27947	5/8	5/8	2-3/4	6
GMF27048	3/4	3/4	2-3/8	5
GMF27948	3/4	3/4	3-1/2	8
GMF27064	1	1	3-1/2	6

Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
0~−.0012	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

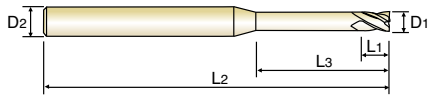
4G MILL END MILLS

GMF28 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE WITH NECK

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRc55
- ▶ Many more various effective lengths and overall lengths than previous standard products.





MG | 4 | 30° | PLAIN P.779

Unit : Inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
GMF28003	3/64	3/16	1/16	5/32	2
GMF28901	3/64	3/16	1/16	3/16	2
GMF28902	3/64	3/16	1/16	1/4	2
GMF28903	3/64	3/16	1/16	5/16	2
GMF28004	1/16	3/16	3/32	1/4	2
GMF28904	1/16	3/16	3/32	5/16	2
GMF28905	1/16	3/16	3/32	3/8	2
GMF28906	1/16	3/16	3/32	1/2	2
GMF28907	1/16	3/16	3/32	5/8	2
GMF28005	5/64	3/16	1/8	5/16	2
GMF28908	5/64	3/16	1/8	3/8	2
GMF28909	5/64	3/16	1/8	1/2	2
GMF28910	5/64	3/16	1/8	5/8	2
GMF28008	1/8	1/4	3/16	3/8	2
GMF28911	1/8	1/4	3/16	1/2	2
GMF28912	1/8	1/4	3/16	5/8	2-3/8
GMF28913	1/8	1/4	3/16	3/4	2-3/8
GMF28914	1/8	1/4	3/16	1-3/16	2-3/4
GMF28012	3/16	1/4	1/4	1/2	2
GMF28915	3/16	1/4	1/4	5/8	2-3/8
GMF28916	3/16	1/4	1/4	3/4	2-3/8
GMF28917	3/16	1/4	1/4	1-3/16	2-3/4
GMF28918	3/16	1/4	1/4	1-1/2	3-1/8
GMF28013	13/64	1/4	5/16	3/4	2-3/8
GMF28919	13/64	1/4	5/16	1-1/2	3-1/8
GMF28016	1/4	1/4	3/8	5/8	2-3/8
GMF28920	1/4	1/4	3/8	1-3/16	2-3/4
GMF28020	5/16	5/16	1/2	1	2-3/4
GMF28921	5/16	5/16	1/2	1-5/8	4
GMF28024	3/8	3/8	5/8	1-3/16	3
GMF28922	3/8	3/8	5/8	1-3/4	4
GMF28032	1/2	1/2	3/4	1-3/8	3-1/8
GMF28923	1/2	1/2	3/4	2	4-1/4

Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
0~−.0012	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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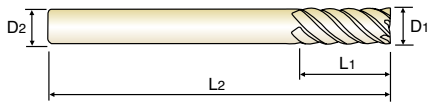
4G MILL END MILLS

GMF29 SERIES PLAIN SHANK

CARBIDE, 6 FLUTE 45° HELIX

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRc55
- ▶ Due to 45 helix angle, better surface finish can be achieved when side cutting.
- ▶ Various effective length and overall length products.





MG 6 45° PLAIN  P.780

Unit : Inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF29016	1/4	1/4	5/8	2-3/8
GMF29901	1/4	1/4	1-3/16	3-1/8
GMF29020	5/16	5/16	3/4	2-3/4
GMF29902	5/16	5/16	1-1/2	3-1/2
GMF29024	3/8	3/8	1	3
GMF29903	3/8	3/8	1-1/2	3-1/2
GMF29032	1/2	1/2	1-3/16	3-1/8
GMF29904	1/2	1/2	2	4
GMF29040	5/8	5/8	1-1/2	4
GMF29905	5/8	5/8	2-3/8	4-1/2
GMF29048	3/4	3/4	1-3/4	4
GMF29906	3/4	3/4	2-3/8	4-1/2

Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
0~−.0012	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

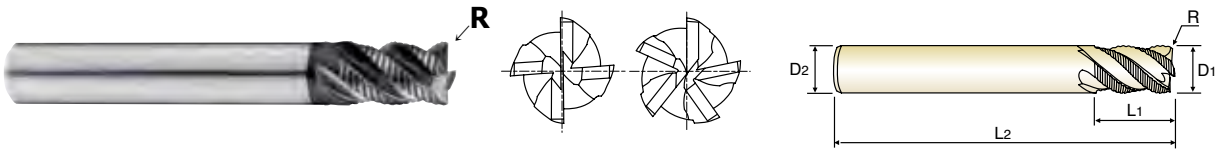
4G MILL END MILLS

X-SPEED ROUGHER

G907 SERIES PLAIN SHANK
G928 SERIES FLAT SHANK

CARBIDE, 4&5 FLUTE STUB LENGTH ROUGHING CORNER RADIUS - FINE

- 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.



MG | 4&5 | M-Helix | PLAIN | FLAT

P.781

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
PLAIN	FLAT	R	D_1	D_2	L_1	L_2	
G90716	-	R.020	**1/4**	1/4	3/8	2	4
G90720	-	R.020	**5/16**	5/16	7/16	2	4
G90724	**G92824**	R.020	**3/8**	3/8	1/2	2-1/4	4
G90732	**G92832**	R.020	**1/2**	1/2	5/8	2-1/2	4
G90740	**G92840**	R.040	**5/8**	5/8	3/4	3	5
G90748	**G92848**	R.040	**3/4**	3/4	1	3-1/4	5
G90764	**G92864**	R.040	**1**	1	1-1/4	4	5

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~−.002	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○	◎	○						

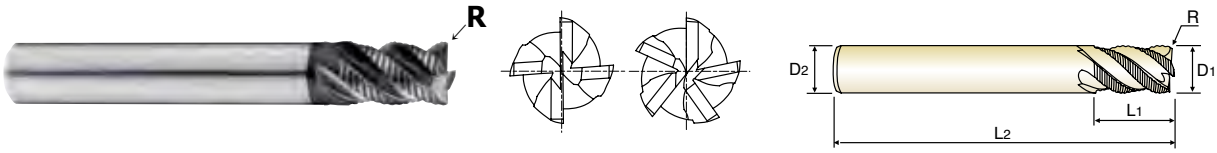
4G MILL END MILLS

X-SPEED ROUGHER

G908 SERIES PLAIN SHANK
G929 SERIES FLAT SHANK

CARBIDE, 4&5 FLUTE REGULAR LENGTH ROUGHING CORNER RADIUS - FINE

- 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 all ng tool life and excellent chip evacuation.



MG 4&5 M-Helix PLAIN FLAT P.781

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
PLAIN	FLAT	R	D1	D2	L1	L2	
G90816	-	R.020	1/4	1/4	5/8	2-1/2	4
G90820	-	R.020	5/16	5/16	3/4	2-1/2	4
G90824	G92924	R.020	3/8	3/8	7/8	2-1/2	4
G90832	G92932	R.020	1/2	1/2	1	3	4
G90840	G92940	R.040	5/8	5/8	1-1/4	3-1/2	5
G90848	G92948	R.040	3/4	3/4	1-5/8	4	5
G90864	G92964	R.040	1	1	1-3/4	4-1/4	5

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~-.002	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○	◎	○						

4G MILL END MILLS

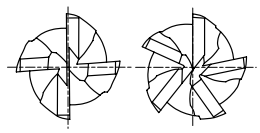
X-SPEED ROUGHER

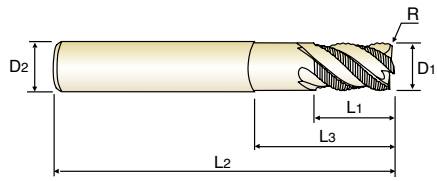
G909 SERIES PLAIN SHANK
G930 SERIES FLAT SHANK

CARBIDE, MULTI FLUTE EXTENDED REACH ROUGHING CORNER RADIUS - FINE

- 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.







MG 4&5 M-Helix PLAIN FLAT

P.781

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	No. of Flute
PLAIN	FLAT	R	D1	D2	L1	L3	L2	
G90916	-	R.020	1/4	1/4	3/8	7/8	2-1/2	4
G90920	-	R.020	5/16	5/16	7/16	1	2-1/2	4
G90924	G93024	R.020	3/8	3/8	1/2	1	2-3/4	4
G90932	G93032	R.020	1/2	1/2	5/8	1-1/4	3-1/4	4
G90940	G93040	R.040	5/8	5/8	3/4	2	4	5
G90948	G93048	R.040	3/4	3/4	1	2-3/8	4-1/2	5

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~-.002	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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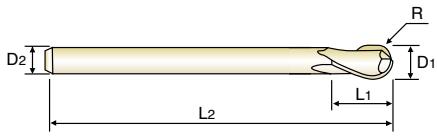
4G MILL END MILLS

SEMD98 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE (Short, Regular, Long Shank)

- 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 wear resistance increased.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.





MG | 2 | 30° | R ±0.005 (R≤3) | R ±0.010 (R>3) | PLAIN

P.782

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEMD98001S	R0.05	0.1	4	0.1	40	Short
SEMD98001	R0.05	0.1	4	0.2	40	Regular
SEMD980013S	R0.05	0.1	3	0.2	40	3mm Shank
SEMD980015S	R0.075	0.15	4	0.15	40	Short
SEMD980015	R0.075	0.15	4	0.3	40	Regular
SEMD98001153S	R0.075	0.15	3	0.3	40	3mm Shank
SEMD98002S	R0.1	0.2	4	0.2	40	Short
SEMD98002	R0.1	0.2	4	0.4	40	Regular
SEMD980023S	R0.1	0.2	3	0.4	40	3mm Shank
SEMD98003S	R0.15	0.3	4	0.3	40	Short
SEMD98003	R0.15	0.3	4	0.6	40	Regular
SEMD980033S	R0.15	0.3	3	0.6	40	3mm Shank
SEMD98004S	R0.2	0.4	4	0.4	40	Short
SEMD98004	R0.2	0.4	4	0.8	40	Regular
SEMD980043S	R0.2	0.4	3	0.8	40	3mm Shank
SEMD98005S	R0.25	0.5	4	0.5	40	Short
SEMD98005	R0.25	0.5	4	1.0	40	Regular
SEMD980053S	R0.25	0.5	3	1.0	40	3mm Shank
SEMD98006S	R0.3	0.6	4	0.6	40	Short
SEMD98006	R0.3	0.6	4	1.2	40	Regular
SEMD980063S	R0.3	0.6	3	1.2	40	3mm Shank
SEMD98007S	R0.35	0.7	4	0.7	40	Short
SEMD98007	R0.35	0.7	4	1.4	40	Regular
SEMD980073S	R0.35	0.7	3	1.4	40	3mm Shank
SEMD98008S	R0.4	0.8	4	0.8	40	Short
SEMD98008	R0.4	0.8	4	1.6	40	Regular
SEMD980083S	R0.4	0.8	3	1.6	40	3mm Shank
SEMD98009S	R0.45	0.9	4	0.9	40	Short
SEMD98009	R0.45	0.9	4	1.8	40	Regular
SEMD980093S	R0.45	0.9	3	1.8	40	3mm Shank

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

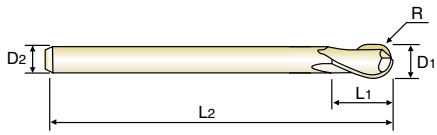
4G MILL END MILLS

SEMD98 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE (Short, Regular, Long Shank)

- 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 wear resistance increased.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.





MG | 2 | 30° | R ±0.005 (R≤3) | R ±0.010 (R>3) | PLAIN

P.782

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEMD98010040	R0.5	1.0	6	1.5	40	Short
SEMD980103S	R0.5	1.0	3	2.5	50	3mm Shank
SEMD980104S	R0.5	1.0	4	2.5	50	Regular
SEMD98010	R0.5	1.0	6	2.5	50	Regular
SEMD98010070	R0.5	1.0	6	2.5	70	Long Shank
SEMD98010100	R0.5	1.0	6	2.5	100	Long Shank
SEMD98012040	R0.6	1.2	6	2	40	Short
SEMD980123S	R0.6	1.2	3	3	50	3mm Shank
SEMD980124S	R0.6	1.2	4	3	50	Regular
SEMD98012	R0.6	1.2	6	3	50	Regular
SEMD98012070	R0.6	1.2	6	3	70	Long Shank
SEMD98012100	R0.6	1.2	6	3	100	Long Shank
SEMD98015040	R0.75	1.5	6	2.5	40	Short
SEMD980153S	R0.75	1.5	3	4	50	3mm Shank
SEMD980154S	R0.75	1.5	4	4	50	Regular
SEMD98015	R0.75	1.5	6	4	50	Regular
SEMD98015070	R0.75	1.5	6	4	70	Long Shank
SEMD98015100	R0.75	1.5	6	4	100	Long Shank
SEMD98020040	R1.0	2.0	6	3	40	Short
SEMD980203S	R1.0	2.0	3	5	50	3mm Shank
SEMD980204S	R1.0	2.0	4	5	50	Regular
SEMD98020	R1.0	2.0	6	5	50	Regular
SEMD98020080	R1.0	2.0	6	5	80	Long Shank
SEMD98020100	R1.0	2.0	6	5	100	Long Shank
SEMD98025040	R1.25	2.5	6	4	40	Short
SEMD980253S	R1.25	2.5	3	6	60	3mm Shank
SEMD980254S	R1.25	2.5	4	6	60	Regular
SEMD98025	R1.25	2.5	6	6	60	Regular
SEMD98025080	R1.25	2.5	6	6	80	Long Shank
SEMD98025100	R1.25	2.5	6	6	100	Long Shank

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

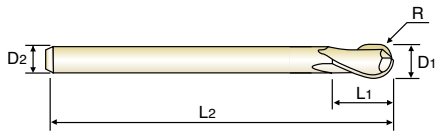
4G MILL END MILLS

SEMD98 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE (Short, Regular, Long Shank)

- 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 wear resistance increased.
- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.





MG | 2 | 30° | R ±0.005 (R≤3) | R ±0.010 (R>3) | PLAIN

P.782

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEMD98030040	R1.5	3.0	6	4.5	40	Short
SEMD980303S	R1.5	3.0	3	6	60	3mm Shank
SEMD980304S	R1.5	3.0	4	6	60	Regular
SEMD98030	R1.5	3.0	6	6	60	Regular
SEMD98030080	R1.5	3.0	6	6	80	Long Shank
SEMD98030100	R1.5	3.0	6	6	100	Long Shank
SEMD98035	R1.75	3.5	6	8	70	-
SEMD98040050	R2.0	4.0	6	6	50	Short
SEMD980404S	R2.0	4.0	4	8	70	Regular
SEMD98040	R2.0	4.0	6	8	70	Regular
SEMD980401004S	R2.0	4.0	4	8	100	Long Shank
SEMD980401204S	R2.0	4.0	4	8	120	Long Shank
SEMD98040100	R2.0	4.0	6	8	100	Long Shank
SEMD98040120	R2.0	4.0	6	8	120	Long Shank
SEMD98045	R2.25	4.5	6	9	80	-
SEMD98050060	R2.5	5.0	6	7.5	60	Short
SEMD98050	R2.5	5.0	6	10	80	Regular
SEMD980505S	R2.5	5.0	5	10	80	5mmShank
SEMD98055	R2.75	5.5	6	11	90	-
SEMD98060050	R3.0	6.0	6	9	50	Short
SEMD98060060	R3.0	6.0	6	9	60	Short
SEMD98060080	R3.0	6.0	6	9	80	Short
SEMD98060	R3.0	6.0	6	12	90	Regular
SEMD98060110	R3.0	6.0	6	12	110	Long Shank
SEMD98060130	R3.0	6.0	6	12	130	Long Shank
SEMD98060150	R3.0	6.0	6	12	150	Long Shank
SEMD98065	R3.25	6.5	8	13	90	-
SEMD98070	R3.5	7.0	8	14	90	-
SEMD98080050	R4.0	8.0	8	12	50	Short
SEMD98080060	R4.0	8.0	8	12	60	Short

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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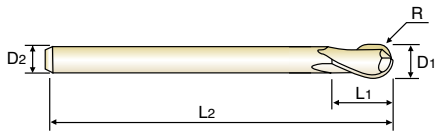
4G MILL END MILLS

SEMD98 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE (Short, Regular, Long Shank)

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MG | 2 | 30° | R ±0.005 (R≤3) | R ±0.010 (R>3) | PLAIN

P.782

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEMD98080080	R4.0	8.0	8	12	80	Short
SEMD98080090	R4.0	8.0	8	12	90	Short
SEMD98080	R4.0	8.0	8	14	100	Regular
SEMD98080130	R4.0	8.0	8	14	130	Long Shank
SEMD98080150	R4.0	8.0	8	14	150	Long Shank
SEMD98085	R4.25	8.5	10	16	100	-
SEMD98090	R4.5	9.0	10	18	100	-
SEMD98100050	R5.0	10.0	10	15	50	Short
SEMD98100060	R5.0	10.0	10	15	60	Short
SEMD98100080	R5.0	10.0	10	15	80	Short
SEMD98100090	R5.0	10.0	10	15	90	Short
SEMD98100	R5.0	10.0	10	18	100	Regular
SEMD98100130	R5.0	10.0	10	18	130	Long Shank
SEMD98100150	R5.0	10.0	10	18	150	Long Shank
SEMD98100180	R5.0	10.0	10	18	180	Long Shank
SEMD98100200	R5.0	10.0	10	18	200	Long Shank
SEMD98110	R5.5	11.0	12	20	100	-
SEMD98120060	R6.0	12.0	12	18	60	Short
SEMD98120080	R6.0	12.0	12	18	80	Short
SEMD98120090	R6.0	12.0	12	18	90	Short
SEMD98120100	R6.0	12.0	12	18	100	Short
SEMD98120	R6.0	12.0	12	22	110	Regular
SEMD98120130	R6.0	12.0	12	22	130	Long Shank
SEMD98120150	R6.0	12.0	12	22	150	Long Shank
SEMD98120180	R6.0	12.0	12	22	180	Long Shank
SEMD98120220	R6.0	12.0	12	22	200	Long Shank
SEMD98130	R6.5	13.0	12	24	100	-
SEMD98140	R7.0	14.0	12	26	100	Regular
SEMD98140145	R7.0	14.0	14	26	100	-
SEMD98140165	R7.0	14.0	16	26	100	-

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

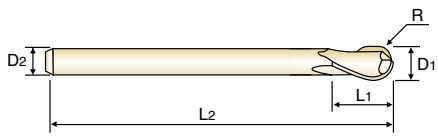
4G MILL END MILLS

SEMD98 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE (Short, Regular, Long Shank)

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MG | 2 | 30° | R ±0.005 (R≤3) | R ±0.010 (R>3) | PLAIN

P.782

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEMD98150	R7.5	**15.0**	16	28	140	-
SEMD98160100	R8.0	**16.0**	16	24	100	Short
SEMD98160130	R8.0	**16.0**	16	24	130	Short
SEMD98160	R8.0	**16.0**	16	30	150	Regular
SEMD98160180	R8.0	**16.0**	16	30	180	Long Shank
SEMD98160200	R8.0	**16.0**	16	30	200	Long Shank
SEMD98180	R9.0	**18.0**	16	34	150	Regular
SEMD98180185	R9.0	**18.0**	18	34	150	-
SEMD98200100	R10.0	**20.0**	20	30	100	Short
SEMD98200130	R10.0	**20.0**	20	30	130	Short
SEMD98200	R10.0	**20.0**	20	38	150	Regular
SEMD98200200	R10.0	**20.0**	20	38	200	Long Shank
SEMD98250120	R12.5	**25.0**	25	50	120	Short
SEMD98250	R12.5	**25.0**	25	50	180	Regular

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

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

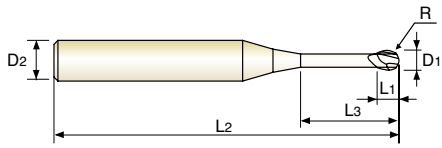
4G MILL END MILLS

SEM846 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK BALL NOSE

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NG HM | 2 | 30° | R ±0.005 (R≤3) | R ±0.010 (R>3) | PLAIN

P.783~787

◇ Call for Availability

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
SEM846001002	R0.05	0.1	4	0.1	0.2	40
SEM846001003	R0.05	0.1	4	0.1	0.3	40
SEM846001005	R0.05	0.1	4	0.1	0.5	40
SEM84600101	R0.05	0.1	4	0.1	1	40
SEM846002005	R0.1	0.2	4	0.2	0.5	40
SEM84600201	R0.1	0.2	4	0.2	1	40
SEM846002015	R0.1	0.2	4	0.2	1.5	40
SEM84600202	R0.1	0.2	4	0.2	2	40
SEM84600203	R0.1	0.2	4	0.2	3	40
SEM84600301	R0.15	0.3	4	0.3	1	40
SEM846003015	R0.15	0.3	4	0.3	1.5	40
SEM84600302	R0.15	0.3	4	0.3	2	40
SEM846003025	R0.15	0.3	4	0.3	2.5	40
SEM84600303	R0.15	0.3	4	0.3	3	40
SEM84600304	R0.15	0.3	4	0.3	4	40
SEM84600305	R0.15	0.3	4	0.3	5	40
SEM84600401	R0.2	0.4	4	0.4	1	40
SEM846004015	R0.2	0.4	4	0.4	1.5	40
SEM84600402	R0.2	0.4	4	0.4	2	40
SEM846004025	R0.2	0.4	4	0.4	2.5	40
SEM84600403	R0.2	0.4	4	0.4	3	40
SEM84600404	R0.2	0.4	4	0.4	4	40
SEM84600405	R0.2	0.4	4	0.4	5	40
SEM84600406	R0.2	0.4	4	0.4	6	40
SEM84600408	R0.2	0.4	4	0.4	8	40
SEM84600410	R0.2	0.4	4	0.4	10	40
SEM84600501	R0.25	0.5	4	0.5	1	45
SEM846005015	R0.25	0.5	4	0.5	1.5	45
SEM84600502	R0.25	0.5	4	0.5	2	45

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

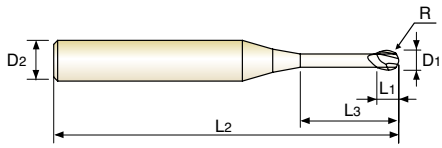
4G MILL END MILLS

SEM846 SERIES PLAIN SHANK

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P.783~787

◇ Call for Availability

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
SEM846005025	R0.25	0.5	4	0.5	2.5	45
SEM84600503	R0.25	0.5	4	0.5	3	45
SEM84600504	R0.25	0.5	4	0.5	4	45
SEM84600505	R0.25	0.5	4	0.5	5	45
SEM84600506	R0.25	0.5	4	0.5	6	45
SEM84600508	R0.25	0.5	4	0.5	8	45
SEM84600510	R0.25	0.5	4	0.5	10	45
SEM84600512	R0.25	0.5	4	0.5	12	45
SEM84600514	R0.25	0.5	4	0.5	14	45
SEM84600516	R0.25	0.5	4	0.5	16	45
SEM84600601	R0.3	0.6	4	0.6	1	45
SEM84600602	R0.3	0.6	4	0.6	2	45
SEM84600603	R0.3	0.6	4	0.6	3	45
SEM84600604	R0.3	0.6	4	0.6	4	45
SEM84600605	R0.3	0.6	4	0.6	5	45
SEM84600606	R0.3	0.6	4	0.6	6	45
SEM84600608	R0.3	0.6	4	0.6	8	45
SEM84600610	R0.3	0.6	4	0.6	10	45
SEM84600612	R0.3	0.6	4	0.6	12	45
SEM84600614	R0.3	0.6	4	0.6	14	45
SEM84600616	R0.3	0.6	4	0.6	16	45
SEM84600702	R0.35	0.7	4	0.7	2	45
SEM84600704	R0.35	0.7	4	0.7	4	45
SEM84600706	R0.35	0.7	4	0.7	6	45
SEM84600708	R0.35	0.7	4	0.7	8	45
SEM84600710	R0.35	0.7	4	0.7	10	45
SEM84600712	R0.35	0.7	4	0.7	12	45
SEM84600801	R0.4	0.8	4	0.8	1	45
SEM84600802	R0.4	0.8	4	0.8	2	45

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

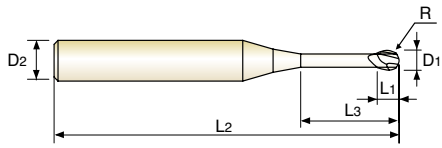
4G MILL END MILLS

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P.783~787

◇ Call for Availability

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
SEM84600803	R0.4	0.8	4	0.8	3	45
SEM84600804	R0.4	0.8	4	0.8	4	45
SEM84600805	R0.4	0.8	4	0.8	5	45
SEM84600806	R0.4	0.8	4	0.8	6	45
SEM84600808	R0.4	0.8	4	0.8	8	45
SEM84600810	R0.4	0.8	4	0.8	10	45
SEM84600812	R0.4	0.8	4	0.8	12	45
SEM84600814	R0.4	0.8	4	0.8	14	45
SEM84600816	R0.4	0.8	4	0.8	16	45
SEM84600820	R0.4	0.8	4	0.8	20	45
SEM84600904	R0.45	0.9	4	0.9	4	45
SEM84600906	R0.45	0.9	4	0.9	6	45
SEM84600908	R0.45	0.9	4	0.9	8	45
SEM84600910	R0.45	0.9	4	0.9	10	45
SEM84601002	R0.5	1.0	4	1	2	50
SEM84601003	R0.5	1.0	4	1	3	50
SEM84601004	R0.5	1.0	4	1	4	50
SEM84601005	R0.5	1.0	4	1	5	50
SEM84601006	R0.5	1.0	4	1	6	50
SEM84601007	R0.5	1.0	4	1	7	50
SEM84601008	R0.5	1.0	4	1	8	50
SEM84601009	R0.5	1.0	4	1	9	50
SEM84601010	R0.5	1.0	4	1	10	50
SEM84601012	R0.5	1.0	4	1	12	50
SEM84601014	R0.5	1.0	4	1	14	50
SEM84601016	R0.5	1.0	4	1	16	50
SEM84601018	R0.5	1.0	4	1	18	50
SEM84601020	R0.5	1.0	4	1	20	50
SEM84601022	R0.5	1.0	4	1	22	60

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

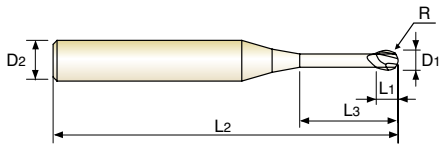
4G MILL END MILLS

SEM846 SERIES PLAIN SHANK

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P.783~787

◇ Call for Availability

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
SEM84601026	R0.5	1.0	4	1	26	60
SEM84601030	R0.5	1.0	4	1	30	70
SEM84601040	R0.5	1.0	4	1	40	80
SEM84601050	R0.5	1.0	4	1	50	100
SEM84601204	R0.6	1.2	4	1.2	4	50
SEM84601206	R0.6	1.2	4	1.2	6	50
SEM84601208	R0.6	1.2	4	1.2	8	50
SEM84601210	R0.6	1.2	4	1.2	10	50
SEM84601212	R0.6	1.2	4	1.2	12	50
SEM84601216	R0.6	1.2	4	1.2	16	50
SEM84601220	R0.6	1.2	4	1.2	20	50
SEM84601226	R0.6	1.2	4	1.2	26	60
SEM84601406	R0.7	1.4	4	1.4	6	50
SEM84601408	R0.7	1.4	4	1.4	8	50
SEM84601410	R0.7	1.4	4	1.4	10	50
SEM84601412	R0.7	1.4	4	1.4	12	50
SEM84601416	R0.7	1.4	4	1.4	16	50
SEM84601503	R0.75	1.5	4	1.5	3	50
SEM84601504	R0.75	1.5	4	1.5	4	50
SEM84601505	R0.75	1.5	4	1.5	5	50
SEM84601506	R0.75	1.5	4	1.5	6	50
SEM84601507	R0.75	1.5	4	1.5	7	50
SEM84601508	R0.75	1.5	4	1.5	8	50
SEM84601510	R0.75	1.5	4	1.5	10	50
SEM84601512	R0.75	1.5	4	1.5	12	50
SEM84601514	R0.75	1.5	4	1.5	14	50
SEM84601516	R0.75	1.5	4	1.5	16	50
SEM84601518	R0.75	1.5	4	1.5	18	50
SEM84601520	R0.75	1.5	4	1.5	20	50

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

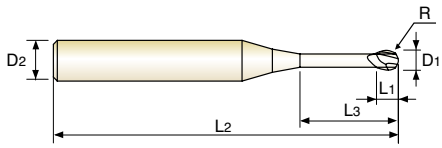
4G MILL END MILLS

SEM846 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK BALL NOSE

▶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 wear resistance increased.
▶Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.





MG | 2 | 30° | R ±0.005 (R≤3) | R ±0.010 (R>3) | PLAIN

P.783~787

◇ Call for Availability

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
SEM84601522	R0.75	1.5	4	1.5	22	60
SEM84601526	R0.75	1.5	4	1.5	26	60
SEM84601530	R0.75	1.5	4	1.5	30	70
SEM84601535	R0.75	1.5	4	1.5	35	70
SEM84601540	R0.75	1.5	4	1.5	40	80
SEM84601604	R0.8	1.6	4	1.6	4	50
SEM84601606	R0.8	1.6	4	1.6	6	50
SEM84601608	R0.8	1.6	4	1.6	8	50
SEM84601610	R0.8	1.6	4	1.6	10	50
SEM84601612	R0.8	1.6	4	1.6	12	50
SEM84601616	R0.8	1.6	4	1.6	16	50
SEM84601620	R0.8	1.6	4	1.6	20	50
SEM84601804	R0.9	1.8	4	1.8	4	50
SEM84601806	R0.9	1.8	4	1.8	6	50
SEM84601808	R0.9	1.8	4	1.8	8	50
SEM84601810	R0.9	1.8	4	1.8	10	50
SEM84601812	R0.9	1.8	4	1.8	12	50
SEM84601816	R0.9	1.8	4	1.8	16	50
SEM84601820	R0.9	1.8	4	1.8	20	50
SEM84602004	R1.0	2.0	4	2	4	50
SEM84602006	R1.0	2.0	4	2	6	50
SEM84602008	R1.0	2.0	4	2	8	50
SEM84602010	R1.0	2.0	4	2	10	50
SEM84602012	R1.0	2.0	4	2	12	50
SEM84602014	R1.0	2.0	4	2	14	50
SEM84602016	R1.0	2.0	4	2	16	50
SEM84602018	R1.0	2.0	4	2	18	50
SEM84602020	R1.0	2.0	4	2	20	50
SEM84602022	R1.0	2.0	4	2	22	60

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

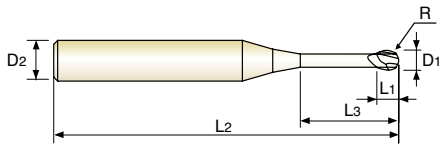
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SEM846 SERIES PLAIN SHANK

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P.783~787

◇ Call for Availability

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
SEM84602026	R1.0	2.0	4	2	26	60
SEM84602030	R1.0	2.0	4	2	30	70
SEM84602035	R1.0	2.0	4	2	35	70
SEM84602040	R1.0	2.0	4	2	40	80
SEM84602045	R1.0	2.0	4	2	45	90
SEM84602050	R1.0	2.0	4	2	50	100
SEM84602060	R1.0	2.0	4	2	60	110
SEM84602508	R1.25	2.5	4	2.5	8	50
SEM84602510	R1.25	2.5	4	2.5	10	50
SEM84602512	R1.25	2.5	4	2.5	12	50
SEM84602516	R1.25	2.5	4	2.5	16	50
SEM84602520	R1.25	2.5	4	2.5	20	50
SEM84602522	R1.25	2.5	4	2.5	22	60
SEM84602526	R1.25	2.5	4	2.5	26	60
SEM84602530	R1.25	2.5	4	2.5	30	70
SEM84602535	R1.25	2.5	4	2.5	35	70
SEM84602540	R1.25	2.5	4	2.5	40	80
SEM84602545	R1.25	2.5	4	2.5	45	90
SEM84602550	R1.25	2.5	4	2.5	50	100
SEM84603006	R1.5	3.0	6	3	6	50
SEM84603008	R1.5	3.0	6	3	8	50
SEM84603010	R1.5	3.0	6	3	10	50
SEM84603012	R1.5	3.0	6	3	12	50
SEM84603014	R1.5	3.0	6	3	14	60
SEM84603016	R1.5	3.0	6	3	16	60
SEM84603018	R1.5	3.0	6	3	18	60
SEM84603020	R1.5	3.0	6	3	20	60
SEM84603022	R1.5	3.0	6	3	22	65
SEM84603026	R1.5	3.0	6	3	26	65

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

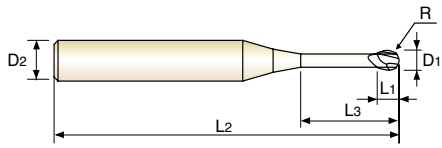
4G MILL END MILLS

SEM846 SERIES PLAIN SHANK

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MG | 2 | 30° | R ±0.005 (R≤3) | R ±0.010 (R>3) | PLAIN

P.783~787

◇ Call for Availability

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
SEM84603030	R1.5	3.0	6	3	30	70
SEM84603035	R1.5	3.0	6	3	35	70
SEM84603040	R1.5	3.0	6	3	40	80
SEM84603045	R1.5	3.0	6	3	45	90
SEM84603050	R1.5	3.0	6	3	50	100
SEM84603060	R1.5	3.0	6	3	60	100
SEM84604008	R2.0	4.0	6	4	8	50
SEM84604010	R2.0	4.0	6	4	10	50
SEM84604012	R2.0	4.0	6	4	12	50
SEM84604014	R2.0	4.0	6	4	14	60
SEM84604016	R2.0	4.0	6	4	16	60
SEM84604018	R2.0	4.0	6	4	18	60
SEM84604020	R2.0	4.0	6	4	20	60
SEM84604022	R2.0	4.0	6	4	22	65
SEM84604026	R2.0	4.0	6	4	26	65
SEM84604030	R2.0	4.0	6	4	30	70
SEM84604035	R2.0	4.0	6	4	35	70
SEM84604040	R2.0	4.0	6	4	40	80
SEM84604045	R2.0	4.0	6	4	45	90
SEM84604050	R2.0	4.0	6	4	50	100
SEM84604055	R2.0	4.0	6	4	55	100
SEM84604060	R2.0	4.0	6	4	60	100
SEM84605015	R2.5	5.0	6	6	15	60
SEM84605020	R2.5	5.0	6	6	20	60
SEM84605026	R2.5	5.0	6	6	26	65
SEM84605030	R2.5	5.0	6	6	30	70
SEM84605035	R2.5	5.0	6	6	35	70
SEM84605040	R2.5	5.0	6	6	40	80
SEM84605045	R2.5	5.0	6	6	45	90

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

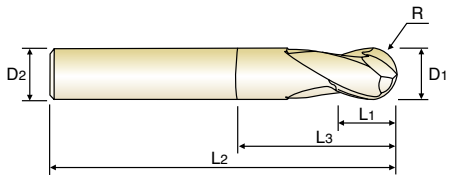
4G MILL END MILLS

SEM846 SERIES PLAIN SHANK

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MG | 2 | 30° | R ±0.005 (R≤3) | R ±0.010 (R>3) | PLAIN

P.783~787

◇ Call for Availability

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
SEM84605050	R2.5	5.0	6	6	50	100
SEM84605055	R2.5	5.0	6	6	55	100
SEM84605060	R2.5	5.0	6	6	60	100
SEM84606020	R3.0	6.0	6	8	20	60
SEM84606030	R3.0	6.0	6	8	30	60
SEM84606020090	R3.0	6.0	6	12	20	90
SEM84606030090	R3.0	6.0	6	12	30	90
SEM84608025	R4.0	8.0	8	10	25	70
SEM84608035	R4.0	8.0	8	10	35	70
SEM84608025100	R4.0	8.0	8	14	25	100
SEM84608035100	R4.0	8.0	8	14	35	100
SEM84610030	R5.0	10.0	10	12	30	75
SEM84610040	R5.0	10.0	10	12	40	75
SEM84610030100	R5.0	10.0	10	18	30	100
SEM84610040100	R5.0	10.0	10	18	40	100
SEM84612032	R6.0	12.0	12	14	32	80
SEM84612045	R6.0	12.0	12	14	45	80
SEM84612032110	R6.0	12.0	12	22	32	110
SEM84612045110	R6.0	12.0	12	22	45	110

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

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

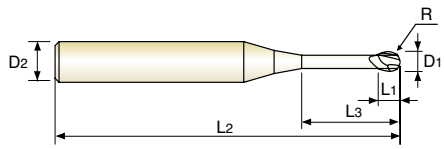
4G MILL END MILLS

SEM846 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK BALL NOSE (6mm shank)

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MG | 2 | 30° | R ±0.005 | PLAIN

P.783~787

◇ Call for Availability

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
SEM8460005016S	R0.25	0.5	6	0.5	1	45
SEM8460005026S	R0.25	0.5	6	0.5	2	45
SEM8460005046S	R0.25	0.5	6	0.5	4	45
SEM8460006016S	R0.3	0.6	6	0.6	1	45
SEM8460006026S	R0.3	0.6	6	0.6	2	45
SEM8460006036S	R0.3	0.6	6	0.6	3	45
SEM8460006046S	R0.3	0.6	6	0.6	4	45
SEM8460006056S	R0.3	0.6	6	0.6	5	45
SEM8460006066S	R0.3	0.6	6	0.6	6	45
SEM8460006086S	R0.3	0.6	6	0.6	8	45
SEM8460006106S	R0.3	0.6	6	0.6	10	45
SEM8460006126S	R0.3	0.6	6	0.6	12	45
SEM8460006146S	R0.3	0.6	6	0.6	14	45
SEM8460006166S	R0.3	0.6	6	0.6	16	45
SEM8460008016S	R0.4	0.8	6	0.8	1	45
SEM8460008026S	R0.4	0.8	6	0.8	2	45
SEM8460008036S	R0.4	0.8	6	0.8	3	45
SEM8460008046S	R0.4	0.8	6	0.8	4	45
SEM8460008056S	R0.4	0.8	6	0.8	5	45
SEM8460008066S	R0.4	0.8	6	0.8	6	45
SEM8460008086S	R0.4	0.8	6	0.8	8	45
SEM8460008106S	R0.4	0.8	6	0.8	10	45
SEM8460008126S	R0.4	0.8	6	0.8	12	45
SEM8460008146S	R0.4	0.8	6	0.8	14	45
SEM8460008166S	R0.4	0.8	6	0.8	16	45
SEM8460008206S	R0.4	0.8	6	0.8	20	45
SEM8460010026S	R0.5	1.0	6	1	2	50
SEM8460010036S	R0.5	1.0	6	1	3	50
SEM8460010046S	R0.5	1.0	6	1	4	50

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

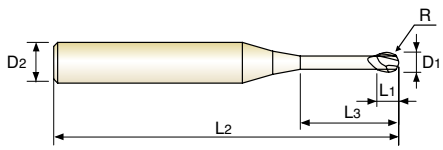
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MG | 2 | 30° | R ±0.005 | PLAIN

P.783~787

◇ Call for Availability

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
SEM846010056S	R0.5	1.0	6	1	5	50
SEM846010066S	R0.5	1.0	6	1	6	50
SEM846010076S	R0.5	1.0	6	1	7	50
SEM846010086S	R0.5	1.0	6	1	8	50
SEM846010096S	R0.5	1.0	6	1	9	50
SEM846010106S	R0.5	1.0	6	1	10	50
SEM846010126S	R0.5	1.0	6	1	12	50
SEM846010146S	R0.5	1.0	6	1	14	50
SEM846010166S	R0.5	1.0	6	1	16	50
SEM846010186S	R0.5	1.0	6	1	18	50
SEM846010206S	R0.5	1.0	6	1	20	50
SEM846010226S	R0.5	1.0	6	1	22	60
SEM846010266S	R0.5	1.0	6	1	26	60
SEM846010306S	R0.5	1.0	6	1	30	70
SEM846015036S	R0.75	1.5	6	1.5	3	50
SEM846015046S	R0.75	1.5	6	1.5	4	50
SEM846015066S	R0.75	1.5	6	1.5	6	50
SEM846015086S	R0.75	1.5	6	1.5	8	50
SEM846015106S	R0.75	1.5	6	1.5	10	50
SEM846015126S	R0.75	1.5	6	1.5	12	50
SEM846015146S	R0.75	1.5	6	1.5	14	50
SEM846015166S	R0.75	1.5	6	1.5	16	50
SEM846015186S	R0.75	1.5	6	1.5	18	50
SEM846015206S	R0.75	1.5	6	1.5	20	50
SEM846015226S	R0.75	1.5	6	1.5	22	60
SEM846015266S	R0.75	1.5	6	1.5	26	60
SEM846015306S	R0.75	1.5	6	1.5	30	70
SEM846015356S	R0.75	1.5	6	1.5	35	70
SEM846015406S	R0.75	1.5	6	1.5	40	80

▶ NEXT PAGE

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P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

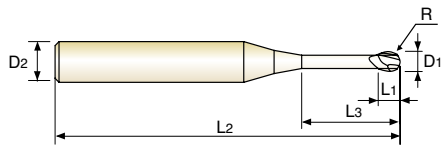
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MG | 2 | 30° | R ±0.005 | PLAIN

P.783~787

◇ Call for Availability

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
SEM846020046S	R1.0	2.0	6	2	4	50
SEM846020066S	R1.0	2.0	6	2	6	50
SEM846020086S	R1.0	2.0	6	2	8	50
SEM846020106S	R1.0	2.0	6	2	10	50
SEM846020126S	R1.0	2.0	6	2	12	50
SEM846020146S	R1.0	2.0	6	2	14	50
SEM846020166S	R1.0	2.0	6	2	16	50
SEM846020186S	R1.0	2.0	6	2	18	50
SEM846020206S	R1.0	2.0	6	2	20	50
SEM846020226S	R1.0	2.0	6	2	22	60
SEM846020266S	R1.0	2.0	6	2	26	60
SEM846020306S	R1.0	2.0	6	2	30	70
SEM846020356S	R1.0	2.0	6	2	35	70
SEM846020406S	R1.0	2.0	6	2	40	80
SEM846020456S	R1.0	2.0	6	2	45	90
SEM846020506S	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

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

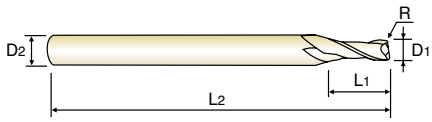
4G MILL END MILLS

SEMD99 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE CORNER RADIUS (Short, Regular, Long Shank)

- 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 aashort, regular and long shank end mills.
- Available various corner radius end mills, from 0.02 mm to 5.0mm corner radius.





MG | 2 | 30° | R ±0.005 (R≤6) | R ±0.010 (D>6) | PLAIN

P.788

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEMD99002002	R0.02	0.2	4	0.4	40	-
SEMD99002005	R0.05	0.2	4	0.4	40	-
SEMD99003002	R0.02	0.3	4	0.6	40	-
SEMD99003005	R0.05	0.3	4	0.6	40	-
SEMD99004005	R0.05	0.4	4	0.8	40	-
SEMD9900401	R0.1	0.4	4	0.8	40	-
SEMD99005005	R0.05	0.5	4	1.0	40	-
SEMD9900501	R0.1	0.5	4	1.0	40	-
SEMD99006005	R0.05	0.6	4	1.2	40	-
SEMD9900601	R0.1	0.6	4	1.2	40	-
SEMD9900602	R0.2	0.6	4	1.2	40	-
SEMD99007005	R0.05	0.7	4	1.4	40	-
SEMD9900701	R0.1	0.7	4	1.4	40	-
SEMD9900702	R0.2	0.7	4	1.4	40	-
SEMD99008005	R0.05	0.8	4	1.6	40	-
SEMD9900801	R0.1	0.8	4	1.6	40	-
SEMD9900802	R0.2	0.8	4	1.6	40	-
SEMD99009005	R0.05	0.9	4	1.8	40	-
SEMD9900901	R0.1	0.9	4	1.8	40	-
SEMD99010005	R0.05	1.0	6	2.5	50	-
SEMD9901001	R0.1	1.0	6	2.5	50	-
SEMD9901002	R0.2	1.0	6	2.5	50	-
SEMD9901003	R0.3	1.0	6	2.5	50	-
SEMD99012005	R0.05	1.2	6	3	50	-
SEMD9901201	R0.1	1.2	6	3	50	-
SEMD9901202	R0.2	1.2	6	3	50	-
SEMD9901203	R0.3	1.2	6	3	50	-
SEMD99015005	R0.05	1.5	6	4	50	-
SEMD9901501	R0.1	1.5	6	4	50	-

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

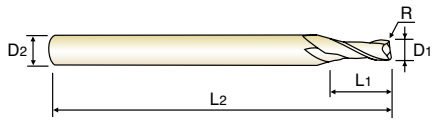
4G MILL END MILLS

SEMD99 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE CORNER RADIUS (Short, Regular, Long Shank)

▶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 0.02 mm to 5.0mm corner radius.





MG | 2 | 30° | R ±0.005 (R≤6) | R ±0.010 (D>6) | PLAIN

P.788

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEMD9901502	R0.2	1.5	6	4	50	-
SEMD9901503	R0.3	1.5	6	4	50	-
SEMD9901505	R0.5	1.5	6	4	50	-
SEMD9902001	R0.1	2.0	6	6	50	-
SEMD9902002	R0.2	2.0	6	6	50	-
SEMD9902003	R0.3	2.0	6	6	50	-
SEMD9902005	R0.5	2.0	6	6	50	-
SEMD9902501	R0.1	2.5	6	7	60	-
SEMD9902502	R0.2	2.5	6	7	60	-
SEMD9902503	R0.3	2.5	6	7	60	-
SEMD9902505	R0.5	2.5	6	7	60	-
SEMD9903001	R0.1	3.0	6	8	60	-
SEMD9903002	R0.2	3.0	6	8	60	-
SEMD9903003	R0.3	3.0	6	8	60	-
SEMD9903005	R0.5	3.0	6	8	60	-
SEMD9903010	R1.0	3.0	6	8	60	-
SEMD9903501	R0.1	3.5	6	10	70	-
SEMD9903502	R0.2	3.5	6	10	70	-
SEMD9903503	R0.3	3.5	6	10	70	-
SEMD9903505	R0.5	3.5	6	10	70	-
SEMD990400014S	R0.1	4.0	4	10	70	4mm Shank
SEMD990400024S	R0.2	4.0	4	10	70	4mm Shank
SEMD990400034S	R0.3	4.0	4	10	70	4mm Shank
SEMD990400054S	R0.5	4.0	4	10	70	4mm Shank
SEMD990401104S	R1.0	4.0	4	10	70	4mm Shank
SEMD990400011004S	R0.1	4.0	4	10	100	4mm Shank
SEMD990400021004S	R0.2	4.0	4	10	100	4mm Shank
SEMD990400031004S	R0.3	4.0	4	10	100	4mm Shank
SEMD990400051004S	R0.5	4.0	4	10	100	4mm Shank

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

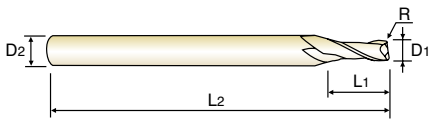
4G MILL END MILLS

SEMD99 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE CORNER RADIUS (Short, Regular, Long Shank)

- 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 0.02 mm to 5.0mm corner radius.





MG | 2 | 30° | R ±0.005 (R≤6) | R ±0.010 (D>6) | PLAIN

P.788

◇ Call for Availability

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
SEMD99040101004S	R1.0	4.0	4	10	100	4mm Shank
SEMD9904001	R0.1	4.0	6	10	70	Regular
SEMD9904002	R0.2	4.0	6	10	70	Regular
SEMD9904003	R0.3	4.0	6	10	70	Regular
SEMD9904005	R0.5	4.0	6	10	70	Regular
SEMD9904010	R1.0	4.0	6	10	70	Regular
SEMD9904501	R0.1	4.5	6	11	80	-
SEMD9904502	R0.2	4.5	6	11	80	-
SEMD9904503	R0.3	4.5	6	11	80	-
SEMD9904505	R0.5	4.5	6	11	80	-
SEMD9905001	R0.1	5.0	6	13	90	-
SEMD9905002	R0.2	5.0	6	13	90	-
SEMD9905003	R0.3	5.0	6	13	90	-
SEMD9905005	R0.5	5.0	6	13	90	-
SEMD9905010	R1.0	5.0	6	13	90	-
SEMD9905501	R0.1	5.5	6	13	90	-
SEMD9905502	R0.2	5.5	6	13	90	-
SEMD9905503	R0.3	5.5	6	13	90	-
SEMD9905505	R0.5	5.5	6	13	90	-
SEMD9905510	R1.0	5.5	6	13	90	-
SEMD9906002060	R0.2	6.0	6	15	60	Short
SEMD9906003060	R0.3	6.0	6	15	60	Short
SEMD9906005060	R0.5	6.0	6	15	60	Short
SEMD9906010060	R1.0	6.0	6	15	60	Short
SEMD9906001	R0.1	6.0	6	15	90	Regular
SEMD9906002	R0.2	6.0	6	15	90	Regular
SEMD9906003	R0.3	6.0	6	15	90	Regular
SEMD9906005	R0.5	6.0	6	15	90	Regular
SEMD9906010	R1.0	6.0	6	15	90	Regular

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

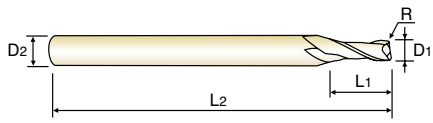
4G MILL END MILLS

SEMD99 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE CORNER RADIUS (Short, Regular, Long Shank)

▶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 0.02 mm to 5.0mm corner radius.





MG | 2 | 30° | R ±0.005 (R≤6) | R ±0.010 (D>6) | PLAIN

P.788

◇ Call for Availability

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
SEMD9906015	R1.5	6.0	6	15	90	Regular
SEMD9906020	R2.0	6.0	6	15	90	Regular
SEMD9906005	R0.5	6.0	6	15	110	Long Shank
SEMD9906010110	R1.0	6.0	6	15	110	Long Shank
SEMD9906005130	R0.5	6.0	6	15	130	Long Shank
SEMD9906010130	R1.0	6.0	6	15	130	Long Shank
SEMD9907001	R0.1	7.0	8	16	90	-
SEMD9907002	R0.2	7.0	8	16	90	-
SEMD9907003	R0.3	7.0	8	16	90	-
SEMD9907005	R0.5	7.0	8	16	90	-
SEMD9907010	R1.0	7.0	8	16	90	-
SEMD9907020	R2.0	7.0	8	16	90	-
SEMD9908003070	R0.3	8.0	8	20	70	Short
SEMD9908005070	R0.5	8.0	8	20	70	Short
SEMD9908010070	R1.0	8.0	8	20	70	Short
SEMD9908001	R0.1	8.0	8	20	100	Regular
SEMD9908002	R0.2	8.0	8	20	100	Regular
SEMD9908003	R0.3	8.0	8	20	100	Regular
SEMD9908005	R0.5	8.0	8	20	100	Regular
SEMD9908010	R1.0	8.0	8	20	100	Regular
SEMD9908015	R1.5	8.0	8	20	100	Regular
SEMD9908020	R2.0	8.0	8	20	100	Regular
SEMD9908025	R2.5	8.0	8	20	100	Regular
SEMD9908030	R3.0	8.0	8	20	100	Regular
SEMD9908005120	R0.5	8.0	8	20	120	Long Shank
SEMD9908010120	R1.0	8.0	8	20	120	Long Shank
SEMD9908015150	R0.5	8.0	8	20	150	Long Shank
SEMD9908010150	R1.0	8.0	8	20	150	Long Shank
SEMD9910003075	R0.3	10.0	10	25	75	Short

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

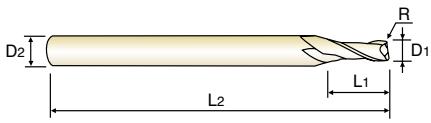
4G MILL END MILLS

SEMD99 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE CORNER RADIUS (Short, Regular, Long Shank)

- 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 0.02 mm to 5.0mm corner radius.





MG | 2 | 30° | R ±0.010 (R≤6) | R ±0.015 (D>6) | PLAIN

P.788

◇ Call for Availability

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
SEMD9910005075	R0.5	10.0	10	25	75	Short
SEMD9910010075	R1.0	10.0	10	25	75	Short
SEMD9910001	R0.1	10.0	10	25	100	Regular
SEMD9910002	R0.2	10.0	10	25	100	Regular
SEMD9910003	R0.3	10.0	10	25	100	Regular
SEMD9910005	R0.5	10.0	10	25	100	Regular
SEMD9910010	R1.0	10.0	10	25	100	Regular
SEMD9910015	R1.5	10.0	10	25	100	Regular
SEMD9910020	R2.0	10.0	10	25	100	Regular
SEMD9910025	R2.5	10.0	10	25	100	Regular
SEMD9910030	R3.0	10.0	10	25	100	Regular
SEMD9910040	R4.0	10.0	10	25	100	Regular
SEMD9910005130	R0.5	10.0	10	25	130	Long Shank
SEMD9910010130	R1.0	10.0	10	25	130	Long Shank
SEMD9910005150	R0.5	10.0	10	25	150	Long Shank
SEMD9910010150	R1.0	10.0	10	25	150	Long Shank
SEMD9911002	R0.2	11.0	12	25	110	-
SEMD9911003	R0.3	11.0	12	25	110	-
SEMD9911005	R0.5	11.0	12	25	110	-
SEMD9911010	R1.0	11.0	12	25	110	-
SEMD9911020	R2.0	11.0	12	25	110	-
SEMD9912003080	R0.3	12.0	12	30	80	Short
SEMD9912005080	R0.5	12.0	12	30	80	Short
SEMD9912010080	R1.0	12.0	12	30	80	Short
SEMD9912001	R0.1	12.0	12	30	110	Regular
SEMD9912002	R0.2	12.0	12	30	110	Regular
SEMD9912003	R0.3	12.0	12	30	110	Regular
SEMD9912005	R0.5	12.0	12	30	110	Regular
SEMD9912010	R1.0	12.0	12	30	110	Regular

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

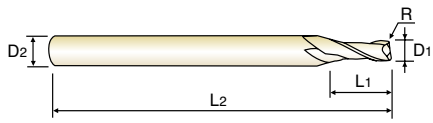
4G MILL END MILLS

SEMD99 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE CORNER RADIUS (Short, Regular, Long Shank)

- ▶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 0.02 mm to 5.0mm corner radius.





MG | 2 | 30° | R ±0.010 (R≤6) | R ±0.015 (D>6) | PLAIN

P.788

◇ Call for Availability

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
SEMD9912015	R1.5	12.0	12	30	110	Regular
SEMD9912020	R2.0	12.0	12	30	110	Regular
SEMD9912025	R2.5	12.0	12	30	110	Regular
SEMD9912030	R3.0	12.0	12	30	110	Regular
SEMD9912040	R4.0	12.0	12	30	110	Regular
SEMD9912050	R5.0	12.0	12	30	110	Regular
SEMD9912005130	R0.5	12.0	12	30	130	Long Shank
SEMD9912010130	R1.0	12.0	12	30	130	Long Shank
SEMD9912005150	R0.5	12.0	12	30	150	Long Shank
SEMD9912010150	R1.0	12.0	12	30	150	Long Shank
SEMD9914005	R0.5	14.0	16	35	150	-
SEMD9914010	R1.0	14.0	16	35	150	-
SEMD9914020	R2.0	14.0	16	35	150	-
SEMD9916005	R0.5	16.0	16	32	150	-
SEMD9916010	R1.0	16.0	16	32	150	-
SEMD9916015	R1.5	16.0	16	32	150	-
SEMD9916020	R2.0	16.0	16	32	150	-
SEMD9920005	R0.5	20.0	20	38	150	-
SEMD9920010	R1.0	20.0	20	38	150	-
SEMD9920015	R1.5	20.0	20	38	150	-
SEMD9920020	R2.0	20.0	20	38	150	-

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

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

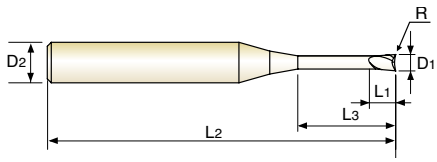
4G MILL END MILLS

SEME61 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK CORNER RADIUS

- 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. 2.0 mm corner radius.
- Available more various effective length and overall length end mills than previous standard products.





NG | 2 | 30° | R ±0.005 (R≤6) | R ±0.010 (D>6) | PLAIN

P.789~791

◇ Call for Availability

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
SEME61002002005	R0.02	0.2	4	0.3	0.5	40	-
SEME6100200201	R0.02	0.2	4	0.3	1	40	-
SEME61002002015	R0.02	0.2	4	0.3	1.5	40	-
SEME6100200202	R0.02	0.2	4	0.3	2	40	-
SEME61002005005	R0.05	0.2	4	0.3	0.5	40	-
SEME6100200501	R0.05	0.2	4	0.3	1	40	-
SEME61002005015	R0.05	0.2	4	0.3	1.5	40	-
SEME6100200502	R0.05	0.2	4	0.3	2	40	-
SEME6100300201	R0.02	0.3	4	0.5	1	40	-
SEME6100300202	R0.02	0.3	4	0.5	2	40	-
SEME6100300203	R0.02	0.3	4	0.5	3	40	-
SEME6100300501	R0.05	0.3	4	0.5	1	40	-
SEME6100300502	R0.05	0.3	4	0.5	2	40	-
SEME6100300503	R0.05	0.3	4	0.5	3	40	-
SEME6100400501	R0.05	0.4	4	0.6	1	40	-
SEME61004005015	R0.05	0.4	4	0.6	1.5	40	-
SEME6100400502	R0.05	0.4	4	0.6	2	40	-
SEME61004005025	R0.05	0.4	4	0.6	2.5	40	-
SEME6100400503	R0.05	0.4	4	0.6	3	40	-
SEME6100400504	R0.05	0.4	4	0.6	4	40	-
SEME610040101	R0.1	0.4	4	0.6	1	40	-
SEME6100401015	R0.1	0.4	4	0.6	1.5	40	-
SEME610040102	R0.1	0.4	4	0.6	2	40	-
SEME6100401025	R0.1	0.4	4	0.6	2.5	40	-
SEME610040103	R0.1	0.4	4	0.6	3	40	-
SEME610040104	R0.1	0.4	4	0.6	4	40	-
SEME6100500501	R0.05	0.5	4	0.7	1	45	-
SEME61005005015	R0.05	0.5	4	0.7	1.5	45	-
SEME6100500502	R0.05	0.5	4	0.7	2	45	-
SEME61005005025	R0.05	0.5	4	0.7	2.5	45	-

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

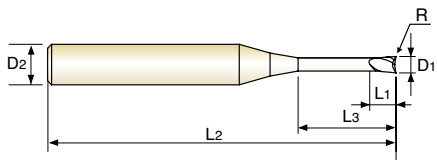
4G MILL END MILLS

SEME61 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK CORNER RADIUS

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
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NG | 2 | 30° | R ±0.005 (R≤6) | R ±0.010 (D>6) | PLAIN

P.789~791

◇ Call for Availability

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
SEME6100500503	R0.05	0.5	4	0.7	3	45	-
SEME6100500504	R0.05	0.5	4	0.7	4	45	-
SEME6100500505	R0.05	0.5	4	0.7	5	45	-
SEME6100500506	R0.05	0.5	4	0.7	6	45	-
SEME610050101	R0.1	0.5	4	0.7	1	45	-
SEME6100501015	R0.1	0.5	4	0.7	1.5	45	-
SEME610050102	R0.1	0.5	4	0.7	2	45	-
SEME6100501025	R0.1	0.5	4	0.7	2.5	45	-
SEME610050103	R0.1	0.5	4	0.7	3	45	-
SEME610050104	R0.1	0.5	4	0.7	4	45	-
SEME610050105	R0.1	0.5	4	0.7	5	45	-
SEME610050106	R0.1	0.5	4	0.7	6	45	-
SEME6100600502	R0.05	0.6	4	0.9	2	45	-
SEME6100600503	R0.05	0.6	4	0.9	3	45	-
SEME6100600504	R0.05	0.6	4	0.9	4	45	-
SEME6100600506	R0.05	0.6	4	0.9	6	45	-
SEME6100600508	R0.05	0.6	4	0.9	8	45	-
SEME6100600510	R0.05	0.6	4	0.9	10	45	-
SEME610060102	R0.1	0.6	4	0.9	2	45	-
SEME610060103	R0.1	0.6	4	0.9	3	45	-
SEME610060104	R0.1	0.6	4	0.9	4	45	-
SEME610060106	R0.1	0.6	4	0.9	6	45	-
SEME610060108	R0.1	0.6	4	0.9	8	45	-
SEME610060110	R0.1	0.6	4	0.9	10	45	-
SEME610060202	R0.2	0.6	4	0.9	2	45	-
SEME610060203	R0.2	0.6	4	0.9	3	45	-
SEME610060204	R0.2	0.6	4	0.9	4	45	-
SEME610060206	R0.2	0.6	4	0.9	6	45	-
SEME610060208	R0.2	0.6	4	0.9	8	45	-
SEME610060210	R0.2	0.6	4	0.9	10	45	-

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

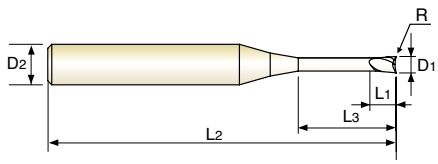
4G MILL END MILLS

SEME61 SERIES PLAIN SHANK

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NG | 2 | 30° | R ±0.005 (R≤6) | R ±0.010 (D>6) | PLAIN

P.789~791

◇ Call for Availability

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
SEME6100700502	R0.05	0.7	4	1.2	2	45	-
SEME6100700504	R0.05	0.7	4	1.2	4	45	-
SEME6100700506	R0.05	0.7	4	1.2	6	45	-
SEME6100700508	R0.05	0.7	4	1.2	8	45	-
SEME6100700510	R0.05	0.7	4	1.2	10	45	-
SEME610070102	R0.1	0.7	4	1.2	2	45	-
SEME610070104	R0.1	0.7	4	1.2	4	45	-
SEME610070106	R0.1	0.7	4	1.2	6	45	-
SEME610070108	R0.1	0.7	4	1.2	8	45	-
SEME610070110	R0.1	0.7	4	1.2	10	45	-
SEME610070202	R0.2	0.7	4	1.2	2	45	-
SEME610070204	R0.2	0.7	4	1.2	4	45	-
SEME610070206	R0.2	0.7	4	1.2	6	45	-
SEME610070208	R0.2	0.7	4	1.2	8	45	-
SEME610070210	R0.2	0.7	4	1.2	10	45	-
SEME6100800502	R0.05	0.8	4	1.2	2	45	-
SEME6100800503	R0.05	0.8	4	1.2	3	45	-
SEME6100800504	R0.05	0.8	4	1.2	4	45	-
SEME6100800506	R0.05	0.8	4	1.2	6	45	-
SEME6100800508	R0.05	0.8	4	1.2	8	45	-
SEME6100800510	R0.05	0.8	4	1.2	10	45	-
SEME610080102	R0.1	0.8	4	1.2	2	45	-
SEME610080103	R0.1	0.8	4	1.2	3	45	-
SEME610080104	R0.1	0.8	4	1.2	4	45	-
SEME610080106	R0.1	0.8	4	1.2	6	45	-
SEME610080108	R0.1	0.8	4	1.2	8	45	-
SEME610080110	R0.1	0.8	4	1.2	10	45	-
SEME610080202	R0.2	0.8	4	1.2	2	45	-
SEME610080203	R0.2	0.8	4	1.2	3	45	-
SEME610080204	R0.2	0.8	4	1.2	4	45	-

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

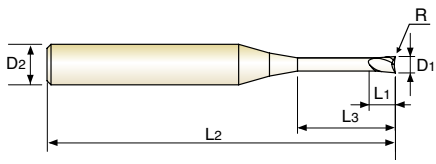
4G MILL END MILLS

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NG | 2 | 30° | R ±0.005 (R≤6) | R ±0.010 (D>6) | PLAIN

P.789~791

◇ Call for Availability

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
SEME610080206	R0.2	0.8	4	1.2	6	45	-
SEME610080208	R0.2	0.8	4	1.2	8	45	-
SEME610080210	R0.2	0.8	4	1.2	10	45	-
SEME6101000503	R0.05	1.0	4	1.5	3	50	-
SEME6101000504	R0.05	1.0	4	1.5	4	50	-
SEME6101000506	R0.05	1.0	4	1.5	6	50	-
SEME6101000508	R0.05	1.0	4	1.5	8	50	-
SEME6101000510	R0.05	1.0	4	1.5	10	50	-
SEME6101000512	R0.05	1.0	4	1.5	12	50	-
SEME6101000514	R0.05	1.0	4	1.5	14	50	-
SEME6101000516	R0.05	1.0	4	1.5	16	50	-
SEME6101000520	R0.05	1.0	4	1.5	20	50	-
SEME610100103	R0.1	1.0	4	1.5	3	50	-
SEME610100104	R0.1	1.0	4	1.5	4	50	-
SEME610100106	R0.1	1.0	4	1.5	6	50	-
SEME610100108	R0.1	1.0	4	1.5	8	50	-
SEME610100110	R0.1	1.0	4	1.5	10	50	-
SEME610100112	R0.1	1.0	4	1.5	12	50	-
SEME610100114	R0.1	1.0	4	1.5	14	50	-
SEME610100116	R0.1	1.0	4	1.5	16	50	-
SEME610100120	R0.1	1.0	4	1.5	20	50	-
SEME610100203	R0.2	1.0	4	1.5	3	50	-
SEME610100204	R0.2	1.0	4	1.5	4	50	-
SEME610100206	R0.2	1.0	4	1.5	6	50	-
SEME610100208	R0.2	1.0	4	1.5	8	50	-
SEME610100210	R0.2	1.0	4	1.5	10	50	-
SEME610100212	R0.2	1.0	4	1.5	12	50	-
SEME610100214	R0.2	1.0	4	1.5	14	50	-
SEME610100216	R0.2	1.0	4	1.5	16	50	-
SEME610100220	R0.2	1.0	4	1.5	20	50	-

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

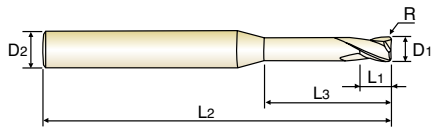
4G MILL END MILLS

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NG | 2 | 30° | R ±0.005 (R≤6) | R ±0.010 (D>6) | PLAIN

P.789~791

◇ Call for Availability

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
SEME610100303	R0.3	1.0	4	1.5	3	50	-
SEME610100304	R0.3	1.0	4	1.5	4	50	-
SEME610100306	R0.3	1.0	4	1.5	6	50	-
SEME610100308	R0.3	1.0	4	1.5	8	50	-
SEME610100310	R0.3	1.0	4	1.5	10	50	-
SEME610100312	R0.3	1.0	4	1.5	12	50	-
SEME610100314	R0.3	1.0	4	1.5	14	50	-
SEME610100316	R0.3	1.0	4	1.5	16	50	-
SEME610100320	R0.3	1.0	4	1.5	20	50	-
SEME6101200503	R0.05	1.2	4	1.8	3	50	-
SEME6101200504	R0.05	1.2	4	1.8	4	50	-
SEME6101200506	R0.05	1.2	4	1.8	6	50	-
SEME6101200508	R0.05	1.2	4	1.8	8	50	-
SEME6101200510	R0.05	1.2	4	1.8	10	50	-
SEME6101200512	R0.05	1.2	4	1.8	12	50	-
SEME6101200516	R0.05	1.2	4	1.8	16	50	-
SEME6101200520	R0.05	1.2	4	1.8	20	50	-
SEME610120103	R0.1	1.2	4	1.8	3	50	-
SEME610120104	R0.1	1.2	4	1.8	4	50	-
SEME610120106	R0.1	1.2	4	1.8	6	50	-
SEME610120108	R0.1	1.2	4	1.8	8	50	-
SEME610120110	R0.1	1.2	4	1.8	10	50	-
SEME610120112	R0.1	1.2	4	1.8	12	50	-
SEME610120116	R0.1	1.2	4	1.8	16	50	-
SEME610120120	R0.1	1.2	4	1.8	20	50	-
SEME610120203	R0.2	1.2	4	1.8	3	50	-
SEME610120204	R0.2	1.2	4	1.8	4	50	-
SEME610120206	R0.2	1.2	4	1.8	6	50	-
SEME610120208	R0.2	1.2	4	1.8	8	50	-
SEME610120210	R0.2	1.2	4	1.8	10	50	-

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

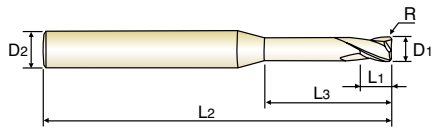
4G MILL END MILLS

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P.789~791

◇ Call for Availability

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
SEME610120212	R0.2	1.2	4	1.8	12	50	-
SEME610120216	R0.2	1.2	4	1.8	16	50	-
SEME610120220	R0.2	1.2	4	1.8	20	50	-
SEME610120303	R0.3	1.2	4	1.8	3	50	-
SEME610120304	R0.3	1.2	4	1.8	4	50	-
SEME610120306	R0.3	1.2	4	1.8	6	50	-
SEME610120308	R0.3	1.2	4	1.8	8	50	-
SEME610120310	R0.3	1.2	4	1.8	10	50	-
SEME610120312	R0.3	1.2	4	1.8	12	50	-
SEME610120316	R0.3	1.2	4	1.8	16	50	-
SEME610120320	R0.3	1.2	4	1.8	20	50	-
SEME6101500504	R0.05	1.5	4	2.3	4	50	-
SEME6101500506	R0.05	1.5	4	2.3	6	50	-
SEME6101500508	R0.05	1.5	4	2.3	8	50	-
SEME6101500510	R0.05	1.5	4	2.3	10	50	-
SEME6101500512	R0.05	1.5	4	2.3	12	50	-
SEME6101500514	R0.05	1.5	4	2.3	14	50	-
SEME6101500516	R0.05	1.5	4	2.3	16	50	-
SEME6101500520	R0.05	1.5	4	2.3	20	50	-
SEME6101500522	R0.05	1.5	4	2.3	22	60	-
SEME6101500526	R0.05	1.5	4	2.3	26	60	-
SEME610150104	R0.1	1.5	4	2.3	4	50	-
SEME610150106	R0.1	1.5	4	2.3	6	50	-
SEME610150108	R0.1	1.5	4	2.3	8	50	-
SEME610150110	R0.1	1.5	4	2.3	10	50	-
SEME610150112	R0.1	1.5	4	2.3	12	50	-
SEME610150114	R0.1	1.5	4	2.3	14	50	-
SEME610150116	R0.1	1.5	4	2.3	16	50	-
SEME610150120	R0.1	1.5	4	2.3	20	50	-
SEME610150122	R0.1	1.5	4	2.3	22	60	-

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

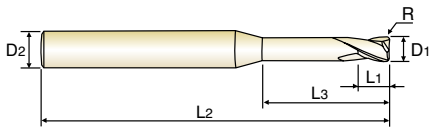
4G MILL END MILLS

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NG | 2 | 30° | R ±0.005 (R≤6) | R ±0.010 (D>6) | PLAIN

P.789~791

◇ Call for Availability

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
SEME610150126	R0.1	1.5	4	2.3	26	60	-
SEME610150204	R0.2	1.5	4	2.3	4	50	-
SEME610150206	R0.2	1.5	4	2.3	6	50	-
SEME610150208	R0.2	1.5	4	2.3	8	50	-
SEME610150210	R0.2	1.5	4	2.3	10	50	-
SEME610150212	R0.2	1.5	4	2.3	12	50	-
SEME610150214	R0.2	1.5	4	2.3	14	50	-
SEME610150216	R0.2	1.5	4	2.3	16	50	-
SEME610150220	R0.2	1.5	4	2.3	20	50	-
SEME610150222	R0.2	1.5	4	2.3	22	60	-
SEME610150226	R0.2	1.5	4	2.3	26	60	-
SEME610150304	R0.3	1.5	4	2.3	4	50	-
SEME610150306	R0.3	1.5	4	2.3	6	50	-
SEME610150308	R0.3	1.5	4	2.3	8	50	-
SEME610150310	R0.3	1.5	4	2.3	10	50	-
SEME610150312	R0.3	1.5	4	2.3	12	50	-
SEME610150314	R0.3	1.5	4	2.3	14	50	-
SEME610150316	R0.3	1.5	4	2.3	16	50	-
SEME610150320	R0.3	1.5	4	2.3	20	50	-
SEME610150322	R0.3	1.5	4	2.3	22	60	-
SEME610150326	R0.3	1.5	4	2.3	26	60	-
SEME610150504	R0.5	1.5	4	2.3	4	50	-
SEME610150506	R0.5	1.5	4	2.3	6	50	-
SEME610150508	R0.5	1.5	4	2.3	8	50	-
SEME610150510	R0.5	1.5	4	2.3	10	50	-
SEME610150512	R0.5	1.5	4	2.3	12	50	-
SEME610150514	R0.5	1.5	4	2.3	14	50	-
SEME610150516	R0.5	1.5	4	2.3	16	50	-
SEME610150520	R0.5	1.5	4	2.3	20	50	-
SEME610150522	R0.5	1.5	4	2.3	22	60	-

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

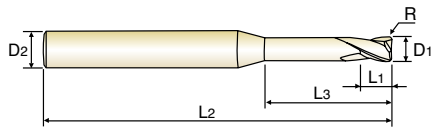
4G MILL END MILLS

SEME61 SERIES PLAIN SHANK

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P.789~791

◇ Call for Availability

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
SEME610150526	R0.5	1.5	4	2.3	26	60	-
SEME610200106	R0.1	2.0	4	3	6	50	-
SEME610200108	R0.1	2.0	4	3	8	50	-
SEME610200110	R0.1	2.0	4	3	10	50	-
SEME610200112	R0.1	2.0	4	3	12	50	-
SEME610200114	R0.1	2.0	4	3	14	50	-
SEME610200116	R0.1	2.0	4	3	16	50	-
SEME610200120	R0.1	2.0	4	3	20	50	-
SEME610200122	R0.1	2.0	4	3	22	60	-
SEME610200126	R0.1	2.0	4	3	26	60	-
SEME610200130	R0.1	2.0	4	3	30	70	-
SEME610200206	R0.2	2.0	4	3	6	50	-
SEME610200208	R0.2	2.0	4	3	8	50	-
SEME610200210	R0.2	2.0	4	3	10	50	-
SEME610200212	R0.2	2.0	4	3	12	50	-
SEME610200214	R0.2	2.0	4	3	14	50	-
SEME610200216	R0.2	2.0	4	3	16	50	-
SEME610200220	R0.2	2.0	4	3	20	50	-
SEME610200222	R0.2	2.0	4	3	22	60	-
SEME610200226	R0.2	2.0	4	3	26	60	-
SEME610200230	R0.2	2.0	4	3	30	70	-
SEME610200306	R0.3	2.0	4	3	6	50	-
SEME610200308	R0.3	2.0	4	3	8	50	-
SEME610200310	R0.3	2.0	4	3	10	50	-
SEME610200312	R0.3	2.0	4	3	12	50	-
SEME610200314	R0.3	2.0	4	3	14	50	-
SEME610200316	R0.3	2.0	4	3	16	50	-
SEME610200320	R0.3	2.0	4	3	20	50	-
SEME610200322	R0.3	2.0	4	3	22	60	-
SEME610200326	R0.3	2.0	4	3	26	60	-

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

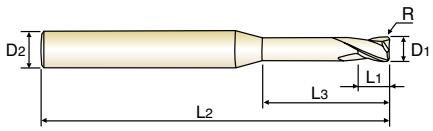
4G MILL END MILLS

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P.789~791

◇ Call for Availability

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
SEME610200330	R0.3	2.0	4	3	30	70	-
SEME610200506	R0.5	2.0	4	3	6	50	-
SEME610200508	R0.5	2.0	4	3	8	50	-
SEME610200510	R0.5	2.0	4	3	10	50	-
SEME610200512	R0.5	2.0	4	3	12	50	-
SEME610200514	R0.5	2.0	4	3	14	50	-
SEME610200516	R0.5	2.0	4	3	16	50	-
SEME610200520	R0.5	2.0	4	3	20	50	-
SEME610200522	R0.5	2.0	4	3	22	60	-
SEME610200526	R0.5	2.0	4	3	26	60	-
SEME610200530	R0.5	2.0	4	3	30	70	-
SEME610250108	R0.1	2.5	4	4	8	50	-
SEME610250110	R0.1	2.5	4	4	10	50	-
SEME610250112	R0.1	2.5	4	4	12	50	-
SEME610250114	R0.1	2.5	4	4	14	50	-
SEME610250116	R0.1	2.5	4	4	16	50	-
SEME610250120	R0.1	2.5	4	4	20	50	-
SEME610250126	R0.1	2.5	4	4	26	60	-
SEME610250130	R0.1	2.5	4	4	30	70	-
SEME610250208	R0.2	2.5	4	4	8	50	-
SEME610250210	R0.2	2.5	4	4	10	50	-
SEME610250212	R0.2	2.5	4	4	12	50	-
SEME610250214	R0.2	2.5	4	4	14	50	-
SEME610250216	R0.2	2.5	4	4	16	50	-
SEME610250220	R0.2	2.5	4	4	20	50	-
SEME610250226	R0.2	2.5	4	4	26	60	-
SEME610250230	R0.2	2.5	4	4	30	70	-
SEME610250308	R0.3	2.5	4	4	8	50	-
SEME610250310	R0.3	2.5	4	4	10	50	-
SEME610250312	R0.3	2.5	4	4	12	50	-

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

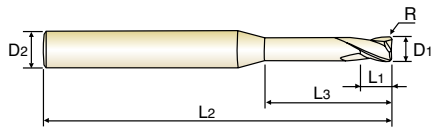
4G MILL END MILLS

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P.789~791

◇ Call for Availability

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
SEME610250314	R0.3	2.5	4	4	14	50	-
SEME610250316	R0.3	2.5	4	4	16	50	-
SEME610250320	R0.3	2.5	4	4	20	50	-
SEME610250326	R0.3	2.5	4	4	26	60	-
SEME610250330	R0.3	2.5	4	4	30	70	-
SEME610250508	R0.5	2.5	6	4	8	50	-
SEME610250510	R0.5	2.5	6	4	10	50	-
SEME610250512	R0.5	2.5	6	4	12	50	-
SEME610250514	R0.5	2.5	6	4	14	50	-
SEME610250516	R0.5	2.5	6	4	16	50	-
SEME610250520	R0.5	2.5	6	4	20	50	-
SEME610250526	R0.5	2.5	6	4	26	60	-
SEME610250530	R0.5	2.5	6	4	30	70	-
SEME610300108	R0.1	3.0	6	4.5	8	50	-
SEME610300110	R0.1	3.0	6	4.5	10	50	-
SEME610300112	R0.1	3.0	6	4.5	12	50	-
SEME610300114	R0.1	3.0	6	4.5	14	60	-
SEME610300116	R0.1	3.0	6	4.5	16	60	-
SEME610300120	R0.1	3.0	6	4.5	20	60	-
SEME610300126	R0.1	3.0	6	4.5	26	65	-
SEME610300130	R0.1	3.0	6	4.5	30	70	-
SEME610300135	R0.1	3.0	6	4.5	35	70	-
SEME610300140	R0.1	3.0	6	4.5	40	80	-
SEME610300208	R0.2	3.0	6	4.5	8	50	-
SEME610300210	R0.2	3.0	6	4.5	10	50	-
SEME610300212	R0.2	3.0	6	4.5	12	50	-
SEME610300214	R0.2	3.0	6	4.5	14	60	-
SEME610300216	R0.2	3.0	6	4.5	16	60	-
SEME610300220	R0.2	3.0	6	4.5	20	60	-
SEME610300226	R0.2	3.0	6	4.5	26	65	-

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

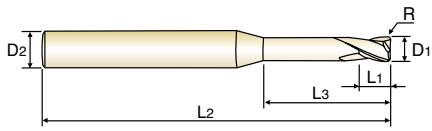
4G MILL END MILLS

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P.789~791

◇ Call for Availability

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
SEME610300230	R0.2	3.0	6	4.5	30	70	-
SEME610300235	R0.2	3.0	6	4.5	35	70	-
SEME610300240	R0.2	3.0	6	4.5	40	80	-
SEME610300308	R0.3	3.0	6	4.5	8	50	-
SEME610300310	R0.3	3.0	6	4.5	10	50	-
SEME610300312	R0.3	3.0	6	4.5	12	50	-
SEME610300314	R0.3	3.0	6	4.5	14	60	-
SEME610300316	R0.3	3.0	6	4.5	16	60	-
SEME610300320	R0.3	3.0	6	4.5	20	60	-
SEME610300326	R0.3	3.0	6	4.5	26	65	-
SEME610300330	R0.3	3.0	6	4.5	30	70	-
SEME610300335	R0.3	3.0	6	4.5	35	70	-
SEME610300340	R0.3	3.0	6	4.5	40	80	-
SEME610300508	R0.5	3.0	6	4.5	8	50	-
SEME610300510	R0.5	3.0	6	4.5	10	50	-
SEME610300512	R0.5	3.0	6	4.5	12	50	-
SEME610300514	R0.5	3.0	6	4.5	14	60	-
SEME610300516	R0.5	3.0	6	4.5	16	60	-
SEME610300520	R0.5	3.0	6	4.5	20	60	-
SEME610300526	R0.5	3.0	6	4.5	26	65	-
SEME610300530	R0.5	3.0	6	4.5	30	70	-
SEME610300535	R0.5	3.0	6	4.5	35	70	-
SEME610300540	R0.5	3.0	6	4.5	40	80	-
SEME610301008	R1.0	3.0	6	4.5	8	50	-
SEME610301010	R1.0	3.0	6	4.5	10	50	-
SEME610301012	R1.0	3.0	6	4.5	12	50	-
SEME610301014	R1.0	3.0	6	4.5	14	60	-
SEME610301016	R1.0	3.0	6	4.5	16	60	-
SEME610301020	R1.0	3.0	6	4.5	20	60	-
SEME610301026	R1.0	3.0	6	4.5	26	65	-

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

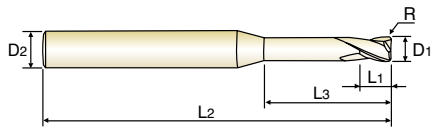
4G MILL END MILLS

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P.789~791

◇ Call for Availability

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
SEME610301030	R1.0	3.0	6	4.5	30	70	-
SEME610301035	R1.0	3.0	6	4.5	35	70	-
SEME610301040	R1.0	3.0	6	4.5	40	80	-
SEME610400110	R0.1	4.0	6	6	10	50	-
SEME610400112	R0.1	4.0	6	6	12	50	-
SEME610400114	R0.1	4.0	6	6	14	60	-
SEME610400116	R0.1	4.0	6	6	16	60	-
SEME610400120	R0.1	4.0	6	6	20	60	-
SEME610400126	R0.1	4.0	6	6	26	65	-
SEME610400130	R0.1	4.0	6	6	30	70	-
SEME610400135	R0.1	4.0	6	6	35	70	-
SEME610400140	R0.1	4.0	6	6	40	80	-
SEME610400145	R0.1	4.0	6	6	45	90	-
SEME610400150	R0.1	4.0	6	6	50	100	-
SEME610400210	R0.2	4.0	6	6	10	50	-
SEME610400212	R0.2	4.0	6	6	12	50	-
SEME610400214	R0.2	4.0	6	6	14	60	-
SEME610400216	R0.2	4.0	6	6	16	60	-
SEME610400220	R0.2	4.0	6	6	20	60	-
SEME610400226	R0.2	4.0	6	6	26	65	-
SEME610400230	R0.2	4.0	6	6	30	70	-
SEME610400235	R0.2	4.0	6	6	35	70	-
SEME610400240	R0.2	4.0	6	6	40	80	-
SEME610400245	R0.2	4.0	6	6	45	90	-
SEME610400250	R0.2	4.0	6	6	50	100	-
SEME610400310	R0.3	4.0	6	6	10	50	-
SEME610400312	R0.3	4.0	6	6	12	50	-
SEME610400314	R0.3	4.0	6	6	14	50	-
SEME610400316	R0.3	4.0	6	6	16	50	-
SEME610400320	R0.3	4.0	6	6	20	50	-

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

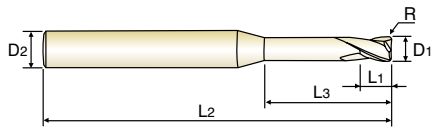
4G MILL END MILLS

SEME61 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK CORNER RADIUS

- 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. 2.0 mm corner radius.
- Available more various effective length and overall length end mills than previous standard products.





NG | 2 | 30° | R ±0.005 (R≤6) | R ±0.010 (D>6) | PLAIN

P.789~791

◇ Call for Availability

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
SEME610400326	R0.3	4.0	6	6	26	65	-
SEME610400330	R0.3	4.0	6	6	30	70	-
SEME610400335	R0.3	4.0	6	6	35	70	-
SEME610400340	R0.3	4.0	6	6	40	80	-
SEME610400345	R0.3	4.0	6	6	45	90	-
SEME610400350	R0.3	4.0	6	6	50	100	-
SEME610400510	R0.5	4.0	6	6	10	50	-
SEME610400512	R0.5	4.0	6	6	12	50	-
SEME610400514	R0.5	4.0	6	6	14	60	-
SEME610400516	R0.5	4.0	6	6	16	60	-
SEME610400520	R0.5	4.0	6	6	20	60	-
SEME610400526	R0.5	4.0	6	6	26	65	-
SEME610400530	R0.5	4.0	6	6	30	70	-
SEME610400535	R0.5	4.0	6	6	35	70	-
SEME610400540	R0.5	4.0	6	6	40	80	-
SEME610400545	R0.5	4.0	6	6	45	90	-
SEME610400550	R0.5	4.0	6	6	50	100	-
SEME610401010	R1.0	4.0	6	6	10	50	-
SEME610401012	R1.0	4.0	6	6	12	50	-
SEME610401014	R1.0	4.0	6	6	14	60	-
SEME610401016	R1.0	4.0	6	6	16	60	-
SEME610401020	R1.0	4.0	6	6	20	60	-
SEME610401026	R1.0	4.0	6	6	26	65	-
SEME610401030	R1.0	4.0	6	6	30	70	-
SEME610401035	R1.0	4.0	6	6	35	70	-
SEME610401040	R1.0	4.0	6	6	40	80	-
SEME610401045	R1.0	4.0	6	6	45	90	-
SEME610401050	R1.0	4.0	6	6	50	100	-
SEME6105001	R0.1	5.0	6	8	15	60	-
SEME6105002	R0.2	5.0	6	8	15	60	-

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

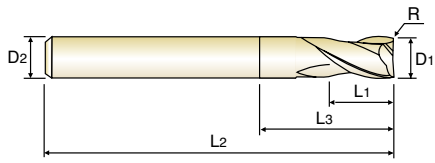
4G MILL END MILLS

SEME61 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK CORNER RADIUS

- 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.
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NG | 2 | 30° | R ±0.005 (R≤6) | R ±0.010 (D>6) | PLAIN

P.789~791

◇ Call for Availability

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
SEME6105003	R0.3	5.0	6	8	15	60	-
SEME6105005	R0.5	5.0	6	8	15	60	-
SEME6105010	R1.0	5.0	6	8	15	60	-
SEME6105015	R1.5	5.0	6	8	15	60	-
SEME6105020	R2.0	5.0	6	8	15	60	-
SEME6106001	R0.1	6.0	6	9	20	60	Regular
SEME6106002	R0.2	6.0	6	9	20	60	Regular
SEME6106003	R0.3	6.0	6	9	20	60	Regular
SEME6106005	R0.5	6.0	6	9	20	60	Regular
SEME6106010	R1.0	6.0	6	9	20	60	Regular
SEME6106015	R1.5	6.0	6	9	20	60	Regular
SEME6106020	R2.0	6.0	6	9	20	60	Regular
SEME6106003090	R0.3	6.0	6	15	30	90	Long Shank
SEME6106005090	R0.5	6.0	6	15	30	90	Long Shank
SEME6106010090	R1.0	6.0	6	15	30	90	Long Shank
SEME6108001	R0.1	8.0	8	12	25	70	Regular
SEME6108002	R0.2	8.0	8	12	25	70	Regular
SEME6108003	R0.3	8.0	8	12	25	70	Regular
SEME6108005	R0.5	8.0	8	12	25	70	Regular
SEME6108010	R1.0	8.0	8	12	25	70	Regular
SEME6108015	R1.5	8.0	8	12	25	70	Regular
SEME6108020	R2.0	8.0	8	12	25	70	Regular
SEME6108003100	R0.3	8.0	8	20	35	100	Long Shank
SEME6108005100	R0.5	8.0	8	20	35	100	Long Shank
SEME6108010100	R1.0	8.0	8	20	35	100	Long Shank
SEME6110001	R0.1	10.0	10	15	30	75	Regular
SEME6110002	R0.2	10.0	10	15	30	75	Regular
SEME6110003	R0.3	10.0	10	15	30	75	Regular
SEME6110005	R0.5	10.0	10	15	30	75	Regular
SEME6110010	R1.0	10.0	10	15	30	75	Regular

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

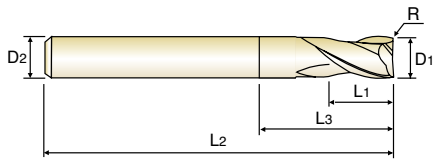
4G MILL END MILLS

SEME61 SERIES PLAIN SHANK

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NG | 2 | 30° | R ±0.005 (R≤6) | R ±0.010 (D>6) | PLAIN

P.789~791

◇ Call for Availability

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
SEME6110015	R1.5	10.0	10	15	30	75	Regular
SEME6110020	R2.0	10.0	10	15	30	75	Regular
SEME6110003100	R0.3	10.0	10	25	40	100	Long Shank
SEME6110005100	R0.5	10.0	10	25	40	100	Long Shank
SEME6110010100	R1.0	10.0	10	25	40	100	Long Shank
SEME6112002	R0.2	12.0	12	18	32	80	Regular
SEME6112003	R0.3	12.0	12	18	32	80	Regular
SEME6112005	R0.5	12.0	12	18	32	80	Regular
SEME6112010	R1.0	12.0	12	18	32	80	Regular
SEME6112015	R1.5	12.0	12	18	32	80	Regular
SEME6112020	R2.0	12.0	12	18	32	80	Regular
SEME6112003110	R0.3	12.0	12	30	50	110	Long Shank
SEME6112005110	R0.5	12.0	12	30	50	110	Long Shank
SEME6112010110	R1.0	12.0	12	30	50	110	Long Shank
SEME6116005	R0.5	16.0	16	20	35	100	Regular
SEME6116010	R1.0	16.0	16	20	35	100	Regular
SEME6116005150	R0.5	16.0	16	35	50	150	Long Shank
SEME6116010150	R1.0	16.0	16	35	50	150	Long Shank
SEME6120005	R0.5	20.0	20	25	40	100	Regular
SEME6120010	R1.0	20.0	20	25	40	100	Regular
SEME6120005150	R0.5	20.0	20	40	55	150	Long Shank
SEME6120010150	R1.0	20.0	20	40	55	150	Long Shank

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

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

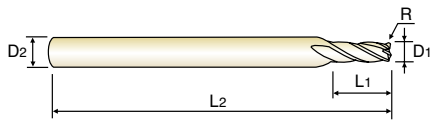
4G MILL END MILLS

SEME01 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE CORNER RADIUS (Short, Regular, Long Shank)

- ▶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.





MG | 4 | M-Helix | R ±0.02 | PLAIN

P.792

◇ Call for Availability

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
SEME01010005	R0.05	1.0	6	2.5	50	-
SEME0101001	R0.1	1.0	6	2.5	50	-
SEME0101002	R0.2	1.0	6	2.5	50	-
SEME0101003	R0.3	1.0	6	2.5	50	-
SEME01012005	R0.05	1.2	6	3	50	-
SEME0101201	R0.1	1.2	6	3	50	-
SEME0101202	R0.2	1.2	6	3	50	-
SEME0101203	R0.3	1.2	6	3	50	-
SEME01015005	R0.05	1.5	6	4	50	-
SEME0101501	R0.1	1.5	6	4	50	-
SEME0101502	R0.2	1.5	6	4	50	-
SEME0101503	R0.3	1.5	6	4	50	-
SEME0101505	R0.5	1.5	6	4	50	-
SEME0102001	R0.1	2.0	6	6	50	-
SEME0102002	R0.2	2.0	6	6	50	-
SEME0102003	R0.3	2.0	6	6	50	-
SEME0102005	R0.5	2.0	6	6	50	-
SEME0102501	R0.1	2.5	6	7	60	-
SEME0102502	R0.2	2.5	6	7	60	-
SEME0102503	R0.3	2.5	6	7	60	-
SEME0102505	R0.5	2.5	6	7	60	-
SEME0103001	R0.1	3.0	6	8	60	-
SEME0103002	R0.2	3.0	6	8	60	-
SEME0103003	R0.3	3.0	6	8	60	-
SEME0103005	R0.5	3.0	6	8	60	-
SEME0103010	R1.0	3.0	6	8	60	-
SEME0103501	R0.1	3.5	6	10	70	-
SEME0103502	R0.2	3.5	6	10	70	-
SEME0103503	R0.3	3.5	6	10	70	-
SEME0103505	R0.5	3.5	6	10	70	-

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

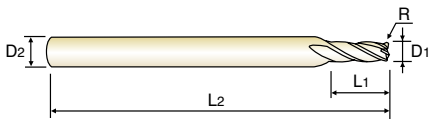
4G MILL END MILLS

SEME01 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE CORNER RADIUS (Short, Regular, Long Shank)

- 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.





MG | 4 | M-Helix | R ±0.02 | PLAIN

P.792

◇ Call for Availability

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
SEME10400014S	R0.1	4.0	4	10	70	4mm Shank
SEME10400024S	R0.2	4.0	4	10	70	4mm Shank
SEME10400034S	R0.3	4.0	4	10	70	4mm Shank
SEME10400054S	R0.5	4.0	4	10	70	4mm Shank
SEME10401044S	R1.0	4.0	4	10	70	4mm Shank
SEME10400011004S	R0.1	4.0	4	10	100	4mm Shank
SEME10400021004S	R0.2	4.0	4	10	100	4mm Shank
SEME10400031004S	R0.3	4.0	4	10	100	4mm Shank
SEME10400051004S	R0.5	4.0	4	10	100	4mm Shank
SEME10401011004S	R1.0	4.0	4	10	100	4mm Shank
SEME0104001	R0.1	4.0	6	10	70	Regular
SEME0104002	R0.2	4.0	6	10	70	Regular
SEME0104003	R0.3	4.0	6	10	70	Regular
SEME0104005	R0.5	4.0	6	10	70	Regular
SEME0104010	R1.0	4.0	6	10	70	Regular
SEME0104501	R0.1	4.5	6	11	80	-
SEME0104502	R0.2	4.5	6	11	80	-
SEME0104503	R0.3	4.5	6	11	80	-
SEME0104505	R0.5	4.5	6	11	80	-
SEME0105001	R0.1	5.0	6	13	90	-
SEME0105002	R0.2	5.0	6	13	90	-
SEME0105003	R0.3	5.0	6	13	90	-
SEME0105005	R0.5	5.0	6	13	90	-
SEME0105010	R1.0	5.0	6	13	90	-
SEME0105501	R0.1	5.5	6	13	90	-
SEME0105502	R0.2	5.5	6	13	90	-
SEME0105503	R0.3	5.5	6	13	90	-
SEME0105505	R0.5	5.5	6	13	90	-
SEME0105510	R1.0	5.5	6	13	90	-
SEME0106001060	R0.1	6.0	6	15	60	Short

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

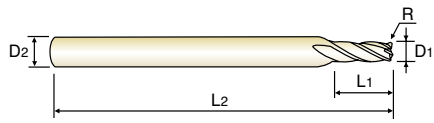
4G MILL END MILLS

SEME01 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE CORNER RADIUS (Short, Regular, Long Shank)

- ▶Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
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- ▶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.





MG | 4 | M-Helix | R ±0.02 | PLAIN

P.792

◇ Call for Availability

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
SEME0106002060	R0.2	6.0	6	15	60	Short
SEME0106001	R0.1	6.0	6	15	90	Regular
SEME0106002	R0.2	6.0	6	15	90	Regular
SEME0106003	R0.3	6.0	6	15	90	Regular
SEME0106005	R0.5	6.0	6	15	90	Regular
SEME0106010	R1.0	6.0	6	15	90	Regular
SEME0106015	R1.5	6.0	6	15	90	Regular
SEME0106020	R2.0	6.0	6	15	90	Regular
SEME0106005110	R0.5	6.0	6	15	110	Long Shank
SEME0106010110	R1.0	6.0	6	15	110	Long Shank
SEME0106005130	R0.5	6.0	6	15	130	Long Shank
SEME0106010130	R1.0	6.0	6	15	130	Long Shank
SEME0107001	R0.1	7.0	8	16	90	-
SEME0107002	R0.2	7.0	8	16	90	-
SEME0107003	R0.3	7.0	8	16	90	-
SEME0107005	R0.5	7.0	8	16	90	-
SEME0107010	R1.0	7.0	8	16	90	-
SEME0107020	R2.0	7.0	8	16	90	-
SEME0108003070	R0.3	8.0	8	20	70	Short
SEME0108005070	R0.5	8.0	8	20	70	Short
SEME0108010070	R1.0	8.0	8	20	70	Short
SEME0108001	R0.1	8.0	8	20	100	Regular
SEME0108002	R0.2	8.0	8	20	100	Regular
SEME0108003	R0.3	8.0	8	20	100	Regular
SEME0108005	R0.5	8.0	8	20	100	Regular
SEME0108010	R1.0	8.0	8	20	100	Regular
SEME0108015	R1.5	8.0	8	20	100	Regular
SEME0108020	R2.0	8.0	8	20	100	Regular
SEME0108025	R2.5	8.0	8	20	100	Regular
SEME0108030	R3.0	8.0	8	20	100	Regular

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

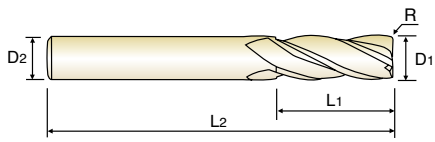
4G MILL END MILLS

SEME01 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE CORNER RADIUS (Short, Regular, Long Shank)

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
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MG | 4 | M-Helix | R ±0.02 | PLAIN

P.792

◇ Call for Availability

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
SEME0108005120	R0.5	8.0	8	20	120	Long Shank
SEME0108010120	R1.0	8.0	8	20	120	Long Shank
SEME0108005150	R0.5	8.0	8	20	150	Long Shank
SEME0108010150	R1.0	8.0	8	20	150	Long Shank
SEME0110003075	R0.3	10.0	10	25	75	Short
SEME0110005075	R0.5	10.0	10	25	75	Short
SEME0110010075	R1.0	10.0	10	25	75	Short
SEME0110001	R0.1	10.0	10	25	100	Regular
SEME0110002	R0.2	10.0	10	25	100	Regular
SEME0110003	R0.3	10.0	10	25	100	Regular
SEME0110005	R0.5	10.0	10	25	100	Regular
SEME0110010	R1.0	10.0	10	25	100	Regular
SEME0110015	R1.5	10.0	10	25	100	Regular
SEME0110020	R2.0	10.0	10	25	100	Regular
SEME0110025	R2.5	10.0	10	25	100	Regular
SEME0110030	R3.0	10.0	10	25	100	Regular
SEME0110040	R4.0	10.0	10	25	100	Regular
SEME0110005130	R0.5	10.0	10	22	130	Long Shank
SEME0110010130	R1.0	10.0	10	22	130	Long Shank
SEME0110005150	R0.5	10.0	10	22	150	Long Shank
SEME0110010150	R1.0	10.0	10	22	150	Long Shank
SEME0111002	R0.2	11.0	12	25	110	-
SEME0111003	R0.3	11.0	12	25	110	-
SEME0111005	R0.5	11.0	12	25	110	-
SEME0111010	R1.0	11.0	12	25	110	-
SEME0111020	R2.0	11.0	12	25	110	-
SEME0112003080	R0.3	12.0	12	30	80	Short
SEME0112005080	R0.5	12.0	12	30	80	Short
SEME0112010080	R1.0	12.0	12	30	80	Short
SEME0112001	R0.1	12.0	12	30	110	Regular

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

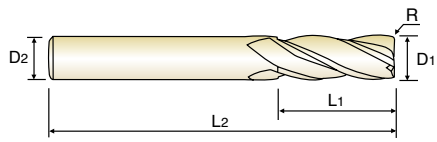
4G MILL END MILLS

SEME01 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE CORNER RADIUS (Short, Regular, Long Shank)

- ▶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.





MG | 4 | M-Helix | R ±0.02 | PLAIN

P.792

◇ Call for Availability

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
SEME0112002	R0.2	12.0	12	30	110	Regular
SEME0112003	R0.3	12.0	12	30	110	Regular
SEME0112005	R0.5	12.0	12	30	110	Regular
SEME0112010	R1.0	12.0	12	30	110	Regular
SEME0112015	R1.5	12.0	12	30	110	Regular
SEME0112020	R2.0	12.0	12	30	110	Regular
SEME0112025	R2.5	12.0	12	30	110	Regular
SEME0112030	R3.0	12.0	12	30	110	Regular
SEME0112040	R4.0	12.0	12	30	110	Regular
SEME0112050	R5.0	12.0	12	30	110	Regular
SEME0112005130	R0.5	12.0	12	30	130	Long Shank
SEME0112010130	R1.0	12.0	12	30	130	Long Shank
SEME0112005150	R0.5	12.0	12	30	130	Long Shank
SEME0112010150	R1.0	12.0	12	30	130	Long Shank
SEME0114005	R0.5	14.0	16	35	150	-
SEME0114010	R1.0	14.0	16	35	150	-
SEME0114020	R2.0	14.0	16	35	150	-
SEME0116005	R0.5	16.0	16	32	150	-
SEME0116010	R1.0	16.0	16	32	150	-
SEME0116015	R1.5	16.0	16	32	150	-
SEME0116020	R2.0	16.0	16	32	150	-
SEME0120005	R0.5	20.0	20	38	150	-
SEME0120010	R1.0	20.0	20	38	150	-
SEME0120015	R1.5	20.0	20	38	150	-
SEME0120020	R2.0	20.0	20	38	150	-

Mill Dia. Tolerance (mm)	Corner Radius Tolerance (mm)	Shank Dia. Tolerance
0~−0.03	±0.02	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

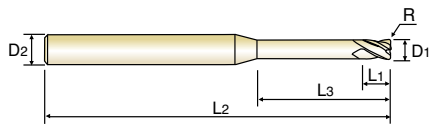
4G MILL END MILLS

SEME64 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG NECK CORNER RADIUS

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- 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.





MG | 4 | M-Helix | R ±0.02 | PLAIN

P.793, 794

◇ Call for Availability

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
SEME6401000503	R0.05	1.0	4	1.5	3	50	-
SEME6401000504	R0.05	1.0	4	1.5	4	50	-
SEME6401000506	R0.05	1.0	4	1.5	6	50	-
SEME6401000508	R0.05	1.0	4	1.5	8	50	-
SEME6401000510	R0.05	1.0	4	1.5	10	50	-
SEME6401000512	R0.05	1.0	4	1.5	12	50	-
SEME6401000514	R0.05	1.0	4	1.5	14	50	-
SEME6401000516	R0.05	1.0	4	1.5	16	50	-
SEME6401000520	R0.05	1.0	4	1.5	20	50	-
SEME640100103	R0.1	1.0	4	1.5	3	50	-
SEME640100104	R0.1	1.0	4	1.5	4	50	-
SEME640100106	R0.1	1.0	4	1.5	6	50	-
SEME640100108	R0.1	1.0	4	1.5	8	50	-
SEME640100110	R0.1	1.0	4	1.5	10	50	-
SEME640100112	R0.1	1.0	4	1.5	12	50	-
SEME640100114	R0.1	1.0	4	1.5	14	50	-
SEME640100116	R0.1	1.0	4	1.5	16	50	-
SEME640100120	R0.1	1.0	4	1.5	20	50	-
SEME640100203	R0.2	1.0	4	1.5	3	50	-
SEME640100204	R0.2	1.0	4	1.5	4	50	-
SEME640100206	R0.2	1.0	4	1.5	6	50	-
SEME640100208	R0.2	1.0	4	1.5	8	50	-
SEME640100210	R0.2	1.0	4	1.5	10	50	-
SEME640100212	R0.2	1.0	4	1.5	12	50	-
SEME640100214	R0.2	1.0	4	1.5	14	50	-
SEME640100216	R0.2	1.0	4	1.5	16	50	-
SEME640100220	R0.2	1.0	4	1.5	20	50	-
SEME640100303	R0.3	1.0	4	1.5	3	50	-
SEME640100304	R0.3	1.0	4	1.5	4	50	-
SEME640100306	R0.3	1.0	4	1.5	6	50	-

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

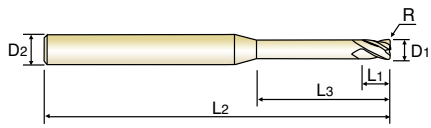
4G MILL END MILLS

SEME64 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG NECK CORNER RADIUS

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- Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
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MG | 4 | M-Helix | R ±0.02 | PLAIN

P.793, 794

◇ Call for Availability

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
SEME640100308	R0.3	1.0	4	1.5	8	50	-
SEME640100310	R0.3	1.0	4	1.5	10	50	-
SEME640100312	R0.3	1.0	4	1.5	12	50	-
SEME640100314	R0.3	1.0	4	1.5	14	50	-
SEME640100316	R0.3	1.0	4	1.5	16	50	-
SEME640100320	R0.3	1.0	4	1.5	20	50	-
SEME6401200503	R0.05	1.2	4	1.8	3	50	-
SEME6401200504	R0.05	1.2	4	1.8	4	50	-
SEME6401200506	R0.05	1.2	4	1.8	6	50	-
SEME6401200508	R0.05	1.2	4	1.8	8	50	-
SEME6401200510	R0.05	1.2	4	1.8	10	50	-
SEME6401200512	R0.05	1.2	4	1.8	12	50	-
SEME6401200516	R0.05	1.2	4	1.8	16	50	-
SEME6401200520	R0.05	1.2	4	1.8	20	50	-
SEME640120103	R0.1	1.2	4	1.8	3	50	-
SEME640120104	R0.1	1.2	4	1.8	4	50	-
SEME640120106	R0.1	1.2	4	1.8	6	50	-
SEME640120108	R0.1	1.2	4	1.8	8	50	-
SEME640120110	R0.1	1.2	4	1.8	10	50	-
SEME640120112	R0.1	1.2	4	1.8	12	50	-
SEME640120116	R0.1	1.2	4	1.8	16	50	-
SEME640120120	R0.1	1.2	4	1.8	20	50	-
SEME640120203	R0.2	1.2	4	1.8	3	50	-
SEME640120204	R0.2	1.2	4	1.8	4	50	-
SEME640120206	R0.2	1.2	4	1.8	6	50	-
SEME640120208	R0.2	1.2	4	1.8	8	50	-
SEME640120210	R0.2	1.2	4	1.8	10	50	-
SEME640120212	R0.2	1.2	4	1.8	12	50	-
SEME640120216	R0.2	1.2	4	1.8	16	50	-
SEME640120220	R0.2	1.2	4	1.8	20	50	-

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

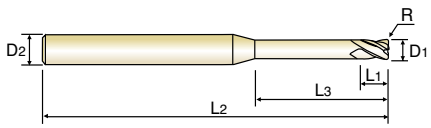
4G MILL END MILLS

SEME64 SERIES PLAIN SHANK

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- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
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MG | 4 | M-Helix | R ±0.02 | PLAIN

P.793, 794

◇ Call for Availability

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
SEME640120303	R0.3	1.2	4	1.8	3	50	-
SEME640120304	R0.3	1.2	4	1.8	4	50	-
SEME640120306	R0.3	1.2	4	1.8	6	50	-
SEME640120308	R0.3	1.2	4	1.8	8	50	-
SEME640120310	R0.3	1.2	4	1.8	10	50	-
SEME640120312	R0.3	1.2	4	1.8	12	50	-
SEME640120316	R0.3	1.2	4	1.8	16	50	-
SEME640120320	R0.3	1.2	4	1.8	20	50	-
SEME6401500504	R0.05	1.5	4	2.3	4	50	-
SEME6401500506	R0.05	1.5	4	2.3	6	50	-
SEME6401500508	R0.05	1.5	4	2.3	8	50	-
SEME6401500510	R0.05	1.5	4	2.3	10	50	-
SEME6401500512	R0.05	1.5	4	2.3	12	50	-
SEME6401500514	R0.05	1.5	4	2.3	14	50	-
SEME6401500516	R0.05	1.5	4	2.3	16	50	-
SEME6401500520	R0.05	1.5	4	2.3	20	50	-
SEME6401500522	R0.05	1.5	4	2.3	22	60	-
SEME6401500526	R0.05	1.5	4	2.3	26	60	-
SEME640150104	R0.1	1.5	4	2.3	4	50	-
SEME640150106	R0.1	1.5	4	2.3	6	50	-
SEME640150108	R0.1	1.5	4	2.3	8	50	-
SEME640150110	R0.1	1.5	4	2.3	10	50	-
SEME640150112	R0.1	1.5	4	2.3	12	50	-
SEME640150114	R0.1	1.5	4	2.3	14	50	-
SEME640150116	R0.1	1.5	4	2.3	16	50	-
SEME640150120	R0.1	1.5	4	2.3	20	50	-
SEME640150122	R0.1	1.5	4	2.3	22	60	-
SEME640150126	R0.1	1.5	4	2.3	26	60	-
SEME640150204	R0.2	1.5	4	2.3	4	50	-
SEME640150206	R0.2	1.5	4	2.3	6	50	-

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

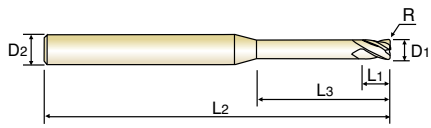
4G MILL END MILLS

SEME64 SERIES PLAIN SHANK

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MG | 4 | M-Helix | R ±0.02 | PLAIN

P.793, 794

◇ Call for Availability

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
SEME640150208	R0.2	1.5	4	2.3	8	50	-
SEME640150210	R0.2	1.5	4	2.3	10	50	-
SEME640150212	R0.2	1.5	4	2.3	12	50	-
SEME640150214	R0.2	1.5	4	2.3	14	50	-
SEME640150216	R0.2	1.5	4	2.3	16	50	-
SEME640150220	R0.2	1.5	4	2.3	20	50	-
SEME640150222	R0.2	1.5	4	2.3	22	60	-
SEME640150226	R0.2	1.5	4	2.3	26	60	-
SEME640150304	R0.3	1.5	4	2.3	4	50	-
SEME640150306	R0.3	1.5	4	2.3	6	50	-
SEME640150308	R0.3	1.5	4	2.3	8	50	-
SEME640150310	R0.3	1.5	4	2.3	10	50	-
SEME640150312	R0.3	1.5	4	2.3	12	50	-
SEME640150314	R0.3	1.5	4	2.3	14	50	-
SEME640150316	R0.3	1.5	4	2.3	16	50	-
SEME640150320	R0.3	1.5	4	2.3	20	50	-
SEME640150322	R0.3	1.5	4	2.3	22	60	-
SEME640150326	R0.3	1.5	4	2.3	26	60	-
SEME640150504	R0.5	1.5	4	2.3	4	50	-
SEME640150506	R0.5	1.5	4	2.3	6	50	-
SEME640150508	R0.5	1.5	4	2.3	8	50	-
SEME640150510	R0.5	1.5	4	2.3	10	50	-
SEME640150512	R0.5	1.5	4	2.3	12	50	-
SEME640150514	R0.5	1.5	4	2.3	14	50	-
SEME640150516	R0.5	1.5	4	2.3	16	50	-
SEME640150520	R0.5	1.5	4	2.3	20	50	-
SEME640150522	R0.5	1.5	4	2.3	22	60	-
SEME640150526	R0.5	1.5	4	2.3	26	60	-
SEME640200106	R0.1	2.0	4	3	6	50	-
SEME640200108	R0.1	2.0	4	3	8	50	-

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

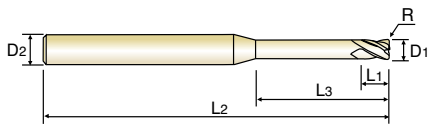
4G MILL END MILLS

SEME64 SERIES PLAIN SHANK

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MG | 4 | M-Helix | R ±0.02 | PLAIN

P.793, 794

◇ Call for Availability

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
SEME640200110	R0.1	2.0	4	3	10	50	-
SEME640200112	R0.1	2.0	4	3	12	50	-
SEME640200114	R0.1	2.0	4	3	14	50	-
SEME640200116	R0.1	2.0	4	3	16	50	-
SEME640200120	R0.1	2.0	4	3	20	50	-
SEME640200122	R0.1	2.0	4	3	22	60	-
SEME640200126	R0.1	2.0	4	3	26	60	-
SEME640200130	R0.1	2.0	4	3	30	70	-
SEME640200206	R0.2	2.0	4	3	6	50	-
SEME640200208	R0.2	2.0	4	3	8	50	-
SEME640200210	R0.2	2.0	4	3	10	50	-
SEME640200212	R0.2	2.0	4	3	12	50	-
SEME640200214	R0.2	2.0	4	3	14	50	-
SEME640200216	R0.2	2.0	4	3	16	50	-
SEME640200220	R0.2	2.0	4	3	20	50	-
SEME640200222	R0.2	2.0	4	3	22	60	-
SEME640200226	R0.2	2.0	4	3	26	60	-
SEME640200230	R0.2	2.0	4	3	30	70	-
SEME640200306	R0.3	2.0	4	3	6	50	-
SEME640200308	R0.3	2.0	4	3	8	50	-
SEME640200310	R0.3	2.0	4	3	10	50	-
SEME640200312	R0.3	2.0	4	3	12	50	-
SEME640200314	R0.3	2.0	4	3	14	50	-
SEME640200316	R0.3	2.0	4	3	16	50	-
SEME640200320	R0.3	2.0	4	3	20	50	-
SEME640200322	R0.3	2.0	4	3	22	60	-
SEME640200326	R0.3	2.0	4	3	26	60	-
SEME640200330	R0.3	2.0	4	3	30	70	-
SEME640200506	R0.5	2.0	4	3	6	50	-
SEME640200508	R0.5	2.0	4	3	8	50	-

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

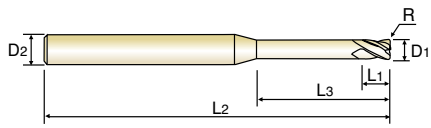
4G MILL END MILLS

SEME64 SERIES PLAIN SHANK

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MG | 4 | M-Helix | R ±0.02 | PLAIN

P.793, 794

◇ Call for Availability

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
SEME640200510	R0.5	2.0	4	3	10	50	-
SEME640200512	R0.5	2.0	4	3	12	50	-
SEME640200514	R0.5	2.0	4	3	14	50	-
SEME640200516	R0.5	2.0	4	3	16	50	-
SEME640200520	R0.5	2.0	4	3	20	50	-
SEME640200522	R0.5	2.0	4	3	22	60	-
SEME640200526	R0.5	2.0	4	3	26	60	-
SEME640200530	R0.5	2.0	4	3	30	70	-
SEME640250108	R0.1	2.5	4	4	8	50	-
SEME640250110	R0.1	2.5	4	4	10	50	-
SEME640250112	R0.1	2.5	4	4	12	50	-
SEME640250114	R0.1	2.5	4	4	14	50	-
SEME640250116	R0.1	2.5	4	4	16	50	-
SEME640250120	R0.1	2.5	4	4	20	50	-
SEME640250126	R0.1	2.5	4	4	26	60	-
SEME640250130	R0.1	2.5	4	4	30	70	-
SEME640250208	R0.2	2.5	4	4	8	50	-
SEME640250210	R0.2	2.5	4	4	10	50	-
SEME640250212	R0.2	2.5	4	4	12	50	-
SEME640250214	R0.2	2.5	4	4	14	50	-
SEME640250216	R0.2	2.5	4	4	16	50	-
SEME640250220	R0.2	2.5	4	4	20	50	-
SEME640250226	R0.2	2.5	4	4	26	60	-
SEME640250230	R0.2	2.5	4	4	30	70	-
SEME640250308	R0.3	2.5	4	4	8	50	-
SEME640250310	R0.3	2.5	4	4	10	50	-
SEME640250312	R0.3	2.5	4	4	12	50	-
SEME640250314	R0.3	2.5	4	4	14	50	-
SEME640250316	R0.3	2.5	4	4	16	50	-
SEME640250320	R0.3	2.5	4	4	20	50	-

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

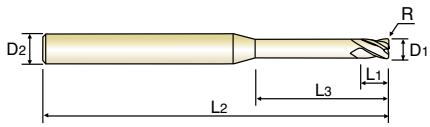
4G MILL END MILLS

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MG | 4 | M-Helix | R ±0.02 | PLAIN

P.793, 794

◇ Call for Availability

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
SEME640250326	R0.3	2.5	4	4	26	60	-
SEME640250330	R0.3	2.5	4	4	30	70	-
SEME640250508	R0.5	2.5	4	4	8	50	-
SEME640250510	R0.5	2.5	4	4	10	50	-
SEME640250512	R0.5	2.5	4	4	12	50	-
SEME640250514	R0.5	2.5	4	4	14	50	-
SEME640250516	R0.5	2.5	4	4	16	50	-
SEME640250520	R0.5	2.5	4	4	20	50	-
SEME640250526	R0.5	2.5	4	4	26	60	-
SEME640250530	R0.5	2.5	4	4	30	70	-
SEME640300108	R0.1	3.0	6	4.5	8	50	-
SEME640300110	R0.1	3.0	6	4.5	10	50	-
SEME640300112	R0.1	3.0	6	4.5	12	50	-
SEME640300114	R0.1	3.0	6	4.5	14	60	-
SEME640300116	R0.1	3.0	6	4.5	16	60	-
SEME640300120	R0.1	3.0	6	4.5	20	60	-
SEME640300126	R0.1	3.0	6	4.5	26	65	-
SEME640300130	R0.1	3.0	6	4.5	30	70	-
SEME640300135	R0.1	3.0	6	4.5	35	70	-
SEME640300140	R0.1	3.0	6	4.5	40	80	-
SEME640300208	R0.2	3.0	6	4.5	8	50	-
SEME640300210	R0.2	3.0	6	4.5	10	50	-
SEME640300212	R0.2	3.0	6	4.5	12	50	-
SEME640300214	R0.2	3.0	6	4.5	14	60	-
SEME640300216	R0.2	3.0	6	4.5	16	60	-
SEME640300220	R0.2	3.0	6	4.5	20	60	-
SEME640300226	R0.2	3.0	6	4.5	26	65	-
SEME640300230	R0.2	3.0	6	4.5	30	70	-
SEME640300235	R0.2	3.0	6	4.5	35	70	-
SEME640300240	R0.2	3.0	6	4.5	40	80	-

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

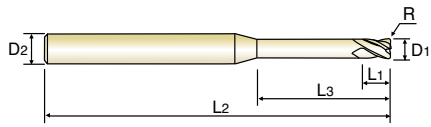
4G MILL END MILLS

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MG | 4 | M-Helix | R ±0.02 | PLAIN

P.793, 794

◇ Call for Availability

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
SEME640300308	R0.3	3.0	6	4.5	8	50	-
SEME640300310	R0.3	3.0	6	4.5	10	50	-
SEME640300312	R0.3	3.0	6	4.5	12	50	-
SEME640300314	R0.3	3.0	6	4.5	14	60	-
SEME640300316	R0.3	3.0	6	4.5	16	60	-
SEME640300320	R0.3	3.0	6	4.5	20	60	-
SEME640300326	R0.3	3.0	6	4.5	26	65	-
SEME640300330	R0.3	3.0	6	4.5	30	70	-
SEME640300335	R0.3	3.0	6	4.5	35	70	-
SEME640300340	R0.3	3.0	6	4.5	40	80	-
SEME640300508	R0.5	3.0	6	4.5	8	50	-
SEME640300510	R0.5	3.0	6	4.5	10	50	-
SEME640300512	R0.5	3.0	6	4.5	12	50	-
SEME640300514	R0.5	3.0	6	4.5	14	60	-
SEME640300516	R0.5	3.0	6	4.5	16	60	-
SEME640300520	R0.5	3.0	6	4.5	20	60	-
SEME640300526	R0.5	3.0	6	4.5	26	65	-
SEME640300530	R0.5	3.0	6	4.5	30	70	-
SEME640300535	R0.5	3.0	6	4.5	35	70	-
SEME640300540	R0.5	3.0	6	4.5	40	80	-
SEME640301008	R1.0	3.0	6	4.5	8	50	-
SEME640301010	R1.0	3.0	6	4.5	10	50	-
SEME640301012	R1.0	3.0	6	4.5	12	50	-
SEME640301014	R1.0	3.0	6	4.5	14	60	-
SEME640301016	R1.0	3.0	6	4.5	16	60	-
SEME640301020	R1.0	3.0	6	4.5	20	60	-
SEME640301026	R1.0	3.0	6	4.5	26	65	-
SEME640301030	R1.0	3.0	6	4.5	30	70	-
SEME640301035	R1.0	3.0	6	4.5	35	70	-
SEME640301040	R1.0	3.0	6	4.5	40	80	-

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

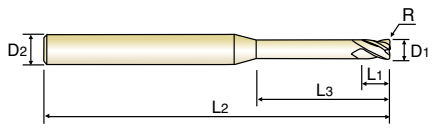
4G MILL END MILLS

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MG | 4 | M-Helix | R ±0.02 | PLAIN

P.793, 794

◇ Call for Availability

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
SEME640400110	R0.1	4.0	6	6	10	50	-
SEME640400112	R0.1	4.0	6	6	12	50	-
SEME640400114	R0.1	4.0	6	6	14	60	-
SEME640400116	R0.1	4.0	6	6	16	60	-
SEME640400120	R0.1	4.0	6	6	20	60	-
SEME640400126	R0.1	4.0	6	6	26	65	-
SEME640400130	R0.1	4.0	6	6	30	70	-
SEME640400135	R0.1	4.0	6	6	35	70	-
SEME640400140	R0.1	4.0	6	6	40	80	-
SEME640400145	R0.1	4.0	6	6	45	90	-
SEME640400150	R0.1	4.0	6	6	50	100	-
SEME640400210	R0.2	4.0	6	6	10	50	-
SEME640400212	R0.2	4.0	6	6	12	50	-
SEME640400214	R0.2	4.0	6	6	14	60	-
SEME640400216	R0.2	4.0	6	6	16	60	-
SEME640400220	R0.2	4.0	6	6	20	60	-
SEME640400226	R0.2	4.0	6	6	26	65	-
SEME640400230	R0.2	4.0	6	6	30	70	-
SEME640400235	R0.2	4.0	6	6	35	70	-
SEME640400240	R0.2	4.0	6	6	40	80	-
SEME640400245	R0.2	4.0	6	6	45	90	-
SEME640400250	R0.2	4.0	6	6	50	100	-
SEME640400310	R0.3	4.0	6	6	10	50	-
SEME640400312	R0.3	4.0	6	6	12	50	-
SEME640400314	R0.3	4.0	6	6	14	60	-
SEME640400316	R0.3	4.0	6	6	16	60	-
SEME640400320	R0.3	4.0	6	6	20	60	-
SEME640400326	R0.3	4.0	6	6	26	65	-
SEME640400330	R0.3	4.0	6	6	30	70	-
SEME640400335	R0.3	4.0	6	6	35	70	-

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

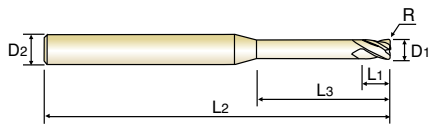
4G MILL END MILLS

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MG | 4 | M-Helix | R ±0.02 | PLAIN

P.793, 794

◇ Call for Availability

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
SEME640400340	R0.3	4.0	6	6	40	80	-
SEME640400345	R0.3	4.0	6	6	45	90	-
SEME640400350	R0.3	4.0	6	6	50	100	-
SEME640400510	R0.5	4.0	6	6	10	50	-
SEME640400512	R0.5	4.0	6	6	12	50	-
SEME640400514	R0.5	4.0	6	6	14	60	-
SEME640400516	R0.5	4.0	6	6	16	60	-
SEME640400520	R0.5	4.0	6	6	20	60	-
SEME640400526	R0.5	4.0	6	6	26	65	-
SEME640400530	R0.5	4.0	6	6	30	70	-
SEME640400535	R0.5	4.0	6	6	35	70	-
SEME640400540	R0.5	4.0	6	6	40	80	-
SEME640400545	R0.5	4.0	6	6	45	90	-
SEME640400550	R0.5	4.0	6	6	50	100	-
SEME640401010	R1.0	4.0	6	6	10	50	-
SEME640401012	R1.0	4.0	6	6	12	50	-
SEME640401014	R1.0	4.0	6	6	14	60	-
SEME640401016	R1.0	4.0	6	6	16	60	-
SEME640401020	R1.0	4.0	6	6	20	60	-
SEME640401026	R1.0	4.0	6	6	26	65	-
SEME640401030	R1.0	4.0	6	6	30	70	-
SEME640401035	R1.0	4.0	6	6	35	70	-
SEME640401040	R1.0	4.0	6	6	40	80	-
SEME640401045	R1.0	4.0	6	6	45	90	-
SEME640401050	R1.0	4.0	6	6	50	100	-
SEME6405001	R0.1	5.0	6	8	15	60	-
SEME6405002	R0.2	5.0	6	8	15	60	-
SEME6405003	R0.3	5.0	6	8	15	60	-
SEME6405005	R0.5	5.0	6	8	15	60	-
SEME6405010	R1.0	5.0	6	8	15	60	-

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

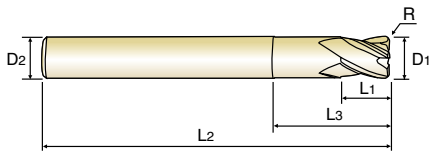
4G MILL END MILLS

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MG | 4 | M-Helix | R ±0.02 | PLAIN

P.793, 794

◇ Call for Availability

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
SEME6405015	R1.5	5.0	6	8	15	60	-
SEME6405020	R2.0	5.0	6	8	15	60	-
SEME6406001	R0.1	6.0	6	9	20	60	Regular
SEME6406002	R0.2	6.0	6	9	20	60	Regular
SEME6406003	R0.3	6.0	6	9	20	60	Regular
SEME6406005	R0.5	6.0	6	9	20	60	Regular
SEME6406010	R1.0	6.0	6	9	20	60	Regular
SEME6406015	R1.5	6.0	6	9	20	60	Regular
SEME6406020	R2.0	6.0	6	9	20	60	Regular
SEME6406003090	R0.3	6.0	6	15	30	90	Long Shank
SEME6406005090	R0.5	6.0	6	15	30	90	Long Shank
SEME6406010090	R1.0	6.0	6	15	30	90	Long Shank
SEME6408001	R0.1	8.0	8	12	25	70	Regular
SEME6408002	R0.2	8.0	8	12	25	70	Regular
SEME6408003	R0.3	8.0	8	12	25	70	Regular
SEME6408005	R0.5	8.0	8	12	25	70	Regular
SEME6408010	R1.0	8.0	8	12	25	70	Regular
SEME6408015	R1.5	8.0	8	12	25	70	Regular
SEME6408020	R2.0	8.0	8	12	25	70	Regular
SEME6408003100	R0.3	8.0	8	20	35	100	Long Shank
SEME6408005100	R0.5	8.0	8	20	35	100	Long Shank
SEME6408010100	R1.0	8.0	8	20	35	100	Long Shank
SEME6410001	R0.1	10.0	10	15	30	75	Regular
SEME6410002	R0.2	10.0	10	15	30	75	Regular
SEME6410003	R0.3	10.0	10	15	30	75	Regular
SEME6410005	R0.5	10.0	10	15	30	75	Regular
SEME6410010	R1.0	10.0	10	15	30	75	Regular
SEME6410015	R1.5	10.0	10	15	30	75	Regular
SEME6410020	R2.0	10.0	10	15	30	75	Regular
SEME6410003100	R0.3	10.0	10	25	40	100	Long Shank

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

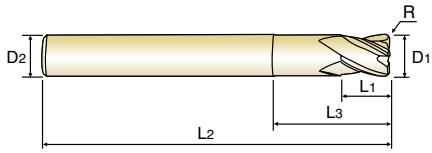
4G MILL END MILLS

SEME64 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG NECK CORNER RADIUS

▶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.





MG | 4 | M-Helix | R ±0.02 | PLAIN

P.793, 794

◇ Call for Availability

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
SEME6410005100	R0.5	10.0	10	25	40	100	Long Shank
SEME6410010100	R1.0	10.0	10	25	40	100	Long Shank
SEME6412002	R0.2	12.0	12	18	32	80	Regular
SEME6412003	R0.3	12.0	12	18	32	80	Regular
SEME6412005	R0.5	12.0	12	18	32	80	Regular
SEME6412010	R1.0	12.0	12	18	32	80	Regular
SEME6412015	R1.5	12.0	12	18	32	80	Regular
SEME6412020	R2.0	12.0	12	18	32	80	Regular
SEME6412003110	R0.3	12.0	12	30	45	110	Long Shank
SEME6412005110	R0.5	12.0	12	30	45	110	Long Shank
SEME6412010110	R1.0	12.0	12	30	45	110	Long Shank
SEME6416005	R0.5	16.0	16	20	35	100	Regular
SEME6416010	R1.0	16.0	16	20	35	100	Regular
SEME6416005150	R0.5	16.0	20	35	50	150	Long Shank
SEME6416010150	R1.0	16.0	20	35	50	150	Long Shank
SEME641600515020	R0.5	16.0	20	35	50	150	Long Shank
SEME641601015020	R1.0	16.0	20	35	50	150	Long Shank
SEME6420005	R0.5	20.0	20	25	40	100	Regular
SEME6420010	R1.0	20.0	20	25	40	100	Regular
SEME6420005150	R0.5	20.0	20	40	55	150	Long Shank
SEME6420010150	R1.0	20.0	20	40	55	150	Long Shank

Mill Dia. Tolerance (mm)	Corner Radius Tolerance (mm)	Shank Dia. Tolerance
0~−0.03	±0.02	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

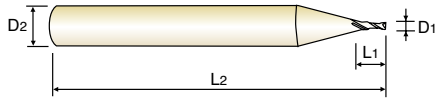
4G MILL END MILLS

SEME35 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE

▶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.





MG 2 30° PLAIN

P.795

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME350003	0.03	4	0.04	40
SEME350004	0.04	4	0.06	40
SEME350005	0.05	4	0.07	40
SEME350006	0.06	4	0.09	40
SEME350007	0.07	4	0.1	40
SEME35 0008	0.08	4	0.12	40
SEME350009	0.09	4	0.13	40
SEME35001	0.1	4	0.2	40
SEME350015	0.15	4	0.3	40
SEME35002	0.2	4	0.4	40
SEME350025	0.25	4	0.5	40
SEME35003	0.3	4	0.6	40
SEME350035	0.35	4	0.7	40
SEME35004	0.4	4	0.8	40
SEME350045	0.45	4	0.9	40
SEME35005	0.5	4	1.0	40
SEME350055	0.55	4	1.1	40
SEME35006	0.6	4	1.2	40
SEME350065	0.65	4	1.3	40
SEME35007	0.7	4	1.4	40
SEME350075	0.75	4	1.5	40
SEME35008	0.8	4	1.6	40
SEME350085	0.85	4	1.7	40
SEME35009	0.9	4	1.8	40
SEME350095	0.95	4	2	40
SEME35010	1.0	6	2.5	50
SEME35012	1.2	6	3	50

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

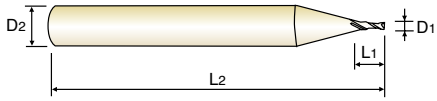
4G MILL END MILLS

SEME35 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE

▶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.





MG 2 30° PLAIN

P.795

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME35015	1.5	6	4	50
SEME35020	2.0	6	6	50
SEME35025	2.5	6	7	50
SEME35030	3.0	6	8	50
SEME35035	3.5	6	10	50
SEME35040	4.0	6	10	50
SEME35045	4.5	6	14	50
SEME35050	5.0	6	15	60
SEME35055	5.5	6	15	60
SEME35060	6.0	6	15	60
SEME35065	6.5	8	18	60
SEME35070	7.0	8	20	60
SEME35075	7.5	8	20	60
SEME35080	8.0	8	20	70
SEME35085	8.5	10	22	70
SEME35090	9.0	10	22	70
SEME35095	9.5	10	24	70
SEME35100	10.0	10	25	75
SEME35105	10.5	12	26	75
SEME35110	11.0	12	30	75
SEME35115	11.5	12	30	80
SEME35120	12.0	12	30	80
SEME35130	13.0	12	35	100
SEME3514012S	14.0	12	35	100
SEME3514014S	14.0	14	35	100
SEME35140	14.0	16	35	100
SEME35150	15.0	16	38	100

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

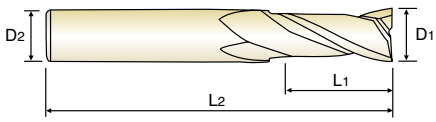
4G MILL END MILLS

SEME35 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE

▶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.





MG 2 30° PLAIN

P.795

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D_1	Shank Diameter D_2	Length of Cut L_1	Overall Length L_2
SEME35160	16.0	16	40	100
SEME35170	17.0	16	42	100
SEME35180	18.0	16	45	100
SEME3518018S	18.0	18	45	100
SEME35190	19.0	20	45	100
SEME35200	20.0	20	45	100
SEME35210	21.0	20	45	100
SEME35220	22.0	20	45	100
SEME35230	23.0	25	50	120
SEME35240	24.0	25	50	120
SEME35250	25.0	25	50	120

▶ NEXT PAGE

Size	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	0~−0.012	h6
over Ø6	0~−0.015	

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

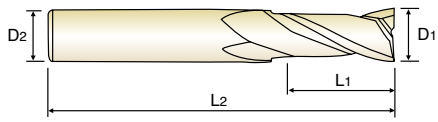
4G MILL END MILLS

SEME35 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE (0.1mm a Unit / 4mm Shank)

▶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.





MG | 2 | 30° | PLAIN

P.795

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME350104S	1.0	1.0	2.5	50
SEME350114S	1.1	1.1	3	50
SEME350124S	1.2	1.2	3	50
SEME350134S	1.3	1.3	3	50
SEME350144S	1.4	1.4	4	50
SEME350154S	1.5	1.5	4	50
SEME350164S	1.6	1.6	4	50
SEME350174S	1.7	1.7	4	50
SEME350184S	1.8	1.8	5	50
SEME350194S	1.9	1.9	5	50
SEME350204S	2.0	2.0	6	50
SEME350214S	2.1	2.1	6	50
SEME350224S	2.2	2.2	6	50
SEME350234S	2.3	2.3	6	50
SEME350244S	2.4	2.4	6	50
SEME350254S	2.5	2.5	8	50
SEME350264S	2.6	2.6	8	50
SEME350274S	2.7	2.7	8	50
SEME350284S	2.8	2.8	8	50
SEME350294S	2.9	2.9	8	50
SEME350304S	3.0	3.0	8	50
SEME350354S	3.5	3.5	10	50
SEME350404S	4.0	4.0	10	50
SEME350404S080	4.0	4.0	10	80

▶ NEXT PAGE

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.012	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

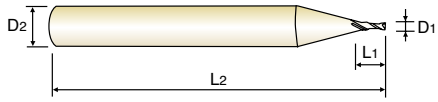
4G MILL END MILLS

SEME35 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE (3mm Shank)

- 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.





MG | 2 | 30° | PLAIN

P.795

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME350013S	0.1	3	0.2	40
SEME350023S	0.2	3	0.4	40
SEME350033S	0.3	3	0.6	40
SEME350043S	0.4	3	0.8	40
SEME350053S	0.5	3	1.0	40
SEME350063S	0.6	3	1.2	40
SEME350073S	0.7	3	1.4	40
SEME350083S	0.8	3	1.6	40
SEME350093S	0.9	3	1.8	40
SEME350103S	1.0	3	2.5	50
SEME350123S	1.2	3	3	50
SEME350153S	1.5	3	4	50
SEME350203S	2.0	3	6	50
SEME350253S	2.5	3	7	50
SEME350303S	3.0	3	8	50

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.012	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

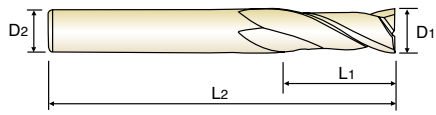
4G MILL END MILLS

SEME70 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG LENGTH

- 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.





MG | 2 | 30° | PLAIN

P.796~798

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME7001003	1.0	6	3	60
SEME7001004	1.0	6	4	60
SEME7001005	1.0	6	5	60
SEME7001006	1.0	6	6	60
SEME7001007	1.0	6	7	60
SEME7001008	1.0	6	8	60
SEME7001010	1.0	6	10	60
SEME7001012	1.0	6	12	60
SEME7001204	1.2	6	4	60
SEME7001206	1.2	6	6	60
SEME7001208	1.2	6	8	60
SEME7001210	1.2	6	10	60
SEME7001212	1.2	6	12	60
SEME7001506	1.5	6	6	60
SEME7001508	1.5	6	8	60
SEME7001510	1.5	6	10	60
SEME7001512	1.5	6	12	60
SEME7001514	1.5	6	14	60
SEME7001516	1.5	6	16	60
SEME7002008	2.0	6	8	60
SEME7002010	2.0	6	10	60
SEME7002012	2.0	6	12	60
SEME7002014	2.0	6	14	60
SEME7002016	2.0	6	16	60
SEME7002510	2.5	6	10	60
SEME7002512	2.5	6	12	60
SEME7002516	2.5	6	16	60

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

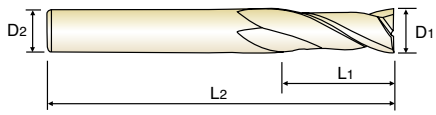
4G MILL END MILLS

SEME70 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG LENGTH

- 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.





MG | 2 | 30° | PLAIN

P.796~798

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME7002520	2.5	6	20	60
SEME7002526	2.5	6	26	60
SEME70030163S	3.0	3	16	100
SEME7003010	3.0	6	10	70
SEME7003012	3.0	6	12	70
SEME7003014	3.0	6	14	70
SEME7003016	3.0	6	16	70
SEME7003020	3.0	6	20	70
SEME7003026	3.0	6	26	70
SEME7003030	3.0	6	30	70
SEME70040204S	4.0	4	20	100
SEME7004012	4.0	6	12	70
SEME7004016	4.0	6	16	70
SEME7004020	4.0	6	20	70
SEME7004026	4.0	6	26	70
SEME7004030	4.0	6	30	70
SEME7005020	5.0	6	20	70
SEME7005025	5.0	6	25	70
SEME7005025100	5.0	6	25	100
SEME7005030	5.0	6	30	80
SEME7005035	5.0	6	35	90
SEME7005040	5.0	6	40	100
SEME7006015	6.0	6	15	60
SEME7006015080	6.0	6	15	80
SEME7006020	6.0	6	20	70
SEME7006020090	6.0	6	20	90
SEME7006025	6.0	6	25	75

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

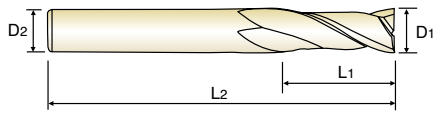
4G MILL END MILLS

SEME70 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG LENGTH

- 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.





MG | 2 | 30° | PLAIN

P.796~798

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME7006030	6.0	6	30	80
SEME7006030100	6.0	6	30	100
SEME7006030150	6.0	6	30	150
SEME7006035	6.0	6	35	90
SEME7006040	6.0	6	40	90
SEME7006040120	6.0	6	40	120
SEME7006045	6.0	6	45	150
SEME7008025	8.0	8	25	80
SEME7008030	8.0	8	30	80
SEME7008030100	8.0	8	30	100
SEME7008035	8.0	8	35	90
SEME7008040	8.0	8	40	90
SEME7008040120	8.0	8	40	120
SEME7008040150	8.0	8	40	150
SEME7008045	8.0	8	45	100
SEME7008050	8.0	8	50	100
SEME7008050150	8.0	8	50	150
SEME7010030	10.0	10	30	80
SEME7010030100	10.0	10	30	100
SEME7010035	10.0	10	35	90
SEME7010040	10.0	10	40	90
SEME7010040120	10.0	10	40	120
SEME7010045	10.0	10	45	100
SEME7010050	10.0	10	50	100
SEME7010050150	10.0	10	50	150
SEME7010050200	10.0	10	50	200
SEME7010055	10.0	10	55	150

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

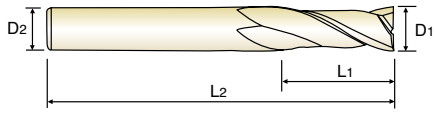
4G MILL END MILLS

SEME70 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG LENGTH

- 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.





MG | 2 | 30° | PLAIN

P.796~798

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME7010060	10.0	10	60	110
SEME7010060200	10.0	10	60	200
SEME7012035	12.0	12	35	90
SEME7012040	12.0	12	40	100
SEME7012040120	12.0	12	40	120
SEME7012045	12.0	12	45	130
SEME7012050	12.0	12	50	100
SEME7012050150	12.0	12	50	150
SEME7012055	12.0	12	55	110
SEME7012060	12.0	12	60	110
SEME7012060150	12.0	12	60	150
SEME7012060200	12.0	12	60	200
SEME7012065	12.0	12	65	150
SEME7012070	12.0	12	70	120
SEME7012070200	12.0	12	70	200
SEME7014050	14.0	16	50	110
SEME7014060	14.0	16	60	150
SEME7016040	16.0	16	40	150
SEME7016050	16.0	16	50	110
SEME7016050150	16.0	16	50	150
SEME7016060	16.0	16	60	120
SEME7016070	16.0	16	70	130
SEME7016070150	16.0	16	70	150
SEME7016070200	16.0	16	70	200
SEME7016080	16.0	16	80	150
SEME7016090	16.0	16	90	150
SEME70160110	16.0	16	110	200

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

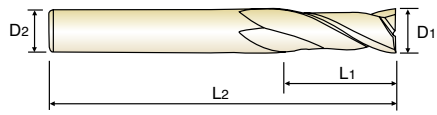
4G MILL END MILLS

SEME70 SERIES PLAIN SHANK

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MG | 2 | 30° | PLAIN

P.796~798

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME70160120	16.0	16	120	250
SEME7018050	18.0	20	50	120
SEME7018070	18.0	20	70	130
SEME70180100	18.0	20	100	200
SEME7020050	20.0	20	50	110
SEME7020050150	20.0	20	50	150
SEME7020060	20.0	20	60	130
SEME7020070	20.0	20	70	130
SEME7020080	20.0	20	80	150
SEME7020090	20.0	20	90	150
SEME7020090200	20.0	20	90	200
SEME70200110	20.0	20	110	200
SEME70200120	20.0	20	120	250
SEME7022075	22.0	20	75	150
SEME70220110	22.0	20	110	200
SEME7025070	25.0	25	70	150
SEME7025090	25.0	25	90	150
SEME70250110	25.0	25	110	200
SEME70250120	25.0	25	120	250

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

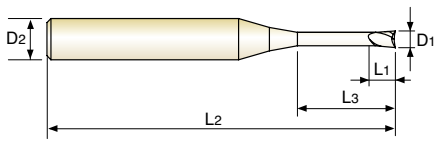
4G MILL END MILLS

SEM845 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK

- 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.





MG 2 30° PLAIN

P.799~803

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SEM845001003	0.1	4	0.15	0.3	40
SEM845001005	0.1	4	0.15	0.5	40
SEM84500101	0.1	4	0.15	1	40
SEM845002005	0.2	4	0.3	0.5	40
SEM84500201	0.2	4	0.3	1	40
SEM845002015	0.2	4	0.3	1.5	40
SEM84500202	0.2	4	0.3	2	40
SEM84500301	0.3	4	0.5	1	40
SEM845003015	0.3	4	0.5	1.5	40
SEM84500302	0.3	4	0.5	2	40
SEM845003025	0.3	4	0.5	2.5	40
SEM84500303	0.3	4	0.5	3	40
SEM84500304	0.3	4	0.5	4	40
SEM84500305	0.3	4	0.5	5	40
SEM84500401	0.4	4	0.6	1	40
SEM845004015	0.4	4	0.6	1.5	40
SEM84500402	0.4	4	0.6	2	40
SEM845004025	0.4	4	0.6	2.5	40
SEM84500403	0.4	4	0.6	3	40
SEM84500404	0.4	4	0.6	4	40
SEM84500405	0.4	4	0.6	5	40
SEM84500406	0.4	4	0.6	6	40
SEM84500408	0.4	4	0.6	8	40
SEM84500410	0.4	4	0.6	10	40
SEM84500501	0.5	4	0.7	1	45
SEM845005015	0.5	4	0.7	1.5	45
SEM84500502	0.5	4	0.7	2	45
SEM845005025	0.5	4	0.7	2.5	45
SEM84500503	0.5	4	0.7	3	45
SEM84500504	0.5	4	0.7	4	45

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

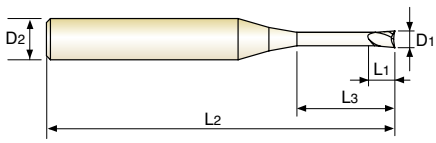
4G MILL END MILLS

SEM845 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK

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- ▶Available various rib processing due to supplying various effective length and overall length products.





MG | 2 | 30° | PLAIN

P.799~803

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SEM84500505	0.5	4	0.7	5	45
SEM84500506	0.5	4	0.7	6	45
SEM84500508	0.5	4	0.7	8	45
SEM84500510	0.5	4	0.7	10	45
SEM84500512	0.5	4	0.7	12	45
SEM84500514	0.5	4	0.7	14	45
SEM84500516	0.5	4	0.7	16	45
SEM84500602	0.6	4	0.9	2	45
SEM84500603	0.6	4	0.9	3	45
SEM84500604	0.6	4	0.9	4	45
SEM84500605	0.6	4	0.9	5	45
SEM84500606	0.6	4	0.9	6	45
SEM84500608	0.6	4	0.9	8	45
SEM84500610	0.6	4	0.9	10	45
SEM84500612	0.6	4	0.9	12	45
SEM84500614	0.6	4	0.9	14	45
SEM84500616	0.6	4	0.9	16	45
SEM84500702	0.7	4	1.2	2	45
SEM84500704	0.7	4	1.2	4	45
SEM84500706	0.7	4	1.2	6	45
SEM84500708	0.7	4	1.2	8	45
SEM84500710	0.7	4	1.2	10	45
SEM84500712	0.7	4	1.2	12	45
SEM84500802	0.8	4	1.2	2	45
SEM84500803	0.8	4	1.2	3	45
SEM84500804	0.8	4	1.2	4	45
SEM84500805	0.8	4	1.2	5	45
SEM84500806	0.8	4	1.2	6	45
SEM84500808	0.8	4	1.2	8	45
SEM84500810	0.8	4	1.2	10	45

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

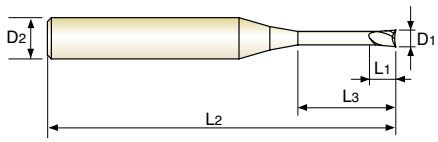
4G MILL END MILLS

SEM845 SERIES PLAIN SHANK

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- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
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- Available various rib processing due to supplying various effective length and overall length products.





MG | 2 | 30° | PLAIN

P.799~803

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SEM84500812	0.8	4	1.2	12	45
SEM84500814	0.8	4	1.2	14	45
SEM84500816	0.8	4	1.2	16	45
SEM84500820	0.8	4	1.2	20	45
SEM84500906	0.9	4	1.3	6	45
SEM84500908	0.9	4	1.3	8	45
SEM84500910	0.9	4	1.3	10	45
SEM84501002	1.0	4	1.5	2	50
SEM84501003	1.0	4	1.5	3	50
SEM84501004	1.0	4	1.5	4	50
SEM84501005	1.0	4	1.5	5	50
SEM84501006	1.0	4	1.5	6	50
SEM84501007	1.0	4	1.5	7	50
SEM84501008	1.0	4	1.5	8	50
SEM84501010	1.0	4	1.5	10	50
SEM84501012	1.0	4	1.5	12	50
SEM84501014	1.0	4	1.5	14	50
SEM84501016	1.0	4	1.5	16	50
SEM84501018	1.0	4	1.5	18	50
SEM84501020	1.0	4	1.5	20	50
SEM84501022	1.0	4	1.5	22	60
SEM84501026	1.0	4	1.5	26	60
SEM84501030	1.0	4	1.5	30	70
SEM84501040	1.0	4	1.5	40	80
SEM84501050	1.0	4	1.5	50	100
SEM84501204	1.2	4	1.8	4	50
SEM84501206	1.2	4	1.8	6	50
SEM84501208	1.2	4	1.8	8	50
SEM84501210	1.2	4	1.8	10	50
SEM84501212	1.2	4	1.8	12	50

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

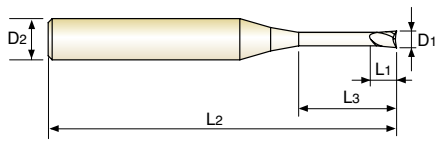
4G MILL END MILLS

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MG | 2 | 30° | PLAIN

P.799~803

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SEM84501214	1.2	4	1.8	14	50
SEM84501216	1.2	4	1.8	16	50
SEM84501220	1.2	4	1.8	20	50
SEM84501226	1.2	4	1.8	26	60
SEM84501230	1.2	4	1.8	30	70
SEM84501406	1.4	4	2.1	6	50
SEM84501408	1.4	4	2.1	8	50
SEM84501410	1.4	4	2.1	10	50
SEM84501414	1.4	4	2.1	14	50
SEM84501416	1.4	4	2.1	16	50
SEM84501420	1.4	4	2.1	20	50
SEM84501504	1.5	4	2.3	4	50
SEM84501505	1.5	4	2.3	5	50
SEM84501506	1.5	4	2.3	6	50
SEM84501507	1.5	4	2.3	7	50
SEM84501508	1.5	4	2.3	8	50
SEM84501510	1.5	4	2.3	10	50
SEM84501512	1.5	4	2.3	12	50
SEM84501514	1.5	4	2.3	14	50
SEM84501516	1.5	4	2.3	16	50
SEM84501518	1.5	4	2.3	18	50
SEM84501520	1.5	4	2.3	20	50
SEM84501522	1.5	4	2.3	22	60
SEM84501526	1.5	4	2.3	26	60
SEM84501530	1.5	4	2.3	30	70
SEM84501608	1.6	4	2.3	8	50
SEM84501610	1.6	4	2.3	10	50
SEM84501612	1.6	4	2.3	12	50
SEM84501616	1.6	4	2.3	16	50
SEM84501620	1.6	4	2.3	20	50

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

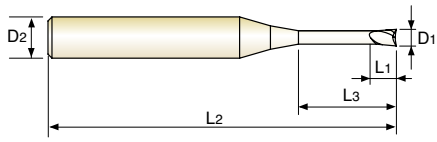
4G MILL END MILLS

SEM845 SERIES PLAIN SHANK

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MG 2 30° PLAIN

P.799~803

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SEM84501808	1.8	4	2.7	8	50
SEM84501810	1.8	4	2.7	10	50
SEM84501812	1.8	4	2.7	12	50
SEM84501816	1.8	4	2.7	16	50
SEM84501820	1.8	4	2.7	20	50
SEM84502006	2.0	4	3	6	50
SEM84502008	2.0	4	3	8	50
SEM84502010	2.0	4	3	10	50
SEM84502012	2.0	4	3	12	50
SEM84502014	2.0	4	3	14	50
SEM84502016	2.0	4	3	16	50
SEM84502018	2.0	4	3	18	50
SEM84502020	2.0	4	3	20	50
SEM84502022	2.0	4	3	22	60
SEM84502026	2.0	4	3	26	60
SEM84502030	2.0	4	3	30	70
SEM84502035	2.0	4	3	35	70
SEM84502040	2.0	4	3	40	80
SEM84502045	2.0	4	3	45	90
SEM84502050	2.0	4	3	50	100
SEM84502060	2.0	4	3	60	110
SEM84502508	2.5	4	4	8	50
SEM84502510	2.5	4	4	10	50
SEM84502512	2.5	4	4	12	50
SEM84502514	2.5	4	4	14	50
SEM84502516	2.5	4	4	16	50
SEM84502518	2.5	4	4	18	50
SEM84502520	2.5	4	4	20	50
SEM84502522	2.5	4	4	22	60
SEM84502526	2.5	4	4	26	60

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

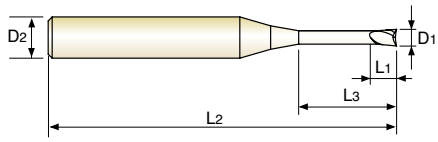
4G MILL END MILLS

SEM845 SERIES PLAIN SHANK

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MG | 2 | 30° | PLAIN

P.799~803

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SEM84502530	2.5	4	4	30	70
SEM84502535	2.5	4	4	35	70
SEM84502540	2.5	4	4	40	80
SEM84502545	2.5	4	4	45	90
SEM84502550	2.5	4	4	50	100
SEM84503006	3.0	6	4.5	6	50
SEM84503008	3.0	6	4.5	8	50
SEM84503010	3.0	6	4.5	10	50
SEM84503012	3.0	6	4.5	12	50
SEM84503014	3.0	6	4.5	14	60
SEM84503016	3.0	6	4.5	16	60
SEM84503018	3.0	6	4.5	18	60
SEM84503020	3.0	6	4.5	20	60
SEM84503022	3.0	6	4.5	22	65
SEM84503026	3.0	6	4.5	26	65
SEM84503030	3.0	6	4.5	30	70
SEM84503035	3.0	6	4.5	35	70
SEM84503040	3.0	6	4.5	40	80
SEM84503045	3.0	6	4.5	45	90
SEM84503050	3.0	6	4.5	50	100
SEM84503060	3.0	6	4.5	60	100
SEM84504008	4.0	6	6	8	50
SEM84504010	4.0	6	6	10	50
SEM84504012	4.0	6	6	12	50
SEM84504014	4.0	6	6	14	60
SEM84504016	4.0	6	6	16	60
SEM84504018	4.0	6	6	18	60
SEM84504020	4.0	6	6	20	60
SEM84504022	4.0	6	6	22	65
SEM84504026	4.0	6	6	26	65

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

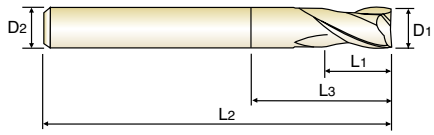
4G MILL END MILLS

SEM845 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG NECK

- ▶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.





MG 2 30° PLAIN

P.799~803

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SEM84504030	4.0	6	6	30	70
SEM84504035	4.0	6	6	35	70
SEM84504040	4.0	6	6	40	80
SEM84504045	4.0	6	6	45	90
SEM84504050	4.0	6	6	50	100
SEM84504060	4.0	6	6	60	100
SEM84505016	5.0	6	8	16	60
SEM84505020	5.0	6	8	20	60
SEM84505026	5.0	6	8	26	65
SEM84505030	5.0	6	8	30	70
SEM84505035	5.0	6	8	35	75
SEM84505040	5.0	6	8	40	80
SEM84505050	5.0	6	8	50	90
SEM84505060	5.0	6	8	60	100
SEM84506015	6.0	6	9	15	60
SEM84506020	6.0	6	9	20	60
SEM84506030	6.0	6	9	30	70
SEM84506032	6.0	6	9	32	90
SEM84508025	8.0	8	12	25	70
SEM84508030	8.0	8	12	30	80
SEM84508042	8.0	8	12	42	100
SEM84510030	10.0	10	15	30	75
SEM84510035	10.0	10	15	35	80
SEM84510045	10.0	10	15	45	100
SEM84512035	12.0	12	20	35	80
SEM84512040	12.0	12	20	40	90
SEM84512050	12.0	12	20	50	110

Size	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	0~−0.012	h6
over Ø6	0~−0.015	

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

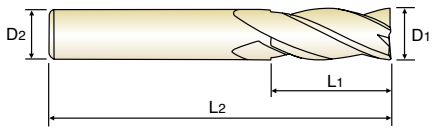
4G MILL END MILLS

SEME36 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE

- 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.





MG 4 M-Helix PLAIN

P.804

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME36008	0.8	4	1.6	40
SEME36009	0.9	4	1.8	40
SEME36010	1.0	6	2.5	50
SEME36012	1.2	6	3	50
SEME36015	1.5	6	4	50
SEME36020	2.0	6	6	50
SEME36025	2.5	6	7	50
SEME36030	3.0	6	8	50
SEME36035	3.5	6	10	50
SEME36040	4.0	6	10	50
SEME36045	4.5	6	14	50
SEME36050	5.0	6	15	60
SEME36055	5.5	6	15	60
SEME36060	6.0	6	15	60
SEME36065	6.5	8	18	60
SEME36070	7.0	8	20	60
SEME36075	7.5	8	20	60
SEME36080	8.0	8	20	70
SEME36085	8.5	10	22	70
SEME36090	9.0	10	22	70
SEME36095	9.5	10	24	70
SEME36100	10.0	10	25	75
SEME36105	10.5	12	26	75
SEME36110	11.0	12	30	75

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

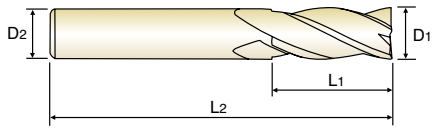
4G MILL END MILLS

SEME36 SERIES PLAIN SHANK

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- 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.





MG | 4 | M-Helix | PLAIN

P.804

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D_1	Shank Diameter D_2	Length of Cut L_1	Overall Length L_2
SEME36115	11.5	12	30	80
SEME36120	12.0	12	30	80
SEME36130	13.0	12	35	100
SEME3614012S	14.0	12	35	100
SEME3614014S	14.0	14	35	100
SEME36140	14.0	16	35	100
SEME36150	15.0	16	38	100
SEME36160	16.0	16	40	100
SEME36170	17.0	16	42	100
SEME36180	18.0	16	45	100
SEME3618018S	18.0	18	45	100
SEME36190	19.0	20	45	100
SEME36200	20.0	20	45	100
SEME36210	21.0	20	45	100
SEME36220	22.0	20	45	100
SEME36230	23.0	25	50	120
SEME36240	24.0	25	50	120
SEME36250	25.0	25	50	120

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

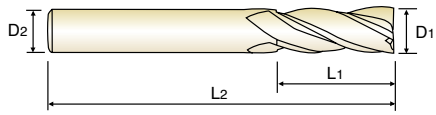
4G MILL END MILLS

SEME71 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE

- 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.





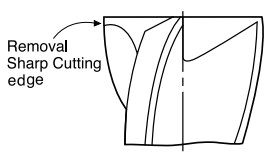
MG | 4 | M-Helix | PLAIN

P.804

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEME7101001	1.0	6	1	40	Short
SEME7101002	1.0	6	2	40	Short
SEME71010	1.0	6	2.5	50	Regular
SEME7101003	1.0	6	3	50	Long
SEME7101004	1.0	6	4	50	Long
SEME7101006	1.0	6	6	50	Long
SEME7101202	1.2	6	2	40	Short
SEME71012	1.2	6	3	50	Regular
SEME7101204	1.2	6	4	50	Long
SEME7101206	1.2	6	6	50	Long
SEME71015015	1.5	6	1.5	40	Short
SEME7101503	1.5	6	3	40	Short
SEME71015	1.5	6	4	50	Regular
SEME7101506	1.5	6	6	50	Long
SEME7101508	1.5	6	8	50	Long
SEME7101510	1.5	6	10	50	Long
SEME7102002	2.0	6	2	40	Short
SEME7102004	2.0	6	4	40	Short
SEME71020	2.0	6	6	50	Regular
SEME7102008	2.0	6	8	50	Long
SEME7102010	2.0	6	10	50	Long
SEME7102012	2.0	6	12	50	Long
SEME71025025	2.5	6	2.5	40	Short
SEME7102505	2.5	6	5	40	Short
SEME71025	2.5	6	7	50	Regular
SEME7102510	2.5	6	10	50	Long



▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

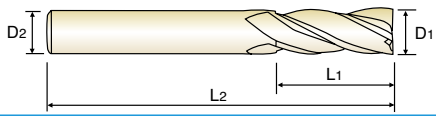
4G MILL END MILLS

SEME71 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE

- 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.





MG | 4 | M-Helix | PLAIN

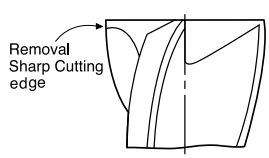
P.804

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEME7102512	2.5	6	12	50	Long
SEME7103003	3.0	6	3	40	Short
SEME7103006	3.0	6	6	40	Short
SEME71030	3.0	6	8	50	Regular
SEME7103010	3.0	6	10	50	Long
SEME7103012	3.0	6	12	50	Long
SEME7103014	3.0	6	14	50	Long
SEME7104004	4.0	6	4	40	Short
SEME7104008	4.0	6	8	40	Short
SEME71040	4.0	6	10	50	Regular
SEME7104012	4.0	6	12	50	Long
SEME7104014	4.0	6	14	50	Long
SEME7104016	4.0	6	16	50	Long
SEME7105005	5.0	6	5	50	Short
SEME7105010	5.0	6	10	50	Short
SEME71050	5.0	6	15	60	Regular
SEME7105020	5.0	6	20	60	Long
SEME7105025	5.0	6	25	60	Long
SEME7106006	6.0	6	6	50	Short
SEME7106012	6.0	6	12	50	Short
SEME71060	6.0	6	15	60	Regular
SEME7106020	6.0	6	20	60	Long
SEME7106025	6.0	6	25	60	Long
SEME7108016	8.0	8	16	60	Short
SEME71080	8.0	8	20	70	Regular
SEME7108025	8.0	8	25	70	Long

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

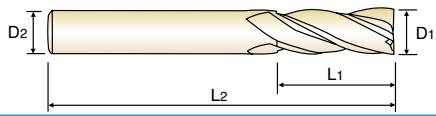
4G MILL END MILLS

SEME71 SERIES PLAIN SHANK

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- ▶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.





MG | 4 | M-Helix | PLAIN

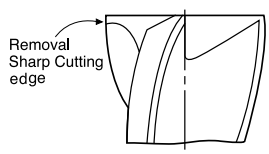
P.804

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEME7108030	8.0	8	30	70	Long
SEME7110022	10.0	10	22	65	Short
SEME71100	10.0	10	25	75	Regular
SEME7110030	10.0	10	30	75	Long
SEME7110035	10.0	10	35	75	Long
SEME7112026	12.0	12	26	70	Short
SEME71120	12.0	12	30	80	Regular
SEME7112035	12.0	12	35	80	Long
SEME7112040	12.0	12	40	80	Long
SEME71140	14.0	16	35	100	Regular
SEME7116032	16.0	16	32	100	Short
SEME71160	16.0	16	40	100	Regular
SEME71180	18.0	20	45	100	Regular
SEME71200	20.0	20	45	100	Regular

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

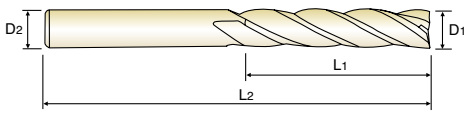
4G MILL END MILLS

SEME72 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG LENGTH

- 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.





MG 4 30° PLAIN

P.805, 806

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME7201003	1.0	6	3	60
SEME7201004	1.0	6	4	60
SEME7201005	1.0	6	5	60
SEME7201006	1.0	6	6	60
SEME7201007	1.0	6	7	60
SEME7201008	1.0	6	8	60
SEME7201010	1.0	6	10	60
SEME7201012	1.0	6	12	60
SEME7201204	1.2	6	4	60
SEME7201206	1.2	6	6	60
SEME7201208	1.2	6	8	60
SEME7201210	1.2	6	10	60
SEME7201212	1.2	6	12	60
SEME7201506	1.5	6	6	60
SEME7201508	1.5	6	8	60
SEME7201510	1.5	6	10	60
SEME7201512	1.5	6	12	60
SEME7201514	1.5	6	14	60
SEME7201516	1.5	6	16	60
SEME7202008	2.0	6	8	60
SEME7202010	2.0	6	10	60
SEME7202012	2.0	6	12	60
SEME7202014	2.0	6	14	60
SEME7202016	2.0	6	16	60
SEME7202510	2.5	6	10	60
SEME7202512	2.5	6	12	60
SEME7202516	2.5	6	16	60
SEME7202520	2.5	6	20	60

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

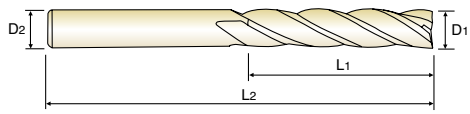
4G MILL END MILLS

SEME72 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG LENGTH

- 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.





MG | 4 | 30° | PLAIN

P.805, 806

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME7202526	2.5	6	26	60
SEME720301635	3.0	3	16	100
SEME7203010	3.0	6	10	70
SEME7203012	3.0	6	12	70
SEME7203014	3.0	6	14	70
SEME7203016	3.0	6	16	70
SEME7203020	3.0	6	20	70
SEME7203026	3.0	6	26	70
SEME7203030	3.0	6	30	70
SEME720402045	4.0	4	20	100
SEME7204012	4.0	6	12	70
SEME7204016	4.0	6	16	70
SEME7204020	4.0	6	20	70
SEME7204026	4.0	6	26	70
SEME7204030	4.0	6	30	70
SEME7205020	5.0	6	20	70
SEME7205025	5.0	6	25	70
SEME7205025100	5.0	6	25	100
SEME7205030	5.0	6	30	80
SEME7205035	5.0	6	35	90
SEME7205040	5.0	6	40	100
SEME7206015	6.0	6	15	60
SEME7206015080	6.0	6	15	80
SEME7206020	6.0	6	20	70
SEME7206020090	6.0	6	20	90
SEME7206025	6.0	6	25	75
SEME7206030	6.0	6	30	80
SEME7206030100	6.0	6	30	100

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

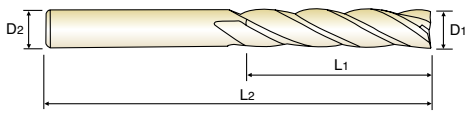
4G MILL END MILLS

SEME72 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG LENGTH

- 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.





MG 4 30° PLAIN

P.805, 806

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME7206030150	6.0	6	30	150
SEME7206035	6.0	6	35	90
SEME7206040	6.0	6	40	90
SEME7206040120	6.0	6	40	120
SEME7206045	6.0	6	45	150
SEME7208025	8.0	8	25	80
SEME7208030	8.0	8	30	80
SEME7208030100	8.0	8	30	100
SEME7208035	8.0	8	35	90
SEME7208040	8.0	8	40	90
SEME7208040120	8.0	8	40	120
SEME7208040150	8.0	8	40	150
SEME7208045	8.0	8	45	100
SEME7208050	8.0	8	50	100
SEME7208050150	8.0	8	50	150
SEME7210030	10.0	10	30	80
SEME7210030100	10.0	10	30	100
SEME7210035	10.0	10	35	90
SEME7210040	10.0	10	40	90
SEME7210040120	10.0	10	40	120
SEME7210045	10.0	10	45	100
SEME7210050	10.0	10	50	100
SEME7210050150	10.0	10	50	150
SEME7210050200	10.0	10	50	200
SEME7210055	10.0	10	55	150
SEME7210060	10.0	10	60	110
SEME7210060200	10.0	10	60	200
SEME7212035	12.0	12	35	90

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

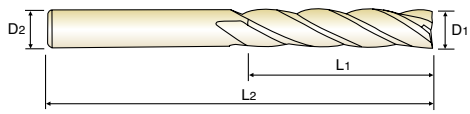
4G MILL END MILLS

SEME72 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG LENGTH

- 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.





MG | 4 | 30° | PLAIN

P.805, 806

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME7212040	12.0	12	40	100
SEME7212040120	12.0	12	40	120
SEME7212045	12.0	12	45	130
SEME7212050	12.0	12	50	100
SEME7212050150	12.0	12	50	150
SEME7212055	12.0	12	55	110
SEME7212060	12.0	12	60	110
SEME7212060150	12.0	12	60	150
SEME7212060200	12.0	12	60	200
SEME7212065	12.0	12	65	150
SEME7212070	12.0	12	70	120
SEME7212070200	12.0	12	70	200
SEME7214050	14.0	16	50	110
SEME7214060	14.0	16	60	150
SEME7216040	16.0	16	40	150
SEME7216050	16.0	16	50	110
SEME7216050150	16.0	16	50	150
SEME7216060	16.0	16	60	120
SEME7216070	16.0	16	70	130
SEME7216070150	16.0	16	70	150
SEME7216070200	16.0	16	70	200
SEME7216080	16.0	16	80	150
SEME7216090	16.0	16	90	150
SEME72160110	16.0	16	110	200
SEME72160120	16.0	16	120	250
SEME7218050	18.0	20	50	120
SEME7218070	18.0	20	70	130
SEME72180100	18.0	20	100	200

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

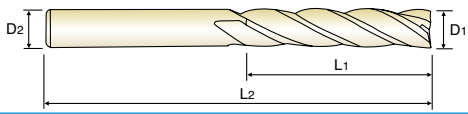
4G MILL END MILLS

SEME72 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG LENGTH

- 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.





MG | 4 | 30° | PLAIN

P.805, 806

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME7220050	20.0	20	50	110
SEME7220050150	20.0	20	50	150
SEME7220060	20.0	20	60	130
SEME7220070	20.0	20	70	130
SEME7220080	20.0	20	80	150
SEME7220090	20.0	20	90	150
SEME7220090200	20.0	20	90	200
SEME72200110	20.0	20	110	200
SEME72200120	20.0	20	120	250
SEME7222075	22.0	20	75	150
SEME72220110	22.0	20	110	200
SEME7225070	25.0	25	70	150
SEME7225090	25.0	25	90	150
SEME72250110	25.0	25	110	200
SEME72250120	25.0	25	120	250

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

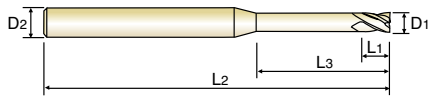
4G MILL END MILLS

SEME73 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG NECK

- 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.





MG | 4 | 30° | PLAIN

P.807~809

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SEME7301002	1.0	4	1.5	2	50
SEME7301003	1.0	4	1.5	3	50
SEME7301004	1.0	4	1.5	4	50
SEME7301005	1.0	4	1.5	5	50
SEME7301006	1.0	4	1.5	6	50
SEME7301007	1.0	4	1.5	7	50
SEME7301008	1.0	4	1.5	8	50
SEME7301010	1.0	4	1.5	10	50
SEME7301012	1.0	4	1.5	12	50
SEME7301014	1.0	4	1.5	14	50
SEME7301016	1.0	4	1.5	16	50
SEME7301018	1.0	4	1.5	18	50
SEME7301020	1.0	4	1.5	20	50
SEME7301022	1.0	4	1.5	22	60
SEME7301026	1.0	4	1.5	26	60
SEME7301030	1.0	4	1.5	30	70
SEME7301040	1.0	4	1.5	40	80
SEME7301050	1.0	4	1.5	50	100
SEME7301204	1.2	4	1.8	4	50
SEME7301206	1.2	4	1.8	6	50
SEME7301208	1.2	4	1.8	8	50
SEME7301210	1.2	4	1.8	10	50
SEME7301212	1.2	4	1.8	12	50
SEME7301214	1.2	4	1.8	14	50
SEME7301216	1.2	4	1.8	16	50
SEME7301220	1.2	4	1.8	20	50
SEME7301226	1.2	4	1.8	26	60
SEME7301230	1.2	4	1.8	30	70
SEME7301504	1.5	4	2.3	4	50
SEME7301505	1.5	4	2.3	5	50
SEME7301506	1.5	4	2.3	6	50
SEME7301507	1.5	4	2.3	7	50

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

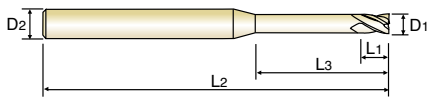
4G MILL END MILLS

SEME73 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG NECK

- 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.





MG 4 30° PLAIN

P.807~809

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SEME7301508	1.5	4	2.3	8	50
SEME7301510	1.5	4	2.3	10	50
SEME7301512	1.5	4	2.3	12	50
SEME7301514	1.5	4	2.3	14	50
SEME7301516	1.5	4	2.3	16	50
SEME7301518	1.5	4	2.3	18	50
SEME7301520	1.5	4	2.3	20	50
SEME7301522	1.5	4	2.3	22	60
SEME7301526	1.5	4	2.3	26	60
SEME7301530	1.5	4	2.3	30	70
SEME7302006	2.0	4	3	6	50
SEME7302008	2.0	4	3	8	50
SEME7302010	2.0	4	3	10	50
SEME7302012	2.0	4	3	12	50
SEME7302014	2.0	4	3	14	50
SEME7302016	2.0	4	3	16	50
SEME7302018	2.0	4	3	18	50
SEME7302020	2.0	4	3	20	50
SEME7302022	2.0	4	3	22	60
SEME7302026	2.0	4	3	26	60
SEME7302030	2.0	4	3	30	70
SEME7302035	2.0	4	3	35	70
SEME7302040	2.0	4	3	40	80
SEME7302045	2.0	4	3	45	90
SEME7302050	2.0	4	3	50	100
SEME7302060	2.0	4	3	60	110
SEME7302508	2.5	4	4	8	50
SEME7302510	2.5	4	4	10	50
SEME7302512	2.5	4	4	12	50
SEME7302514	2.5	4	4	14	50
SEME7302516	2.5	4	4	16	50
SEME7302518	2.5	4	4	18	50

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

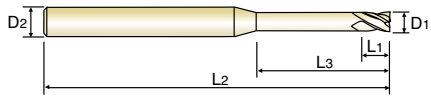
4G MILL END MILLS

SEME73 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG NECK

- 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.





MG | 4 | 30° | PLAIN

P.807~809

◇ Call for Availability

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
SEME7302520	2.5	4	4	20	50
SEME7302522	2.5	4	4	22	60
SEME7302526	2.5	4	4	26	60
SEME7302530	2.5	4	4	30	70
SEME7302535	2.5	4	4	35	70
SEME7302540	2.5	4	4	40	80
SEME7302545	2.5	4	4	45	90
SEME7302550	2.5	4	4	50	100
SEME7303006	3.0	6	4.5	6	50
SEME7303008	3.0	6	4.5	8	50
SEME7303010	3.0	6	4.5	10	50
SEME7303012	3.0	6	4.5	12	50
SEME7303014	3.0	6	4.5	14	60
SEME7303016	3.0	6	4.5	16	60
SEME7303018	3.0	6	4.5	18	60
SEME7303020	3.0	6	4.5	20	60
SEME7303022	3.0	6	4.5	22	65
SEME7303026	3.0	6	4.5	26	65
SEME7303030	3.0	6	4.5	30	70
SEME7303035	3.0	6	4.5	35	70
SEME7303040	3.0	6	4.5	40	80
SEME7303045	3.0	6	4.5	45	90
SEME7303050	3.0	6	4.5	50	100
SEME7303060	3.0	6	4.5	60	100
SEME7304008	4.0	6	6	8	50
SEME7304010	4.0	6	6	10	50
SEME7304012	4.0	6	6	12	50
SEME7304014	4.0	6	6	14	60
SEME7304016	4.0	6	6	16	60
SEME7304018	4.0	6	6	18	60
SEME7304020	4.0	6	6	20	60
SEME7304022	4.0	6	6	22	65

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

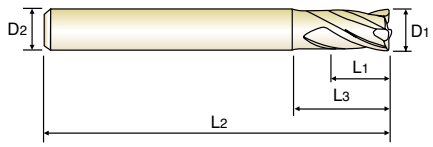
4G MILL END MILLS

SEME73 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG NECK

- 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.





MG 4 30° PLAIN

P.807~809

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
SEME7304026	4.0	6	6	26	65
SEME7304030	4.0	6	6	30	70
SEME7304035	4.0	6	6	35	70
SEME7304040	4.0	6	6	40	80
SEME7304045	4.0	6	6	45	90
SEME7304050	4.0	6	6	50	100
SEME7304060	4.0	6	6	60	100
SEME7305016	5.0	6	8	16	60
SEME7305020	5.0	6	8	20	60
SEME7305026	5.0	6	8	26	65
SEME7305030	5.0	6	8	30	70
SEME7305035	5.0	6	8	35	75
SEME7305040	5.0	6	8	40	80
SEME7305050	5.0	6	8	50	90
SEME7305060	5.0	6	8	60	100
SEME7306015	6.0	6	9	15	60
SEME7306020	6.0	6	9	20	60
SEME7306030	6.0	6	9	30	70
SEME7306032	6.0	6	9	32	90
SEME7308025	8.0	8	12	25	70
SEME7308030	8.0	8	12	30	80
SEME7308042	8.0	8	12	42	100
SEME7310030	10.0	10	15	30	75
SEME7310035	10.0	10	15	35	80
SEME7310045	10.0	10	15	45	100
SEME7312035	12.0	12	20	35	80
SEME7312040	12.0	12	20	40	90
SEME7312050	12.0	12	20	50	110

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○		○	○							

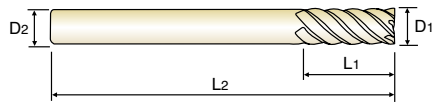
4G MILL END MILLS

SEME75 SERIES PLAIN SHANK

CARBIDE, 6 FLUTE 45º HELIX (Regular, Long Shank)

- 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.





MG | 6 | 45° | PLAIN

P.810, 811

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Remark
SEME75060	6.0	6	15	60	Regular
SEME7506020	6.0	6	20	70	Long
SEME7506030	6.0	6	30	80	Long
SEME7506030110	6.0	6	30	110	Long
SEME75080	8.0	8	20	70	Regular
SEME7508030	8.0	8	30	80	Long
SEME7508035	8.0	8	35	90	Long
SEME7508040	8.0	8	40	90	Long
SEME7508040130	8.0	8	40	130	Long
SEME75100	10.0	10	25	75	Regular
SEME7510030	10.0	10	30	80	Long
SEME7510040	10.0	10	40	90	Long
SEME7510050	10.0	10	50	100	Long
SEME7510050150	10.0	10	50	150	Long
SEME75120	12.0	12	30	80	Regular
SEME7512040	12.0	12	40	90	Long
SEME7512050	12.0	12	50	100	Long
SEME7512060	12.0	12	60	110	Long
SEME7512060150	12.0	12	60	150	Long
SEME75160	16.0	16	40	100	Regular
SEME7516050	16.0	16	50	110	Long
SEME7516060	16.0	16	60	120	Long
SEME7516090	16.0	16	90	150	Long
SEME75160110	16.0	16	110	200	Long
SEME75160110250	16.0	16	110	250	Long
SEME75200	20.0	20	45	100	Regular
SEME7520060	20.0	20	60	120	Long
SEME7520070	20.0	20	70	130	Long
SEME75200110	20.0	20	110	200	Long
SEME75200110250	20.0	20	110	250	Long
SEME75200110300	20.0	20	110	300	Long

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	◎	○			○							

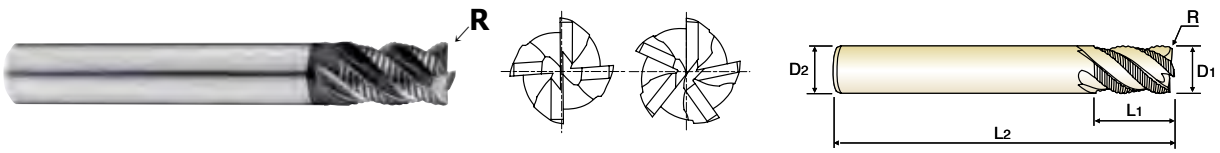
4G MILL END MILLS

X-SPEED ROUGHER

G9D75 SERIES PLAIN SHANK
G9D67 SERIES FLAT SHANK

CARBIDE, 4&5 FLUTE MULTIPLE HELIX SHORT LENGTH ROUGHING CORNER RADIUS

- 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.



MG | 4&5 | M-Helix | PLAIN

P.812

◇ Call for Availability

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
PLAIN	FLAT	R	D_1	D_2	L_1	L_2	
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

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○	◎	○						

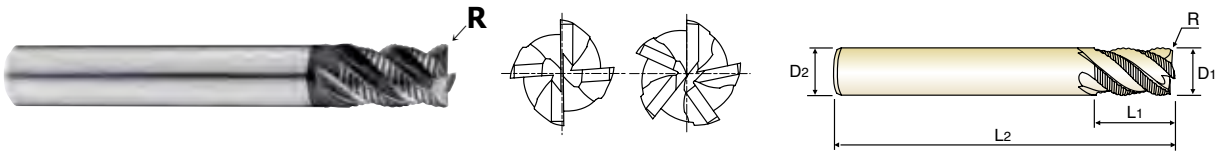
4G MILL END MILLS

X-SPEED ROUGHER

G9D76 SERIES PLAIN SHANK
G9D68 SERIES FLAT SHANK

CARBIDE, 4&5 FLUTE MULTIPLE HELIX LONG LENGTH ROUGHING CORNER RADIUS

- 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.



MG 4&5 M-Helix PLAIN

P.812

◇ Call for Availability

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
PLAIN	FLAT	R	D_1	D_2	L_1	L_2	
G9D76060	G9D68060	R0.5	6.0	6	9	57	4
G9D76080	G9D68080	R0.5	8.0	8	12	63	4
G9D76100	G9D68100	R0.5	10.0	10	15	72	4
G9D76120	G9D68120	R0.5	12.0	12	18	83	4
G9D76160	G9D68160	R1.0	16.0	16	24	92	5
G9D76200	G9D68200	R1.0	20.0	20	30	104	5

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.05	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○	◎	○						

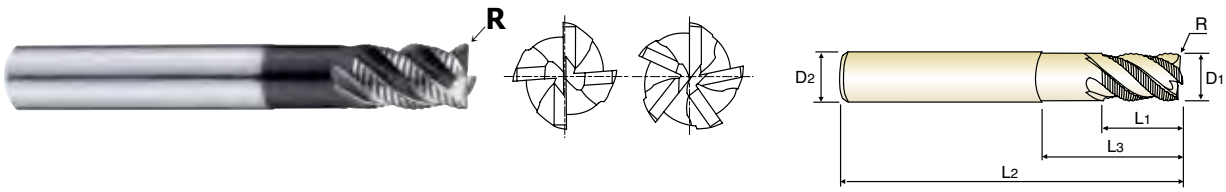
4G MILL END MILLS

X-SPEED ROUGHER

G9D77 SERIES PLAIN SHANK
G9D69 SERIES FLAT SHANK

CARBIDE, 4&5 FLUTE MULTIPLE HELIX LONG REACH ROUGHING CORNER RADIUS

- 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.



MG | 4&5 | M-Helix | PLAIN

P.812

◇ Call for Availability

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	No. of Flute
PLAIN	FLAT	R	D_1	D_2	L_1	L_3	L_2	
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

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○	◎	○						

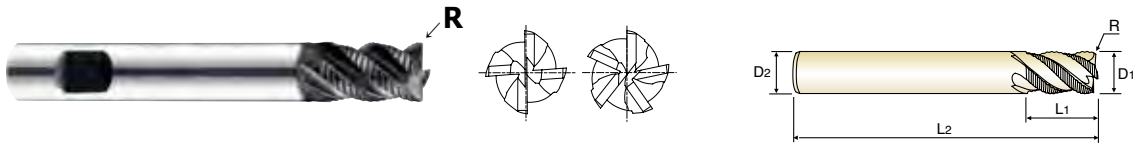
4G MILL END MILLS

X-SPEED ROUGHER

GAE53 SERIES FLAT SHANK

HSS-PM, 4&5 FLUTE MULTIPLE HELIX SHORT LENGTH ROUGHING CORNER RADIUS

- 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.



HSS PM | 4&5 | M-Helix | FLAT

P.813

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flute
FLAT	R	Metric D1(js12)	Inch D1(js12)	D2(h6)	L1	L2	
GAE53060	R0.5	6.0	.2362	6	13	57	4
GAE53070	R0.5	7.0	.2756	10	16	66	4
GAE53080	R0.5	8.0	.3150	10	19	69	4
GAE53090	R0.5	9.0	.3543	10	19	69	4
GAE53100	R0.5	10.0	.3937	10	22	72	4
GAE53120	R0.5	12.0	.4724	12	26	83	4
GAE53140	R1.0	14.0	.5512	16	26	83	5
GAE53160	R1.0	16.0	.6299	16	32	92	5
GAE53180	R1.0	18.0	.7087	20	32	92	5
GAE53200	R1.0	20.0	.7874	20	38	104	5

Tolerances according to DIN 7160 & 7161

Tolerance range in μm						
Nominal-Diameter in mm						
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30	over 30 to 50
js12	± 50	± 60	± 75	± 90	± 105	± 125
h6	0 / − 6	0 / − 8	0 / − 9	0 / − 11	0 / − 13	0 / − 16

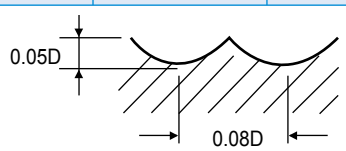
◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○				◎	◎	○						

CARBIDE, 2 FLUTE BALL NOSE

GMF15 SERIES

MATERIAL	P					
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~ HRc35		HRc35 ~ HRc45		HRc45 ~ HRc55	
STRENGTH	~ 1100N/mm²		1110 ~ 1500N/mm²		1500 ~ 2000N/mm²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R.002 × .004	39400	21.3	39370	19.3	32480	15.6
R.004 × .008	29530	28.0	29530	24.4	26570	22.2
R.006 × .012	29530	34.8	29530	31.3	26570	28.0
R.075 × .015	29490	44.1	31500	42.1	28350	37.2
R.010 × .020	29530	55.7	29530	48.8	26570	44.1
R.012 × .024	29530	67.5	29530	58.1	26570	51.2
R.014 × .028	29530	79.1	29530	67.5	26570	60.4
R.0155 × .031	30480	93.5	30480	79.1	27430	72.1
R.0175 × .035	30370	103.9	30370	89.8	27330	81.3
R.0234 × 3/64	30240	121.5	29030	102.4	26000	91.7
R1/32 × 1/16	28350	120.5	27210	100.4	24380	89.4
R.0391 × 5/64	30050	135.6	28910	114.4	24190	95.3
R3/64 × 3/32	24990	145.1	24040	125.2	20160	99.2
R1/16 × 1/8	18770	133.9	18030	118.3	15120	89.4
R3/32 × 3/16	12310	131.7	11820	113.8	9920	86.4
R.102 × 13/64	10820	132.9	10350	112.2	8720	85.8
R1/8 × 1/4	7880	108.3	7600	91.5	6240	69.1
R9/64 × 9/32	7070	102.2	6820	85.6	5680	65.6
R5/32 × 5/16	6710	100.0	6470	83.3	5440	64.4
R3/16 × 3/8	5860	91.7	5610	77.0	4720	59.5
R1/4 × 1/2	3940	65.8	3780	55.7	3170	42.3
R9/32 × 9/16	3670	64.8	3530	57.9	2970	41.7
R5/16 × 5/8	3370	63.2	3240	52.4	2720	40.6
R3/8 × 3/4	2800	58.3	2710	48.4	2270	37.2



RPM = rev./min.
FEED = inch/min.

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE BALL NOSE WITH NECK

GMF16 SERIES

MATERIAL		P								
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS		~ HRc35			HRc35 ~ HRc45			HRc45 ~ HRc55		
STRENGTH		~ 1100N/mm²			1110 ~ 1500N/mm²			1500 ~ 2000N/mm²		
DIA.	LBS	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)
.008	1/64	49210	13.0	.0007	49210	12.0	.0006	42520	10.0	.0004
.008	3/64	44290	10.4	.0003	44290	9.7	.0002	38270	8.1	.0002
.012	3/64	49210	18.5	.0007	49210	16.7	.0006	42130	14.2	.0004
.012	5/64	44290	15.0	.0004	44290	13.6	.0004	37910	11.4	.0002
.012	1/8	39370	11.8	.0003	39370	10.6	.0002	33700	9.1	.0002
.015	3/64	43040	20.3	.0009	40730	17.5	.0008	35910	14.0	.0005
.015	5/64	38740	16.3	.0006	36660	14.2	.0004	32310	11.4	.0003
.015	1/8	38740	16.3	.0004	36660	14.2	.0003	32310	11.4	.0002
.015	5/32	34440	13.0	.0004	32590	11.2	.0003	28720	9.1	.0002
.020	3/64	33660	26.6	.0018	31790	22.4	.0015	28050	19.9	.0010
.020	5/64	33660	26.6	.0013	31790	22.4	.0011	28050	19.9	.0007
.020	1/8	30300	21.5	.0007	28610	18.1	.0006	25250	16.1	.0004
.020	5/32	30300	21.5	.0007	28610	18.1	.0006	25250	16.1	.0004
.020	3/16	30300	21.5	.0004	28610	18.1	.0004	25250	16.1	.0002
.020	1/4	26930	16.9	.0004	25430	14.4	.0004	22440	12.8	.0002
.020	5/16	20200	11.2	.0003	19070	9.5	.0002	16830	8.5	.0002
.020	3/8	20200	11.2	.0002	19070	9.5	.0002	16830	8.5	.0001
.024	5/64	33660	39.8	.0015	31790	32.5	.0013	28050	26.6	.0008
.024	1/8	30300	32.1	.0009	28610	26.4	.0007	25250	21.5	.0005
.024	5/32	30300	32.1	.0009	28610	26.4	.0007	25250	21.5	.0005
.024	3/16	30300	32.1	.0009	28610	26.4	.0007	25250	21.5	.0005
.024	1/4	26930	25.4	.0006	25430	20.9	.0004	22440	16.9	.0003
.024	5/16	26930	25.4	.0003	25430	20.9	.0003	22440	16.9	.0002
.024	3/8	20200	16.7	.0003	19070	13.6	.0003	16830	11.2	.0002
.024	1/2	10100	7.1	.0002	9540	5.9	.0002	8420	4.7	.0001
1/32	5/64	34470	48.8	.0028	32550	41.1	.0024	28720	33.9	.0016
1/32	1/8	34470	48.8	.0020	32550	41.1	.0017	28720	33.9	.0011
1/32	5/32	34470	48.8	.0020	32550	41.1	.0017	28720	33.9	.0011
1/32	3/16	31020	39.6	.0011	29300	33.3	.0009	25850	27.6	.0006
1/32	1/4	31020	39.6	.0011	29300	33.3	.0009	25850	27.6	.0006
1/32	5/16	31020	39.6	.0007	29300	33.3	.0006	25850	27.6	.0004
1/32	3/8	27580	31.3	.0007	26040	26.4	.0006	22980	21.7	.0004
3/64	1/8	26510	54.5	.0042	25000	45.7	.0035	22070	37.6	.0024
3/64	5/32	26510	54.5	.0030	25000	45.7	.0025	22070	37.6	.0017
3/64	3/16	26510	54.5	.0030	25000	45.7	.0025	22070	37.6	.0017
3/64	1/4	23860	44.3	.0017	22500	37.0	.0014	19870	30.5	.0009
3/64	5/16	23860	44.3	.0017	22500	37.0	.0014	19870	30.5	.0009
3/64	3/8	23860	44.3	.0017	22500	37.0	.0014	19870	30.5	.0009
3/64	1/2	21210	34.8	.0011	20000	29.1	.0009	17660	24.2	.0006
3/64	9/16	21210	34.8	.0011	20000	29.1	.0009	17660	24.2	.0006
3/64	5/8	21210	34.8	.0006	20000	29.1	.0005	17660	24.2	.0004
3/64	3/4	15900	22.8	.0006	15000	19.1	.0005	13240	15.8	.0004

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = inch/min.

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE BALL NOSE WITH NECK

GMF16 SERIES

MATERIAL		P								
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS		~ HRc35			HRc35 ~ HRc45			HRc45 ~ HRc55		
STRENGTH		~ 1100N/mm²			1110 ~ 1500N/mm²			1500 ~ 2000N/mm²		
DIA.	LBS	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)
1/16	5/32	22580	58.9	.0056	21350	50.4	.0047	18900	40.0	.0031
1/16	1/4	22580	58.9	.0039	21350	50.4	.0033	18900	40.0	.0022
1/16	5/16	22580	58.9	.0039	21350	50.4	.0033	18900	40.0	.0022
1/16	3/8	20320	47.6	.0022	19220	40.8	.0019	17010	32.5	.0013
1/16	1/2	20320	47.6	.0022	19220	40.8	.0019	17010	32.5	.0013
1/16	9/16	20320	47.6	.0014	19220	40.8	.0012	17010	32.5	.0008
1/16	5/8	20320	47.6	.0014	19220	40.8	.0012	17010	32.5	.0008
1/16	3/4	18070	37.6	.0014	17080	32.3	.0012	15120	25.6	.0008
5/64	1/4	18140	71.3	.0049	17130	60.4	.0041	15120	50.9	.0027
5/64	5/16	18140	71.3	.0049	17130	60.4	.0041	15120	51.0	.0027
5/64	3/8	18140	71.3	.0049	17130	60.4	.0041	15120	51.0	.0027
5/64	1/2	16330	57.7	.0028	15420	49.0	.0024	13610	41.3	.0016
5/64	9/16	16330	57.7	.0028	15420	49.0	.0024	13610	41.3	.0016
5/64	5/8	16330	57.7	.0028	15420	49.0	.0024	13610	41.3	.0016
5/64	11/16	16330	57.7	.0018	15420	49.0	.0015	13610	41.3	.0010
5/64	3/4	16330	57.7	.0018	15420	49.0	.0015	13610	41.3	.0010
5/64	1	14510	45.7	.0018	13710	38.8	.0015	12090	32.7	.0010
5/64	1-3/16	10890	29.9	.0011	10280	25.4	.0009	9070	21.5	.0006
3/32	3/8	16590	79.5	.0059	15640	66.3	.0049	13860	53.9	.0033
3/32	3/4	14930	64.4	.0034	14080	53.7	.0028	12470	43.7	.0019
1/8	5/16	12940	76.2	.0113	12190	64.4	.0094	10770	53.4	.0063
1/8	3/8	12940	76.2	.0113	12190	64.4	.0094	10770	53.4	.0063
1/8	1/2	12940	76.2	.0079	12190	64.4	.0066	10770	53.4	.0044
1/8	9/16	12940	76.2	.0079	12190	64.4	.0066	10770	53.4	.0044
1/8	5/8	12940	76.2	.0079	12190	64.4	.0066	10770	53.4	.0044
1/8	11/16	11650	61.8	.0045	10970	52.2	.0037	9690	43.3	.0025
1/8	3/4	11650	61.8	.0045	10970	52.2	.0037	9690	43.3	.0025
1/8	1	11650	61.8	.0045	10970	52.2	.0037	9690	43.3	.0025
1/8	1-3/16	11650	61.8	.0028	10970	52.2	.0024	9690	43.3	.0016
1/8	1-3/8	10360	48.8	.0028	9750	41.1	.0024	8620	34.3	.0016
3/16	3/8	8230	65.0	.0169	7810	55.3	.0141	6890	46.1	.0094
3/16	1/2	8230	65.0	.0169	7810	55.3	.0141	6890	46.1	.0094
3/16	9/16	8230	65.0	.0169	7810	55.3	.0141	6890	46.1	.0094
3/16	5/8	8230	65.0	.0118	7810	55.3	.0098	6890	46.1	.0066
3/16	11/16	8230	65.0	.0118	7810	55.3	.0098	6890	46.1	.0066
3/16	3/4	8230	65.0	.0118	7810	55.3	.0098	6890	46.1	.0066
3/16	1	7410	52.6	.0067	7030	44.7	.0056	6200	37.4	.0037
3/16	1-3/16	7410	52.6	.0067	7030	44.7	.0056	6200	37.4	.0037
3/16	1-3/8	7410	52.6	.0067	7030	44.7	.0056	6200	37.4	.0037
3/16	1-1/2	7410	52.6	.0067	7030	44.7	.0056	6200	37.4	.0037
13/64	13/64	6720	57.1	.0073	6370	44.9	.0061	5580	39.8	.0041
1/4	3/4	6140	70.7	.0225	5860	59.5	.0187	5200	49.4	.0125

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = inch/min.

4G MILL END MILLS

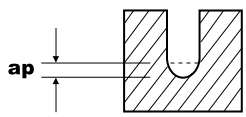
RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE BALL NOSE WITH NECK

GMF16 SERIES

MATERIAL		P								
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS		~ HRc35			HRc35 ~ HRc45			HRc45 ~ HRc55		
STRENGTH		~ 1100N/mm²			1110 ~ 1500N/mm²			1500 ~ 2000N/mm²		
DIA.	LBS	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)
1/4	1-3/16	6140	70.7	.0157	5860	59.5	.0131	5200	49.4	.0087
5/16	1	4890	71.5	.0197	4640	59.5	.0164	4030	50.8	.0109
5/16	1-3/8	4890	71.5	.0197	4640	59.5	.0164	4030	50.8	.0109
3/8	1-3/16	4040	68.1	.0236	3860	57.9	.0197	3360	49.6	.0131
3/8	1-3/16	4040	68.1	.0236	3860	57.9	.0197	3360	49.6	.0131
3/8	1-1/2	4040	68.1	.0236	3860	57.9	.0197	3360	49.6	.0131
1/2	1-1/4	3020	56.5	.0450	2880	48.4	.0375	2500	40.9	.0250
1/2	1-1/4	3020	56.5	.0450	2880	48.4	.0375	2500	40.9	.0250

(Depth of Cut per one pass)



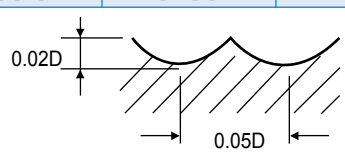
DIA. = Diameter
LBS = Length Below Shank

RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE BALL NOSE

GMF17 SERIES

MATERIAL	P					
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~ HRc35		HRc35 ~ HRc45		HRc45 ~ HRc55	
STRENGTH	~ 1100N/mm²		1110 ~ 1500N/mm²		1500 ~ 2000N/mm²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	22700	202.0	16540	144.3	15120	135.8
R3/32 × 3/16	17600	224.4	13020	152.6	12250	143.5
R1/8 × 1/4	14400	231.3	11530	167.3	10490	142.5
R5/32 × 5/16	11400	208.3	9270	157.9	8390	132.9
R3/16 × 3/8	9600	189.8	7720	142.5	6990	118.7
R1/4 × 1/2	7200	158.5	5790	118.7	5230	89.4

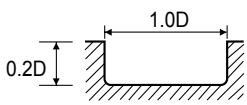


RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE CORNER RADIUS

GMF18 SERIES

MATERIAL	P					
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~ HRc35		HRc35 ~ HRc45		HRc45 ~ HRc55	
STRENGTH	~ 1100N/mm^2		1110 ~ 1500N/mm^2		1500 ~ 2000N/mm^2	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
3/64	25000	9.7	15870	4.1	9830	2.4
1/16	20800	9.3	12760	4.1	8030	2.2
5/64	18100	10.2	11650	4.7	7260	2.8
1/8	12500	10.4	8090	5.1	4990	2.6
9/64	11700	12.0	7540	5.9	4690	3.0
13/64	8900	15.9	5620	7.7	3680	3.7
1/4	7500	18.5	4760	9.3	3100	4.5
5/16	6000	21.5	3830	9.8	2540	4.7
3/8	5300	22.2	3440	10.2	2120	4.9
1/2	3900	15.6	2630	8.5	1590	3.7
9/16	3500	15.0	2390	7.7	1450	3.5
5/8	3100	14.4	2120	6.7	1290	3.2
3/4	2600	11.6	1720	4.9	1050	2.6



RPM = rev./min.
FEED = inch/min.

4G MILL END MILLS

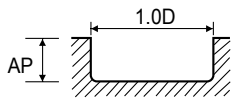
RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE CORNER RADIUS WITH NECK

GMF19 SERIES

MATERIAL		P								
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS		~ HRc35			HRc35 ~ HRc45			HRc45 ~ HRc55		
STRENGTH		~ 1100N/mm²			1110 ~ 1500N/mm²			1500 ~ 2000N/mm²		
DIA.	LBS	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)
.008	3/64	44290	5.3	.0006	30560	2.4	.0005	18740	1.4	.0004
.012	3/64	49210	7.7	.0017	31500	3.4	.0013	19690	2.0	.0010
.012	5/64	44290	6.3	.0009	28350	2.8	.0007	17720	1.6	.0006
.015	3/64	52490	8.3	.0021	33600	3.5	.0016	21000	2.0	.0013
.015	1/16	52490	8.3	.0021	33600	3.5	.0016	21000	2.0	.0013
.015	5/64	47240	6.7	.0012	30240	2.8	.0009	18900	1.8	.0007
.015	3/32	47240	6.7	.0012	30240	2.8	.0009	18900	1.8	.0007
.020	3/64	42320	8.5	.0040	27560	3.7	.0030	16830	2.4	.0024
.020	1/16	42320	8.5	.0028	27560	3.7	.0021	16830	2.4	.0017
.020	5/64	42320	8.5	.0028	27560	3.7	.0021	16830	2.4	.0017
.020	1/8	38090	6.9	.0016	24800	3.0	.0012	15150	2.0	.0009
.020	5/32	38090	6.9	.0016	24800	3.0	.0012	15150	2.0	.0009
.024	5/64	35830	9.7	.0033	23620	4.3	.0025	14270	2.6	.0020
.024	1/8	32240	7.9	.0019	21260	3.5	.0015	12840	2.0	.0011
.024	5/32	32240	7.9	.0019	21260	3.5	.0015	12840	2.0	.0011
.024	1/4	28660	6.1	.0012	18900	2.8	.0009	11420	1.6	.0007
.031	5/64	36980	10.0	.0062	24380	4.3	.0046	14730	2.6	.0037
.031	5/32	33280	8.1	.0025	21950	3.5	.0019	13260	2.2	.0015
.031	1/4	33280	8.1	.0015	21950	3.5	.0012	13260	2.2	.0009
.031	5/16	29590	6.5	.0015	19510	2.8	.0012	11790	1.6	.0009
3/64	1/8	27800	9.3	.0094	18140	3.9	.0070	11090	2.4	.0056
3/64	5/32	27800	9.3	.0066	18140	3.9	.0049	11090	2.4	.0039
3/64	1/4	25020	7.5	.0037	16330	3.2	.0028	9980	2.0	.0022
3/64	5/16	25020	7.5	.0037	16330	3.2	.0028	9980	2.0	.0022
3/64	3/8	25020	7.5	.0037	16330	3.2	.0028	9980	2.0	.0022
1/16	5/32	24940	11.2	.0125	15310	4.9	.0094	9640	2.6	.0075
1/16	1/4	24940	11.2	.0087	15310	4.9	.0066	9640	2.6	.0052
1/16	5/16	24940	11.2	.0087	15310	4.9	.0066	9640	2.6	.0052
1/16	3/8	22450	9.1	.0050	13780	3.9	.0037	8670	2.2	.0030
1/16	1/2	22450	9.1	.0050	13780	3.9	.0037	8670	2.2	.0030
5/64	1/4	21770	12.2	.0109	13910	5.5	.0082	8710	3.2	.0066
5/64	5/16	21770	12.2	.0109	13910	5.5	.0082	8710	3.2	.0066
5/64	3/8	21770	12.2	.0109	13910	5.5	.0082	8710	3.2	.0066
5/64	1/2	19590	10.0	.0063	12520	4.5	.0047	7840	2.6	.0037
5/64	9/16	19590	10.0	.0063	12520	4.5	.0047	7840	2.6	.0037
5/64	5/8	19590	10.0	.0063	12520	4.5	.0047	7840	2.6	.0037
1/8	5/16	15020	12.2	.0250	9730	5.9	.0187	5950	3.0	.0150
1/8	3/8	15020	12.2	.0250	9730	5.9	.0187	5950	3.0	.0150
1/8	1/2	15020	12.2	.0175	9730	5.9	.0131	5950	3.0	.0105
1/8	5/8	15020	12.2	.0175	9730	5.9	.0131	5950	3.0	.0105
1/8	3/4	13520	10.0	.0100	8760	4.7	.0075	5360	2.4	.0060
1/8	1	13520	10.0	.0100	8760	4.7	.0075	5360	2.4	.0060

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = inch/min.

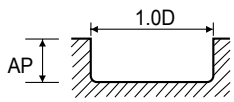


CARBIDE, 2 FLUTE CORNER RADIUS WITH NECK

GMF19 SERIES

MATERIAL		P								
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS		~ HRc35			HRc35 ~ HRc45			HRc45 ~ HRc55		
STRENGTH		~ 1100N/mm²			1110 ~ 1500N/mm²			1500 ~ 2000N/mm²		
DIA.	LBS	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)
3/16	3/8	11550	20.7	.0375	7350	9.8	.0281	4790	4.9	.0225
3/16	1/2	11550	20.7	.0375	7350	9.8	.0281	4790	4.9	.0225
3/16	5/8	11550	20.7	.0263	7350	9.8	.0197	4790	4.9	.0157
3/16	3/4	11550	20.7	.0263	7350	9.8	.0197	4790	4.9	.0157
3/16	1	10390	16.7	.0150	6610	8.1	.0113	4310	3.9	.0090
3/16	1-3/16	10390	16.7	.0150	6610	8.1	.0113	4310	3.9	.0090
1/4	3/4	8980	22.2	.0500	5670	11.2	.0375	3710	5.1	.0300
1/4	1-3/16	8980	22.2	.0350	5670	11.2	.0263	3710	5.1	.0210
5/16	1	7260	25.4	.0437	4590	11.8	.0328	3040	5.5	.0263
3/8	1-3/16	6300	26.4	.0525	4200	12.4	.0394	2540	5.7	.0315
1/2	1-1/4	4720	18.5	.1000	3160	10.0	.0750	1890	4.5	.0600
5/8	1-3/8	3750	17.9	.1250	2540	8.3	.0937	1550	3.7	.0750
3/4	1-1/2	3150	13.6	.1500	2050	5.7	.1125	1260	3.0	.0900

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = inch/min.

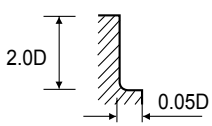


CARBIDE, 4 FLUTE CORNER RADIUS

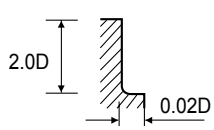
GMF20 SERIES

MATERIAL	P					
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~ HRc35		HRc35 ~ HRc45		HRc45 ~ HRc55	
STRENGTH	~ 1100N/mm²		1110 ~ 1500N/mm²		1500 ~ 2000N/mm²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
3/64	25000	12.0	15870	8.9	9830	4.7
5/64	18100	12.8	11650	9.5	7260	5.1
1/8	12500	12.6	8090	9.7	4990	4.9
3/16	9400	15.8	5960	12.2	3830	5.7
13/64	8900	16.3	5620	13.8	3680	6.5
1/4	7500	15.9	4760	13.4	3100	6.3
5/16	6000	18.3	3830	14.4	2540	6.7
3/8	5300	19.1	3440	15.0	2120	7.1
1/2	3900	13.4	2630	11.8	1590	5.1
5/8	3100	11.0	2120	9.1	1290	4.5
3/4	2600	9.5	1720	7.5	1050	3.7

1.5XD Axial cutting depth should be for DIA over5/8 inch



RPM = rev./min.
FEED = inch/min.



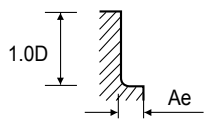
4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE CORNER RADIUS WITH NECK

GMF21 SERIES

MATERIAL		P								
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS		~ HRc35			HRc35 ~ HRc45			HRc45 ~ HRc55		
STRENGTH		~ 1100N/mm²			1110 ~ 1500N/mm²			1500 ~ 2000N/mm²		
DIA.	LBS	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)
3/64	5/32	29980	14.6	.0010	19050	10.4	.0007	11790	5.5	.0006
3/64	1/4	26990	11.8	.0006	17140	8.5	.0004	10610	4.5	.0004
3/64	5/16	26990	11.8	.0006	17140	8.5	.0004	10610	4.5	.0004
1/16	1/4	24940	13.8	.0013	15310	10.0	.0010	9640	5.1	.0008
1/16	5/16	24940	13.8	.0013	15310	10.0	.0010	9640	5.1	.0008
1/16	3/8	22450	11.2	.0007	13780	8.1	.0006	8670	4.1	.0004
1/16	1/2	22450	11.2	.0007	13780	8.1	.0006	8670	4.1	.0004
5/64	1/4	21770	15.2	.0017	13910	11.0	.0012	8710	5.9	.0010
5/64	5/16	21770	15.2	.0017	13910	11.0	.0012	8710	5.9	.0010
5/64	3/8	21770	15.2	.0017	13910	11.0	.0012	8710	5.9	.0010
5/64	1/2	19590	12.2	.0009	12520	9.1	.0007	7840	4.7	.0006
1/8	5/16	15020	15.0	.0037	9730	11.6	.0028	5950	5.5	.0022
1/8	3/8	15020	15.0	.0037	9730	11.6	.0028	5950	5.5	.0022
1/8	1/2	15020	15.0	.0026	9730	11.6	.0020	5950	5.5	.0016
1/8	5/8	15020	15.0	.0026	9730	11.6	.0020	5950	5.5	.0016
1/8	3/4	13520	12.0	.0015	8760	9.3	.0011	5360	4.5	.0009
1/8	1	13520	12.0	.0015	8760	9.3	.0011	5360	4.5	.0009
3/16	3/8	11550	21.1	.0056	7350	17.7	.0042	4790	8.3	.0034
3/16	1/2	11550	21.1	.0056	7350	17.7	.0042	4790	8.3	.0034
3/16	5/8	11550	21.1	.0039	7350	17.7	.0030	4790	8.3	.0024
3/16	3/4	11550	21.1	.0039	7350	17.7	.0030	4790	8.3	.0024
3/16	1	10390	17.1	.0022	6610	14.4	.0017	4310	6.7	.0013
1/4	3/4	8980	18.9	.0075	5670	15.9	.0056	3710	7.5	.0045
5/16	1	7260	21.9	.0066	4590	17.1	.0049	3040	7.9	.0039
5/16	1-3/8	7260	21.9	.0066	4590	17.1	.0049	3040	7.9	.0039
3/8	1-3/16	6300	22.6	.0079	4200	17.7	.0059	2540	8.3	.0047
3/8	1-1/2	6300	22.6	.0079	4200	17.7	.0059	2540	8.3	.0047
1/2	1-1/4	4720	15.9	.0150	3160	14.2	.0113	1890	5.9	.0090
1/2	1-3/4	4720	15.9	.0105	3160	14.2	.0079	1890	5.9	.0063
5/8	1-3/8	3750	13.2	.0187	2540	11.0	.0141	1550	5.3	.0113
3/4	1-1/2	3150	11.2	.0225	2050	8.7	.0169	1260	4.1	.0135



DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = inch/min.

RECOMMENDED CUTTING CONDITIONS

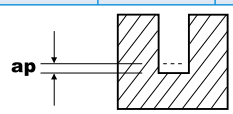
CARBIDE, 2 FLUTE WITH NECK

GMF22 SERIES

MATERIAL		P								
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS		~ HRc35			HRc35 ~ HRc45			HRc45 ~ HRc55		
STRENGTH		~ 1100N/mm²			1110 ~ 1500N/mm²			1500 ~ 2000N/mm²		
DIA.	LBS	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)
.008	3/64	34100	12.0	.0003	32160	8.5	.0002	28440	6.3	.0002
.015	3/64	26930	12.0	.0009	25430	8.5	.0007	22440	7.1	.0005
.015	5/64	24240	9.8	.0006	22890	6.7	.0004	20200	5.7	.0003
.015	1/8	24240	9.8	.0004	22890	6.7	.0003	20200	5.7	.0002
.015	5/32	21540	7.7	.0004	20350	5.3	.0003	17950	4.5	.0002
.015	3/16	21540	7.7	.0004	20350	5.3	.0003	17950	4.5	.0002
.020	5/64	26970	20.9	.0013	25390	16.5	.0010	22440	11.0	.0007
.020	1/8	24270	16.9	.0007	22850	13.4	.0006	20200	8.9	.0004
.020	5/32	24270	16.9	.0007	22850	13.4	.0006	20200	8.9	.0004
.020	3/16	24270	16.9	.0004	22850	13.4	.0004	20200	8.9	.0002
.020	1/4	21570	13.4	.0004	20310	10.6	.0004	17950	7.1	.0002
.024	5/64	26970	30.1	.0015	25390	21.1	.0012	22440	15.8	.0008
.024	1/8	24270	24.4	.0009	22850	17.1	.0007	20200	12.8	.0005
.024	5/32	24270	24.4	.0009	22850	17.1	.0007	20200	12.8	.0005
.024	3/16	24270	24.4	.0009	22850	17.1	.0007	20200	12.8	.0005
.024	1/4	21570	19.3	.0006	20310	13.6	.0004	17950	10.0	.0003
.024	5/16	21570	19.3	.0003	20310	13.6	.0002	17950	10.0	.0002
.024	3/8	16180	12.6	.0003	15240	8.9	.0002	13460	6.5	.0002
1/32	5/64	27620	30.7	.0028	26000	24.0	.0022	22980	17.9	.0016
1/32	1/8	27620	30.7	.0020	26000	24.0	.0015	22980	17.9	.0011
1/32	5/32	27620	30.7	.0020	26000	24.0	.0015	22980	17.9	.0011
1/32	3/16	24850	25.0	.0011	23400	19.5	.0009	20680	14.4	.0006
1/32	1/4	24850	25.0	.0011	23400	19.5	.0009	20680	14.4	.0006
1/32	5/16	24850	25.0	.0007	23400	19.5	.0006	20680	14.4	.0004
1/32	3/8	22090	19.7	.0007	20800	15.4	.0006	18380	11.4	.0004
3/64	1/8	22070	36.8	.0042	20860	28.5	.0033	18340	19.3	.0024
3/64	5/32	22070	36.8	.0030	20860	28.5	.0023	18340	19.3	.0017
3/64	3/16	22070	36.8	.0030	20860	28.5	.0023	18340	19.3	.0017
3/64	1/4	19870	29.9	.0017	18780	23.2	.0013	16510	15.6	.0009
3/64	5/16	19870	29.9	.0017	18780	23.2	.0013	16510	15.6	.0009
3/64	3/8	19870	29.9	.0017	18780	23.2	.0013	16510	15.6	.0009
3/64	1/2	17660	23.6	.0011	16690	18.3	.0008	14670	12.4	.0006
3/64	9/16	17660	23.6	.0011	16690	18.3	.0008	14670	12.4	.0006
3/64	5/8	17660	23.6	.0006	16690	18.3	.0005	14670	12.4	.0004
3/64	3/4	13240	15.6	.0006	12520	12.0	.0005	11010	8.1	.0004
1/16	5/32	18140	33.7	.0056	17100	23.6	.0044	15120	17.7	.0031
1/16	1/4	18140	33.7	.0039	17100	23.6	.0031	15120	17.7	.0022
1/16	5/16	18140	33.7	.0039	17100	23.6	.0031	15120	17.7	.0022
1/16	3/8	16330	27.4	.0022	15390	19.1	.0017	13610	14.4	.0013
1/16	1/2	16330	27.4	.0022	15390	19.1	.0017	13610	14.4	.0013
1/16	9/16	16330	27.4	.0014	15390	19.1	.0011	13610	14.4	.0008
1/16	5/8	16330	27.4	.0014	15390	19.1	.0011	13610	14.4	.0008

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = inch/min.

(Depth of Cut per one pass)



4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

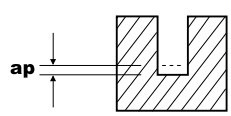
CARBIDE, 2 FLUTE WITH NECK

GMF22 SERIES

MATERIAL		P								
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS		~ HRc35			HRc35 ~ HRc45			HRc45 ~ HRc55		
STRENGTH		~ 1100N/mm^2			1110 ~ 1500N/mm^2			1500 ~ 2000N/mm^2		
DIA.	LBS	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)
1/16	3/4	14510	21.5	.0014	13680	15.2	.0011	12090	11.2	.0008
5/64	1/4	14510	32.5	.0049	13710	24.6	.0038	12090	18.9	.0027
5/64	5/16	14510	32.5	.0049	13710	24.6	.0038	12090	18.9	.0027
5/64	3/8	14510	32.5	.0049	13710	24.6	.0038	12090	18.9	.0027
5/64	1/2	13060	26.4	.0028	12340	19.9	.0022	10890	15.4	.0016
5/64	9/16	13060	26.4	.0028	12340	19.9	.0022	10890	15.4	.0016
5/64	5/8	13060	26.4	.0028	12340	19.9	.0022	10890	15.4	.0016
5/64	3/4	13060	26.4	.0018	12340	19.9	.0014	10890	15.4	.0010
3/32	5/16	12910	40.2	.0059	12180	28.2	.0046	10810	21.1	.0033
3/32	1/2	11620	32.5	.0034	10960	22.8	.0026	9730	17.1	.0019
3/32	5/8	11620	32.5	.0034	10960	22.8	.0026	9730	17.1	.0019
3/32	3/4	11620	32.5	.0034	10960	22.8	.0026	9730	17.1	.0019
1/8	5/16	10300	32.1	.0113	9730	22.4	.0087	6240	16.7	.0063
1/8	3/8	10300	32.1	.0113	9730	22.4	.0087	6240	16.7	.0063
1/8	1/2	10300	32.1	.0079	9730	22.4	.0061	6240	16.7	.0044
1/8	9/16	10300	32.1	.0079	9730	22.4	.0061	6240	16.7	.0044
1/8	5/8	10300	32.1	.0079	9730	22.4	.0061	6240	16.7	.0044
1/8	11/16	9270	26.0	.0045	8760	18.3	.0035	5610	13.6	.0025
1/8	3/4	9270	26.0	.0045	8760	18.3	.0035	5610	13.6	.0025
1/8	1	9270	26.0	.0045	8760	18.3	.0035	5610	13.6	.0025
3/16	3/8	6720	42.9	.0169	6380	38.4	.0131	5630	25.4	.0094
3/16	1/2	6720	42.9	.0169	6380	38.4	.0131	5630	25.4	.0094
3/16	5/8	6720	42.9	.0118	6380	38.4	.0092	5630	25.4	.0066
3/16	11/16	6720	42.9	.0118	6380	38.4	.0092	5630	25.4	.0066
3/16	3/4	6720	42.9	.0118	6380	38.4	.0092	5630	25.4	.0066
3/16	1	6050	34.8	.0067	5740	31.1	.0052	5060	20.7	.0037
3/16	1-3/16	6050	34.8	.0067	5740	31.1	.0052	5060	20.7	.0037
13/64	3/4	6200	44.1	.0128	5910	34.3	.0100	5230	23.0	.0071
13/64	1-3/16	5580	35.6	.0073	5320	27.8	.0057	4710	18.7	.0041
13/64	1-3/8	5580	35.6	.0073	5320	27.8	.0057	4710	18.7	.0041
13/64	1-1/2	5580	35.6	.0073	5320	27.8	.0057	4710	18.7	.0041
13/64	2	5580	35.6	.0046	5320	27.8	.0035	4710	18.7	.0025
1/4	5/8	5010	39.2	.0225	4720	30.5	.0175	4160	20.5	.0125
1/4	3/4	5010	39.2	.0225	4720	30.5	.0175	4160	20.5	.0125
1/4	1-3/16	5010	39.2	.0157	4720	30.5	.0122	4160	20.5	.0087
5/16	1	4030	37.6	.0197	3830	29.7	.0153	3330	19.9	.0109
3/8	1-3/16	3360	37.2	.0236	3200	28.2	.0184	2760	16.5	.0131
3/8	1-3/4	3360	37.2	.0236	3200	28.2	.0184	2760	16.5	.0131
1/2	1-3/8	2500	29.7	.0450	2380	22.2	.0350	2060	13.0	.0250
1/2	2	2500	29.7	.0315	2380	22.2	.0245	2060	13.0	.0175

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = inch/min.

(Depth of Cut per one pass)

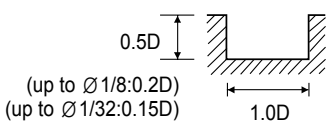


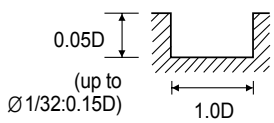
RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE

GMF23 SERIES

MATERIAL	P						M	
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		STAINLESS STEELS	
HARDNESS	~ HRc35		HRc35 ~ HRc45		HRc45 ~ HRc55			
STRENGTH	~ 1100N/mm^2		1110 ~ 1500N/mm^2		1500 ~ 2000N/mm^2			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
.004	41300	3.5	24800	2.1	16540	0.7	20670	1.7
.008	41300	3.8	24800	2.1	16540	0.7	20670	1.7
.012	38400	4.0	23000	2.4	15350	0.7	19190	1.9
.015	40900	4.5	24600	2.6	16380	1.0	20470	2.1
.020	35400	5.0	21300	2.8	14170	1.0	17720	2.4
.024	31500	5.7	18900	3.3	12600	1.2	15750	2.8
.028	27600	6.4	16500	3.8	11020	1.2	13780	3.1
.031	25400	7.1	15200	4.3	10160	1.4	12700	3.5
.035	23800	7.3	14300	4.5	9520	1.4	11900	3.8
.040	21200	7.3	12700	4.5	8460	1.4	10580	3.8
.047	18100	7.8	10900	4.7	7240	1.7	9050	4.0
1/16	14200	7.6	8500	4.5	5670	1.4	7090	3.8
5/64	11700	8.2	7600	5.2	5080	1.5	6350	3.9
3/32	10800	9.1	6900	5.8	4410	1.7	5730	4.8
1/8	8400	8.7	5300	5.6	3170	1.7	4370	5.0
9/64	8100	10.8	5000	6.7	3090	1.7	4160	5.6
3/16	6500	12.8	4000	7.6	2490	2.0	3330	6.3
13/64	6100	13.4	3700	8.0	2250	2.2	3060	6.7
1/4	5300	14.3	3200	9.1	1890	2.2	2680	7.4
17/64	5000	14.4	3000	8.7	1850	2.5	2560	7.4
9/32	4800	14.9	2900	8.5	1800	2.7	2420	7.2
5/16	4200	15.9	2500	8.3	1690	3.1	2120	7.4
11/32	3900	14.7	2300	7.6	1560	2.9	1940	7.0
23/64	3700	14.5	2200	7.2	1500	2.7	1860	7.0
3/8	3400	14.3	2100	7.0	1430	2.7	1760	7.0
13/32	3200	13.2	2000	6.4	1330	2.5	1630	6.4
7/16	3000	12.4	1800	6.0	1250	2.3	1500	6.0
1/2	2600	11.2	1600	5.3	1100	2.1	1290	5.3
9/16	2400	10.1	1500	5.0	1010	1.9	1190	5.0
5/8	2200	9.1	1400	4.6	910	1.7	1070	4.6
3/4	1800	7.4	1100	3.5	710	1.2	880	3.5





RPM = rev./min.
FEED = inch/min.

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

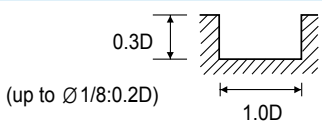
CARBIDE, 2 FLUTE LONG

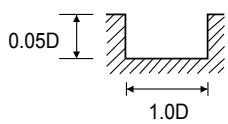
GMF24 SERIES

MATERIAL		P					
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS		~ HRc35		HRc35 ~ HRc45		HRc45 ~ HRc55	
STRENGTH		~ 1100N/mm^2		1110 ~ 1500N/mm^2		1500 ~ 2000N/mm^2	
DIA.	LOC	RPM	FEED	RPM	FEED	RPM	FEED
3/64	1/8	13710	3.0	10970	2.6	6860	1.2
3/64	5/32	13710	3.0	10970	2.6	6860	1.2
3/64	1/4	12340	2.8	9870	2.4	6170	1.0
3/64	5/16	12340	2.4	9870	2.2	6170	1.0
3/64	3/8	12340	2.2	9870	2.0	6170	0.8
1/16	1/4	10000	2.8	8000	2.4	5000	1.0
1/16	5/16	10000	2.8	8000	2.4	5000	1.0
1/16	3/8	9000	2.4	7200	2.0	4500	0.8
1/16	1/2	9000	2.0	7200	1.8	4500	0.8
1/16	5/8	9000	2.0	7200	1.8	4500	0.8
5/64	5/16	9210	3.4	7370	2.8	4610	1.4
5/64	3/8	9210	3.4	7370	2.8	4610	1.4
5/64	1/2	8290	2.8	6640	2.4	4150	1.2
5/64	5/8	8290	2.4	6640	2.0	4150	1.0
3/32	5/8	7640	3.4	6150	2.8	3820	1.4
1/8	3/8	5670	3.5	4600	3.0	2830	1.4
1/8	1/2	5670	3.5	4600	3.0	2830	1.4
1/8	5/8	5670	3.5	4600	3.0	2830	1.4
1/8	3/4	5100	2.8	4140	2.4	2550	1.2
1/8	1	5100	2.6	4140	2.2	2550	1.0
3/16	1/2	3630	3.4	2890	2.8	1820	1.4
3/16	5/8	3630	3.4	2890	2.8	1820	1.4
3/16	3/4	3630	3.4	2890	2.8	1820	1.4
3/16	1	3270	3.0	2600	2.6	1640	1.2
3/16	1-3/16	3270	2.8	2600	2.2	1640	1.2
13/64	3/4	4130	5.5	3270	4.5	2140	2.0
13/64	1	4130	5.5	3270	4.5	2140	2.0
13/64	1-3/16	3720	4.5	2940	3.7	1930	1.6
13/64	1-1/2	3720	4.5	2940	3.7	1930	1.6
1/4	5/8	3390	6.3	2720	5.3	1760	2.4
1/4	3/4	3390	6.3	2720	5.3	1760	2.4
1/4	1	3390	6.3	2720	5.3	1760	2.4
1/4	1-3/16	3390	5.3	2720	4.5	1760	2.2
1/4	1-3/8	3050	4.9	2450	3.9	1580	2.0
1/4	1-1/2	3050	4.3	2450	3.5	1580	1.6
1/4	1-3/4	3050	4.3	2450	3.5	1580	1.6
5/16	1	2930	7.7	2320	5.9	1530	2.8
5/16	1-3/16	2930	7.7	2320	5.9	1530	2.8
5/16	1-3/8	2930	7.7	2320	5.9	1530	2.8
5/16	1-1/2	2930	6.5	2320	5.1	1530	2.4

DIA. = Diameter
LOC = Length of Cut

RPM = rev./min.
FEED = inch/min.

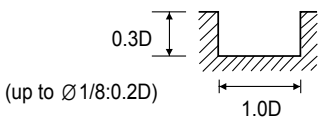


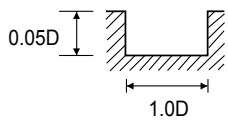


CARBIDE, 2 FLUTE LONG

GMF24 SERIES

MATERIAL		P					
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS		~ HRc35		HRc35 ~ HRc45		HRc45 ~ HRc55	
STRENGTH		~ 1100N/mm^2		1110 ~ 1500N/mm^2		1500 ~ 2000N/mm^2	
DIA.	LOC	RPM	FEED	RPM	FEED	RPM	FEED
5/16	1-3/4	2630	5.9	2080	4.5	1380	2.2
5/16	2	2630	5.1	2080	4.1	1380	2.0
3/8	1-3/16	2700	8.3	2200	6.5	1330	3.0
3/8	1-3/8	2700	8.3	2200	6.5	1330	3.0
3/8	1-1/2	2700	8.3	2200	6.5	1330	3.0
3/8	1-3/4	2700	7.1	2200	5.5	1330	2.6
3/8	2	2430	6.3	1980	4.9	1200	2.4
3/8	2-3/8	2430	5.5	1980	4.3	1200	2.0
1/2	1-3/8	1790	5.3	1490	4.7	900	2.0
1/2	1-1/2	1790	5.3	1490	4.7	900	2.0
1/2	1-3/4	1790	5.3	1490	4.7	900	2.0
1/2	2	1790	4.5	1490	3.9	900	1.6
1/2	2-1/8	1790	4.5	1490	3.9	900	1.6
1/2	2-3/8	1790	4.5	1490	3.9	900	1.6
5/8	1-1/2	1730	5.5	1300	4.1	810	2.0
3/4	3-1/2	1340	3.4	1050	2.4	660	1.2
3/4	4-1/4	1210	3.0	940	2.1	600	1.0





DIA. = Diameter
LOC = Length of Cut
RPM = rev./min.
FEED = inch/min.

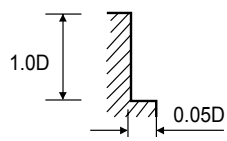
4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE

GMF25, GMF26 SERIES

MATERIAL	P						M	
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		STAINLESS STEELS	
HARDNESS	~ HRc35		HRc35 ~ HRc45		HRc45 ~ HRc55			
STRENGTH	~ 1100N/mm²		1110 ~ 1500N/mm²		1500 ~ 2000N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/64	22680	11.8	13610	7.1	9070	2.1	11340	5.9
1/16	17720	11.3	10630	6.9	7090	2.1	8860	5.9
5/64	14560	12.1	9520	7.4	6350	2.2	7940	6.1
3/32	13440	13.6	8610	8.5	5510	2.6	7170	7.2
1/8	10540	13.0	6570	8.2	3970	2.4	5460	6.9
9/64	10090	18.8	6230	11.7	3860	2.6	5200	9.5
3/16	8180	24.0	4960	14.5	3110	2.6	4160	11.9
13/64	7640	25.1	4580	15.2	2810	3.0	3830	12.6
7/32	7330	27.1	4410	16.5	2670	3.3	3710	13.4
1/4	6570	27.1	3970	16.7	2360	3.3	3350	13.4
17/64	6290	27.5	3800	16.5	2310	3.6	3200	13.8
9/32	5980	27.7	3610	15.9	2250	3.9	3030	13.9
19/64	5650	28.7	3390	16.1	2190	4.3	2840	14.3
5/16	5290	29.6	3170	15.9	2120	4.6	2650	14.7
11/32	4830	27.5	2910	14.5	1950	4.1	2420	13.6
23/64	4590	26.9	2790	13.9	1870	4.1	2330	13.2
3/8	4280	26.5	2620	13.0	1780	3.9	2200	13.0
7/16	3710	23.2	2280	11.2	1560	3.5	1880	11.0
1/2	3240	20.7	1980	9.9	1370	3.2	1610	9.5
9/16	3030	18.8	1860	9.1	1260	2.9	1510	8.9
5/8	2770	17.6	1710	8.5	1140	2.5	1390	8.3
3/4	2200	13.9	1400	7.0	890	1.6	1100	6.4

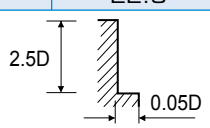


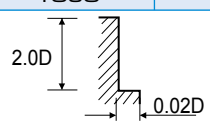
RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE LONG

GMF27 SERIES

MATERIAL		P					
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS		~ HRc35		HRc35 ~ HRc45		HRc45 ~ HRc55	
STRENGTH		~ 1100N/mm²		1110 ~ 1500N/mm²		1500 ~ 2000N/mm²	
DIA.	LOC	RPM	FEED	RPM	FEED	RPM	FEED
3/64	1/8	16330	8.1	9310	3.2	5710	1.6
3/64	5/32	16330	8.1	9310	3.2	5710	1.6
3/64	3/16	16330	8.1	9310	3.2	5710	1.6
3/64	1/4	14690	7.3	8380	3.0	5140	1.4
1/16	1/4	13040	8.1	7430	3.2	4560	1.6
5/64	5/16	10670	9.5	6100	3.7	3810	2.2
5/64	3/8	10670	9.5	6100	3.7	3810	2.2
5/64	1/2	9600	7.7	5490	3.2	3430	1.8
5/64	9/16	9600	7.7	5490	3.2	3430	1.8
3/32	3/8	9440	10.6	5420	4.5	3370	2.6
3/32	1/2	8500	9.7	4880	3.9	3030	2.2
1/8	3/8	7000	10.2	4050	4.5	2490	2.4
1/8	1/2	7000	10.2	4050	4.5	2490	2.4
1/8	5/8	7000	10.2	4050	4.5	2490	2.4
1/8	3/4	6300	8.3	3640	3.5	2250	2.0
1/8	1	6300	7.5	3640	3.2	2250	1.8
1/8	1-3/16	6300	7.5	3640	3.2	2250	1.8
3/16	1/2	5040	11.0	2860	4.5	1800	2.4
3/16	5/8	5040	11.0	2860	4.5	1800	2.4
3/16	3/4	5040	11.0	2860	4.5	1800	2.4
3/16	1	4540	10.0	2580	4.1	1620	2.2
3/16	1-3/16	4540	9.1	2580	3.7	1620	2.0
13/64	3/4	4970	16.5	2810	6.5	1840	3.2
13/64	1	4970	16.5	2810	6.5	1840	3.2
13/64	1-3/16	4470	13.4	2530	5.1	1650	2.6
1/4	5/8	4170	19.3	2380	8.1	1550	3.9
1/4	3/4	4170	19.3	2380	8.1	1550	3.9
1/4	1	4170	19.3	2380	8.1	1550	3.9
1/4	1-3/16	4170	16.3	2380	6.9	1550	3.4
1/4	1-3/8	3760	14.8	2140	6.1	1400	3.2
1/4	1-1/2	3760	13.0	2140	5.5	1400	2.8
1/4	1-3/4	3760	13.0	2140	5.5	1400	2.8
5/16	1	3390	21.9	1910	8.7	1270	4.3
5/16	1-3/16	3390	21.9	1910	8.7	1270	4.3
5/16	1-3/8	3390	21.9	1910	8.7	1270	4.3
5/16	1-1/2	3390	18.7	1910	7.3	1270	3.7
5/16	1-3/4	3050	16.7	1720	6.5	1140	3.4
5/16	2	3050	14.8	1720	5.7	1140	3.0
3/8	1-3/16	2960	22.8	1730	8.9	1060	4.5
3/8	1-3/8	2960	22.8	1730	8.9	1060	4.5





DIA. = Diameter
LOC = Length of Cut

RPM = rev./min.
FEED = inch/min.

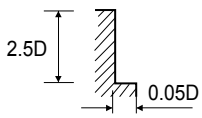
4G MILL END MILLS

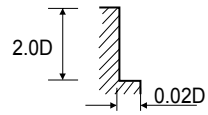
RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE LONG

GMF27 SERIES

MATERIAL		P					
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS		~ HRc35		HRc35 ~ HRc45		HRc45 ~ HRc55	
STRENGTH		~ 1100N/mm^2		1110 ~ 1500N/mm^2		1500 ~ 2000N/mm^2	
DIA.	LOC	RPM	FEED	RPM	FEED	RPM	FEED
3/8	1-1/2	2960	22.8	1730	8.9	1060	4.5
3/8	1-3/4	2960	19.5	1730	7.7	1060	3.7
3/8	2	2660	17.5	1550	6.9	950	3.4
1/2	1-3/8	2180	16.1	1320	7.1	790	3.2
1/2	1-1/2	2180	16.1	1320	7.1	790	3.2
1/2	1-3/4	2180	16.1	1320	7.1	790	3.2
1/2	2	2180	13.6	1320	6.1	790	2.6
1/2	2-1/8	2180	13.6	1320	6.1	790	2.6
1/2	2-3/8	2180	13.6	1320	6.1	790	2.6
9/16	2	2080	13.4	1210	5.5	740	2.6
5/8	2	1960	15.2	1080	5.9	680	3.0
5/8	2-3/8	1960	13.0	1080	5.1	680	2.4
5/8	2-3/4	1960	13.0	1080	5.1	680	2.4
3/4	2-3/8	1490	9.7	860	3.7	530	2.0
3/4	3-1/2	1490	8.5	860	3.4	530	1.8
1	3-1/2	1090	7.1	800	3.5	500	1.8





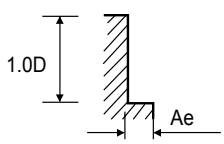
DIA. = Diameter
LOC = Length of Cut

RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE WITH NECK

GMF28 SERIES

MATERIAL		P								
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS		~ HRc35			HRc35 ~ HRc45			HRc45 ~ HRc55		
STRENGTH		~ 1100N/mm^2			1110 ~ 1500N/mm^2			1500 ~ 2000N/mm^2		
DIA.	LBS	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)	RPM	FEED	Ap(inch)
3/64	5/32	19650	12.4	.0007	12200	7.3	.0005	7560	2.0	.0004
3/64	3/16	19650	12.4	.0007	12200	7.3	.0005	7560	2.0	.0004
3/64	1/4	17690	10.0	.0004	10980	5.9	.0003	6800	1.6	.0002
3/64	5/16	17690	10.0	.0004	10980	5.9	.0003	6800	1.6	.0002
1/16	1/4	16060	11.8	.0009	10110	7.1	.0007	6140	1.8	.0006
1/16	5/16	16060	11.8	.0009	10110	7.1	.0007	6140	1.8	.0006
1/16	3/8	14460	9.7	.0005	9100	5.7	.0004	5530	1.6	.0003
1/16	1/2	14460	9.7	.0005	9100	5.7	.0004	5530	1.6	.0003
1/16	5/8	14460	9.7	.0003	9100	5.7	.0002	5530	1.6	.0002
5/64	5/16	14010	13.2	.0011	9140	7.9	.0009	6050	2.4	.0007
5/64	3/8	14010	13.2	.0011	9140	7.9	.0009	6050	2.4	.0007
5/64	1/2	12610	10.6	.0007	8230	6.5	.0005	5440	2.0	.0004
5/64	5/8	12610	10.6	.0007	8230	6.5	.0005	5440	2.0	.0004
1/8	3/8	10110	14.2	.0026	6300	8.9	.0020	3810	2.6	.0016
1/8	1/2	10110	14.2	.0019	6300	8.9	.0014	3810	2.6	.0011
1/8	5/8	10110	14.2	.0019	6300	8.9	.0014	3810	2.6	.0011
1/8	3/4	9100	11.4	.0011	5670	7.3	.0008	3430	2.2	.0006
1/8	1-3/16	9100	11.4	.0007	5670	7.3	.0005	3430	2.2	.0004
3/16	1/2	7620	22.4	.0039	4650	14.0	.0030	2960	2.4	.0024
3/16	5/8	7620	22.4	.0028	4650	14.0	.0021	2960	2.4	.0017
3/16	3/4	7620	22.4	.0028	4650	14.0	.0021	2960	2.4	.0017
3/16	1-3/16	6860	18.3	.0016	4190	11.2	.0012	2670	2.0	.0009
3/16	1-1/2	6860	18.3	.0016	4190	11.2	.0012	2670	2.0	.0009
13/64	3/4	7330	27.6	.0030	4390	16.3	.0022	2690	3.2	.0018
13/64	1-1/2	6590	22.2	.0017	3950	13.4	.0013	2420	2.6	.0010
1/4	5/8	6300	29.3	.0052	3810	18.3	.0039	2270	3.5	.0031
1/4	1-3/16	6300	29.3	.0037	3810	18.3	.0028	2270	3.5	.0022
5/16	1	5080	33.7	.0046	3040	17.9	.0035	2030	5.1	.0028
5/16	1-5/8	4570	27.4	.0026	2740	14.4	.0020	1820	4.1	.0016
3/8	1-3/16	4100	30.1	.0055	2520	15.0	.0041	1710	4.3	.0033
3/8	1-3/4	4100	30.1	.0055	2520	15.0	.0041	1710	4.3	.0033
1/2	1-3/8	3120	23.0	.0105	1900	11.2	.0079	1320	3.5	.0063
1/2	2	3120	23.0	.0074	1900	11.2	.0055	1320	3.5	.0044



DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = inch/min.

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

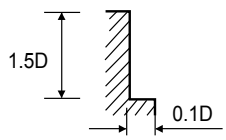
CARBIDE, 6 FLUTE 45º HELIX

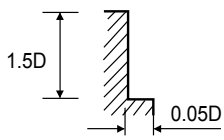
GMF29 SERIES

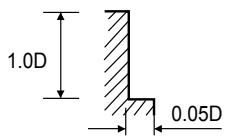
- NORMAL SPEED

MATERIAL		P					
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS		~ HRc35		HRc35 ~ HRc45		HRc45 ~ HRc55	
STRENGTH		~ 1100N/mm^2		1110 ~ 1500N/mm^2		1500 ~ 2000N/mm^2	
DIA.	LOC	RPM	FEED	RPM	FEED	RPM	FEED
1/4	5/8	5775	81.9	4035	56.1	1640	8.7
1/4	1-3/16	5775	69.5	4035	47.6	1640	7.4
5/16	3/4	4440	83.3	3110	57.1	1230	8.7
5/16	1-1/2	4440	70.9	3110	48.6	1230	7.4
3/8	1	3705	86.8	2560	59.5	1105	9.1
3/8	1-1/2	3705	86.8	2560	59.5	1105	9.1
1/2	1-3/16	2950	68.6	2080	47.4	870	7.4
1/2	2	2950	58.5	2080	40.3	870	6.3
5/8	1-1/2	2225	52.5	1565	36.6	685	5.4
5/8	2-3/8	2225	44.7	1565	31.2	685	4.6
3/4	1-3/4	1850	43.8	1280	30.0	545	4.8
3/4	2-3/8	1850	37.2	1280	25.4	545	4.1

DIA. = Diameter
LOC = Length of Cut
RPM = rev./min.
FEED = inch/min.



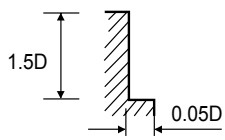


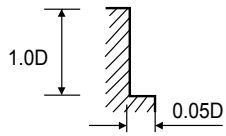


- HIGH SPEED

MATERIAL		P			
		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS		HRc35 ~ HRc45		HRc45 ~ HRc55	
STRENGTH		1110 ~ 1500N/mm^2		1500 ~ 2000N/mm^2	
DIAMETER	Length of Cut	RPM	FEED	RPM	FEED
1/4	5/8	17455	249.2	8735	124.7
1/4	1-3/16	17455	211.8	8735	106.1
5/16	3/4	13335	253.8	6670	127.1
5/16	1-1/2	13335	215.6	6670	108.1
3/8	1	11005	260.0	5555	132.3
3/8	1-1/2	11005	260.0	5555	132.3
1/2	1-3/16	8735	206.1	4365	103.1
1/2	2	8735	175.4	4365	87.7
5/8	1-1/2	6670	157.5	3340	78.8
5/8	2-3/8	6670	133.9	3340	67.0
3/4	1-3/4	5555	132.3	2785	63.9
3/4	2-3/8	5555	112.4	2785	54.2

RPM = rev./min.
FEED = inch/min.

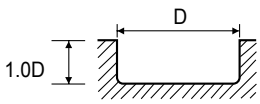


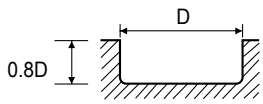


CARBIDE, 4&5 FLUTE MULTIPLE HELIX CORNER RADIUS - SLOTTING

G907, G928, G908, G929, G909, G930 SERIES

MATERIAL		P			
		ALLOY STEELS, CARBON STEELS TOOL STEELS CAST IRON		ALLOY STEELS, CARBON STEELS TOOL STEELS, CAST IRON PREHARDENED STEELS	
HARDNESS		~ HRc25		HRc25 ~ HRc40	
DIAMETER		RPM	FEED	RPM	FEED
INCH	METRIC				
1/4	6.0	12000	61.0	10600	43.3
5/16	8.0	9000	65.0	8100	46.5
3/8	10.0	7200	65.0	6400	46.5
1/2	12.0	6000	60.6	5400	44.9
5/8	16.0	4500	59.1	4100	41.3
3/4	20.0	3600	52.4	3200	35.4
1	-	2900	46.4	2600	32.5



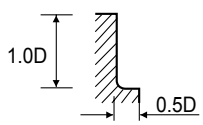


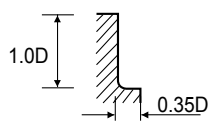
RPM = rev./min.
FEED = inch/min.

CARBIDE, 4&5 FLUTE MULTIPLE HELIX CORNER RADIUS - SIDE CUTTING

G907, G928, G908, G929, G909, G930 SERIES

MATERIAL		P			
		ALLOY STEELS, CARBON STEELS TOOL STEELS CAST IRON		ALLOY STEELS, CARBON STEELS TOOL STEELS, CAST IRON PREHARDENED STEELS	
HARDNESS		~ HRc25		HRc25 ~ HRc40	
DIAMETER		RPM	FEED	RPM	FEED
INCH	METRIC				
1/4	6.0	15800	101.2	14300	72.8
5/16	8.0	11900	106.3	10700	76.8
3/8	10.0	9500	106.3	8500	76.8
1/2	12.0	8000	101.2	7100	72.8
5/8	16.0	6000	96.5	5400	69.9
3/4	20.0	4800	84.3	4300	59.1
1	-	3800	75.3	3400	49.3





RPM = rev./min.
FEED = inch/min.

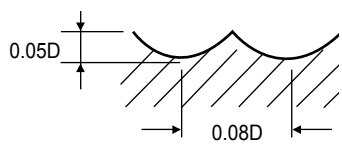
4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE BALL NOSE

SEMD98 SERIES

MATERIAL	P											
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS	~ HRc35				HRc35 ~ HRc45				HRc45 ~ HRc55			
STRENGTH	~ 1100N/mm^2				1110 ~ 1500N/mm^2				1500 ~ 2000N/mm^2			
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

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE LONG NECK BALL NOSE

SEM846 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
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

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/tooth

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE LONG NECK BALL NOSE

SEM846 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
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)
0.6	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
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

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/tooth

CARBIDE, 2 FLUTE LONG NECK BALL NOSE

SEM846 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
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)
1.0	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
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

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/tooth

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE LONG NECK BALL NOSE

SEM846 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
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)
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
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

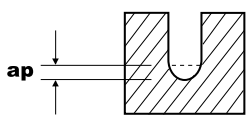
DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/tooth

CARBIDE, 2 FLUTE LONG NECK BALL NOSE

SEM846 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
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	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/tooth

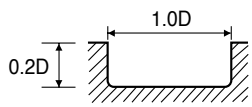
4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE CORNER RADIUS

SEMD99 SERIES

MATERIAL	P											
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS	~ HRc35				HRc35 ~ HRc45				HRc45 ~ HRc55			
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/tooth

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE LONG NECK CORNER RADIUS

SEME61 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
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

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/tooth

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE LONG NECK CORNER RADIUS

SEME61 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
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)
1.0	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
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

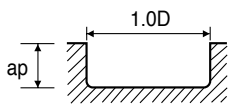
DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/tooth

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE LONG NECK CORNER RADIUS

SEME61 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
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	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
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/tooth

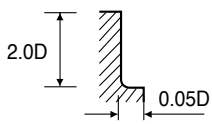
4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

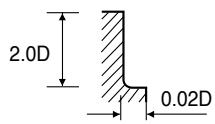
CARBIDE, 4 FLUTE CORNER RADIUS

SEME01 SERIES

MATERIAL	P											
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS	~ HRc35				HRc35 ~ HRc45				HRc45 ~ HRc55			
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/tooth

CARBIDE, 4 FLUTE LONG NECK CORNER RADIUS

SEME64 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
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)
1.0	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

DIA. = Diameter
LBS = Length Below Shank

RPM = rev./min.
FEED = mm/min.

Vc = m/min.
fz = mm/tooth

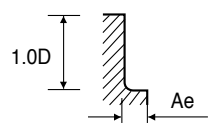
4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE LONG NECK CORNER RADIUS

SEME64 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
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)
2.5	30	14400	250	113	0.004	0.019	9120	190	72	0.005	0.014	5860	95	46	0.004	0.011
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/tooth

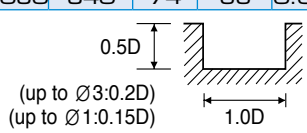
4G MILL END MILLS

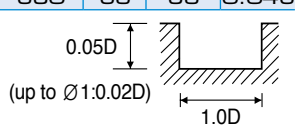
RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE

SEME35 SERIES

MATERIAL	P												M			
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS				STAINLESS STEELS			
HARDNESS	~ HRc35				HRc35 ~ HRc45				HRc45 ~ HRc55							
STRENGTH	~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²							
DIA.	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	16800	16	5	0.000	21000	40	7	0.001
0.2	42000	85	26	0.001	25200	50	16	0.001	16800	17	11	0.001	21000	39	13	0.001
0.3	39000	90	37	0.001	23400	54	22	0.001	15600	18	15	0.001	19500	45	18	0.001
0.4	39000	95	49	0.001	23400	57	29	0.001	15600	19	20	0.001	19500	47	25	0.001
0.5	36000	110	57	0.002	21600	66	34	0.002	14400	22	23	0.001	18000	55	28	0.002
0.6	32000	125	60	0.002	19200	76	36	0.002	12800	25	24	0.001	16000	63	30	0.002
0.7	28000	140	62	0.003	16800	85	37	0.003	11200	28	25	0.001	14000	70	31	0.003
0.8	25000	155	63	0.003	15000	95	38	0.003	10000	32	25	0.002	12500	79	31	0.003
0.9	23500	165	66	0.004	14100	98	40	0.003	9400	33	27	0.002	11750	81	33	0.003
1.0	21500	170	68	0.004	12900	101	41	0.004	8600	34	27	0.002	10750	84	34	0.004
1.2	18000	175	68	0.005	10800	104	41	0.005	7200	35	27	0.002	9000	87	34	0.005
1.5	15000	180	71	0.006	9000	107	42	0.006	6000	36	28	0.003	7500	89	35	0.006
2.0	11560	200	73	0.009	7560	125	48	0.008	5040	37	32	0.004	6300	95	40	0.008
2.5	10240	210	80	0.010	6560	135	52	0.010	4200	39	33	0.005	5460	110	43	0.010
3.0	8920	220	84	0.012	5560	145	52	0.013	3360	42	32	0.006	4620	125	44	0.014
3.5	8240	270	91	0.016	5090	170	56	0.017	3150	42	35	0.007	4250	140	47	0.016
4.0	7560	315	95	0.021	4620	190	58	0.021	2940	42	37	0.007	3880	160	49	0.021
4.5	6930	325	98	0.023	4200	195	59	0.023	2630	47	37	0.009	3520	165	50	0.023
5.0	6300	335	99	0.027	3780	200	59	0.026	2320	53	36	0.011	3160	170	50	0.027
5.5	5930	350	102	0.030	3570	215	62	0.030	2160	55	37	0.013	3000	180	52	0.030
6.0	5560	370	105	0.033	3360	230	63	0.034	2000	58	38	0.015	2840	190	54	0.033
6.5	5220	375	107	0.036	3150	225	64	0.036	1920	63	39	0.016	2655	190	54	0.036
7.0	4880	385	107	0.039	2940	220	65	0.037	1840	68	40	0.018	2470	190	54	0.038
7.5	4540	390	107	0.043	2730	215	64	0.039	1760	74	41	0.021	2285	190	54	0.042
8.0	4200	400	106	0.048	2520	210	63	0.042	1680	79	42	0.024	2100	190	53	0.045
8.5	3965	385	106	0.049	2390	200	64	0.042	1600	74	43	0.023	1995	185	53	0.046
9.0	3730	375	105	0.050	2260	190	64	0.042	1520	68	43	0.022	1890	180	53	0.048
9.5	3495	355	104	0.051	2130	180	64	0.042	1440	63	43	0.022	1785	175	53	0.049
10.0	3260	345	102	0.053	2000	170	63	0.043	1360	63	43	0.023	1680	170	53	0.051
10.5	3130	330	103	0.053	1920	160	63	0.042	1310	61	43	0.023	1600	160	53	0.050
11.0	3000	320	104	0.053	1840	150	64	0.041	1260	58	44	0.023	1520	150	53	0.049
11.5	2870	305	104	0.053	1760	140	64	0.040	1210	58	44	0.024	1440	140	52	0.049
12.0	2740	295	103	0.054	1680	135	63	0.040	1160	58	44	0.025	1360	135	51	0.050
13.0	2605	280	106	0.054	1600	130	65	0.041	1095	55	45	0.025	1285	130	52	0.051
14.0	2470	265	109	0.054	1520	125	67	0.041	1030	49	45	0.024	1210	125	53	0.052
15.0	2335	245	110	0.052	1440	120	68	0.042	965	45	45	0.023	1135	120	53	0.053
16.0	2200	230	111	0.052	1360	115	68	0.042	900	42	45	0.023	1060	115	53	0.054
17.0	2070	215	111	0.052	1285	105	69	0.041	845	39	45	0.023	1005	105	54	0.052
18.0	1940	205	110	0.053	1210	100	68	0.041	790	37	45	0.023	950	100	54	0.053
19.0	1810	190	108	0.052	1135	90	68	0.040	735	34	44	0.023	895	90	53	0.050
20.0	1680	180	106	0.054	1060	84	67	0.040	680	32	43	0.024	840	84	53	0.050
21.0	1615	170	107	0.053	1015	82	67	0.040	650	29	43	0.022	800	80	53	0.050
22.0	1550	165	107	0.053	970	80	67	0.041	620	27	43	0.022	775	76	54	0.049
23.0	1480	150	107	0.051	925	78	67	0.042	600	25	43	0.021	745	71	54	0.048
24.0	1425	140	107	0.049	885	76	67	0.043	570	23	43	0.020	715	67	54	0.047
25.0	1360	135	107	0.050	840	74	66	0.044	540	21	42	0.019	680	63	53	0.046





RPM = rev./min. Vc = m/min.
FEED = mm/min. fz = mm/tooth

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE LONG LENGTH

SEME70 SERIES

MATERIAL		P											
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS		~ HRc35				HRc35 ~ HRc45				HRc45 ~ HRc55			
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

DIA. = Diameter
LOC = Length of Cut
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/tooth

CARBIDE, 2 FLUTE LONG LENGTH

SEME70 SERIES

MATERIAL		P											
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS		~ HRc35				HRc35 ~ HRc45				HRc45 ~ HRc55			
STRENGTH		~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²			
DIA.	LOC	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
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
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

DIA. = Diameter LOC = Length of Cut RPM = rev./min. FEED = mm/min. Vc = m/min. fz = mm/tooth

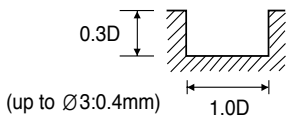
4G MILL END MILLS

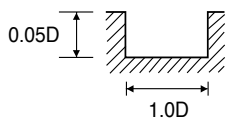
RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE LONG LENGTH

SEME70 SERIES

MATERIAL		P											
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS		~ HRc35				HRc35 ~ HRc45				HRc45 ~ HRc55			
STRENGTH		~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²			
DIA.	LOC	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
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/tooth

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE LONG NECK

SEM845 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
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

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/tooth

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE LONG NECK

SEM845 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
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)
0.6	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
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

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/tooth

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE LONG NECK

SEM845 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
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	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
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

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/tooth

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE LONG NECK

SEM845 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
STRENGTH		~ 1100N/mm^2					1110 ~ 1500N/mm^2					1500 ~ 2000N/mm^2				
DIA.	LBS	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)	RPM	FEED	Vc	fz	Ap(mm)
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
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

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/tooth

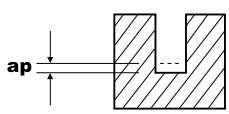
RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE LONG NECK

SEM845 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
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	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/tooth

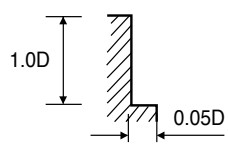
4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE

SEME36, SEME71 SERIES

MATERIAL	P												M			
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS				STAINLESS STEELS			
HARDNESS	~ HRc35				HRc35 ~ HRc45				HRc45 ~ HRc55							
STRENGTH	~ 1100N/mm²				1110 ~ 1500N/mm²				1500 ~ 2000N/mm²							
DIA.	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	12500	42	31	0.001	15630	120	39	0.002
0.9	29300	245	83	0.002	17580	145	50	0.002	11720	42	33	0.001	14650	120	41	0.002
1.0	26800	250	84	0.002	16080	150	51	0.002	10720	47	34	0.001	13400	125	42	0.002
1.2	22500	265	85	0.003	13500	160	51	0.003	9000	47	34	0.001	11250	130	42	0.003
1.5	18750	270	88	0.004	11250	165	53	0.004	7500	47	35	0.002	9380	135	44	0.004
2.0	14450	295	91	0.005	9450	180	59	0.005	6300	53	40	0.002	7880	145	50	0.005
2.5	12800	315	101	0.006	8200	195	64	0.006	5250	58	41	0.003	6830	165	54	0.006
3.0	11150	335	105	0.008	6950	210	66	0.008	4200	63	40	0.004	5780	180	54	0.008
3.5	10300	465	113	0.011	6360	290	70	0.011	3940	63	43	0.004	5310	235	58	0.011
4.0	9450	600	119	0.016	5780	370	73	0.016	3680	63	46	0.004	4850	295	61	0.015
4.5	8660	615	122	0.018	5250	375	74	0.018	3290	70	47	0.005	4400	305	62	0.017
5.0	7880	630	124	0.020	4730	380	74	0.020	2900	75	46	0.006	3950	315	62	0.020
5.5	7410	660	128	0.022	4460	405	77	0.023	2700	80	47	0.007	3750	330	65	0.022
6.0	6950	695	131	0.025	4200	430	79	0.026	2500	85	47	0.009	3550	345	67	0.024
6.5	6530	710	133	0.027	3940	425	80	0.027	2400	95	49	0.010	3320	350	68	0.026
7.0	6100	720	134	0.030	3680	415	81	0.028	2300	100	51	0.011	3090	355	68	0.029
7.5	5680	735	134	0.032	3410	410	80	0.030	2200	110	52	0.013	2860	360	67	0.031
8.0	5250	745	132	0.035	3150	400	79	0.032	2100	115	53	0.014	2630	370	66	0.035
8.5	4960	720	132	0.036	2990	380	80	0.032	2000	110	53	0.014	2490	355	66	0.036
9.0	4660	695	132	0.037	2830	355	80	0.031	1900	105	54	0.014	2360	340	67	0.036
9.5	4370	665	130	0.038	2660	335	79	0.031	1800	100	54	0.014	2230	330	67	0.037
10.0	4080	640	128	0.039	2500	315	79	0.032	1700	95	53	0.014	2100	315	66	0.038
10.5	3910	620	129	0.040	2400	305	79	0.032	1640	95	54	0.014	2000	300	66	0.038
11.0	3750	595	130	0.040	2300	290	79	0.032	1580	90	55	0.014	1900	285	66	0.038
11.5	3590	570	130	0.040	2200	280	79	0.032	1510	90	55	0.015	1800	270	65	0.038
12.0	3430	545	129	0.040	2100	265	79	0.032	1450	85	55	0.015	1700	250	64	0.037
13.0	3260	520	133	0.040	2000	250	82	0.031	1370	80	56	0.015	1620	240	66	0.037
14.0	3090	490	136	0.040	1900	235	84	0.031	1290	75	57	0.015	1540	230	68	0.037
15.0	2920	460	138	0.039	1800	225	85	0.031	1210	70	57	0.014	1460	220	69	0.038
16.0	2750	440	138	0.040	1700	215	85	0.032	1130	65	57	0.014	1380	210	69	0.038
17.0	2590	410	138	0.040	1610	200	86	0.031	1060	60	57	0.014	1290	200	69	0.039
18.0	2430	385	137	0.040	1510	190	85	0.031	990	55	56	0.014	1210	185	68	0.038
19.0	2260	360	135	0.040	1420	180	85	0.032	920	47	55	0.013	1130	175	67	0.039
20.0	2100	335	132	0.040	1330	170	84	0.032	850	42	53	0.012	1050	160	66	0.038
21.0	2020	320	133	0.040	1270	165	84	0.032	820	42	54	0.013	1010	150	67	0.037
22.0	1940	310	134	0.040	1220	160	84	0.033	780	39	54	0.013	970	145	67	0.037
23.0	1860	295	134	0.040	1160	145	84	0.031	750	37	54	0.012	930	140	67	0.038
24.0	1780	280	134	0.039	1110	140	84	0.032	710	32	54	0.011	890	130	67	0.037
25.0	1700	265	134	0.039	1050	135	82	0.032	680	32	53	0.012	850	125	67	0.037



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/tooth

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE LONG LENGTH

SEME72 SERIES

MATERIAL		P											
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS		~ HRc35				HRc35 ~ HRc45				HRc45 ~ HRc55			
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
8.0	25	3360	550	84	0.041	1900	215	48	0.028	1260	110	32	0.022

DIA. = Diameter
LOC = Length of Cut

RPM = rev./min.
FEED = mm/min.

Vc = m/min.
fz = mm/tooth

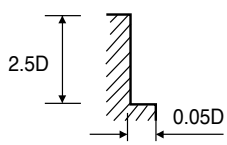
4G MILL END MILLS

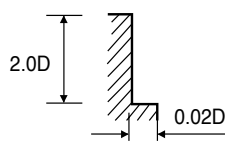
RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE LONG LENGTH

SEME72 SERIES

MATERIAL		P											
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS		~ HRc35				HRc35 ~ HRc45				HRc45 ~ HRc55			
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	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/tooth

CARBIDE, 4 FLUTE LONG NECK

SEME73 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
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)
1.0	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

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/tooth

4G MILL END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE LONG NECK

SEME73 SERIES

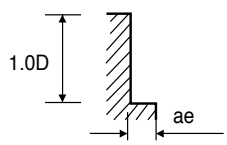
MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
STRENGTH		~ 1100N/mm²					1110 ~ 1500N/mm²					1500 ~ 2000N/mm²				
DIA.	LBS	RPM	FEED	Vc	fz	ae(mm)	RPM	FEED	Vc	fz	ae(mm)	RPM	FEED	Vc	fz	ae(mm)
2.0	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
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

DIA. = Diameter
LBS = Length Below Shank
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/tooth

CARBIDE, 4 FLUTE LONG NECK

SEME73 SERIES

MATERIAL		P														
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON					ALLOY STEELS HEAT RESISTANT STEELS					HARDENED STEELS				
HARDNESS		~ HRc35					HRc35 ~ HRc45					HRc45 ~ HRc55				
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	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
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/tooth

4G MILL END MILLS

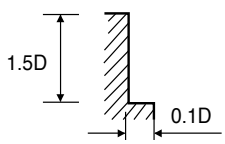
RECOMMENDED CUTTING CONDITIONS

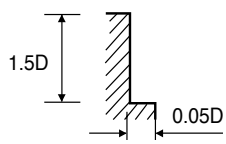
CARBIDE, 6 FLUTE 45° HELIX

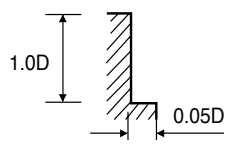
SEME75 SERIES

■ NORMAL SPEED

MATERIAL		P											
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON				ALLOY STEELS HEAT RESISTANT STEELS				HARDENED STEELS			
HARDNESS		~ HRc35				HRc35 ~ HRc45				HRc45 ~ HRc55			
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.

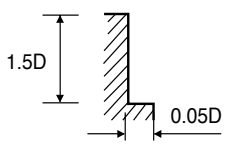
Vc = m/min.
fz = mm/tooth

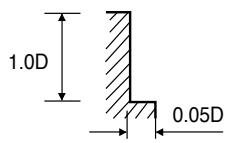
CARBIDE, 6 FLUTE 45° HELIX

SEME75 SERIES

■ HIGH SPEED

MATERIAL		P							
		NON-ALLOYED STEELS ALLOY STEELS CAST IRON				HARDENED STEELS			
HARDNESS		HRc35 ~ HRc45				HRc45 ~ HRc55			
STRENGTH		1100 ~ 1500N/mm²				1500 ~ 2000N/mm²			
DIA.	LOC	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





DIA. = Diameter
LOC = Length of Cut
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/tooth

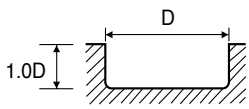
4G MILL END MILLS

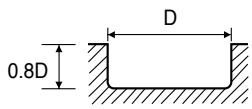
RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4&5 FLUTE MULTIPLE HELIX CORNER RADIUS - SLOTTING

G9D75, G9D67, G9D76, G9D68, G9D77, G9D69 SERIES

MATERIAL	P							
	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



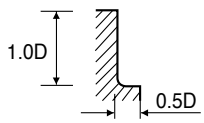


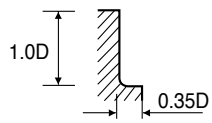
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/tooth

CARBIDE, 4&5 FLUTE MULTIPLE HELIX CORNER RADIUS - SIDE CUTTING

G9D75, G9D67, G9D76, G9D68, G9D77, G9D69 SERIES

MATERIAL	P							
	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





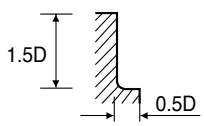
RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/tooth

HSS-PM, 4&5 FLUTE MULTIPLE HELIX SHORT LENGTH CORNER RADIUS

GAE53 SERIES

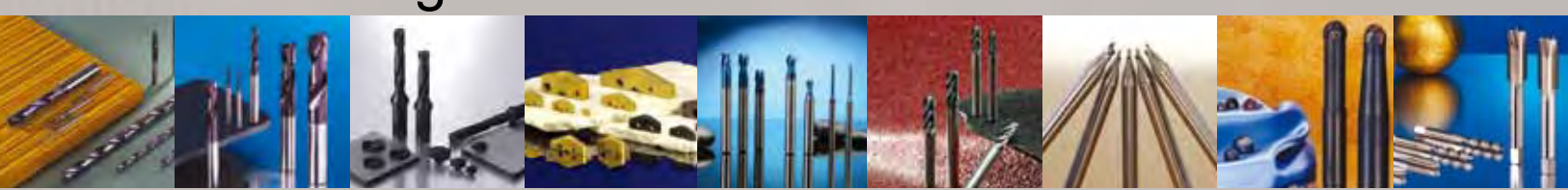
MATERIAL	P											
	STRUCTURAL STEELS CARBON STEELS				STRUCTURAL STEELS CARBON STEELS, CAST IRONS				CARBON STEELS ALLOY STEELS, TOOL STELLS			
HARDNESS					~ HRc 20				HRc 20 ~ 30			
STRENGTH	~ 500N/mm²				500 ~ 800N/mm²				800 ~ 1000N/mm²			
DIAMETER	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz	RPM	FEED	Vc	fz
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	P				M			
	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/tooth

Global Cutting Tool Leader **YG-1**



CARBIDE

Being the best through innovation



X-POWER END MILLS

- Medium Steels to High Hardened Steels up to HRc70

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
INCH					
EM154		CARBIDE, 2 FLUTE REGULAR LENGTH ◆	D1/16	D1	**824**
EM206		CARBIDE, 2 FLUTE LONG LENGTH ◆	D1/8	D1	**824**
EM959		CARBIDE, 2 FLUTE MINIATURE ◆	D.016	D.062	**825**
EM153		CARBIDE, 4 FLUTE REGULAR LENGTH ◆	D1/16	D1	**826**
EM207		CARBIDE, 4 FLUTE LONG LENGTH ◆	D1/8	D1	**826**
EM636		CARBIDE, 2 FLUTE STUB LENGTH CORNER RADIUS ◆	D1/16	D1/2	**827**
EM639		CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS ◆	D1/16	D1/2	**827**
EM637		CARBIDE, 2 FLUTE REGULAR LENGTH CORNER RADIUS ◆	D1/16	D1/2	**828**
EM649		CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS ◆	D1/16	D1/2	**828**
EM211		CARBIDE, 2 FLUTE LONG LENGTH CORNER RADIUS ◆	D1/4	D1/2	**829**
EM212		CARBIDE, 4 FLUTE LONG LENGTH CORNER RADIUS ◆	D1/4	D1/2	**829**
EM102		CARBIDE, 4 FLUTE 45° HELIX LONG LENGTH ◆	D3/8	D7/8	**830**
EM103		CARBIDE, 4 FLUTE 45° HELIX LONG REACH CORNER RADIUS ◆	D3/8	D7/8	**831**
EM965		CARBIDE, 4 FLUTE 55° HELIX STUB LENGTH CORNER RADIUS ◆	D1/4	D1/2	**832**
EM208		CARBIDE, 6&8 FLUTE 45° HELIX LONG LENGTH ◆	D1/4	D1	**833**
EM218		CARBIDE, 6&8 FLUTE 45° HELIX EXTRA LONG LENGTH ◆	D1/4	D1	**833**
EM668		CARBIDE, 6&8 FLUTE 45° HELIX LONG LENGTH CORNER RADIUS ◆	D1/4	D3/4	**834**

◆ U.S.A Stock

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
INCH					
EM209		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE ◆	R1/64	R1/2	**835**
EM210		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE ◆	R1/16	R1/2	**835**
EM961		CARBIDE, 2 FLUTE MEDIUM LENGTH BALL NOSE ◆	R1/16	R1/2	**836**
EM962		CARBIDE, 2 FLUTE LONG REACH BALL NOSE ◆	R3/64	R3/8	**837**
EM960		CARBIDE, 2 FLUTE MINIATURE BALL NOSE ◆	R.012	R.031	**838**
EM109		CARBIDE, 2 FLUTE 15° HELIX STUB CUT LENGTH BALL NOSE for OVER HRc55 ◆	R1/64	R1/4	**839**
EM963		CARBIDE, 2 FLUTE BALL NOSE with TAPER NECK ◆	R1/32	R1/4	**840**
EM979		CARBIDE, 2 FLUTE BALL NOSE with PENCIL NECK ◆	R3/32	R1/4	**841**
EM084		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE (MMC-ECONOMY TYPE) ◆	R1/16	R5/16	**843**
EM093		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE (MMC-ECONOMY TYPE) ◆	R1/16	R5/16	**844**
EM096		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE (MMC-SPHERE TYPE) ◆	R1/16	R5/16	**845**
EM097		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE (MMC-SPHERE TYPE) ◆	R1/16	R5/16	**846**
EM666		CARBIDE, MULTI FLUTE 20° HELIX STUB LENGTH FINE PITCH ROUGHING ◆	D1/4	D1	**847**
EM156		CARBIDE, MULTI FLUTE 20° HELIX LONG LENGTH FINE PITCH ROUGHING ◆	D1/4	D1	**847**
EM662		CARBIDE, MULTI FLUTE 20° HELIX LONG LENGTH FINE PITCH ROUGHING BALL NOSE ◆	R1/8	R1/2	**848**
EM966		CARBIDE, 2 FLUTE for RIB PROCESSING ◆	D1/32	D1/8	**849**
EM967		CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING ◆	R1/64	R1/16	**850**

◆ U.S.A Stock

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
METRIC					
EM810		CARBIDE, 2 FLUTE SHORT LENGTH ◇	D1.0	D25.0	**851**
EM816		CARBIDE, 2 FLUTE LONG LENGTH ◇	D2.0	D25.0	**852**
EM811		CARBIDE, 4 FLUTE SHORT LENGTH ◇	D2.0	D25.0	**853**
EM817		CARBIDE, 4 FLUTE LONG LENGTH ◇	D2.0	D25.0	**854**
EM895		CARBIDE, 3 FLUTE 38° HELIX SHORT LENGTH ◇	D1.0	D20.0	**855**
EM810		CARBIDE, 2 FLUTE MINIATURE ◇	D0.4	D1.5	**856**
EM818		CARBIDE, 2 FLUTE LONG LENGTH CORNER RADIUS ◇	D3.0	D20.0	**857**
EM819		CARBIDE, 4 FLUTE LONG LENGTH CORNER RADIUS ◇	D3.0	D20.0	**857**
EM905		CARBIDE, 4 FLUTE 45° HELIX SHORT LENGTH CORNER RADIUS ◇	D10.0	D22.0	**858**
EM839		CARBIDE, 4 FLUTE STUB CUT LENGTH CORNER RADIUS ◇	D2.0	D16.0	**859**
EM812		CARBIDE, 6&8 FLUTE 45° HELIX LONG LENGTH ◇	D6.0	D25.0	**860**
EM834		CARBIDE, 6&8 FLUTE 45° HELIX EXTRA LONG LENGTH ◇	D6.0	D25.0	**860**
EM835		CARBIDE, 6 FLUTE 45° HELIX LONG LENGTH CORNER RADIUS ◇	D6.0	D20.0	**861**
EM897		CARBIDE, 6 FLUTE 45° HELIX STUB CUT LENGTH CORNER RADIUS ◇	D6.0	D12.0	**862**
EM876		CARBIDE, 2 FLUTE SHORT LENGTH BALL NOSE ◇	R0.5	R12.5	**863**
EM813 EM823		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE ◇	R0.5	R12.5	**864**
EM815 EM825		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE ◇	R0.5	R12.5	**864**

◇ Call for Availability

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
METRIC					
EM899		CARBIDE, 2 FLUTE MEDIUM LENGTH BALL NOSE ◇	R1.5	R12.5	**865**
EM838		CARBIDE, 2 FLUTE LONG REACH BALL NOSE ◇	R1.0	R10.0	**866**
EM865		CARBIDE, 2 FLUTE MINIATURE BALL NOSE ◇	R0.3	R0.75	**867**
EM868		CARBIDE, 2 FLUTE 15° HELIX STUB CUT LENGTH BALL NOSE for OVER HRc55 ◇	R0.5	R12.5	**868**
EM902		CARBIDE, 2 FLUTE BALL NOSE with TAPER NECK ◇	R0.5	R6.0	**869**
EM669		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE (MMC-ECONOMY TYPE) ◇	R1.5	R8.0	**870**
EM673		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE (MMC-ECONOMY TYPE) ◇	R2.5	R8.0	**871**
EM863		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE (MMC- SPHERE TYPE) ◇	R1.5	R8.0	**872**
EM864		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE (MMC- SPHERE TYPE) ◇	R2.5	R8.0	**873**
EM832		CARBIDE, MULTI FLUTE 20° HELIX SHORT LENGTH FINE PITCH ROUGHING ◇	D6.0	D25.0	**874**
EM814		CARBIDE, MULTI FLUTE 20° HELIX LONG LENGTH FINE PITCH ROUGHING ◇	D6.0	D25.0	**875**
EM833		CARBIDE, 3&4 FLUTE 20° HELIX LONG LENGTH FINE PITCH ROUGHING BALL NOSE ◇	R3.0	R10.0	**876**
EM837		CARBIDE, 2 FLUTE TAPER ◇	D2.0	D8.0	**877**
EM883		CARBIDE, 2 FLUTE for RIB PROCESSING ◇	D0.8	D3.0	**878**
EM886		CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING ◇	R0.3	R2.0	**879**
		RECOMMENDED CUTTING CONDITIONS			**880**

◇ Call for Availability

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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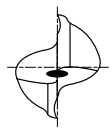
X-POWER END MILLS

EM154 SERIES PLAIN SHANK
EM206 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE REGULAR & LONG LENGTH

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- Superior workpiece finishes.
- Increased feed rate.





MG | 2 | 30° | PLAIN

P.880

◆ U.S.A Stock

EM154 Series ■ REGULAR LENGTH

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
93074	1/16	1/8	3/16	1-1/2
93075	1/8	1/8	1/2	1-1/2
93076	3/16	3/16	5/8	2
93077	1/4	1/4	3/4	2-1/2
93078	5/16	5/16	13/16	2-1/2
93079	3/8	3/8	1	2-1/2
93080	1/2	1/2	1	3
93081	5/8	5/8	1-1/4	3-1/2
93082	3/4	3/4	1-1/2	4
93083	1	1	1-1/2	4

EM206 Series ■ LONG LENGTH

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
93084	1/8	1/8	3/4	2-1/4
93085	3/16	3/16	3/4	2-1/2
93086	1/4	1/4	1-1/8	3
93087	5/16	5/16	1-1/8	3
93088	3/8	3/8	1-1/8	3
93089	1/2	1/2	2	4
93090	5/8	5/8	2-1/4	5
93091	3/4	3/4	2-1/4	5
93092	1	1	2-1/4	5

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~−.0012	0~−.0003

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○		○	○							

X-POWER END MILLS

EM959 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE MINIATURE

- High precision milling in medical, optical, electronics and aero space industries.
- Excellent performance on high hardened steel(HRc70).



MG | 2 | 30° | PLAIN

P.882

◆ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
93495	.016	1/8	.031	1-1/2
93496	.020	1/8	.040	1-1/2
93497	.024	1/8	.047	1-1/2
93498	.028	1/8	.055	1-1/2
93499	.031	1/8	.063	1-1/2
93500	.035	1/8	.080	1-1/2
93501	.040	1/8	.100	1-1/2
93502	.043	1/8	.100	1-1/2
93503	.047	1/8	.157	1-1/2
93504	.052	1/8	.157	1-1/2
93505	.055	1/8	.157	1-1/2
93506	.062	1/8	.157	1-1/2

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
±.0005	0~−.0003

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

X-POWER END MILLS

EM153 SERIES PLAIN SHANK
EM207 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE REGULAR & LONG LENGTH

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- 4 flute allows for better workpiece finishes.
- Increased production.



MG | 4 | 30° | PLAIN

P.881

◆ U.S.A Stock

EM153 Series ■ REGULAR LENGTH

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
93093	1/16	1/8	3/16	1-1/2
93094	1/8	1/8	1/2	1-1/2
93095	3/16	3/16	5/8	2
93096	1/4	1/4	3/4	2-1/2
93097	5/16	5/16	13/16	2-1/2
93098	3/8	3/8	1	2-1/2
93594	7/16	7/16	1	2-3/4
93099	1/2	1/2	1	3
93100	5/8	5/8	1-1/4	3-1/2
93101	3/4	3/4	1-1/2	4
93102	1	1	1-1/2	4

EM207 Series ■ LONG LENGTH

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
93103	1/8	1/8	3/4	2-1/4
93104	3/16	3/16	3/4	2-1/2
93105	1/4	1/4	1-1/8	3
93106	5/16	5/16	1-1/8	3
93107	3/8	3/8	1-1/8	3
93108	1/2	1/2	2	4
93109	5/8	5/8	2-1/4	5
93110	3/4	3/4	2-1/4	5
93111	1	1	2-1/4	5

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~−.0012	0~−.0003

◎ : Excellent ○ : Good

Series	P					H	M	K	N					S	
	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
	~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
EM153	○	◎	◎	◎	○		○	○							
EM207	○	◎	◎	◎	○			○							

YG X-POWER END MILLS

EM636 SERIES PLAIN SHANK
EM639 SERIES PLAIN SHANK

CARBIDE, 2&4 FLUTE STUB LENGTH CORNER RADIUS

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- Superior workpiece finishes.
- Increased feed rate.



MG | 2&4 | 30° | R ±.001 | PLAIN

P.882, 883

◆ U.S.A Stock

EM636(2 FLUTE), EM639(4 FLUTE) Series

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
2 FLUTE	4 FLUTE	R (±.001)				
93172	93216	R.008	1/16	1/4	1/8	2-1/4
93173	93217	R.010	1/8	1/4	1/4	2-1/4
93174	93218	R.020	1/8	1/4	1/4	2-1/4
93175	-	R.030	1/8	1/4	1/4	2-1/4
93176	93220	R.010	3/16	1/4	3/8	2-1/2
93177	93221	R.020	3/16	1/4	3/8	2-1/2
93178	93222	R.030	3/16	1/4	3/8	2-1/2
93179	93223	R.010	1/4	1/4	1/2	3
93180	93224	R.020	1/4	1/4	1/2	3
93181	93225	R.030	1/4	1/4	1/2	3
93182	93226	R.020	5/16	5/16	1/2	3
93183	93227	R.030	5/16	5/16	1/2	3
93184	93228	R.060	5/16	5/16	1/2	3
93185	93229	R.090	5/16	5/16	1/2	3
93186	93230	R.020	3/8	3/8	5/8	3
93187	93231	R.030	3/8	3/8	5/8	3
93188	93232	R.060	3/8	3/8	5/8	3
93189	93233	R.090	3/8	3/8	5/8	3
93190	93234	R.020	1/2	1/2	5/8	4
93191	93235	R.030	1/2	1/2	5/8	4
93192	93236	R.060	1/2	1/2	5/8	4
93193	93237	R.090	1/2	1/2	5/8	4

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~−.0012	0~−.0003

◎ : Excellent ○ : Good

Series	P					H	M	K	N					S	
	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
	~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
EM636	○	◎	◎	◎	○										
EM639	○	◎	◎	◎	○		○	○							

YG X-POWER END MILLS

EM637 SERIES PLAIN SHANK
EM649 SERIES PLAIN SHANK

CARBIDE, 2&4 FLUTE REGULAR LENGTH CORNER RADIUS

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- Superior workpiece finishes.
- Increased feed rate.



MG | 2&4 | 30° | R ±.001 | PLAIN

P.882, 883

◆ U.S.A Stock

EM637 (2 FLUTE), EM649 (4 FLUTE) Series

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
2 FLUTE	4 FLUTE	R (±.001)				
93194	93238	R.008	1/16	1/4	3/16	2-1/4
93195	93239	R.010	1/8	1/4	1/2	2-1/4
93196	93240	R.020	1/8	1/4	1/2	2-1/4
93197	-	R.030	1/8	1/4	1/2	2-1/4
93198	93242	R.010	3/16	1/4	5/8	2-1/2
93199	93243	R.020	3/16	1/4	5/8	2-1/2
93200	93244	R.030	3/16	1/4	5/8	2-1/2
93201	93245	R.010	1/4	1/4	3/4	3
93202	93246	R.020	1/4	1/4	3/4	3
93203	93247	R.030	1/4	1/4	3/4	3
93204	93248	R.020	5/16	5/16	13/16	3
93205	93249	R.030	5/16	5/16	13/16	3
93206	93250	R.060	5/16	5/16	13/16	3
93207	93251	R.090	5/16	5/16	13/16	3
93208	93252	R.020	3/8	3/8	1	3
93209	93253	R.030	3/8	3/8	1	3
93210	93254	R.060	3/8	3/8	1	3
93211	93255	R.090	3/8	3/8	1	3
93600	93595	R.020	7/16	7/16	1	4
93601	93597	R.030	7/16	7/16	1	4
93602	93598	R.060	7/16	7/16	1	4
93603	93599	R.090	7/16	7/16	1	4
93212	93256	R.020	1/2	1/2	1	4
93213	93257	R.030	1/2	1/2	1	4
93214	93258	R.060	1/2	1/2	1	4
93215	93259	R.090	1/2	1/2	1	4

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~−.0012	0~−.0003

◎ : Excellent ○ : Good

Series	P					H	M	K	N					S	
	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
	~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
EM637	○	◎	◎	◎	○										
EM649	○	◎	◎	◎	○		○	○							

YG X-POWER END MILLS

EM211 SERIES PLAIN SHANK
EM212 SERIES PLAIN SHANK

CARBIDE, 2&4 FLUTE LONG LENGTH CORNER RADIUS

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- Superior workpiece finishes.
- Increased feed rate.



MG | 2&4 | 30° | R ±.001 | PLAIN

P.882, 883

◆ U.S.A Stock

EM211 (2 FLUTE), EM212 (4 FLUTE) Series

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
2 FLUTE	4 FLUTE	R (±.001)				
93143	**93157**	R.020	**1/4**	1/4	1-1/8	3
93144	**93158**	R.030	**1/4**	1/4	1-1/8	3
93145	**93159**	R.020	**5/16**	5/16	1-1/8	3
93146	**93160**	R.030	**5/16**	5/16	1-1/8	3
93147	**93161**	R.060	**5/16**	5/16	1-1/8	3
93148	**93162**	R.090	**5/16**	5/16	1-1/8	3
93149	**93163**	R.020	**3/8**	3/8	1-1/8	3
93150	**93164**	R.030	**3/8**	3/8	1-1/8	3
93151	**93165**	R.060	**3/8**	3/8	1-1/8	3
93152	**93166**	R.090	**3/8**	3/8	1-1/8	3
93153	**93167**	R.020	**1/2**	1/2	2	4
93154	**93168**	R.030	**1/2**	1/2	2	4
93155	**93169**	R.060	**1/2**	1/2	2	4
93156	**93170**	R.090	**1/2**	1/2	2	4

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~−.0012	0~−.0003

◎ : Excellent ○ : Good

Series	P					H	M	K	N					S	
	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
	~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
EM211	○	◎	◎	◎	○										
EM212	○	◎	◎	◎	○		○	○							

X-POWER END MILLS

EM102 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE 45º HELIX LONG LENGTH

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- 4 flute allows for better workpiece finishes.
- Increased production.



MG | 4 | 45° | PLAIN

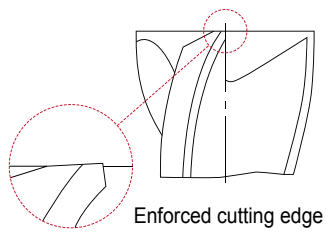
P.883

◆ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
93395	**3/8**	5/16	5/8	5
93396	**1/2**	3/8	3/4	6
93397	**5/8**	1/2	7/8	6-1/2
93398	**3/4**	5/8	1	7
93399	**7/8**	3/4	1-1/4	8

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~−.0012	0~−.0003



Enforced cutting edge

◎ : Excellent ○ : Good

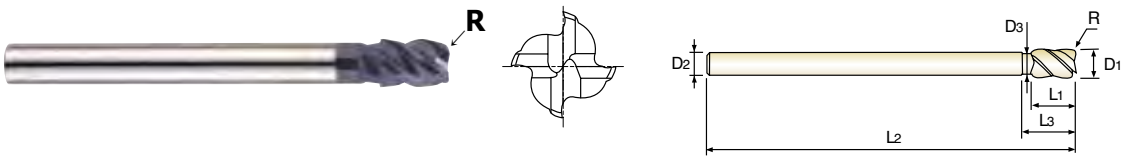
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○		○	○							

X-POWER END MILLS

EM103 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE 45º HELIX LONG REACH CORNER RADIUS

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- Superior workpiece finishes.
- Increased feed rate.



MG | 4 | 45° | R ±.001 | PLAIN

P.884

◆ U.S.A Stock

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.001)	D1	D2	L1	L3	L2	D3
93400	R.020	**3/8**	5/16	5/8	.750	5	.293
93405	R.040	**3/8**	5/16	5/8	.750	5	.293
93401	R.020	**1/2**	3/8	3/4	.875	6	.355
93406	R.040	**1/2**	3/8	3/4	.875	6	.355
93402	R.020	**5/8**	1/2	7/8	1.000	6-1/2	.480
93407	R.040	**5/8**	1/2	7/8	1.000	6-1/2	.480
93403	R.020	**3/4**	5/8	1	1.125	7	.605
93408	R.040	**3/4**	5/8	1	1.125	7	.605
93404	R.020	**7/8**	3/4	1-1/4	1.375	8	.730
93409	R.040	**7/8**	3/4	1-1/4	1.375	8	.730

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~−.0012	0~−.0003

◎ : Excellent ○ : Good

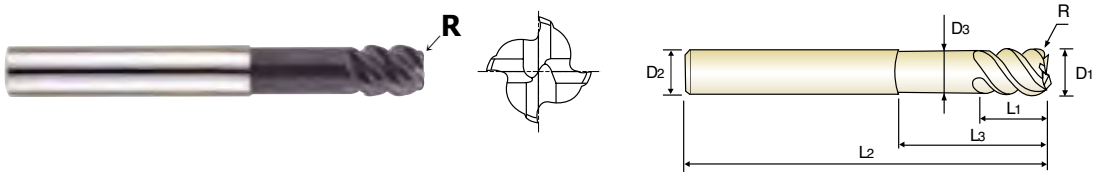
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○		○	○							

YG X-POWER END MILLS

EM965 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE 55° HELIX STUB LENGTH CORNER RADIUS

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- Corner radius and corner protection against chipping.



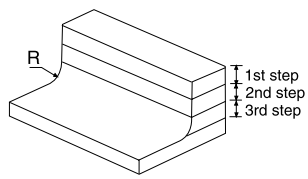
MG | 4 | 55° | R ±.001 | PLAIN | P.885

◆ U.S.A Stock

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.001)	D1	D2	L1	L3	L2	D3
93544	R.063	**1/4**	1/4	5/16	7/8	2-1/4	.230
93545	R.078	**5/16**	5/16	3/8	1	2-1/2	.289
93546	R.094	**3/8**	3/8	7/16	1-1/4	3	.344
93596	R.109	**7/16**	7/16	1/2	1-1/2	3-1/4	.395
93547	R.125	**1/2**	1/2	1/2	1-1/2	3-1/4	.461

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~-.0012	0~-.0003



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○		○	○							

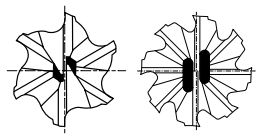
YG X-POWER END MILLS

EM208 SERIES PLAIN SHANK
EM218 SERIES PLAIN SHANK

CARBIDE, 6&8 FLUTE 45° HELIX LONG & EXTRA LONG LENGTH

- Designed to machine high hardened materials.
- High speed cutting and finish milling with high feed rate.
- Superior workpiece finishes.
- Superior wear resistant.
- Suitable for dry milling.
- Corner Protection against chipping.





MG | 6&8 | 45° | PLAIN

P.886, 887

◆ U.S.A Stock

EM208 Series ■ LONG LENGTH

Unit : Inch

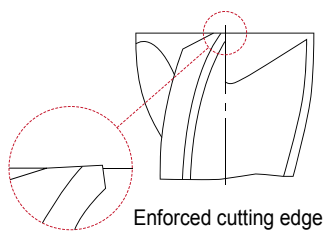
EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
93119	1/4	1/4	1/2	2-1/4	6
93120	5/16	5/16	3/4	2-1/2	6
93121	3/8	3/8	7/8	2-7/8	6
93122	1/2	1/2	1	3-1/4	6
93123	5/8	5/8	1-1/4	3-5/8	6
93124	3/4	3/4	1-1/2	4-1/8	8
93171	1	1	1-3/4	4-1/4	8

EM218 Series ■ EXTRA LONG LENGTH

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
99666	1/4	1/4	1	2-3/4	6
99667	5/16	5/16	1-1/2	3-5/8	6
99668	3/8	3/8	1-3/4	4	6
99669	1/2	1/2	2-3/16	4-3/8	6
99670	5/8	5/8	2-5/8	5-1/8	6
99588	3/4	3/4	2-1/4	5	8
99589	3/4	3/4	3-1/4	6	8
99590	3/4	3/4	4-1/8	7	8
99591	1	1	4-1/8	7	8

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~−.0012	0~−.0003



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

X-POWER END MILLS

EM668 SERIES PLAIN SHANK

CARBIDE, 6&8 FLUTE 45° HELIX LONG LENGTH CORNER RADIUS

- Designed to machine high hardened materials.
- High speed cutting and finish milling with high feed rates.
- Superior workpiece finishes.
- Superior wear resistant.
- Suitable for dry milling.



MG 6&8 45° PLAIN P.887

◆ U.S.A Stock

Unit : Inch

EDP No.	Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
93277	R.020	**1/4**	1/4	1/2	2-1/4	6
93278	R.020	**5/16**	5/16	3/4	2-1/2	6
93279	R.020	**3/8**	3/8	7/8	2-7/8	6
93280	R.030	**3/8**	3/8	7/8	2-7/8	6
93281	R.020	**1/2**	1/2	1	3-1/4	6
93282	R.030	**1/2**	1/2	1	3-1/4	6
93283	R.030	**5/8**	5/8	1-1/4	3-5/8	6
93284	R.060	**5/8**	5/8	1-1/4	3-5/8	6
93285	R.030	**3/4**	3/4	1-1/2	4-1/8	8
93286	R.060	**3/4**	3/4	1-1/2	4-1/8	8
93287	R.090	**3/4**	3/4	1-1/2	4-1/8	8

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~−.0012	0~−.0003

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

X-POWER END MILLS

EM209 SERIES PLAIN SHANK
EM210 SERIES PLAIN SHANK

CARBIDE, 2&4 FLUTE LONG LENGTH BALL NOSE

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- For copy-milling machines.



MG | 2&4 | 30° | R ±.001 | PLAIN

P.888, 889

◆ U.S.A Stock

EM209(2 FLUTE), EM210(4 FLUTE) Series

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
2 FLUTE	4 FLUTE	R (±.001)				
93260	-	R 1/64	**1/32**	1/4	1/32	2-1/2
93261	-	R 1/32	**1/16**	1/4	1/16	2-1/2
93262	-	R 3/64	**3/32**	1/4	3/32	2-1/2
93125	**93134**	R 1/16	**1/8**	1/8	5/16	2-3/8
93126	**93135**	R 3/32	**3/16**	3/16	3/8	3-1/8
93127	**93136**	R 1/8	**1/4**	1/4	1/2	3-1/2
93128	**93137**	R 5/32	**5/16**	5/16	9/16	4
93129	**93138**	R 3/16	**3/8**	3/8	3/4	4
93130	**93139**	R 1/4	**1/2**	1/2	7/8	4-1/4
93131	**93140**	R 5/16	**5/8**	5/8	1-1/4	5-1/2
93132	**93141**	R 3/8	**3/4**	3/4	1-1/2	6-1/4
93133	**93142**	R 1/2	**1**	1	2	7-1/8

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~−.0012	0~−.0003

◎ : Excellent ○ : Good

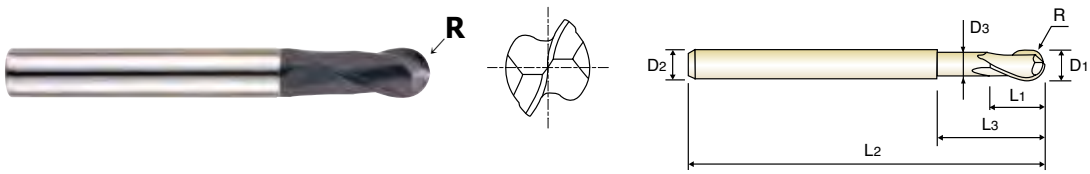
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

X-POWER END MILLS

EM961 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE MEDIUM LENGTH BALL NOSE

- Deep slotting milling is possible by reduced neck.
- High efficiency milling is possible in deep slotting with projection of the end mill being long.



MG | 2 | 30° | R ±.001 | PLAIN

P.890

◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.001)	D1	D2	L1	L3	L2	D3
93517	R1/16	**1/8**	1/4	5/16	-	2-3/4	-
93518	R3/32	**3/16**	1/4	1/2	-	3-1/8	-
93519	R1/8	**1/4**	1/4	1/2	7/8	3-1/8	.242
93520	R5/32	**5/16**	5/16	9/16	1-1/16	3-1/2	.305
93521	R3/16	**3/8**	3/8	3/4	1-1/4	4	.367
93522	R1/4	**1/2**	1/2	7/8	1-3/8	4-1/4	.492
93523	R5/16	**5/8**	5/8	1-1/4	2	5-1/2	.617
93524	R3/8	**3/4**	3/4	1-1/2	2-1/4	6-1/4	.742
93525	R1/2	**1**	1	2-1/8	3	7	.992

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~−.0012	0~−.0003

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

X-POWER END MILLS

EM962 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG REACH BALL NOSE

▶ Longer overall length than EM209, EM210, type and suitable for machining deeply located area.



MG | 2 | 30° | R ±.001 | PLAIN

P.891

◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose R (±.001)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
93578	R3/64	**3/32**	1/8	1/4	3-1/8
93579	R1/16	**1/8**	1/8	5/16	4
93580	R3/32	**3/16**	3/16	3/8	4-3/4
93581	R1/8	**1/4**	1/4	3/8	4-3/4
93582	R5/32	**5/16**	5/16	9/16	5-1/2
93583	R3/16	**3/8**	3/8	3/4	7
93584	R1/4	**1/2**	1/2	7/8	8
93585	R5/16	**5/8**	5/8	1-1/4	10
93586	R3/8	**3/4**	3/4	1-1/2	10

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~−.0012	0~−.0003

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

YG X-POWER END MILLS

EM960 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE MINIATURE BALL NOSE

- High precision milling in medical, optical, electronics and aerospace industrials.
- Excellent performance at dry cutting conditon.
- Excellent performance on high hardened steel up to HRc70.



MG | 2 | 30° | R ±.0005 | PLAIN

P.897

◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose R (±.0005)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
93507	R.012	**.024**	1/8	.043	1-1/2
93508	R.014	**.028**	1/8	.060	1-1/2
93509	R.0155	**.031**	1/8	.080	1-1/2
93510	R.0175	**.035**	1/8	.087	1-1/2
93511	R.020	**.040**	1/8	.100	1-1/2
93512	R.0215	**.043**	1/8	.118	1-1/2
93513	R.0235	**.047**	1/8	.118	1-1/2
93514	R.026	**.052**	1/8	.138	1-1/2
93515	R.0275	**.055**	1/8	.138	1-1/2
93516	R.031	**.062**	1/8	.157	1-1/2

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~−.0010	0~−.0003

◎ : Excellent ○ : Good

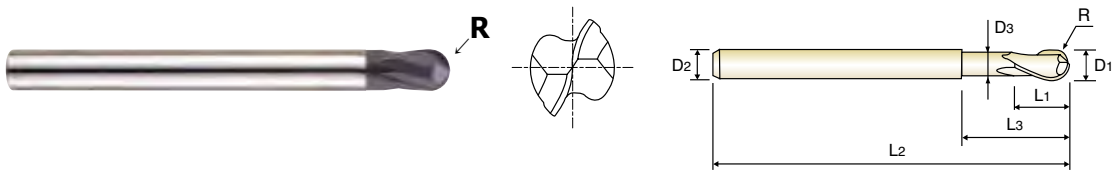
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

X-POWER END MILLS

EM109 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE 15° HELIX STUB CUT LENGTH BALL NOSE for OVER HRc55

- Suitable for HRc55~HRc70 high hardened materials.
- Strong cutting edges and higher tool rigidity.



MG | 2 | 15° | R ±.0005 | PLAIN

P.892

HRc55 ~ HRc70
◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.0005)	D1	D2	L1	L3	L2	D3
93485	R1/64	**1/32**	1/4	1/32	1/16	2	.029
93486	R1/32	**1/16**	1/4	1/16	1/8	2	.059
93487	R3/64	**3/32**	1/4	3/32	3/16	2	.090
93488	R1/16	**1/8**	1/4	1/8	1/4	2-1/2	.121
93489	R3/32	**3/16**	1/4	3/16	3/8	3	.184
93490	R1/8	**1/4**	1/4	1/4	1/2	3-1/2	.246
93491	R5/32	**5/16**	5/16	5/16	5/8	4	.309
93492	R3/16	**3/8**	3/8	3/8	3/4	4	.371
93493	R1/4	**1/2**	1/2	1/2	1	4-1/2	.496

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~−.0012	0~−.0003

◎ : Excellent ○ : Good

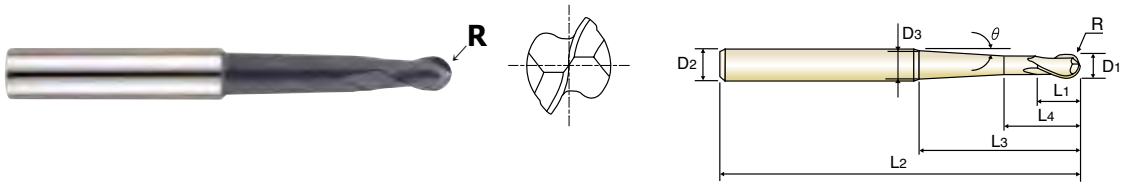
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
			○	◎	◎									

X-POWER END MILLS

EM963 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE with TAPER NECK

▶ High efficiency milling is possible in deep slotting with projection of the end mill being long.



MG | 2 | 30° | R ±.0005 | PLAIN

P.893

◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Under Neck Parallel Length	Length Below Shank	Overall Length	Neck Diameter	Neck Taper Angle
	R (±.0005)	D1	D2	L1	L4	L3	L2	D3	θ
93526	R1/32	**1/16**	1/4	5/32	15/64	7/8	2-3/8	.096	1° 30′
93527	R1/32	**1/16**	1/4	5/32	15/64	1-5/8	3-1/8	.208	3°
93528	R1/16	**1/8**	1/4	1/4	21/64	2-1/16	3-5/8	.216	1° 30′
93529	R3/32	**3/16**	3/8	3/8	29/64	2-3/8	4-3/8	.288	1° 30′
93530	R1/8	**1/4**	3/8	1/2	5/8	2-1/16	4-3/8	.325	1° 30′
93531	R5/32	**5/16**	1/2	9/16	11/16	2-1/16	4-3/4	.385	1° 30′
93532	R3/16	**3/8**	1/2	11/16	13/16	2-3/8	5-1/16	.458	1° 30′
93533	R1/4	**1/2**	3/4	7/8	1	3-1/4	6-3/8	.618	1° 30′

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~−.0012	0~−.0003

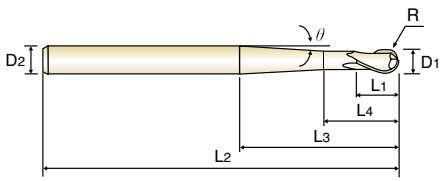
◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

CARBIDE, 2 FLUTE BALL NOSE with PENCIL NECK

▶ High efficiency milling is possible in deep slotting with projection of the end mill being long.





MG | 2 | 30° | R ±.0005 | PLAIN

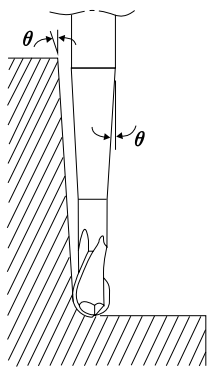
P.894

◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Under Neck Parallel Length	Length Below Shank	Overall Length	Neck Taper Angle
	R (±.0005)	D1	D2	L1	L4	L3	L2	θ
93534	R3/32	**3/16**	3/8	9/16	.659	3-11/32	7-3/4	2°
93535	R3/32	**3/16**	3/8	9/16	.666	2-13/16	6	2° 30′
93536	R1/8	**1/4**	1/2	3/4	.859	4-7/16	7-3/4	2°
93537	R1/8	**1/4**	1/2	3/4	.856	3-23/32	6	2° 30′
93538	R5/32	**5/16**	1/2	3/4	.868	4-29/32	7-3/4	1° 20′
93539	R5/32	**5/16**	1/2	3/4	.870	3-15/16	6	1° 45′
93540	R3/16	**3/8**	5/8	1-3/16	1.326	4-29/32	7-3/4	2°
93541	R3/16	**3/8**	5/8	1-3/16	1.325	4-3/16	6	2° 30′
93542	R1/4	**1/2**	5/8	1-3/16	1.309	4	7-3/4	1° 20′
93543	R1/4	**1/2**	5/8	1-3/16	1.329	3-3/8	6	1° 45′

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~−.0012	0~−.0003



MILLING ON TAPERED WALL

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

YG X-POWER END MILLS

X-POWER BALL NOSE END MILLS - MMC

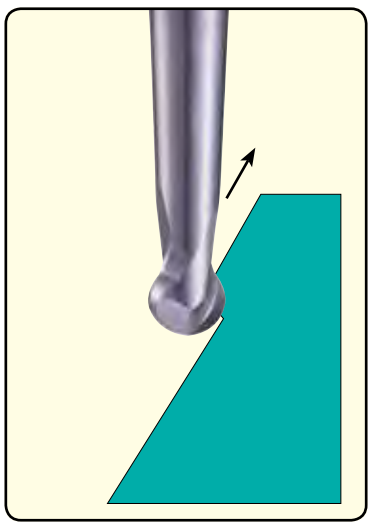
Useful Field Area

- Die & Mold making, Turbine manufacturing and Aircraft Industry, etc.
- Difficult 3-D Forms.
- Profiling of up to HRc 65 high hardened steels and Alloy steels, Nickelbase alloys, Titanium alloys.

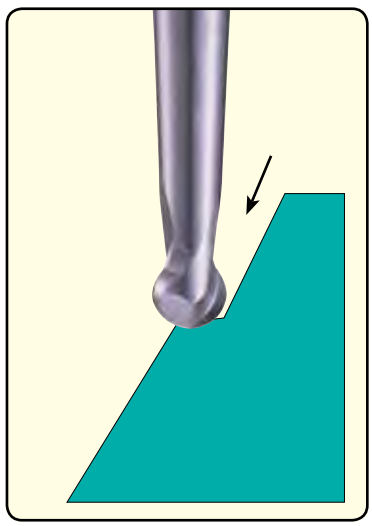
Characteristics

- Ultra micro grain carbide which increase both toughness and hardness.
- YG-1's unique X-POWER coating suitable for dry cutting and high speed cutting.
- Oustanding tool geometry and sphere shape ball enables more increased tool life and higher speed and feed operation.

Surpassing Milling Operation

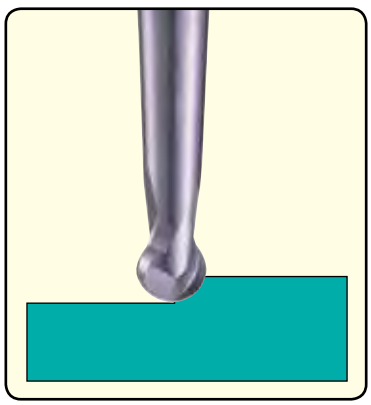


Favorable Back Milling

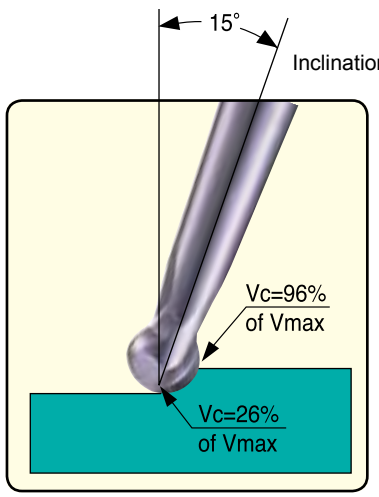


Unfavorable Drilling

- Operating angle 14° ~ 16°, higher speed and feed are possible by decreased cutting resistance at the cutting edges contacting the workpiece.
- Excellent surface finish and faster milling process.
- Enable to milling with higher speed and feed when Back Milling.



Unfavorable Profiling



Favorable Profiling

- When 15° inclination milling operation, more productivity and higher speed and feed are possible.
- Decreased cutting force.
- Excellent surface roughness and brightness.

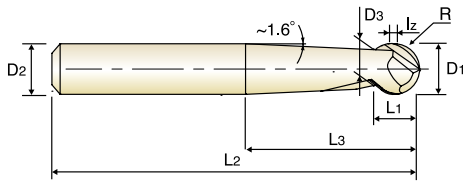
X-POWER END MILLS

EM084 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE (MMC-ECONOMY TYPE)

- Designed for copy milling.
- Increased feed rates.
- 15° inclination.
- Easy to regrind.





MG | 2 | 30° | R ±.0005 | PLAIN

P.895

◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Iz
	R (±.0005)	D1	D2	L1	L3	L2	D3	
93288	R1/16	**1/8**	1/4	5/32	1-1/4	3-1/4	.100	.060
93289	R3/32	**3/16**	1/4	7/32	1-1/4	3-1/4	.150	.080
93290	R1/8	**1/4**	1/4	9/32	1-1/4	4	.200	.080
93291	R5/32	**5/16**	5/16	3/8	1-1/2	4	.250	.120
93292	R3/16	**3/8**	3/8	13/32	1-3/4	4	.300	.120
93293	R1/4	**1/2**	1/2	17/32	2-1/4	4-1/4	.400	.120
93294	R5/16	**5/8**	5/8	5/8	2-3/4	6-1/4	.500	.120

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~−.0010	0~−.0003

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

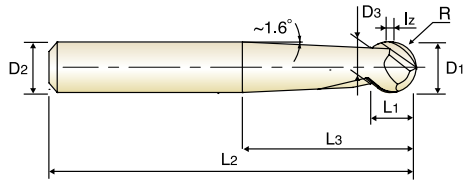
X-POWER END MILLS

EM093 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE (MMC-ECONOMY TYPE)

- Designed for copy milling.
- Increased feed rates.
- 15° inclination.
- Easy to regrind.





MG | 4 | 30° | R ±.0005 | PLAIN

P.896

◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Iz
	R (±.0005)	D1	D2	L1	L3	L2	D3	
93295	R1/16	**1/8**	1/4	5/32	1-1/4	3-1/4	.100	.060
93296	R3/32	**3/16**	1/4	7/32	1-1/4	3-1/4	.150	.080
93297	R1/8	**1/4**	1/4	9/32	1-1/4	4	.200	.080
93298	R5/32	**5/16**	5/16	3/8	1-1/2	4	.250	.120
93299	R3/16	**3/8**	3/8	13/32	1-3/4	4	.300	.120
93300	R1/4	**1/2**	1/2	17/32	2-1/4	4-1/4	.400	.120
93301	R5/16	**5/8**	5/8	5/8	2-3/4	6-1/4	.500	.120

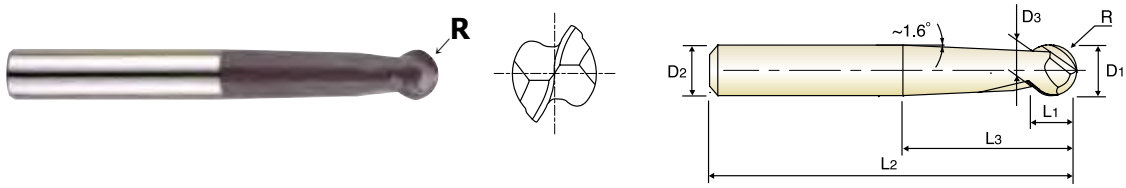
Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~−.0010	0~−.0003

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE (MMC-SPHERE TYPE)

- Designed for copy milling.
- Increased feed rates.
- 15° inclination.
- Sphere Angle : 250°



MG | 2 | 30° | R ±.0005 | PLAIN

P.895

◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.0005)	D1	D2	L1	L3	L2	D3
93410	R1/16	**1/8**	1/4	.100	1-1/4	3-1/4	.100
93411	R3/32	**3/16**	1/4	.150	1-1/4	3-1/4	.150
93412	R1/8	**1/4**	1/4	.200	1-1/8	4	.200
93413	R5/32	**5/16**	5/16	.250	1-3/8	4	.250
93414	R3/16	**3/8**	3/8	.300	1-5/8	4	.300
93415	R1/4	**1/2**	1/2	.400	2-3/16	4-1/4	.400
93416	R5/16	**5/8**	5/8	.500	2-3/4	6-1/4	.500

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~−.0010	0~−.0003

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

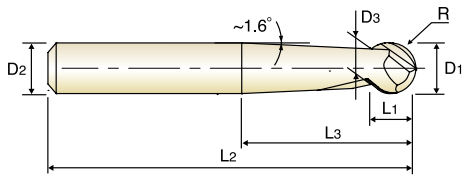
X-POWER END MILLS

EM097 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE (MMC-SPHERE TYPE)

- Designed for copy milling.
- Increased feed rates.
- 15° inclination.
- Sphere Angle : 250°





MG | 4 | 30° | R ±.0005 | PLAIN

P.896

◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.0005)	D_1	D_2	L_1	L_3	L_2	D_3
93417	R1/16	**1/8**	1/4	.100	1-1/4	3-1/4	.100
93418	R3/32	**3/16**	1/4	.150	1-1/4	3-1/4	.150
93419	R1/8	**1/4**	1/4	.200	1-1/8	4	.200
93420	R5/32	**5/16**	5/16	.250	1-3/8	4	.250
93421	R3/16	**3/8**	3/8	.300	1-5/8	4	.300
93422	R1/4	**1/2**	1/2	.400	2-3/16	4-1/4	.400
93423	R5/16	**5/8**	5/8	.500	2-3/4	6-1/4	.500

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~−.0010	0~−.0003

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

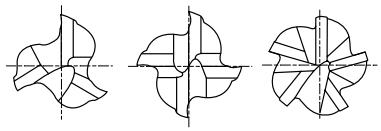
X-POWER END MILLS

EM666 SERIES PLAIN SHANK
EM156 SERIES PLAIN SHANK

CARBIDE, MULTI FLUTE 20° HELIX STUB & LONG LENGTH FINE PITCH ROUGHING

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- High velocity milling of hardened steels.
- For dry and wet milling.
- Fast chip ejection.





MG | FINE | 3-5 | 20° | PLAIN

P.897

◆ U.S.A Stock

EM666 Series ■ STUB LENGTH

Unit : Inch

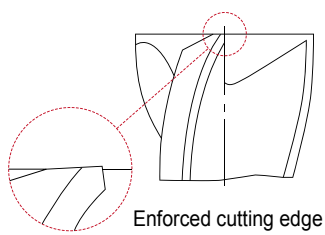
EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
93270	1/4	1/4	5/16	2-1/8	3
93271	5/16	5/16	3/8	2-1/4	3
93272	3/8	3/8	9/16	2-1/2	3
93273	1/2	1/2	5/8	3	4
93274	5/8	5/8	7/8	3-1/4	4
93275	3/4	3/4	1	3-3/4	4
93276	1	1	1	4	5

EM156 Series ■ LONG LENGTH

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
93112	1/4	1/4	3/4	2-1/2	3
93113	5/16	5/16	3/4	2-1/2	3
93114	3/8	3/8	7/8	2-1/2	3
93115	1/2	1/2	1	3	4
93116	5/8	5/8	1-1/4	3-1/2	4
93117	3/4	3/4	1-5/8	4	4
93118	1	1	1-3/4	4	5

Mill Dia. (inch)	Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
1/4~3/8	0 ~ −.0022	0 ~ −.0003
1/2~5/8	0 ~ −.0027	
3/4~1	0 ~ −.0033	



Enforced cutting edge

◎ : Excellent ○ : Good

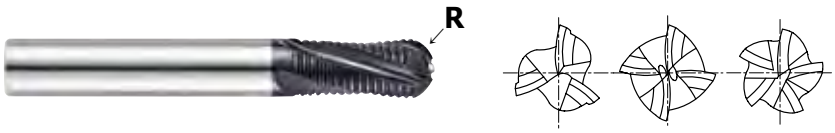
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○		○	○							

X-POWER END MILLS

EM662 SERIES PLAIN SHANK

CARBIDE, MULTI FLUTE 20° HELIX LONG LENGTH FINE PITCH ROUGHING BALL NOSE

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- High velocity milling of hardened steels.
- For dry and wet milling.
- Fast chip ejection.



MG | FINE | 3-5 | 20° | R ±.001 | PLAIN

P.898

◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose R (±.001)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
93263	R1/8	**1/4**	1/4	3/4	2-1/2	3
93264	R5/32	**5/16**	5/16	3/4	2-1/2	3
93265	R3/16	**3/8**	3/8	7/8	2-1/2	3
93266	R1/4	**1/2**	1/2	1	3	4
93267	R5/16	**5/8**	5/8	1-1/4	3-1/2	4
93268	R3/8	**3/4**	3/4	1-5/8	4	4
93269	R1/2	**1**	1	1-3/4	4	5

Mill Dia. (inch)	Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
1/4~3/8	0 ~ −.0022	0 ~ −.0003
1/2~5/8	0 ~ −.0027	
3/4~1	0 ~ −.0033	

◎ : Excellent ○ : Good

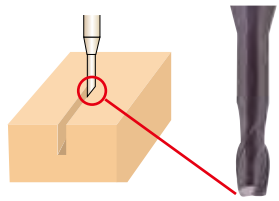
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

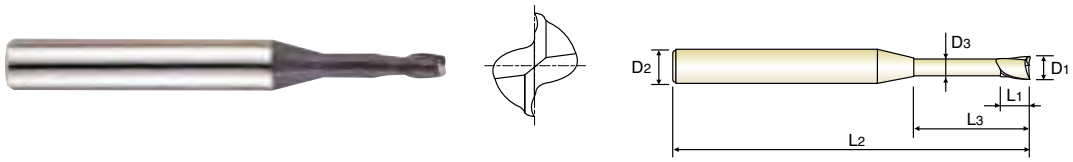
X-POWER END MILLS

EM966 SERIES

CARBIDE, 2 FLUTE for RIB PROCESSING

- For deep slotting & pocketing.
- For depths of 6 to 10X cutting diameter.
- Machine carbon steel, alloy steel, tool steel, die and mold steels.
- Suitable for high speed cutting and high precision machining.
- Designed with reinforced shank for higher stability and rigidity.
- Long neck design for deep machining near walls.





MG | 2 | 30° | PLAIN

P.898

◆ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D_1	D_2	L_1	L_3	L_2	D_3
93548	**1/32**	1/8	3/64	7/32	2	.029
93549	**1/32**	1/8	3/64	5/16	2	.029
93550	**3/64**	1/8	1/16	7/32	2	.045
93551	**3/64**	1/8	1/16	9/32	2	.045
93552	**3/64**	1/8	1/16	1/2	2	.045
93553	**1/16**	1/8	3/32	5/16	2	.060
93554	**1/16**	1/8	3/32	3/8	2	.060
93555	**1/16**	1/8	3/32	1/2	2	.060
93556	**1/16**	1/8	3/32	5/8	2	.060
93557	**5/64**	1/8	1/8	1/2	2	.076
93558	**5/64**	1/8	1/8	5/8	2	.076
93559	**3/32**	1/8	9/64	1/2	2	.090
93560	**3/32**	1/8	9/64	5/8	2	.090
93561	**1/8**	1/4	3/16	9/16	2-1/4	.120
93562	**1/8**	1/4	3/16	3/4	2-1/4	.120

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~−.0006	0~−.0003

◎ : Excellent ○ : Good

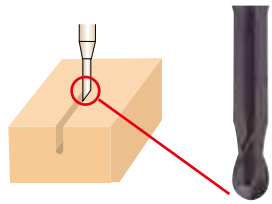
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

X-POWER END MILLS

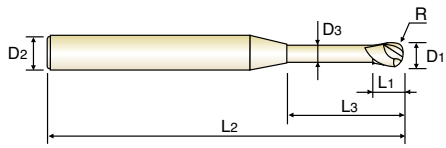
EM967 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING

- For 3-D milling, deep slotting and pocketing.
- For depths of 6 to 10X cutting diameter.
- Machine carbon steel, alloy steel, tool steel, die and mold steels.
- Suitable for high speed cutting and high precision machining.
- Designed with reinforced shank for higher stability and rigidity.
- Long neck design for deep machining near walls.







MG | 2 | 30° | R ±.0005 | PLAIN

P.899

◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.0005)	D1	D2	L1	L3	L2	D3
93563	R1/64	**1/32**	1/8	3/64	7/32	2	.029
93564	R1/64	**1/32**	1/8	3/64	5/16	2	.029
93565	R.0234	**3/64**	1/8	1/16	7/32	2	.045
93566	R.0234	**3/64**	1/8	1/16	9/32	2	.045
93567	R.0234	**3/64**	1/8	1/16	1/2	2	.045
93568	R1/32	**1/16**	1/8	3/32	5/16	2	.060
93569	R1/32	**1/16**	1/8	3/32	1/2	2	.060
93570	R1/32	**1/16**	1/8	3/32	5/8	2	.060
93571	R.0391	**5/64**	1/8	1/8	5/16	2	.076
93572	R.0391	**5/64**	1/8	1/8	5/8	2	.076
93573	R.0391	**5/64**	1/8	1/8	3/4	2	.076
93574	R3/64	**3/32**	1/8	9/64	5/8	2	.090
93575	R3/64	**3/32**	1/8	9/64	3/4	2	.090
93576	R1/16	**1/8**	1/4	3/16	5/8	2-1/4	.120
93577	R1/16	**1/8**	1/4	3/16	3/4	2-1/4	.120

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~−.0006	0~−.0003

◎ : Excellent ○ : Good

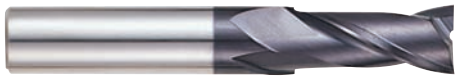
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

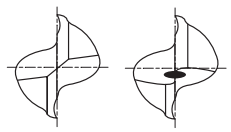
X-POWER END MILLS

EM810 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE SHORT LENGTH

- Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- Superior workpiece finishes.
- Increased feed rates.





up to Ø3mm over Ø3mm

MG 2 30° PLAIN P.880, 882

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
EM810901	1.0	.0394	6	2.5	40
EM810902	1.5	.0591	6	4	40
EM810020	2.0	.0787	4	6	40
EM810903	2.0	.0787	6	6	40
EM810025	2.5	.0984	4	8	40
EM810904	2.5	.0984	6	8	40
EM810030	3.0	.1181	6	8	45
EM810035	3.5	.1378	6	10	45
EM810040	4.0	.1575	6	11	45
EM810045	4.5	.1772	6	11	45
EM810050	5.0	.1969	6	13	50
EM810055	5.5	.2165	6	13	50
EM810060	6.0	.2362	6	13	50
EM810065	6.5	.2559	8	16	60
EM810070	7.0	.2756	8	16	60
EM810075	7.5	.2953	8	16	60
EM810080	8.0	.3150	8	19	60
EM810085	8.5	.3346	10	19	70
EM810090	9.0	.3543	10	19	70
EM810095	9.5	.3740	10	19	70
EM810100	10.0	.3937	10	22	70
EM810105	10.5	.4134	12	22	75
EM810110	11.0	.4330	12	22	75
EM810115	11.5	.4527	12	22	75
EM810120	12.0	.4724	12	26	75
EM810906	13.0	.5118	12	26	85
EM810140	14.0	.5512	14	26	85
EM810905	14.0	.5512	16	26	85
EM810908	15.0	.5905	16	26	90

◎ : Excellent ○ : Good

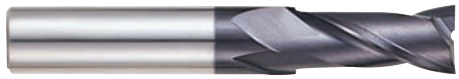
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○		○	○							

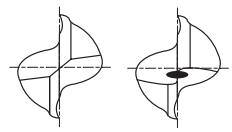
X-POWER END MILLS

EM810 SERIES PLAIN SHANK
EM816 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE SHORT& LONG LENGTH

- Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- Superior workpiece finishes.
- Increased feed rates.





up to Ø3mm over Ø3mm

MG | 2 | 30° | PLAIN

P.880

◇ Call for Availability

EM810 Series ■ SHORT LENGTH

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
EM810160	16.0	.6299	16	32	100
EM810909	17.0	.6692	16	32	100
EM810180	18.0	.7087	18	32	100
EM810911	19.0	.7480	20	32	100
EM810200	20.0	.7874	20	38	105
EM810220	22.0	.8661	20	38	105
EM810240	24.0	.9449	25	45	120
EM810250	25.0	.9843	25	45	120

EM816 Series ■ LONG LENGTH

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
EM816020	2.0	.0787	4	8	40
EM816030	3.0	.1181	6	12	50
EM816040	4.0	.1575	6	15	50
EM816050	5.0	.1969	6	20	60
EM816060	6.0	.2362	6	20	60
EM816080	8.0	.3150	8	25	70
EM816100	10.0	.3937	10	30	90
EM816120	12.0	.4724	12	30	90
EM816140	14.0	.5512	16	40	110
EM816160	16.0	.6299	16	50	110
EM816180	18.0	.7087	20	50	110
EM816200	20.0	.7874	20	55	110
EM816250	25.0	.9843	25	75	140

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

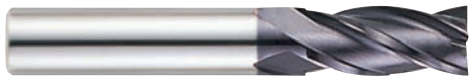
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○		○	○							

X-POWER END MILLS

EM811 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE SHORT LENGTH

- Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- 4 flute allows for better workpiece finishes.
- Increased production.





MG | 4 | 30° | PLAIN

P.881

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
EM811020	2.0	.0787	4	6	40
EM811901	2.0	.0787	6	6	40
EM811025	2.5	.0984	4	8	40
EM811902	2.5	.0984	6	8	40
EM811030	3.0	.1181	6	8	45
EM811035	3.5	.1378	6	10	45
EM811040	4.0	.1575	6	11	45
EM811045	4.5	.1772	6	11	45
EM811050	5.0	.1969	6	13	50
EM811055	5.5	.2165	6	13	50
EM811060	6.0	.2362	6	13	50
EM811065	6.5	.2559	8	16	60
EM811070	7.0	.2756	8	16	60
EM811075	7.5	.2953	8	16	60
EM811080	8.0	.3150	8	19	60
EM811085	8.5	.3346	10	19	70
EM811090	9.0	.3543	10	19	70
EM811095	9.5	.3740	10	19	70
EM811100	10.0	.3937	10	22	70
EM811105	10.5	.4134	12	22	75
EM811110	11.0	.4330	12	22	75
EM811115	11.5	.4527	12	22	75
EM811120	12.0	.4724	12	26	75
EM811904	13.0	.5118	12	26	85
EM811140	14.0	.5512	14	26	85
EM811905	14.0	.5512	12	26	85
EM811903	14.0	.5512	16	26	85
EM811906	15.0	.5905	16	26	90
EM811160	16.0	.6299	16	32	100

◎ : Excellent ○ : Good

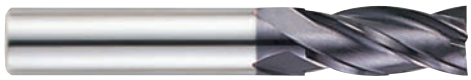
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○		○	○							

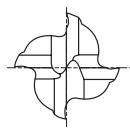
X-POWER END MILLS

EM811 SERIES PLAIN SHANK
EM817 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE SHORT& LONG LENGTH

- Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- 4 flute allows for better workpiece finishes.
- Increased production.





MG HM | 4 | 30° | PLAIN

P.881

◇ Call for Availability

EM811 Series ■ SHORT LENGTH

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
EM811907	17.0	.6692	16	32	100
EM811180	18.0	.7087	18	32	100
EM811908	18.0	.7087	16	32	100
EM811909	19.0	.7480	20	32	100
EM811200	20.0	.7874	20	38	105
EM811220	22.0	.8661	20	38	105
EM811240	24.0	.9449	25	45	120
EM811250	25.0	.9843	25	45	120

EM817 Series ■ LONG LENGTH

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
EM817020	2.0	.0787	4	8	40
EM817030	3.0	.1181	6	12	50
EM817040	4.0	.1575	6	15	50
EM817050	5.0	.1969	6	20	60
EM817060	6.0	.2362	6	20	60
EM817080	8.0	.3150	8	25	70
EM817100	10.0	.3937	10	30	90
EM817120	12.0	.4724	12	30	90
EM817140	14.0	.5512	16	40	110
EM817160	16.0	.6299	16	50	110
EM817180	18.0	.7087	20	50	110
EM817200	20.0	.7874	20	55	110
EM817250	25.0	.9843	25	75	140

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

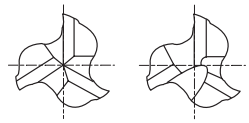
◎ : Excellent ○ : Good

Series	P					H	M	K	N					S	
	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
	~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
EM811	○	◎	◎	◎	○		○	○							
EM817	○	◎	◎	◎	○			○							

CARBIDE, 3 FLUTE 38˚ HELIX SHORT LENGTH

- 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.





under Ø3mm from Ø3mm

MG HM | 3 | 38˚ | PLAIN

P.900

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
EM895010	1.0	.0394	3	2.5	38
EM895015	1.5	.0591	4	5	50
EM895025	2.5	.0984	3	7	38
EM895030	3.0	.1181	3	10	38
EM895901	3.0	.1181	6	10	50
EM895035	3.5	.1378	4	12	50
EM895902	3.5	.1378	6	12	50
EM895040	4.0	.1575	4	12	50
EM895903	4.0	.1575	6	12	50
EM895045	4.5	.1772	6	14	57
EM895050	5.0	.1969	5	14	50
EM895904	5.0	.1969	6	14	57
EM895060	6.0	.2362	6	16	57
EM895080	8.0	.3150	8	20	63
EM895100	10.0	.3937	10	22	72
EM895120	12.0	.4724	12	25	73
EM895140	14.0	.5512	14	25	75
EM895160	16.0	.6299	16	32	82
EM895180	18.0	.7087	18	32	92
EM895200	20.0	.7874	20	38	92

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○		○	○							

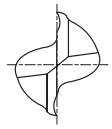
YG X-POWER END MILLS

EM810 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE MINIATURE

- High precision milling in medical, optical, electronics and aero space industries.
- Excellent performance on hardened steel





MG HM | 2 | 30° | PLAIN

P.882

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
EM810004	0.4	.0157	3	0.8	40
EM810005	0.5	.0197	3	1	40
EM810006	0.6	.0236	3	1.2	40
EM810007	0.7	.0276	3	1.4	40
EM810008	0.8	.0315	3	1.6	40
EM810009	0.9	.0354	3	2	40
EM810010	1.0	.0394	4	2.5	40
EM810011	1.1	.0433	4	2.5	40
EM810012	1.2	.0472	4	4	40
EM810013	1.3	.0512	4	4	40
EM810014	1.4	.0551	4	4	40
EM810015	1.5	.0591	4	4	40

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

YG X-POWER END MILLS

EM818 SERIES PLAIN SHANK
EM819 SERIES PLAIN SHANK

CARBIDE, 2&4 FLUTE LONG LENGTH CORNER RADIUS

- Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- Superior workpiece finishes.
- Increased feed rates.



MG HM | 2&4 | 30° | PLAIN

P.901

◇ Call for Availability

EM818(2 FLUTE), EM819(4 FLUTE) Series

Unit : mm

EDP No.		Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
2 FLUTE	4 FLUTE	R	Metric	Inch			
EM818030	EM819030	R0.3	3.0	.1181	6	12	50
EM818040	EM819040	R0.3	4.0	.1575	6	15	50
EM818911	EM819911	R0.5	4.0	.1575	6	15	50
EM818050	EM819050	R0.3	5.0	.1969	6	20	60
EM818912	EM819912	R0.5	5.0	.1969	6	20	60
EM818913	EM819913	R0.3	6.0	.2362	6	20	60
EM818060	EM819060	R0.5	6.0	.2362	6	20	60
EM818901	EM819901	R1.0	6.0	.2362	6	20	60
EM818914	EM819914	R0.3	8.0	.3150	8	25	70
EM818080	EM819080	R0.5	8.0	.3150	8	25	70
EM818902	EM819902	R1.0	8.0	.3150	8	25	70
EM818903	EM819903	R1.5	8.0	.3150	8	25	70
EM818904	EM819904	R2.0	8.0	.3150	8	25	70
EM818915	EM819915	R0.3	10.0	.3937	10	30	90
EM818100	EM819100	R0.5	10.0	.3937	10	30	90
EM818905	EM819905	R1.0	10.0	.3937	10	30	90
EM818906	EM819906	R1.5	10.0	.3937	10	30	90
EM818907	EM819907	R2.0	10.0	.3937	10	30	90
EM818120	EM819120	R0.5	12.0	.4724	12	30	90
EM818908	EM819908	R1.0	12.0	.4724	12	30	90
EM818909	EM819909	R1.5	12.0	.4724	12	30	90
EM818910	EM819910	R2.0	12.0	.4724	12	30	90
EM818160	EM819160	R0.5	16.0	.6299	16	50	110
EM818916	EM819916	R1.0	16.0	.6299	16	50	110
EM818917	EM819917	R1.5	16.0	.6299	16	50	110
EM818918	EM819918	R2.0	16.0	.6299	16	50	110
EM818200	EM819200	R0.5	20.0	.7874	20	55	110
EM818919	EM819919	R1.0	20.0	.7874	20	55	110
EM818920	EM819920	R1.5	20.0	.7874	20	55	110
EM818921	EM819921	R2.0	20.0	.7874	20	55	110

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

Series	P					H	M	K	N					S	
	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
	~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
EM811	○	◎	◎	◎	○										
EM817	○	◎	◎	◎	○		○	○							

X-POWER END MILLS

EM905 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE 45° HELIX SHORT LENGTH CORNER RADIUS

- 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



MG HM | 4 | 45° | PLAIN

P.884

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R	D_1		D_2	L_1	L_3	L_2	D_3
EM905100	R0.5	**10.0**	**.3937**	8	15	19.2	130	7.5
EM905901	R1.0	**10.0**	**.3937**	8	15	19.2	130	7.5
EM905120	R0.5	**12.0**	**.4724**	10	18	22.2	150	9.5
EM905902	R1.0	**12.0**	**.4724**	10	18	22.2	150	9.5
EM905140	R0.5	**14.0**	**.5512**	12	21	25.2	160	11.5
EM905903	R1.0	**14.0**	**.5512**	12	21	25.2	160	11.5
EM905180	R0.5	**18.0**	**.7087**	16	27	31.2	180	15.5
EM905904	R1.0	**18.0**	**.7087**	16	27	31.2	180	15.5
EM905220	R0.5	**22.0**	**.8661**	20	33	37.2	200	19.5
EM905905	R1.0	**22.0**	**.8661**	20	33	37.2	200	19.5

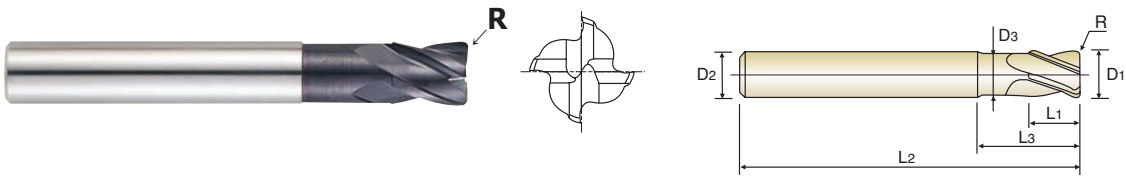
Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○	○	○							

CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS

- Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- Superior workpiece finishes.
- Increased feed rates.



MG HM | 4 | 30° | PLAIN

P.902

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R	D1		D2	L1	L3	L2	D3
EM839020	R0.2	2.0	.0787	6	2.5	5	50	1.9
EM839025	R0.25	2.5	.0984	6	3	6	50	2.4
EM839030	R0.3	3.0	.1181	6	4	7	50	2.8
EM839035	R0.35	3.5	.1378	6	4.5	8	50	3.2
EM839040	R0.4	4.0	.1575	6	5	9	50	3.7
EM839050	R0.5	5.0	.1969	6	6	12	50	4.6
EM839060	R0.6	6.0	.2362	6	7	14	55	5.6
EM839080	R0.8	8.0	.3150	8	10	18	60	7.4
EM839100	R1.0	10.0	.3937	10	12	25	70	9.4
EM839120	R1.2	12.0	.4724	12	15	30	80	11.4
EM839160	R1.6	16.0	.6299	16	18	35	90	15.4

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

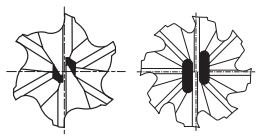
X-POWER END MILLS

EM812 SERIES PLAIN SHANK
EM834 SERIES PLAIN SHANK

CARBIDE, 6&8 FLUTE 45° HELIX LONG & EXTRA LONG LENGTH

- 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.





MG HM | 6&8 | 45° | PLAIN

P.886, 887

◇ Call for Availability

EM812 Series ■ LONG LENGTH

Unit : mm

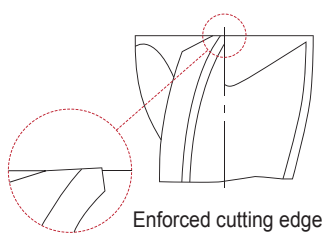
EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flute
	Metric	Inch				
EM812060	6.0	.2362	6	13	57	6
EM812070	7.0	.2756	8	16	63	6
EM812080	8.0	.3150	8	19	63	6
EM812090	9.0	.3543	10	19	72	6
EM812100	10.0	.3937	10	22	72	6
EM812120	12.0	.4724	12	26	83	6
EM812140	14.0	.5512	14	26	83	6
EM812901	14.0	.5512	16	26	83	6
EM812160	16.0	.6299	16	32	92	6
EM812180	18.0	.7087	18	32	92	8
EM812200	20.0	.7874	20	38	104	8
EM812250	25.0	.9843	25	44	104	8

EM834 Series ■ EXTRA LONG LENGTH

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flute
	Metric	Inch				
EM834060	6.0	.2362	6	26	70	6
EM834080	8.0	.3150	8	36	90	6
EM834100	10.0	.3937	10	46	100	6
EM834120	12.0	.4724	12	56	110	6
EM834160	16.0	.6299	16	66	130	6
EM834200	20.0	.7874	20	76	140	6
EM834250	25.0	.9843	25	92	180	6

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

X-POWER END MILLS

EM835 SERIES PLAIN SHANK

CARBIDE, 6 FLUTE 45° HELIX LONG LENGTH CORNER RADIUS

- 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.



MG HM | 6 | 45° | PLAIN

P.887

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter Metric	Mill Diameter Inch	Shank Diameter	Length of Cut	Overall Length
EM835060	R0.5	6.0	.2362	6	13	70
EM835080	R0.5	8.0	.3150	8	19	90
EM835100	R0.5	10.0	.3937	10	22	100
EM835901	R1.0	10.0	.3937	10	22	100
EM835120	R0.5	12.0	.4724	12	26	110
EM835902	R1.0	12.0	.4724	12	26	110
EM835160	R1.0	16.0	.6299	16	32	130
EM835903	R1.5	16.0	.6299	16	32	130
EM835200	R1.0	20.0	.7874	20	38	140
EM835904	R1.5	20.0	.7874	20	38	140
EM835905	R2.0	20.0	.7874	20	38	140

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

X-POWER END MILLS

EM897 SERIES PLAIN SHANK

CARBIDE, 6 FLUTE 45° HELIX STUB LENGTH CORNER RADIUS

- High speed cutting
- Excellent performance in dry cutting
- Cutting up to three times length of the cutting diameter due to reduced neck.



MG HM | 6 | 45° | PLAIN

P.902

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter Metric	Mill Diameter Inch	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R	D1		D2	L1	L3	L2	D3
EM897060	R0.5	6.0	.2362	6	6	14	50	5.7
EM897080	R0.5	8.0	.3150	8	8	24	60	7.65
EM897100	R1.0	10.0	.3937	10	10	30	70	9.65
EM897120	R1.0	12.0	.4724	12	12	30	75	11.6

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

X-POWER END MILLS

EM876 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE SHORT LENGTH BALL NOSE

- Economic type with short overall length.
- Radius tolerance ±0.02mm & short length of cut.



MG HM | 2 | 30° | R ±0.02 | PLAIN

P.888

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	R (±0.02)	Metric	Inch			
EM876010	R0.5	1.0	.0394	3	3	38
EM876012	R0.6	1.2	.0472	3	3	38
EM876015	R0.75	1.5	.0591	3	3	38
EM876020	R1.0	2.0	.0787	6	3	50
EM876030	R1.5	3.0	.1181	6	4	50
EM876040	R2.0	4.0	.1575	6	5	54
EM876050	R2.5	5.0	.1969	6	6	54
EM876060	R3.0	6.0	.2362	6	7	54
EM876070	R3.5	7.0	.2756	8	8	58
EM876080	R4.0	8.0	.3150	8	9	58
EM876090	R4.5	9.0	.3543	10	10	66
EM876100	R5.0	10.0	.3937	10	11	66
EM876120	R6.0	12.0	.4724	12	12	73
EM876140	R7.0	14.0	.5512	14	14	75
EM876160	R8.0	16.0	.6299	16	16	82
EM876180	R9.0	18.0	.7087	18	18	84
EM876200	R10.0	20.0	.7874	20	20	92
EM876250	R12.5	25.0	.9843	25	25	104

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

YG X-POWER END MILLS

EM813 / EM815 SERIES PLAIN SHANK
EM823 / EM825 SERIES FLAT SHANK

CARBIDE, 2&4 FLUTE LONG LENGTH BALL NOSE

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- For copy - milling machines.



MG HM | 2&4 | 30° | R ±0.02 | PLAIN | FLAT

P.888, 889

◇ Call for Availability

EM813, EM823(2 FLUTE), EM815, EM825(4 FLUTE) Series

Unit : mm

EDP No.				Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
2 FLUTE		4 FLUTE							
PLAIN	FLAT	PLAIN	FLAT	R (±0.02)	Metric	Inch			
93302	—	93335	—	R0.5	1.0	.0394	4	2.5	50
93303	—	—	—	R0.6	1.2	.0472	4	3	50
93304	—	93336	—	R0.75	1.5	.0591	4	4	50
93305	93320	93337	93352	R1.0	2.0	.0787	6	5	50
93306	93321	93338	93353	R1.5	3.0	.1181	6	8	60
93307	93322	93339	93354	R2.0	4.0	.1575	6	8	70
93308	93323	93340	93355	R2.5	5.0	.1969	6	10	80
93309	93324	93341	93356	R3.0	6.0	.2362	6	12	90
93310	93325	93342	93357	R3.5	7.0	.2756	8	14	90
93311	93326	93343	93358	R4.0	8.0	.3150	8	14	100
93312	93327	93344	93359	R4.5	9.0	.3543	10	18	100
93313	93328	93345	93360	R5.0	10.0	.3937	10	18	100
93314	93329	93346	93361	R6.0	12.0	.4724	12	22	110
93315	93330	93347	93362	R7.0	14.0	.5512	14	26	110
93316	93331	93348	93363	R8.0	16.0	.6299	16	30	140
93317	93332	93349	93364	R9.0	18.0	.7087	18	34	140
93318	93333	93350	93365	R10.0	20.0	.7874	20	38	160
93319	93334	93351	93366	R12.5	25.0	.9843	25	50	180

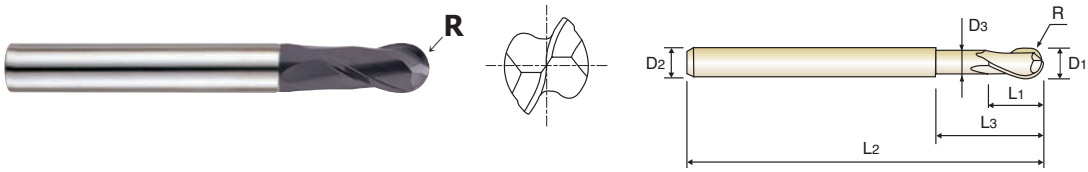
Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

CARBIDE, 2 FLUTE MEDIUM LENGTH BALL NOSE

- Deep slotting milling is possible by reduced neck.
- High efficiency milling is possible in deep slotting with projection of the end mill being long.



MG HM | 2 | 30° | R ±0.01 | PLAIN

P.890

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.01)	D1		D2	L1	L3	L2	D3
EM899030	R1.5	3.0	.1181	6	8	—	70	—
EM899040	R2.0	4.0	.1575	6	8	—	70	—
EM899050	R2.5	5.0	.1969	6	12	—	80	—
EM899060	R3.0	6.0	.2362	6	12	22	80	5.8
EM899070	R3.5	7.0	.2756	8	14	—	90	—
EM899080	R4.0	8.0	.3150	8	14	27	90	7.8
EM899100	R5.0	10.0	.3937	10	18	31	100	9.8
EM899120	R6.0	12.0	.4724	12	22	35	110	11.8
EM899140	R7.0	14.0	.5512	12	26	—	120	—
EM899160	R8.0	16.0	.6299	16	30	50	140	15.8
EM899180	R9.0	18.0	.7087	16	34	—	140	—
EM899200	R10.0	20.0	.7874	20	38	58	160	19.8
EM899250	R12.5	25.0	.9843	25	55	75	180	24.8

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

X-POWER END MILLS

EM838 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG REACH BALL NOSE

▶ Longer overall length than EM813 types and suitable for machining deeply located area.



MG HM | 2 | 30° | R ±0.02 | PLAIN

P.891

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	R (±0.02)	Metric	Inch			
EM838020	R1.0	2.0	.0787	3	6	80
EM838030	R1.5	3.0	.1181	3	8	100
EM838040	R2.0	4.0	.1575	4	8	100
EM838050	R2.5	5.0	.1969	6	10	120
EM838060	R3.0	6.0	.2362	6	10	120
EM838080	R4.0	8.0	.3150	8	14	140
EM838100	R5.0	10.0	.3937	10	18	180
EM838120	R6.0	12.0	.4724	12	22	200
EM838160	R8.0	16.0	.6299	16	30	250
EM838200	R10.0	20.0	.7874	20	38	250

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

CARBIDE, 2 FLUTE MINIATURE BALL NOSE

- High precision milling in medical, optical, electronics and aerospace industrials.
- Excellent performance at dry cutting conditon.
- Excellent performance on hardened steel.



MG HM | 2 | 30° | R ±0.01 | PLAIN

P.897

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter Metric	Mill Diameter Inch	Shank Diameter	Length of Cut	Overall Length
93424	R0.30	0.6	.0236	3	1.1	40
93425	R0.35	0.7	.0276	3	1.5	40
93426	R0.40	0.8	.0315	3	2.0	40
93427	R0.45	0.9	.0354	3	2.2	40
93428	R0.50	1.0	.0394	3	2.5	40
93429	R0.55	1.1	.0433	3	3.0	40
93430	R0.60	1.2	.0472	3	3.0	40
93431	R0.65	1.3	.0512	3	3.5	40
93432	R0.70	1.4	.0551	3	3.5	40
93433	R0.75	1.5	.0591	3	4.0	40

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

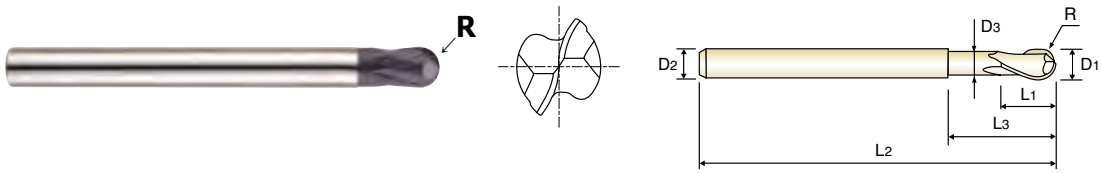
YG X-POWER END MILLS

EM868 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE 15° HELIX STUB CUT LENGTH BALL NOSE for OVER HRc55

HRc55 ~ HRc70

- Suitable for HRc55~HRc70 high hardened materials.
- Strong cutting edges and higher tool rigidity.



MG HM | 2 | 15° | R ±0.01 | PLAIN

P.892

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.01)	D1		D2	L1	L3	L2	D3
EM868010	R0.5	**1.0**	**.0394**	4	1	2.2	50	0.95
EM868901	R0.5	**1.0**	**.0394**	6	1	2.2	50	0.95
EM868012	R0.6	**1.2**	**.0472**	4	1.2	2.6	50	1.1
EM868015	R0.75	**1.5**	**.0591**	4	1.5	3	50	1.4
EM868020	R1.0	**2.0**	**.0787**	6	2	4	50	1.9
EM868030	R1.5	**3.0**	**.1181**	6	3	6	60	2.9
EM868040	R2.0	**4.0**	**.1575**	6	4	8	70	3.9
EM868050	R2.5	**5.0**	**.1969**	6	5	10	80	4.9
EM868060	R3.0	**6.0**	**.2362**	6	6	12	90	5.9
EM868070	R3.5	**7.0**	**.2756**	8	7	14	90	6.9
EM868080	R4.0	**8.0**	**.3150**	8	8	16	100	7.9
EM868090	R4.5	**9.0**	**.3543**	10	9	18	100	8.9
EM868100	R5.0	**10.0**	**.3937**	10	10	20	100	9.9
EM868120	R6.0	**12.0**	**.4724**	12	12	24	110	11.9
EM868140	R7.0	**14.0**	**.5512**	14	14	28	110	13.8
EM868160	R8.0	**16.0**	**.6299**	16	16	32	140	15.8
EM868180	R9.0	**18.0**	**.7087**	18	18	36	140	17.8
EM868200	R10.0	**20.0**	**.7874**	20	20	40	160	19.8
EM868250	R12.5	**25.0**	**.9843**	25	25	50	180	24.8

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

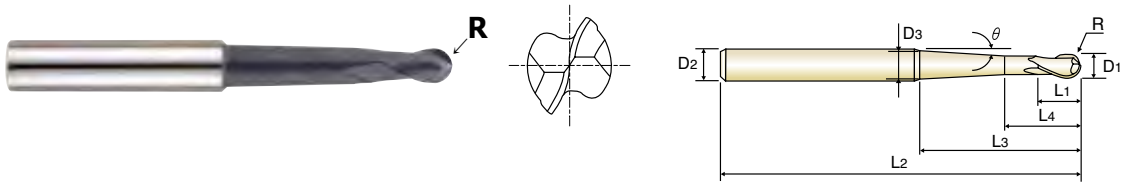
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
			○	◎	◎									

YG X-POWER END MILLS

EM902 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE with TAPER NECK

▶ High efficiency milling is possible in deep slotting with projection of the end mill being long.



MG HM | 2 | 30° | R ±0.01 | PLAIN

P.893

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter Metric	Mill Diameter Inch	Shank Diameter	Length of Cut	Under Neck Parallel Length	Length Below Shank	Overall Length	Neck Diameter	Neck Taper Angle
	R (±0.01)	D1		D2	L1	L4	L3	L2	D3	θ
EM902010	R0.5	1.0	.0394	6	2	4	23	60	2.0	1° 30′
EM902901	R0.5	1.0	.0394	6	2	4	23	60	4.3	5°
EM902902	R0.5	1.0	.0394	6	2	4	42	80	5.0	3°
EM902020	R1.0	2.0	.0787	6	4	6	23	60	2.9	1° 30′
EM902903	R1.0	2.0	.0787	6	4	6	23	60	5.0	5°
EM902904	R1.0	2.0	.0787	6	4	6	41	80	5.7	3°
EM902030	R1.5	3.0	.1181	6	6	8	32	70	5.6	3°
EM902905	R1.5	3.0	.1181	6	6	8	52	90	5.3	1° 30′
EM902040	R2.0	4.0	.1575	6	8	10	28	70	6.0	3°
EM902906	R2.0	4.0	.1575	6	8	10	49	90	6.0	1° 30′
EM902050	R2.5	5.0	.1969	8	10	12	41	90	8.0	3°
EM902907	R2.5	5.0	.1969	8	10	12	61	110	7.6	1° 30′
EM902060	R3.0	6.0	.2362	8	12	15	34	90	8.0	3°
EM902908	R3.0	6.0	.2362	8	12	15	53	110	8.0	1° 30′
EM902080	R4.0	8.0	.3150	10	14	17	36	100	10.0	3°
EM902909	R4.0	8.0	.3150	10	14	17	55	120	10.0	1° 30′
EM902100	R5.0	10.0	.3937	12	18	21	40	110	12.0	3°
EM902910	R5.0	10.0	.3937	12	18	21	59	130	12.0	1° 30′
EM902120	R6.0	12.0	.4724	16	22	25	63	140	16.0	3°
EM902911	R6.0	12.0	.4724	16	22	25	83	160	15.0	1° 30′

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○										

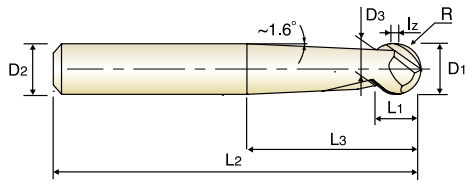
X-POWER END MILLS

EM669 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE (MMC-ECONOMY TYPE)

- Designed for copy milling.
- Increased feed rates.
- 15° inclination.
- Easy to regrind.





MG HM | 2 | 30° | R ±0.01 | PLAIN

P.895

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Iz
		Metric	Inch						
	R (±0.01)	D1		D2	L1	L3	L2	D3	
EM669030	R1.5	3.0	.1181	6	4	30	80	2.5	1.5
EM669040	R2.0	4.0	.1575	6	5	30	80	3.3	1.5
EM669050	R2.5	5.0	.1969	6	6	43	80	4.1	2.0
EM669060	R3.0	6.0	.2362	6	7	30	100	4.7	2.0
EM669080	R4.0	8.0	.3150	8	9	36	100	6.5	3.0
EM669100	R5.0	10.0	.3937	10	11	43	100	8.2	3.0
EM669120	R6.0	12.0	.4724	12	13	52	100	9.8	3.0
EM669160	R8.0	16.0	.6299	16	15	61	150	13.4	3.0

※ ECONOMIC TYPE HAS MORE ADVANTAGE IN RESHARPENING THAN SPHERE TYPE.

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

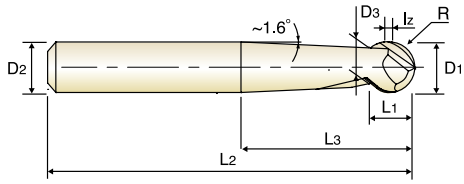
◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE (MMC-ECONOMY TYPE)

- Designed for copy milling.
- Increased feed rates.
- 15° inclination.
- Easy to regrind.





MG HM | 4 | 30° | R ±0.01 | PLAIN

P.896

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	lz
		Metric	Inch						
	R (±0.01)	D1		D2	L1	L3	L2	D3	
EM673050	R2.5	5.0	.1969	6	6	43	80	4.1	2.0
EM673060	R3.0	6.0	.2362	6	7	30	100	4.7	2.0
EM673080	R4.0	8.0	.3150	8	9	36	100	6.5	3.0
EM673100	R5.0	10.0	.3937	10	11	43	100	8.2	3.0
EM673120	R6.0	12.0	.4724	12	13	52	100	9.8	3.0
EM673160	R8.0	16.0	.6299	16	15	61	150	13.4	3.0

※ ECONOMIC TYPE HAS MORE ADVANTAGE IN RESHARPENING THAN SPHERE TYPE.

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

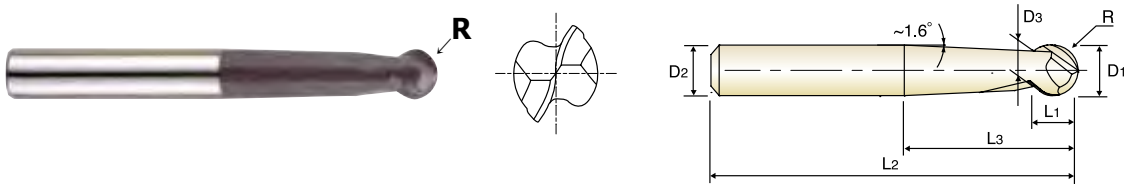
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

X-POWER END MILLS

EM863 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE (MMC-SPHERE TYPE)

- Designed for copy milling.
- Increased feed rates.
- 15° inclination.
- Sphere Angle : 250°



MG HM | 2 | 30° | R ±0.01 | PLAIN

P.895

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.01)	D1		D2	L1	L3	L2	D3
EM863030	R1.5	**3.0**	**.1181**	6	2.3	30	80	2.5
EM863040	R2.0	**4.0**	**.1575**	6	3.1	30	80	3.3
EM863050	R2.5	**5.0**	**.1969**	6	3.9	38	80	4.1
EM863060	R3.0	**6.0**	**.2362**	6	4.9	28	100	4.7
EM863080	R4.0	**8.0**	**.3150**	8	6.3	33	100	6.5
EM863100	R5.0	**10.0**	**.3937**	10	7.9	40	100	8.2
EM863120	R6.0	**12.0**	**.4724**	12	9.5	49	100	9.8
EM863160	R8.0	**16.0**	**.6299**	16	12.4	59	150	13.4

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

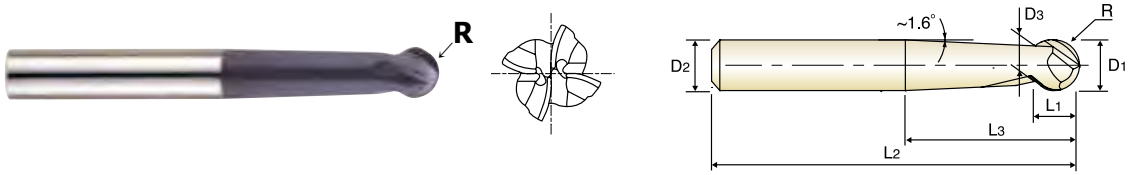
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

X-POWER END MILLS

EM864 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE (MMC-SPHERE TYPE)

- Designed for copy milling.
- Increased feed rates.
- 15° inclination.
- Sphere Angle : 250°



MG HM | 4 | 30° | R ±0.01 | PLAIN

P.896

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.01)	D1		D2	L1	L3	L2	D3
EM864050	R2.5	**5.0**	**.1969**	6	3.9	38	80	4.1
EM864060	R3.0	**6.0**	**.2362**	6	4.9	28	100	4.7
EM864080	R4.0	**8.0**	**.3150**	8	6.3	33	100	6.5
EM864100	R5.0	**10.0**	**.3937**	10	7.9	40	100	8.2
EM864120	R6.0	**12.0**	**.4724**	12	9.5	49	100	9.8
EM864160	R8.0	**16.0**	**.6299**	16	12.4	59	150	13.4

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○	○		○							

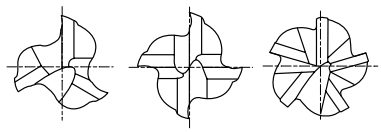
X-POWER END MILLS

EM832 SERIES PLAIN SHANK

CARBIDE, MULTI FLUTE 20° HELIX SHORT LENGTH FINE PITCH ROUGHING

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- High velocity milling of hardened steels.
- For dry and wet milling.
- Fast chip ejection.





MG HM | FINE | 3-5 | 20° | PLAIN

P.897

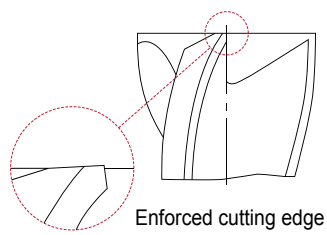
◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flute
	Metric	Inch				
	h10		h6			
EM832060	6.0	.2362	6	7	54	3
EM832070	7.0	.2756	8	8	58	3
EM832080	8.0	.3150	8	9	58	3
EM832090	9.0	.3543	10	13	66	4
EM832100	10.0	.3937	10	14	66	4
EM832120	12.0	.4724	12	16	73	4
EM832140	14.0	.5512	14	18	75	4
EM832160	16.0	.6299	16	22	82	4
EM832180	18.0	.7087	18	24	84	4
EM832200	20.0	.7874	20	26	92	4
EM832250	25.0	.9843	25	25	110	5

Tolerances according to DIN 7160 & 7161

Tolerance range in μm					
Nominal-Diameter in mm					
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
h10	0 / — 40	0 / — 48	0 / — 58	0 / — 70	0 / — 84
h6	0 / — 6	0 / — 8	0 / — 9	0 / — 11	0 / — 13



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○		○	○							

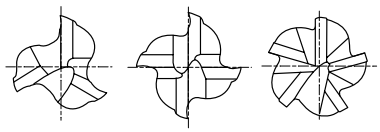
X-POWER END MILLS

EM814 SERIES PLAIN SHANK

CARBIDE, MULTI FLUTE 20° HELIX LONG LENGTH FINE PITCH ROUGHING

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- High velocity milling of hardened steels.
- For dry and wet milling.
- Fast chip ejection.





MG HM | FINE | 3-5 | 20° | PLAIN

P.897

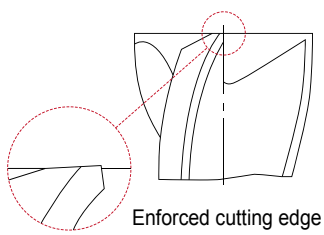
◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter Metric h10	Mill Diameter Inch h10	Shank Diameter h6	Length of Cut	Overall Length	No. of Flute
EM814060	6.0	.2362	6	16	57	3
EM814070	7.0	.2756	8	16	63	3
EM814080	8.0	.3150	8	16	63	3
EM814090	9.0	.3543	10	19	72	4
EM814100	10.0	.3937	10	22	72	4
EM814120	12.0	.4724	12	26	83	4
EM814140	14.0	.5512	14	26	83	4
EM814901	14.0	.5512	16	26	83	4
EM814160	16.0	.6299	16	32	92	4
EM814180	18.0	.7087	18	32	92	4
EM814200	20.0	.7874	20	38	104	4
EM814250	25.0	.9843	25	45	121	5

Tolerances according to DIN 7160 & 7161

Tolerance range in μm					
Nominal-Diameter in mm					
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
h10	0 / — 40	0 / — 48	0 / — 58	0 / — 70	0 / — 84
h6	0 / — 6	0 / — 8	0 / — 9	0 / — 11	0 / — 13



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○		○	○							

X-POWER END MILLS

EM833 SERIES PLAIN SHANK

CARBIDE, 3&4 FLUTE 20° HELIX LONG LENGTH FINE PITCH ROUGHING BALL NOSE

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- High velocity milling of hardened steels.
- For dry and wet milling.
- Fast chip ejection.



MG HM | FINE | 3&4 | 20° | R ±0.02 | PLAIN

P.898

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flute
		Metric	Inch				
	R (±0.02)	h10		h6			
EM833060	R3.0	6.0	.2362	6	16	57	3
EM833080	R4.0	8.0	.3150	8	16	63	3
EM833100	R5.0	10.0	.3937	10	22	72	4
EM833120	R6.0	12.0	.4724	12	26	83	4
EM833140	R7.0	14.0	.5512	14	26	83	4
EM833160	R8.0	16.0	.6299	16	32	92	4
EM833180	R9.0	18.0	.7087	18	32	92	4
EM833200	R10.0	20.0	.7874	20	38	104	4

Tolerances according to DIN 7160 & 7161

Tolerance range in μm					
Nominal-Diameter in mm					
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 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

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○		○	○							

X-POWER END MILLS

EM837 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE TAPER

- Designed for milling die cavity.
- Suitable for machining tool steels, alloy steels, mold steels and other hardened materials.



MG HM | 2 | 30° | PLAIN

P.899

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	Taper Angle
	Metric	Inch				
EM837913	2.0	.0787	4	6	45	30′
EM837020	2.0	.0787	4	6	45	1°
EM837901	2.0	.0787	4	6	45	2°
EM837902	2.0	.0787	4	6	45	3°
EM837914	3.0	.1181	6	10	55	30′
EM837030	3.0	.1181	6	10	55	1°
EM837903	3.0	.1181	6	10	55	2°
EM837904	3.0	.1181	6	10	55	3°
EM837915	4.0	.1575	6	15	55	30′
EM837040	4.0	.1575	6	15	55	1°
EM837905	4.0	.1575	6	15	55	2°
EM837906	4.0	.1575	6	15	55	3°
EM837916	5.0	.1969	6	15	60	30′
EM837050	5.0	.1969	6	15	60	1°
EM837907	5.0	.1969	6	15	60	2°
EM837908	5.0	.1969	6	15	60	3°
EM837917	6.0	.2362	6	20	60	30′
EM837060	6.0	.2362	6	20	60	1°
EM837909	6.0	.2362	6	20	60	2°
EM837910	6.0	.2362	8	20	65	3°
EM837918	8.0	.3150	8	25	70	30′
EM837080	8.0	.3150	8	25	70	1°
EM837911	8.0	.3150	8	25	70	2°
EM837912	8.0	.3150	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

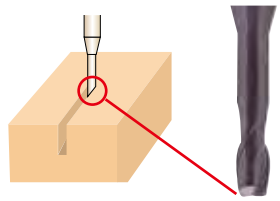
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

YG X-POWER END MILLS

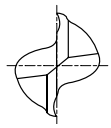
EM883 SERIES PLAIN SHANK

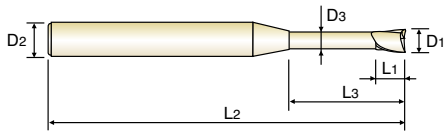
CARBIDE, 2 FLUTE for RIB PROCESSING

- For deep slotting & pocketing.
- For depths of 6 to 10X cutting diameter.
- Machine carbon steel, alloy steel, tool steel, die and mold steels.
- Suitable for high speed cutting and high precision machining.
- Designed with reinforced shank for higher stability and rigidity.
- Long neck design for deep machining near walls.









MG HM | 2 | 30° | PLAIN

P.898

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter Metric D1	Mill Diameter Inch D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
EM883908	0.8	.0315	4	1.2	6	45	0.75
EM883909	0.8	.0315	4	1.2	8	45	0.75
EM883010	1.0	.0394	4	1.5	6	45	0.97
EM883912	1.0	.0394	4	1.5	8	45	0.95
EM883914	1.0	.0394	4	1.5	12	45	0.93
EM883915	1.2	.0472	4	1.8	8	45	1.15
EM883917	1.2	.0472	4	1.8	12	45	1.13
EM883920	1.4	.0551	4	2.1	12	45	1.33
EM883923	1.5	.0591	4	2.3	8	45	1.45
EM883924	1.5	.0591	4	2.3	10	45	1.45
EM883925	1.5	.0591	4	2.3	12	45	1.43
EM883927	1.5	.0591	4	2.3	16	50	1.41
EM883932	1.6	.0630	4	2.4	12	45	1.53
EM883946	1.8	.0709	4	2.7	12	45	1.73
EM883960	2.0	.0787	4	3.0	12	45	1.93
EM883962	2.0	.0787	4	3.0	16	50	1.91
EM883968	2.5	.0984	4	3.7	12	45	2.40
EM883970	2.5	.0984	4	3.7	16	55	2.40
EM883977	3.0	.1181	6	4.5	14	50	2.85
EM883979	3.0	.1181	6	4.5	18	55	2.85

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.015	h6

◎ : Excellent ○ : Good

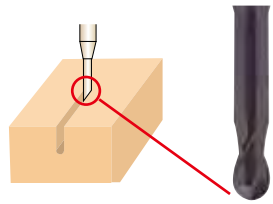
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

X-POWER END MILLS

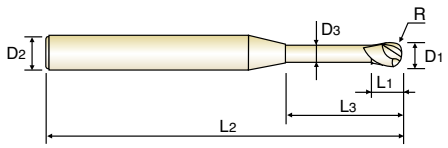
EM886 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING

- For 3-D milling, deep slotting and pocketing.
- For depths of 6 to 10X cutting diameter.
- Machine carbon steel, alloy steel, tool steel, die and mold steels.
- Suitable for high speed cutting and high precision machining.
- Designed with reinforced shank for higher stability and rigidity.
- Long neck design for deep machining near walls.







MG HM | 2 | 30° | R ±0.01 | PLAIN

P.899

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter Metric	Mill Diameter Inch	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±0.01)	D1		D2	L1	L3	L2	D3
EM886006	R0.3	0.6	.0236	3	0.9	6	35	0.55
EM886008	R0.4	0.8	.0315	4	1.2	6	45	0.75
EM886901	R0.4	0.8	.0315	4	1.2	8	45	0.75
EM886010	R0.5	1.0	.0394	4	1.5	6	45	0.97
EM886902	R0.5	1.0	.0394	4	1.5	8	45	0.95
EM886904	R0.5	1.0	.0394	4	1.5	12	45	0.93
EM886012	R0.6	1.2	.0472	4	1.8	8	45	1.15
EM886905	R0.6	1.2	.0472	4	1.8	12	45	1.13
EM886014	R0.7	1.4	.0551	4	2.1	12	45	1.33
EM886015	R0.75	1.5	.0591	4	2.3	8	45	1.45
EM886906	R0.75	1.5	.0591	4	2.3	12	45	1.43
EM886907	R0.75	1.5	.0591	4	2.3	16	50	1.41
EM886016	R0.8	1.6	.0630	4	2.4	16	50	1.51
EM886018	R0.9	1.8	.0709	4	2.7	16	50	1.71
EM886020	R1.0	2.0	.0787	4	3.0	8	45	1.95
EM886909	R1.0	2.0	.0787	4	3.0	16	50	1.91
EM886910	R1.0	2.0	.0787	4	3.0	20	55	1.89
EM886030	R1.5	3.0	.1181	6	4.5	16	55	2.85
EM886911	R1.5	3.0	.1181	6	4.5	20	60	2.85
EM886040	R2.0	4.0	.1575	6	6.0	16	60	3.85
EM886912	R2.0	4.0	.1575	6	6.0	20	65	3.85

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.02	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	◎	○			○							

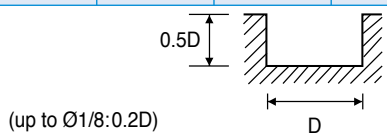
X-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS

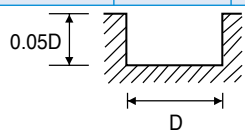
CARBIDE, 2 FLUTE FINISH - SLOTTING

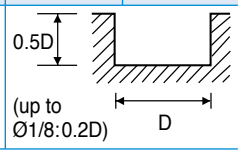
EM154, EM810 SERIES

MATERIAL	P								M	
	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		HARDENED STEELS		HARDENED STEELS		STAINLESS STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc65			
STRENGTH	~ 1000N/mm^2		1000 ~ 1500N/mm^2		1500 ~ 2000N/mm^2		2000N/mm^2 ~			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/16	11560	7.5	7560	4.7	5040	1.4			6300	3.6
1/8	8920	8.3	5560	5.5	3360	1.6	1900	1.6	4620	4.7
3/16	6300	12.6	3780	7.5	2320	2.0	1260	1.6	3160	6.3
1/4	5560	13.8	3360	8.7	2000	2.2	1100	1.6	2840	7.1
5/16	4200	15.0	2520	7.9	1680	3.0	840	1.6	2100	7.1
3/8	3260	13.0	2000	6.3	1360	2.4	680	1.4	1680	6.3
1/2	2740	11.0	1680	5.1	1160	2.2	560	1.4	1360	5.1
5/8	2200	8.7	1360	4.3	900	1.6	440	0.8	1060	4.3
3/4	1680	6.7	1060	3.2	680	1.2	320	0.8	840	3.2
1	1360	5.1	840	2.8	540	0.8	260	0.6	680	2.4



(up to Ø1/8:0.2D)





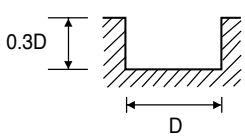
(up to Ø1/8:0.2D)

RPM = rev./min.
FEED = inch/min.

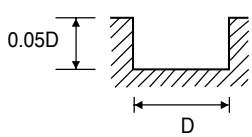
CARBIDE, 2 FLUTE LONG LENGTH FINISH - SLOTTING

EM206, EM816 SERIES

Material	P					
	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		HARDENED STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc45		HRc45 ~ HRc55	
STRENGTH	~ 1000N/mm^2		1000 ~ 1500N/mm^2		1500 ~ 2000N/mm	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
1/8	4410	2.8	3570	2.4	2200	1.2
3/16	3050	4.1	2420	3.3	1580	1.6
1/4	2630	4.9	2100	4.1	1370	2.0
5/16	2000	5.3	1580	4.1	1050	2.0
3/8	1680	5.3	1370	4.1	840	2.0
1/2	1370	4.1	1160	3.7	700	1.6
5/8	1160	3.7	890	3.0	560	1.4
3/4	840	2.8	680	2.0	420	1.0
1	610	2.0	540	1.6	330	0.7



(up to Ø1/8: .0016")



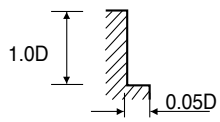
RPM = rev./min.
FEED = inch/min.

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE FINISH - SIDE CUTTING

EM153, EM811 SERIES

MATERIAL	P								M	
	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		HARDENED STEELS		HARDENED STEELS		STAINLESS STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc65			
STRENGTH	~ 1000N/mm^2		1000 ~ 1500N/mm^2		1500 ~ 2000N/mm^2		2000N/mm^2 ~			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/16	11560	11.0	7560	6.7	5040	2.0			6300	5.5
1/8	8920	12.6	5560	7.9	3360	2.4	1900	2.4	4620	6.7
3/16	6300	23.6	3780	14.2	2320	2.8	1260	2.4	3160	11.8
1/4	5560	26.0	3360	16.2	2000	3.2	1100	2.4	2840	13.0
5/16	4200	28.0	2520	15.0	1680	4.3	840	2.4	2100	13.8
3/8	3260	24.0	2000	11.8	1360	3.6	680	2.0	1680	11.8
1/2	2740	20.5	1680	9.9	1160	3.2	560	2.0	1360	9.5
5/8	2200	16.2	1360	7.9	900	2.4	440	1.2	1060	7.9
3/4	1680	12.6	1060	6.3	680	1.6	320	1.2	840	5.9
1	1360	9.9	840	5.1	540	1.2	260	0.8	680	4.7

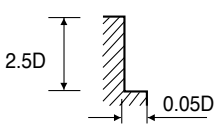


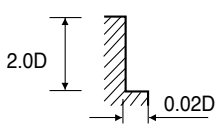
RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE LONG LENGTH FINISH - SIDE CUTTING

EM207, EM817 SERIES

MATERIAL	P							
	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc65	
STRENGTH	~ 1000N/mm^2		1000 ~ 1500N/mm^2		1500 ~ 2000N/mm^2		2000N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	4410	4.5	3570	3.9	2200	2.2	1890	1.2
3/16	3050	7.1	2420	5.5	1580	2.8	1260	1.6
1/4	2630	8.5	2100	7.1	1370	3.5	1160	2.0
5/16	2000	9.1	1580	7.1	1050	3.5	840	2.0
3/8	1680	9.1	1370	7.1	840	3.5	670	2.0
1/2	1370	7.1	1160	6.3	700	2.8	560	1.6
5/8	1160	6.3	890	4.9	560	2.4	440	1.4
3/4	840	4.5	680	3.5	420	1.8	340	1.0
1	670	4.5	540	3.5	340	1.8	270	1.0





RPM = rev./min.
FEED = inch/min.

X-POWER END MILLS

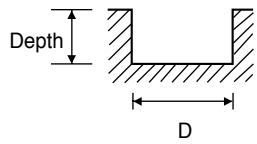
RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE MINIATURE - SLOTTING

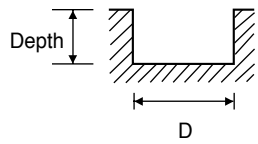
EM959, EM810 SERIES

MATERIAL	P			
	ALLOY STEELS TOOL STEELS		HARDENED STEELS	
HARDNESS	HRc30 ~ HRc45		HRc45 ~ HRc55	
STRENGTH	1000 ~ 1500N/mm^2		1500 ~ 2000N/mm^2	
DIAMETER	RPM	FEED	RPM	FEED
.016	30000	7.1	23000	3.9
.031	24000	11.8	18000	5.1
.040	20000	12.6	15000	5.9
.047	16000	12.6	12000	5.9
.062	12000	11.8	9000	5.5

D < .040
Depth=0.15×D
D≧.040
Depth=0.25×D



D < .040
Depth=0.02×D
D≧.040
Depth=0.05×D

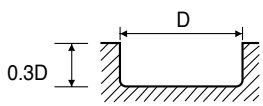


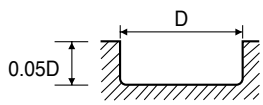
RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE CORNER RADIUS - SLOTTING

EM636, EM637, EM211 SERIES

MATERIAL	P							
	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc65	
STRENGTH	~ 1000N/mm^2		1000 ~ 1750N/mm^2		1750 ~ 2000N/mm^2		2000N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	2630	4.9	2100	4.2	1370	2.0	1160	1.4
5/16	2000	5.3	1580	4.2	1050	2.0	840	1.4
3/8	1680	5.3	1370	4.2	840	2.0	670	1.4
1/2	1370	4.2	1160	3.8	700	1.5	550	1.0





RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE CORNER RADIUS - SIDE CUTTING

EM639, EM649, EM212 SERIES

MATERIAL	P							
	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc65	
STRENGTH	~ 1000N/mm^2		1000 ~ 1750N/mm^2		1750 ~ 2000N/mm^2		2000N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	2630	8.5	2100	7.1	1370	3.3	1160	2.0
5/16	2000	9.0	1580	7.1	1050	3.3	840	2.0
3/8	1680	9.0	1370	7.1	840	3.3	670	2.0
1/2	1370	7.1	1160	6.3	700	2.8	550	1.5
	2.5D, 0.05D				2.0D, 0.02D		D, 0.05D	

RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE 45° HELIX - SIDE CUTTING

EM102 SERIES

MATERIAL	P								M	
	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS		STAINLESS STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc60			
STRENGTH	~ 1000N/mm^2		1000 ~ 1500N/mm^2		1500 ~ 2000N/mm^2		2000N/mm^2 ~			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/8	3010	31.5	2610	14.3	1400	5.3	1000	2.6	1600	7.7
1/2	2260	27.0	1950	12.3	1050	4.6	750	2.0	1200	6.3
5/8	1800	22.6	1560	10.1	840	4.1	600	1.7	960	5.1
3/4	1500	19.0	1300	8.5	700	3.9	500	1.6	800	4.5
7/8	1290	16.1	1120	7.6	600	3.9	430	1.6	690	4.5
	1.2D, 0.1D				1.2D, 0.05D		1.2D, 0.02D		1.2D, 0.1D	

RPM = rev./min.
FEED = inch/min.

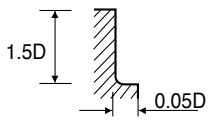
X-POWER END MILLS

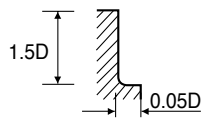
RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE 45° HELIX CORNER RADIUS - SIDE CUTTING

EM103, EM905 SERIES

MATERIAL	P								M	
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS		STAINLESS STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc65			
STRENGTH	~ 1000N/mm^2		1000 ~ 1500N/mm^2		1500 ~ 2000N/mm^2		2000N/mm^2 ~			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/8	7690	79.0	7690	48.0	5680	29.0	3840	19.0	5680	36.0
1/2	5760	79.0	5760	48.0	4260	29.0	2880	19.0	4260	36.0
5/8	4600	71.0	4600	48.0	3410	29.0	2300	19.0	3410	36.0
3/4	3850	60.0	3850	48.0	2840	29.0	1920	19.0	2840	36.0
7/8	3300	51.0	3300	48.0	2430	29.0	1650	19.0	2430	36.0



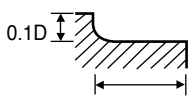


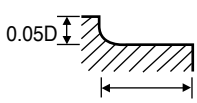
RPM = rev./min.
FEED = inch/min.

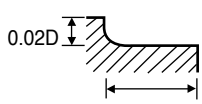
CARBIDE, 4 FLUTE 45° HELIX CORNER RADIUS - CONTOURING

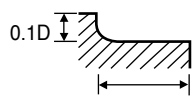
EM103, EM905 SERIES

MATERIAL	P								M	
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS		STAINLESS STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc65			
STRENGTH	~ 1000N/mm^2		1000 ~ 1500N/mm^2		1500 ~ 2000N/mm^2		2000N/mm^2 ~			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/8	7690	45.0	5680	36.0	5680	18.0	3840	11.0	5680	31.0
1/2	5760	45.0	4260	36.0	4260	18.0	2880	11.0	4260	31.0
5/8	4600	45.0	3410	36.0	3410	18.0	2300	11.0	3410	31.0
3/4	4850	45.0	2840	36.0	2840	18.0	1920	11.0	2840	31.0
7/8	3300	45.0	2430	36.0	2430	18.0	1650	11.0	2430	31.0







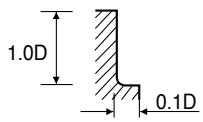


RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE 55° HELIX CORNER RADIUS - SIDE CUTTING

EM965 SERIES

MATERIAL	P						M	
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS		STAINLESS STEELS	
HARDNESS	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc65			
STRENGTH	1000 ~ 1250N/mm^2		1250 ~ 1700N/mm^2		1500N/mm^2 ~			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	21000	32.0	13000	9.5	7300	9.5	13000	21.0
3/16	18000	56.0	11000	9.5	4800	9.5	11000	33.0
1/4	13000	66.0	7500	13.0	4200	9.5	7500	40.0
5/16	9500	61.0	6500	17.0	3200	9.5	6500	39.0
3/8	7700	48.0	5700	22.0	3850	12.0	5700	39.0
1/2	5800	48.0	4260	25.0	2900	15.0	4260	39.0
5/8	4200	48.0	3100	29.0	2100	19.0	3100	39.0

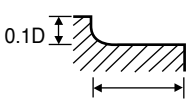


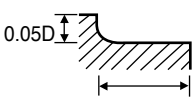
RPM = rev./min.
FEED = inch/min.

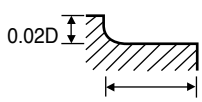
CARBIDE, 4 FLUTE 55° HELIX CORNER RADIUS - CONTOURING

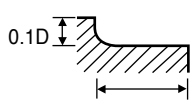
EM965 SERIES

MATERIAL	P						M	
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS		STAINLESS STEELS	
HARDNESS	HRc30 ~ HRc40		HRc40 ~ HRc50		HRc50 ~ HRc65			
STRENGTH	1000 ~ 1250N/mm^2		1250 ~ 1700N/mm^2		1500N/mm^2 ~			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	21000	24	13000	6	7300	5.5	13000	18
3/16	18000	42	11000	6	4800	5.5	11000	29
1/4	13000	50	7500	8	4200	5.5	7500	35
5/16	9500	46	6500	10	3200	5.5	6500	34
3/8	7700	36	5700	12	3850	7.5	5700	34
1/2	5800	36	4260	15	2900	9.5	4260	34
5/8	4200	36	3100	18	2100	11.5	3100	34









RPM = rev./min.
FEED = inch/min.

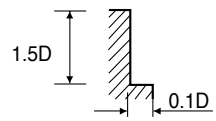
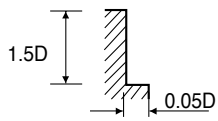
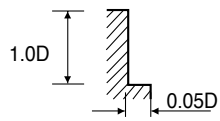
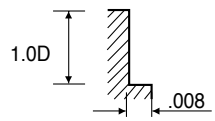
X-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 6&8 FLUTE 45° HELIX LONG LENGTH - SIDE CUTTING

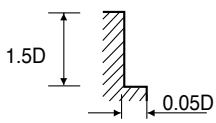
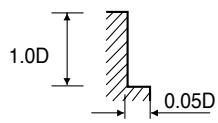
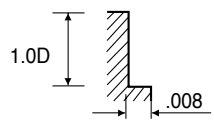
EM208, EM812 SERIES

■ NORMAL SPEED

MATERIAL	P							
	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~HRc30		HRc30 ~ HRc50		HRc50 ~ HRc55		HRc60 ~ HRc65	
STRENGTH	~1000N/mm^2		1000 ~ 1750N/mm^2		1750 ~ 2080N/mm^2		2080N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	5560	79.0	3880	54.0	1580	8.3	1100	5.1
5/16	4200	79.0	2940	54.0	1160	8.3	840	5.1
3/8	3360	79.0	2320	54.0	1000	8.3	680	5.1
1/2	2840	66.0	2000	46.0	840	7.1	560	4.4
5/8	2100	50.0	1480	35.0	640	5.1	420	2.8
3/4	1680	40.0	1160	27.0	500	4.4	320	2.4
1	1260	25.0	870	17.5	375	3.0	240	1.5
								

RPM = rev./min.
FEED = inch/min.

■ HIGH SPEED

MATERIAL	P					
	CARBON STEELS TOOL STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~HRc50		HRc50 ~ HRc60		HRc60 ~	
STRENGTH	~1750N/mm^2		1750N/mm^2		1750N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
1/4	16800	240.0	8400	120.0	4200	58.0
5/16	12600	240.0	6300	120.0	3160	58.0
3/8	9980	235.0	5040	120.0	2520	58.0
1/2	8400	199.0	4200	100.0	2100	50.0
5/8	6300	149.0	3160	75.0	1580	37.0
3/4	5040	120.0	2520	58.0	1260	30.0
1	3790	75.0	1890	38.0	950	19.0
						

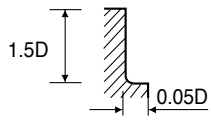
RPM = rev./min.
FEED = inch/min.

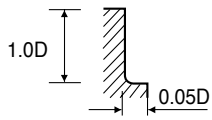
CARBIDE, 6&8 FLUTE 45° HELIX CORNER RADIUS - SIDE CUTTING

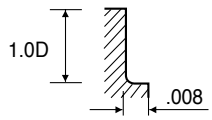
EM668, EM835 SERIES

■ HIGH SPEED

MATERIAL	P					
	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		HARDENED STEELS	
HARDNESS	~ HRc50		HRc50 ~ HRc60		HRc60 ~ HRc65	
STRENGTH	~ 1750N/mm^2		1750 ~ 2080N/mm^2		2080N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
1/4	16800	240.0	8400	120.0	4200	58.0
5/16	12600	240.0	6300	120.0	3200	58.0
3/8	10000	235.0	5000	120.0	2500	58.0
1/2	8400	200.0	4200	100.0	2100	50.0
5/8	6300	150.0	3150	75.0	1600	37.0
3/4	5000	120.0	2500	58.0	1260	30.0





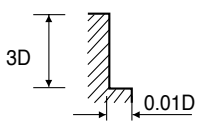


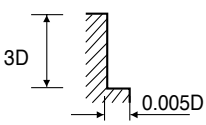
RPM = rev./min.
FEED = inch/min.

CARBIDE, 6&8 FLUTE 45° HELIX EXTRA LONG LENGTH - SIDE CUTTING

EM218, EM812, EM834 SERIES

MATERIAL	P							
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~HRc40		HRc40 ~ HRc50		HRc50 ~ HRc60		HRc60 ~ HRc65	
STRENGTH	~1250N/mm^2		1250 ~ 1750N/mm^2		1750 ~ 2080N/mm^2		2080N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	2230	19.0	1670	14.0	1390	10.0	1110	8.0
5/16	1670	18.0	1250	13.0	1050	9.5	840	7.0
3/8	1330	17.0	1000	12.0	840	9.0	680	6.3
1/2	1110	16.0	840	11.0	690	8.5	560	6.0
5/8	840	13.0	630	9.0	530	6.5	420	5.0
3/4	670	11.0	500	8.0	420	6.0	320	4.7
1	540	9.5	400	6.5	340	5.0	270	3.7





RPM = rev./min.
FEED = inch/min.

X-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS

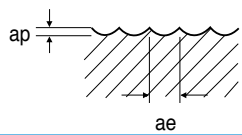
CARBIDE, 2 FLUTE BALL NOSE

EM209, EM876, EM813, EM823 SERIES

■ NORMAL SPEED

MATERIAL	P					
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc40		HRc45 ~ HRc65	
STRENGTH	~ 1000N/mm^2		1000 ~ 1250N/mm^2		1500N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/64 × 1/32	15760	9.8	12720	7.8	5800	3.5
R1/32 × 1/16	15760	13.8	12140	10.6	5320	4.7
R3/64 × 3/32	14400	29.5	10700	19.3	4680	5.9
R1/16 × 1/8	13100	26.7	10000	18.1	4520	5.9
R3/32 × 3/16	9140	32.3	7300	22.8	3680	7.1
R1/8 × 1/4	7780	33.0	6300	24.8	3160	7.5
R5/32 × 5/16	5260	37.5	4420	26.0	2100	7.5
R3/16 × 3/8	4620	40.1	3780	28.0	1780	7.5
R1/4 × 1/2	3780	35.4	2940	26.0	1360	7.5
R5/16 × 5/8	2740	36.2	2320	26.0	1160	7.5
R3/8 × 3/4	2100	33.0	1900	25.0	840	7.5

ap: D1/32~D1/4 =.008″
D5/16~D3/4=.012″
ae: 0.2×D



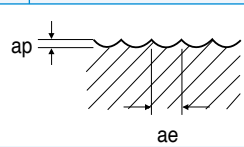
ap: D1/32~D1/4 =.008″
D5/16~D3/4 =.012″
ae: 0.1×D

RPM = rev./min.
FEED = inch/min.

■ HIGH SPEED

MATERIAL	P			
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		HARDENED STEELS	
HARDNESS	~ HRc45		HRc45 ~ HRc65	
STRENGTH	~ 1500N/mm^2		1500N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED
R1/64 × 1/32	25000	25.6	25000	15.7
R1/32 × 1/16	23000	27.5	23000	16.9
R3/64 × 3/32	21000	34.6	19000	19.3
R1/16 × 1/8	21000	39.4	17000	20.5
R3/32 × 3/16	21000	70.9	12000	23.6
R1/8 × 1/4	21000	90.9	10500	24.8
R5/32 × 5/16	15760	111.8	7880	29.1
R3/16 × 3/8	13660	120.0	6300	33.0
R1/4 × 1/2	10500	103.5	5260	33.0
R5/16 × 5/8	8200	103.5	3780	28.0
R3/8 × 3/4	6300	99.0	2940	20.8

ap: D1/32~D1/4 =.008″
D5/16~D3/4=.012″
ae: 0.05×D



RPM = rev./min.
FEED = inch/min.

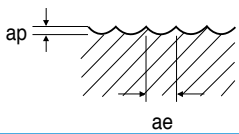
CARBIDE, 4 FLUTE BALL NOSE

EM210, EM815, EM825 SERIES

■ NORMAL SPEED

MATERIAL	P					
	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		HARDENED STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc40		HRc45 ~ HRc65	
STRENGTH	~ 1000N/mm^2		1000 ~ 1250N/mm^2		1500N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	13100	40.1	10000	27.0	4520	8.9
R3/32 × 3/16	9140	48.5	7300	34.0	3680	10.5
R1/8 × 1/4	7780	49.5	6300	37.0	3160	11.3
R5/32 × 5/16	5260	56.0	4420	39.0	2100	11.3
R3/16 × 3/8	4620	60.0	3780	42.0	1780	11.3
R1/4 × 1/2	3780	53.0	2940	39.0	1360	11.3
R5/16 × 5/8	2740	54.5	2320	38.5	1160	11.3

ap: D1/8~D1/4 =.008″
D5/16~D5/8=.012″
ae: 0.2×D



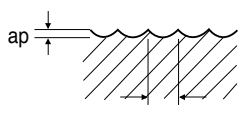
ap: D1/8~D1/4 =.008″
D5/16~D5/8 =.012″
ae: 0.1×D

RPM = rev./min.
FEED = inch/min.

■ HIGH SPEED

MATERIAL	P			
	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS	
HARDNESS	~ HRc45		HRc45 ~ HRc65	
STRENGTH	~ 1500N/mm^2		1500N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED
R1/16 × 1/8	21000	59.0	17000	30.5
R3/32 × 3/16	21000	106.3	12000	35.5
R1/8 × 1/4	21000	136.5	10500	37.0
R5/32 × 5/16	15760	167.5	7880	43.5
R3/16 × 3/8	13660	180.0	6300	49.5
R1/4 × 1/2	10500	155.5	5260	49.5
R5/16 × 5/8	8200	155.5	3780	42.0

ap: D1/8~D1/4 =.008″
D5/16~D5/8=.012″
ae: 0.05×D



RPM = rev./min.
FEED = inch/min.

X-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE MEDIUM LENGTH BALL NOSE

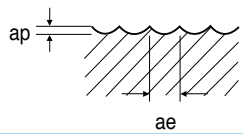
EM961, EM899 SERIES

■ NORMAL SPEED

MATERIAL	P					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	HRc30 ~ HRc40		HRc45 ~ HRc50		HRc50 ~ HRc55	
STRENGTH	1000 ~ 1250N/mm^2		1500 ~ 1750N/mm^2		1750 ~ 2000N/mm^2	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	10000	18.1	12700	43.3	12300	41.3
R3/32 × 3/16	7300	22.8	9400	43.3	9050	41.3
R1/8 × 1/4	6300	24.8	8600	45.3	8250	43.3
R5/32 × 5/16	4420	26.0	7000	41.3	6700	39.4
R3/16 × 3/8	3780	28.0	6050	39.4	5800	37.8
R1/4 × 1/2	2940	26.0	5450	39.4	5200	37.8
R5/16 × 5/8	2320	26.0	4350	34.3	4150	32.7
R3/8 × 3/4	1900	25.0	3500	27.2	3300	25.6
R1/2 × 1	1520	25.0	2800	27.2	2650	25.6

ap: D1/8~D1/4 =.008″
D5/16~D1 =.012″
ae: 0.2×D

ap: D1/8 = .006″
D3/16~D5/16 = .010″
D3/8~D1 = .012″
ae: 0.1×D



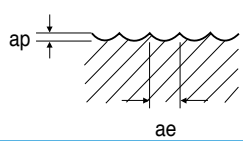
RPM = rev./min.
FEED = inch/min.

■ HIGH SPEED

MATERIAL	P					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRc45		HRc45 ~ HRc50		HRc50 ~ HRc55	
STRENGTH	1000 ~ 1250N/mm^2		1500 ~ 1750N/mm^2		1750 ~ 2000N/mm^2	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	21000	39.4	12700	68.9	12300	65.7
R3/32 × 3/16	21000	70.9	9400	65.0	9050	61.8
R1/8 × 1/4	21000	90.9	8600	69.0	8250	65.7
R5/32 × 5/16	15760	111.8	7000	61.0	6700	57.5
R3/16 × 3/8	13660	120.1	6050	57.1	5800	53.5
R1/4 × 1/2	10500	103.5	5450	55.9	5200	52.4
R5/16 × 5/8	8200	103.5	4350	48.4	4150	44.5
R3/8 × 3/4	6300	99.2	3500	39.4	3300	35.4
R1/2 × 1	5040	99.2	2800	39.4	2650	35.4

ap: D1/8~D1/4 =.008″
D5/16~D1 =.012″
ae: 0.05×D

ap: D1/8 = .006″
D3/16~D5/16 = .010″
D3/8~D1 = .012″
ae: 0.05×D



RPM = rev./min.
FEED = inch/min.

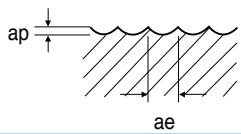
CARBIDE, 2 FLUTE LONG REACH BALL NOSE

EM962, EM838 SERIES

■ NORMAL SPEED

MATERIAL	P					
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc40		HRc45 ~ HRc65	
STRENGTH	~ 1000N/mm^2		1000 ~ 1250N/mm^2		1500N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R3/64 × 3/32	12600	16.5	9250	10.2	3870	3.5
R1/16 × 1/8	10500	21.3	8000	14.6	3620	4.7
R3/32 × 3/16	7310	26.0	5840	18.1	2940	5.5
R1/8 × 1/4	6220	26.4	5040	19.7	2530	5.9
R5/32 × 5/16	4210	29.9	3540	20.7	1680	5.9
R3/16 × 3/8	3700	32.3	3020	22.4	1420	5.9
R1/4 × 1/2	3020	28.3	2350	20.9	1090	5.9
R5/16 × 5/8	2190	29.1	1860	20.5	930	5.9
R3/8 × 3/4	1680	26.4	1520	19.7	670	5.9

ap: D3/32~D1/4 =.008″
D5/16~D3/4=.012″
ae: 0.2×D



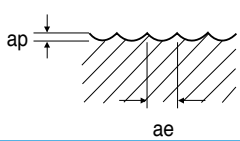
ap: D3/32~D1/4 =.008″
D5/16~D3/4 =.012″
ae: 0.1×D

RPM = rev./min.
FEED = inch/min.

■ HIGH SPEED

MATERIAL	P			
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		HARDENED STEELS	
HARDNESS	~ HRc45		HRc45 ~ HRc65	
STRENGTH	~ 1500N/mm^2		1500N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED
R3/64 × 3/32	16800	23.2	16800	15.0
R1/16 × 1/8	16800	31.5	13600	16.5
R3/32 × 3/16	16800	56.7	9600	18.9
R1/8 × 1/4	16800	72.8	8400	19.7
R5/32 × 5/16	12610	89.4	6300	23.2
R3/16 × 3/8	10930	96.1	5040	26.4
R1/4 × 1/2	8400	82.7	4210	26.4
R5/16 × 5/8	6560	82.7	3020	22.4
R3/8 × 3/4	5040	79.5	2350	16.5

ap: D3/32~D1/4 =.008″
D5/16~D3/4=.012″
ae: 0.05×D



RPM = rev./min.
FEED = inch/min.

X-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS

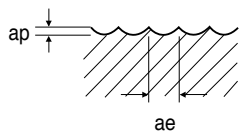
CARBIDE, 2 FLUTE BALL NOSE for OVER HRc55

EM109, EM868 SERIES

■ NORMAL SPEED

MATERIAL	P							
	HARDENED STEELS		HARDENED STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	HRc45 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc70	
STRENGTH	1500 ~ 1750N/mm^2		1750 ~ 2000N/mm^2		2000 ~ 2080N/mm^2		2080N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	12700	43.3	12300	41.3	11800	39.4	8400	26.0
R3/32 × 3/16	9400	43.3	9050	41.3	8600	37.4	5600	26.8
R1/8 × 1/4	8600	45.3	8250	43.3	7850	37.4	4850	27.6
R5/32 × 5/16	7000	41.3	6700	39.4	6350	37.4	3800	25.6
R3/16 × 3/8	6050	39.4	5800	37.8	5450	35.4	3200	24.4
R1/4 × 1/2	5450	39.4	5200	37.8	4900	35.4	2750	24.0
R5/16 × 5/8	4350	34.3	4150	32.7	3900	32.3	2150	10.4
R3/8 × 3/4	3500	27.2	3300	25.6	3150	24.8	1700	8.7
R1/2 × 1	2800	27.2	2650	25.6	2520	24.8	1360	8.7

ap: D1/8 =.006″
D3/16 ~ D5/16=.010″
D3/8 ~ D1=.012″
ae: 0.1 × D

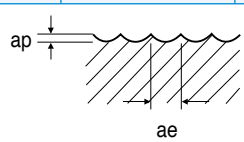


RPM = rev./min.
FEED = inch/min.

■ HIGH SPEED

MATERIAL	P					
	HARDENED STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	HRc45 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc70	
STRENGTH	1500 ~ 1750N/mm^2		1750 ~ 2000N/mm^2		2000 ~ 2080N/mm^2	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	12700	68.9	12300	65.7	11800	33.9
R3/32 × 3/16	9400	65.0	9050	61.8	8600	29.5
R1/8 × 1/4	8600	68.9	8250	65.7	7850	27.6
R5/32 × 5/16	7000	61.0	6700	57.5	6350	25.6
R3/16 × 3/8	6050	57.1	5800	53.5	5450	24.4
R1/4 × 1/2	5450	55.9	5200	52.4	4900	24.0
R5/16 × 5/8	4350	48.4	4150	44.5	3900	10.4
R3/8 × 3/4	3500	39.4	3300	35.4	3150	8.7
R1/2 × 1	2800	39.4	2640	35.4	2520	8.7

ap: D1/8 = .006″
D3/16~D5/16 = .010″
D3/8~D1 = .012″
ae: 0.05 × D



RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE BALL NOSE with TAPER NECK

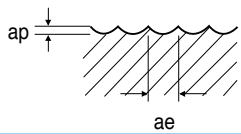
EM963, EM902 SERIES

■ NORMAL SPEED

MATERIAL	P					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	HRc30 ~ HRc40		HRc45 ~ HRc50		HRc50 ~ HRc55	
STRENGTH	1000 ~ 1250N/mm²		1250 ~ 1750N/mm²		1750 ~ 2000N/mm²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/32 × 1/16	9700	8.3	13800	19.9	13600	17.9
R1/16 × 1/8	8000	14.6	10200	34.6	9800	33.5
R3/32 × 3/16	5840	18.1	7500	34.6	7200	33.5
R1/8 × 1/4	5040	19.7	6900	36.2	6500	34.6
R5/32 × 5/16	3540	20.9	5600	33.1	5300	31.5
R3/16 × 3/8	3020	22.4	4850	31.5	4650	30.3
R1/4 × 1/2	2350	20.9	4350	31.5	4150	30.3

ap: D1/16~D1/4 =.008″
D5/16~D1/2 =.012″
ae: 0.2×D

ap: D1/16~D1/8 = 0.05″×D
D3/16~D5/16 = .010″
D3/8~D1/2 = .012″
ae: 0.1×D



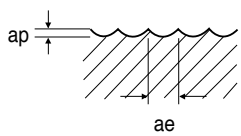
RPM = rev./min.
FEED = inch/min.

■ HIGH SPEED

MATERIAL	P					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRc45		HRc45 ~ HRc50		HRc50 ~ HRc55	
STRENGTH	1500N/mm²		1250 ~ 1750N/mm²		1750 ~ 2000N/mm²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/32 × 1/16	18400	21.9	13800	28.9	13600	30.1
R1/16 × 1/8	16800	31.5	10200	55.1	9800	51.2
R3/32 × 3/16	16800	56.7	7500	52.0	7200	49.2
R1/8 × 1/4	16800	72.8	6900	55.1	6500	53.1
R5/32 × 5/16	12600	89.4	5600	49.2	5300	45.3
R3/16 × 3/8	10930	96.1	4850	45.3	4650	43.3
R1/4 × 1/2	8400	82.7	4350	44.5	4150	41.3

ap: D1/16~D1/4 =.008″
D5/16~D1/2 =.012″
ae: 0.05×D

ap: D1/16~D1/8 = 0.05″×D
D3/16~D5/16 = .010″
D3/8~D1/2 = .012″
ae: 0.05×D



RPM = rev./min.
FEED = inch/min.

X-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE BALL NOSE with PENCIL NECK

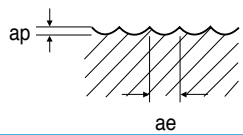
EM979 SERIES

■ NORMAL SPEED

MATERIAL	P					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	HRc30 ~ HRc40		HRc45 ~ HRc50		HRc50 ~ HRc55	
STRENGTH	1000 ~ 1250N/mm^2		1250 ~ 1750N/mm^2		1750 ~ 2000N/mm^2	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R3/32 × 3/16	4670	14.5	6000	27.7	5760	26.8
R1/8 × 1/4	4030	15.8	5520	29.0	5200	27.7
R5/32 × 5/16	2830	16.7	4480	26.5	4240	25.2
R3/16 × 3/8	2420	17.9	3880	25.2	3720	24.2
R1/4 × 1/2	1880	16.7	3480	25.2	3320	24.2

ap: D3/16~D1/4 =.008″
D5/16~D1/2 =.012″
ae: 0.2×D

ap: D3/16~D5/16 = .010″
D3/8~D1/2 = .012″
ae: 0.1×D



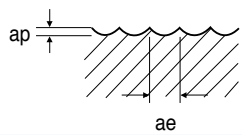
RPM = rev./min.
FEED = inch/min.

■ HIGH SPEED

MATERIAL	P					
	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRc45		HRc45 ~ HRc50		HRc50 ~ HRc55	
STRENGTH	1500N/mm^2		1250 ~ 1750N/mm^2		1750 ~ 2000N/mm^2	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R3/32 × 3/16	13440	45.4	6000	41.6	5760	39.4
R1/8 × 1/4	13440	58.2	5520	44.1	5200	42.5
R5/32 × 5/16	10080	71.5	4480	39.4	4240	36.2
R3/16 × 3/8	8740	76.9	3880	36.3	3720	34.6
R1/4 × 1/2	6720	66.2	3480	35.6	3320	33.0

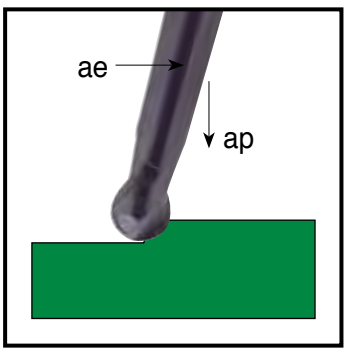
ap: D3/16~D1/4 =.008″
D5/16~D1/2 =.012″
ae: 0.05×D

ap: D3/16~D5/16 = .010″
D3/8~D1/2 = .012″
ae: 0.05×D



RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE BALL NOSE - MMC



RECOMMENDED CUTTING CONDITIONS

- ap=0.02×D1
- ae=0.05×D1

EM084, EM096, EM669, EM863 SERIES

■ NORMAL SPEED

MATERIAL	P					
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOYED STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~HRc30		HRc30 ~ HRc40		HRc45 ~ HRc65	
STRENGTH	~1000N/mm²		1000 ~ 1250N/mm²		1500N/mm²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	35000	110.2	33000	102.4	12000	35.4
R5/64 × 5/32	26000	90.6	25000	86.6	9000	31.5
R3/32 × 3/16	21000	82.7	20000	78.7	7000	27.6
R1/8 × 1/4	17000	74.8	16000	70.9	6000	25.6
R5/32 × 5/16	13000	66.9	12000	63.0	4500	21.7
R3/16 × 3/8	10500	57.1	10000	55.1	3500	19.7
R1/4 × 1/2	9000	55.1	8000	51.2	3000	17.7
R5/16 × 5/8	6000	47.2	5500	43.3	2000	15.8

RPM = rev./min.
FEED = inch/min.

■ HIGH SPEED

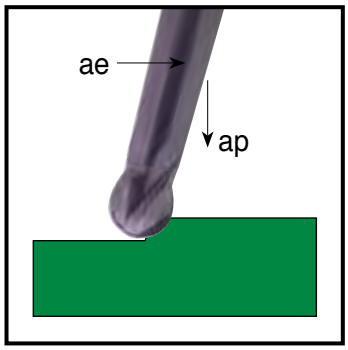
MATERIAL	P					
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOYED STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~HRc30		HRc30 ~ HRc40		HRc45 ~ HRc65	
STRENGTH	~1000N/mm²		1000 ~ 1250N/mm²		1500N/mm²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	47000	145.7	44000	137.8	17000	55.1
R5/64 × 5/32	35000	126.0	33000	118.1	13000	47.2
R3/32 × 3/16	28000	110.2	27000	102.4	10000	43.3
R1/8 × 1/4	23000	102.4	22000	94.5	8000	37.4
R5/32 × 5/16	18000	90.6	17000	82.7	6000	33.5
R3/16 × 3/8	14000	78.7	13000	74.8	5000	29.5
R1/4 × 1/2	12000	70.9	11000	70.9	4000	27.6
R5/16 × 5/8	9000	63.0	8000	59.1	3300	23.6

RPM = rev./min.
FEED = inch/min.

X-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE BALL NOSE - MMC



RECOMMENDED CUTTING CONDITIONS

- ap=0.02×D1
- ae=0.05×D1

EM093, EM097, EM673, EM864 SERIES

■ NORMAL SPEED

MATERIAL	P					
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOYED STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~HRc30		HRc30 ~ HRc40		HRc45 ~ HRc65	
STRENGTH	~1000N/mm^2		1000 ~ 1250N/mm^2		1500N/mm^2	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R3/32 × 3/16	21000	157.5	20000	157.5	7000	55.1
R1/8 × 1/4	17000	157.5	16000	137.8	6000	51.2
R5/32 × 5/16	13000	137.8	12000	118.1	4500	43.3
R3/16 × 3/8	10500	118.1	10000	98.4	3500	39.4
R1/4 × 1/2	9000	110.2	8000	98.4	3000	37.4
R5/16 × 5/8	6000	110.2	5500	86.6	2000	31.5

RPM = rev./min.
FEED = inch/min.

■ HIGH SPEED

MATERIAL	P					
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOYED STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~HRc30		HRc30 ~ HRc40		HRc45 ~ HRc65	
STRENGTH	~1000N/mm^2		1000 ~ 1250N/mm^2		1500N/mm^2	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R3/32 × 3/16	28000	220.5	27000	208.7	11000	82.7
R1/8 × 1/4	23000	200.1	22000	192.9	9000	74.8
R5/32 × 5/16	18000	181.1	17000	169.3	7000	66.9
R3/16 × 3/8	14000	153.5	13000	145.7	5000	55.1
R1/4 × 1/2	12000	145.7	11000	137.8	4500	51.2
R5/16 × 5/8	9000	122.0	8000	118.1	3300	43.3

RPM = rev./min.
FEED = inch/min.

RECOMMENDED CUTTING CONDITIONS

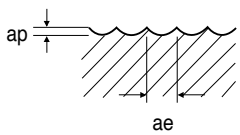
CARBIDE, 2 FLUTE MINIATURE BALL NOSE

EM960, EM865 SERIES

MATERIAL	P			
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		HARDENED STEELS	
HARDNESS	HRc30 ~ HRc45		HRc45 ~ HRc55	
STRENGTH	1000 ~ 1500N/mm^2		1500 ~ 2000N/mm^2	
DIAMETER	RPM	FEED	RPM	FEED
R.012 × .024	30000	23.6	30000	11.8
R.0155 × .031	27000	25.6	27000	15.0
R.020 × .040	25000	25.6	25000	15.7
R.0235 × .047	24000	26.4	24000	16.5
R.031 × .062	23000	27.6	23000	16.9

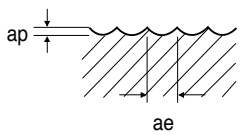
D < .040
ap=0.05 × D
ae=0.15 × D

D ≧ .040
ap=0.075 × D
ae=0.15 × D



D < .040
ap=0.05 × D
ae=0.1 × D

D ≧ .040
ap=0.05 × D
ae=0.15 × D

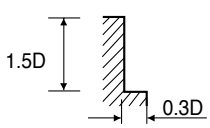


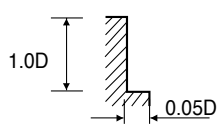
RPM = rev./min.
FEED = inch/min.

CARBIDE, MULTI FLUTE ROUGHING - SIDE CUTTING

EM666, EM156, EM832, EM814 SERIES

MATERIAL	P									
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~HRc30		HRc30 ~ HRc38		HRc38 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc65	
STRENGTH	~1000N/mm^2		1000 ~ 1200N/mm^2		1200` ~ 1400N/mm^2		1400 ~ 2000N/mm^2		2000N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	15600	91.4	12400	33.1	8400	22.5	3400	10.3	2400	7.5
5/16	11600	91.4	9200	33.1	6300	22.5	2400	9.5	1800	7.1
3/8	9200	91.4	7600	33.1	5100	22.5	2000	11.4	1300	7.5
1/2	8000	94.5	6000	31.5	4200	22.5	1680	10.3	1200	7.5
5/8	6000	94.5	4800	29.9	3300	20.1	1200	6.3	800	4.4
3/4	5200	91.4	4400	28.4	2700	16.6	1100	5.9	700	4.0
1	4800	85.1	3600	22.1	2400	14.2	1000	5.9	660	4.0





RPM = rev./min.
FEED = inch/min.

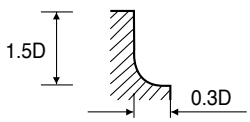
X-POWER END MILLS

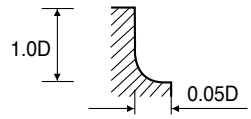
RECOMMENDED CUTTING CONDITIONS

CARBIDE, MULTI FLUTE ROUGHING BALL NOSE - SIDE CUTTING

EM662, EM833 SERIES

MATERIAL	P									
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc38		HRc38 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc65	
STRENGTH	~ 1000N/mm^2		1000 ~ 1200N/mm^2		1200 ~ 1400N/mm^2		1400 ~ 2000N/mm^2		2000N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/8 × 1/4	15600	91.3	12400	33.0	8400	22.4	3400	10.2	2400	7.5
R5/32 × 5/16	11600	91.3	9200	33.0	6300	22.4	2400	9.4	1800	7.1
R3/16 × 3/8	9200	91.3	7600	33.0	5100	22.4	2000	11.4	1300	7.5
R1/4 × 1/2	8000	94.5	6000	31.5	4200	22.4	1680	10.2	1200	7.5
R5/16 × 5/8	6000	94.5	4800	29.9	3300	20.1	1200	6.3	800	4.3
R3/8 × 3/4	4800	85.0	3600	22.0	2400	14.1	1000	5.9	660	3.9





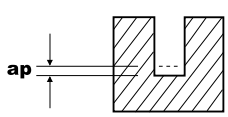
RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE FINISH for RIB PROCESSING

EM966, EM883 SERIES

MATERIAL	P								
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS	~ HRc30			HRc30 ~ HRc45			HRc45 ~ HRc55		
STRENGTH	~ 1000N/mm^2			1000 ~ 1500N/mm^2			1500 ~ 2000N/mm^2		
DIAMETER	RPM	FEED	ap	RPM	FEED	ap	RPM	FEED	ap
1/32	27000~35000	7.5~16.5	.0006~.0014	19500~24500	2.4~9.5	.0006~.0014	12500~14800	1.4~3.7	.0003~.0006
3/64	18500~23500	7.5~23.6	.0022~.0039	13000~16500	3.7~11.8	.0022~.0039	8300~10500	2.0~3.9	.0004~.0009
1/16	14000~18000	7.5~23.6	.0030~.0057	10200~12800	3.7~11.8	.0030~.0057	6400~8000	2.0~3.9	.0006~.0012
5/64	12000~14500	7.5~23.6	.0035~.0071	8300~10500	3.7~11.8	.0035~.0071	5300~6600	2.0~3.9	.0007~.0014
3/32	9500~12000	7.5~23.6	.0044~.0093	6700~8500	3.7~11.8	.0044~.0093	4300~5300	2.0~3.9	.0009~.0018
1/8	8000~10000	7.5~23.6	.0053~.0106	5500~7000	3.7~11.8	.0053~.0106	3500~4400	2.0~3.9	.0011~.0022

(Depth of Cut per one pass)



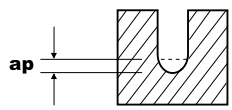
RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING

EM967, EM886 SERIES

MATERIAL	P								
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS	~ HRc30			HRc30 ~ HRc45			HRc45 ~ HRc55		
STRENGTH	~ 1000N/mm^2			1000 ~ 1500N/mm^2			1500 ~ 2000N/mm^2		
DIAMETER	RPM	FEED	ap	RPM	FEED	ap	RPM	FEED	ap
R1/64 x 1/32	27000~35000	7.5~16.5	.0006~.0014	19500~24500	2.4~9.5	.0006~.0014	12500~14800	1.4~3.7	.0003~.0006
R.0234 x 3/64	18500~23500	7.5~23.6	.0022~.0039	13000~16500	3.7~11.8	.0022~.0039	8300~10500	2.0~3.9	.0004~.0009
R1/32 x 1/16	14000~18000	7.5~23.6	.0030~.0057	10200~12800	3.7~11.8	.0030~.0057	6400~8000	2.0~3.9	.0006~.0012
R.0391 x 5/64	12000~14500	7.5~23.6	.0035~.0071	8300~10500	3.7~11.8	.0035~.0071	5300~6600	2.0~3.9	.0007~.0014
R3/64 x 3/32	9500~12000	7.5~23.6	.0044~.0093	6700~8500	3.7~11.8	.0044~.0093	4300~5300	2.0~3.9	.0009~.0018
R1/16 x 1/8	8000~10000	7.5~23.6	.0053~.0106	5500~7000	3.7~11.8	.0053~.0106	3500~4400	2.0~3.9	.0011~.0022

(Depth of Cut per one pass)

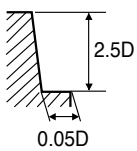


RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE TAPER - SIDE CUTTING

EM837 SERIES

MATERIAL	P			
	NON-ALLOYED STEELS ALLOY STEELS		ALLOY STEELS HEAT RESISTANT STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc45	
STRENGTH	~ 1000N/mm^2		1000 ~ 1500N/mm^2	
DIAMETER	RPM	FEED	RPM	FEED
2.0	8400	6.7	6300	4.9
3.0	4410	4.7	3570	3.9
4.0	3570	5.5	2840	4.5
5.0	3050	7.1	2410	5.7
6.0	2630	8.3	2100	6.7
8.0	2000	9.8	1580	7.1



RPM = rev./min.
FEED = inch/min.

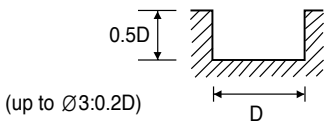
X-POWER END MILLS

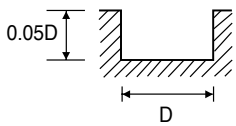
RECOMMENDED CUTTING CONDITIONS

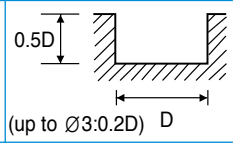
CARBIDE, 3 FLUTE - SLOTTING

EM895 SERIES

MATERIAL	P								M	
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS		STAINLESS STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc65			
STRENGTH	~ 1000N/mm^2		1000 ~ 1500N/mm^2		1500 ~ 2000N/mm^2		2000N/mm^2 ~			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	11560	6.7	7560	4.3	5040	1.2			6300	3.2
3.0	8920	7.5	5560	5.1	3360	1.4	1900	1.6	4620	4.3
4.0	7560	10.6	4620	6.3	2940	1.4	1480	1.4	3880	5.1
5.0	6300	11.0	3780	6.7	2320	1.8	1260	1.4	3160	5.5
6.0	5560	12.2	3360	7.9	2000	2.0	1100	1.4	2840	6.3
8.0	4200	13.4	2520	7.1	1680	2.6	840	1.4	2100	6.3
10.0	3260	11.8	2000	5.5	1360	2.2	680	1.2	1680	5.7
12.0	2740	9.8	1680	4.7	1160	2.0	560	1.2	1360	4.7
16.0	2200	7.9	1360	3.9	900	1.4	440	0.8	1060	3.9
18.0	1940	6.9	1210	3.4	790	1.2	380	0.8	950	3.4
20.0	1680	5.9	1060	2.8	680	1.0	320	0.8	840	2.8





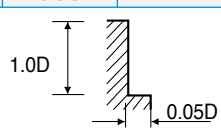


RPM = rev./min. FEED = inch/min.

CARBIDE, 3 FLUTE - SIDE CUTTING

EM895 SERIES

MATERIAL	P								M	
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS		STAINLESS STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc65			
STRENGTH	~ 1000N/mm^2		1000 ~ 1500N/mm^2		1500 ~ 2000N/mm^2		2000N/mm^2 ~			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	11560	8.3	7560	5.5	5040	1.2			6300	4.5
3.0	8920	9.5	5560	5.9	3360	1.6	1900	1.8	4620	4.9
4.0	7560	16.9	4620	10.2	2940	1.8	1480	1.8	3880	8.3
5.0	6300	17.7	3780	10.6	2320	2.2	1260	1.8	3160	9.1
6.0	5560	19.7	3360	12.2	2000	2.4	1100	1.8	2840	9.8
8.0	4200	20.9	2520	11.4	1680	3.2	840	1.8	2100	10.4
10.0	3260	18.1	2000	9.1	1360	2.8	680	1.4	1680	9.1
12.0	2740	15.4	1680	7.5	1160	2.4	560	1.4	1360	7.1
16.0	2200	12.2	1360	5.9	900	1.8	440	0.8	1060	5.9
18.0	1940	11.0	1210	5.3	790	1.4	380	0.8	950	5.1
20.0	1680	9.5	1060	4.7	680	1.2	320	0.8	840	4.5

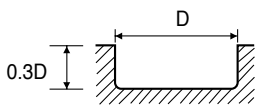


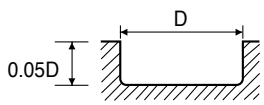
RPM = rev./min. FEED = inch/min.

CARBIDE, 2 FLUTE LONG CORNER RADIUS - SLOTTING

EM818 SERIES

MATERIAL	P							
	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/mm^2		1000 ~ 1500N/mm^2		1500 ~ 2000N/mm^2		2000N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3.0	6620	5.5	4280	2.8	2640	1.4	1870	0.7
4.0	5360	6.7	3410	3.4	2150	1.6	1470	0.8
5.0	4580	8.3	2900	3.9	1900	2.0	1260	1.0
6.0	3950	9.8	2520	4.9	1640	2.4	1160	1.4
8.0	3000	10.6	1900	4.9	1260	2.4	840	1.4
10.0	2520	10.6	1640	4.9	1010	2.4	670	1.4
12.0	2060	8.3	1390	4.5	840	2.0	550	1.0
16.0	1740	7.5	1070	3.5	670	1.6	440	0.8
20.0	1260	5.5	820	2.4	500	1.2	340	0.6



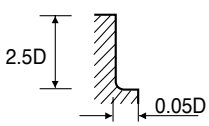


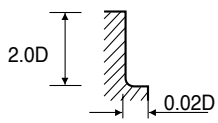
RPM = rev./min.
FEED = inch/min.

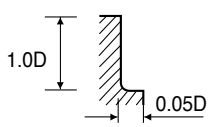
CARBIDE, 4 FLUTE LONG CORNER RADIUS - SIDE CUTTING

EM819 SERIES

MATERIAL	P							
	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/mm^2		1000 ~ 1500N/mm^2		1500 ~ 2000N/mm^2		2000N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3.0	6620	6.7	4280	5.1	2640	2.6	1870	1.2
4.0	5360	8.3	3410	5.9	2150	2.8	1470	1.4
5.0	4580	8.5	2900	7.1	1900	3.4	1260	1.6
6.0	3950	8.5	2520	7.1	1640	3.4	1160	2.0
8.0	3000	9.1	1900	7.1	1260	3.4	840	2.0
10.0	2520	9.1	1640	7.1	1010	3.4	670	2.0
12.0	2060	7.1	1390	6.3	840	2.8	550	1.6
16.0	1740	6.3	1070	4.9	670	2.4	440	1.4
20.0	1260	4.5	820	3.5	500	1.8	340	1.0







RPM = rev./min.
FEED = inch/min.

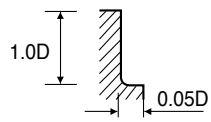
X-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE STUB CORNER RADIUS - SIDE CUTTING

EM839 SERIES

MATERIAL	P							
	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/mm^2		1000 ~ 1500N/mm^2		1500 ~ 2000N/mm^2		2000N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	13870	13.4	9070	8.1	6050	2.4		
2.5	12290	14.2	7870	8.7	5040	2.6		
3.0	10700	15.2	6670	9.5	4030	2.8	2280	2.8
3.5	9890	21.1	6100	13.0	3780	2.8	2030	2.8
4.0	9070	27.0	5540	16.5	3530	2.8	1780	2.8
5.0	7560	28.4	4540	16.9	2780	3.4	1510	2.8
6.0	6670	31.1	4030	19.3	2400	3.7	1320	2.8
8.0	5040	33.5	3020	17.9	2020	5.1	1010	2.8
10.0	3910	28.7	2400	14.2	1630	4.3	820	2.4
12.0	3290	24.6	2020	11.8	1390	3.7	670	2.4
16.0	2640	19.3	1630	9.5	1080	2.8	530	1.4

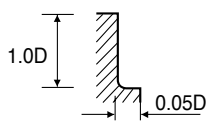


RPM = rev./min.
FEED = inch/min.

CARBIDE, 6 FLUTE STUB CORNER RADIUS - SIDE CUTTING

EM897 SERIES

MATERIAL	P							
	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/mm^2		1000 ~ 1500N/mm^2		1500 ~ 2000N/mm^2		2000N/mm^2 ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6.0	6670	31.1	4030	19.3	2400	3.7	1320	2.8
8.0	5040	33.5	3020	17.9	2020	5.1	1010	2.8
10.0	3910	28.7	2400	14.2	1630	4.3	820	2.4
12.0	3290	24.6	2020	11.8	1390	3.7	670	2.4

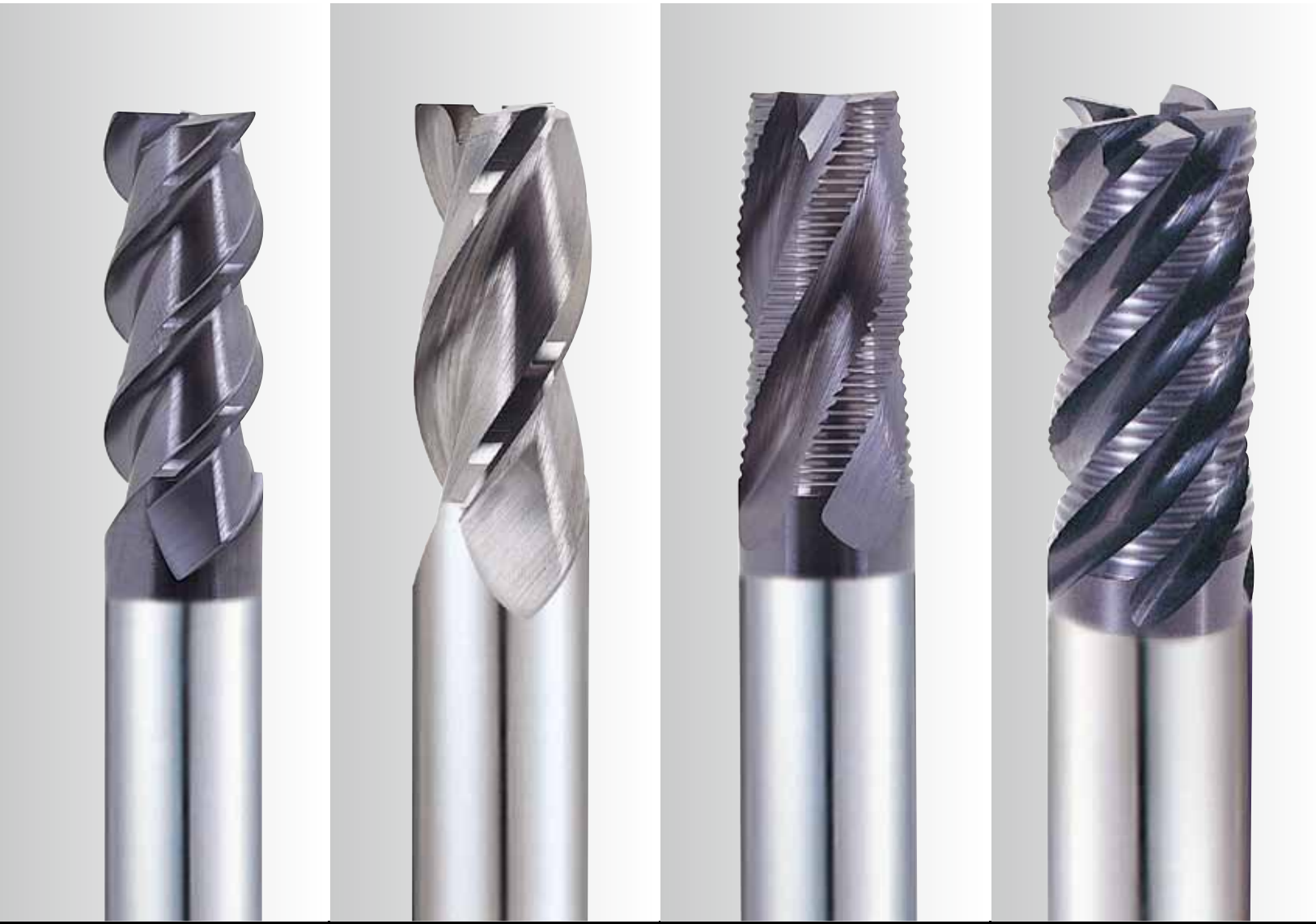


RPM = rev./min.
FEED = inch/min.

CARBIDE & HSS

YG

Being the best through innovation



JET-POWER END MILLS

- Exotic materials like Stainless Steels, Nickel alloys and Titanium

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
INCH					
EH108		CARBIDE, 3&4 FLUTE 50° HELIX REGULAR LENGTH ◆	D1/8	D1	**906**
EE882		YPM, 6 FLUTE 35° HELIX REGULAR LENGTH ◆	D3/4	D1-1/2	**907**
E5075 E5105		CARBIDE, 3 FLUTE 35° HELIX STUB LENGTH CORNER RADIUS - "HOSS" ◆	D1/8	D1	**908**
E5074 E5104		CARBIDE, 3 FLUTE 35° HELIX REGULAR LENGTH CORNER RADIUS - "HOSS" ◆	D1/8	D1	**909**
EH094		CARBIDE, MULTI FLUTE STUB LENGTH FINE PITCH ROUGHING ◆	D1/4	D1	**910**
EH095		CARBIDE, MULTI FLUTE LONG LENGTH FINE PITCH ROUGHING ◆	D1/4	D1	**911**
EH969		CARBIDE, MULTI FLUTE 45° HELIX LONG LENGTH FINE PITCH ROUGHING ◆	D3/16	D1	**912**
EH970		CARBIDE, MULTI FLUTE 45° HELIX LONG REACH FINE PITCH ROUGHING ◆	D1/4	D3/4	**913**

◆ U.S.A Stock

METRIC					
EH830		CARBIDE, 3&4 FLUTE 50° HELIX LONG LENGTH ◇	D6.0	D25.0	**914**
EE515		PREMIUM HSS-PM, 4&6 FLUTE SHORT LENGTH ◇	D3.0	D25.0	**915**
EH852		CARBIDE, MULTI FLUTE SHORT FINE PITCH ROUGHING ◇	D6.0	D25.0	**916**
EH831		CARBIDE, MULTI FLUTE LONG LENGTH FINE PITCH ROUGHING ◇	D6.0	D25.0	**917**
EH917		CARBIDE, MULTI FLUTE 45° HELIX SHORT LENGTH FINE PITCH ROUGHING ◇	D6.0	D20.0	**918**
EH919		CARBIDE, MULTI FLUTE 45° HELIX LONG LENGTH FINE PITCH ROUGHING ◇	D4.0	D25.0	**919**
EH921		CARBIDE, MULTI FLUTE 45° HELIX LONG REACH FINE PITCH ROUGHING ◇	D6.0	D20.0	**920**
		RECOMMENDED CUTTING CONDITIONS			**921**

◇ Call for Availability

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○			◎	○						○	○
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○	◎	○				◎	○							
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○	◎	◎	○			◎							◎	○

JET-POWER END MILLS

EH108 SERIES PLAIN SHANK FLAT SHANK

CARBIDE, 3&4 FLUTE 50° HELIX REGULAR LENGTH

- Suitable for low hardness materials (under HRc 45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steels, inconel, nimonic, etc.
- Corner Protection against chipping.



MG | 3&4 | 50° | PLAIN | FLAT

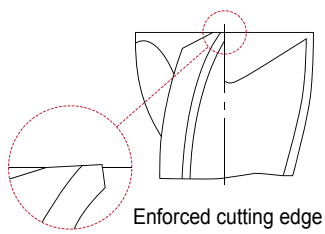
P.921

◆ U.S.A Stock

Unit : Inch

EDP No. PLAIN	EDP No. FLAT	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
95063	—	1/8	1/8	1/2	1-1/2	3
95064	—	3/16	3/16	5/8	2	3
95065	—	1/4	1/4	3/4	2-1/2	3
95066	—	5/16	5/16	13/16	2-1/2	3
—	95067	3/8	3/8	1	2-1/2	3
95115	—	7/16	7/16	1	2-3/4	3
—	95068	1/2	1/2	1	3	3
—	95069	5/8	5/8	1-1/4	3-1/2	3
—	95070	3/4	3/4	1-1/2	4	4
—	95071	1	1	1-1/2	4	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	0~−.0003



Enforced cutting edge

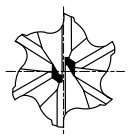
◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○			◎	○						○	○

YPM, 6 FLUTE 35° HELIX REGULAR LENGTH

▶ Designed to machine low hardness materials (under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steel, inconel, nimonic, etc.
▶ High velocity milling operation and good surface finishes.





YPM | 6 | 35° | FLAT

P.922

◆ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
95094	3/4	3/4	1-5/8	3-7/8
95095	7/8	7/8	1-7/8	4-1/8
95096	1	1	2	4-1/2
95097	1-1/4	1-1/4	2	4-1/2
95098	1-1/2	1-1/4	2	4-1/2

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~+.0010	0~−.0003

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○			◎							◎	○

JET-POWER END MILLS

E5075 SERIES PLAIN SHANK Ø1/8~Ø5/16
E5105 SERIES FLAT SHANK Ø11/32~Ø1

CARBIDE, 3 FLUTE 35° HELIX STUB LENGTH CORNER RADIUS - "HOSS"

- #1 Choice for slotting, ramping & pocket work on stainless, monel & other alloys up to HRc35.
- Dry milling is recommended on steel alloys to reduce thermal shock and increase the life (YG:TYLON F or E COATING).



MG | 3 | 35° | PLAIN | FLAT

Ø1/8~Ø5/16 Ø11/32~Ø1

◆ U.S.A Stock

Unit : Inch

EDP No.					Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	R				
57558	57558TN	57558TC	57558TF	57558TE	.008~.010	1/8	1/8	1/4	1-1/2
57561	57561TN	57561TC	57561TF	57561TE	.008~.010	5/32	3/16	5/16	2
57565	57565TN	57565TC	57565TF	57565TE	.008~.010	3/16	3/16	5/16	2
57570	57570TN	57570TC	57570TF	57570TE	.015~.020	7/32	1/4	3/8	2
57573	57573TN	57573TC	57573TF	57573TE	.015~.020	1/4	1/4	3/8	2
57576	57576TN	57576TC	57576TF	57576TE	.015~.020	9/32	5/16	7/16	2
57579	57579TN	57579TC	57579TF	57579TE	.015~.020	5/16	5/16	7/16	2
57582	57582TN	57582TC	57582TF	57582TE	.015~.020	11/32	3/8	1/2	2
57584	57584TN	57584TC	57584TF	57584TE	.015~.020	3/8	3/8	1/2	2
57588	57588TN	57588TC	57588TF	57588TE	.015~.020	7/16	7/16	9/16	2-1/2
57593	57593TN	57593TC	57593TF	57593TE	.030~.035	1/2	1/2	5/8	2-1/2
57595	57595TN	57595TC	57595TF	57595TE	.030~.035	5/8	5/8	3/4	3
57598	57598TN	57598TC	57598TF	57598TE	.030~.035	3/4	3/4	1	3
57600	57600TN	57600TC	57600TF	57600TE	.030~.035	1	1	1-1/4	3

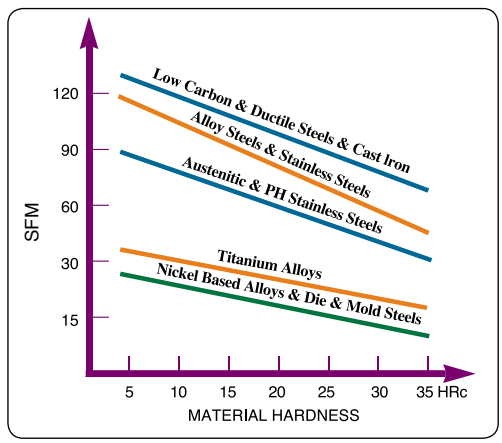
Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0003

RECOMMENDED CUTTING CONDITIONS

- Use stub length whenever possible
- Hardslick coating is recommended on soft gummy material Especially on tools 3/16 and under

CUTTING TOOL DIAMETER

1/8	.0003~.0015	3/8	.0015~.0035	3/4	.003~.006
3/16	.0004~.002	7/16	.002~.004	1	.003~.007
1/4	.001~.0025	1/2	.0025~.0045		
5/16	.0015~.003	5/8	.0025~.005		



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	○				◎	○							

JET-POWER END MILLS

E5074 SERIES PLAIN SHANK Ø1/8~Ø5/16
E5104 SERIES FLAT SHANK Ø11/32~Ø1

CARBIDE, 3 FLUTE 35° HELIX REGULAR LENGTH CORNER RADIUS - "HOSS"

- #1 Choice for slotting, ramping & pocket work on stainless, monel & other alloys up to HRc35.
- Dry milling is recommended on steel alloys to reduce thermal shock and increase the life (YG:TYLON F or E COATING).



MG | 3 | 35° | PLAIN | FLAT

P.908

◆ U.S.A Stock

aØ1/8~Ø5/16 Ø11/32~Ø1

Unit : Inch

EDP No.					Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	R				
56558	**56558TN**	**56558TC**	**56558TF**	**56558TE**	.008~.010	**1/8**	1/8	1/2	1-1/2
56561	**56561TN**	**56561TC**	**56561TF**	**56561TE**	.008~.010	**5/32**	3/16	9/16	2
56565	**56565TN**	**56565TC**	**56565TF**	**56565TE**	.008~.010	**3/16**	3/16	9/16	2
56570	**56570TN**	**56570TC**	**56570TF**	**56570TE**	.015~.020	**7/32**	1/4	3/4	2-1/2
56573	**56573TN**	**56573TC**	**56573TF**	**56573TE**	.015~.020	**1/4**	1/4	3/4	2-1/2
56576	**56576TN**	**56576TC**	**56576TF**	**56576TE**	.015~.020	**9/32**	5/16	13/16	2-1/2
56579	**56579TN**	**56579TC**	**56579TF**	**56579TE**	.015~.020	**5/16**	5/16	13/16	2-1/2
56582	**56582TN**	**56582TC**	**56582TF**	**56582TE**	.015~.020	**11/32**	3/8	1	2-1/2
56584	**56584TN**	**56584TC**	**56584TF**	**56584TE**	.015~.020	**3/8**	3/8	1	2-1/2
56588	**56588TN**	**56588TC**	**56588TF**	**56588TE**	.015~.020	**7/16**	7/16	1	2-3/4
56593	**56593TN**	**56593TC**	**56593TF**	**56593TE**	.030~.035	**1/2**	1/2	1-1/4	3
56595	**56595TN**	**56595TC**	**56595TF**	**56595TE**	.030~.035	**5/8**	5/8	1-5/8	3-1/2
56598	**56598TN**	**56598TC**	**56598TF**	**56598TE**	.030~.035	**3/4**	3/4	1-5/8	4
56600	**56600TN**	**56600TC**	**56600TF**	**56600TE**	.030~.035	**1**	1	2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0003

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	○				◎	○							

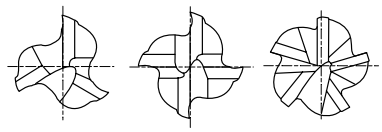
JET-POWER END MILLS

EH094 SERIES PLAIN SHANK

CARBIDE, MULTI FLUTE STUB LENGTH FINE PITCH ROUGHING

- Designed to machine low hardness materials (under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steel, inconel, nimonic.
- High velocity milling operation.
- Fast chip ejection.





MG | FINE | 3-5 | 30° | PLAIN

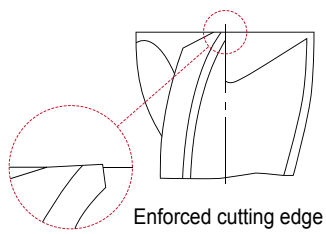
P.923

◆ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
95072	**1/4**	1/4	5/16	2-1/8	3
95073	**5/16**	5/16	3/8	2-1/4	3
95074	**3/8**	3/8	9/16	2-1/2	3
95075	**1/2**	1/2	5/8	3	4
95076	**5/8**	5/8	7/8	3-1/4	4
95077	**3/4**	3/4	1	3-3/4	4
95078	**1**	1	1	4	5

Mill Dia. (inch)	Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
1/4~3/8	0 ~ −.0022	0 ~ −.0003
1/2~5/8	0 ~ −.0027	
3/4~1	0 ~ −.0033	



Enforced cutting edge

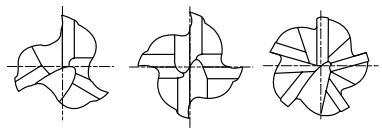
◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○			◎							◎	○

CARBIDE, MULTI FLUTE LONG LENGTH FINE PITCH ROUGHING

- Suitable for low hardness materials (under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steel, inconel, nimonic, etc.
- High velocity milling operation.
- Fast chip ejection.





MG | FINE | 3-5 | 30° | PLAIN

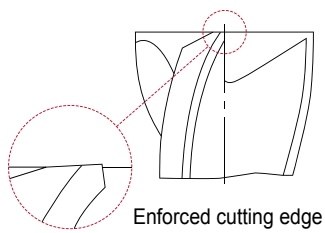
P.923

◆ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
95079	1/4	1/4	3/4	2-1/2	3
95080	5/16	5/16	3/4	2-1/2	3
95081	3/8	3/8	7/8	2-1/2	3
95082	1/2	1/2	1	3	4
95083	5/8	5/8	1-1/4	3-1/2	4
95084	3/4	3/4	1-5/8	4	4
95085	1	1	1-3/4	4	5

Mill Dia. (inch)	Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
1/4~3/8	0 ~ −.0022	0 ~ −.0003
1/2~5/8	0 ~ −.0027	
3/4~1	0 ~ −.0033	



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○			◎							◎	○

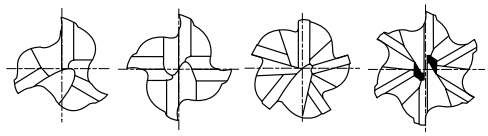
JET-POWER END MILLS

EH969 SERIES PLAIN SHANK

CARBIDE, MULTI FLUTE 45° HELIX LONG LENGTH FINE PITCH ROUGHING

- Suitable for low hardness materials (under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steel, titanium, inconel, nimonic, etc.
- High chip removed and minimizing breakages of cutting edges.
- Corner Protection against chipping.





MG | FINE | 3-6 | 45° | PLAIN

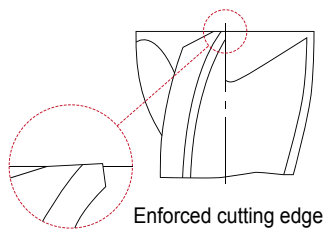
P.923

◆ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
95107	3/16	1/4	1/2	2-1/4	3
95108	1/4	1/4	3/4	2-1/2	4
95109	5/16	5/16	3/4	2-1/2	4
95110	3/8	3/8	7/8	2-1/2	4
95111	1/2	1/2	1	3	4
95112	5/8	5/8	1-1/4	3-1/2	5
95113	3/4	3/4	1-5/8	4	6
95114	1	1	1-3/4	4	6

Mill Dia. (inch)	Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
3/16	0 ~ −.0019	0 ~ −.0003
1/4~3/8	0 ~ −.0022	
1/2~5/8	0 ~ −.0027	
3/4~1	0 ~ −.0033	



Enforced cutting edge

◎ : Excellent ○ : Good

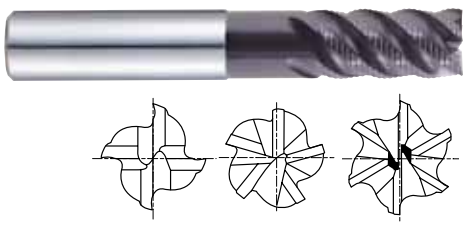
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○			◎							◎	○

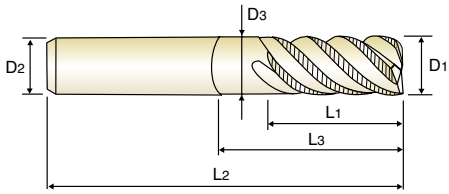
JET-POWER END MILLS

EH970 SERIES PLAIN SHANK

CARBIDE, MULTI FLUTE 45° HELIX LONG REACH FINE PITCH ROUGHING

- ▶ Suitable for low hardness materials (under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steel, titanium, inconel, nimonic, etc.
- ▶ High chip removed and minimizing breakages of cutting edges.
- ▶ Corner Protection against chipping.





MG | FINE | 4-6 | 45° | PLAIN

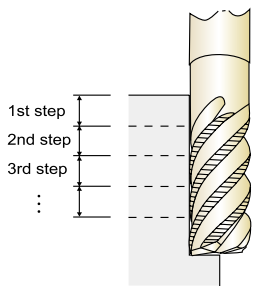
P.923

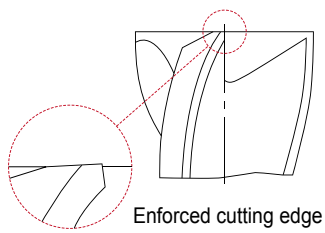
◆ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	No. of Flute
95101	**1/4**	1/4	3/4	7/8	2-1/2	.230	4
95102	**5/16**	5/16	3/4	1	2-1/2	.292	4
95103	**3/8**	3/8	7/8	1-1/4	2-1/2	.355	4
95104	**1/2**	1/2	1	1-1/2	3	.480	4
95105	**5/8**	5/8	1-1/4	2	4	.605	5
95106	**3/4**	3/4	1-5/8	2-3/8	4-3/8	.719	6

Mill Dia. (inch)	Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
1/4~3/8	0 ~ −.0022	0 ~ −.0003
1/2~5/8	0 ~ −.0027	
3/4~1	0 ~ −.0033	





◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○			◎							◎	○

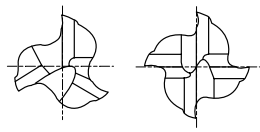
YG JET-POWER END MILLS

EH830 SERIES PLAIN SHANK

CARBIDE, 3&4 FLUTE 50° HELIX LONG LENGTH

- Reduces chipping of corner edges
- Suitable for low hardness materials(under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steels, Inconel, nimonic, etc





MG | 3&4 | 50° | PLAIN

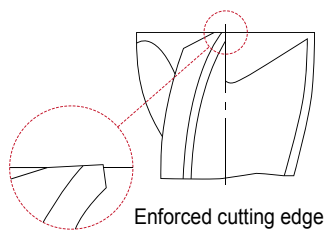
P.921

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flute
	Metric	Inch				
EH830060	6.0	.2362	6	13	50	3
EH830901	6.0	.2362	6	13	50	4
EH830080	8.0	.3150	8	19	60	3
EH830100	10.0	.3937	10	22	70	3
EH830120	12.0	.4724	12	25	75	3
EH830160	16.0	.6299	16	32	90	3
EH830180	18.0	.7087	18	32	90	3
EH830200	20.0	.7874	20	38	100	4
EH830250	25.0	.9843	25	45	120	4

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○			◎							◎	○

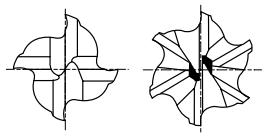
JET-POWER END MILLS

EE515 SERIES FLAT SHANK

PREMIUM HSS-PM, 4&6 FLUTE SHORT LENGTH

▶ Designed to machine low hardness materials (under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steel, inconel, nimonic, etc.
▶ High velocity milling operation and good surface finishes.





YPM | 4&6 | 30° | FLAT

P.922

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flute
	Metric	Inch				
EE515030	3.0	.1181	6	8	52	4
EE515040	4.0	.1575	6	11	55	4
EE515050	5.0	.1969	6	13	57	4
EE515060	6.0	.2362	6	13	57	4
EE515080	8.0	.3150	10	19	69	4
EE515100	10.0	.3937	10	22	72	4
EE515120	12.0	.4724	12	26	83	4
EE515140	14.0	.5512	12	26	83	4
EE515160	16.0	.6299	16	32	92	6
EE515180	18.0	.7087	16	32	92	6
EE515200	20.0	.7874	20	38	104	6
EE515250	25.0	.9843	25	45	121	6

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~+0.03	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○			◎							◎	○

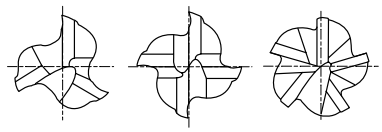
JET-POWER END MILLS

EH852 SERIES PLAIN SHANK

CARBIDE, MULTI FLUTE SHORT LENGTH FINE PITCH ROUGHING

- Designed to machine low hardness materials (under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steel, inconel, nimonic.
- High velocity milling operation.
- Fast chip ejection.





MG | FINE | 3-5 | 30° | PLAIN

P.923

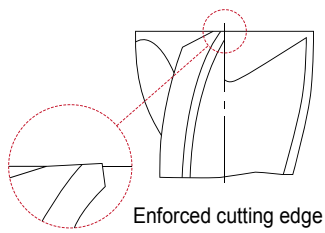
◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter Metric h10	Mill Diameter Inch h10	Shank Diameter h6	Length of Cut	Overall Length	No. of Flute
EH852060	6.0	.2362	6	7	54	3
EH852070	7.0	.2756	8	8	58	3
EH852080	8.0	.3150	8	9	58	3
EH852090	9.0	.3543	10	13	66	4
EH852100	10.0	.3937	10	14	66	4
EH852120	12.0	.4724	12	16	73	4
EH852140	14.0	.5512	14	18	75	4
EH852160	16.0	.6299	16	22	82	4
EH852180	18.0	.7087	18	24	84	4
EH852200	20.0	.7874	20	26	92	4
EH852250	25.0	.9843	25	25	110	5

Tolerances according to DIN 7160 & 7161

Tolerance range in μm					
Nominal-Diameter in mm					
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
h10	0 / — 40	0 / — 48	0 / — 58	0 / — 70	0 / — 84
h6	0 / — 6	0 / — 8	0 / — 9	0 / — 11	0 / — 13



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○			◎							◎	○

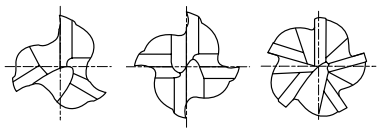
JET-POWER END MILLS

EH831 SERIES PLAIN SHANK

CARBIDE, MULTI FLUTE LONG LENGTH FINE PITCH ROUGHING

- Designed to machine low hardness materials (under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steel, inconel, nimonic.
- High velocity milling operation.
- Fast chip ejection.





MG | FINE | 3-5 | 30° | PLAIN

P.923

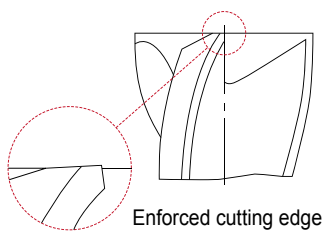
◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flute
	Metric	Inch				
	h10		h6			
EH831060	6.0	.2362	6	16	57	3
EH831070	7.0	.2756	8	16	63	3
EH831080	8.0	.3150	8	16	63	3
EH831090	9.0	.3543	10	19	72	4
EH831100	10.0	.3937	10	22	72	4
EH831120	12.0	.4724	12	26	83	4
EH831140	14.0	.5512	14	26	83	4
EH831160	16.0	.6299	16	32	92	4
EH831180	18.0	.7087	18	32	92	4
EH831200	20.0	.7874	20	38	104	4
EH831250	25.0	.9843	25	45	121	5

Tolerances according to DIN 7160 & 7161

Tolerance range in μm					
Nominal-Diameter in mm					
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
h10	0 / — 40	0 / — 48	0 / — 58	0 / — 70	0 / — 84
h6	0 / — 6	0 / — 8	0 / — 9	0 / — 11	0 / — 13



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○			◎							◎	○

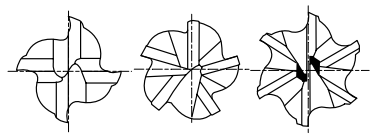
JET-POWER END MILLS

EH917 SERIES PLAIN SHANK

CARBIDE, MULTI FLUTE 45° HELIX SHORT LENGTH FINE PITCH ROUGHING

- 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, Inconel, nimonic, etc





MG | FINE | 4-6 | 45° | PLAIN

P.923

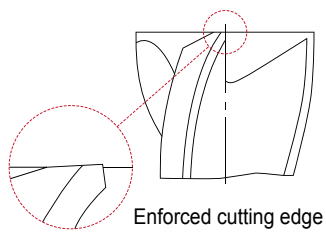
◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flute
	Metric	Inch				
	h10		h6			
EH917060	6.0	.2362	6	7	54	4
EH917080	8.0	.3150	8	9	58	4
EH917100	10.0	.3937	10	14	66	4
EH917120	12.0	.4724	12	16	73	4
EH917160	16.0	.6299	16	22	82	5
EH917200	20.0	.7874	20	26	92	6

Tolerances according to DIN 7160 & 7161

Tolerance range in μm					
Nominal-Diameter in mm					
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
h10	0 / — 40	0 / — 48	0 / — 58	0 / — 70	0 / — 84
h6	0 / — 6	0 / — 8	0 / — 9	0 / — 11	0 / — 13



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○			◎							◎	○

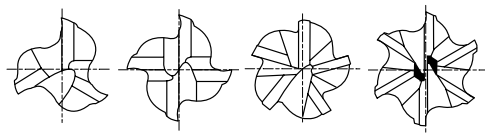
JET-POWER END MILLS

EH919 SERIES PLAIN SHANK

CARBIDE, MULTI FLUTE 45° HELIX LONG LENGTH FINE PITCH ROUGHING

- 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, Inconel, nimonic, etc





MG | FINE | 3-6 | 45° | PLAIN

P.923

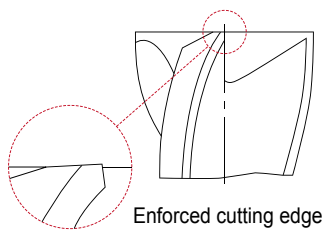
◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flute
	Metric	Inch				
	h10		h6			
EH919040	4.0	.1575	6	11	57	3
EH919050	5.0	.1969	6	13	57	4
EH919060	6.0	.2362	6	16	57	4
EH919070	7.0	.2756	8	16	63	4
EH919080	8.0	.3150	8	16	63	4
EH919090	9.0	.3543	10	19	72	4
EH919100	10.0	.3937	10	22	72	4
EH919120	12.0	.4724	12	26	83	4
EH919140	14.0	.5512	14	26	83	5
EH919160	16.0	.6299	16	32	92	5
EH919200	20.0	.7874	20	38	104	6
EH919250	25.0	.9843	25	45	121	6

Tolerances according to DIN 7160 & 7161

Tolerance range in μm					
Nominal-Diameter in mm					
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
h10	0 — 40	0 — 48	0 — 58	0 — 70	0 — 84
h6	0 — 6	0 — 8	0 — 9	0 — 11	0 — 13



Enforced cutting edge

◎ : Excellent ○ : Good

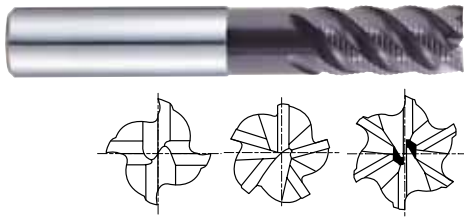
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○			◎							◎	○

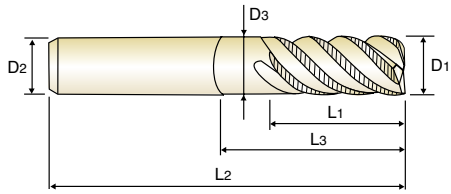
JET-POWER END MILLS

EH921 SERIES PLAIN SHANK

CARBIDE, MULTI FLUTE 45° HELIX LONG REACH FINE PITCH ROUGHING

- Suitable for low hardness materials (under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steel, titanium, inconel, nimonic, etc.
- High chip removed and minimizing breakages of cutting edges.
- Corner Protection against chipping.





MG | FINE | 4-6 | 45° | PLAIN

P.923

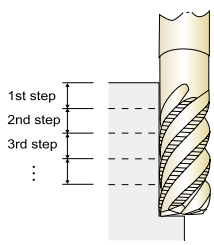
◇ Call for Availability

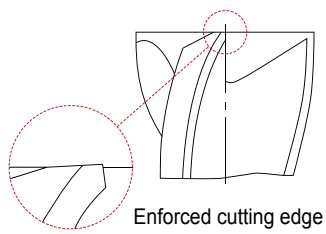
Unit : mm

EDP No.	Mill Diameter Metric D1	Mill Diameter Inch D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	No. of Flute
EH921060	6.0	.2362	6	16	20	57	5.5	4
EH921080	8.0	.3150	8	16	26	63	7.5	4
EH921100	10.0	.3937	10	22	31	72	9.5	4
EH921120	12.0	.4724	12	26	37	83	11.5	4
EH921160	16.0	.6299	16	32	51	100	15.5	5
EH921200	20.0	.7874	20	38	59	110	19.2	6

Tolerances according to DIN 7160 & 7161

Tolerance range in μm					
Nominal-Diameter in mm					
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
h10	0 / — 40	0 / — 48	0 / — 58	0 / — 70	0 / — 84
h6	0 / — 6	0 / — 8	0 / — 9	0 / — 11	0 / — 13





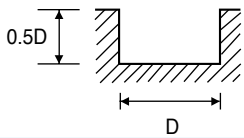
◎ : Excellent ○ : Good

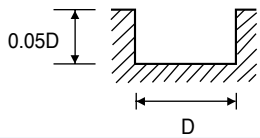
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	◎	◎	○			◎							◎	○

CARBIDE, 3&4 FLUTE FINISH - SLOTTING

EH108, EH830 SERIES

MATERIAL	P				M		S			
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS		TITANIUM ALLOY		HIGH TEMPERATURE ALLOY	
HARDNESS	~HRc30		HRc30 ~ HRc45							
STRENGTH	~1000N/mm^2		1000 ~ 1500N/mm^2							
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	5560	12.2	3360	7.9	2840	6.3	1500	2.2	1160	1.6
5/16	4200	13.4	2520	7.1	2100	6.3	1090	2.2	840	1.6
3/8	3260	11.8	2000	5.5	1680	5.5	870	2.2	670	1.6
1/2	2740	9.8	1680	4.7	1370	4.7	730	1.8	560	1.2
5/8	2200	7.9	1360	3.9	1050	4.0	550	1.4	420	1.0
3/4	1750	6.9	1100	3.4	880	3.4	480	1.2	350	1.2
1	1360	4.5	840	2.4	670	2.4	350	0.8	270	0.6





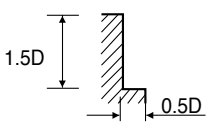
※ The Feed, in long & extra long types, should be reduced by around 50%.

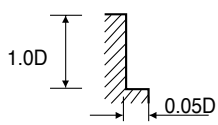
RPM = rev./min.
FEED = inch/min.

CARBIDE, 3&4 FLUTE FINISH - SIDE CUTTING

EH108, EH830 SERIES

MATERIAL	P				M		S			
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS		TITANIUM ALLOY		HIGH TEMPERATURE ALLOY	
HARDNESS	~HRc30		HRc30 ~ HRc45							
STRENGTH	~1000N/mm^2		1000 ~ 1500N/mm^2							
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	5560	15.8	3360	9.9	2840	8.3	1360	3.0	1050	2.2
5/16	4200	16.5	2520	9.1	2100	8.7	1090	2.8	840	2.0
3/8	3260	14.6	2000	7.1	1680	8.7	880	2.8	680	2.0
1/2	2740	12.2	1680	5.9	1370	7.1	730	2.6	560	1.8
5/8	2200	9.9	1360	4.7	1050	5.3	550	2.0	420	1.4
3/4	1750	8.7	1100	4.4	880	5.4	480	1.6	350	1.2
1	1360	5.9	840	3.0	670	4.5	350	1.4	270	1.0





※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

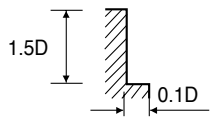
JET-POWER END MILLS

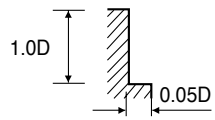
RECOMMENDED CUTTING CONDITIONS

YPM, 6 FLUTE - SIDE CUTTING

EE882 SERIES

MATERIAL	P				M		S			
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS		TITANIUM ALLOY		HIGH TEMPERATURE ALLOY	
HARDNESS	~HRc30		HRc30 ~ HRc45							
STRENGTH	~1000N/mm^2		1000 ~ 1500N/mm^2							
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/4	960	8.0	215	0.8	480	4.8	220	1.4	170	1.0
7/8	730	7.3	180	0.7	365	4.4	190	1.1	145	0.8
1	640	6.6	165	0.6	320	4.0	170	1.0	130	0.7
1-1/4	520	5.3	130	0.5	260	3.2	140	0.8	105	0.6
1-1/2	430	4.4	105	0.4	215	2.6	110	0.6	85	0.5





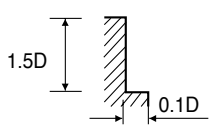
※ The Feed, in long & extra long types, should be reduced by around 50%.

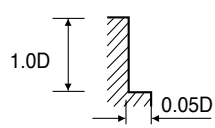
RPM = rev./min.
FEED = inch/min.

PREMIUM HSS-PM, 4&6 FLUTE SHORT- SIDE CUTTING

EE515 SERIES

MATERIAL	P				M		S	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS TITANIUM ALLOY		HIGH TEMPERATURE ALLOY	
HARDNESS	~ HRc30		HRc30 ~ HRc45					
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3.0	4400	7.3	1100	0.9	2200	4.3	880	1.1
4.0	3600	8.3	900	1.2	1800	4.9	720	1.5
5.0	3000	8.9	750	1.2	1500	5.3	600	1.4
6.0	2600	9.3	600	1.1	1300	5.5	480	1.4
8.0	2000	9.8	500	1.1	1000	5.9	400	1.3
10.0	1600	11.2	410	1.2	800	6.7	330	1.4
12.0	1320	9.8	340	1.1	660	5.9	270	1.4
14.0	1160	9.3	290	1.1	580	5.5	230	1.3
16.0	1000	8.9	250	1.0	500	5.3	200	1.2
18.0	900	8.3	225	0.9	450	4.9	180	1.1
20.0	800	7.9	200	0.7	400	4.7	160	0.8
25.0	640	6.5	165	0.6	320	3.9	130	0.7



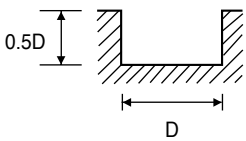


RPM = rev./min.
FEED = inch/min.

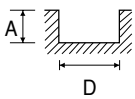
CARBIDE, MULTI FLUTE ROUGHING - SLOTTING

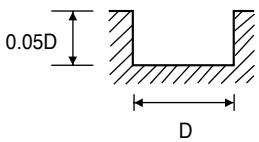
EH094, EH095, EH969, EH970, EH852, EH831, EH917, EH919, EH921 SERIES

MATERIAL	P				M		S			
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS		TITANIUM ALLOY		HIGH TEMPERATURE ALLOY	
HARDNESS	~HRc30		HRc30 ~ HRc45							
STRENGTH	~1000N/mm^2		1000 ~ 1500N/mm^2							
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	15600	91.4	12400	33.1	8400	22.5	3150	10.6	2400	7.5
5/16	11600	91.4	9200	33.1	6300	22.5	2350	9.8	1800	7.1
3/8	9200	91.4	7600	33.1	5100	22.5	1700	10.2	1300	7.5
1/2	8000	94.5	6000	31.5	4200	22.5	1560	10.2	1200	7.5
5/8	6000	94.5	4800	29.9	3300	20.1	1040	5.8	800	4.3
3/4	5200	91.4	4400	28.4	2500	16.6	910	5.5	675	4.0
1	4300	84.7	3200	24.4	2160	16.2	780	5.1	600	4.3



A: D1/4-D3/8:0.25×D
D1/2-D5/8:0.15×D
D3/4-D1:0.10×D





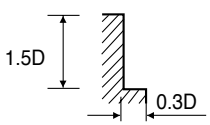
※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

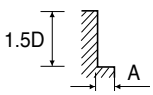
CARBIDE, MULTI FLUTE ROUGHING - SIDE CUTTING

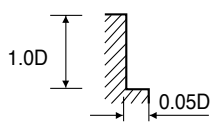
EH094, EH095, EH969, EH970, EH852, EH831, EH917, EH919, EH921 SERIES

MATERIAL	P				M		S			
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS		TITANIUM ALLOY		HIGH TEMPERATURE ALLOY	
HARDNESS	~HRc30		HRc30 ~ HRc45							
STRENGTH	~1000N/mm^2		1000 ~ 1500N/mm^2							
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	15600	91.4	12400	33.1	8400	22.5	3150	10.6	2400	7.5
5/16	11600	91.4	9200	33.1	6300	22.5	2350	9.8	1800	7.1
3/8	9200	91.4	7600	33.1	5100	22.5	1700	10.2	1300	7.5
1/2	8000	94.5	6000	31.5	4200	22.5	1560	10.2	1200	7.5
5/8	6000	94.5	4800	29.9	3300	22.1	1040	5.9	800	4.3
3/4	5200	91.4	4400	28.4	2700	16.6	910	5.5	700	4.0
1	4300	84.7	3200	24.4	2160	16.2	780	5.1	600	4.3



A: D1/4-D3/8:0.15×D
D1/2-D5/8:0.10×D
D3/4-D1:0.05×D

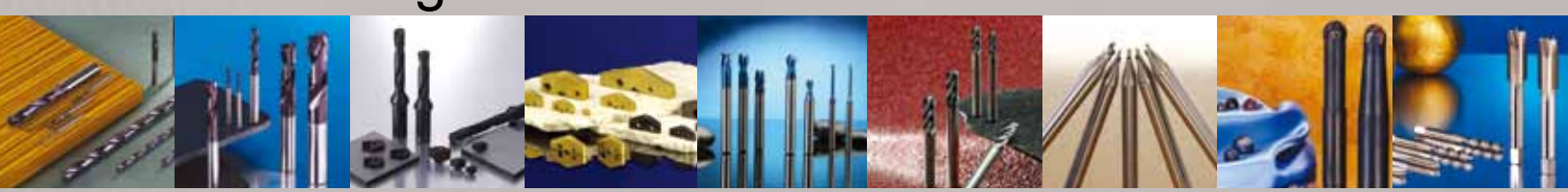




※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

Global Cutting Tool Leader **YG-1**



CARBIDE

Being the best through innovation





TitaNox-POWER END MILLS

- High Speed Machining for Exotic Materials:
  Titanium, Inconel and Stainless Steels

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
INCH					
UGMG42		CARBIDE, 4 FLUTE CORNER RADIUS with DOUBLE CORE ◆	D1/4	D1	928
UGMG34		CARBIDE, 5 FLUTE CORNER RADIUS ◆	D1/8	D1	930
UGMG32		CARBIDE, 5 FLUTE ◆	D1/8	D1	933
METRIC					
GMG40		CARBIDE, 4 FLUTE CORNER RADIUS with DOUBLE CORE ◇	D6.0	D25.0	934
GMG24		CARBIDE, 5 FLUTE SHORT LENGTH ◇	D6.0	D25.0	936
GMG26		CARBIDE, 5 FLUTE LONG LENGTH ◇	D6.0	D25.0	937
GMG28		CARBIDE, 5 FLUTE SHORT LENGTH CORNER RADIUS ◇	D6.0	D25.0	938
GMG30		CARBIDE, 5 FLUTE LONG LENGTH CORNER RADIUS ◇	D6.0	D25.0	939
		RECOMMENDED CUTTING CONDITIONS			941

◆ U.S.A Stock

◇ Call for Availability

◎ : Excellent ○ : Good

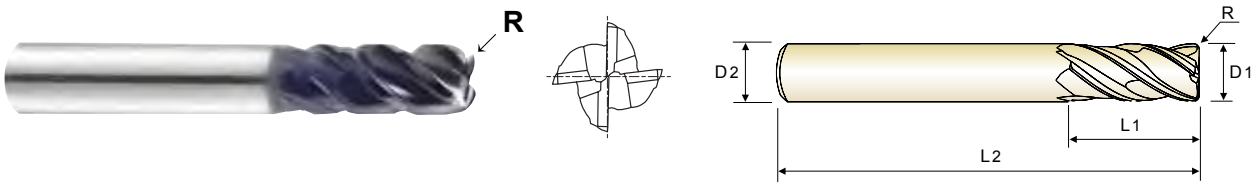
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~352	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	○	○				◎							◎	○
○	○	○				◎							◎	○
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○	○	○				◎							◎	○
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○	○	○				◎							◎	○
○	○	○				◎							◎	○

TitaNox-POWER END MILLS

UGMG42 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE CORNER RADIUS with DOUBLE CORE

- Double Core E/M has a Unique Flute Design for excellent chip evacuation and higher rigidity
- The double core adds stability and aids chip flow, reducing tool deflection, improving dimensional stability and workpiece accuracy



MG | 4 | M-Helix | PLAIN

P.941, 942

MADE IN USA ◆ U.S.A Stock

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
Y-COATED	R	D1	D2	L1	L2
UGMG42016	R.015	**1/4**	1/4	9/16	2-1/2
UGMG42901	R.030	**1/4**	1/4	9/16	2-1/2
UGMG42902	R.060	**1/4**	1/4	9/16	2-1/2
UGMG42020	R.015	**5/16**	5/16	11/16	2-1/2
UGMG42903	R.030	**5/16**	5/16	11/16	2-1/2
UGMG42904	R.060	**5/16**	5/16	11/16	2-1/2
UGMG42024	R.020	**3/8**	3/8	13/16	2-1/2
UGMG42905	R.030	**3/8**	3/8	13/16	2-1/2
UGMG42906	R.060	**3/8**	3/8	13/16	2-1/2
UGMG42907	R.090	**3/8**	3/8	13/16	2-1/2
UGMG42032	R.020	**1/2**	1/2	1	3
UGMG42908	R.030	**1/2**	1/2	1	3
UGMG42909	R.060	**1/2**	1/2	1	3
UGMG42910	R.090	**1/2**	1/2	1	3
UGMG42911	R.125	**1/2**	1/2	1	3
UGMG42912	R.030	**1/2**	1/2	1-1/4	3-1/2
UGMG42040	R.030	**5/8**	5/8	1-1/4	3-1/2
UGMG42913	R.060	**5/8**	5/8	1-1/4	3-1/2
UGMG42914	R.090	**5/8**	5/8	1-1/4	3-1/2
UGMG42915	R.125	**5/8**	5/8	1-1/4	3-1/2
UGMG42048	R.030	**3/4**	3/4	1-1/2	4
UGMG42916	R.060	**3/4**	3/4	1-1/2	4
UGMG42917	R.090	**3/4**	3/4	1-1/2	4
UGMG42918	R.125	**3/4**	3/4	1-1/2	4
UGMG42919	R.190	**3/4**	3/4	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	○	○				◎							◎	○

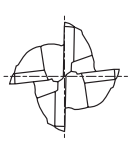
TitaNox-POWER END MILLS

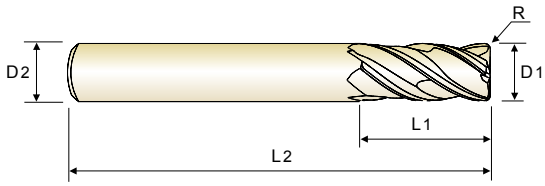
UGMG42 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE CORNER RADIUS with DOUBLE CORE

- Double Core E/M has a Unique Flute Design for excellent chip evacuation and higher rigidity
- The double core adds stability and aids chip flow, reducing tool deflection, improving dimensional stability and workpiece accuracy







MG | 4 | M-Helix | PLAIN

P.941, 942

MADE IN USA ◆ U.S.A Stock

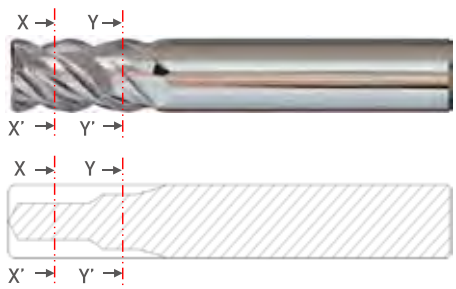
Unit : Inch

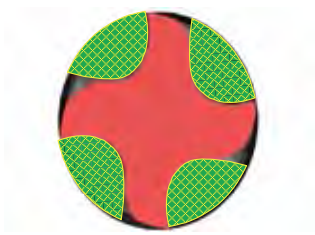
EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
Y-COATED	R	D1	D2	L1	L2
UGMG42064	R.030	**1**	1	2	5
UGMG42920	R.060	**1**	1	2	5
UGMG42921	R.090	**1**	1	2	5
UGMG42922	R.125	**1**	1	2	5
UGMG42923	R.190	**1**	1	2	5

▶ Other shank types are available on your request.

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6

◆ **2 STEP CORE**





<SECTION X-X'>
Excellent chip evacuation



<SECTION Y-Y'>
Higher rigidity

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	○	○				◎							◎	○

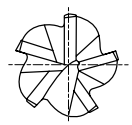
TitaNox-POWER END MILLS

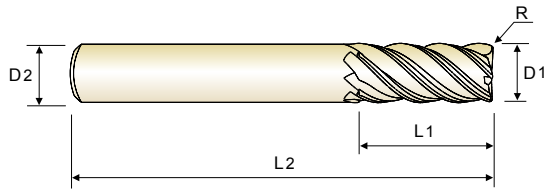
UGMG34 SERIES PLAIN SHANK

CARBIDE, 5 FLUTE CORNER RADIUS

- Excellent performance results and long tool life when machining Titanium and other tough materials
- This tool has high rigidity of flute so that is possible to use for heavy profile and high speed milling
- For protecting Corner chipping of end teeth, Corner Radius & Chamfer are adopted







MG | 5 | M-Helix | PLAIN

P.943

MADE IN USA ◆ U.S.A Stock

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
Y-COATED	R	D_1	D_2	L_1	L_2
UGMG34008	R.015	**1/8**	1/8	1/4	1-1/2
UGMG34901	R.015	**1/8**	1/8	3/8	1-1/2
UGMG34012	R.015	**3/ 16**	3/16	5/16	2
UGMG34902	R.015	**3/ 16**	3/16	9/16	2
UGMG34016	R.030	**1/4**	1/4	3/8	2
UGMG34903	R.015	**1/4**	1/4	3/4	2-1/2
UGMG34904	R.030	**1/4**	1/4	3/4	2-1/2
UGMG34905	R.060	**1/4**	1/4	3/4	2-1/2
UGMG34020	R.030	**5/16**	5/16	7/16	2
UGMG34906	R.015	**5/16**	5/16	13/16	2-1/2
UGMG34907	R.030	**5/16**	5/16	13/16	2-1/2
UGMG34908	R.060	**5/16**	5/16	13/16	2-1/2
UGMG34024	R.030	**3/8**	3/8	1/2	2-1/2
UGMG34909	R.060	**3/8**	3/8	1/2	2-1/2
UGMG34910	R.015	**3/8**	3/8	1	3
UGMG34911	R.030	**3/8**	3/8	1	3
UGMG34912	R.060	**3/8**	3/8	1	3
UGMG34032	R.015	**1/2**	1/2	5/8	2-1/2
UGMG34913	R.030	**1/2**	1/2	5/8	2-1/2
UGMG34914	R.060	**1/2**	1/2	5/8	2-1/2
UGMG34915	R.015	**1/2**	1/2	1	3
UGMG34916	R.030	**1/2**	1/2	1	3
UGMG34917	R.060	**1/2**	1/2	1	3
UGMG34918	R.090	**1/2**	1/2	1	3

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6

▶ Other shank types are available on your request.

▶ NEXT PAGE

◎ : Excellent ○ : Good

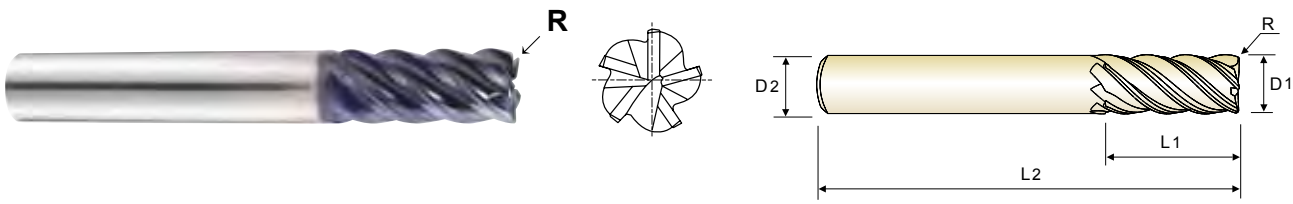
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	○	○				◎							◎	○

TitaNox-POWER END MILLS

UGMG34 SERIES PLAIN SHANK

CARBIDE, 5 FLUTE CORNER RADIUS

- Excellent performance results and long tool life when machining Titanium and other tough materials
- This tool has high rigidity of flute so that is possible to use for heavy profile and high speed milling
- For protecting Corner chipping of end teeth, Corner Radius & Chamfer are adopted



MG | 5 | M-Helix | PLAIN | P.943

MADE IN USA ◆ U.S.A Stock

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
Y-COATED	R	D_1	D_2	L_1	L_2
UGMG34919	R.125	**1/2**	1/2	1	3
UGMG34920	R.015	**1/2**	1/2	1-1/4	3-1/2
UGMG34921	R.030	**1/2**	1/2	1-1/4	3-1/2
UGMG34922	R.060	**1/2**	1/2	1-1/4	3-1/2
UGMG34923	R.090	**1/2**	1/2	1-1/4	3-1/2
UGMG34924	R.125	**1/2**	1/2	1-1/4	3-1/2
UGMG34040	R.030	**5/8**	5/8	3/4	3
UGMG34925	R.060	**5/8**	5/8	3/4	3
UGMG34926	R.015	**5/8**	5/8	1-1/4	3-1/2
UGMG34927	R.030	**5/8**	5/8	1-1/4	3-1/2
UGMG34928	R.060	**5/8**	5/8	1-1/4	3-1/2
UGMG34929	R.090	**5/8**	5/8	1-1/4	3-1/2
UGMG34930	R.125	**5/8**	5/8	1-1/4	3-1/2
UGMG34048	R.030	**3/4**	3/4	1	3-1/2
UGMG34931	R.060	**3/4**	3/4	1	3-1/2
UGMG34932	R.090	**3/4**	3/4	1	3-1/2
UGMG34933	R.015	**3/4**	3/4	1-1/2	4
UGMG34934	R.030	**3/4**	3/4	1-1/2	4
UGMG34935	R.060	**3/4**	3/4	1-1/2	4
UGMG34936	R.090	**3/4**	3/4	1-1/2	4
UGMG34937	R.125	**3/4**	3/4	1-1/2	4
UGMG34938	R.190	**3/4**	3/4	1-1/2	4

▶ Other shank types are available on your request.

▶ NEXT PAGE

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	○	○				◎							◎	○

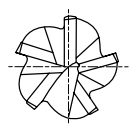
TitaNox-POWER END MILLS

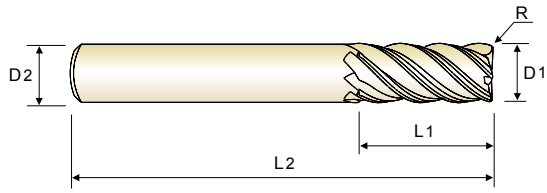
UGMG34 SERIES PLAIN SHANK

CARBIDE, 5 FLUTE CORNER RADIUS

- Excellent performance results and long tool life when machining Titanium and other tough materials
- This tool has high rigidity of flute so that is possible to use for heavy profile and high speed milling
- For protecting Corner chipping of end teeth, Corner Radius & Chamfer are adopted







MG | 5 | M-Helix | PLAIN

P.943

MADE IN USA ◆ U.S.A Stock

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
Y-COATED	R	D_1	D_2	L_1	L_2
UGMG34064	R.030	**1**	1	1-1/8	4
UGMG34939	R.060	**1**	1	1-1/8	4
UGMG34940	R.090	**1**	1	1-1/8	4
UGMG34941	R.015	**1**	1	1-1/2	4
UGMG34942	R.030	**1**	1	1-1/2	4
UGMG34943	R.060	**1**	1	1-1/2	4
UGMG34944	R.090	**1**	1	1-1/2	4
UGMG34945	R.125	**1**	1	1-1/2	4
UGMG34946	R.190	**1**	1	1-1/2	4
UGMG34947	R.030	**1**	1	2	5
UGMG34948	R.060	**1**	1	2	5
UGMG34949	R.090	**1**	1	2	5

- Other shank types are available on your request.

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6

◎ : Excellent ○ : Good

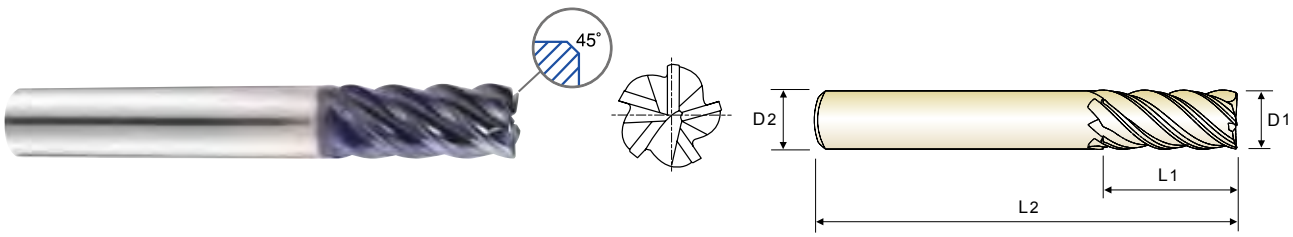
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	○	○				◎							◎	○

TitaNox-POWER END MILLS

UGMG32 SERIES PLAIN SHANK

CARBIDE, 5 FLUTE

- Excellent performance results and long tool life when machining Titanium and other tough materials
- This tool has high rigidity of flute so that is possible to use for heavy profile and high speed milling
- For protecting Corner chipping of end teeth, Corner Radius & Chamfer are adopted



MG | 5 | M-Helix | PLAIN | C x 45° | P.943

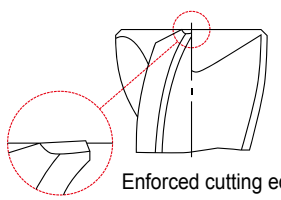
MADE IN USA ◆ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Chamfer Size
Y-COATED	D_1	D_2	L_1	L_2	
UGMG32008	1/8	1/8	1/4	1-1/2	.004
UGMG32901	1/8	1/8	3/8	1-1/2	.004
UGMG32012	3/16	3/16	5/16	2	.006
UGMG32902	3/16	3/16	9/16	2	.006
UGMG32016	1/4	1/4	3/8	2	.007
UGMG32903	1/4	1/4	3/4	2-1/2	.007
UGMG32020	5/16	5/16	7/16	2	.007
UGMG32904	5/16	5/16	13/16	2-1/2	.007
UGMG32024	3/8	3/8	1/2	2-1/2	.011
UGMG32905	3/8	3/8	1	3	.011
UGMG32032	1/2	1/2	5/8	2-1/2	.013
UGMG32906	1/2	1/2	1	3	.013
UGMG32907	1/2	1/2	1-1/4	3-1/2	.013
UGMG32040	5/8	5/8	3/4	3	.015
UGMG32908	1/2	5/8	1-1/4	3-1/2	.015
UGMG32048	3/4	3/4	1	3-1/2	.019
UGMG32909	3/4	3/4	1-1/2	4	.019
UGMG32064	1	1	1-1/8	4	.019
UGMG32910	1	1	1-1/2	4	.019
UGMG32911	1	1	2	5	.019

▶ Other shank types are available on your request.

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6


Enforced cutting edge

◎ : Excellent ○ : Good

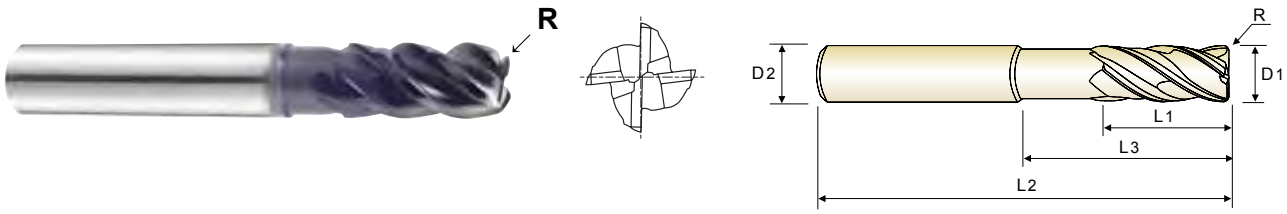
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	○	○				◎							◎	○

TitaNox-POWER END MILLS

GMG40 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE CORNER RADIUS with DOUBLE CORE

- Double Core E/M has a Unique Flute Design for excellent chip evacuation and higher rigidity
- The double core adds stability and aids chip flow, reducing tool deflection, improving dimensional stability and workpiece accuracy



MG | 4 | M-Helix | PLAIN

P.944, 945

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length
Y-COATED	R	METRIC / INCH D1		D_2	L_1	L_3	L_2
GMG40060	R0.5	**6.0**	**.2362**	6	13	20	57
GMG40901	R1.0	**6.0**	**.2362**	6	13	20	57
GMG40080	R0.5	**8.0**	**.3150**	8	19	25	63
GMG40902	R1.0	**8.0**	**.3150**	8	19	25	63
GMG40903	R1.5	**8.0**	**.3150**	8	19	25	63
GMG40904	R2.0	**8.0**	**.3150**	8	19	25	63
GMG40100	R0.5	**10.0**	**.3937**	10	22	30	72
GMG40905	R1.0	**10.0**	**.3937**	10	22	30	72
GMG40906	R1.5	**10.0**	**.3937**	10	22	30	72
GMG40907	R2.0	**10.0**	**.3937**	10	22	30	72
GMG40120	R0.5	**12.0**	**.4724**	12	26	35	83
GMG40908	R1.0	**12.0**	**.4724**	12	26	35	83
GMG40909	R1.5	**12.0**	**.4724**	12	26	35	83
GMG40910	R2.0	**12.0**	**.4724**	12	26	35	83
GMG40911	R3.0	**12.0**	**.4724**	12	26	35	83
GMG40140	R1.0	**14.0**	**.5512**	14	26	35	83
GMG40912	R2.0	**14.0**	**.5512**	14	26	35	83
GMG40160	R1.0	**16.0**	**.6299**	16	35	43	92
GMG40913	R1.5	**16.0**	**.6299**	16	35	43	92
GMG40914	R2.0	**16.0**	**.6299**	16	35	43	92
GMG40915	R3.0	**16.0**	**.6299**	16	35	43	92
GMG40916	R4.0	**16.0**	**.6299**	16	35	43	92

▶ NEXT PAGE

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6

◎ : Excellent ○ : Good

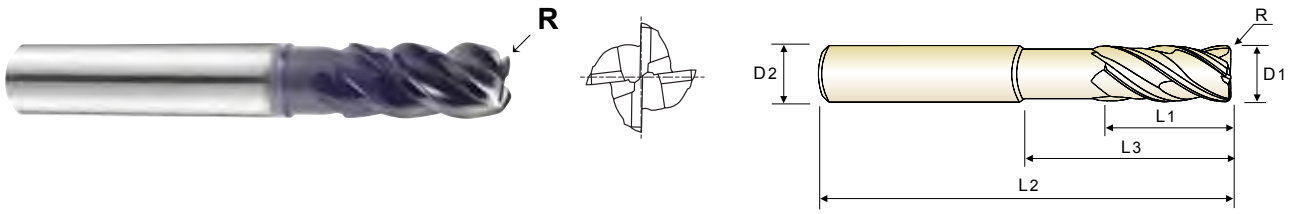
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	○	○				◎							◎	○

TitaNox-POWER END MILLS

GMG40 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE CORNER RADIUS with DOUBLE CORE

- Double Core E/M has a Unique Flute Design for excellent chip evacuation and higher rigidity
- The double core adds stability and aids chip flow, reducing tool deflection, improving dimensional stability and workpiece accuracy



MG | 4 | M-Helix | PLAIN

P.944, 945

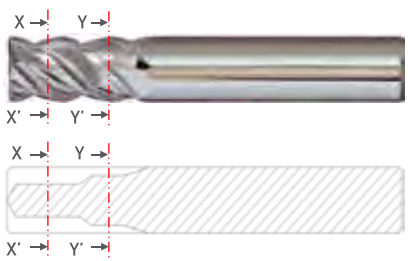
◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length
Y-COATED	R	METRIC	INCH	D_2	L_1	L_3	L_2
		D_1					
GMG40200	R1.0	**20.0**	**.7874**	20	44	56	110
GMG40917	R1.5	**20.0**	**.7874**	20	44	56	110
GMG40918	R2.0	**20.0**	**.7874**	20	44	56	110
GMG40919	R3.0	**20.0**	**.7874**	20	44	56	110
GMG40920	R3.5	**20.0**	**.7874**	20	44	56	110
GMG40921	R4.0	**20.0**	**.7874**	20	44	56	110
GMG40250	R1.0	**25.0**	**.9843**	25	55	70	130
GMG40922	R1.5	**25.0**	**.9843**	25	55	70	130
GMG40923	R2.0	**25.0**	**.9843**	25	55	70	130
GMG40924	R3.0	**25.0**	**.9843**	25	55	70	130
GMG40925	R4.0	**25.0**	**.9843**	25	55	70	130

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6

◆ **2 STEP CORE**





<SECTION X-X'>
Excellent chip evacuation

<SECTION Y-Y'>
Higher rigidity

◎ : Excellent ○ : Good

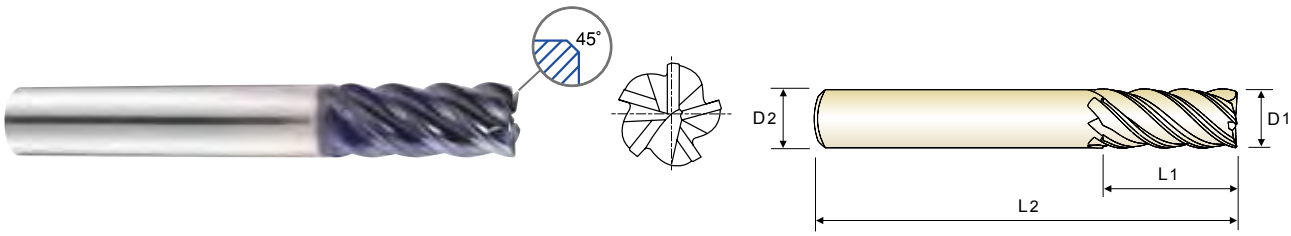
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	○	○				◎							◎	○

TitaNox-POWER END MILLS

GMG24 SERIES PLAIN SHANK

CARBIDE, 5 FLUTE SHORT LENGTH

- Excellent performance results and long tool life when machining Titanium and other tough materials
- This tool has high rigidity of flute so that is possible to use for heavy profile and high speed milling
- For protecting Corner chipping of end teeth, Corner Radius & Chamfer are adopted



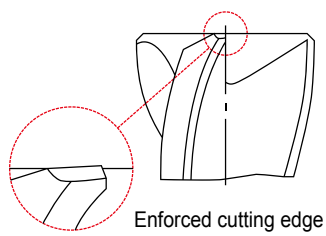
MG | 5 | M-Helix | PLAIN | C x 45° | P.946

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	Chamfer Size
Y-COATED	METRIC	INCH	D_2	L_1	L_2	
	D_1					
GMG24060	**6.0**	**.2362**	6	10	54	0.2
GMG24080	**8.0**	**.3150**	8	12	58	0.2
GMG24100	**10.0**	**.3937**	10	14	66	0.3
GMG24120	**12.0**	**.4724**	12	16	73	0.35
GMG24160	**16.0**	**.6299**	16	22	82	0.4
GMG24200	**20.0**	**.7874**	20	26	92	0.5
GMG24250	**25.0**	**.9843**	25	29	100	0.5

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6


Enforced cutting edge

◎ : Excellent ○ : Good

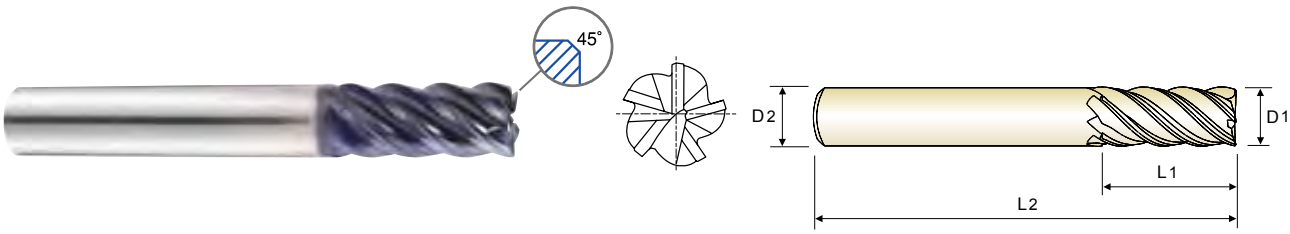
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	○	○				◎							◎	○

TitaNox-POWER END MILLS

GMG26 SERIES PLAIN SHANK

CARBIDE, 5 FLUTE LONG LENGTH

- Excellent performance results and long tool life when machining Titanium and other tough materials
- This tool has high rigidity of flute so that is possible to use for heavy profile and high speed milling
- For protecting Corner chipping of end teeth, Corner Radius & Chamfer are adopted



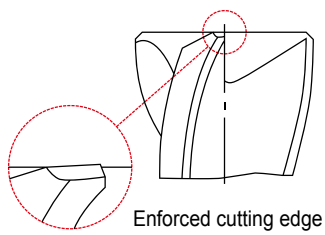
MG | 5 | M-Helix | PLAIN | C x 45° | P.946

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	Chamfer Size
Y-COATED	METRIC	INCH	D_2	L_1	L_2	
	D_1					
GMG26060	6.0	.2362	6	13	57	0.2
GMG26080	8.0	.3150	8	19	63	0.2
GMG26100	10.0	.3937	10	22	72	0.3
GMG26120	12.0	.4724	12	26	83	0.35
GMG26160	16.0	.6299	16	36	92	0.4
GMG26200	20.0	.7874	20	44	104	0.5
GMG26250	25.0	.9843	25	54	121	0.5

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6


Enforced cutting edge

◎ : Excellent ○ : Good

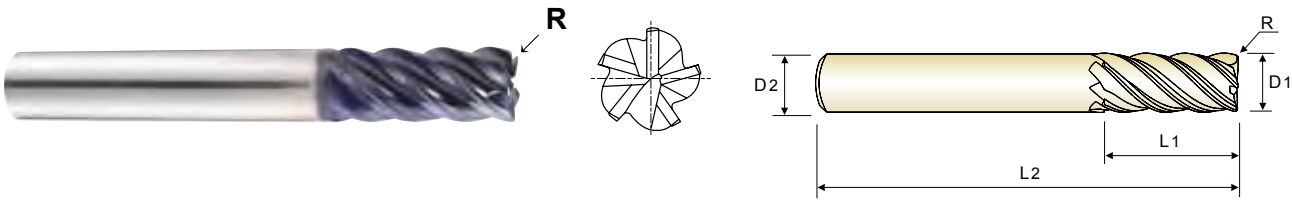
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	○	○				◎							◎	○

TitaNox-POWER END MILLS

GMG28 SERIES PLAIN SHANK

CARBIDE, 5 FLUTE SHORT LENGTH CORNER RADIUS

- Excellent performance results and long tool life when machining Titanium and other tough materials
- This tool has high rigidity of flute so that is possible to use for heavy profile and high speed milling
- For protecting Corner chipping of end teeth, Corner Radius & Chamfer are adopted



MG | 5 | M-Helix | PLAIN

P.946

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
Y-COATED	R	METRIC	INCH	D_2	L_1	L_2
		D_1				
GMG28060	R0.5	**6.0**	**.2362**	6	10	54
GMG28080	R0.5	**8.0**	**.3150**	8	12	58
GMG28100	R0.5	**10.0**	**.3937**	10	14	66
GMG28120	R0.5	**12.0**	**.4724**	12	16	73
GMG28160	R1.0	**16.0**	**.6299**	16	22	82
GMG28200	R1.0	**20.0**	**.7874**	20	26	92
GMG28250	R1.0	**25.0**	**.9843**	25	29	100

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6

◎ : Excellent ○ : Good

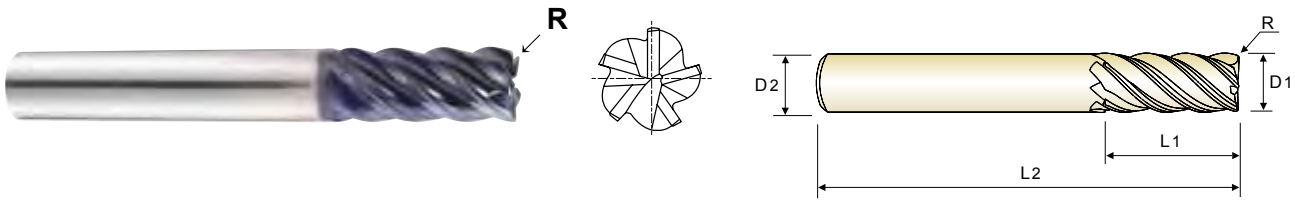
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	○	○				◎							◎	○

TitaNox-POWER END MILLS

GMG30 SERIES PLAIN SHANK

CARBIDE, 5 FLUTE LONG LENGTH CORNER RADIUS

- Excellent performance results and long tool life when machining Titanium and other tough materials
- This tool has high rigidity of flute so that is possible to use for heavy profile and high speed milling
- For protecting Corner chipping of end teeth, Corner Radius & Chamfer are adopted



MG | 5 | M-Helix | PLAIN

P.946

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
Y-COATED	R	METRIC D1	INCH D1	D2	L1	L2
GMG30060	R0.3	6.0	.2362	6	13	57
GMG30901	R0.5	6.0	.2362	6	13	57
GMG30902	R1.0	6.0	.2362	6	13	57
GMG30080	R0.5	8.0	.3150	8	19	63
GMG30903	R1.0	8.0	.3150	8	19	63
GMG30904	R1.5	8.0	.3150	8	19	63
GMG30905	R2.0	8.0	.3150	8	19	63
GMG30100	R0.5	10.0	.3937	10	22	72
GMG30906	R1.0	10.0	.3937	10	22	72
GMG30907	R1.5	10.0	.3937	10	22	72
GMG30908	R2.0	10.0	.3937	10	22	72
GMG30120	R0.5	12.0	.4724	12	26	83
GMG30909	R1.0	12.0	.4724	12	26	83
GMG30910	R1.5	12.0	.4724	12	26	83
GMG30911	R2.0	12.0	.4724	12	26	83
GMG30912	R2.5	12.0	.4724	12	26	83
GMG30913	R3.0	12.0	.4724	12	26	83
GMG30160	R1.0	16.0	.6299	16	36	92
GMG30914	R1.5	16.0	.6299	16	36	92
GMG30915	R2.0	16.0	.6299	16	36	92
GMG30916	R2.5	16.0	.6299	16	36	92
GMG30917	R3.0	16.0	.6299	16	36	92
GMG30918	R4.0	16.0	.6299	16	36	92

▶ NEXT PAGE

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6

◎ : Excellent ○ : Good

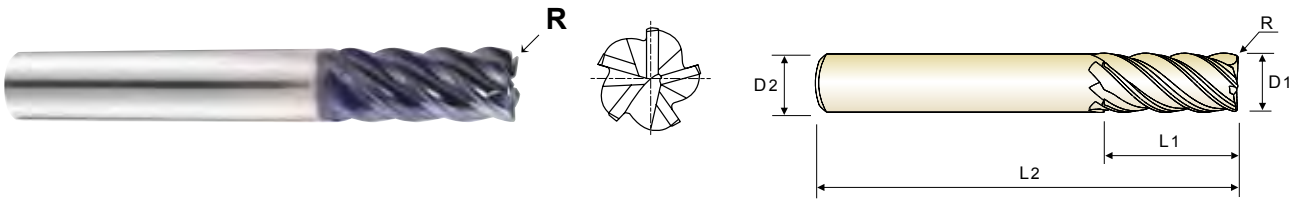
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	○	○				◎							◎	○

TitaNox-POWER END MILLS

GMG30 SERIES PLAIN SHANK

CARBIDE, 5 FLUTE LONG LENGTH CORNER RADIUS

- Excellent performance results and long tool life when machining Titanium and other tough materials
- This tool has high rigidity of flute so that is possible to use for heavy profile and high speed milling
- For protecting Corner chipping of end teeth, Corner Radius & Chamfer are adopted



MG | 5 | M-Helix | PLAIN

P.946

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
Y-COATED	R	METRIC D1	INCH D1	D2	L1	L2
GMG30200	R1.0	20.0	.7874	20	44	104
GMG30919	R1.5	20.0	.7874	20	44	104
GMG30920	R2.0	20.0	.7874	20	44	104
GMG30921	R2.5	20.0	.7874	20	44	104
GMG30922	R3.0	20.0	.7874	20	44	104
GMG30923	R4.0	20.0	.7874	20	44	104
GMG30924	R5.0	20.0	.7874	20	44	104
GMG30250	R1.0	25.0	.9843	25	54	121
GMG30925	R1.5	25.0	.9843	25	54	121
GMG30926	R2.0	25.0	.9843	25	54	121
GMG30927	R2.5	25.0	.9843	25	54	121
GMG30928	R3.0	25.0	.9843	25	54	121
GMG30929	R4.0	25.0	.9843	25	54	121
GMG30930	R5.0	25.0	.9843	25	54	121

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6

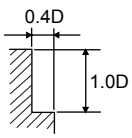
◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○	○	○				◎							◎	○

CARBIDE, 4 FLUTE CORNER RADIUS with DOUBLE CORE - SIDE CUTTING

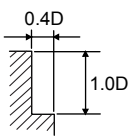
UGMG42 SERIES

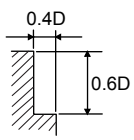
MATERIAL	P											
	CARBON STEELS				ALLOY STEELS				TOOL STEELS			
HARDNESS	~ HB 300				HB 300 ~ HB 380				~ HB 380			
STRENGTH	~ 1000N/mm²				1000 ~ 1300N/mm²				~ 1300N/mm²			
DIAMETER	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz
1/4	8021	34.11	525	.0011	7520	29.61	492	.0010	7520	31.97	492	.0011
5/16	6417	35.37	525	.0014	6016	33.16	492	.0014	6016	33.16	492	.0014
3/8	5347	35.37	525	.0017	5013	33.16	492	.0017	5013	36.32	492	.0018
1/2	4010	33.47	525	.0021	3760	29.01	492	.0019	3760	31.38	492	.0021
5/8	3208	31.83	525	.0025	3008	29.84	492	.0025	3008	31.74	492	.0026
3/4	2674	32.42	525	.0030	2507	27.63	492	.0028	2507	30.39	492	.0030
1	2005	26.53	525	.0033	1880	24.87	492	.0033	1880	24.87	492	.0033



RPM = rev./min. FEED = inch/min.
Vc = ft/min. fz = inch/tooth

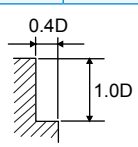
MATERIAL	M											
	STAINLESS STEELS 300				STAINLESS STEELS 400				STAINLESS STEELS (PH)			
HARDNESS												
STRENGTH												
DIAMETER	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz
1/4	5264	20.47	344	.0010	7770	41.85	509	.0013	2206	5.61	144	.0006
5/16	4211	22.68	344	.0013	6216	44.64	509	.0018	1765	5.81	144	.0008
3/8	3509	23.10	344	.0016	5180	46.50	509	.0022	1471	6.16	144	.0010
1/2	2632	19.69	344	.0019	3885	40.69	509	.0026	1103	5.61	144	.0013
5/8	2106	20.47	344	.0024	3108	41.85	509	.0034	882	5.54	144	.0016
3/4	1755	19.69	344	.0028	2590	38.75	509	.0037	735	5.28	144	.0018
1	1316	16.73	344	.0032	1943	34.87	509	.0045	551	4.54	144	.0021

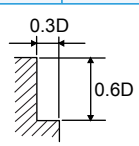




RPM = rev./min. FEED = inch/min.
Vc = ft/min. fz = inch/tooth

MATERIAL	K				S							
	CAST IRON				TITANIUM				HIGH TEMPERATURE ALLOY INCONEL HASTELLOY RENE			
HARDNESS	~ HB 260											
STRENGTH	~ 870N/mm²											
DIAMETER	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz
1/4	8773	29.01	574	.0008	3509	18.90	230	.0013	1604	5.05	105	.0008
5/16	7018	30.95	574	.0011	2807	21.00	230	.0019	1283	5.25	105	.0010
3/8	5849	32.24	574	.0014	2339	21.00	230	.0022	1069	5.39	105	.0013
1/2	4386	29.01	574	.0017	1755	18.37	230	.0026	802	4.80	105	.0015
5/8	3509	29.29	574	.0021	1404	18.90	230	.0034	642	4.85	105	.0019
3/4	2924	27.63	574	.0024	1170	17.50	230	.0037	535	4.63	105	.0022
1	2193	24.18	574	.0028	877	15.75	230	.0045	401	4.11	105	.0026





RPM = rev./min. FEED = inch/min.
Vc = ft/min. fz = inch/tooth

TitaNox-POWER END MILLS

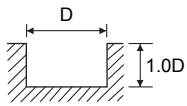
RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE CORNER RADIUS with DOUBLE CORE - SLOTTING

UGMG42 SERIES

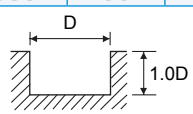
MATERIAL	P											
	CARBON STEELS				ALLOY STEELS				TOOL STEELS			
HARDNESS	~ HB 300				HB 300 ~ HB 380				~ HB 380			
STRENGTH	~ 1000N/mm²				1000 ~ 1300N/mm²				~ 1300N/mm²			
DIAMETER	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz
1/4	6266	24.67	410	.0010	6016	23.68	394	.0010	6016	25.58	394	.0011
5/16	5013	26.84	410	.0013	4813	25.77	394	.0013	4813	26.53	394	.0014
3/8	4178	27.63	410	.0017	4010	26.53	394	.0017	4010	26.53	394	.0017
1/2	3133	24.18	410	.0019	3008	23.21	394	.0019	3008	25.11	394	.0021
5/8	2507	24.87	410	.0025	2406	23.87	394	.0025	2406	23.87	394	.0025
3/4	2089	23.03	410	.0028	2005	22.11	394	.0028	2005	24.32	394	.0030
1	1567	20.72	410	.0033	1504	18.24	394	.0030	1504	19.89	394	.0033

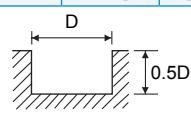
RPM = rev./min. FEED = inch/min.
Vc = ft/min. fz = inch/tooth



MATERIAL	M											
	STAINLESS STEELS 300				STAINLESS STEELS 400				STAINLESS STEELS (PH)			
HARDNESS												
STRENGTH												
DIAMETER	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz
1/4	4261	16.57	279	.0010	6266	33.75	410	.0013	1805	4.59	118	.0006
5/16	3409	18.36	279	.0013	5013	36.00	410	.0018	1444	4.75	118	.0008
3/8	2841	18.70	279	.0016	4178	37.50	410	.0022	1203	5.04	118	.0010
1/2	2131	15.94	279	.0019	3133	32.81	410	.0026	902	4.59	118	.0013
5/8	1704	16.57	279	.0024	2507	31.87	410	.0032	722	4.54	118	.0016
3/4	1420	15.94	279	.0028	2089	31.25	410	.0037	602	4.32	118	.0018
1	1065	13.55	279	.0032	1567	25.78	410	.0041	451	3.71	118	.0021

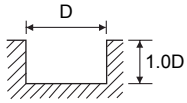
RPM = rev./min. FEED = inch/min.
Vc = ft/min. fz = inch/tooth

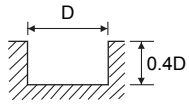




MATERIAL	K				S							
	CAST IRON				TITANIUM				HIGH TEMPERATURE ALLOY INCONEL HASTELLOY RENE			
HARDNESS	~ HB 260											
STRENGTH	~ 900N/mm²											
DIAMETER	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz
1/4	7018	23.21	459	.0008	2757	14.85	181	.0013	1253	3.55	82	.0007
5/16	5615	24.76	459	.0011	2206	15.84	181	.0018	1003	3.79	82	.0009
3/8	4679	25.79	459	.0014	1838	16.50	181	.0022	836	3.95	82	.0012
1/2	3509	23.21	459	.0017	1379	14.44	181	.0026	627	3.55	82	.0014
5/8	2807	23.43	459	.0021	1103	14.85	181	.0034	501	3.47	82	.0017
3/4	2339	22.11	459	.0024	919	13.75	181	.0037	418	3.29	82	.0020
1	1755	18.51	459	.0026	689	11.34	181	.0041	313	2.71	82	.0022

RPM = rev./min. FEED = inch/min.
Vc = ft/min. fz = inch/tooth



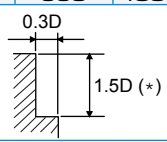


CARBIDE, 5 FLUTE - SIDE CUTTING

UGMG34, UGMG32 SERIES

MATERIAL	P											
	CARBON STEELS				ALLOY STEELS				TOOL STEELS			
HARDNESS	~ HB 300				HB 300 ~ HB 380				~ HB 380			
STRENGTH	~ 1000N/mm²				1000 ~ 1300N/mm²				~ 1300N/mm²			
DIAMETER	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz
1/4	7197	46.78	471	.0013	5042	32.78	330	.0013	3025	13.61	198	.0009
5/16	5758	43.18	471	.0015	4034	30.25	330	.0015	2420	13.31	198	.0011
3/8	4798	47.98	471	.0020	3362	33.62	330	.0020	2017	14.12	198	.0014
1/2	3598	44.98	471	.0025	2521	31.52	330	.0025	1513	12.86	198	.0017
9/16	3199	43.18	471	.0027	2241	30.25	330	.0027	1345	12.77	198	.0019
5/8	2879	43.18	471	.0030	2017	30.25	330	.0030	1210	12.71	198	.0021
11/16	2617	43.18	471	.0033	1834	30.25	330	.0033	1100	12.65	198	.0023
3/4	2399	41.98	471	.0035	1681	29.41	330	.0035	1008	12.61	198	.0025
1	1799	35.98	471	.0040	1261	25.21	330	.0040	756	10.59	198	.0028

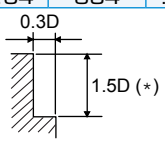
(*): Apply below than 90% of Length of Cut, when it is less than 1.5D.



RPM = rev./min. FEED = inch/min.
Vc = ft/min. fz = inch/tooth

MATERIAL	M											
	STAINLESS STEELS 300				STAINLESS STEELS 400				STAINLESS STEELS (PH)			
HARDNESS												
STRENGTH												
DIAMETER	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz
1/4	4110	24.66	269	.0012	5868	29.34	384	.0010	2934	17.60	192	.0012
5/16	3288	19.73	269	.0012	4694	23.47	384	.0010	2347	14.08	192	.0012
3/8	2740	20.55	269	.0015	3912	23.47	384	.0012	1956	14.67	192	.0015
1/2	2055	25.69	269	.0025	2934	26.40	384	.0018	1467	18.34	192	.0025
9/16	1827	23.75	269	.0026	2608	26.08	384	.0020	1304	16.95	192	.0026
5/8	1644	22.20	269	.0027	2347	24.64	384	.0021	1174	15.84	192	.0027
11/16	1495	20.93	269	.0028	2134	23.47	384	.0022	1067	14.94	192	.0028
3/4	1370	20.55	269	.0030	1956	23.47	384	.0024	978	14.67	192	.0030
1	1028	17.98	269	.0035	1467	20.54	384	.0028	733	12.84	192	.0035

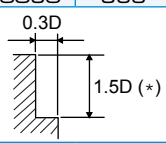
(*): Apply below than 90% of Length of Cut, when it is less than 1.5D.

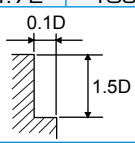


RPM = rev./min. FEED = inch/min.
Vc = ft/min. fz = inch/tooth

MATERIAL	K				S							
	CAST IRON				TITANIUM				HIGH TEMPERATURE ALLOY INCONEL HASTELLOY RENE			
HARDNESS	~ HB 260											
STRENGTH	~ 900N/mm²											
DIAMETER	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz
1/4	5302	45.07	347	.0017	3453	18.99	226	.0011	1574	6.30	103	.0008
5/16	4242	40.30	347	.0019	2763	15.19	226	.0011	1259	5.67	103	.0009
3/8	3535	44.18	347	.0025	2302	14.96	226	.0013	1049	5.25	103	.0010
1/2	2651	41.09	347	.0031	1727	18.99	226	.0022	787	6.69	103	.0017
9/16	2357	40.06	347	.0034	1535	17.65	226	.0023	699	6.30	103	.0018
5/8	2121	40.30	347	.0038	1381	16.58	226	.0024	630	5.98	103	.0019
11/16	1928	39.53	347	.0041	1256	15.70	226	.0025	572	5.44	103	.0019
3/4	1767	38.88	347	.0044	1151	15.54	226	.0027	525	5.51	103	.0021
1	1326	33.14	347	.0050	863	13.38	226	.0031	393	4.72	103	.0024

(*): Apply below than 90% of Length of Cut, when it is less than 1.5D.





RPM = rev./min. FEED = inch/min.
Vc = ft/min. fz = inch/tooth

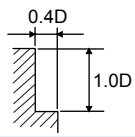
TitaNox-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE CORNER RADIUS with DOUBLE CORE - SIDE CUTTING

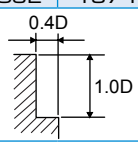
GMG40 SERIES

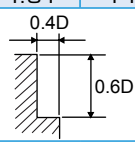
MATERIAL	P											
	CARBON STEELS				ALLOY STEELS				TOOL STEELS			
HARDNESS	~ HB 300				HB 300 ~ HB 380				~ HB 380			
STRENGTH	~ 1000N/mm²				1000 ~ 1300N/mm²				~ 1300N/mm²			
DIAMETER	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz
6.0	8488	36.09	525	.0011	7958	31.33	492	.0010	7958	33.84	492	.0011
8.0	6366	35.09	525	.0014	5968	32.90	492	.0014	5968	32.90	492	.0014
10.0	5093	33.69	525	.0017	4775	31.58	492	.0017	4775	34.59	492	.0018
12.0	4244	35.42	525	.0021	3979	30.70	492	.0019	3979	33.21	492	.0021
14.0	3638	33.23	525	.0023	3410	30.08	492	.0022	3410	32.22	492	.0024
16.0	3183	31.58	525	.0025	2984	29.61	492	.0025	2984	31.49	492	.0026
20.0	2546	30.88	525	.0030	2387	26.32	492	.0028	2387	28.95	492	.0030
25.0	2037	26.95	525	.0033	1910	25.26	492	.0033	1910	25.26	492	.0033



RPM = rev./min. FEED = inch/min.
Vc = ft/min. fz = inch/tooth

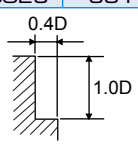
MATERIAL	M											
	STAINLESS STEELS 300				STAINLESS STEELS 400				STAINLESS STEELS (PH)			
HARDNESS												
STRENGTH												
DIAMETER	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz
6.0	5570	21.67	344	.0010	8223	44.29	509	.0013	2334	5.94	144	.0006
8.0	4178	22.50	344	.0013	6167	44.29	509	.0018	1751	5.76	144	.0008
10.0	3342	22.00	344	.0016	4934	44.29	509	.0022	1401	5.87	144	.0010
12.0	2785	20.83	344	.0019	4112	43.06	509	.0026	1167	5.94	144	.0013
14.0	2387	20.68	344	.0022	3524	42.18	509	.0030	1000	5.67	144	.0014
16.0	2089	20.31	344	.0024	3084	41.52	509	.0034	875	5.50	144	.0016
20.0	1671	18.75	344	.0028	2467	36.91	509	.0037	700	5.03	144	.0018
25.0	1337	17.00	344	.0032	1974	35.43	509	.0045	560	4.61	144	.0021

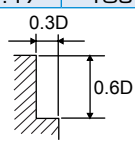




RPM = rev./min. FEED = inch/min.
Vc = ft/min. fz = inch/tooth

MATERIAL	K				S							
	CAST IRON				TITANIUM				HIGH TEMPERATURE ALLOY INCONEL HASTELLOY RENE			
HARDNESS	~ HB 260											
STRENGTH	~ 900N/mm²											
DIAMETER	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz
6.0	9284	30.70	574	.0008	3714	20.00	230	.0013	1698	5.35	105	.0008
8.0	6963	30.70	574	.0011	2785	20.83	230	.0019	1273	5.21	105	.0010
10.0	5570	30.70	574	.0014	2228	20.00	230	.0022	1019	5.13	105	.0013
12.0	4642	30.70	574	.0017	1857	19.45	230	.0026	849	5.08	105	.0015
14.0	3979	30.08	574	.0019	1592	19.05	230	.0030	728	5.04	105	.0017
16.0	3482	29.06	574	.0021	1393	18.75	230	.0034	637	4.81	105	.0019
20.0	2785	26.32	574	.0024	1114	16.67	230	.0037	509	4.41	105	.0022
25.0	2228	24.56	574	.0028	891	16.00	230	.0045	407	4.17	105	.0026



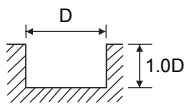


RPM = rev./min. FEED = inch/min.
Vc = ft/min. fz = inch/tooth

CARBIDE, 4 FLUTE CORNER RADIUS with DOUBLE CORE - SLOTTING

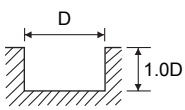
GMG40 SERIES

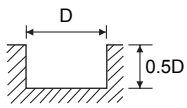
MATERIAL	P											
	CARBON STEELS				ALLOY STEELS				TOOL STEELS			
HARDNESS	~ HB 300				HB 300 ~ HB 380				~ HB 380			
STRENGTH	~ 1000N/mm²				1000 ~ 1300N/mm²				~ 1300N/mm²			
DIAMETER	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz
6.0	6631	26.11	410	.0010	6366	25.06	394	.0010	6366	27.07	394	.0011
8.0	4974	26.63	410	.0013	4775	25.57	394	.0013	4775	26.32	394	.0014
10.0	3979	26.32	410	.0017	3820	25.26	394	.0017	3820	25.26	394	.0017
12.0	3316	25.59	410	.0019	3183	24.56	394	.0019	3183	26.57	394	.0021
14.0	2842	25.06	410	.0022	2728	24.06	394	.0022	2728	24.92	394	.0023
16.0	2487	24.67	410	.0025	2387	23.69	394	.0025	2387	23.69	394	.0025
20.0	1989	21.93	410	.0028	1910	21.05	394	.0028	1910	23.16	394	.0030
25.0	1592	21.05	410	.0033	1528	18.53	394	.0030	1528	20.21	394	.0033



RPM = rev./min. FEED = inch/min.
Vc = ft/min. fz = inch/tooth

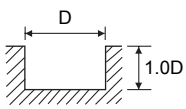
MATERIAL	M											
	STAINLESS STEELS 300				STAINLESS STEELS 400				STAINLESS STEELS (PH)			
HARDNESS												
STRENGTH												
DIAMETER	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz
6.0	4509	17.54	279	.0010	6631	35.72	410	.0013	1910	4.86	118	.0006
8.0	3382	18.22	279	.0013	4974	35.72	410	.0018	1432	4.71	118	.0008
10.0	2706	17.81	279	.0016	3979	35.72	410	.0022	1146	4.80	118	.0010
12.0	2255	16.87	279	.0019	3316	34.72	410	.0026	955	4.86	118	.0013
14.0	1933	16.74	279	.0022	2842	33.12	410	.0029	819	4.64	118	.0014
16.0	1691	16.44	279	.0024	2487	31.62	410	.0032	716	4.50	118	.0016
20.0	1353	15.18	279	.0028	1989	29.76	410	.0037	573	4.11	118	.0018
25.0	1082	13.76	279	.0032	1592	26.19	410	.0041	458	3.77	118	.0021

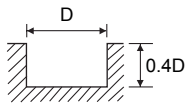




RPM = rev./min. FEED = inch/min.
Vc = ft/min. fz = inch/tooth

MATERIAL	K				S							
	CAST IRON				TITANIUM				HIGH TEMPERATURE ALLOY INCONEL HASTELLOY RENE			
HARDNESS	~ HB 260											
STRENGTH	~ 900N/mm²											
DIAMETER	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz
6.0	7427	24.56	459	.0008	2918	15.71	180	.0013	1326	3.76	82	.0007
8.0	5570	24.56	459	.0011	2188	15.71	180	.0018	995	3.76	82	.0009
10.0	4456	24.56	459	.0014	1751	15.71	180	.0022	796	3.76	82	.0012
12.0	3714	24.56	459	.0017	1459	15.28	180	.0026	663	3.76	82	.0014
14.0	3183	24.06	459	.0019	1251	14.97	180	.0030	568	3.58	82	.0016
16.0	2785	23.25	459	.0021	1094	14.73	180	.0034	497	3.45	82	.0017
20.0	2228	21.05	459	.0024	875	13.10	180	.0037	398	3.13	82	.0020
25.0	1783	18.81	459	.0026	700	11.52	180	.0041	318	2.76	82	.0022





RPM = rev./min. FEED = inch/min.
Vc = ft/min. fz = inch/tooth

TitaNox-POWER END MILLS

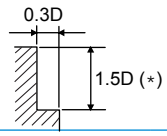
RECOMMENDED CUTTING CONDITIONS

CARBIDE, 5 FLUTE - SIDE CUTTING

GMG24, GMG26, GMG28, GMG30 SERIES

MATERIAL	P											
	CARBON STEELS				ALLOY STEELS				TOOL STEELS			
HARDNESS	~ HB 300				HB 300 ~ HB 380				~ HB 380			
STRENGTH	~ 1000N/mm²				1000 ~ 1300N/mm²				~ 1300N/mm²			
DIAMETER	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz
6.0	7639	51.13	472	.0013	5358	35.86	331	.0013	3183	15.04	197	.0009
8.0	5730	42.86	472	.0015	4019	30.06	331	.0015	2387	12.69	197	.0011
10.0	4584	45.11	472	.0020	3215	31.64	331	.0020	1910	13.16	197	.0014
12.0	3820	47.37	472	.0025	2679	33.23	331	.0025	1592	13.79	197	.0017
16.0	2865	42.86	472	.0030	2009	30.06	331	.0030	1194	12.69	197	.0021
20.0	2292	40.15	472	.0035	1607	28.16	331	.0035	955	11.65	197	.0024
25.0	1833	36.45	472	.0040	1286	25.57	331	.0040	764	10.68	197	.0028

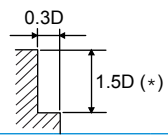
(*): Apply below than 90% of Length of Cut, when it is less than 1.5D.



RPM = rev./min. FEED = inch/min.
Vc = ft/min. fz = inch/tooth

MATERIAL	M											
	STAINLESS STEELS 300				STAINLESS STEELS 400				STAINLESS STEELS (PH)			
HARDNESS												
STRENGTH												
DIAMETER	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz
6.0	4350	25.69	269	.0012	6207	29.32	384	.0009	3130	18.48	194	.0012
8.0	3263	20.55	269	.0013	4655	22.91	384	.0010	2348	14.79	194	.0013
10.0	2610	19.52	269	.0015	3724	21.99	384	.0012	1878	14.05	194	.0015
12.0	2175	26.97	269	.0025	3104	28.10	384	.0018	1565	19.41	194	.0025
16.0	1631	22.16	269	.0027	2328	24.74	384	.0021	1174	15.94	194	.0027
20.0	1305	19.52	269	.0030	1862	22.36	384	.0024	939	14.05	194	.0030
25.0	1044	18.09	269	.0035	1490	20.82	384	.0028	751	13.01	194	.0035

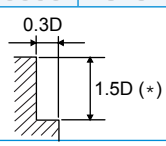
(*): Apply below than 90% of Length of Cut, when it is less than 1.5D.

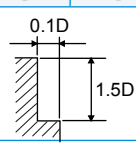


RPM = rev./min. FEED = inch/min.
Vc = ft/min. fz = inch/tooth

MATERIAL	K				S							
	CAST IRON				TITANIUM				HIGH TEMPERATURE ALLOY INCONEL HASTELLOY RENE			
HARDNESS	~ HB 260											
STRENGTH	~ 900N/mm²											
DIAMETER	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz
6.0	5623	47.60	348	.0017	3661	19.46	226	.0011	1645	6.80	102	.0008
8.0	4218	39.85	348	.0019	2745	15.67	226	.0011	1233	5.34	102	.0009
10.0	3374	41.84	348	.0025	2196	14.70	226	.0013	987	5.24	102	.0011
12.0	2812	43.73	348	.0031	1830	20.54	226	.0022	822	7.12	102	.0017
16.0	2109	39.85	348	.0038	1373	16.75	226	.0024	617	5.83	102	.0019
20.0	1687	36.86	348	.0044	1098	14.92	226	.0027	493	5.15	102	.0021
25.0	1350	33.48	348	.0050	879	13.66	226	.0031	395	4.82	102	.0024

(*): Apply below than 90% of Length of Cut, when it is less than 1.5D.





RPM = rev./min. FEED = inch/min.
Vc = ft/min. fz = inch/tooth

CARBIDE

Being the best through innovation



V7 PLUS A END MILLS

- Silent Cutting of Steels up to HRc40.
  Designed as Unequal Leads.

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
INCH					
UGMG53 UGMG54		CARBIDE, 4 FLUTE BALL NOSE ◆	1/8 11/32	1	950
UGMF70 UGMF71		CARBIDE, 4 FLUTE CORNER RADIUS ◆	1/8 3/8	1	951
UGMF74 UGMF75		CARBIDE, 4 FLUTE with EXTENDED NECK, CORNER RADIUS ◆	1/4 3/8	1	954
UGMF68 UGMF69		CARBIDE, 4 FLUTE ◆	1/8 11/32	1	955
UGMF76 UGMF77		CARBIDE, 4 FLUTE ◆	3/8	1	956
UGMF72 UGMF73		CARBIDE, 4 FLUTE with EXTENDED NECK ◆	1/4 3/8	1	957
UGMG22 UGMG23		CARBIDE, 6 FLUTE CORNER RADIUS ◆	1/4 3/8	1	958
UGMG20 UGMG21		CARBIDE, 6 FLUTE ◆	1/4 3/8	1	961
METRIC					◆ U.S.A Stock
GMG55 GMG56		CARBIDE, 4 FLUTE BALL NOSE ◇	R1.5	R12.5	962
GMF54 GMF55		CARBIDE, 4 FLUTE SHORT LENGTH CORNER RADIUS ◇	D3.0	D20.0	963
GMF58 GMF59		CARBIDE, 4 FLUTE LONG LENGTH CORNER RADIUS ◇	D3.0	D25.0	964
GMF62 GMF63		CARBIDE, 4 FLUTE with EXTENDED NECK CORNER RADIUS ◇	D3.0	D20.0	965
GMF52 GMF53		CARBIDE, 4 FLUTE SHORT LENGTH ◇	D3.0	D20.0	968
GMF56 GMF57		CARBIDE, 4 FLUTE LONG LENGTH ◇	D3.0	D25.0	969
GMF60 GMF61		CARBIDE, 4 FLUTE with EXTENDED NECK ◇	D3.0	D20.0	970
GMG16 GMG17		CARBIDE, 6 FLUTE LONG LENGTH CORNER RADIUS ◇	D6.0	D25.0	972
GMG18 GMG19		CARBIDE, 6 FLUTE EXTRA LONG LENGTH CORNER RADIUS ◇	D6.0	D25.0	973
GMG12 GMG13		CARBIDE, 6 FLUTE LONG LENGTH ◇	D6.0	D25.0	975
GMG14 GMG15		CARBIDE, 6 FLUTE EXTRA LONG LENGTH ◇	D6.0	D25.0	975
		RECOMMENDED CUTTING CONDITIONS			976

◇ Call for Availability

◎ : Excellent ○ : Good

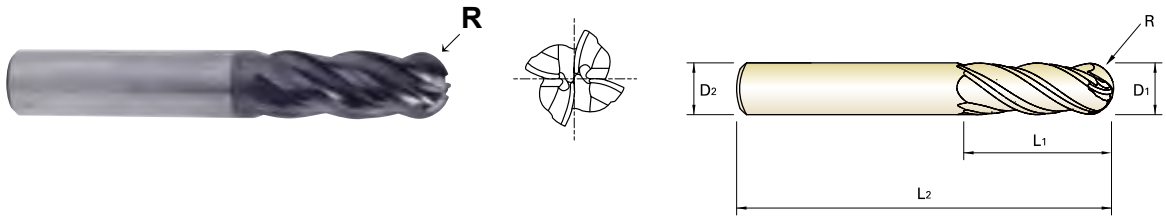
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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V7 PLUS A END MILLS

UGMG53 SERIES PLAIN SHANK
UGMG54 SERIES FLAT SHANK

CARBIDE, 4 FLUTE BALL NOSE

- Special flute geometry and multiple helix eliminate vibrations
- Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40



MG | 4 | M-Helix | R ±.0008 | PLAIN | FLAT

P.976

MADE IN USA ◆ U.S.A Stock

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length Of Cut	Overall Length
PLAIN	FLAT	R	D1	D2	L1	L2
UGMG53008	-	1/16	1/8	1/8	3/8	1-1/2
UGMG53010	-	5/64	5/32	3/16	7/16	2
UGMG53012	-	3/32	3/16	3/16	7/16	2
UGMG53014	-	7/64	7/32	1/4	7/16	2-1/2
UGMG53016	-	1/8	1/4	1/4	1/2	2-1/2
UGMG53018	-	9/64	9/32	5/16	5/8	2-1/2
UGMG53020	-	5/32	5/16	5/16	13/16	2-1/2
UGMG53022	UGMG54022	11/64	11/32	3/8	13/16	2-1/2
UGMG53024	UGMG54024	3/16	3/8	3/8	7/8	2-1/2
UGMG53028	UGMG54028	7/32	7/16	7/16	1	2-3/4
UGMG53032	UGMG54032	1/4	1/2	1/2	1	3
UGMG53040	UGMG54040	5/16	5/8	5/8	1-1/4	3-1/2
UGMG53048	UGMG54048	3/8	3/4	3/4	1-1/2	4
UGMG53064	UGMG54064	1/2	1	1	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6

◎ : Excellent ○ : Good

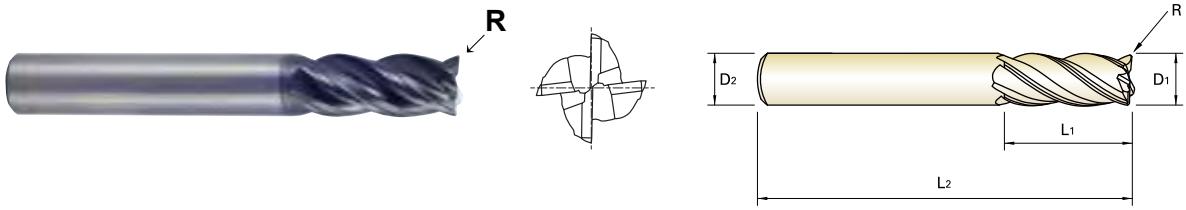
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

UGMF70 SERIES PLAIN SHANK
UGMF71 SERIES FLAT SHANK

CARBIDE, 4 FLUTE CORNER RADIUS

- Special flute geometry and multiple helix eliminate vibrations
- Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40



MG | 4 | M-Helix | PLAIN | FLAT

P.977, 978

MADE IN USA ◆ U.S.A Stock

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length Of Cut	Overall Length
PLAIN	FLAT	R	D1	D2	L1	L2
UGMF70008	-	R.010	1/8	1/8	1/8	1-1/2
UGMF70901	-	R.010	1/8	1/8	3/8	1-1/2
UGMF70902	-	R.030	1/8	1/8	3/8	1-1/2
UGMF70012	-	R.010	3/16	3/16	3/16	2
UGMF70903	-	R.010	3/16	3/16	7/16	2
UGMF70904	-	R.030	3/16	3/16	7/16	2
UGMF70016	-	R.010	1/4	1/4	3/8	2
UGMF70905	-	R.030	1/4	1/4	3/8	2
UGMF70906	-	R.060	1/4	1/4	3/8	2
UGMF70907	-	R.010	1/4	1/4	3/4	2-1/2
UGMF70908	-	R.015	1/4	1/4	3/4	2-1/2
UGMF70909	-	R.030	1/4	1/4	3/4	2-1/2
UGMF70020	-	R.030	5/16	5/16	7/16	2
UGMF70910	-	R.010	5/16	5/16	13/16	2-1/2
UGMF70911	-	R.030	5/16	5/16	13/16	2-1/2
UGMF70912	-	R.060	5/16	5/16	13/16	2-1/2
UGMF70024	UGMF71024	R.010	3/8	3/8	1/2	2-1/2
UGMF70913	UGMF71913	R.030	3/8	3/8	1/2	2-1/2
UGMF70914	UGMF71914	R.060	3/8	3/8	1/2	2-1/2
UGMF70915	UGMF71915	R.010	3/8	3/8	7/8	2-1/2
UGMF70916	UGMF71916	R.030	3/8	3/8	7/8	2-1/2
UGMF70917	UGMF71917	R.060	3/8	3/8	7/8	2-1/2
UGMF70028	UGMF71028	R.015	7/16	7/16	5/8	2-1/2
UGMF70918	UGMF71918	R.030	7/16	7/16	5/8	2-1/2
UGMF70919	UGMF71919	R.010	7/16	7/16	1	2-3/4
UGMF70920	UGMF71920	R.030	7/16	7/16	1	2-3/4

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◎ : Excellent ○ : Good

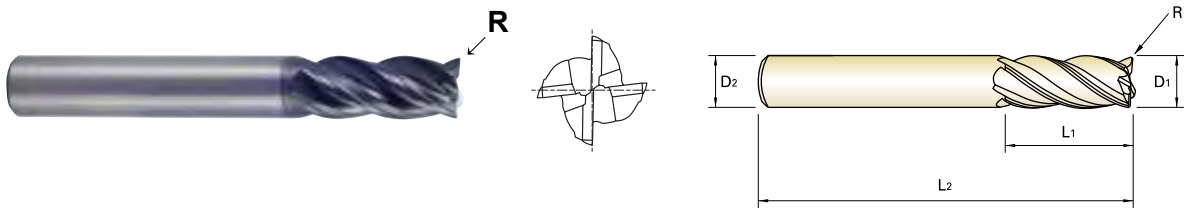
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Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

UGMF70 SERIES PLAIN SHANK
UGMF71 SERIES FLAT SHANK

CARBIDE, 4 FLUTE CORNER RADIUS

- Special flute geometry and multiple helix eliminate vibrations
- Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40



MG | 4 | M-Helix | PLAIN | FLAT

P.977, 978

MADE IN USA ◆ U.S.A Stock

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length Of Cut	Overall Length
PLAIN	FLAT	R	D1	D2	L1	L2
UGMF70921	UGMF71921	R.060	7/16	7/16	1	2-3/4
UGMF70032	UGMF71032	R.010	1/2	1/2	5/8	2-1/2
UGMF70922	UGMF71922	R.015	1/2	1/2	5/8	2-1/2
UGMF70923	UGMF71923	R.030	1/2	1/2	5/8	2-1/2
UGMF70924	UGMF71924	R.060	1/2	1/2	5/8	2-1/2
UGMF70925	UGMF71925	R.010	1/2	1/2	1	3
UGMF70926	UGMF71926	R.030	1/2	1/2	1	3
UGMF70927	UGMF71927	R.060	1/2	1/2	1	3
UGMF70928	UGMF71928	R.125	1/2	1/2	1	3
UGMF70929	UGMF71929	R.010	1/2	1/2	1-1/4	3-1/2
UGMF70930	UGMF71930	R.015	1/2	1/2	1-1/4	3-1/2
UGMF70931	UGMF71931	R.030	1/2	1/2	1-1/4	3-1/2
UGMF70932	UGMF71932	R.060	1/2	1/2	1-1/4	3-1/2
UGMF70933	UGMF71933	R.125	1/2	1/2	1-1/4	3-1/2
UGMF70040	UGMF71040	R.010	5/8	5/8	3/4	3
UGMF70934	UGMF71934	R.030	5/8	5/8	3/4	3
UGMF70935	UGMF71935	R.060	5/8	5/8	3/4	3
UGMF70936	UGMF71936	R.010	5/8	5/8	1-1/4	3-1/2
UGMF70937	UGMF71937	R.015	5/8	5/8	1-1/4	3-1/2
UGMF70938	UGMF71938	R.030	5/8	5/8	1-1/4	3-1/2
UGMF70939	UGMF71939	R.060	5/8	5/8	1-1/4	3-1/2
UGMF70940	UGMF71940	R.125	5/8	5/8	1-1/4	3-1/2
UGMF70048	UGMF71048	R.030	3/4	3/4	3/4	3
UGMF70941	UGMF71941	R.060	3/4	3/4	3/4	3
UGMF70942	UGMF71942	R.015	3/4	3/4	1-1/2	4
UGMF70943	UGMF71943	R.030	3/4	3/4	1-1/2	4

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◎ : Excellent ○ : Good

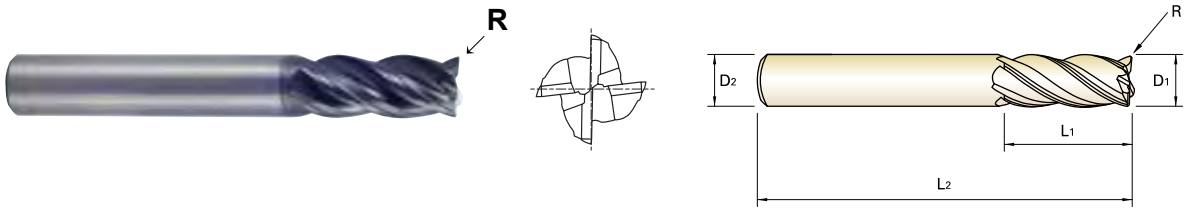
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Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

UGMF70 SERIES PLAIN SHANK
UGMF71 SERIES FLAT SHANK

CARBIDE, 4 FLUTE CORNER RADIUS

- Special flute geometry and multiple helix eliminate vibrations
- Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40



MG | 4 | M-Helix | PLAIN | FLAT

P.977, 978

MADE IN USA ◆ U.S.A Stock

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length Of Cut	Overall Length
PLAIN	FLAT	R	D_1	D_2	L_1	L_2
UGMF70944	**UGMF71944**	R.060	**3/4**	3/4	1-1/2	4
UGMF70945	**UGMF71945**	R.125	**3/4**	3/4	1-1/2	4
UGMF70064	**UGMF71064**	R.015	**1**	1	1	4
UGMF70946	**UGMF71946**	R.030	**1**	1	1	4
UGMF70947	**UGMF71947**	R.060	**1**	1	1	4
UGMF70948	**UGMF71948**	R.015	**1**	1	1-1/2	4
UGMF70949	**UGMF71949**	R.030	**1**	1	1-1/2	4
UGMF70950	**UGMF71950**	R.060	**1**	1	1-1/2	4
UGMF70951	**UGMF71951**	R.125	**1**	1	1-1/2	4
UGMF70952	**UGMF71952**	R.015	**1**	1	2	5
UGMF70953	**UGMF71953**	R.030	**1**	1	2	5
UGMF70954	**UGMF71954**	R.060	**1**	1	2	5

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6

◎ : Excellent ○ : Good

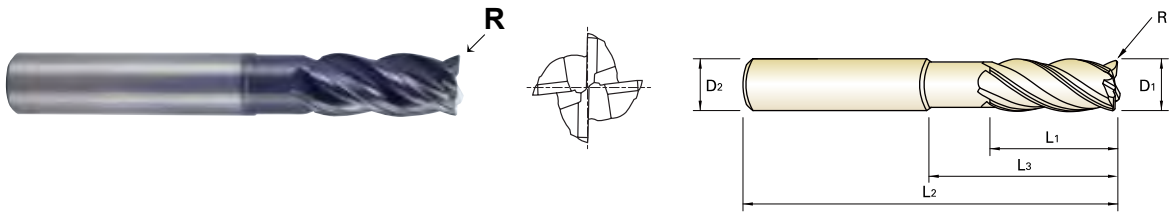
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

UGMF74 SERIES PLAIN SHANK
UGMF75 SERIES FLAT SHANK

CARBIDE, 4 FLUTE with EXTENDED NECK, CORNER RADIUS

- Special flute geometry and multiple helix eliminate vibrations
- Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40



MG | 4 | M-Helix | PLAIN | FLAT

P.977, 978

MADE IN USA ◆ U.S.A Stock

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length Of Cut	Length Below Shank	Neck Diameter
PLAIN	FLAT	R	D1	D2	L1	L3	D3
UGMF74016	-	R.015	1/4	1/4	3/8	3/4	4
UGMF74901	-	R.015	1/4	1/4	3/8	1-1/8	4
UGMF74902	-	R.015	1/4	1/4	3/8	2-1/8	4
UGMF74024	UGMF75024	R.030	3/8	3/8	1/2	1-1/8	4
UGMF74903	UGMF75903	R.030	3/8	3/8	1/2	2-1/8	4
UGMF74904	UGMF75904	R.030	3/8	3/8	1/2	3-1/8	6
UGMF74032	UGMF75032	R.030	1/2	1/2	5/8	1-1/2	4
UGMF74905	UGMF75905	R.030	1/2	1/2	5/8	2-1/4	4
UGMF74906	UGMF75906	R.030	1/2	1/2	5/8	3-3/8	6
UGMF74040	UGMF75040	R.030	5/8	5/8	3/4	1-5/8	4
UGMF74907	UGMF75907	R.030	5/8	5/8	3/4	2-3/8	6
UGMF74908	UGMF75908	R.030	5/8	5/8	3/4	3-3/8	6
UGMF74048	UGMF75048	R.030	3/4	3/4	1	2	4
UGMF74909	UGMF75909	R.030	3/4	3/4	1	3	6
UGMF74910	UGMF75910	R.030	3/4	3/4	1	4	6
UGMF74064	UGMF75064	R.030	1	1	1-1/8	2	4
UGMF74911	UGMF75911	R.030	1	1	1-1/8	3	6
UGMF74912	UGMF75912	R.030	1	1	1-1/8	4	6

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6

◎ : Excellent ○ : Good

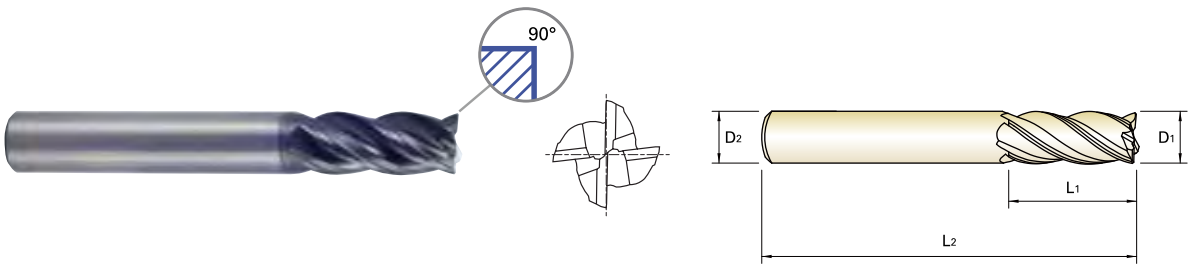
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

UGMF68 SERIES PLAIN SHANK
UGMF69 SERIES FLAT SHANK

CARBIDE, 4 FLUTE

- Special flute geometry and multiple helix eliminate vibrations
- Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40



MG | 4 | M-Helix | PLAIN | FLAT

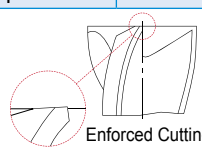
P.977, 978

MADE IN USA ◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length Of Cut	Overall Length
PLAIN	FLAT	D1	D2	L1	L2
UGMF68008	-	1/8	1/8	1/8	1-1/2
UGMF68901	-	1/8	1/8	3/8	1-1/2
UGMF68010	-	5/32	3/16	3/16	2
UGMF68902	-	5/32	3/16	7/16	2
UGMF68012	-	3/16	3/16	3/16	2
UGMF68903	-	3/16	3/16	7/16	2
UGMF68014	-	7/32	1/4	1/4	2
UGMF68904	-	7/32	1/4	7/16	2-1/2
UGMF68016	-	1/4	1/4	3/8	2
UGMF68905	-	1/4	1/4	3/4	2-1/2
UGMF68018	-	9/32	5/16	5/8	2-1/2
UGMF68020	-	5/16	5/16	7/16	2
UGMF68906	-	5/16	5/16	13/16	2-1/2
UGMF68022	UGMF69022	11/32	3/8	1/2	2-1/2
UGMF68024	UGMF69024	3/8	3/8	1/2	2-1/2
UGMF68907	UGMF69907	3/8	3/8	7/8	2-1/2
UGMF68028	UGMF69028	7/16	7/16	5/8	2-1/2
UGMF68908	UGMF69908	7/16	7/16	1	2-3/4
UGMF68032	UGMF69032	1/2	1/2	5/8	2-1/2
UGMF68909	UGMF69909	1/2	1/2	1	3
UGMF68910	UGMF69910	1/2	1/2	1-1/4	3-1/2
UGMF68040	UGMF69040	5/8	5/8	3/4	3
UGMF68911	UGMF69911	5/8	5/8	1-1/4	3-1/2
UGMF68048	UGMF69048	3/4	3/4	3/4	3
UGMF68912	UGMF69912	3/4	3/4	1-1/2	4
UGMF68064	UGMF69064	1	1	1	4
UGMF68913	UGMF69913	1	1	1-1/2	4
UGMF68914	UGMF69914	1	1	2	5

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	h6



Enforced Cutting Edge

◎ : Excellent ○ : Good

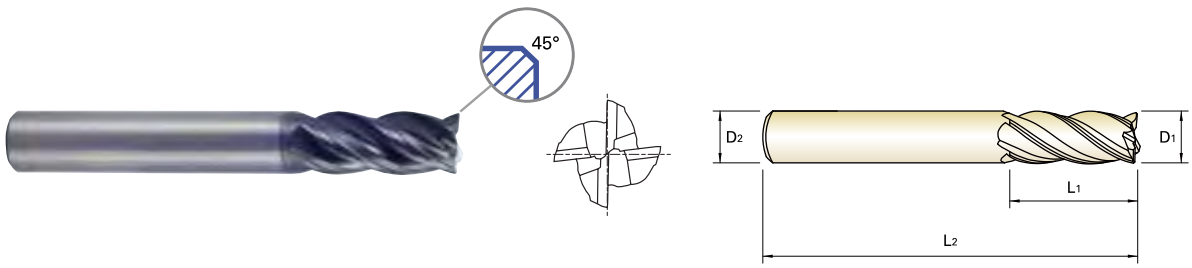
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Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

UGMF76 SERIES PLAIN SHANK
UGMF77 SERIES FLAT SHANK

CARBIDE, 4 FLUTE

- Special flute geometry and multiple helix eliminate vibrations
- Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40



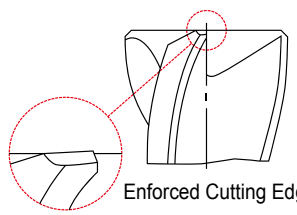
MG | 4 | M-Helix | PLAIN | FLAT | C x 45° | P.977, 978

MADE IN USA ◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length Of Cut	Overall Length	Chamfer
PLAIN	FLAT	D1	D2	L1	L2	
UGMF76024	UGMF77024	3/8	3/8	7/8	2-1/2	.011
UGMF76032	UGMF77032	1/2	1/2	5/8	2-1/2	.013
UGMF76901	UGMF77901	1/2	1/2	1-1/4	3-1/2	.013
UGMF76040	UGMF77040	5/8	5/8	1-1/4	3-1/2	.015
UGMF76048	UGMF77048	3/4	3/4	1-1/2 4	.019	0.20
UGMF76064	UGMF77064	1	1	1-1/2 4	.019	0.30

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	h6


Enforced Cutting Edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

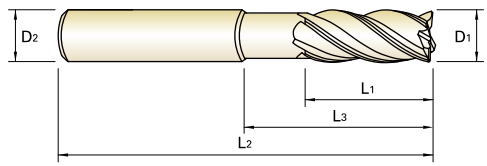
V7 PLUS A END MILLS

UGMF72 SERIES PLAIN SHANK
UGMF73 SERIES FLAT SHANK

CARBIDE, 4 FLUTE with EXTENDED NECK

- Special flute geometry and multiple helix eliminate vibrations
- Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40





MG | 4 | M-Helix | PLAIN | FLAT

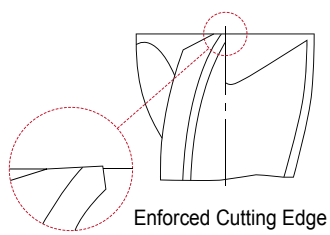
P.977, 978

MADE IN USA ◆ U.S.A Stock

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length Of Cut	Overall Length
PLAIN	FLAT	R	D1	D2	L1	L2
UGMF72016	-	1/4	1/4	3/8	3/4	4
UGMF72901	-	1/4	1/4	3/8	1-1/8	4
UGMF72902	-	1/4	1/4	3/8	2-1/8	4
UGMF72024	UGMF73024	3/8	3/8	1/2	1-1/8	4
UGMF72903	UGMF73903	3/8	3/8	1/2	2-1/8	4
UGMF72904	UGMF73904	3/8	3/8	1/2	3-1/8	6
UGMF72032	UGMF73032	1/2	1/2	5/8	1-1/2	4
UGMF72905	UGMF73905	1/2	1/2	5/8	2-1/4	4
UGMF72906	UGMF73906	1/2	1/2	5/8	3-3/8	6
UGMF72040	UGMF73040	5/8	5/8	3/4	1-5/8	4
UGMF72907	UGMF73907	5/8	5/8	3/4	2-3/8	6
UGMF72908	UGMF73908	5/8	5/8	3/4	3-3/8	6
UGMF72048	UGMF73048	3/4	3/4	1	2	4
UGMF72909	UGMF73909	3/4	3/4	1	3	6
UGMF72910	UGMF73910	3/4	3/4	1	4	6
UGMF72064	UGMF73064	1	1	1-1/8	2	4
UGMF72911	UGMF73911	1	1	1-1/8	3	6
UGMF72912	UGMF73912	1	1	1-1/8	4	6

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6



Enforced Cutting Edge

◎ : Excellent ○ : Good

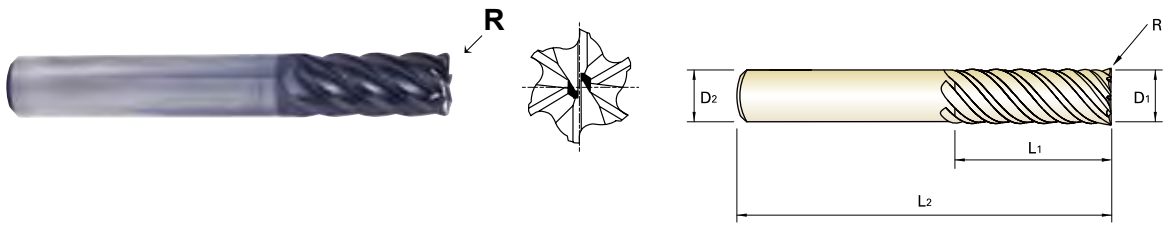
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Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

UGMG22 SERIES PLAIN SHANK
UGMG23 SERIES FLAT SHANK

CARBIDE, 6 FLUTE SHORT CORNER RADIUS

- Special flute geometry and multiple helix eliminate vibrations
- Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40



MG | 6 | 45° | PLAIN | FLAT P.979

MADE IN USA ◆ U.S.A Stock

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length Of Cut	Overall Length
PLAIN	FLAT	R	D1	D2	L1	L2
UGMG22016	-	R.015	1/4	1/4	3/4	2-1/2
UGMG22901	-	R.015	1/4	1/4	1-1/8	3
UGMG22902	-	R.030	1/4	1/4	1-1/8	3
UGMG22903	-	R.015	1/4	1/4	1-1/2	4
UGMG22904	-	R.030	1/4	1/4	1-1/2	4
UGMG22020	-	R.015	5/16	5/16	3/4	2-1/2
UGMG22905	-	R.015	5/16	5/16	1-1/4	3
UGMG22906	-	R.030	5/16	5/16	1-1/4	3
UGMG22907	-	R.015	5/16	5/16	1-5/8	4
UGMG22908	-	R.030	5/16	5/16	1-5/8	4
UGMG22024	UGMG23024	R.015	3/8	3/8	1	3
UGMG22909	UGMG23909	R.030	3/8	3/8	1	3
UGMG22910	UGMG23910	R.060	3/8	3/8	1	3
UGMG22911	UGMG23911	R.015	3/8	3/8	1-1/2	4
UGMG22912	UGMG23912	R.030	3/8	3/8	1-1/2	4
UGMG22913	UGMG23913	R.060	3/8	3/8	1-1/2	4
UGMG22914	UGMG23914	R.015	3/8	3/8	2	4
UGMG22915	UGMG23915	R.030	3/8	3/8	2	4
UGMG22916	UGMG23916	R.060	3/8	3/8	2	4
UGMG22032	UGMG23032	R.015	1/2	1/2	1	3
UGMG22917	UGMG23917	R.030	1/2	1/2	1	3
UGMG22918	UGMG23918	R.060	1/2	1/2	1	3
UGMG22919	UGMG23919	R.030	1/2	1/2	1-1/4	3-1/2
UGMG22920	UGMG23920	R.060	1/2	1/2	1-1/4	3-1/2
UGMG22921	UGMG23921	R.090	1/2	1/2	1-1/4	3-1/2
UGMG22922	UGMG23922	R.120	1/2	1/2	1-1/4	3-1/2

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◎ : Excellent ○ : Good

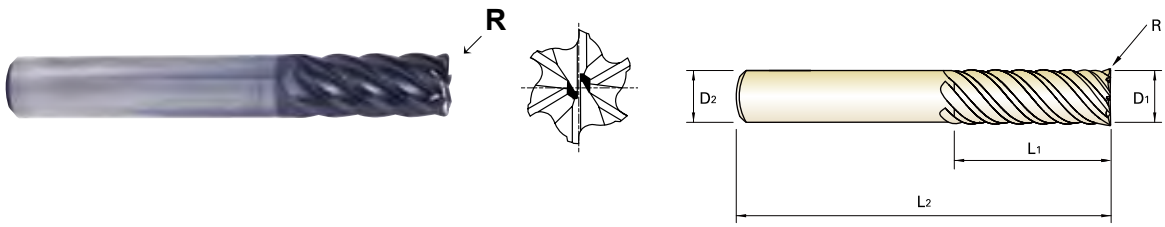
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Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

UGMG22 SERIES PLAIN SHANK
UGMG23 SERIES FLAT SHANK

CARBIDE, 6 FLUTE SHORT CORNER RADIUS

▶ Special flute geometry and multiple helix eliminate vibrations
▶ Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40



MG | 6 | 45° | PLAIN | FLAT

P.979

MADE IN USA ◆ U.S.A Stock

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length Of Cut	Overall Length
PLAIN	FLAT	R	D1	D2	L1	L2
UGMG22923	UGMG23923	R.030	1/2	1/2	2	4
UGMG22924	UGMG23924	R.060	1/2	1/2	2	4
UGMG22925	UGMG23925	R.090	1/2	1/2	2	4
UGMG22926	UGMG23926	R.120	1/2	1/2	2	4
UGMG22927	UGMG23927	R.030	1/2	1/2	3	5
UGMG22928	UGMG23928	R.060	1/2	1/2	3	5
UGMG22929	UGMG23929	R.090	1/2	1/2	3	5
UGMG22930	UGMG23930	R.120	1/2	1/2	3	5
UGMG22040	UGMG23040	R.030	5/8	5/8	1-1/4	3-1/2
UGMG22931	UGMG23931	R.060	5/8	5/8	1-1/4	3-1/2
UGMG22932	UGMG23932	R.090	5/8	5/8	1-1/4	3-1/2
UGMG22933	UGMG23933	R.120	5/8	5/8	1-1/4	3-1/2
UGMG22934	UGMG23934	R.030	5/8	5/8	2	4
UGMG22935	UGMG23935	R.060	5/8	5/8	2	4
UGMG22936	UGMG23936	R.090	5/8	5/8	2	4
UGMG22937	UGMG23937	R.120	5/8	5/8	2	4
UGMG22938	UGMG23938	R.030	5/8	5/8	3	5
UGMG22939	UGMG23939	R.060	5/8	5/8	3	5
UGMG22940	UGMG23940	R.090	5/8	5/8	3	5
UGMG22941	UGMG23941	R.120	5/8	5/8	3	5
UGMG22048	UGMG23048	R.030	3/4	3/4	1-1/2	4
UGMG22942	UGMG23942	R.060	3/4	3/4	1-1/2	4
UGMG22943	UGMG23943	R.090	3/4	3/4	1-1/2	4
UGMG22944	UGMG23944	R.120	3/4	3/4	1-1/2	4
UGMG22945	UGMG23945	R.030	3/4	3/4	3	5-1/2
UGMG22946	UGMG23946	R.060	3/4	3/4	3	5-1/2

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◎ : Excellent ○ : Good

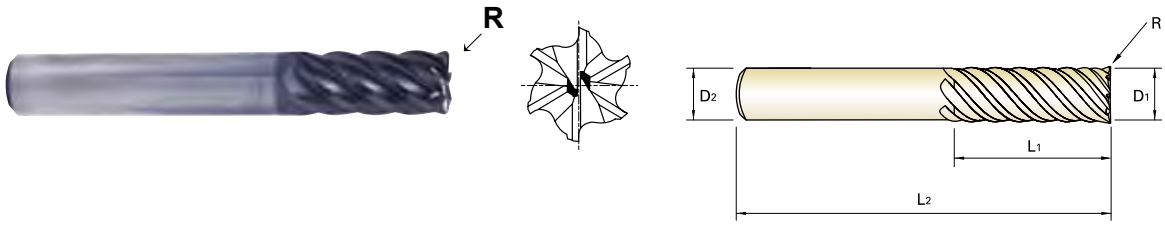
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

UGMG22 SERIES PLAIN SHANK
UGMG23 SERIES FLAT SHANK

CARBIDE, 6 FLUTE SHORT CORNER RADIUS

- Special flute geometry and multiple helix eliminate vibrations
- Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40



MG | 6 | 45° | PLAIN | FLAT P.979

MADE IN USA ◆ U.S.A Stock

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length Of Cut	Overall Length
PLAIN	FLAT	R	D_1	D_2	L_1	L_2
UGMG22947	UGMG23947	R.090	3/4	3/4	3	5-1/2
UGMG22948	UGMG23948	R.120	3/4	3/4	3	5-1/2
UGMG22064	UGMG23064	R.030	1	1	1-1/2	4
UGMG22949	UGMG23949	R.060	1	1	1-1/2	4
UGMG22950	UGMG23950	R.090	1	1	1-1/2	4
UGMG22951	UGMG23951	R.120	1	1	1-1/2	4
UGMG22952	UGMG23952	R.030	1	1	4	7
UGMG22953	UGMG23953	R.060	1	1	4	7
UGMG22954	UGMG23954	R.090	1	1	4	7
UGMG22955	UGMG23955	R.120	1	1	4	7

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	h6

◎ : Excellent ○ : Good

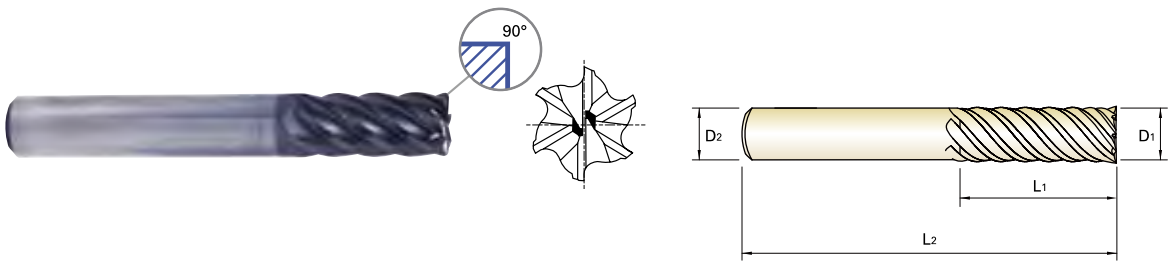
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

UGMG20 SERIES PLAIN SHANK
UGMG21 SERIES FLAT SHANK

CARBIDE, 6 FLUTE

- Special flute geometry and multiple helix eliminate vibrations
- Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40



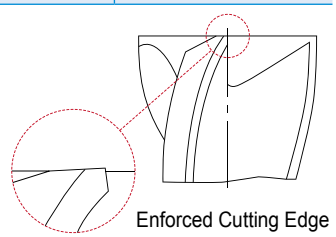
MG | 6 | 45° | PLAIN | FLAT | P.979

MADE IN USA ◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length Of Cut	Overall Length
PLAIN	FLAT	D1	D2	L1	L2
UGMG20016	-	1/4	1/4	3/4	2-1/2
UGMG20901	-	1/4	1/4	1-1/8	3
UGMG20902	-	1/4	1/4	1-1/2	4
UGMG20020	-	5/16	5/16	3/4	2-1/2
UGMG20903	-	5/16	5/16	1-1/4	3
UGMG20904	-	5/16	5/16	1-5/8	4
UGMG20024	UGMG21024	3/8	3/8	1	3
UGMG20905	UGMG21905	3/8	3/8	1-1/2	4
UGMG20906	UGMG21906	3/8	3/8	2	4
UGMG20032	UGMG21032	1/2	1/2	1	3-1/4
UGMG20907	UGMG21907	1/2	1/2	1-1/4	3-1/2
UGMG20908	UGMG21908	1/2	1/2	2	4
UGMG20909	UGMG21909	1/2	1/2	3	5
UGMG20040	UGMG21040	5/8	5/8	1-1/4	3-1/2
UGMG20910	UGMG21910	5/8	5/8	2	4
UGMG20911	UGMG21911	5/8	5/8	3	5
UGMG20048	UGMG21048	3/4	3/4	1-1/2	4
UGMG20912	UGMG21912	3/4	3/4	3	5-1/2
UGMG20064	UGMG60064	1	1	1-1/2	4
UGMG20913	UGMG21913	1	1	4	7

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6


Enforced Cutting Edge

◎ : Excellent ○ : Good

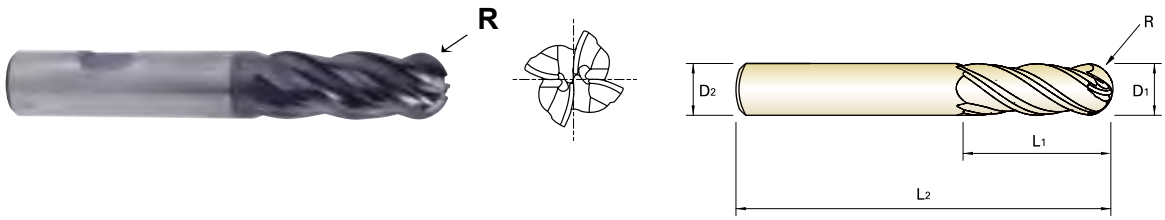
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

GMG55 SERIES PLAIN SHANK
GMG56 SERIES FLAT SHANK

CARBIDE, 4 FLUTE BALL NOSE

▶ Special flute geometry and multiple helix eliminate vibrations
▶ Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40



MG | 4 | M-Helix | R ±.0008 | PLAIN | FLAT

P.980

◇ Call for Availability

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length Of Cut	Overall Length
PLAIN	FLAT	R	D_1	D_2	L_1	L_2
GMG55030	**GMG56030**	R1.5	**3.0**	6	8	57
GMG55040	**GMG56040**	R2.0	**4.0**	6	11	57
GMG55050	**GMG56050**	R2.5	**5.0**	6	13	57
GMG55060	**GMG56060**	R3.0	**6.0**	6	13	57
GMG55080	**GMG56080**	R4.0	**8.0**	8	19	63
GMG55100	**GMG56100**	R5.0	**10.0**	10	22	72
GMG55120	**GMG56120**	R6.0	**12.0**	12	26	83
GMG55160	**GMG56160**	R8.0	**16.0**	16	32	92
GMG55200	**GMG56200**	R10.0	**20.0**	20	38	104
GMG55250	**GMG56250**	R12.5	**25.0**	25	38	104

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

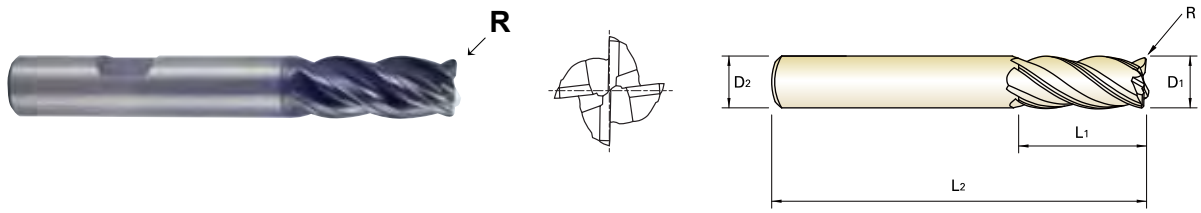
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Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

GMF54 SERIES PLAIN SHANK
GMF55 SERIES FLAT SHANK

CARBIDE, 4 FLUTE SHORT LENGTH CORNER RADIUS

- Special flute geometry and multiple helix eliminate vibrations
- Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40



MG | 4 | M-Helix | PLAIN | FLAT

P.981, 982

◇ Call for Availability

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length Of Cut	Overall Length
PLAIN	FLAT	R	D1	D2	L1	L2
GMF54030	GMF55030	R0.3	3.0	6	7	54
GMF54901	GMF55901	R0.5	3.0	6	7	54
GMF54040	GMF55040	R0.3	4.0	6	8	54
GMF54902	GMF55902	R0.5	4.0	6	8	54
GMF54050	GMF55050	R0.3	5.0	6	10	54
GMF54903	GMF55903	R0.5	5.0	6	10	54
GMF54060	GMF55060	R0.3	6.0	6	10	54
GMF54904	GMF55904	R0.5	6.0	6	10	54
GMF54905	GMF55905	R1.0	6.0	6	10	54
GMF54080	GMF55080	R0.5	8.0	8	12	58
GMF54906	GMF55906	R1.0	8.0	8	12	58
GMF54100	GMF55100	R0.5	10.0	10	14	66
GMF54907	GMF55907	R1.0	10.0	10	14	66
GMF54120	GMF55120	R0.5	12.0	12	16	73
GMF54908	GMF55908	R1.0	12.0	12	16	73
GMF54909	GMF55909	R2.0	12.0	12	16	73
GMF54140	GMF55140	R0.5	14.0	14	18	75
GMF54160	GMF55160	R1.0	16.0	16	22	82
GMF54912	GMF55912	R2.0	16.0	16	22	82
GMF54913	GMF55913	R3.0	16.0	16	22	82
GMF54180	GMF55180	R1.0	18.0	18	24	84
GMF54200	GMF55200	R1.0	20.0	20	26	92
GMF54916	GMF55916	R2.0	20.0	20	26	92
GMF54917	GMF55917	R3.0	20.0	20	26	92

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

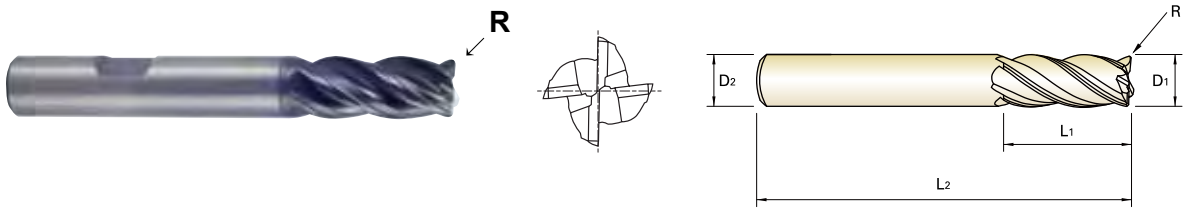
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Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

GMF58 SERIES PLAIN SHANK
GMF59 SERIES FLAT SHANK

CARBIDE, 4 FLUTE LONG LENGTH CORNER RADIUS

- Special flute geometry and multiple helix eliminate vibrations
- Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40



MG | 4 | M-Helix | PLAIN | FLAT

P.981, 982

◇ Call for Availability

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length Of Cut	Overall Length
PLAIN	FLAT	R	D_1	D_2	L_1	L_2
GMF58030	GMF59030	R0.3	3.0	6	8	57
GMF58901	GMF59901	R0.5	3.0	6	8	57
GMF58040	GMF59040	R0.3	4.0	6	11	57
GMF58902	GMF59902	R0.5	4.0	6	11	57
GMF58050	GMF59050	R0.3	5.0	6	13	57
GMF58903	GMF59903	R0.5	5.0	6	13	57
GMF58060	GMF59060	R0.3	6.0	6	13	57
GMF58904	GMF59904	R0.5	6.0	6	13	57
GMF58905	GMF59905	R1.0	6.0	6	13	57
GMF58080	GMF59080	R0.5	8.0	8	19	63
GMF58906	GMF59906	R1.0	8.0	19	63	83
GMF58100	GMF59100	R0.5	10.0	10	22	72
GMF58907	GMF59907	R1.0	10.0	10	22	72
GMF58120	GMF59120	R0.5	12.0	12	26	83
GMF58908	GMF59908	R1.0	12.0	12	26	83
GMF58909	GMF59909	R2.0	12.0	12	26	83
GMF58140	GMF59140	R0.5	14.0	14	26	83
GMF58160	GMF59160	R1.0	16.0	16	32	92
GMF58912	GMF59912	R2.0	16.0	16	32	92
GMF58913	GMF59913	R3.0	16.0	16	32	92
GMF58180	GMF59180	R1.0	18.0	18	32	92
GMF58200	GMF59200	R1.0	20.0	20	38	104
GMF58916	GMF59916	R2.0	20.0	20	38	104
GMF58917	GMF59917	R3.0	20.0	20	38	104
GMF58250	GMF59250	R1.0	25.0	25	38	104

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

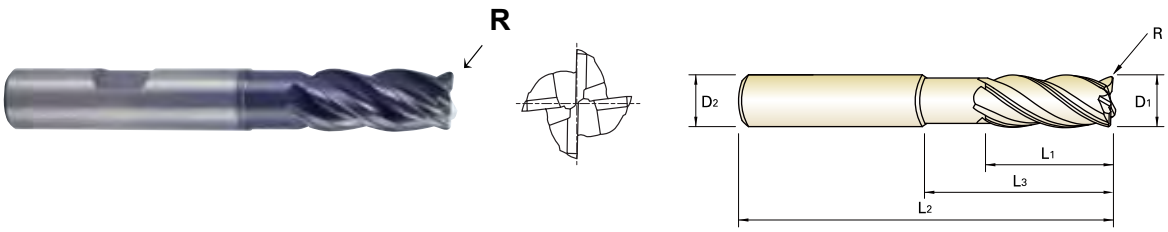
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

GMF62 SERIES PLAIN SHANK
GMF63 SERIES FLAT SHANK

CARBIDE, 4 FLUTE with EXTENDED NECK CORNER RADIUS

- Special flute geometry and multiple helix eliminate vibrations
- Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40



MG | 4 | M-Helix | PLAIN | FLAT

P.981, 982

◇ Call for Availability

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length Of Cut	Length Below Shank	Overall Length
PLAIN	FLAT	R	D1	D2	L1	L3	L2
GMF62030	GMF63030	R0.3	3.0	6	7	12	54
GMF62901	GMF63901	R0.5	3.0	6	7	12	54
GMF62902	GMF63902	R0.3	3.0	6	7	17	57
GMF62903	GMF63903	R0.5	3.0	6	7	17	57
GMF62040	GMF63040	R0.3	4.0	6	8	15	57
GMF62904	GMF63904	R0.5	4.0	6	8	15	57
GMF62905	GMF63905	R0.3	4.0	6	8	22	63
GMF62906	GMF63906	R0.5	4.0	6	8	22	63
GMF62050	GMF63050	R0.3	5.0	6	10	17	57
GMF62907	GMF63907	R0.5	5.0	6	10	17	57
GMF62908	GMF63908	R0.3	5.0	6	10	27	67
GMF62909	GMF63909	R0.5	5.0	6	10	27	67
GMF62060	GMF63060	R0.3	6.0	6	10	15	57
GMF62910	GMF63910	R0.5	6.0	6	10	15	57
GMF62911	GMF63911	R1.0	6.0	6	10	15	57
GMF62912	GMF63912	R0.3	6.0	6	10	20	62
GMF62913	GMF63913	R0.5	6.0	6	10	20	62
GMF62914	GMF63914	R1.0	6.0	6	10	20	62
GMF62915	GMF63915	R0.3	6.0	6	10	32	74
GMF62916	GMF63916	R0.5	6.0	6	10	32	74
GMF62917	GMF63917	R1.0	6.0	6	10	32	74
GMF62080	GMF63080	R0.5	8.0	8	12	20	63
GMF62918	GMF63918	R1.0	8.0	8	12	20	63
GMF62919	GMF63919	R0.5	8.0	8	12	30	73
GMF62920	GMF63920	R1.0	8.0	8	12	30	73
GMF62921	GMF63921	R0.5	8.0	8	12	46	90

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◎ : Excellent ○ : Good

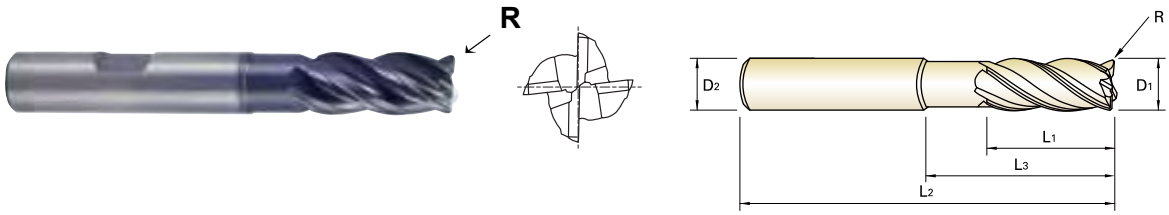
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

GMF62 SERIES PLAIN SHANK
GMF63 SERIES FLAT SHANK

CARBIDE, 4 FLUTE with EXTENDED NECK CORNER RADIUS

▶ Special flute geometry and multiple helix eliminate vibrations
▶ Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40



MG | 4 | M-Helix | PLAIN | FLAT

P.981, 982

◇ Call for Availability

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length Of Cut	Length Below Shank	Overall Length
PLAIN	FLAT	R	D1	D2	L1	L3	L2
GMF62922	GMF63922	R1.0	8.0	8	12	46	90
GMF62100	GMF63100	R0.5	10.0	10	14	25	72
GMF62923	GMF63923	R1.0	10.0	10	14	25	72
GMF62924	GMF63924	R0.5	10.0	10	14	35	82
GMF62925	GMF63925	R1.0	10.0	10	14	35	82
GMF62926	GMF63926	R0.5	10.0	10	14	55	102
GMF62927	GMF63927	R1.0	10.0	10	14	55	102
GMF62120	GMF63120	R0.5	12.0	12	16	30	83
GMF62928	GMF63928	R1.0	12.0	12	16	30	83
GMF62929	GMF63929	R2.0	12.0	12	16	30	83
GMF62930	GMF63930	R0.5	12.0	12	16	40	93
GMF62931	GMF63931	R1.0	12.0	12	16	40	93
GMF62932	GMF63932	R2.0	12.0	12	16	40	93
GMF62933	GMF63933	R0.5	12.0	12	16	64	117
GMF62934	GMF63934	R1.0	12.0	12	16	64	117
GMF62935	GMF63935	R2.0	12.0	12	16	64	117
GMF62160	GMF63160	R1.0	16.0	16	22	38	92
GMF62936	GMF63936	R2.0	16.0	16	22	38	92
GMF62937	GMF63937	R3.0	16.0	16	22	38	92
GMF62938	GMF63938	R1.0	16.0	16	22	55	109
GMF62939	GMF63939	R2.0	16.0	16	22	55	109
GMF62940	GMF63940	R3.0	16.0	16	22	55	109
GMF62941	GMF63941	R1.0	16.0	16	22	87	141
GMF62942	GMF63942	R2.0	16.0	16	22	87	141
GMF62943	GMF63943	R3.0	16.0	16	22	87	141
GMF62200	GMF63200	R1.0	20.0	20	26	50	104

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◎ : Excellent ○ : Good

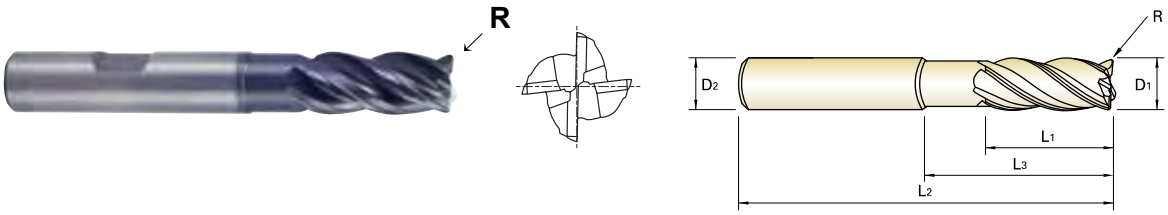
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

GMF62 SERIES PLAIN SHANK
GMF63 SERIES FLAT SHANK

CARBIDE, 4 FLUTE with EXTENDED NECK CORNER RADIUS

- Special flute geometry and multiple helix eliminate vibrations
- Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40



MG | 4 | M-Helix | PLAIN | FLAT

P.981, 982

◇ Call for Availability

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length Of Cut	Length Below Shank	Overall Length
PLAIN	FLAT	R	D1	D2	L1	L3	L2
GMF62944	**GMF63944**	R2.0	**20.0**	20	26	50	104
GMF62945	**GMF63945**	R3.0	**20.0**	20	26	50	104
GMF62946	**GMF63946**	R1.0	**20.0**	20	26	70	124
GMF62947	**GMF63947**	R2.0	**20.0**	20	26	70	124
GMF62948	**GMF63948**	R3.0	**20.0**	20	26	70	124
GMF62949	**GMF63949**	R1.0	**20.0**	20	26	110	164
GMF62950	**GMF63950**	R2.0	**20.0**	20	26	110	164
GMF62951	**GMF63951**	R3.0	**20.0**	20	26	110	164

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

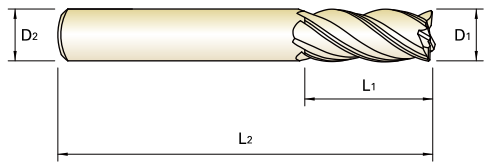
V7 PLUS A END MILLS

GMF52 SERIES PLAIN SHANK
GMF53 SERIES FLAT SHANK

CARBIDE, 4 FLUTE SHORT LENGTH

- Special flute geometry and multiple helix eliminate vibrations
- Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40





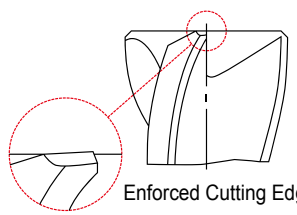
MG | 4 | M-Helix | PLAIN | FLAT | C x 45° | P.981, 982

◇ Call for Availability

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length Of Cut	Overall Length	Chamfer
PLAIN	FLAT	D1	D2	L1	L2	
GMF52030	GMF53030	3.0	6	7	54	0.10
GMF52040	GMF53040	4.0	6	8	54	0.15
GMF52050	GMF53050	5.0	6	10	54	0.15
GMF52060	GMF53060	6.0	6	10	54	0.20
GMF52080	GMF53080	8.0	8	12	58	0.20
GMF52100	GMF53100	10.0	10	14	66	0.30
GMF52120	GMF53120	12.0	12	16	73	0.35
GMF52140	GMF53140	14.0	14	18	75	0.40
GMF52160	GMF53160	16.0	16	22	82	0.40
GMF52180	GMF53180	18.0	18	24	84	0.50
GMF52200	GMF53200	20.0	20	26	92	0.50

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~−0.03	h6


Enforced Cutting Edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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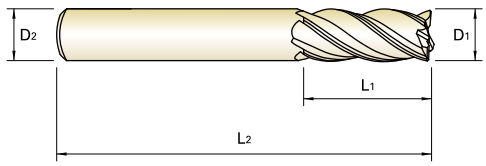
V7 PLUS A END MILLS

GMF56 SERIES PLAIN SHANK
GMF57 SERIES FLAT SHANK

CARBIDE, 4 FLUTE LONG LENGTH

▶ Special flute geometry and multiple helix eliminate vibrations
▶ Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40





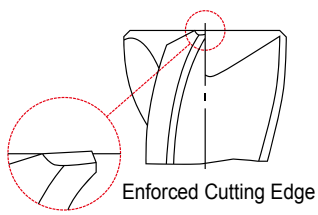
MG | 4 | M-Helix | PLAIN | FLAT | C x 45° | P.981, 982

◇ Call for Availability

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length Of Cut	Overall Length	Chamfer
PLAIN	FLAT	D1	D2	L1	L2	
GMF56030	GMF57030	3.0	6	8	57	0.10
GMF56040	GMF57040	4.0	6	11	57	0.15
GMF56050	GMF57050	5.0	6	13	57	0.15
GMF56060	GMF57060	6.0	6	13	57	0.20
GMF56080	GMF57080	8.0	8	19	63	0.20
GMF56100	GMF57100	10.0	10	22	72	0.30
GMF56120	GMF57120	12.0	12	26	83	0.35
GMF56140	GMF57140	14.0	14	26	83	0.40
GMF56160	GMF57160	16.0	16	32	92	0.40
GMF56180	GMF57180	18.0	18	32	92	0.50
GMF56200	GMF57200	20.0	20	38	104	0.50
GMF56250	GMF57250	25.0	25	38	104	0.50

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~−0.03	h6


Enforced Cutting Edge

◎ : Excellent ○ : Good

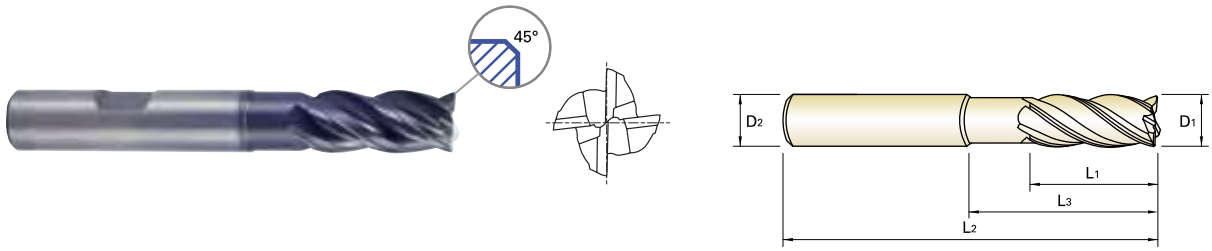
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

GMF60 SERIES PLAIN SHANK
GMF61 SERIES FLAT SHANK

CARBIDE, 4 FLUTE with EXTENDED NECK

- Special flute geometry and multiple helix eliminate vibrations
- Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40



MG | 4 | M-Helix | PLAIN | FLAT | C x 45° | P.981, 982

◇ Call for Availability

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length Of Cut	Length Below Shank	Overall Length	Neck Diameter	Chamfer
PLAIN	FLAT	D1	D2	L1	L3	L2	D3	
GMF60030	GMF61030	3.0	6	7	12	54	2.7	0.10
GMF60901	GMF61901	3.0	6	7	17	57	2.7	0.10
GMF60902	GMF61902	3.0	6	8	14	57	2.7	0.10
GMF60040	GMF61040	4.0	6	8	15	57	3.7	0.15
GMF60903	GMF61903	4.0	6	8	22	63	3.7	0.15
GMF60904	GMF61904	4.0	6	11	16	57	3.7	0.15
GMF60050	GMF61050	5.0	6	10	17	57	4.7	0.15
GMF60905	GMF61905	5.0	6	10	27	67	4.7	0.15
GMF60906	GMF61906	5.0	6	13	18	57	4.7	0.15
GMF60060	GMF61060	6.0	6	10	15	57	5.5	0.20
GMF60907	GMF61907	6.0	6	10	20	62	5.5	0.20
GMF60908	GMF61908	6.0	6	10	32	74	5.5	0.20
GMF60909	GMF61909	6.0	6	13	21	57	5.5	0.20
GMF60080	GMF61080	8.0	8	12	20	63	7.5	0.20
GMF60910	GMF61910	8.0	8	12	30	73	7.5	0.20
GMF60911	GMF61911	8.0	8	12	46	90	7.5	0.20
GMF60912	GMF61912	8.0	8	19	27	63	7.5	0.20
GMF60100	GMF61100	10.0	10	14	25	72	9.2	0.30
GMF60913	GMF61913	10.0	10	14	35	82	9.2	0.30
GMF60914	GMF61914	10.0	10	14	55	102	9.2	0.30
GMF60915	GMF61915	10.0	10	22	32	72	9.2	0.30
GMF60120	GMF61120	12.0	12	16	30	83	11.0	0.35
GMF60916	GMF61916	12.0	12	16	40	93	11.0	0.35
GMF60917	GMF61917	12.0	12	16	64	117	11.0	0.35
GMF60918	GMF61918	12.0	12	26	38	83	11.0	0.35
GMF60160	GMF61160	16.0	16	22	38	92	15.0	0.40

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◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

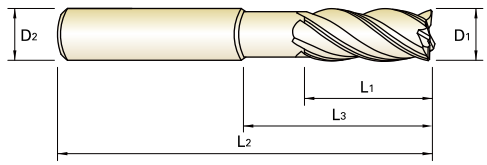
V7 PLUS A END MILLS

GMF60 SERIES PLAIN SHANK
GMF61 SERIES FLAT SHANK

CARBIDE, 4 FLUTE with EXTENDED NECK

- Special flute geometry and multiple helix eliminate vibrations
- Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40





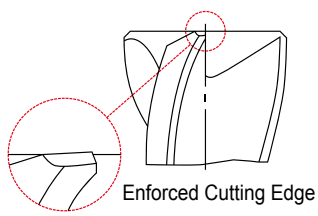
MG | 4 | M-Helix | PLAIN | FLAT | C x 45° | P.981, 982

◇ Call for Availability

Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length Of Cut	Length Below Shank	Overall Length	Neck Diameter	Chamfer
PLAIN	FLAT	D1	D2	L1	L3	L2	D3	
GMF60919	GMF61919	16.0	16	22	55	109	15.0	0.40
GMF60920	GMF61920	16.0	16	22	87	141	15.0	0.40
GMF60921	GMF61921	16.0	16	32	44	92	15.0	0.40
GMF60200	GMF61200	20.0	20	26	50	104	19.0	0.50
GMF60922	GMF61922	20.0	20	26	70	124	19.0	0.50
GMF60923	GMF61923	20.0	20	26	110	164	19.0	0.50
GMF60924	GMF61924	20.0	20	38	54	104	19.0	0.50

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~−0.03	h6



◎ : Excellent ○ : Good

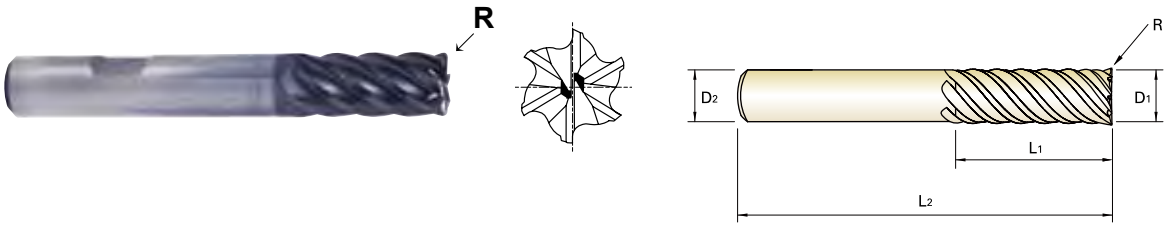
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

GMG16 SERIES PLAIN SHANK
GMG17 SERIES FLAT SHANK

CARBIDE, 6 FLUTE LONG LENGTH CORNER RADIUS

- The unique geometry of the variable pitch reduces chatter for high speed and trochoidal milling
- Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40



MG | 6 | 45° | PLAIN | FLAT

P.983

◇ Call for Availability

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length Of Cut	Overall Length
PLAIN	FLAT	R	D1	D2	L1	L2
GMG16060	GMG17060	R0.5	6.0	6	13	57
GMG16901	GMG17901	R1.0	6.0	6	13	57
GMG16080	GMG17080	R0.5	8.0	8	19	63
GMG16902	GMG17902	R1.0	8.0	8	19	63
GMG16100	GMG17100	R0.5	10.0	10	22	72
GMG16903	GMG17903	R1.0	10.0	10	22	72
GMG16904	GMG17904	R1.5	10.0	10	22	72
GMG16905	GMG17905	R2.0	10.0	10	22	72
GMG16120	GMG17120	R0.5	12.0	12	26	83
GMG16906	GMG17906	R1.0	12.0	12	26	83
GMG16907	GMG17907	R1.5	12.0	12	26	83
GMG16908	GMG17908	R2.0	12.0	12	26	83
GMG16909	GMG17909	R3.0	12.0	12	26	83
GMG16160	GMG17160	R1.0	16.0	16	32	92
GMG16910	GMG17910	R1.5	16.0	16	32	92
GMG16911	GMG17911	R2.0	16.0	16	32	92
GMG16912	GMG17912	R3.0	16.0	16	32	92
GMG16200	GMG17200	R1.0	20.0	20	38	104
GMG16913	GMG17913	R1.5	20.0	20	38	104
GMG16914	GMG17914	R2.0	20.0	20	38	104
GMG16915	GMG17915	R3.0	20.0	20	38	104
GMG16250	GMG17250	R1.0	25.0	25	44	104
GMG16916	GMG17916	R1.5	25.0	25	44	104
GMG16917	GMG17917	R2.0	25.0	25	44	104
GMG16918	GMG17918	R3.0	25.0	25	44	104

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

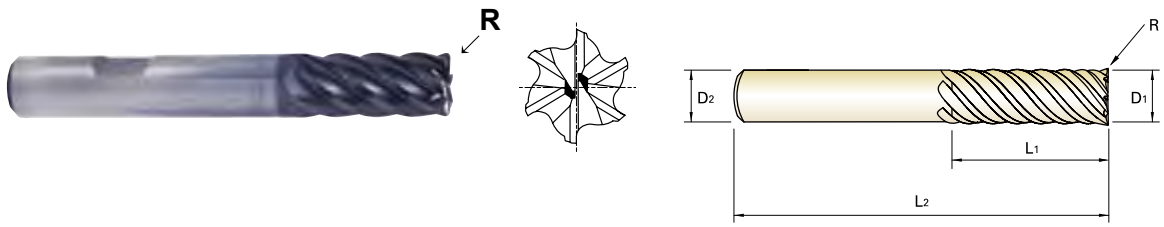
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

GMG18 SERIES PLAIN SHANK
GMG19 SERIES FLAT SHANK

CARBIDE, 6 FLUTE EXTRA LONG LENGTH CORNER RADIUS

- The unique geometry of the variable pitch reduces chatter for high speed and trochoidal milling
- Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40



MG | 6 | 45° | PLAIN | FLAT

P.983

◇ Call for Availability

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length Of Cut	Overall Length
PLAIN	FLAT	R	D1	D2	L1	L2
GMG18060	GMG19060	R0.5	6.0	6	24	75
GMG18901	GMG19901	R1.0	6.0	6	24	75
GMG18080	GMG19080	R0.5	8.0	8	32	75
GMG18902	GMG19902	R1.0	8.0	8	32	75
GMG18903	GMG19903	R2.0	8.0	8	32	75
GMG18100	GMG19100	R0.5	10.0	10	40	100
GMG18904	GMG19904	R1.0	10.0	10	40	100
GMG18905	GMG19905	R1.5	10.0	10	40	100
GMG18906	GMG19906	R2.0	10.0	10	40	100
GMG18120	GMG19120	R0.5	12.0	12	48	120
GMG18907	GMG19907	R1.0	12.0	12	48	120
GMG18908	GMG19908	R1.5	12.0	12	48	120
GMG18909	GMG19909	R2.0	12.0	12	48	120
GMG18910	GMG19910	R3.0	12.0	12	48	120
GMG18160	GMG19160	R1.0	16.0	16	64	140
GMG18911	GMG19911	R1.5	16.0	16	64	140
GMG18912	GMG19912	R2.0	16.0	16	64	140
GMG18913	GMG19913	R3.0	16.0	16	64	140
GMG18200	GMG19200	R1.0	20.0	20	80	150
GMG18914	GMG19914	R1.5	20.0	20	80	150
GMG18915	GMG19915	R2.0	20.0	20	80	150
GMG18916	GMG19916	R3.0	20.0	20	80	150
GMG18917	GMG19917	R4.0	20.0	20	80	150
GMG18918	GMG19918	R5.0	20.0	20	80	150

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~−0.03	h6

▶ NEXT PAGE

◎ : Excellent ○ : Good

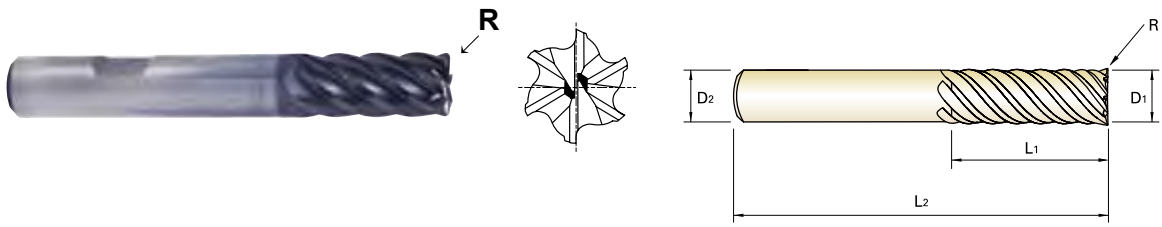
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

GMG18 SERIES PLAIN SHANK
GMG19 SERIES FLAT SHANK

CARBIDE, 6 FLUTE EXTRA LONG LENGTH CORNER RADIUS

▶ Special flute geometry and multiple helix eliminate vibrations
▶ Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40



MG | 6 | 45° | PLAIN | FLAT

P.983

◇ Call for Availability

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length Of Cut	Overall Length
PLAIN	FLAT	R	D_1	D_2	L_1	L_2
GMG18250	**GMG19250**	R1.0	**25.0**	25	100	170
GMG18919	**GMG19919**	R1.5	**25.0**	25	100	170
GMG18920	**GMG19920**	R2.0	**25.0**	25	100	170
GMG18921	**GMG19921**	R3.0	**25.0**	25	100	170
GMG18922	**GMG19922**	R4.0	**25.0**	25	100	170
GMG18923	**GMG19923**	R5.0	**25.0**	25	100	170

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

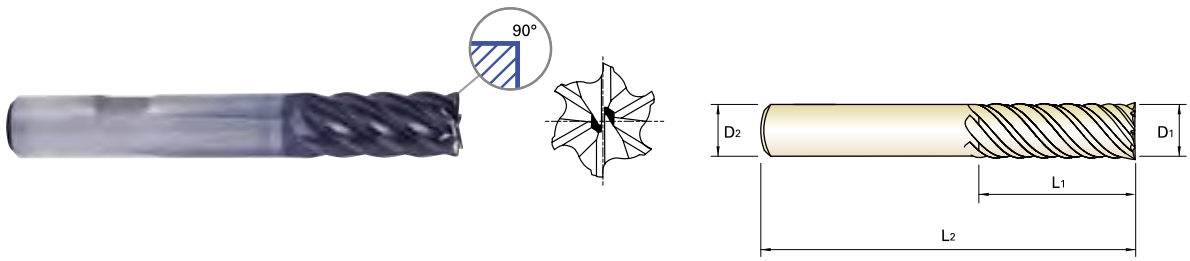
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

V7 PLUS A END MILLS

GMG12, GMG14 SERIES PLAIN SHANK
GMG13, GMG15 SERIES FLAT SHANK

CARBIDE, 6 FLUTE LONG & EXTRA LONG LENGTH

- The unique geometry of the variable pitch reduces chatter for high speed and trochoidal milling
- Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40



MG | 6 | 45° | PLAIN | FLAT

P.983

◇ Call for Availability

LONG

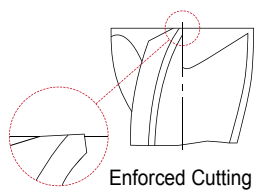
Unit : mm

EDP No.		Mill Diameter	Shank Diameter	Length Of Cut	Overall Length
PLAIN	FLAT	D1	D2	L1	L2
GMG12060	GMG13060	6.0	6	13	57
GMG12080	GMG13080	8.0	8	19	63
GMG12100	GMG13100	10.0	10	22	72
GMG12120	GMG13120	12.0	12	26	83
GMG12160	GMG13160	16.0	16	32	92
GMG12200	GMG13200	20.0	20	38	104
GMG12250	GMG13250	25.0	25	44	104

EXTRA LONG

EDP No.		Mill Diameter	Shank Diameter	Length Of Cut	Overall Length
PLAIN	FLAT	D1	D2	L1	L2
GMG14060	GMG15060	6.0	6	24	75
GMG14080	GMG15080	8.0	8	32	75
GMG14100	GMG15100	10.0	10	40	100
GMG14120	GMG15120	12.0	12	48	120
GMG14160	GMG15160	16.0	16	64	140
GMG14200	GMG15200	20.0	20	80	150
GMG14250	GMG15250	25.0	25	100	170

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~−0.03	h6



Enforced Cutting Edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	◎						○	○

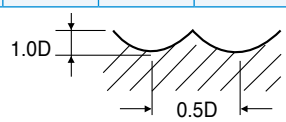
V7 PLUS A END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE BALL NOSE

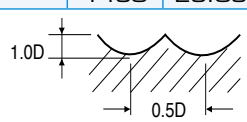
UGMG53, UGMG54 SERIES

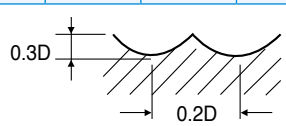
MATERIAL	P						M					
	CARBON STEELS		ALLOY STEELS		TOOL STEELS		STAINLESS STEELS 300		STAINLESS STEELS 400		STAINLESS STEELS (PH)	
HARDNESS	~ HB 300		HB 300 ~ HB 380		~HB 380							
STRENGTH	~ 1000N/mm²		1000N/mm²~1300N/mm²		~ 1300 N/mm²							
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	16227	63.89	11338	44.64	6815	18.24	8526	26.85	7732	18.26	7732	24.35
3/16	10818	46.00	7559	32.14	4543	13.59	5684	17.90	5154	12.18	5154	16.23
13/64	9986	47.18	6977	32.96	4194	13.87	5247	20.66	4758	18.73	4758	18.73
1/4	8114	51.11	5669	35.71	3407	15.02	4263	27.53	3866	18.26	3866	24.96
5/16	6491	61.33	4535	42.85	2726	18.03	3410	24.17	3093	19.48	3093	21.92
3/8	5409	55.37	3779	38.69	2272	16.10	2842	22.38	2577	18.26	2577	20.29
1/2	4057	44.72	2834	31.25	1704	13.15	2132	18.46	1933	15.22	1933	16.74
5/8	3245	38.33	2268	26.43	1363	11.16	1705	16.11	1546	13.15	1546	14.61
11/16	2950	37.17	2061	25.65	1239	10.93	1550	15.62	1406	13.06	1406	14.17
3/4	2705	38.33	1890	26.78	1136	11.27	1421	14.55	1289	11.77	1289	13.19
1	2028	31.62	1417	22.10	852	9.39	1066	11.41	966	8.98	966	10.35



RPM = rev./min.
Feed = inch/min.

MATERIAL	K		S			
	CAST IRON		TITANIUM		HIGH TEMPERATURE ALLOYS	
HARDNESS	~ HB 260					
STRENGTH	~ 870N/mm²					
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
1/8	11918	58.18	4706	13.34	2109	4.65
3/16	7946	41.29	3137	8.89	1406	3.10
13/64	7334	42.74	2896	10.03	1298	3.47
1/4	5959	46.92	2353	13.71	1054	4.65
5/16	4767	55.56	1882	11.86	843	4.12
3/8	3973	50.68	1569	11.12	703	3.87
1/2	2980	40.82	1177	9.08	527	3.15
5/8	2384	34.91	941	8.00	422	2.79
11/16	2167	33.78	856	7.82	383	2.72
3/4	1986	35.04	784	7.16	351	2.49
1	1490	29.09	588	5.65	264	1.99



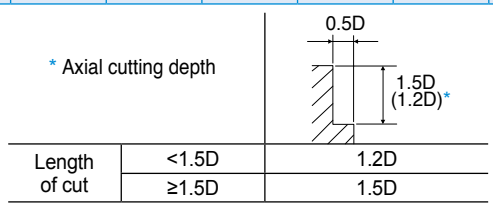


RPM = rev./min.
Feed = inch/min.

CARBIDE, 4 FLUTE - SIDE CUTTING

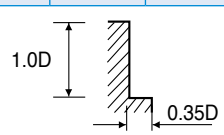
UGMF68, UGMF69, UGMF70, UGMF71, UGMF72, UGMF73, UGMF74, UGMF75, UGMF76, UGMF77 SERIES

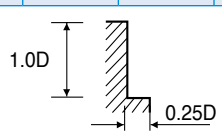
MATERIAL	P						M					
	CARBON STEELS		ALLOY STEELS		TOOL STEELS		STAINLESS STEELS 300		STAINLESS STEELS 400		STAINLESS STEELS (PH)	
HARDNESS	~ HB 300		HB 300 ~ HB 380		~HB 380							
STRENGTH	~ 1000N/mm²		1000N/mm²~1300N/mm²		~ 1300 N/mm²							
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	15249	12.01	10727	8.45	6418	3.03	11521	9.07	16136	10.16	10421	8.21
5/32	12200	15.37	8581	10.81	5134	4.85	9217	11.61	12909	12.20	8337	10.50
3/16	10166	17.61	7151	12.39	4278	5.39	7681	15.72	10757	15.25	6947	14.22
7/32	8714	18.53	6129	13.03	3667	5.49	6583	16.07	9220	15.97	5955	14.54
1/4	7625	19.21	5363	13.51	3209	5.56	5761	16.33	8068	16.52	5210	14.77
9/32	6778	22.95	4767	16.14	2852	6.74	5120	18.55	7171	20.08	4632	16.78
5/16	6100	25.94	4291	18.24	2567	7.68	4608	20.32	6454	22.36	4168	18.38
11/32	5834	29.86	4089	20.93	2445	8.86	4189	25.07	5868	25.87	3789	22.68
3/8	5613	33.59	3912	23.41	2343	9.96	3840	29.03	5379	28.80	3474	26.26
7/16	4811	32.20	3353	22.44	2008	9.33	3292	26.96	4610	26.86	2977	24.15
1/2	4210	31.16	2934	21.71	1757	8.86	2880	25.40	4034	25.41	2605	22.57
5/8	3368	28.11	2347	19.59	1406	8.19	2304	22.86	3227	22.87	2084	20.35
3/4	2806	28.73	1956	20.02	1171	8.30	1920	23.28	2689	23.29	1737	21.06
1	2105	21.21	1467	14.78	879	6.23	1440	17.69	2017	17.47	1303	16.00



Length of cut		
	<1.5D	1.2D
	≥1.5D	1.5D

MATERIAL	K		S			
	CAST IRON		TITANIUM		HIGH TEMPERATURE ALLOYS	
HARDNESS	~ HB 260					
STRENGTH	~ 870N/mm²					
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
1/8	11216	10.60	8129	5.12	3117	2.45
5/32	8972	14.13	6503	7.17	2494	2.75
3/16	7477	16.48	5419	9.39	2078	3.93
7/32	6409	17.16	4645	9.88	1781	4.21
1/4	5608	17.66	4064	10.24	1559	4.42
9/32	4985	21.19	3613	11.66	1385	5.35
5/16	4486	24.02	3252	12.80	1247	6.09
11/32	4290	27.70	2956	15.83	1133	6.96
3/8	4115	31.11	2710	18.35	1039	7.69
7/16	3527	29.44	2323	17.01	891	7.15
1/2	3087	28.19	2032	16.00	779	6.75
5/8	2469	25.28	1626	14.34	623	6.28
3/4	2058	26.25	1355	14.72	520	6.30
1	1543	19.20	1016	11.20	390	4.85





RPM = rev./min.
Feed = inch/min.

V7 PLUS A END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE - SLOTTING

UGMF68, UGMF69, UGMF70, UGMF71, UGMF72, UGMF73, UGMF74, UGMF75, UGMF76, UGMF77 SERIES

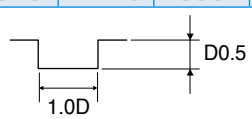
MATERIAL	P						M					
	CARBON STEELS		ALLOY STEELS		TOOL STEELS		STAINLESS STEELS 300		STAINLESS STEELS 400		STAINLESS STEELS (PH)	
HARDNESS	~ HB 300		HB 300 ~ HB 380		~HB 380							
STRENGTH	~ 1000N/mm²		1000N/mm²~1300N/mm²		~ 1300 N/mm²							
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	15249	12.01	10727	8.45	6418	3.03	11521	9.07	16136	10.16	10421	8.21
5/32	12200	15.37	8581	10.81	5134	4.85	9217	11.61	12909	12.20	8337	10.50
3/16	10166	17.61	7151	12.39	4278	5.39	7681	15.72	10757	15.25	6947	14.22
7/32	8714	18.53	6129	13.03	3667	5.49	6583	16.07	9220	15.97	5955	14.54
1/4	7625	19.21	5363	13.51	3209	5.56	5761	16.33	8068	16.52	5210	14.77
9/32	6778	22.95	4767	16.14	2852	6.74	5120	18.55	7171	19.76	4632	16.78
5/16	6100	25.94	4291	18.24	2567	7.68	4608	20.32	6454	22.36	4168	18.38
11/32	5834	29.86	4089	20.93	2445	8.86	4189	25.07	5868	25.87	3789	22.68
3/8	5613	33.59	3912	23.41	2343	9.96	3840	29.03	5379	28.80	3474	26.26
7/16	4811	32.20	3353	22.44	2008	9.33	3292	26.96	4610	26.86	2977	24.15
1/2	4210	31.16	2934	21.71	1757	8.86	2880	25.40	4034	25.41	2605	22.57
5/8	3368	28.11	2347	19.59	1406	8.19	2304	22.86	3227	22.87	2084	20.35
3/4	2806	28.73	1956	18.17	1171	8.30	1920	23.28	2689	23.29	1737	21.06
1	2105	21.21	1467	14.78	879	6.23	1440	17.69	2017	17.47	1303	16.00

* Axial cutting depth		D(0.8D)* D
Length of cut	<1.5D	0.8D
	≥1.5D	D

RPM = rev./min.
Feed = inch/min.

MATERIAL	K		S			
	CAST IRON		TITANIUM		HIGH TEMPERATURE ALLOYS	
HARDNESS	~ HB 260					
STRENGTH	~ 870N/mm²					
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
1/8	11216	10.60	8129	5.12	3117	2.45
5/32	8972	14.13	6503	7.17	2494	2.75
3/16	7477	16.48	5419	9.39	2078	3.93
7/32	6409	17.16	4645	9.88	1781	4.21
1/4	5608	17.66	4064	10.24	1559	4.42
9/32	4985	21.19	3613	11.66	1385	5.35
5/16	4486	24.02	3252	12.80	1247	6.09
11/32	4290	27.70	2956	15.83	1133	6.96
3/8	4115	31.11	2710	18.35	1039	7.69
7/16	3527	29.44	2323	17.01	891	7.15
1/2	3087	28.19	2032	16.00	779	6.75
5/8	2469	25.28	1626	14.34	623	6.28
3/4	2058	26.25	1355	14.72	520	6.30
1	1543	19.20	1016	11.20	390	4.85

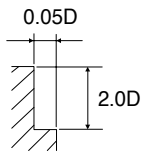
* Axial cutting depth		D(0.8D)* D
Length of cut	<1.5D	0.8D
	≥1.5D	D



CARBIDE, 6 FLUTE - SIDE CUTTING

UGMG20, UGMG21, UGMG22, UGMG23 SERIES

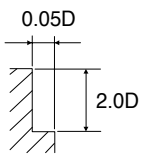
MATERIAL	P						M					
	CARBON STEELS		ALLOY STEELS		TOOL STEELS		STAINLESS STEELS 300		STAINLESS STEELS 400		STAINLESS STEELS (PH)	
HARDNESS	~ HB 300		HB 300 ~ HB 380		~HB 380							
STRENGTH	~ 1000N/mm²		1000N/mm²~1300N/mm²		~ 1300 N/mm²							
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6	15915	255.65	10769	127.20	5305	51.38	7799	75.53	11300	130.80	7109	68.85
8	11937	327.08	8077	162.18	3979	66.73	5849	98.10	8475	168.17	5332	89.42
10	9549	324.83	6462	161.80	3183	66.17	4679	97.27	6780	166.56	4265	88.67
12	7958	325.20	5385	162.81	2653	65.79	3899	96.71	5650	166.83	3554	88.16
16	5968	284.79	4039	142.14	1989	57.80	2924	84.97	4238	146.14	2666	77.46
20	4775	253.77	3231	127.45	1592	51.51	2340	75.71	3390	129.73	2133	69.02
25	3820	209.33	2585	106.24	1273	43.31	1872	63.22	2712	107.63	1706	57.23



If product's Length of Cut(L.O.C) is below 2D, it must be applied L.O.C × 90% ap.

RPM = rev./min.
Feed = inch/min.

MATERIAL	S			
	TITANIUM		HIGH TEMPERATURE ALLOYS	
HARDNESS				
STRENGTH				
DIAMETER	RPM	FEED	RPM	FEED
6	6154	47.97	1751	13.65
8	4615	59.97	1313	17.06
10	3692	61.06	1050	17.37
12	3077	60.33	875	16.96
16	2308	52.88	657	15.04
20	1846	49.28	525	13.90
25	1477	40.82	420	11.41



If product's Length of Cut(L.O.C) is below 2D, it must be applied L.O.C × 90% ap.

RPM = rev./min.
Feed = inch/min.

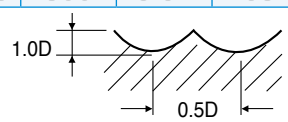
V7 PLUS A END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE BALL NOSE

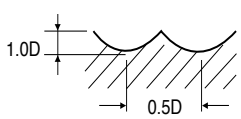
GMG55, GMG56 SERIES

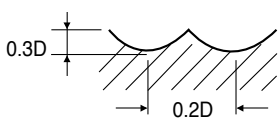
MATERIAL	P						M					
	CARBON STEELS		ALLOY STEELS		TOOL STEELS		STAINLESS STEELS 300		STAINLESS STEELS 400		STAINLESS STEELS (PH)	
HARDNESS	~ HB 300		HB 300 ~ HB 380		~HB 380							
STRENGTH	~ 1000 N/mm²		1000 ~ 1300 N/mm²		~ 1300 N/mm²							
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3	17189	67.67	11990	47.20	7215	19.32	9019	28.41	8170	19.30	8170	25.73
4	12892	54.81	8992	38.23	5411	16.19	6764	21.30	6127	14.47	6127	19.30
5	10313	48.72	7194	33.99	4329	14.32	5411	21.30	4902	19.30	4902	19.30
6	8594	54.14	5995	37.76	3608	15.91	4509	29.12	4085	19.30	4085	26.38
8	6446	60.90	4496	42.48	2706	17.90	3382	23.97	3064	19.30	3064	21.71
10	5157	52.78	3597	36.82	2165	15.34	2706	21.30	2451	17.37	2451	19.30
12	4297	47.37	2997	33.04	1804	13.92	2255	19.53	2042	16.08	2042	17.69
16	3223	38.07	2248	26.20	1353	11.08	1691	15.98	1532	13.03	1532	14.47
18	2865	36.09	1998	24.86	1203	10.60	1503	15.15	1362	12.65	1362	13.72
20	2578	36.54	1798	25.49	1082	10.74	1353	13.85	1225	11.19	1225	12.54
25	2063	32.16	1439	22.43	866	9.54	1082	11.59	980	9.11	980	10.50



RPM = rev./min.
Feed = mm/min.

MATERIAL	K		S			
	CAST IRON		TITANIUM		HIGH TEMPERATURE ALLOYS	
HARDNESS	~ HB 260					
STRENGTH	~ 870N/mm²					
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
3	12626	61.64	4987	14.14	2228	4.91
4	9470	49.21	3740	10.60	1671	3.68
5	7576	44.14	2992	10.37	1337	3.58
6	6313	49.71	2493	14.53	1114	4.91
8	4735	55.18	1870	11.78	836	4.08
10	3788	48.32	1496	10.60	668	3.68
12	3157	43.25	1247	9.62	557	3.33
16	2367	34.67	935	7.95	418	2.76
18	2104	32.81	831	7.59	371	2.63
20	1894	33.40	748	6.83	334	2.37
25	1515	29.59	598	5.75	267	2.02



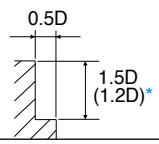


RPM = rev./min.
Feed = mm/min.

CARBIDE, 4 FLUTE - SIDE CUTTING

GMF52, GMF53, GMF54, GMF55, GMF56, GMF57, GMF58, GMF59, GMF60, GMF61, GMF62, GMF63 SERIES

MATERIAL	P						M					
	CARBON STEELS		ALLOY STEELS		TOOL STEELS		STAINLESS STEELS 300		STAINLESS STEELS 400		STAINLESS STEELS (PH)	
HARDNESS	~ HB 300		HB 300 ~ HB 380		~HB 380							
STRENGTH	~ 1000 N/mm²		1000 ~ 1300 N/mm²		~ 1300 N/mm²							
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3	16128	12.70	11353	8.94	6791	3.21	12202	9.61	17083	10.76	11035	8.69
4	12096	15.24	8515	10.73	5093	4.81	9151	11.53	12812	12.11	8276	10.43
5	9677	16.76	6812	11.80	4074	5.13	7321	14.99	10250	14.53	6621	13.55
6	8064	20.32	5677	14.30	3395	5.88	6101	17.29	8541	17.49	5517	15.64
8	6048	25.72	4257	18.10	2546	7.62	4576	20.18	6406	22.19	4138	18.25
10	5348	32.00	3724	22.29	2228	9.47	3661	27.67	5125	27.44	3310	25.02
12	4456	32.98	3104	22.97	1857	9.36	3050	26.90	4271	26.90	2759	23.89
14	3820	29.47	2660	20.53	1592	8.52	2615	24.71	3661	24.79	2365	21.97
16	3342	27.90	2328	19.43	1393	8.11	2288	22.70	3203	22.70	2069	20.20
18	2971	27.60	2069	19.22	1238	7.99	2034	22.42	2847	22.42	1839	19.98
20	2674	27.37	1862	19.06	1114	7.90	1830	22.19	2562	22.19	1655	20.07
25	2139	21.56	1490	15.01	891	6.32	1464	17.99	2050	17.76	1324	16.27

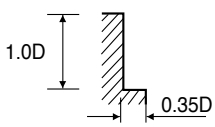


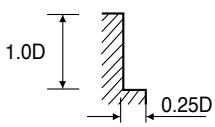
* Axial cutting depth

Length of cut		
	<1.5D	1.2D
	≥1.5D	1.5D

RPM = rev./min.
Feed = mm/min.

MATERIAL	K		S			
	CAST IRON		TITANIUM		HIGH TEMPERATURE ALLOYS	
HARDNESS	~ HB 260					
STRENGTH	~ 870N/mm²					
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
3	11884	11.23	8594	5.41	3289	2.59
4	8913	14.04	6446	7.11	2467	2.72
5	7130	15.72	5157	8.93	1974	3.73
6	5942	18.71	4297	10.83	1645	4.66
8	4456	23.86	3223	12.69	1233	6.02
10	3915	29.60	2578	17.46	987	7.30
12	3263	29.80	2149	16.92	822	7.12
14	2797	26.86	1842	15.37	705	6.77
16	2447	25.05	1611	14.21	617	6.22
18	2175	25.01	1432	13.99	548	5.96
20	1958	24.97	1289	14.01	493	5.98
25	1566	19.48	1031	11.37	395	4.91





RPM = rev./min.
Feed = mm/min.

V7 PLUS A END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE - SLOTTING

GMF52, GMF53, GMF54, GMF55, GMF56, GMF57, GMF58, GMF59, GMF60, GMF61, GMF62, GMF63 SERIES

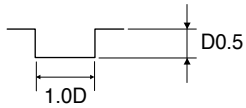
MATERIAL	P						M					
	CARBON STEELS		ALLOY STEELS		TOOL STEELS		STAINLESS STEELS 300		STAINLESS STEEL 400		STAINLESS STEELS (PH)	
HARDNESS	~ HB 300		HB 300 ~ HB 380		~HB 380							
STRENGTH	~ 1000 N/mm²		1000 ~ 1300 N/mm²		~ 1300 N/mm²							
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3	16128	12.70	11353	8.94	6791	3.21	12202	9.61	17083	10.76	11035	8.69
4	12096	15.24	8515	10.73	5093	4.81	9151	11.53	12812	12.11	8276	10.43
5	9677	16.76	6812	11.80	4074	5.13	7321	14.99	10250	14.53	6621	13.55
6	8064	20.32	5677	14.30	3395	5.88	6101	17.29	8541	17.49	5517	15.64
8	6048	25.72	4257	18.10	2546	7.62	4576	20.18	6406	22.19	4138	18.25
10	5348	32.00	3724	22.29	2228	9.47	3661	27.67	5125	27.44	3310	25.02
12	4456	32.98	3104	22.97	1857	9.36	3050	26.90	4271	26.90	2759	23.89
14	3820	29.47	2660	20.53	1592	8.52	2615	24.71	3661	24.79	2365	21.97
16	3342	27.90	2328	19.43	1393	8.11	2288	22.70	3203	22.70	2069	20.20
18	2971	27.60	2069	19.22	1238	7.99	2034	22.42	2847	22.42	1839	19.98
20	2674	27.37	1862	19.06	1114	7.90	1830	22.19	2562	22.19	1655	20.07
25	2139	21.56	1490	15.01	891	6.32	1464	17.99	2050	17.76	1324	16.27

* Axial cutting depth		D(0.8D)* D
Length of cut	<1.5D	0.8D
	≥1.5D	D

RPM = rev./min.
Feed = mm/min.

MATERIAL	K		S			
	CAST IRON		TITANIUM		HIGH TEMPERATURE ALLOYS	
HARDNESS	~ HB 260					
STRENGTH	~ 870N/mm²					
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
3	11884	11.23	8594	5.41	3289	2.59
4	8913	14.04	6446	7.11	2467	2.72
5	7130	15.72	5157	8.93	1974	3.73
6	5942	18.71	4297	10.83	1645	4.66
8	4456	23.86	3223	12.69	1233	6.02
10	3915	29.60	2578	17.46	987	7.30
12	3263	29.80	2149	16.92	822	7.12
14	2797	26.86	1842	15.37	705	6.77
16	2447	25.05	1611	14.21	617	6.22
18	2175	25.01	1432	13.99	548	5.96
20	1958	24.97	1289	14.01	493	5.98
25	1566	19.48	1031	11.37	395	4.91

* Axial cutting depth		D(0.8D)* D
Length of cut	<1.5D	0.8D
	≥1.5D	D

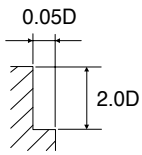


RPM = rev./min.
Feed = mm/min.

CARBIDE, 6 FLUTE - SIDE CUTTING

GMG12, GMG13, GMG14, GMG15, GMG16, GMG17, GMG18, GMG19 SERIES

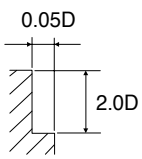
MATERIAL	P						M					
	CARBON STEELS		ALLOY STEELS		TOOL STEELS		STAINLESS STEELS 300		STAINLESS STEELS 400		STAINLESS STEELS (PH)	
HARDNESS	~ HB 300		HB 300 ~ HB 380		~HB 380							
STRENGTH	~ 1000N/mm²		1000N/mm²~1300N/mm²		~ 1300 N/mm²							
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	15036	241.52	10176	120.19	5012	48.54	7365	71.33	10681	123.63	6723	65.11
5/16	12028	329.60	8141	163.46	4009	67.25	5892	98.82	8545	169.55	5379	90.21
3/8	10024	340.96	6784	169.88	3341	69.46	4910	102.07	7120	174.93	4482	93.17
1/2	7518	307.22	5088	153.85	2506	62.15	3682	91.34	5340	157.69	3362	83.38
5/8	6014	286.98	4071	143.27	2005	58.25	2946	85.60	4272	147.34	2689	78.14
3/4	5012	266.38	3392	133.82	1671	54.06	2455	79.45	3560	136.24	2241	72.53
1	3759	206.00	2544	104.57	1253	42.62	1841	62.20	2670	105.97	1681	56.38



If product's Length of Cut(L.O.C) is below 2D, it must be applied L.O.C × 90% ap.

RPM = rev./min.
Feed = mm/min.

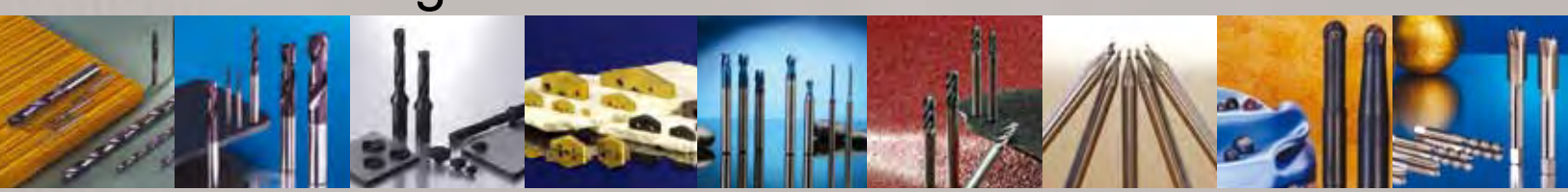
MATERIAL	S			
	TITANIUM		HIGH TEMPERATURE ALLOYS	
HARDNESS				
STRENGTH				
DIAMETER	RPM	FEED	RPM	FEED
1/4	5822	45.38	1650	12.86
5/16	4657	60.51	1320	17.15
3/8	3881	64.18	1100	18.19
1/2	2911	57.07	825	15.98
5/8	2329	53.36	660	15.13
3/4	1941	51.80	550	14.55
1	1455	40.22	413	11.21



If product's Length of Cut(L.O.C) is below 2D, it must be applied L.O.C × 90% ap.

RPM = rev./min.
Feed = mm/min.

Global Cutting Tool Leader **YG-1**



CARBIDE

Being the best through innovation



V7 MILL INOX END MILLS

- Silent Cutting of Stainless Steels up to HRc40.
  Designed as Variable Leads, YG-1's Patent.

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
INCH					
EMC75 EMD60		CARBIDE, 4 FLUTE STUB LENGTH ◆	D1/8	D1	988
EMC76 EMD61		CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS ◆	D1/8	D1	989
EMB12 EMB37		CARBIDE, 4 FLUTE REGULAR LENGTH ◆	D1/8	D1	990
EMB13 EMB38		CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS ◆	D1/8	D1	991
EMB20		CARBIDE, 4 FLUTE EXTENDED LENGTH LONG REACH ◆	D1/4	D1	992
EMB78 EMB79		CARBIDE, 4 FLUTE REGULAR LENGTH BALL NOSE ◆	R1/16	R1/2	993
EMB76 EMB77		CARBIDE, 5 FLUTE REGULAR LENGTH ◆	D1/4	D1	994

◆ U.S.A Stock

METRIC

EMB41 EMB42		CARBIDE, 4 FLUTE SHORT LENGTH ◇	D3.0	D20.0	995
EMB43 EMB44		CARBIDE, 4 FLUTE SHORT LENGTH CORNER RADIUS ◇	D3.0	D20.0	996
EMB14 EMB39		CARBIDE, 4 FLUTE REGULAR LENGTH ◇	D3.0	D25.0	997
EMB15 EMB40		CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS ◇	D3.0	D25.0	998
EMB74 EMB75		CARBIDE, 4 FLUTE REGULAR LENGTH BALL NOSE ◇	R1.5	R12.5	999
EMB72 EMB73		CARBIDE, 5 FLUTE REGULAR LENGTH ◇	D6.0	D25.0	1000
		RECOMMENDED CUTTING CONDITIONS			1001

◇ Call for Availability

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○				◎							◎	○
◎	○	○				◎							◎	○
◎	○	○				◎							◎	○
◎	○	○				◎							◎	○
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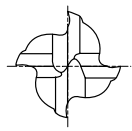
V7 MILL INOX END MILLS

EMC75 SERIES PLAIN SHANK
EMD60 SERIES FLAT SHANK

CARBIDE, 4 FLUTE STUB LENGTH

- Special flute geometry eliminates vibrations
- Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- Excellent work piece finishes
- Higher speeds, deeper cuts and metal removal rates





MG | 4 | PLAIN | FLAT | P.1001

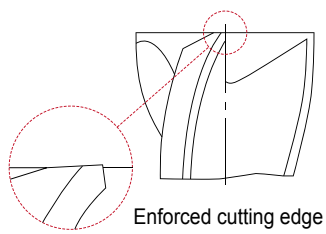
◆ U.S.A Stock

Unit : Inch

EDP No. PLAIN	EDP No. FLAT	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EMC75008	-	1/8	1/8	1/8	1-1/2
EMC75010	-	5/32	3/16	3/16	2
EMC75012	-	3/16	3/16	3/16	2
EMC75014	-	7/32	1/4	1/4	2
EMC75016	-	1/4	1/4	1/4	2
EMC75020	-	5/16	5/16	5/16	2
-	EMD60024	3/8	3/8	3/8	2
-	EMD60028	7/16	7/16	7/16	2-1/2
-	EMD60032	1/2	1/2	1/2	2-1/2
-	EMD60040	5/8	5/8	5/8	3
-	EMD60048	3/4	3/4	3/4	3
-	EMD60064	1	1	1	4

▶ Shanks 3/8″ and over come standard with Flats.

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	h6



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○				◎							◎	○

V7 MILL INOX END MILLS

EMC76 SERIES PLAIN SHANK
EMD61 SERIES FLAT SHANK

CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS

- Special flute geometry eliminates vibrations
- Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- Excellent work piece finishes
- Higher speeds, deeper cuts and metal removal rates



MG 4 PLAIN FLAT P.1001

◆ U.S.A Stock

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R				
EMC76008	-	R.015	**1/8**	1/8	1/8	1-1/2
EMC76010	-	R.015	**5/32**	3/16	3/16	2
EMC76012	-	R.015	**3/16**	3/16	3/16	2
EMC76014	-	R.020	**7/32**	1/4	1/4	2
EMC76016	-	R.020	**1/4**	1/4	1/4	2
EMC76020	-	R.020	**5/16**	5/16	5/16	2
-	**EMD61024**	R.020	**3/8**	3/8	3/8	2
-	**EMD61028**	R.020	**7/16**	7/16	7/16	2-1/2
-	**EMD61032**	R.030	**1/2**	1/2	1/2	2-1/2
-	**EMD61040**	R.040	**5/8**	5/8	5/8	3
-	**EMD61048**	R.040	**3/4**	3/4	3/4	3
-	**EMD61064**	R.040	**1**	1	1	4

▶ Shanks 3/8″ and over come standard with Flats.

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○				◎							◎	○

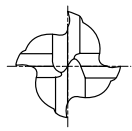
V7 MILL INOX END MILLS

EMB12 SERIES PLAIN SHANK
EMB37 SERIES FLAT SHANK

CARBIDE, 4 FLUTE REGULAR LENGTH

- Special flute geometry eliminates vibrations
- Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- Excellent work piece finishes
- Higher speeds, deeper cuts and metal removal rates





MG | 4 | PLAIN | FLAT

P.1001

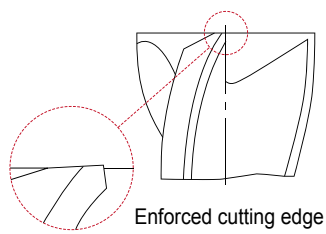
◆ U.S.A Stock

Unit : Inch

EDP No. PLAIN	EDP No. FLAT	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EMB12008	-	1/8	1/8	3/8	1-1/2
EMB12010	-	5/32	3/16	7/16	2
EMB12012	-	3/16	3/16	7/16	2
EMB12014	-	7/32	1/4	7/16	2-1/2
EMB12016	-	1/4	1/4	1/2	2-1/2
EMB12018	-	9/32	5/16	5/8	2-1/2
EMB12020	-	5/16	5/16	13/16	2-1/2
EMB12022	-	11/32	3/8	13/16	2-1/2
-	EMB37024	3/8	3/8	7/8	2-1/2
-	EMB37026	13/32	7/16	15/16	2-3/4
-	EMB37028	7/16	7/16	1	2-3/4
-	EMB37030	15/32	1/2	1	3
-	EMB37032	1/2	1/2	1	3
-	EMB37036	9/16	9/16	1-1/8	3-1/2
-	EMB37040	5/8	5/8	1-1/4	3-1/2
-	EMB37048	3/4	3/4	1-1/2	4
-	EMB37064	1	1	1-1/2	4

▶ Shanks 3/8″ and over come standard with Flats.

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	h6



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○				◎							◎	○

V7 MILL INOX END MILLS

EMB13 SERIES PLAIN SHANK
EMB38 SERIES FLAT SHANK

CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS

- ▶ Special flute geometry eliminates vibrations
- ▶ Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- ▶ Excellent work piece finishes
- ▶ Higher speeds, deeper cuts and metal removal rates



MG | 4 | PLAIN | FLAT

P.1001

◆ U.S.A Stock

Unit : Inch

EDP No. PLAIN	EDP No. FLAT	Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EMB13008	-	R.015	**1/8**	1/8	3/8	1-1/2
EMB13012	-	R.015	**3/16**	3/16	7/16	2
EMB13016	-	R.020	**1/4**	1/4	1/2	2-1/2
EMB13020	-	R.020	**5/16**	5/16	13/16	2-1/2
-	**EMB38024**	R.020	**3/8**	3/8	7/8	2-1/2
-	**EMB38028**	R.020	**7/16**	7/16	1	2-3/4
-	**EMB38032**	R.030	**1/2**	1/2	1	3
-	**EMB38036**	R.030	**9/16**	9/16	1-1/8	3-1/2
-	**EMB38040**	R.040	**5/8**	5/8	1-1/4	3-1/2
-	**EMB38048**	R.040	**3/4**	3/4	1-1/2	4
-	**EMB38064**	R.040	**1**	1	1-1/2	4

▶ Shanks 3/8″ and over come standard with Flats.

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○				◎							◎	○

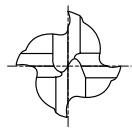
V7 MILL INOX END MILLS

EMB20 SERIES PLAIN SHANK FLAT SHANK

CARBIDE, 4 FLUTE EXTENDED LENGTH, LONG REACH

- ▶ Higher speeds, deeper cuts and metal removal rates.
- ▶ Improved surface finishes
- ▶ New "NANO" AlTiN coating





MG | 4 | PLAIN | FLAT

P.1001

◆ U.S.A Stock

Unit : Inch

EDP No. PLAIN	EDP No. FLAT	Mill Diameter	Shank Diameter	Length of Cut	Reach Length	Overall Length
EMB20160	-	**1/4**	1/4	3/8	1-1/4	4
-	**EMB20240**	**3/8**	3/8	1/2	1-7/8	4
-	**EMB20320**	**1/2**	1/2	5/8	2-1/4	4
-	**EMB20400**	**5/8**	5/8	3/4	2-1/4	4-1/8
-	**EMB20401**	**5/8**	5/8	3/4	3-1/4	5
-	**EMB20480**	**3/4**	3/4	1	2-1/4	4-1/4
-	**EMB20481**	**3/4**	3/4	1	3-1/4	5-1/2
-	**EMB20640**	**1**	1	1-1/8	2-1/4	4-1/2
-	**EMB20641**	**1**	1	1-1/8	3-1/4	5-1/2
-	**EMB20642**	**1**	1	1-1/8	4-1/4	6-1/2

▶ Shanks 3/8″ and over come standard with Flats.

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○				◎							◎	○

V7 MILL INOX END MILLS

EMB78 SERIES PLAIN SHANK
EMB79 SERIES FLAT SHANK

CARBIDE, 4 FLUTE REGULAR LENGTH BALL NOSE

- Special flute geometry eliminates vibrations
- Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- Excellent work piece finishes
- Higher speeds, deeper cuts and metal removal rates



MG | 4 | R ±.0004" | PLAIN | FLAT P.1002

◆ U.S.A Stock

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R (±.0004)				
EMB78008	-	R1/16	**1/8**	1/8	3/8	1-1/2
EMB78010	-	R5/64	**5/32**	3/16	7/16	2
EMB78012	-	R3/32	**3/16**	3/16	7/16	2
EMB78016	-	R1/8	**1/4**	1/4	1/2	2-1/2
EMB78020	-	R5/32	**5/16**	5/16	13/16	2-1/2
-	**EMB79024**	R3/16	**3/8**	3/8	7/8	2-1/2
-	**EMB79032**	R1/4	**1/2**	1/2	1	3
-	**EMB79040**	R5/16	**5/8**	5/8	1-1/4	3-1/2
-	**EMB79048**	R3/8	**3/4**	3/4	1-1/2	4
-	**EMB79064**	R1/2	**1**	1	1-1/2	4

▶ Shanks 3/8″ and over come standard with Flats.

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○				◎							◎	○

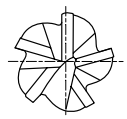
V7 MILL INOX END MILLS

EMB76 SERIES PLAIN SHANK
EMB77 SERIES FLAT SHANK

CARBIDE, 5 FLUTE REGULAR LENGTH

- Special flute geometry eliminates vibrations
- Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- Excellent work piece finishes
- Higher speeds, deeper cuts and metal removal rates





MG | 5 | PLAIN | FLAT | P.1002

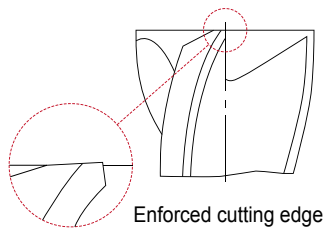
◆ U.S.A Stock

Unit : Inch

EDP No. PLAIN	EDP No. FLAT	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EMB76016	-	1/4	1/4	1/2	2-1/2
EMB76020	-	5/16	5/16	13/16	2-1/2
EMB76024	EMB77024	3/8	3/8	7/8	2-1/2
-	EMB77032	1/2	1/2	1	3
-	EMB77036	9/16	9/16	1-1/8	3-1/2
-	EMB77040	5/8	5/8	1-1/4	3-1/2
-	EMB77048	3/4	3/4	1-1/2	4
-	EMB77064	1	1	1-1/2	4

▶ Shanks 3/8″ and over come standard with Flats.

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	h6



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○				◎							◎	○

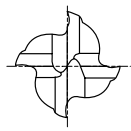
V7 MILL INOX END MILLS

EMB41 SERIES PLAIN SHANK
EMB42 SERIES FLAT SHANK

CARBIDE, 4 FLUTE SHORT LENGTH

- Special flute geometry eliminates vibrations
- Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- Excellent work piece finishes
- Higher speeds, deeper cuts and metal removal rates





MG | 4 | PLAIN | FLAT

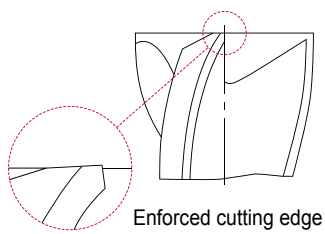
P.1001

◇ Call for Availability

Unit : mm

EDP No.		Mill Diameter		Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	Metric	Inch			
EMB41030	EMB42030	3.0	.1181	6	7	54
EMB41040	EMB42040	4.0	.1575	6	8	54
EMB41050	EMB42050	5.0	.1969	6	10	54
EMB41060	EMB42060	6.0	.2362	6	10	54
EMB41080	EMB42080	8.0	.3150	8	12	58
EMB41100	EMB42100	10.0	.3937	10	14	66
EMB41120	EMB42120	12.0	.4724	12	16	73
EMB41140	EMB42140	14.0	.5512	14	18	75
EMB41160	EMB42160	16.0	.6299	16	22	82
EMB41180	EMB42180	18.0	.7087	18	24	84
EMB41200	EMB42200	20.0	.7874	20	26	92

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~−0.03	h6



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○				◎							◎	○

V7 MILL INOX END MILLS

EMB43 SERIES PLAIN SHANK
EMB44 SERIES FLAT SHANK

CARBIDE, 4 FLUTE SHORT LENGTH CORNER RADIUS

- Special flute geometry eliminates vibrations
- Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- Excellent work piece finishes
- Higher speeds, deeper cuts and metal removal rates



MG | 4 | PLAIN | FLAT

P.1001

◇ Call for Availability

Unit : mm

EDP No.		Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R	Metric	Inch			
EMB43030	EMB44030	R0.3	3.0	.1181	6	7	54
EMB43040	EMB44040	R0.3	4.0	.1575	6	8	54
EMB43050	EMB44050	R0.3	5.0	.1969	6	10	54
EMB43060	EMB44060	R0.5	6.0	.2362	6	10	54
EMB43080	EMB44080	R0.5	8.0	.3150	8	12	58
EMB43100	EMB44100	R0.5	10.0	.3937	10	14	66
EMB43120	EMB44120	R0.7	12.0	.4724	12	16	73
EMB43140	EMB44140	R0.7	14.0	.5512	14	18	75
EMB43160	EMB44160	R1.0	16.0	.6299	16	22	82
EMB43180	EMB44180	R1.0	18.0	.7087	18	24	84
EMB43200	EMB44200	R1.0	20.0	.7874	20	26	92

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○				◎							◎	○

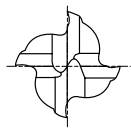
V7 MILL INOX END MILLS

EMB14 SERIES PLAIN SHANK
EMB39 SERIES FLAT SHANK

CARBIDE, 4 FLUTE REGULAR LENGTH

- Special flute geometry eliminates vibrations
- Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- Excellent work piece finishes
- Higher speeds, deeper cuts and metal removal rates





MG | 4 | PLAIN | FLAT

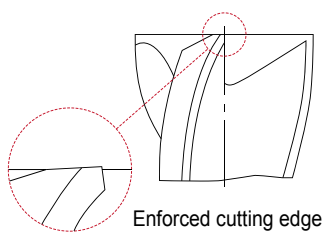
P.1001

◇ Call for Availability

Unit : mm

EDP No.		Mill Diameter		Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	Metric	Inch			
EMB14030	-	3.0	.1181	6	8	57
EMB14040	-	4.0	.1575	6	11	57
EMB14050	-	5.0	.1969	6	13	57
EMB14060	-	6.0	.2362	6	13	57
EMB14080	-	8.0	.3150	8	19	63
EMB14100	-	10.0	.3937	10	22	72
-	EMB39120	12.0	.4724	12	26	83
-	EMB39140	14.0	.5512	14	26	83
-	EMB39160	16.0	.6299	16	32	92
-	EMB39180	18.0	.7087	18	32	92
-	EMB39200	20.0	.7874	20	38	104
-	EMB39250	25.0	.9800	25	38	104

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~−0.03	h6



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○				◎							◎	○

V7 MILL INOX END MILLS

EMB15 SERIES PLAIN SHANK
EMB40 SERIES FLAT SHANK

CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS

- Special flute geometry eliminates vibrations
- Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- Excellent work piece finishes
- Higher speeds, deeper cuts and metal removal rates



MG 4 PLAIN FLAT

P.1001

◇ Call for Availability

Unit : mm

EDP No.		Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R	Metric	Inch			
EMB15030	-	R0.3	3.0	.1181	6	8	57
EMB15040	-	R0.3	4.0	.1575	6	11	57
EMB15050	-	R0.3	5.0	.1969	6	13	57
EMB15060	-	R0.5	6.0	.2362	6	13	57
EMB15080	-	R0.5	8.0	.3150	8	19	63
EMB15100	-	R0.5	10.0	.3937	10	22	72
-	EMB40120	R0.7	12.0	.4724	12	26	83
-	EMB40140	R0.7	14.0	.5512	14	26	83
-	EMB40160	R1.0	16.0	.6299	16	32	92
-	EMB40180	R1.0	18.0	.7087	18	32	92
-	EMB40200	R1.0	20.0	.7874	20	38	104
-	EMB40250	R1.0	25.0	.9800	25	38	104

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○				◎							◎	○

V7 MILL INOX END MILLS

EMB74 SERIES PLAIN SHANK
EMB75 SERIES FLAT SHANK

CARBIDE, 4 FLUTE REGULAR LENGTH BALL NOSE

- Special flute geometry eliminates vibrations
- Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- Excellent work piece finishes
- Higher speeds, deeper cuts and metal removal rates



MG | 4 | R ±0.01 | PLAIN | FLAT

P.1002

◇ Call for Availability

Unit : mm

EDP No.		Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R (±0.01)	Metric	Inch			
EMB74030	**EMB75030**	R1.5	**3.0**	**.1181**	6	8	57
EMB74040	**EMB75040**	R2.0	**4.0**	**.1575**	6	11	57
EMB74050	**EMB75050**	R2.5	**5.0**	**.1969**	6	13	57
EMB74060	**EMB75060**	R3.0	**6.0**	**.2362**	6	13	57
EMB74080	**EMB75080**	R4.0	**8.0**	**.3150**	8	19	63
EMB74100	**EMB75100**	R5.0	**10.0**	**.3937**	10	22	72
EMB74120	**EMB75120**	R6.0	**12.0**	**.4724**	12	26	83
EMB74160	**EMB75160**	R8.0	**16.0**	**.6299**	16	32	92
EMB74200	**EMB75200**	R10.0	**20.0**	**.7874**	20	38	104
EMB74250	**EMB75250**	R12.5	**25.0**	**.9800**	25	38	104

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○				◎							◎	○

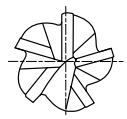
V7 MILL INOX END MILLS

EMB72 SERIES PLAIN SHANK
EMB73 SERIES FLAT SHANK

CARBIDE, 5 FLUTE REGULAR LENGTH

- Special flute geometry eliminates vibrations
- Designed for mild steels, stainless steel, cast iron, tool steels, titanium alloys, prehardened steels and low hardness material
- Excellent work piece finishes
- Higher speeds, deeper cuts and metal removal rates





MG | 5 | PLAIN | FLAT

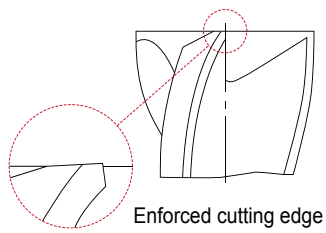
P.1002

◇ Call for Availability

Unit : mm

EDP No.		Mill Diameter		Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	Metric	Inch			
EMB72060	EMB73060	6.0	.2362	6	13	57
EMB72080	EMB73080	8.0	.3150	8	19	63
EMB72100	EMB73100	10.0	.3937	10	22	72
EMB72120	EMB73120	12.0	.4724	12	26	83
EMB72140	EMB73140	14.0	.5512	14	26	83
EMB72160	EMB73160	16.0	.6299	16	32	92
EMB72180	EMB73180	18.0	.7087	18	32	92
EMB72200	EMB73200	20.0	.7874	20	38	104
EMB72250	EMB73250	25.0	.9800	25	38	104

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~−0.03	h6



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	○	○				◎							◎	○

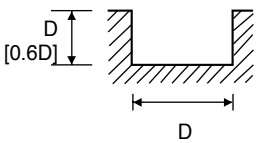
V7 MILL INOX END MILLS

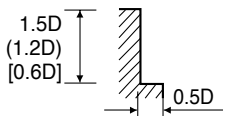
RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE

EMC75, EMD60, EMC76, EMD61, EMB12, EMB37, EMB13, EMB38, EMB20
EMB41, EMB42, EMB43, EMB44, EMB14, EMB39, EMB15, EMB40 SERIES

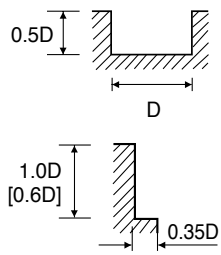
MATERIAL	P		M				S			
	ALLOY STEELS CAST IRON		STAINLESS STEELS 300SERIES		STAINLESS STEELS 400SERIES		TITANIUM		HIGH TEMPERATURE ALLOY	
HARDNESS	~HRc 20									
STRENGTH	~1000N/mm^2									
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	12735	10.2	9625	7.3	13475	7.6	8320	7.6	2565	2.1
3/16	8490	10.9	6385	8.3	12000	8.4	5550	8.4	1685	1.8
1/4	6370	11.5	4810	9.6	6815	9.6	4160	9.6	1285	2.5
5/16	5100	13.0	3850	10.7	5390	10.7	3330	10.7	1025	2.8
3/8	4245	18.4	3210	15.4	4490	15.4	2770	15.4	855	4.1
7/16	4010	24.5	2750	20.9	3850	20.9	2380	20.7	735	5.5
1/2	3500	25.9	2400	21.0	3370	21.0	2080	21.0	640	5.6
9/16	3110	26.0	2140	21.2	2990	21.2	1850	21.2	570	5.7
5/8	2800	26.1	1925	21.2	2700	21.2	1660	21.2	510	5.6
3/4	2340	24.0	1600	19.4	2250	19.4	1390	19.4	425	5.2
1	1755	17.4	1200	14.7	1685	15.1	1040	15.1	315	4.3





* ( ) : Short length Type
* [ ] : Stub length Type

* 1.2 x D Axial cutting depth should be applied for Short length series DIA over 5/16mm
* 0.6 x D Axial cutting depth should be applied for Stub length series.



RPM = rev./min.
FEED = inch/min.

V7 MILL INOX END MILLS

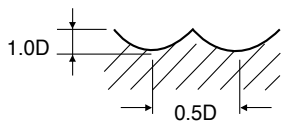
RECOMMENDED CUTTING CONDITIONS

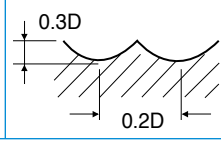
CARBIDE, 4 FLUTE BALL NOSE

EMB78, EMB79, EMB74, EMB75 SERIES

MATERIAL	P		M				S			
	ALLOY STEELS CAST IRON		STAINLESS STEELS 300SERIES		STAINLESS STEELS 400SERIES		TITANIUM		HIGH TEMPERATURE ALLOY	
HARDNESS	~HRc20									
STRENGTH	~1000N/mm²									
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	13530	53.2	7770	24.2	7020	16.4	5510	10.4	3010	5.2
3/16	9020	42.6	5180	20.3	4680	18.2	3680	8.7	2010	3.3
1/4	6770	40.7	3880	24.9	3510	16.4	2760	8.6	1500	3.7
5/16	5410	50.8	3110	21.9	2810	17.5	2210	10.4	1200	4.8
3/8	4510	42.6	2590	20.3	2340	16.6	1840	8.7	1000	4.2
7/16	3870	39.5	2220	18.3	2010	15.0	1580	8.6	860	4.4
1/2	3380	37.2	1940	16.8	1750	13.8	1380	8.6	750	4.5
9/16	3010	34.2	1730	15.6	1560	12.8	1230	8.0	670	4.5
5/8	2710	31.8	1550	14.7	1400	11.9	1100	7.6	600	4.4
3/4	2260	32.0	1290	13.3	1170	10.8	920	8.7	500	4.2
1	1690	26.5	970	10.7	880	8.2	690	7.4	380	3.1

RPM = rev./min.
FEED = inch/min.

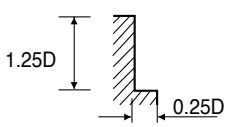


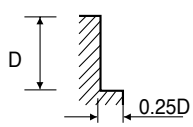


CARBIDE, 5 FLUTE

EMB76, EMB77, EMB72, EMB73 SERIES

MATERIAL	P		M				S			
	ALLOY STEELS CAST IRON		STAINLESS STEELS 300SERIES		STAINLESS STEELS 400SERIES		TITANIUM		HIGH TEMPERATURE ALLOY	
HARDNESS	~HRc20									
STRENGTH	~1000N/mm²									
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	6870	46.1	5710	34.2	5310	31.8	4200	24.9	1350	4.4
5/16	5490	41.3	4570	28.6	4250	26.5	3360	20.6	1080	4.3
3/8	4580	45.5	3810	28.5	3540	26.3	2800	20.7	900	4.5
7/16	3920	44.0	3270	32.6	3040	23.9	2400	20.8	770	4.7
1/2	3430	42.8	2860	35.7	2660	22.1	2100	20.8	680	4.8
9/16	3050	41.7	2540	32.7	2360	29.6	1860	20.9	600	5.4
5/8	2750	41.4	2290	30.9	2130	28.4	1680	20.7	540	5.1
3/4	2290	39.6	1900	28.6	1770	26.4	1400	20.7	450	5.4
1	1720	34.2	1430	24.8	1330	23.2	1050	18.3	340	5.1





RPM = rev./min.
FEED = inch/min.

CARBIDE & HSS

YG

Being the best through innovation



ALU-POWER END MILLS

- Silent Cutting of Aluminium Alloys, Mirror Surface

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
INCH					
E5253		CARBIDE, 2 FLUTE 42° HELIX REGULAR LENGTH - "BANSHEE" (FLAT SHANK) ◆	D1/4	D1	**1008**
E5254		CARBIDE, 2 FLUTE 42° HELIX REGULAR LENGTH - "BANSHEE" (PLAIN SHANK) ◆	D1/16	D1	**1009**
E5976		CARBIDE, 2 FLUTE 37° HELIX with EXTENDED NECK ◆	D1/4	D1	**1010**
E5980		CARBIDE, 3 FLUTE 45° HELIX STUB LENGTH ◆	D1/8	D1	**1011**
E5981		CARBIDE, 3 FLUTE 45° HELIX REGULAR LENGTH ◆	D1/8	D1	**1012**
E5983		CARBIDE, 3 FLUTE, 45° HELIX REGULAR LENGTH CORNER RADIUS ◆	D1/2	D1	**1012**
E5982		CARBIDE, 3 FLUTE 45° HELIX LONG LENGTH ◆	D1/4	D1	**1013**
E5984		CARBIDE, 3 FLUTE 45° HELIX LONG LENGTH CORNER RADIUS ◆	D1/2	D1	**1013**
E5E44		CARBIDE, 3 FLUTE ROUGHING ◆	D1/4	D1	**1014**
E5E98		CARBIDE, 3 FLUTE ROUGHING with NECK ◆	D1/4	D1	**1014**
E5E45		CARBIDE, 3 FLUTE 37° ROUGHING BALL NOSE ◆	D1/4	D1	**1015**
E5977		CARBIDE, 3 FLUTE 37° HELIX with EXTENDED NECK ◆	D1/4	D1	**1016**
E5985		CARBIDE, 3 FLUTE 37° HELIX with EXTENDED NECK CORNER RADIUS ◆	D1/2	D1	**1017**
E5973		CARBIDE, 2 FLUTE CORNER RADIUS with NECK ◆	D5/32	D3/4	**1018**
E5974		CARBIDE, 2 FLUTE 50° HELIX STUB CUT LENGTH BALL NOSE with NECK ◆	R1/8	R3/8	**1019**
E5978		CARBIDE, 2 FLUTE 37° HELIX LONG REACH BALL NOSE ◆	R1/8	R1/2	**1020**
E5975		CARBIDE, 3 FLUTE 40° HELIX LONG LENGTH BALL NOSE with NECK ◆	R3/64	R5/16	**1021**

◆ U.S.A Stock

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				
										◎				
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SELECTION GUIDE

ITEM	MODEL	DESCRIPTION		SIZE MIN	SIZE MAX	PAGE
METRIC - CARBIDE						
E5522 EG522		CARBIDE, 2 FLUTE 45° HELIX LONG LENGTH TiCN COATED	◇	D3.0	D20.0	1022
EG930		CARBIDE, 2 FLUTE 25° HELIX STUB CUT LENGTH CORNER RADIUS TiCN COATED	◇	D2.0	D20.0	1023
EG909		CARBIDE, 2 FLUTE STUB CUT LENGTH CORNER RADIUS with NECK TiCN COATED	◇	D4.0	D20.0	1024
EG910		CARBIDE 2 FLUTE 50° HELIX STUB CUT LENGTH BALL NOSE with NECK TiCN COATED	◇	R3.0	R10.0	1025
EG908		CARBIDE, 3 FLUTE 40° HELIX LONG LENGTH BALL NOSE with NECK TiCN COATED	◇	R1.0	R8.0	1026

◇ Call for Availability

INCH / SPEED FREEK - HSS POWDERED METAL						
EK191		T15, 3 FLUTE 42° HELIX REGULAR LENGTH ROUGHING for ALUMINUM	◆	D1/2	D2	1027
EK191		T15, 3 FLUTE 42° HELIX REGULAR LENGTH ROUGHING with CORNER RADIUS for ALUMINUM	◆	D3/4	D1-1/4	1027
EK226		T15, 3 FLUTE 42° HELIX MEDIUM LENGTH ROUGHING for ALUMINUM	◆	D3/4	D2	1028
EK226		T15, 3 FLUTE 42° HELIX MEDIUM LENGTH ROUGHING with CORNER RADIUS for ALUMINUM	◆	D3/4	D1-1/4	1028
EK192		T15, 3 FLUTE 42° HELIX LONG LENGTH ROUGHING for ALUMINUM	◆	D1/2	D2	1029
EK192		T15, 3 FLUTE 42° HELIX LONG LENGTH ROUGHING with CORNER RADIUS for ALUMINUM	◆	D3/4	D1-1/4	1030
EK196		3 FLUTE BALL NOSE 42° HELIX ROUGHING BALL NOSE REGULAR LENGTH for ALUMINUM	◆	R1/4	R5/8	1031
EK193 EK132		3 FLUTE FINISHING with & without CORNER RADIUS REGULAR & MEDIUM & LONG LENGTH	◆	D1/2	D1-1/2	1032

◆ U.S.A Stock

METRIC / SPEED FREEK - HSS POWDERED METAL						
EP922		PREMIUM HSS-PM, 3 FLUTE, 42° HELIX SHORT LENGTH ROUGHING for ALUMINUM	◇	D12.0	D32.0	1034
EP924		PREMIUM HSS-PM, 3 FLUTE 42° HELIX LONG LENGTH ROUGHING for ALUMINUM	◇	D12.0	D32.0	1035
		RECOMMENDED CUTTING CONDITIONS				1036

◇ Call for Availability

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				
										◎				
										◎				
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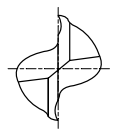
ALU-POWER END MILLS

E5253 SERIES FLAT SHANK

CARBIDE, 2 FLUTE 42° HELIX REGULAR LENGTH - "BANSHEE"

- ▶ High velocity milling of aluminum & other non ferrous materials.
- ▶ Excellent plunging capabilities.
- ▶ Improved surface roughness-cylindrical margin which is controlled tightly.
- ▶ Maximum-metal removal rate.
- ▶ Superior chip evacuation.
- ▶ Mirror face-excellent surface finish.





MG | 2 | 42° | FLAT

P.1036

◆ U.S.A Stock

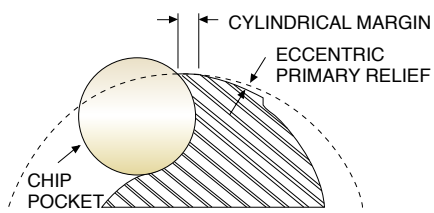
Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
17574	17574TN	17574TC	17574TF	17574TE	1/4	3/8	3/4	2-1/2
17580	17580TN	17580TC	17580TF	17580TE	5/16	3/8	13/16	2-1/2
17584	17584TN	17584TC	17584TF	17584TE	3/8	3/8	1	2-1/2
17593	17593TN	17593TC	17593TF	17593TE	1/2	1/2	1	3
18593	18593TN	18593TC	18593TF	18593TE	1/2	1/2	2	4
17901	17901TN	17901TC	17901TF	17901TE	1/2	1/2	1-1/4	3-1/4
17595	17595TN	17595TC	17595TF	17595TE	5/8	5/8	1-1/4	3-1/2
17598	17598TN	17598TC	17598TF	17598TE	3/4	3/4	1-1/2	4
18598	18598TN	18598TC	18598TF	18598TE	3/4	3/4	3	5-1/2
17600	17600TN	17600TC	17600TF	17600TE	1	1	1-1/2	4
18600	18600TN	18600TC	18600TF	18600TE	1	1	3	5-1/2

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	0~−.0003



- High performance in machining aluminum and non-ferrous materials
- Special designed geometry with high rigidity cutting edge
- Improved surface roughness - cylindrical margin which is controlled tightly.
- Excellent chip removal - higher rake angle, higher helix angle(42°), bigger chip pocket.



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

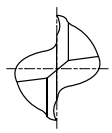
ALU-POWER END MILLS

E5254 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE 42° HELIX REGULAR LENGTH - " BANSHEE"

- ▶ High velocity milling of aluminum & other non ferrous materials.
- ▶ Excellent plunging capabilities.
- ▶ Improved surface roughness-cylindrical margin which is controlled tightly.
- ▶ Maximum-metal removal rate.
- ▶ Superior chip evacuation.
- ▶ Mirror face-excellent surface finish.





MG | 2 | 42° | PLAIN

P.1036

◆ U.S.A Stock

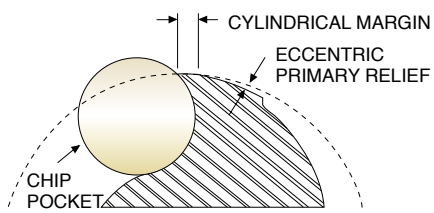
Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
21554	21554TN	21554TC	21554TF	21554TE	1/16	1/8	1/8	1-1/2
21556	21556TN	21556TC	21556TF	21556TE	3/32	1/8	1/4	1-1/2
21601	21601TN	21601TC	21601TF	21601TE	1/8	1/4	5/16	1-3/4
21566	21566TN	21566TC	21566TF	21566TE	3/16	1/4	7/16	2
21574	21574TN	21574TC	21574TF	21574TE	1/4	3/8	3/4	2-1/2
21580	21580TN	21580TC	21580TF	21580TE	5/16	3/8	13/16	2-1/2
21584	21584TN	21584TC	21584TF	21584TE	3/8	3/8	1	2-1/2
21588	21588TN	21588TC	21588TF	21588TE	7/16	7/16	1	2-3/4
21593	21593TN	21593TC	21593TF	21593TE	1/2	1/2	1	3
21904	21904TN	21904TC	21904TF	21904TE	1/2	1/2	1-1/4	3
21901	21901TN	21901TC	21901TF	21901TE	1/2	1/2	2	4
21595	21595TN	21595TC	21595TF	21595TE	5/8	5/8	1-1/4	3-1/2
21598	21598TN	21598TC	21598TF	21598TE	3/4	3/4	1-1/2	4
21902	21902TN	21902TC	21902TF	21902TE	3/4	3/4	3	5-1/2
21600	21600TN	21600TC	21600TF	21600TE	1	1	1-1/2	4
21903	21903TN	21903TC	21903TF	21903TE	1	1	3	5-1/2

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	0~−.0003



- High performance in machining aluminum and non-ferrous materials
- Special designed geometry with high rigidity cutting edge
- Improved surface roughness - cylindrical margin which is controlled tightly.
- Excellent chip removal - higher rake angle, higher helix angle(42°), bigger chip pocket.



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

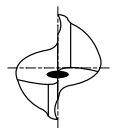
ALU-POWER END MILLS

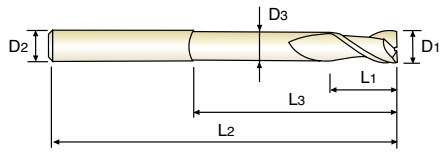
E5976 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE 37° HELIX with EXTENDED NECK

- ▶ High velocity milling of aluminum & other non-ferrous materials.
- ▶ Excellent plunging capabilities.
- ▶ Improved surface roughness-cylindrical margin which is controlled tightly.
- ▶ Maximum-metal removal rate.
- ▶ Superior chip evacuation.
- ▶ Mirror face-excellent surface finish.







MG | 2 | 37° | PLAIN

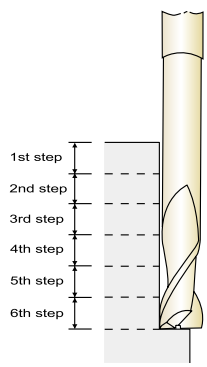
P.1039

◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
UNCOATED	TiCN COATED	D1	D2	L1	L3	L2	D3
39573	39573TC	1/4	1/4	3/8	2-1/4	4	.220
39584	39584TC	3/8	3/8	1/2	2-1/4	4	.345
39593	39593TC	1/2	1/2	5/8	2-1/4	5	.470
39908	39908TC	1/2	1/2	5/8	3-1/4	6	.470
39901	39901TC	1/2	1/2	5/8	4	6	.470
39595	39595TC	5/8	5/8	3/4	2-1/4	5	.585
39902	39902TC	5/8	5/8	3/4	3-1/4	6	.585
39903	39903TC	5/8	5/8	3/4	4-1/4	7	.585
39598	39598TC	3/4	3/4	1	2-1/4	5	.710
39904	39904TC	3/4	3/4	1	3-1/4	6	.710
39905	39905TC	3/4	3/4	1	4-1/4	7	.710
39600	39600TC	1	1	1-1/8	2-1/4	5	.960
39906	39906TC	1	1	1-1/8	3-1/4	6	.960
39907	39907TC	1	1	1-1/8	4-1/4	7	.960

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0005	0~−.0003



STEP MILLING

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

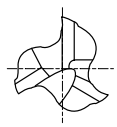
ALU-POWER END MILLS

E5980 SERIES PLAIN SHANK

CARBIDE, 3 FLUTE 45° HELIX STUB LENGTH

- ▶ Designed to machine aluminium at high speed condition.
- ▶ Improved surface roughness-cylindrical margin which is controlled tightly.
- ▶ Mirror face-excellent surface finish.





MG | 3 | 45° | PLAIN

P.1037

◆ U.S.A Stock

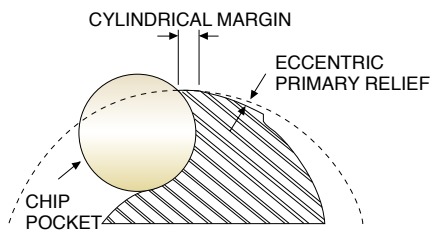
Unit : Inch

EDP No. UNCOATED	EDP No. TiCN COATED	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
25558	25558TC	1/8	1/8	1/4	1-1/2
25565	25565TC	3/16	3/16	5/16	2
25573	25573TC	1/4	1/4	3/8	2
25579	25579TC	5/16	5/16	7/16	2
25584	25584TC	3/8	3/8	1/2	2
25588	25588TC	7/16	7/16	9/16	2-1/2
25593	25593TC	1/2	1/2	5/8	2-1/2
25595	25595TC	5/8	5/8	3/4	3
25598	25598TC	3/4	3/4	1	3
25600	25600TC	1	1	1-1/4	3

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0005	0~−.0003



- High performance in machining aluminum and non-ferrous materials
- Special designed geometry with high rigidity cutting edge
- Improved surface roughness - cylindrical margin which is controlled tightly.
- Excellent chip removal - higher rake angle, higher helix angle(45°), bigger chip pocket.



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

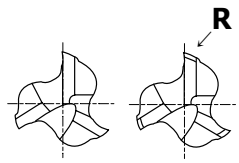
ALU-POWER END MILLS

E5981 SERIES PLAIN SHANK
E5983 SERIES PLAIN SHANK

CARBIDE, 3 FLUTE 45° HELIX REGULAR LENGTH & CORNER RADIUS

- ▶ High velocity milling of aluminum & other non-ferrous materials.
- ▶ 3flute and 45° helix allow harmonic balance at high speed condition and smooth cutting.
- ▶ Improved surface roughness-cylindrical margin which is controlled tightly
- ▶ Maximum-metal removal rate.
- ▶ Superior chip evacuation.
- ▶ Mirror face-excellent surface finish.





MG | 3 | 45° | PLAIN

P.1037

◆ U.S.A Stock

■ SQUARE

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED				
28558	**28558TC**	**1/8**	1/8	3/8	1-1/2
28565	**28565TC**	**3/16**	3/16	9/16	2
28573	**28573TC**	**1/4**	1/4	5/8	2-1/2
28579	**28579TC**	**5/16**	5/16	5/8	2-1/2
28584	**28584TC**	**3/8**	3/8	1	2-1/2
28588	**28588TC**	**7/16**	7/16	1-1/4	2-3/4
28593	**28593TC**	**1/2**	1/2	1-1/4	3
28595	**28595TC**	**5/8**	5/8	1-5/8	3-1/2
28598	**28598TC**	**3/4**	3/4	1-5/8	4
28600	**28600TC**	**1**	1	2	5

■ CORNER RADIUS

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED	R				
EA50321	**EA50321C**	R.060	**1/2**	1/2	1-1/4	3
EA50401	**EA50401C**	R.060	**5/8**	5/8	1-5/8	3-1/2
EA50481	**EA50481C**	R.060	**3/4**	3/4	1-5/8	4
EA50641	**EA50641C**	R.065	**1**	1	2	5
EA20321	**EA20321C**	R.120	**1/2**	1/2	1-1/4	3
EA20401	**EA20401C**	R.120	**5/8**	5/8	1-5/8	3-1/2
EA20481	**EA20481C**	R.120	**3/4**	3/4	1-5/8	4
EA20641	**EA20641C**	R.120	**1**	1	2	5

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0005	0~−.0003

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

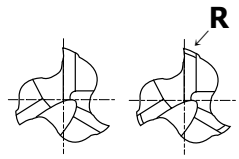
ALU-POWER END MILLS

E5982 SERIES PLAIN SHANK
E5984 SERIES PLAIN SHANK

CARBIDE, 3 FLUTE 45° HELIX LONG LENGTH & CORNER RADIUS

- ▶ High velocity milling of aluminum & other non-ferrous materials.
- ▶ 3flute and 45° helix allow harmonic balance at high speed condition and smooth cutting.
- ▶ Improved surface roughness-cylindrical margin which is controlled tightly
- ▶ Maximum-metal removal rate.
- ▶ Superior chip evacuation.
- ▶ Mirror face-excellent surface finish.





MG | 3 | 45° | PLAIN

P.1037

◆ U.S.A Stock

■ SQUARE

Unit : Inch

EDP No. UNCOATED	EDP No. TiCN COATED	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
36573	**36573TC**	**1/4**	1/4	1-1/4	3-1/4
36579	**36579TC**	**5/16**	5/16	1-1/4	3-1/2
36584	**36584TC**	**3/8**	3/8	1-1/2	3-1/2
36588	**36588TC**	**7/16**	7/16	2	4
36593	**36593TC**	**1/2**	1/2	2	4
36595	**36595TC**	**5/8**	5/8	2-1/2	5
36598	**36598TC**	**3/4**	3/4	3-1/4	6
36600	**36600TC**	**1**	1	3-1/4	6

■ CORNER RADIUS

Unit : Inch

EDP No. UNCOATED	EDP No. TiCN COATED	Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EA60321	**EA60321C**	R.060	**1/2**	1/2	2	4
EA60401	**EA60401C**	R.060	**5/8**	5/8	2-1/2	5
EA60481	**EA60481C**	R.060	**3/4**	3/4	3-1/4	6
EA60641	**EA60641C**	R.060	**1**	1	3-1/4	6
EA30321	**EA30321C**	R.120	**1/2**	1/2	2	4
EA30401	**EA30401C**	R.120	**5/8**	5/8	2-1/2	5
EA30481	**EA30481C**	R.120	**3/4**	3/4	3-1/4	6
EA30641	**EA30641C**	R.120	**1**	1	3-1/4	6

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0005	0~−.0003

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

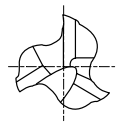
ALU-POWER END MILLS

E5E44 SERIES PLAIN SHANK
E5E98 SERIES PLAIN SHANK

CARBIDE, 3 FLUTE ROUGHING / ROUGHING with NECK

- Excellent cutting qualities on aluminum, copper
- Increased tool life and superior chip evacuation
- Reduces chipping of corner edges





* WITH NECK

MG | 3 | 30° | PLAIN

P.1044

◆ U.S.A Stock

ROUGHING

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
44016	**1/4**	1/4	3/4	2-1/2
44024	**3/8**	3/8	7/8	2-1/2
44032	**1/2**	1/2	1	3
44040	**5/8**	5/8	1-1/4	3-1/2
44048	**3/4**	3/4	1-5/8	4
44064	**1**	1	1-3/4	4

ROUGHING WITH NECK

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length
98016	**1/4**	1/4	3/4	1	2-1/2
98024	**3/8**	3/8	7/8	1-1/4	3
98032	**1/2**	1/2	1	1-3/8	3-1/4
98040	**5/8**	5/8	1-1/4	1-3/4	3-3/4
98048	**3/4**	3/4	1-5/8	2-1/4	4-1/2
98064	**1**	1	1-3/4	2-1/2	5

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0005	0~−.0003

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

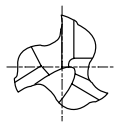
ALU-POWER END MILLS

E5E45 SERIES PLAIN SHANK

CARBIDE, 3 FLUTE ROUGHING BALL NOSE

- Excellent cutting qualities on aluminum, copper
- Increased tool life and superior chip evacuation
- Reduces chipping of corner edges





MG 3 30° PLAIN P.1044

◆ U.S.A Stock

Unit : Inch

SAB CODE	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of FLUTE
45016	1/4	1/4	3/4	2-1/2	3
45024	3/8	3/8	7/8	2-1/2	3
45032	1/2	1/2	1	3	3
45040	5/8	5/8	1-1/4	3-1/2	3
45048	3/4	3/4	1-5/8	4	3
45064	1	1	1-3/4	4	3

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0005	0~−.0003

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

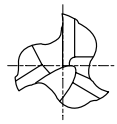
ALU-POWER END MILLS

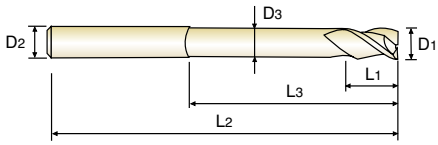
E5977 SERIES PLAIN SHANK

CARBIDE, 3 FLUTE 37° HELIX with EXTENDED NECK

- ▶ High velocity milling of aluminum & other non-ferrous materials.
- ▶ 3flute and 37° helix allow harmonic balance at high speed condition and smooth cutting.
- ▶ Improved surface roughness-cylindrical margin which is controlled tightly.
- ▶ Maximum-metal removal rate.
- ▶ Superior chip evacuation.
- ▶ Mirror face-excellent surface finish.







MG | 3 | 37° | PLAIN

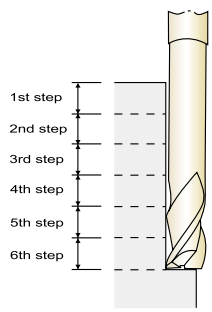
P.1038

◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
UNCOATED	TiCN COATED	D1	D2	L1	L3	L2	D3
40573	40573TC	1/4	1/4	3/8	2-1/4	4	.220
40584	40584TC	3/8	3/8	1/2	2-1/4	4	.345
40593	40593TC	1/2	1/2	5/8	2-1/4	5	.470
40901	40901TC	1/2	1/2	5/8	3-1/4	6	.470
40902	40902TC	1/2	1/2	5/8	4	6	.470
40595	40595TC	5/8	5/8	3/4	2-1/4	5	.585
40903	40903TC	5/8	5/8	3/4	3-1/4	6	.585
40904	40904TC	5/8	5/8	3/4	4-1/4	7	.585
40598	40598TC	3/4	3/4	1	2-1/4	5	.710
40905	40905TC	3/4	3/4	1	3-1/4	6	.710
40906	40906TC	3/4	3/4	1	4-1/4	7	.710
40600	40600TC	1	1	1-1/8	2-1/4	5	.960
40907	40907TC	1	1	1-1/8	3-1/4	6	.960
40908	40908TC	1	1	1-1/8	4-1/4	7	.960

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0005	0~−.0003



STEP MILLING

◎ : Excellent ○ : Good

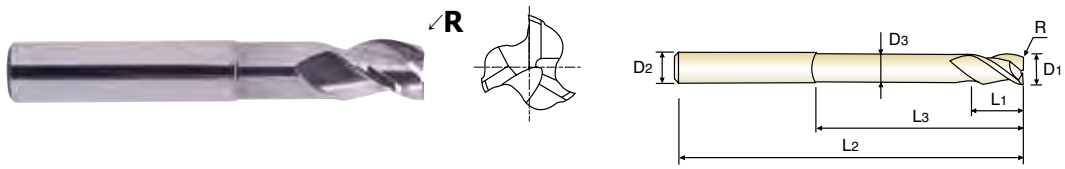
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

E5985 SERIES PLAIN SHANK

CARBIDE, 3 FLUTE 37° HELIX with EXTENDED NECK CORNER RADIUS

- ▶ High velocity milling of aluminum & other non-ferrous materials.
- ▶ 3flute and 37° helix allow harmonic balance at high speed condition and smooth cutting.
- ▶ Improved surface roughness-cylindrical margin which is controlled tightly.
- ▶ Maximum-metal removal rate.
- ▶ Superior chip evacuation.
- ▶ Mirror face-excellent surface finish.



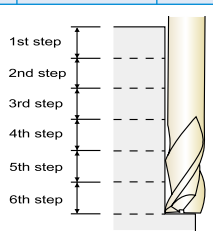
MG 3 37° PLAIN P.1038

◆ U.S.A Stock

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
UNCOATED	TiCN COATED	R	D1	D2	L1	L3	L2	D3
EA40321	EA40321C	R.060	1/2	1/2	5/8	3-1/4	6	.470
EA40322	EA40322C	R.060	1/2	1/2	5/8	4	6	.470
EA40401	EA40401C	R.060	5/8	5/8	3/4	2-1/4	5	.585
EA40402	EA40402C	R.060	5/8	5/8	3/4	3-1/4	6	.585
EA40403	EA40403C	R.060	5/8	5/8	3/4	4-1/4	7	.585
EA40481	EA40481C	R.060	3/4	3/4	1	2-1/4	5	.710
EA40482	EA40482C	R.060	3/4	3/4	1	3-1/4	6	.710
EA40483	EA40483C	R.060	3/4	3/4	1	4-1/4	7	.710
EA40641	EA40641C	R.060	1	1	1-1/8	2-1/4	5	.960
EA40642	EA40642C	R.060	1	1	1-1/8	3-1/4	6	.960
EA40643	EA40643C	R.060	1	1	1-1/8	4-1/4	7	.960
EA10321	EA10321C	R.120	1/2	1/2	5/8	3-1/4	6	.470
EA10322	EA10322C	R.120	1/2	1/2	5/8	4	6	.470
EA10401	EA10401C	R.120	5/8	5/8	3/4	2-1/4	5	.585
EA10402	EA10402C	R.120	5/8	5/8	3/4	3-1/4	6	.585
EA10403	EA10403C	R.120	5/8	5/8	3/4	4-1/4	7	.585
EA10481	EA10481C	R.120	3/4	3/4	1	2-1/4	5	.710
EA10482	EA10482C	R.120	3/4	3/4	1	3-1/4	6	.710
EA10483	EA10483C	R.120	3/4	3/4	1	4-1/4	7	.710
EA10641	EA10641C	R.120	1	1	1-1/8	2-1/4	5	.960
EA10642	EA10642C	R.120	1	1	1-1/8	3-1/4	6	.960
EA10643	EA10643C	R.120	1	1	1-1/8	4-1/4	7	.960

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0005	0~−.0003



STEP MILLING

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

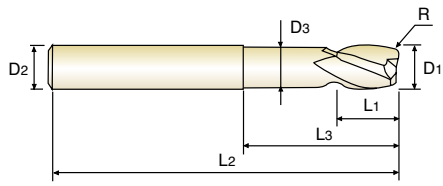
ALU-POWER END MILLS

E5973 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE CORNER RADIUS with NECK

- ▶ Excellent cutting qualities on stainless steel, aluminum, copper.
- ▶ Increased tool life and higher cutting accuracy.
- ▶ Mirror face-excellent surface finish.





MG | 2 | 30° | R ±.001 | PLAIN

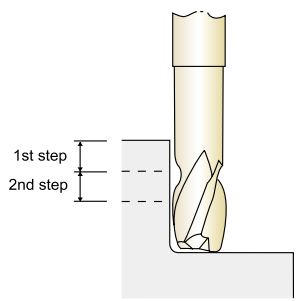
P.1039

◆ U.S.A Stock

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
UNCOATED	TiCN COATED	R	D1	D2	L1	L3	L2	D3
24562	**24562TC**	R.012	**5/32**	1/4	3/16	3/8	2	.140
24573	**24573TC**	R.020	**1/4**	1/4	5/16	3/4	2-3/8	.226
24579	**24579TC**	R.024	**5/16**	5/16	3/8	1-1/8	2-3/4	.282
24584	**24584TC**	R.031	**3/8**	3/8	1/2	1-1/2	3-1/8	.336
24593	**24593TC**	R.040	**1/2**	1/2	9/16	1-1/2	3-1/2	.460
24595	**24595TC**	R.051	**5/8**	5/8	3/4	1-3/4	4	.566
24598	**24598TC**	R.063	**3/4**	3/4	1	1-3/4	4	.670

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	0~−.0003



STEP MILLING

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

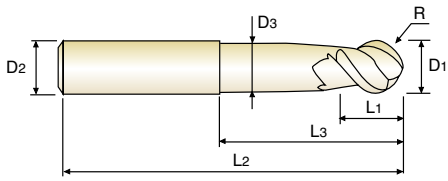
ALU-POWER END MILLS

E5974 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE 50° HELIX STUB CUT LENGTH BALL NOSE with NECK

- Excellent cutting qualities on stainless steel, aluminum, copper.
- Increased tool life and higher cutting accuracy.
- Mirror face-excellent surface finish.





MG | 2 | 50° | R ±.0005 | PLAIN

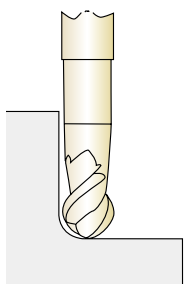
P.1041

◆ U.S.A Stock

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
UNCOATED	TiCN COATED	R (±.0005)	D1	D2	L1	L3	L2	D3
37573	**37573TC**	R 1/8	**1/4**	1/4	7/32	1	2-1/4	.226
37579	**37579TC**	R 5/32	**5/16**	5/16	9/32	1-1/8	2-1/2	.280
37584	**37584TC**	R 3/16	**3/8**	3/8	11/32	1-3/8	3	.335
37593	**37593TC**	R 1/4	**1/2**	1/2	13/32	1-1/2	3	.460
37595	**37595TC**	R 5/16	**5/8**	5/8	9/16	2	3-1/2	.566
37598	**37598TC**	R 3/8	**3/4**	3/4	11/16	2	4	.671

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0010	0~−.0003



◎ : Excellent ○ : Good

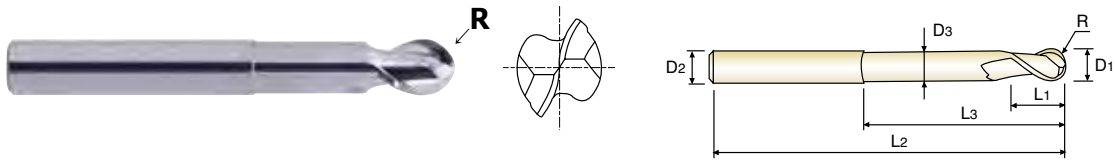
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

E5978 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE 37° HELIX LONG REACH BALL NOSE

- ▶ High velocity milling of aluminum & other non-ferrous materials.
- ▶ Extended neck design which is suitable for step milling.
- ▶ Improved surface roughness-cylinderical margin which is controlled tightly
- ▶ Maximum-metal removal rate.
- ▶ Superior chip evacuation.
- ▶ Mirror face-excellent surface finish.



MG | 2 | 37° | R ±.001 | PLAIN

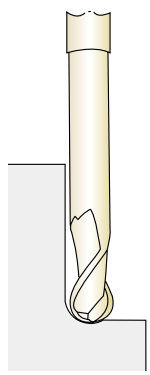
P.1040

◆ U.S.A Stock

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
UNCOATED	TiCN COATED	R (±.001)	D1	D2	L1	L3	L2	D3
89573	**89573TC**	R 1/8	**1/4**	1/4	3/8	2-1/4	4	.220
89584	**89584TC**	R 3/16	**3/8**	3/8	1/2	2-1/4	4	.345
89593	**89593TC**	R 1/4	**1/2**	1/2	5/8	2-1/4	5	.470
89901	**89901TC**	R 1/4	**1/2**	1/2	5/8	3-1/4	6	.470
89902	**89902TC**	R 1/4	**1/2**	1/2	5/8	4	6	.470
89595	**89595TC**	R 5/16	**5/8**	5/8	3/4	2-1/4	5	.585
89903	**89903TC**	R 5/16	**5/8**	5/8	3/4	3-1/4	6	.585
89904	**89904TC**	R 5/16	**5/8**	5/8	3/4	4-1/4	7	.585
89598	**89598TC**	R 3/8	**3/4**	3/4	1	2-1/4	5	.710
89905	**89905TC**	R 3/8	**3/4**	3/4	1	3-1/4	6	.710
89906	**89906TC**	R 3/8	**3/4**	3/4	1	4-1/4	7	.710
89600	**89600TC**	R1/2	**1**	1	1-1/8	2-1/4	5	.960
89907	**89907TC**	R1/2	**1**	1	1-1/8	3-1/4	6	.960
89908	**89908TC**	R1/2	**1**	1	1-1/8	4-1/4	7	.960

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	0~−.0003



◎ : Excellent ○ : Good

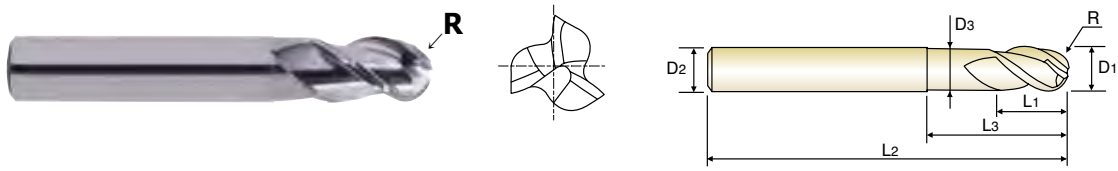
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

E5975 SERIES PLAIN SHANK

CARBIDE, 3 FLUTE 40° HELIX LONG LENGTH BALL NOSE with NECK

- ▶ Excellent cutting qualities on stainless steel, aluminum, copper.
- ▶ Increased tool life and higher cutting accuracy.
- ▶ Mirror face-excellent surface finish.



MG | 3 | 40° | R ±.0005 | PLAIN

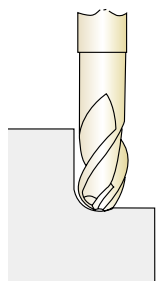
P.1041

◆ U.S.A Stock

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
UNCOATED	TiCN COATED	R (±.0005)	D1	D2	L1	L3	L2	D3
38602	**38602TC**	R 3/64	**3/32**	1/4	1/8	3/16	2-3/8	.090
38601	**38601TC**	R 1/16	**1/8**	1/4	3/16	1/4	2-3/8	.117
38566	**38566TC**	R 3/32	**3/16**	1/4	1/4	3/8	2-1/2	.172
38573	**38573TC**	R 1/8	**1/4**	1/4	3/8	1/2	3	.235
38579	**38579TC**	R 5/32	**5/16**	5/16	1/2	1	3	.289
38584	**38584TC**	R 3/16	**3/8**	3/8	5/8	1-1/4	3-1/8	.351
38593	**38593TC**	R 1/4	**1/2**	1/2	3/4	1-3/8	3-1/2	.476
38595	**38595TC**	R 5/16	**5/8**	5/8	1	1-1/2	4	.601

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	0~−.0003



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

E5522 SERIES PLAIN SHANK
EG522 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE 45° HELIX LONG LENGTH - TiCN COATED

▶ Suitable for high speed machining in aluminum and other non-ferrous materials, excellent surface finishes, superior chip removal.
▶ Mirror face-excellent surface finish.



MG | 2 | 45° | PLAIN

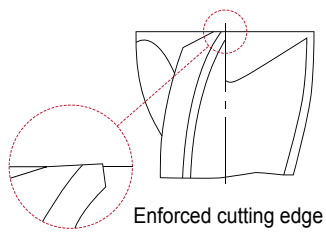
P.1042

◇ Call for Availability

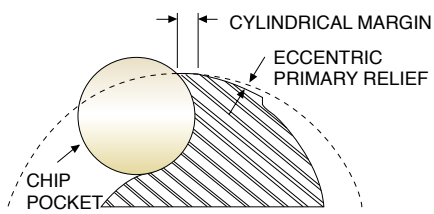
Unit : mm

EDP No.		Mill Diameter		Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED	Metric	Inch			
E5522030	EG522030	3.0	.1181	6	8	57
E5522040	EG522040	4.0	.1575	6	11	57
E5522050	EG522050	5.0	.1969	6	13	57
E5522060	EG522060	6.0	.2362	6	13	57
E5522080	EG522080	8.0	.3150	8	19	63
E5522100	EG522100	10.0	.3937	10	22	72
E5522120	EG522120	12.0	.4724	12	26	83
E5522140	EG522140	14.0	.5512	14	26	83
E5522160	EG522160	16.0	.6299	16	32	92
E5522180	EG522180	18.0	.7087	18	32	92
E5522200	EG522200	20.0	.7874	20	38	104

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6



- High performance in machining aluminum and non-ferrous materials
- Special designed geometry with high rigidity cutting edge
- Improved surface roughness - cylindrical margin which is controlled tightly.
- Excellent chip removal - higher rake angle, higher helix angle(45°), bigger chip pocket.



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

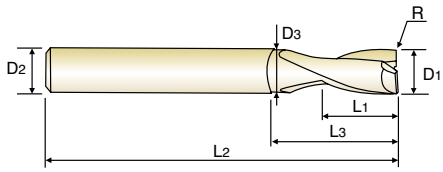
ALU-POWER END MILLS

EG930 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE 25° HELIX STUB CUT LENGTH CORNER RADIUS TiCN COATED

- Designed for the machining aluminum and its alloys, non-ferrous materials.
- Increased tool life and higher cutting accuracy.
- Maximum-stock removal, chip ejection, stability.
- Corner Radius for avoiding the chipping.
- Mirror face-excellent surface finish.





MG | 2 | 25° | R ±0.025 | PLAIN

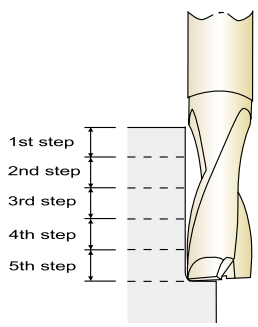
P.1042

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.025)	D1		D2	L1	L3	L2	D3
EG930020	R0.2	2.0	.0787	3	3	6	40	1.9
EG930030	R0.2	3.0	.1181	3	4	8	40	2.9
EG930040	R0.2	4.0	.1575	4	5	12	50	3.8
EG930050	R0.2	5.0	.1969	5	8	14	50	4.8
EG930060	R0.2	6.0	.2362	6	8	18	65	5.7
EG930080	R0.2	8.0	.3150	8	10	22	70	7.7
EG930100	R0.2	10.0	.3937	10	14	28	80	9.7
EG930120	R0.2	12.0	.4724	12	16	35	90	11.5
EG930160	R0.2	16.0	.6299	16	20	40	90	15.5
EG930200	R0.2	20.0	.7874	20	25	50	100	19.5

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6



STEP MILLING

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

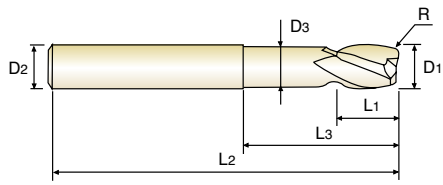
ALU-POWER END MILLS

EG909 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE STUB CUT LENGTH CORNER RADIUS with NECK TiCN COATED

- Excellent cutting qualities on stainless steel, Aluminum, copper.
- Increased tool life and higher cutting accuracy.
- Mirror face-excellent surface finish.





MG | 2 | 30° | R ±0.025 | PLAIN

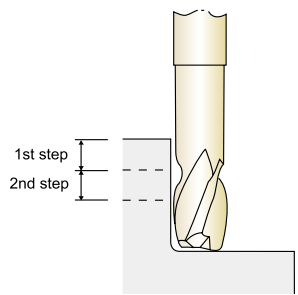
P.1043

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.025)	D1		D2	L1	L3	L2	D3
EG909040	R0.3	4.0	.1575	6	5	10	50	3.6
EG909060	R0.5	6.0	.2362	6	8	20	60	5.4
EG909080	R0.6	8.0	.3150	8	10	30	70	7.2
EG909100	R0.8	10.0	.3937	10	12	36	80	9.0
EG909120	R1.0	12.0	.4724	12	14	40	90	11.0
EG909160	R1.3	16.0	.6299	16	18	45	100	14.5
EG909200	R1.6	20.0	.7874	20	24	45	100	18.0

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6



STEP MILLING

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

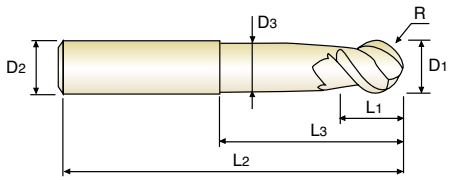
ALU-POWER END MILLS

EG910 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE 50° HELIX STUB CUT LENGTH BALL NOSE with NECK TiCN COATED

- ▶ Excellent cutting qualities on stainless steel, Aluminum, copper.
- ▶ Increased tool life and higher cutting accuracy.
- ▶ Mirror face-excellent surface finish.





MG | 2 | 50° | R ±0.01 | PLAIN

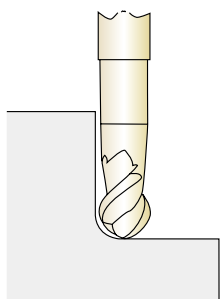
P.1043

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.01)	D1		D2	L1	L3	L2	D3
EG910060	R 3.0	**6.0**	**.2362**	6	5.5	25	55	5.4
EG910080	R 4.0	**8.0**	**.3150**	8	7	30	65	7.2
EG910100	R 5.0	**10.0**	**.3937**	10	8.5	35	75	9.0
EG910120	R 6.0	**12.0**	**.4724**	12	10.5	40	75	11.0
EG910160	R 8.0	**16.0**	**.6299**	16	14	50	90	14.5
EG910200	R 10.0	**20.0**	**.7874**	20	17	50	100	18.0

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
± 0.02	h6



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

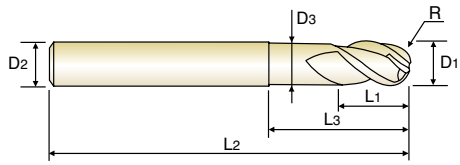
ALU-POWER END MILLS

EG908 SERIES PLAIN SHANK

CARBIDE, 3 FLUTE 40° HELIX LONG LENGTH BALL NOSE with NECK TiCN COATED

- Excellent cutting performance on stainless steels, Aluminum & copper.
- Increased tool life and higher cutting accuracy.
- Mirror face-excellent surface finish.





MG | 3 | 40° | R ±0.01 | PLAIN

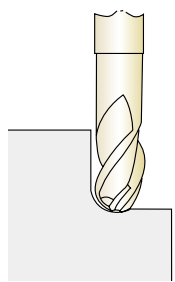
P.1044

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.01)	D1		D2	L1	L3	L2	D3
EG908020	R1.0	2.0	.0787	6	3	2.5	60	1.9
EG908025	R1.25	2.5	.0984	6	4	6	60	2.4
EG908030	R1.5	3.0	.1181	6	4.5	6.5	60	2.8
EG908035	R1.75	3.5	.1378	6	5	7	65	3.2
EG908040	R2.0	4.0	.1575	6	6	8	65	3.7
EG908050	R2.5	5.0	.1969	6	7.5	10	65	4.6
EG908060	R3.0	6.0	.2362	6	9	12	75	5.6
EG908080	R4.0	8.0	.3150	8	12	25	75	7.4
EG908100	R5.0	10.0	.3937	10	15	30	80	9.4
EG908120	R6.0	12.0	.4724	12	18	36	90	11.4
EG908160	R8.0	16.0	.6299	16	24	40	100	15.4

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

EK191 SERIES FLAT SHANK

T15, 3 FLUTE 42° HELIX REGULAR LENGTH ROUGHING for ALUMINUM

▶ High performance metal removal in aluminum alloys.
▶ Corner radius against chipping



T15 ALU 3 42° FLAT P.1046

◆ U.S.A Stock

■ SQUARE

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED				
66515	66515 PC	1/2	1/2	1-1/4	3-1/4
66519	66519 PC	5/8	5/8	1-5/8	3-3/4
66524	66524 PC	3/4	3/4	1-5/8	3-7/8
66540	66540 PC	1	1	2	4-1/2
66541	66541 PC	1-1/4	1-1/4	2	4-1/2
66542	66542 PC	1-1/2	1-1/4	2	4-1/2
* 66543	* 66543 PC	2	2	2	5-3/4

* Combination Shank

T15 ALU 3 42° R ±.001 FLAT P.1046

◆ U.S.A Stock

■ with CORNER RADIUS

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED	R				
66903	66903 PC	R .060	3/4	3/4	1-5/8	3-7/8
66904	66904 PC	R .090	3/4	3/4	1-5/8	3-7/8
66905	66905 PC	R .120	3/4	3/4	1-5/8	3-7/8
66906	66906 PC	R .060	1	1	2	4-1/2
66907	66907 PC	R .090	1	1	2	4-1/2
66908	66908 PC	R .120	1	1	2	4-1/2
66909	66909 PC	R .060	1-1/4	1-1/4	2	4-1/2
66910	66910 PC	R .090	1-1/4	1-1/4	2	4-1/2
66911	66911 PC	R .120	1-1/4	1-1/4	2	4-1/2

■ The TiN coated, or TiAlN coated is available on your request.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

EK226 SERIES FLAT SHANK

T15, 3 FLUTE 42° HELIX & MEDIUM LENGTH ROUGHING for ALUMINUM

▶ High performance metal removal in aluminum alloys.
▶ Corner radius against chipping



T15 | ALU | 3 | 42° | FLAT P.1046

◆ U.S.A Stock

■ SQUARE

Unit : Inch

EDP No. UNCOATED	EDP No. TiCN COATED	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
80524	80524 PC	3/4	3/4	2-1/4	4-5/8
80540	80540 PC	1	1	3	5-1/2
80541	80541 PC	1-1/4	1-1/4	3	5-1/2
80542	80542 PC	1-1/2	1-1/4	3	5-1/2
* 80543	* 80543 PC	2	2	3	6-3/4

* Combination Shank

T15 | ALU | 3 | 42° | R ±.001 | FLAT P.1046

◆ U.S.A Stock

■ with CORNER RADIUS

Unit : Inch

EDP No. UNCOATED	EDP No. TiCN COATED	Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
80901	80901 PC	R .060	3/4	3/4	2-1/4	4-5/8
80902	80902 PC	R .090	3/4	3/4	2-1/4	4-5/8
80903	80903 PC	R .120	3/4	3/4	2-1/4	4-5/8
80904	80904 PC	R .060	1	1	3	5-1/2
80905	80905 PC	R .090	1	1	3	5-1/2
80906	80906 PC	R .120	1	1	3	5-1/2
80907	80907 PC	R .060	1-1/4	1-1/4	3	5-1/2
80908	80908 PC	R .090	1-1/4	1-1/4	3	5-1/2
80909	80909 PC	R .120	1-1/4	1-1/4	3	5-1/2

■ The TiN coated, or TiAlN coated is available on your request.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

EK192 SERIES FLAT SHANK

T15, 3 FLUTE 42° HELIX LONG LENGTH ROUGHING for ALUMINUM

▶ High performance metal removal in aluminum alloys.



T15 | ALU | 3 | 42° | FLAT

P.1046

◆ U.S.A Stock

■ SQUARE

Unit : Inch

EDP No. UNCOATED	EDP No. TiCN COATED	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
67515	67515 PC	1/2	1/2	2	4
67519	67519 PC	5/8	5/8	2-1/2	4-5/8
67524	67524 PC	3/4	3/4	3	5-1/4
67540	67540 PC	1	1	4	6-1/2
67541	67541 PC	1-1/4	1-1/4	4	6-1/2
67542	67542 PC	1-1/2	1-1/4	4	6-1/2
* 67543	* 67543 PC	2	2	4	7-3/4
67544	67544 PC	1-1/4	1-1/4	6	8-1/2
67545	67545 PC	1-1/2	1-1/4	6	8-1/2
* 67546	* 67546 PC	2	2	6	9-3/4

* Combination Shank

■ with NECK

EDP No. UNCOATED	EDP No. TiCN COATED	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
EK10482	EK10482C	3/4	3/4	1-1/2	3	5-1/4	.705
EK10483	EK10483C	3/4	3/4	1-1/2	4	6-1/4	.705
EK10642	EK10642C	1	1	1-1/2	3	5-1/2	.950
EK10643	EK10643C	1	1	2	4	6-1/2	.950
EK10644	EK10644C	1	1	2	6	8-1/2	.950
EK11601	EK11601C	1-1/4	1-1/4	2	4	6-1/2	1.200
EK11602	EK11602C	1-1/4	1-1/4	2	6	8-1/2	1.200

■ The TiN coated, or TiAlN coated is available on your request.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

EK192 SERIES FLAT SHANK

T15, 3 FLUTE 42° HELIX LONG LENGTH ROUGHING with CORNER RADIUS for ALUMINUM

▶ High performance metal in aluminum alloys.
▶ Corner radius against chipping



T15 | ALU | 3 | 42° | R ±.001 | FLAT

P.1046

◆ U.S.A Stock

Unit : Inch

EDP No. UNCOATED	EDP No. TiCN COATED	Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
67904	67904 PC	R .060	3/4	3/4	3	5-1/4
67905	67905 PC	R .090	3/4	3/4	3	5-1/4
67906	67906 PC	R .120	3/4	3/4	3	5-1/4
67907	67907 PC	R .060	1	1	4	6-1/2
67908	67908 PC	R .090	1	1	4	6-1/2
67909	67909 PC	R .120	1	1	4	6-1/2
67910	67910 PC	R .060	1-1/4	1-1/4	4	6-1/2
67911	67911 PC	R .090	1-1/4	1-1/4	4	6-1/2
67912	67912 PC	R .120	1-1/4	1-1/4	4	6-1/2
67913	67913 PC	R .060	1-1/4	1-1/4	6	8-1/2
67914	67914 PC	R .090	1-1/4	1-1/4	6	8-1/2
67915	67915 PC	R .120	1-1/4	1-1/4	6	8-1/2

■ The TiN coated, or TiAlN coated is available on your request.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

EK196 SERIES FLAT SHANK

T15, 3 FLUTE 42° HELIX ROUGHING BALL NOSE REGULAR LENGTH for ALUMINUM

▶High performance metal removal in aluminum alloys.



T15 | ALU | 3 | 42° | R ±.001 | FLAT

P.1045

◆ U.S.A Stock

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED	R (±.001)				
EP12032	**EP12032C**	R1/4	**1/2**	1/2	1-1/4	3-1/4
EP12040	**EP12040C**	R5/16	**5/8**	5/8	1-5/8	3-3/4
EP12048	**EP12048C**	R3/8	**3/4**	3/4	1-5/8	3-7/8
EP12064	**EP12064C**	R1/2	**1**	1	2	4-1/2
EP12110	**EP12110C**	R5/8	**1-1/4**	1-1/4	2	4-1/2

■ The TiN coated, or TiAlN coated is available on your request.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

EK193 SERIES FLAT SHANK
EK132 SERIES FLAT SHANK

T15, 3 FLUTE FINISHING
REGULAR LENGTH & MEDIUM LENGTH & LONG LENGTH

▶High performance metal removal in aluminum alloys.



T15 | 3 | 42° | FLAT

P.1045

◆ U.S.A Stock

■ SQUARE

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED				
EP10323	EP10323C	1/2	1/2	1-1/4	3-1/4
EP10324	EP10324C	1/2	1/2	2	4
EP10403	EP10403C	5/8	5/8	1-5/8	3-3/4
EP10404	EP10404C	5/8	5/8	2-1/2	4-5/8
EP10484	EP10484C	3/4	3/4	1-5/8	3-7/8
EP10485	EP10485C	3/4	3/4	2-1/4	4-5/8
EP10486	EP10486C	3/4	3/4	3	5-1/4
EP10644	EP10644C	1	1	2	4-1/2
EP10645	EP10645C	1	1	3	5-1/2
EP10646	EP10646C	1	1	4	6-1/2
EP11165	EP11165C	1-1/4	1-1/4	2	4-1/2
EP11166	EP11166C	1-1/4	1-1/4	3	5-1/2
EP11167	EP11167C	1-1/4	1-1/4	4	6-1/2
EP11324	EP11324C	1-1/2	1-1/4	2	4-1/2
EP11325	EP11325C	1-1/2	1-1/4	3	5-1/2
EP11326	EP11326C	1-1/2	1-1/4	4	6-1/2

■ SQUARE with NECK

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
UNCOATED	TiCN COATED						
EK13210	EK13210C	3/4	3/4	1-1/2	3	5-1/4	.705
EK13211	EK13211C	3/4	3/4	1-1/2	4	6-1/4	.705
EK13212	EK13212C	1	1	1-1/2	3	5-1/2	.950
EK13213	EK13213C	1	1	2	4	6-1/2	.950
EK13214	EK13214C	1	1	2	6	8-1/2	.950
EK13215	EK13215C	1-1/4	1-1/4	2	4	6-1/2	1.200
EK13216	EK13216C	1-1/4	1-1/4	2	6	8-1/2	1.200

Mill Dia. Tolerance (inch)	
0~+.0010	**0~+.0015

■ The TiN coated, or TiAlN coated is available on your request.

**The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

EK193 SERIES FLAT SHANK

T15, 3 FLUTE FINISHING CORNER RADIUS REGULAR LENGTH & MEDIUM LENGTH & LONG LENGTH

- ▶High performance metal removal in aluminum alloys.
- ▶Corner radius against chipping



T15 | 3 | 42° | FLAT

P.1045

◆ U.S.A Stock

Unit : Inch

EDP No. UNCOATED	EDP No. TiCN COATED	Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EP10321	EP10321C	R.120	1/2	1/2	1-1/4	3-1/4
EP10322	EP10322C	R.120	1/2	1/2	2	4
EP10401	EP10401C	R.120	5/8	5/8	1-5/8	3-3/4
EP10402	EP10402C	R.120	5/8	5/8	2-1/2	4-5/8
EP10481	EP10481C	R.120	3/4	3/4	1-5/8	3-7/8
EP10482	EP10482C	R.120	3/4	3/4	2-1/4	4-5/8
EP10483	EP10483C	R.120	3/4	3/4	3	5-1/4
EP10641	EP10641C	R.120	1	1	2	4-1/2
EP10642	EP10642C	R.120	1	1	3	5-1/2
EP10643	EP10643C	R.120	1	1	4	6-1/2
EP11162	EP11162C	R.120	1-1/4	1-1/4	2	4-1/2
EP11163	EP11163C	R.120	1-1/4	1-1/4	3	5-1/2
EP11164	EP11164C	R.120	1-1/4	1-1/4	4	6-1/2
EP11321	EP11321C	R.120	1-1/2	1-1/4	2	4-1/2
EP11322	EP11322C	R.120	1-1/2	1-1/4	3	5-1/2
EP11323	EP11323C	R.120	1-1/2	1-1/4	4	6-1/2

■ The TiN coated, or TiAlN coated is available on your request.

Mill Dia. Tolerance (inch)	
0~+.0010	**0~+.0015

**The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

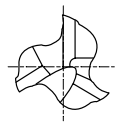
ALU-POWER END MILLS

EP922 SERIES PLAIN SHANK

PREMIUM HSS-PM, 3 FLUTE 42° HELIX SHORT LENGTH ROUGHING for ALUMINUM

- ▶ Maximum stock removal rates at High Speed Condition.
- ▶ Reduces vibrations and improves surface roughness.





YPM | ALU | 3 | 42° | PLAIN

P.1046

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
	js12		h6		
EP922120	12.0	.4724	12	26	83
EP922140	14.0	.5512	12	26	83
EP922160	16.0	.6299	16	32	92
EP922180	18.0	.7087	16	32	92
EP922200	20.0	.7874	20	38	104
EP922220	22.0	.8661	20	38	104
EP922250	25.0	.9843	25	45	121
EP922280	28.0	1.1024	25	45	121
EP922320	32.0	1.2598	32	53	133

Tolerances according to DIN 7160 & 7161

	Tolerance range in µm					
	Nominal-Diameter in mm					
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30	over 30 to 50
js12	± 50	± 60	± 75	± 90	± 105	± 125
h6	0 / — 6	0 / — 8	0 / — 9	0 / — 11	0 / — 13	0 / — 16

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

ALU-POWER END MILLS

EP924 SERIES PLAIN SHANK

PREMIUM HSS-PM, 3 FLUTE 42° HELIX LONG LENGTH ROUGHING for ALUMINUM

- ▶ Maximum stock removal rates at High Speed Condition.
- ▶ Reduces vibrations and improves surface roughness.



YPM | ALU | 3 | 42° | PLAIN

P.1046

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
	js12		h6		
EP924120	12.0	.4724	12	53	110
EP924140	14.0	.5512	12	53	110
EP924160	16.0	.6299	16	63	123
EP924180	18.0	.7087	16	63	123
EP924200	20.0	.7874	20	75	141
EP924220	22.0	.8661	20	75	141
EP924250	25.0	.9843	25	90	166
EP924280	28.0	1.1024	25	90	166
EP924320	32.0	1.2598	32	106	186

Tolerances according to DIN 7160 & 7161

Tolerance range in μm						
Nominal-Diameter in mm						
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30	over 30 to 50
js12	± 50	± 60	± 75	± 90	± 105	± 125
h6	0 / — 6	0 / — 8	0 / — 9	0 / — 11	0 / — 13	0 / — 16

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
										◎				

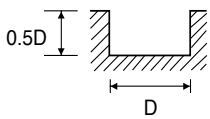
ALU-POWER END MILLS

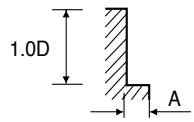
RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE 42° HELIX - “BANSHEE”

E5253, E5254 SERIES

MATERIAL	N			
	ALUMINUM NON FERROUS METALS		ALUMINUM NON FERROUS METALS	
DIAMETER	RPM	FEED	RPM	FEED
1/8	10000	27.6	10000	35.4
5/32	10000	35.4	10000	43.3
3/16	10000	39.4	10000	51.2
1/4	10000	47.2	10000	59.1
5/16	8000	55.1	8000	70.9
3/8	8000	66.9	8000	82.7
1/2	8000	82.7	8000	102.4
9/16	6000	70.9	6000	86.6
5/8	6000	74.8	6000	94.5
11/16	4000	55.1	4000	70.9
13/16	4000	63.0	4000	74.8





A : Ø1/8 ~ Ø3/8 = 0.25 × D
Ø1/2 ~ Ø13/16 = 0.5 × D

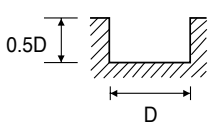
※ The Feed, in long & extra long types, should be reduced by around 50%.

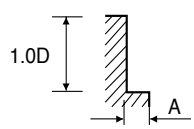
RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE 42° HELIX TiCN COATED - “BANSHEE”

EG253, EG254 SERIES

MATERIAL	N			
	ALUMINUM NON FERROUS METALS		ALUMINUM NON FERROUS METALS	
DIAMETER	RPM	FEED	RPM	FEED
1/8	15600	42.5	12000	56.7
5/32	15600	56.7	12000	66.1
3/16	15600	61.4	12000	80.3
1/4	15600	70.9	12000	94.5
5/16	12000	85.1	9600	108.7
3/8	12000	103.9	9600	127.6
1/2	12000	127.6	9600	160.6
9/16	9600	108.7	7200	132.2
5/8	9600	118.1	7200	146.5
11/16	6000	85.0	4800	108.7
13/16	6000	94.5	4800	118.1





A : Ø1/8 ~ Ø3/8 = 0.25 × D
Ø1/2 ~ Ø13/16 = 0.5 × D

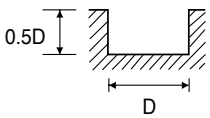
※ The Feed, in long & extra long types, should be reduced by around 50%.

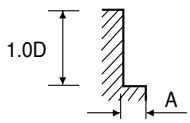
RPM = rev./min.
FEED = inch/min.

CARBIDE, 3 FLUTE 45° HELIX FINISH

E5980, E5981, E5982, E5983, E5984 SERIES

MATERIAL	N			
	ALUMINUM NON FERROUS METALS		ALUMINUM NON FERROUS METALS	
DIAMETER	RPM	FEED	RPM	FEED
1/8	10000	33.1	10000	42.5
5/32	10000	42.5	10000	52.0
3/16	10000	47.3	10000	61.4
1/4	10000	56.7	10000	70.9
5/16	8000	66.2	8000	85.1
3/8	8000	80.3	8000	99.2
1/2	8000	99.2	8000	122.9
9/16	6000	85.1	6000	104.0
5/8	6000	89.8	6000	113.4
11/16	4000	66.2	4000	85.1
13/16	4000	75.6	4000	89.8





A : Ø1/8 ~Ø3/8 = 0.25×D
Ø1/2 ~ Ø13/16 = 0.5×D

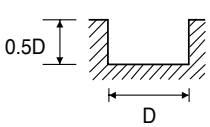
※ The Feed, in long & extra long types, should be reduced by around 50%.

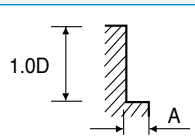
RPM = rev./min.
FEED = inch/min.

CARBIDE, 3 FLUTE 45° HELIX FINISH TiCN COATED

EG980, EG981, EG982, EG983, EG984 SERIES

MATERIAL	N			
	ALUMINUM NON FERROUS METALS		ALUMINUM NON FERROUS METALS	
DIAMETER	RPM	FEED	RPM	FEED
1/8	15600	43.0	12000	55.3
5/32	15600	55.3	12000	67.6
3/16	15600	61.4	12000	79.8
1/4	15600	73.7	12000	92.2
5/16	12000	86.0	9600	110.6
3/8	12000	104.4	9600	129.0
1/2	12000	128.9	9600	159.8
9/16	9600	110.6	7200	135.2
5/8	9600	116.7	7200	147.4
11/16	6000	86.0	4800	110.6
13/16	6000	98.3	4800	116.7





A : Ø1/8 ~Ø3/8 = 0.25×D
Ø1/2 ~ Ø13/16 = 0.5×D

※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

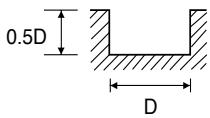
ALU-POWER END MILLS

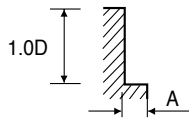
RECOMMENDED CUTTING CONDITIONS

CARBIDE, 3 FLUTE 37° HELIX with EXTENDED NECK

E5977, E5985 SERIES

MATERIAL	N			
	ALUMINUM NON FERROUS METALS		ALUMINUM NON FERROUS METALS	
DIAMETER	RPM	FEED	RPM	FEED
1/4	8000	45.4	8000	56.7
3/8	6400	64.3	6400	79.4
1/2	6400	79.4	6400	98.3
5/8	4800	71.8	4800	90.7
3/4	3200	70.9	3200	87.4
1	2600	63.8	2600	78.7





A : Ø1/4 ~Ø3/8 = 0.25×D
Ø1/2 ~ Ø1 = 0.5×D

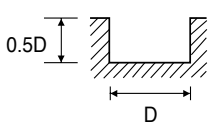
※ The Feed, in long & extra long types, should be reduced by around 50%.

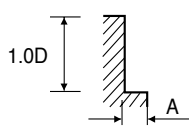
RPM = rev./min.
FEED = inch/min.

CARBIDE, 3 FLUTE 37° HELIX with EXTENDED NECK TiCN COATED

EG977, EG985 SERIES

MATERIAL	N			
	ALUMINUM NON FERROUS METALS		ALUMINUM NON FERROUS METALS	
DIAMETER	RPM	FEED	RPM	FEED
1/4	10500	59.0	10500	73.7
3/8	8300	83.5	8300	103.2
1/2	8300	103.2	8300	127.7
5/8	6200	93.4	6200	117.9
3/4	4200	92.1	4200	113.6
1	3400	83.0	3400	102.0





A : Ø1/4 ~Ø3/8 = 0.25×D
Ø1/2 ~ Ø1 = 0.5×D

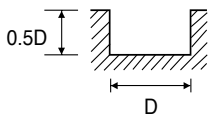
※ The Feed, in long & extra long types, should be reduced by around 50%.

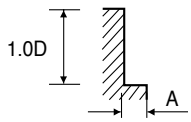
RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE CORNER RADIUS with NECK

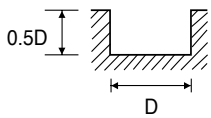
E5973 SERIES

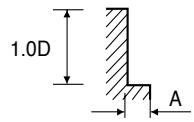
MATERIAL	N							
	ALUMINUM NON FERROUS METALS				COPPER ALLOYS			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R.012 × 5/32	10000	36.4	10000	42.4	3000	9.1	3000	10.6
R.020 × 1/4	10000	45.4	10000	60.6	3000	11.5	3000	15.2
R.024 × 5/16	8000	54.5	8000	69.6	2300	13.6	2300	17.6
R.031 × 3/8	8000	66.6	8000	81.8	2300	16.7	2300	20.6
R.040 × 1/2	8000	81.8	8000	103.0	2300	20.6	2300	25.8
R.051 × 5/8	6000	75.7	6000	93.9	1800	19.1	1800	23.6
R.063 × 3/4	4000	60.6	4000	75.7	1150	15.2	1150	19.1





A : Ø5/32 ~Ø3/8 = 0.25×D
Ø1/2 ~ Ø3/4 = 0.5×D





A : Ø5/32 ~Ø3/8 = 0.25×D
Ø1/2 ~ Ø3/4 = 0.5×D

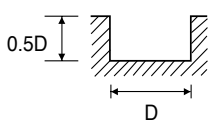
※ The Feed, in long & extra long types, should be reduced by around 50%.

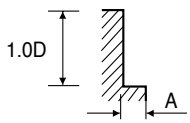
RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE 37° HELIX with EXTENDED NECK

E5976 SERIES

MATERIAL	N			
	ALUMINUM NON FERROUS METALS		ALUMINUM NON FERROUS METALS	
DIAMETER	RPM	FEED	RPM	FEED
1/4	8000	37.8	8000	47.3
3/8	6400	53.6	6400	66.2
1/2	6400	66.2	6400	81.9
5/8	4800	59.9	4800	75.6
3/4	3200	59.1	3200	72.9
1	2600	53.2	2600	65.6





A : Ø1/4 ~Ø3/8 = 0.25×D
Ø1/2 ~ Ø1 = 0.5×D

※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

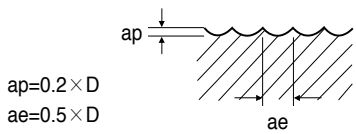
ALU-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE 37° HELIX LONG REACH BALL NOSE

E5978 SERIES

MATERIAL	N	
	ALUMINUM NON FERROUS METALS	
DIAMETER	RPM	FEED
R1/8 × 1/4	11200	55.1
R5/32 × 5/16	8600	63.0
R3/16 × 3/8	8600	74.0
R1/4 × 1/2	8600	94.5
R5/16 × 5/8	6800	85.0
R3/8 × 3/4	4300	69.3



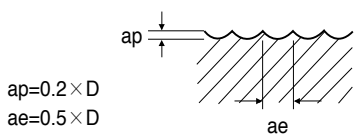
※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE 37° HELIX LONG REACH BALL NOSE TiCN COATED

EG978 SERIES

MATERIAL	N	
	ALUMINUM NON FERROUS METALS	
DIAMETER	RPM	FEED
R1/8 × 1/4	14500	71.7
R5/32 × 5/16	11200	81.9
R3/16 × 3/8	11200	96.2
R1/4 × 1/2	11200	122.9
R5/16 × 5/8	8800	110.5
R3/8 × 3/4	5600	104.0



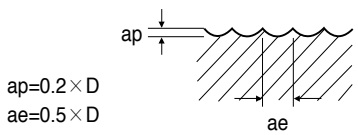
※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE 50° HELIX BALL NOSE with NECK

E5974 SERIES

MATERIAL	N			
	ALUMINUM ALUMINUM ALLOYS		COPPER ALLOYS	
DIAMETER	RPM	FEED	RPM	FEED
R1/8 × 1/4	14000	53.0	4200	13.3
R5/32 × 5/16	10800	60.5	3200	15.1
R3/16 × 3/8	10800	71.2	3200	17.5
R1/4 × 1/2	10800	90.8	3200	22.7
R5/16 × 5/8	8500	81.8	2500	20.3
R3/8 × 3/4	5400	66.6	1600	16.7



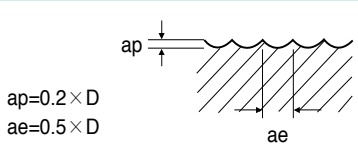
※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

CARBIDE, 3 FLUTE 40° HELIX BALL NOSE with NECK

E5975 SERIES

MATERIAL	N			
	ALUMINUM ALUMINUM ALLOYS		COPPER ALLOYS	
DIAMETER	RPM	FEED	RPM	FEED
R3/64 × 3/32	20700	28.8	6200	7.3
R1/16 × 1/8	13800	28.8	4200	7.3
R3/32 × 3/16	13800	40.9	4200	10.3
R1/8 × 1/4	13800	53.0	4200	13.3
R5/32 × 5/16	10800	60.6	3200	15.2
R3/16 × 3/8	10800	71.2	3200	17.6
R1/4 × 1/2	10800	90.9	3200	22.7
R5/16 × 5/8	8500	81.8	2500	20.3



※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

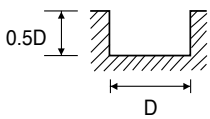
ALU-POWER END MILLS

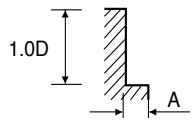
RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE

E5522 SERIES

MATERIAL	N			
	ALUMINUM LOW SILICON ALUMINUM			
DIAMETER	RPM	FEED	RPM	FEED
3.0	10000	27.6	10000	35.4
4.0	10000	35.4	10000	43.3
5.0	10000	39.4	10000	51.2
6.0	10000	47.2	10000	59.1
8.0	8000	55.1	8000	70.9
10.0	8000	66.9	8000	82.7
12.0	8000	82.7	8000	102.4
14.0	6000	70.9	6000	86.6
16.0	6000	74.8	6000	94.5
18.0	4000	55.1	4000	70.9
20.0	4000	63.0	4000	74.8





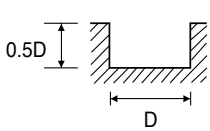
A : Ø3 ~ Ø10 = 0.25 × D
Ø12 ~ Ø20 = 0.5 × D

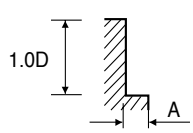
RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE TiCN COATED

EG522, EG930 SERIES

MATERIAL	N			
	ALUMINUM LOW SILICON ALUMINUM			
DIAMETER	RPM	FEED	RPM	FEED
3.0	13000	35.4	13000	47.2
4.0	13000	47.2	13000	55.1
5.0	13000	51.2	13000	66.9
6.0	13000	59.1	13000	78.7
8.0	10000	70.9	10000	90.6
10.0	10000	86.6	10000	106.3
12.0	10000	106.3	10000	133.9
14.0	8000	90.6	8000	110.2
16.0	8000	98.4	8000	122.1
18.0	5000	70.9	5000	90.6
20.0	5000	78.7	5000	98.4





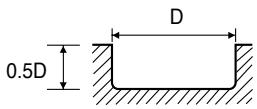
A : Ø3 ~ Ø10 = 0.25 × D
Ø12 ~ Ø20 = 0.5 × D

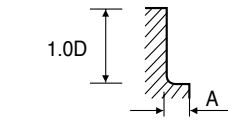
RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE CORNER RADIUS TiCN COATED

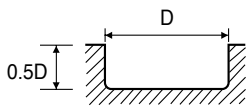
EG909 SERIES

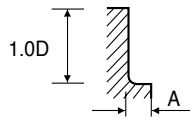
MATERIAL	N							
	ALUMINUM ALUMINUM ALLOYS				COPPER ALLOYS			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
4.0	13000	47.2	13000	55.1	3900	11.8	3900	13.8
6.0	13000	59.1	13000	78.7	3900	15.0	3900	19.7
8.0	10000	70.9	10000	90.6	3000	17.7	3000	22.8
10.0	10000	86.6	10000	106.3	3000	21.7	3000	26.8
12.0	10000	106.3	10000	133.9	3000	26.8	3000	33.5
16.0	8000	98.4	8000	122.1	2400	24.8	2400	30.7
20.0	5000	78.7	5000	98.4	1500	19.7	1500	24.8





A : ~Ø10=0.25D
Ø12~Ø20=0.5D





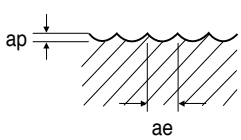
A : ~Ø10=0.25D
Ø12~Ø20=0.5D

RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE 50° HELIX BALL NOSE TiCN COATED

EG910 SERIES

MATERIAL	N			
	ALUMINUM ALUMINUM ALLOYS		COPPER ALLOYS	
DIAMETER	RPM	FEED	RPM	FEED
R3.0 × 6.0	18000	68.9	5500	17.3
R4.0 × 8.0	14000	78.7	4200	19.7
R5.0 × 10.0	14000	92.5	4200	22.8
R6.0 × 12.0	14000	118.1	4200	29.5
R8.0 × 16.0	11000	106.3	3300	26.4
R10.0 × 20.0	7000	86.6	2100	21.7



ap=0.2×D
ae=0.5×D

RPM = rev./min.
FEED = inch/min.

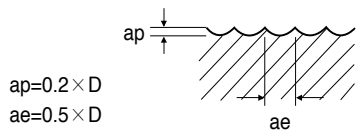
ALU-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 3 FLUTE 40° HELIX BALL NOSE TiCN COATED

EG908 SERIES

MATERIAL	N			
	ALUMINUM LOW SILICON ALUMINUM		COPPER ALLOYS	
DIAMETER	RPM	FEED	RPM	FEED
R1.0 × 2.0	27000	37.4	8000	9.5
R1.25 × 2.5	22000	37.4	6500	9.5
R1.5 × 3.0	18000	37.4	5500	9.5
R2.0 × 4.0	18000	49.2	5500	12.2
R2.5 × 5.0	18000	53.2	5500	13.4
R3.0 × 6.0	18000	68.9	5500	17.3
R4.0 × 8.0	14000	78.7	4200	19.7
R5.0 × 10.0	14000	92.5	4200	22.8
R6.0 × 12.0	14000	118.1	4200	29.5
R8.0 × 16.0	11000	106.3	3300	26.4

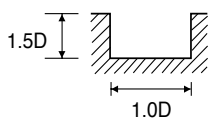


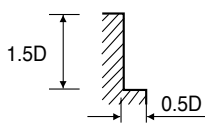
RPM = rev./min.
FEED = inch/min.

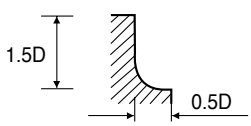
CARBIDE, 3 FLUTE ROUGHING

E5E44, E5E98, E5E45 SERIES

MATERIAL	N					
	ALUMINUM ALUMINUM ALLOYS					
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
1/4	7000	20.7	10000	29.5	10000	29.5
3/8	4700	16.1	6700	22.8	6700	22.8
1/2	3600	16.3	5100	23.0	5100	23.0
5/8	2800	16.9	4000	24.0	4000	24.0
3/4	2300	18.5	3300	26.4	3300	26.4
1	1800	17.3	2500	24.4	2500	24.4





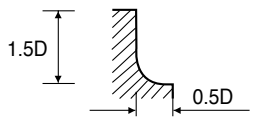


RPM = rev./min.
FEED = inch/min.

T15, 3 FLUTE 42° HELIX SPEED-FREAK BALL NOSE

EK196 SERIES

MATERIAL	N	
	ALUMINUM ALUMINUM ALLOYS	
DIAMETER	RPM	FEED
1/4	4500	7.9
5/16	3100	9.1
3/8	2500	13.8
1/2	2000	15.8
5/8	1600	17.7



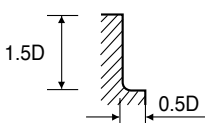
※ The FEED, in long & long reach types, should be reduced by around 50%

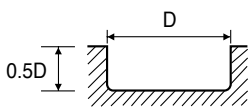
RPM = rev./min.
FEED = inch/min.

T15, 3 FLUTE, 42° HELIX FINISHING with CORNER RADIUS

EK193 SERIES

MATERIAL	N			
	ALUMINUM ALUMINUM ALLOYS			
DIAMETER	RPM	FEED	RPM	FEED
1/2	4500	38	4095	38
5/8	3500	26	3185	39
3/4	2300	27	2093	41
1	2000	27	1820	40
1-1/4	1600	26	1456	38
1-1/2	1350	25	1229	38





※ The FEED, in long & long reach types, should be reduced by around 50%

RPM = rev./min.
FEED = inch/min.

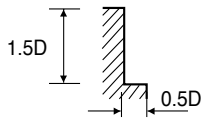
ALU-POWER END MILLS

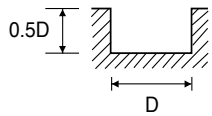
RECOMMENDED CUTTING CONDITIONS

PREMIUM HSS-PM, 3 FLUTE 42° HELIX ROUGHING TiAlN COATED

EP922, EP924 SERIES

MATERIAL	N			
	ALUMINUM ALUMINUM ALLOYS			
DIAMETER	RPM	FEED	RPM	FEED
12.0	2800	16.1	2800	21.7
16.0	2200	18.3	2200	24.6
20.0	1700	20.7	1700	27.6
25.0	1400	18.3	1400	24.6
32.0	1100	20.7	1100	27.6





※ The FEED, in long & long reach types, should be reduced by around 50%

RPM = rev./min.
FEED = inch/min.

SPEED FREEK

YG T-15 3 FLUTE ALUMINUM ROUGHER

SPEEDS & FEEDS

MATERIAL	UNCOATED	TiCN	CHIP LOAD PER TOOTH & CUTTING DIAMETER				
	SFM	SFM	1/2	3/4	1.00	1.25	2.00
ALUMINUM [SOFT]	250-500	400-2,500	.005	.007	.010	.012	.015
AIRCRAFT ALUMINUM [UNDER 10% SILICON]	250-750	500-3,250	.005	.007	.010	.012	.015

3/4 DIA. / TiCN COATED / 10,186 RPM [2,000 SFM] @ 213 IPM

SFM	$0.262 \times \text{CUTTER DIA} \times \text{RPM}$
RPM	$3.82 \times \frac{\text{SFM}}{\text{CUTTER DIA}}$
IPM	$\text{FPT} \times \text{N} \times \text{RPM}$

FPT	$\frac{\text{IPM}}{\text{N X RPM}}$
IPR	$\frac{\text{IPM}}{\text{RPM}}$
CUTTING TIME	$\frac{\text{LENGTH OF CUT}}{\text{IPM}}$

SFM = SURFACE FEET PER MINUTE
RPM = REVOLUTIONS PER MINUTE
N = NUMBER OF TEETH
IPR = INCHES PER REVOLUTION
IPM = INCHES PER MINUTE
FPT = FEED PER TOOTH

CARBIDE

YG

Being the best through innovation



D-POWER GRAPHITE END MILLS

- Diamond Coated Carbide End Mills for Graphite

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
INCH					
EI107		CARBIDE, 4(2) FLUTE REGULAR LENGTH ◆	D1/64	D1/2	**1050**
EI099		CARBIDE, 2 FLUTE REGULAR LENGTH BALL NOSE ◆	R.0391	R1/4	**1051**
EI106		CARBIDE, 4 FLUTE REGULAR LENGTH BALL NOSE ◆	R.0391	R1/4	**1051**
EI971		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE ◆	R.0391	R1/4	**1052**
EI972		CARBIDE, 2 FLUTE LONG REACH BALL NOSE ◆	R.0391	R5/32	**1053**
EIB07		CARBIDE, 4 FLUTE REGULAR LENGTH BALL NOSE with NECK ◆	R.0156	R.0625	**1054**
EIB05		CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS ◆	D1/16	D1/2	**1055**
EIB06		CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS with NECK ◆	D1/32	D3/8	**1056**

◆ U.S.A Stock

METRIC					
EI880		CARBIDE, 2 FLUTE SHORT LENGTH BALL NOSE ◇	R1.0	R6.0	**1057**
EI881		CARBIDE, 3 FLUTE SHORT LENGTH BALL NOSE ◇	R1.0	R6.0	**1057**
EI451		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE ◇	R1.0	R6.0	**1058**
EI450		CARBIDE, 2 FLUTE LONG REACH BALL NOSE ◇	R1.0	R4.0	**1059**
		RECOMMENDED CUTTING CONDITIONS			**1060**

◇ Call for Availability

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									◎	○				
									◎	○				
									◎	○				
									◎	○				
									◎	○				
									◎	○				
									◎	○				
									◎	○				
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									◎	○				
									◎	○				
									◎	○				

D-POWER GRAPHITE END MILLS

EI107 SERIES PLAIN SHANK

CARBIDE, 4(2) FLUTE REGULAR LENGTH

- ▶ Higher hardness of film and excellent wear-resistance increase the tool life dramatically.
- ▶ 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 may have good result for the machining of non-ferrous metals and non-metallic materials.



MG | 4 | 30° | PLAIN P.1061

for GRAPHITE

◆ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
★ 99686	1/64	1/8	3/65	1-1/2
99629	1/8	1/8	1/2	1-1/2
99630	3/16	3/16	5/8	2
99631	1/4	1/4	3/4	2-1/2
99632	5/16	5/16	13/16	2-1/2
99633	3/8	3/8	7/8	2-1/2
99635	1/2	1/2	1	3

★ 2Flute

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~−.0012	0~−.0003

▶Recommended Cutting Condition
▶Cutting speed : 500~1200 SFPM
▶ Feed : .002~.006 inch/tooth

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									◎	○				

D-POWER GRAPHITE END MILLS

EI099 SERIES PLAIN SHANK
EI106 SERIES PLAIN SHANK

CARBIDE, 2&4 FLUTE REGULAR LENGTH BALL NOSE

- Higher hardness of film and excellent wear-resistance increase the tool life dramatically.
- 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 may have good result for the machining of non-ferrous metals and non-metallic materials.



MG | 2 | 30° | R ±.0008 | PLAIN

P.1060

for GRAPHITE

◆ U.S.A Stock

EI099(2 FLUTE), EI106(4 FLUTE) Series

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
2 FLUTE	4 FLUTE	R (±.0008)				
99572	**99621**	R .0391	**5/64**	1/8	1/4	1-1/2
99573	**99622**	R 3/64	**3/32**	1/8	3/8	1-1/2
99574	**99623**	R 1/16	**1/8**	1/8	1/2	1-1/2
99575	**99624**	R 3/32	**3/16**	3/16	5/8	2
99576	**99625**	R 1/8	**1/4**	1/4	3/4	2-1/2
99577	**99626**	R 5/32	**5/16**	5/16	13/16	2-1/2
99578	**99627**	R 3/16	**3/8**	3/8	7/8	2-1/2
99583	**99628**	R 1/4	**1/2**	1/2	1	3

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~−.0012	0~−.0003

◎ : Excellent ○ : Good

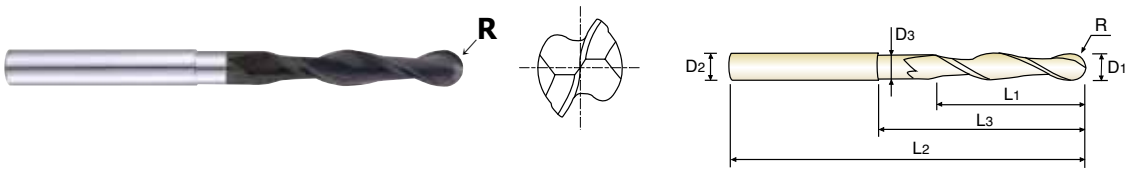
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									◎	○				

D-POWER GRAPHITE END MILLS

EI971 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE

- Higher hardness of film and excellent wear-resistance increase the tool life dramatically.
- 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 may have good result for the machining of non-ferrous metals and non-metallic materials.



MG | 2 | 30° | R ±.0008 | PLAIN

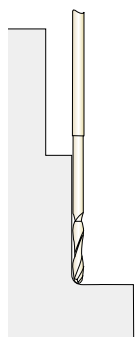
P.1060

for GRAPHITE
◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.0008)	D_1	D_2	L_1	L_3	L_2	D_3
99671	R.0391	**5/64**	1/8	3/8	3/4	3-1/4	.076
99672	R 1/16	**1/8**	1/8	5/8	1	3-1/4	.120
99973	R 3/32	**3/16**	3/16	1-1/8	2	4	.182
99673	R 3/32	**3/16**	1/4	1-1/8	2	4	.185
99674	R 1/8	**1/4**	1/4	1-1/8	2	4	.230
99675	R 5/32	**5/16**	5/16	1-1/2	2-3/8	4-1/2	.293
99676	R 3/16	**3/8**	3/8	2	2-3/4	4-3/4	.355
99677	R1/4	**1/2**	1/2	2-1/8	3	5-1/8	.480

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~−.0012	0~−.0003



◎ : Excellent ○ : Good

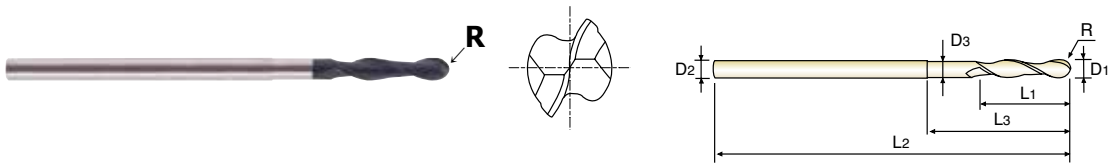
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									◎	○				

D-POWER GRAPHITE END MILLS

EI972 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG REACH BALL NOSE

- ▶ Higher hardness of film and excellent wear-resistance increase the tool life dramatically.
- ▶ 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 may have good result for the machining of non-ferrous metals and non-metallic materials.



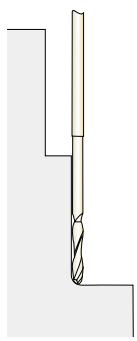
MG | 2 | 30° | R ±.0008 | PLAIN | P.1060

for GRAPHITE
◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.0008)	D1	D2	L1	L3	L2	D3
99678	R.0391	**5/64**	1/8	3/8	3/4	4	.076
99679	R1/16	**1/8**	1/8	5/8	1	4	.120
99980	R3/32	**3/16**	3/16	1-1/8	2	4-3/4	.182
99680	R3/32	**3/16**	1/4	1-1/8	2	4-3/4	.186
99681	R1/8	**1/4**	1/4	1-1/8	2	6	.230
99682	R5/32	**5/16**	5/16	1-1/2	2-3/8	6	.293

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~-.0012	0~-.0003



◎ : Excellent ○ : Good

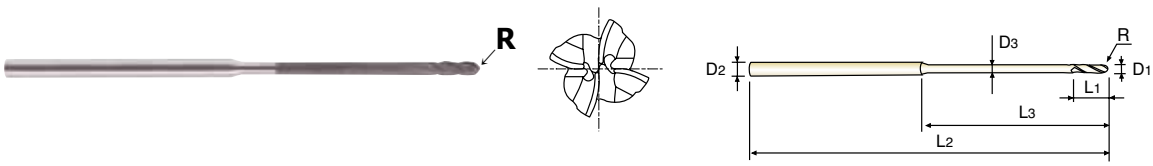
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									◎	○				

D-POWER GRAPHITE END MILLS

EIB07 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE REGULAR LENGTH BALL NOSE with NECK

- Higher hardness of film and excellent wear-resistance increase the tool life dramatically.
- 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 may have good result for the machining of non-ferrous metals and non-metallic materials.



MG | 4 | 30° | R ±.0008 | PLAIN

P.1060

for GRAPHITE
◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose R (±.0008)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
EIB07002	R.0156	**1/32**	1/8	3/32	3/8	3	.028
EIB07901	R.0156	**1/32**	1/8	3/32	1/2	3	.028
EIB07003	R.0234	**3/64**	1/8	9/64	9/16	3	.043
EIB07902	R.0234	**3/64**	1/8	9/64	3/4	3	.043
EIB07004	R.0312	**1/16**	1/8	3/16	3/4	3	.057
EIB07903	R.0312	**1/16**	1/8	3/16	1	3	.057
EIB07006	R.0469	**3/32**	1/8	9/32	1	3	.086
EIB07904	R.0469	**3/32**	1/8	9/32	1-1/2	3	.086
EIB07008	R.0625	**1/8**	1/8	3/8	1-1/2	3	.115
EIB07905	R.0625	**1/8**	1/8	3/8	2	3	.115

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~−.0012	0~−.0003

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									◎	○				

D-POWER GRAPHITE END MILLS

EIB05 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS

- Higher hardness of film and excellent wear-resistance increase the tool life dramatically.
- 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 may have good result for the machining of non-ferrous metals and non-metallic materials.



MG | 4 | 30° | R ±.001 | PLAIN | P.1060

for GRAPHITE
◆ U.S.A Stock

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.001)	D_1	D_2	L_1	L_3	L_2	D_3
EIB05004	R.010	**1/16**	1/8	3/16	-	1-1/2	-
EIB05901	R.015	**1/16**	1/8	3/16	-	1-1/2	-
EIB05006	R.010	**3/32**	1/8	3/8	-	1-1/2	-
EIB05008	R.015	**1/8**	1/8	1/2	-	1-1/2	-
EIB05902	R.020	**1/8**	1/8	1/2	-	1-1/2	-
EIB05012	R.020	**3/16**	3/16	5/8	-	2	-
EIB05911	R.020	**3/16**	3/16	3/16	1-1/2	4	.169
EIB05903	R.030	**3/16**	3/16	5/8	-	2	-
EIB05016	R.020	**1/4**	1/4	3/4	-	2-1/2	-
EIB05913	R.020	**1/4**	1/4	1/4	2	4	.230
EIB05912	R.020	**1/4**	1/4	1/4	2	6	.230
EIB05904	R.030	**1/4**	1/4	3/4	-	2-1/2	-
EIB05024	R.020	**3/8**	3/8	7/8	-	2-1/2	-
EIB05908	R.020	**3/8**	3/8	3/8	2	4	.355
EIB05907	R.020	**3/8**	3/8	3/8	-	4	-
EIB05905	R.030	**3/8**	3/8	7/8	-	2-1/2	-
EIB05032	R.030	**1/2**	1/2	1	-	3	-
EIB05906	R.060	**1/2**	1/2	1	-	3	-
EIB05909	R.030	**1/2**	1/2	1-1/2	-	4	-
EIB05910	R.030	**1/2**	1/2	3	-	6	-

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~-.0012	0~-.0003

◎ : Excellent ○ : Good

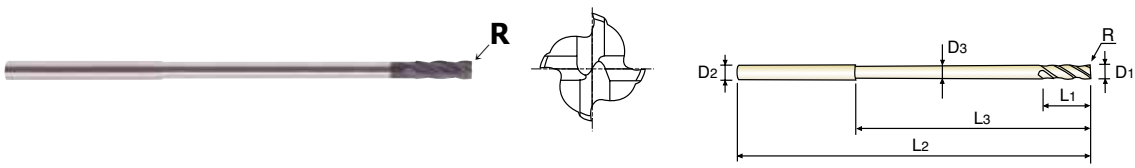
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									◎	○				

D-POWER GRAPHITE END MILLS

EIB06 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS with NECK

- Higher hardness of film and excellent wear-resistance increase the tool life dramatically.
- 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 may have good result for the machining of non-ferrous metals and non-metallic materials.



MG | 4 | 30° | R ±.001 | PLAIN

P.1061

for GRAPHITE

◆ U.S.A Stock

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.001)	D_1	D_2	L_1	L_3	L_2	D_3
EIB06002	R.005	**1/32**	1/8	3/32	3/8	3	.028
EIB06901	R.005	**1/32**	1/8	3/32	1/2	3	.028
EIB06003	R.010	**3/64**	1/8	9/64	9/16	3	.043
EIB06902	R.010	**3/64**	1/8	9/64	3/4	3	.043
EIB06004	R.010	**1/16**	1/8	3/16	3/4	3	.057
EIB06903	R.010	**1/16**	1/8	3/16	1	3	.057
EIB06006	R.010	**3/32**	1/8	9/32	1	3	.086
EIB06904	R.010	**3/32**	1/8	9/32	1-1/2	3	.086
EIB06008	R.010	**1/8**	1/8	3/8	1-1/2	3	.115
EIB06905	R.010	**1/8**	1/8	3/8	2	3	.115
EIB06906	R.015	**1/8**	1/8	3/16	.800	2-1/2	.115
EIB06907	R.020	**3/8**	3/8	3/8	3	6	.355

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~−.0012	0~−.0003

◎ : Excellent ○ : Good

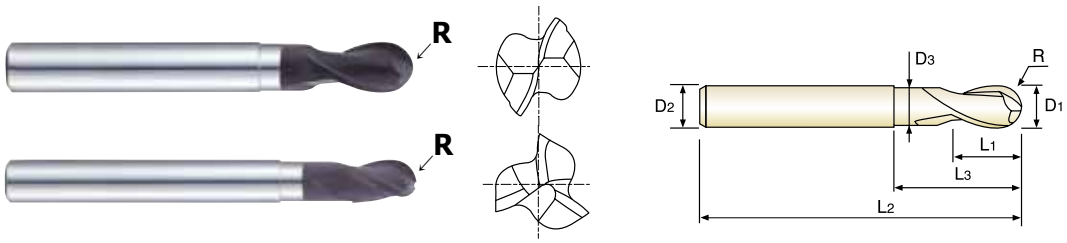
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Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									◎	○				

D-POWER GRAPHITE END MILLS

EI880 SERIES PLAIN SHANK
EI881 SERIES PLAIN SHANK

CARBIDE, 2&3 FLUTE SHORT LENGTH BALL NOSE

- Higher hardness of film and excellent wear-resistance increase the tool life dramatically.
- 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 may have good result for the machining of non-ferrous metals and non-metallic materials.



MG | 2&3 | 30° | R ±0.01 | PLAIN

P.1061

for GRAPHITE
◇ Call for Availability

EI880(2 FLUTE), EI881(3 FLUTE) Series

Unit : mm

EDP No.		Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
			Metric	Inch					
2 FLUTE	3 FLUTE	R (±0.01)	D1		D2	L1	L3	L2	D3
EI880020	EI881020	R1.0	2.0	.0787	6	3	5	60	1.9
EI880025	EI881025	R1.25	2.5	.0984	6	4	6	60	2.4
EI880030	EI881030	R1.5	3.0	.1181	6	4.5	6.5	60	2.8
EI880035	EI881035	R1.75	3.5	.1378	6	5	7	65	3.2
EI880040	EI881040	R2.0	4.0	.1575	6	6	8	65	3.7
EI880050	EI881050	R2.5	5.0	.1969	6	7.5	10	65	4.6
EI880060	EI881060	R3.0	6.0	.2362	6	9	12	75	5.6
EI880080	EI881080	R4.0	8.0	.3150	8	12	25	75	7.4
EI880100	EI881100	R5.0	10.0	.3937	10	15	30	80	9.4
EI880120	EI881120	R6.0	12.0	.4724	12	18	36	90	11.4

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									◎	○				

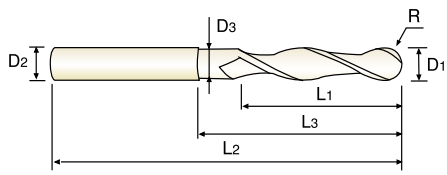
D-POWER GRAPHITE END MILLS

EI451 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE

- Higher hardness of film and excellent wear-resistance increase the tool life dramatically.
- 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 may have good result for the machining of non-ferrous metals and non-metallic materials.





MG | 2 | 30° | R ±0.01 | PLAIN

P.1061

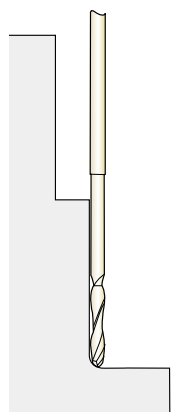
for GRAPHITE

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.01)	D_1		D_2	L_1	L_3	L_2	D_3
99558	R1.0	**2.0**	**.0787**	4	10	20	80	1.95
99559	R1.5	**3.0**	**.1181**	4	15	25	80	2.9
99560	R2.0	**4.0**	**.1575**	4	20	30	80	3.9
99561	R2.5	**5.0**	**.1969**	6	30	50	100	4.9
99562	R3.0	**6.0**	**.2362**	6	30	50	100	5.5
99563	R4.0	**8.0**	**.3150**	8	40	60	110	7.5
99564	R5.0	**10.0**	**.3937**	10	50	70	120	9.5
99565	R6.0	**12.0**	**.4724**	12	55	75	130	11.5

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6



◎ : Excellent ○ : Good

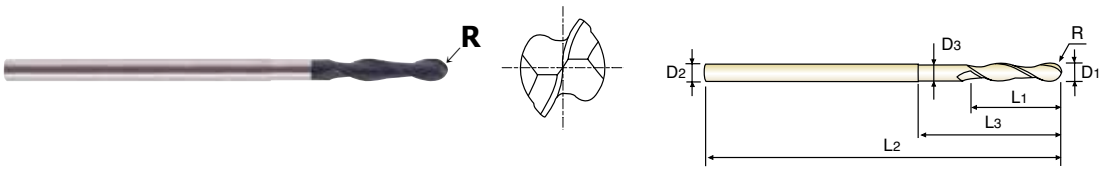
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									◎	○				

D-POWER GRAPHITE END MILLS

EI450 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG REACH BALL NOSE

- Higher hardness of film and excellent wear-resistance increase the tool life dramatically.
- 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 may have good result for the machining of non-ferrous metals and non-metallic materials.



MG | 2 | 30° | R ±0.01 | PLAIN

P.1061

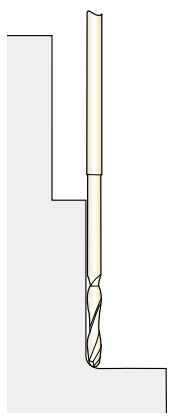
for GRAPHITE

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
		Metric	Inch					
	R (±0.01)	D_1		D_2	L_1	L_3	L_2	D_3
99566	R1.0	**2.0**	**.0787**	4	10	20	100	1.95
99567	R1.5	**3.0**	**.1181**	4	15	25	100	2.9
99568	R2.0	**4.0**	**.1575**	4	20	30	100	3.9
99569	R2.5	**5.0**	**.1969**	6	30	50	120	4.9
99570	R3.0	**6.0**	**.2362**	6	30	50	150	5.5
99571	R4.0	**8.0**	**.3150**	8	40	60	150	7.5

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~−0.03	h6



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									◎	○				

D-POWER GRAPHITE END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE BALL NOSE

EI106 SERIES

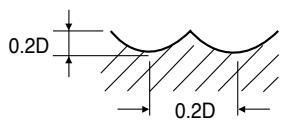
MATERIAL	N	
	GRAPHITE	
DIAMETER	RPM	FEED
5/64	16000	63.0
3/32	16000	88.2
1/8	16000	114.2
9/64	16000	137.8
5/32	16000	165.4
3/16	15500	200.8
1/4	15000	232.3
5/16	13000	236.2
3/8	11500	324.2
1/2	10500	248.0

RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE BALL NOSE

EI099, EI971, EI972 SERIES

MATERIAL	N	
	GRAPHITE	
DIAMETER	RPM	FEED
5/64	16000	31.5
3/32	16000	44.1
1/8	16000	57.1
9/64	16000	58.9
5/32	16000	82.7
3/16	15500	100.4
1/4	15000	116.1
5/16	13000	118.1
3/8	11500	120.1
1/2	10500	124.0

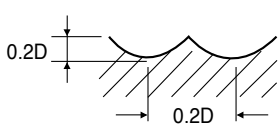


RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE BALL NOSE with NECK

EIB07 SERIES

MATERIAL	N	
	GRAPHITE	
DIAMETER	RPM	FEED
1/32	20000	37.9
3/64	20000	42.5
1/16	20000	51.7
5/64	16000	56.7
3/32	16000	79.4
1/8	16000	101.8
9/64	16000	124.7
5/32	16000	147.4
3/16	15500	182.0
1/4	15000	210.5
5/16	13000	211.5
3/8	11500	216.8
1/2	10500	224.7

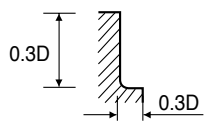


RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE CORNER RADIUS

EIB05 SERIES

MATERIAL	N	
	GRAPHITE	
DIAMETER	RPM	FEED
1/16	40000	126.0
5/64	40000	157.5
1/8	40000	220.5
5/32	40000	315.0
3/16	40000	378.0
1/4	40000	440.9
5/16	32000	440.9
3/8	26000	451.4
1/2	21000	430.5



RPM = rev./min.
FEED = inch/min.

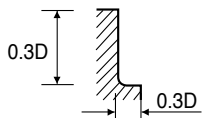
D-POWER GRAPHITE END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE CORNER RADIUS with NECK

EIB06 SERIES

MATERIAL	N	
	GRAPHITE	
DIAMETER	RPM	FEED
1/32	40000	44.1
3/64	40000	66.1
1/16	40000	88.2
5/64	40000	110.2
1/8	40000	154.3
5/32	40000	220.5
3/16	40000	264.6
1/4	40000	308.7
5/16	32000	308.7
3/89	26000	316.1
1/2	21000	301.4

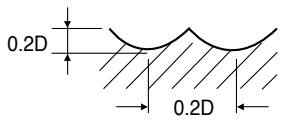


RPM = rev./min.
FEED = inch/min.

CARBIDE, 2 FLUTE BALL NOSE

EI880, EI451, EI450 SERIES

MATERIAL	N	
	GRAPHITE	
DIAMETER	RPM	FEED
2.0	16000	31.5
2.5	16000	44.1
3.0	16000	57.1
3.5	16000	68.9
4.0	16000	82.7
5.0	15500	100.4
6.0	15000	116.1
8.0	13000	118.1
10.0	11500	120.1
12.0	10500	124.0

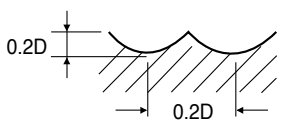


RPM = rev./min.
FEED = inch/min.

CARBIDE, 3 FLUTE BALL NOSE

EI881 SERIES

MATERIAL	N	
	GRAPHITE	
DIAMETER	RPM	FEED
2.0	16000	47.2
2.5	16000	66.9
3.0	16000	84.7
3.5	16000	104.3
4.0	16000	122.1
5.0	15500	149.6
6.0	15000	175.2
8.0	13000	177.2
10.0	11500	181.1
12.0	10500	187.0

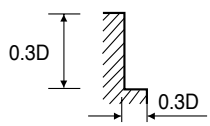


RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE

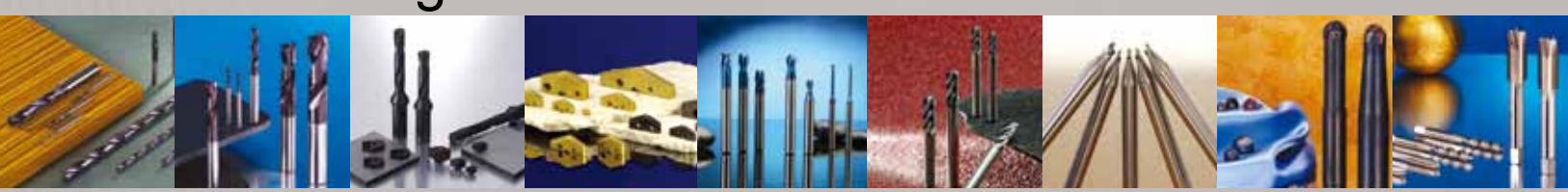
EI107 SERIES

MATERIAL	N	
	GRAPHITE	
DIAMETER	RPM	FEED
1/64	40000	31.5
1/8	40000	63.0
3/16	40000	126.0
1/4	40000	189.0
5/16	32000	196.9
3/8	26000	204.7
1/2	20000	189.0



RPM = rev./min.
FEED = inch/min.

Global Cutting Tool Leader **YG-1**



CARBIDE

Being the best through innovation





D-POWER CFRP END MILLS

- For composite materials including CFRP, GFRP

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
GUG82		CARBIDE, MULTI FLUTE DUAL HELIX	D1/4	D1/2	**1066**
GUG83		CARBIDE, 4 FLUTE	D1/4	D1/2	**1067**
		RECOMMENDED CUTTING CONDITIONS			**1068**

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									○			◎		
									○			◎		

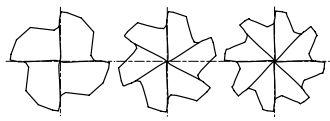
D-POWER CFRP END MILLS

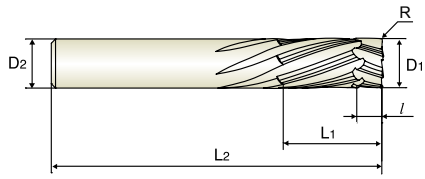
GUG82 SERIES PLAIN SHANK

CARBIDE, MULTI FLUTE DUAL HELIX

- For composite materials - CFRP, GFRP.
- Reduce delamination and burrs.
- Diamond coating with excellent abrasion resistance







MG | 4-8 | 20°/20° | PLAIN

P.1068

for CFRP

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
	R	D1	D2	L1(*l*)	L2	
GUG82016	R.020	1/4	1/4	1/2(1/8)	2-1/2	4
GUG82024	R.020	3/8	3/8	3/4(3/16)	3	6
GUG82032	R.020	1/2	1/2	1(1/4)	3-1/2	8

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~-.0012	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									○			◎		

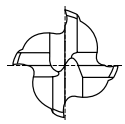
D-POWER CFRP END MILLS

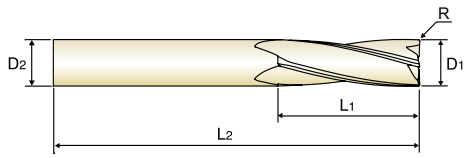
GUG83 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE

- For composite materials - CFRP, GFRP.
- Reduce delamination and burrs.
- Diamond coating with excellent abrasion resistance







MG | 4 | 15° | PLAIN

P.1068

for CFRP

Unit : Inch

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1(l)	Overall Length L2	No. of Flute
GUG83016	R.010	1/4	1/4	3/4	2-1/2	4
GUG83024	R.015	3/8	3/8	1-1/4	3-1/4	4
GUG83032	R.015	1/2	1/2	1-1/2	4	4

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~-.0012	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
									○			◎		

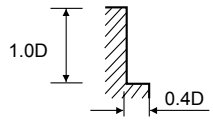
D-POWER CFRP END MILLS

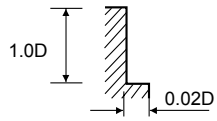
RECOMMENDED CUTTING CONDITIONS

CARBIDE, MULTI FLUTE DUAL HELIX

GUG82 SERIES

MATERIAL	N							
	CFRP		GFRP		CFRP		GFRP	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	7520	41.45	4010	15.79	10026	74.21	5013	27.63
3/8	5013	65.13	2674	23.37	6684	121.58	3342	35.53
1/2	3760	76.97	2005	27.16	5013	145.26	2507	39.47



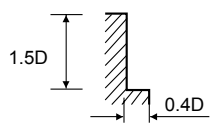


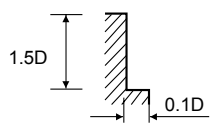
RPM = rev./min.
FEED = inch/min.

CARBIDE, 4 FLUTE

GUG83 SERIES

MATERIAL	N							
	CFRP		GFRP		CFRP		GFRP	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	10026	55.26	5013	19.74	10026	44.21	5013	19.74
3/8	6684	57.89	3342	19.47	6684	46.32	3342	16.84
1/2	5013	51.32	2507	16.97	5013	41.05	2507	13.82





RPM = rev./min.
FEED = inch/min.

CARBIDE

Being the best through innovation



ROUTERS

- For composite materials including CFRP, GFRP

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
RTI105		CARBIDE, ROUTER END MILL TYPE	D1/4	D1/2	**1072**
		RECOMMENDED CUTTING CONDITIONS			**1073**

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
												◎		

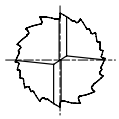
ROUTERS

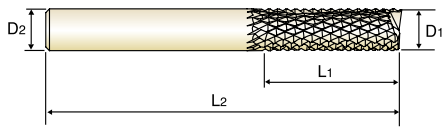
RTI105 SERIES PLAIN SHANK

CARBIDE, ROUTER END MILL TYPE

- For composite materials - CFRP, GFRP.
- Reduce delamination and burrs.
- Diamond coating with excellent abrasion resistance





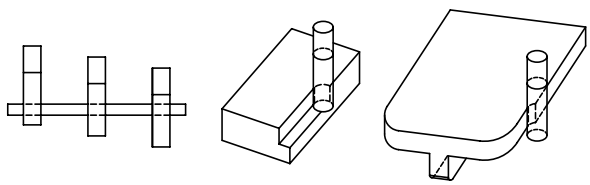


MG PLAIN P.1073

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
RTI105016	1/4	**1/4**	3/4	2-1/4
RTI105024	3/8	**3/8**	1-1/4	3-1/2
RTI105032	1/2	**1/2**	1-1/2	4

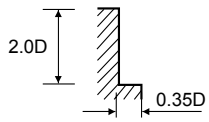
Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
−.0008~−.003	h6



CARBIDE, ROUTER END MILL TYPE

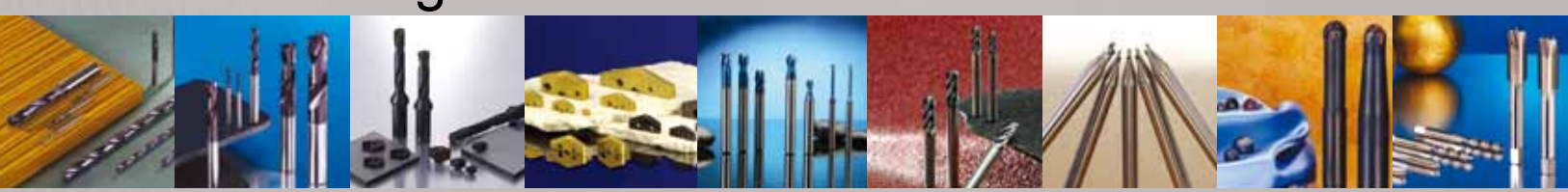
RTI105 SERIES

MATERIAL	N					
	CFRP			GFRP		
DIAMETER	RPM	FEED	SFM	RPM	FEED	SFM
1/4	10030	82.78	656	5010	41.34	328
3/8	6680	126.20	656	3340	63.10	328
1/2	5010	126.24	656	2510	63.12	329



RPM = rev./min.
FEED = inch/min.
SFM = ft/min.

Global Cutting Tool Leader **YG-1**



CARBIDE

Being the best through innovation



STANDARD CARBIDE END MILLS

- General Purpose

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
INCH					◆ U.S.A Stock
UGMF90		CARBIDE, 2 FLUTE REGULAR LENGTH ◆	D1/8	D1	**1080**
E5020		CARBIDE, 2 FLUTE REGULAR LENGTH	D1/32	D1	**1081**
UGMF89		CARBIDE, 4 FLUTE REGULAR LENGTH ◆	D1/16	D1	**1082**
E5021		CARBIDE, 4 FLUTE REGULAR LENGTH	D1/16	D1	**1083**
E5244		CARBIDE, 2 FLUTE STUB LENGTH	D1/16	D3/4	**1084**
UGMGF57		CARBIDE, 4 FLUTE STUB LENGTH ◆	D1/16	D3/4	**1085**
E5245		CARBIDE, 4 FLUTE STUB LENGTH	D1/16	D3/4	**1086**
E5011		CARBIDE, 2 FLUTE LONG LENGTH	D1/8	D1	**1087**
E5012		CARBIDE, 4 FLUTE LONG LENGTH	D1/8	D1	**1087**
UGMGF58		CARBIDE, 4 FLUTE LONG LENGTH ◆	D1/8	D1	**1088**
E5026		CARBIDE, 2 FLUTE EXTRA LONG LENGTH	D1/8	D1	**1089**
UGMGF59		CARBIDE, 4 FLUTE EXTRA LONG LENGTH ◆	D1/8	D1	**1090**
E5065		CARBIDE, 4 FLUTE EXTRA LONG LENGTH	D1/8	D1	**1091**
E5022		CARBIDE, 2 FLUTE STUB LENGTH DOUBLE	D1/32	D1/2	**1092**
E5023		CARBIDE, 4 FLUTE STUB LENGTH DOUBLE	D1/16	D1/2	**1093**
E5025		CARBIDE, 2 FLUTE REGULAR LENGTH DOUBLE	D1/8	D1/2	**1094**
E5024		CARBIDE, 4 FLUTE REGULAR LENGTH DOUBLE	D1/8	D1/2	**1094**
E5249		CARBIDE, 2 FLUTE REGULAR LENGTH BALL NOSE	R1/16	R1/2	**1095**
E5250		CARBIDE, 4 FLUTE REGULAR LENGTH BALL NOSE	R1/16	R1/2	**1095**
UGMF91		CARBIDE, 4 FLUTE REGULAR LENGTH BALL NOSE ◆	R1/16	R1/2	**1096**
E5014		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE	R1/16	R1/2	**1097**

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
INCH					
E5060		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE	R1/16	R1/2	**1097**
E5018		CARBIDE, 2 FLUTE EXTRA LONG LENGTH BALL NOSE	R1/16	R1/2	**1098**
E5062		CARBIDE, 4 FLUTE EXTRA LONG LENGTH BALL NOSE	R1/16	R1/2	**1099**
E5251 E5252		CARBIDE, 2&4 FLUTE STUB LENGTH DOUBLE BALL NOSE	R7/64	R1/4	**1100**
E5216		CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS	D1/8	D1	**1101**
E5069		CARBIDE, 5 FLUTE 45° HELIX REGULAR LENGTH CORNER RADIUS	D1/4	D1	**1103**
E5243		CARBIDE, 3 FLUTE 45° HELIX REGULAR LENGTH	D1/8	D1	**1104**
E5059		CARBIDE, 3 FLUTE 50° HELIX STUB & REGULAR & LONG LENGTH	D1/4	D3/4	**1105**
E5246		CARBIDE, 3 FLUTE 60° HELIX REGULAR LENGTH	D1/8	D1	**1106**
E5066		CARBIDE, 5 FLUTE 45° HELIX STUB LENGTH	D1/8	D1	**1107**
E5067		CARBIDE, 5 FLUTE 45° HELIX REGULAR LENGTH	D1/8	D1	**1108**
E5068		CARBIDE, 5 FLUTE 45° HELIX MEDIUM & LONG LENGTH	D1/4	D1	**1109**
E5073		CARBIDE, 5 FLUTE 45° HELIX EXTRA LONG LENGTH	D5/16	D1	**1110**
E5058		CARBIDE, 6 FLUTE 40° HELIX REGULAR LENGTH	D3/16	D3/4	**1111**
E5056 E5057		CARBIDE, 5 FLUTE 45° HELIX STUB & REGULAR LENGTH FINE PITCH ROUGHING CARBIDE	D3/8	D1	**1112**
E5077		CARBIDE, 3 FLUTE TAPER	D3/32	D1/4	**1113**
E5078		CARBIDE, 3 FLUTE TAPER BALL NOSE	R.047	R.125	**1114**
METRIC					
EH527		CARBIDE, 2 FLUTE LONG LENGTH TiAlN 'F' COATED	D3.5	D20.0	**1115**
EH540		CARBIDE, 4 FLUTE LONG LENGTH TiAlN 'F' COATED	D3.5	D20.0	**1116**
EH882		CARBIDE, 3 FLUTE 35° HELIX CORNER RADIUS TiAlN 'F' COATED	D3.0	D20.0	**1117**
		RECOMMENDED CUTTING CONDITIONS			**1118**

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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CARBIDE END MILLS

UGMF90 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE REGULAR LENGTH

- These are designed for slotting, drilling, pocketing and general operation.
- Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



MG | 2 | 30° | PLAIN | P.1120

MADE IN USA ◆ U.S.A Stock

Unit : Inch

EDP No. Y-COATED	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UGMF90008	1/8	1/8	1/2	1-1/2
UGMF90012	3/16	3/16	5/8	2
UGMF90016	1/4	1/4	3/4	2-1/2
UGMF90024	3/8	3/8	1	2-1/2
UGMF90032	1/2	1/2	1	3
UGMF90040	5/8	5/8	1-1/4	3-1/2
UGMF90048	3/4	3/4	1-1/2	4
UGMF90064	1	1	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	0~−.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○				○	○			○				

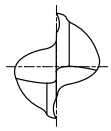
CARBIDE END MILLS

E5020 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE REGULAR LENGTH

- These are designed for slotting, drilling, pocketing and general operation.
- Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.





MG | 2 | 30° | PLAIN | P.1121

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
01552	01552TN	01552TC	01552TF	01552TE	1/32	1/8	5/64	1-1/2
01553	01553TN	01553TC	01553TF	01553TE	3/64	1/8	7/64	1-1/2
01554	01554TN	01554TC	01554TF	01554TE	1/16	1/8	3/16	1-1/2
01555	01555TN	01555TC	01555TF	01555TE	5/64	1/8	3/16	1-1/2
01556	01556TN	01556TC	01556TF	01556TE	3/32	1/8	3/8	1-1/2
01557	01557TN	01557TC	01557TF	01557TE	7/64	1/8	3/8	1-1/2
01558	01558TN	01558TC	01558TF	01558TE	1/8	1/8	1/2	1-1/2
01560	01560TN	01560TC	01560TF	01560TE	9/64	3/16	1/2	2
01562	01562TN	01562TC	01562TF	01562TE	5/32	3/16	9/16	2
01564	01564TN	01564TC	01564TF	01564TE	11/64	3/16	5/8	2
01565	01565TN	01565TC	01565TF	01565TE	3/16	3/16	5/8	2
01569	01569TN	01569TC	01569TF	01569TE	13/64	1/4	5/8	2-1/2
01570	01570TN	01570TC	01570TF	01570TE	7/32	1/4	5/8	2-1/2
01572	01572TN	01572TC	01572TF	01572TE	15/64	1/4	3/4	2-1/2
01573	01573TN	01573TC	01573TF	01573TE	1/4	1/4	3/4	2-1/2
01579	01579TN	01579TC	01579TF	01579TE	5/16	5/16	13/16	2-1/2
01584	01584TN	01584TC	01584TF	01584TE	3/8	3/8	1	2-1/2
01588	01588TN	01588TC	01588TF	01588TE	7/16	7/16	1	2-3/4
01593	01593TN	01593TC	01593TF	01593TE	1/2	1/2	1	3
01595	01595TN	01595TC	01595TF	01595TE	5/8	5/8	1-1/4	3-1/2
01598	01598TN	01598TC	01598TF	01598TE	3/4	3/4	1-1/2	4
01600	01600TN	01600TC	01600TF	01600TE	1	1	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	0~−.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○	○	○		○				

CARBIDE END MILLS

UGMF89 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE REGULAR LENGTH

- These are designed for slotting, drilling, pocketing and general operation.
- Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



MG | 2 | 30° | PLAIN

P.1119

MADE IN USA ◆ U.S.A Stock

Unit : Inch

EDP No. Y-COATED	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UGMF89004	1/16	1/8	3/16	1-1/2
UGMF89005	5/64	1/8	3/16	1-1/2
UGMF89006	3/32	1/8	3/8	1-1/2
UGMF89007	7/64	1/8	3/8	1-1/2
UGMF89008	1/8	1/8	1/2	1-1/2
UGMF89009	9/64	3/16	1/2	2
UGMF89010	5/32	3/16	9/16	2
UGMF89011	11/64	3/16	5/8	2
UGMF89012	3/16	3/16	5/8	2
UGMF89013	13/64	1/4	5/8	2-1/2
UGMF89014	7/32	1/4	5/8	2-1/2
UGMF89015	15/64	1/4	3/4	2-1/2
UGMF89016	1/4	1/4	3/4	2-1/2
UGMF89018	9/32	5/16	3/4	2-1/2
UGMF89020	5/16	5/16	13/16	2-1/2
UGMF89024	3/8	3/8	1	2-1/2
UGMF89028	7/16	7/16	1	2-3/4
UGMF89032	1/2	1/2	1	3
UGMF89036	9/16	9/16	1-1/4	3-1/2
UGMF89040	5/8	5/8	1-1/4	3-1/2
UGMF89048	3/4	3/4	1-1/2	4
UGMF89056	7/8	7/8	1-1/2	4
UGMF89064	1	1	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	0~−.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○				○	○			○				

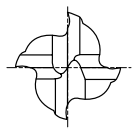
CARBIDE END MILLS

E5021 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE REGULAR LENGTH

▶ Possible for high-speed cutting, suitable for high efficiency maching for hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.





MG | 4 | 30° | PLAIN P.1122

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
07554	07554TN	07554TC	07554TF	07554TE	1/16	1/8	3/16	1-1/2
07555	07555TN	07555TC	07555TF	07555TE	5/64	1/8	3/16	1-1/2
07556	07556TN	07556TC	07556TF	07556TE	3/32	1/8	3/8	1-1/2
07557	07557TN	07557TC	07557TF	07557TE	7/64	1/8	3/8	1-1/2
07558	07558TN	07558TC	07558TF	07558TE	1/8	1/8	1/2	1-1/2
07560	07560TN	07560TC	07560TF	07560TE	9/64	3/16	1/2	2
07561	07561TN	07561TC	07561TF	07561TE	5/32	3/16	9/16	2
07564	07564TN	07564TC	07564TF	07564TE	11/64	3/16	5/8	2
07565	07565TN	07565TC	07565TF	07565TE	3/16	3/16	5/8	2
07569	07569TN	07569TC	07569TF	07569TE	13/64	1/4	5/8	2-1/2
07570	07570TN	07570TC	07570TF	07570TE	7/32	1/4	5/8	2-1/2
07572	07572TN	07572TC	07572TF	07572TE	15/64	1/4	3/4	2-1/2
07573	07573TN	07573TC	07573TF	07573TE	1/4	1/4	3/4	2-1/2
07576	07576TN	07576TC	07576TF	07576TE	9/32	5/16	3/4	2-1/2
07579	07579TN	07579TC	07579TF	07579TE	5/16	5/16	13/16	2-1/2
07584	07584TN	07584TC	07584TF	07584TE	3/8	3/8	1	2-1/2
07588	07588TN	07588TC	07588TF	07588TE	7/16	7/16	1	2-3/4
07593	07593TN	07593TC	07593TF	07593TE	1/2	1/2	1	3
07595	07595TN	07595TC	07595TF	07595TE	5/8	5/8	1-1/4	3-1/2
07598	07598TN	07598TC	07598TF	07598TE	3/4	3/4	1-1/2	4
07600	07600TN	07600TC	07600TF	07600TE	1	1	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	0~−.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○	○	○		○				

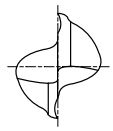
CARBIDE END MILLS

E5244 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE STUB LENGTH

▶ Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.





MG | 2 | 30° | PLAIN P.1121

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
30554	30554TN	30554TC	30554TF	30554TE	1/16	1/8	1/8	1-1/2
30556	30556TN	30556TC	30556TF	30556TE	3/32	1/8	3/16	1-1/2
30558	30558TN	30558TC	30558TF	30558TE	1/8	1/8	1/4	1-1/2
30561	30561TN	30561TC	30561TF	30561TE	5/32	3/16	5/16	2
30565	30565TN	30565TC	30565TF	30565TE	3/16	3/16	3/8	2
30570	30570TN	30570TC	30570TF	30570TE	7/32	1/4	7/16	2
30573	30573TN	30573TC	30573TF	30573TE	1/4	1/4	1/2	2
30579	30579TN	30579TC	30579TF	30579TE	5/16	5/16	1/2	2
30584	30584TN	30584TC	30584TF	30584TE	3/8	3/8	5/8	2
30588	30588TN	30588TC	30588TF	30588TE	7/16	7/16	5/8	2-1/2
30593	30593TN	30593TC	30593TF	30593TE	1/2	1/2	5/8	2-1/2
30595	30595TN	30595TC	30595TF	30595TE	5/8	5/8	3/4	3
30598	30598TN	30598TC	30598TF	30598TE	3/4	3/4	1	3

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	0~−.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○	○	○		○				

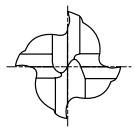
CARBIDE END MILLS

UGMGF57 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE STUB LENGTH

▶ Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.





MG | 4 | 30° | PLAIN

P.1119

MADE IN USA

◆ U.S.A Stock

Unit : Inch

EDP No. Y-COATED	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UGMGF57004	1/16	1/8	1/8	1-1/2
UGMGF57006	3/32	1/8	3/16	1-1/2
UGMGF57008	1/8	1/8	1/4	1-1/2
UGMGF57010	5/32	3/16	5/16	2
UGMGF57012	3/16	3/16	3/8	2
UGMGF57014	7/32	1/4	7/16	2
UGMGF57016	1/4	1/4	1/2	2
UGMGF57020	5/16	5/16	1/2	2
UGMGF57024	3/8	3/8	5/8	2
UGMGF57028	7/16	7/16	5/8	2-1/2
UGMGF57032	1/2	1/2	5/8	2-1/2
UGMGF57040	5/8	5/8	3/4	3
UGMGF57048	3/4	3/4	1	3

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	0~−.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○	○	○		○				

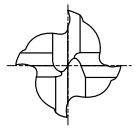
CARBIDE END MILLS

E5245 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE STUB LENGTH

▶ Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.





MG | 4 | 30° | PLAIN P.1122

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
31554	31554TN	31554TC	31554TF	31554TE	1/16	1/8	1/8	1-1/2
31556	31556TN	31556TC	31556TF	31556TE	3/32	1/8	3/16	1-1/2
31558	31558TN	31558TC	31558TF	31558TE	1/8	1/8	1/4	1-1/2
31561	31561TN	31561TC	31561TF	31561TE	5/32	3/16	5/16	2
31565	31565TN	31565TC	31565TF	31565TE	3/16	3/16	3/8	2
31570	31570TN	31570TC	31570TF	31570TE	7/32	1/4	7/16	2
31573	31573TN	31573TC	31573TF	31573TE	1/4	1/4	1/2	2
31579	31579TN	31579TC	31579TF	31579TE	5/16	5/16	1/2	2
31584	31584TN	31584TC	31584TF	31584TE	3/8	3/8	5/8	2
31588	31588TN	31588TC	31588TF	31588TE	7/16	7/16	5/8	2-1/2
31593	31593TN	31593TC	31593TF	31593TE	1/2	1/2	5/8	2-1/2
31595	31595TN	31595TC	31595TF	31595TE	5/8	5/8	3/4	3
31598	31598TN	31598TC	31598TF	31598TE	3/4	3/4	1	3

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

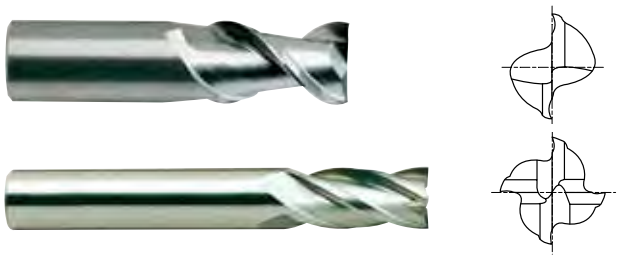
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○	○	○		○				

CARBIDE END MILLS

E5011 SERIES PLAIN SHANK
E5012 SERIES PLAIN SHANK

CARBIDE, 2&4 FLUTE LONG LENGTH

▶ Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



MG | 2&4 | 30° | PLAIN

P.1121, 1122

E5011(2 FLUTE) Series

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
02558	02558TN	02558TC	02558TF	02558TE	1/8	1/8	3/4	2-1/4
02565	02565TN	02565TC	02565TF	02565TE	3/16	3/16	3/4	2-1/2
02573	02573TN	02573TC	02573TF	02573TE	1/4	1/4	1-1/8	3
02579	02579TN	02579TC	02579TF	02579TE	5/16	5/16	1-1/8	3
02584	02584TN	02584TC	02584TF	02584TE	3/8	3/8	1-1/8	3
02588	02588TN	02588TC	02588TF	02588TE	7/16	7/16	2	4
02593	02593TN	02593TC	02593TF	02593TE	1/2	1/2	2	4
02595	02595TN	02595TC	02595TF	02595TE	5/8	5/8	2-1/4	5
02598	02598TN	02598TC	02598TF	02598TE	3/4	3/4	2-1/4	5
02600	02600TN	02600TC	02600TF	02600TE	1	1	2-1/4	5

E5012(4 FLUTE) Series

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
08558	08558TN	08558TC	08558TF	08558TE	1/8	1/8	3/4	2-1/4
08565	08565TN	08565TC	08565TF	08565TE	3/16	3/16	3/4	2-1/2
08573	08573TN	08573TC	08573TF	08573TE	1/4	1/4	1-1/8	3
08579	08579TN	08579TC	08579TF	08579TE	5/16	5/16	1-1/8	3
08584	08584TN	08584TC	08584TF	08584TE	3/8	3/8	1-1/8	3
08588	08588TN	08588TC	08588TF	08588TE	7/16	7/16	2	4
08593	08593TN	08593TC	08593TF	08593TE	1/2	1/2	2	4
08595	08595TN	08595TC	08595TF	08595TE	5/8	5/8	2-1/4	5
08598	08598TN	08598TC	08598TF	08598TE	3/4	3/4	2-1/4	5
08600	08600TN	08600TC	08600TF	08600TE	1	1	2-1/4	5

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	0~−.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○	○	○		○				

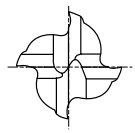
CARBIDE END MILLS

UGMGF58 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG LENGTH

▶ Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.





MG | 4 | 30° | PLAIN

P.1119

MADE IN USA

◆ U.S.A Stock

Unit : Inch

EDP No. Y-COATED	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UGMGF58008	1/8	1/8	3/4	2-1/4
UGMGF58012	3/16	3/16	3/4	2-1/2
UGMGF58016	1/4	1/4	1-1/8	3
UGMGF58020	5/16	5/16	1-1/8	3
UGMGF58024	3/8	3/8	1-1/8	3
UGMGF58028	7/16	7/16	2	4
UGMGF58032	1/2	1/2	2	4
UGMGF58040	5/8	5/8	2-1/4	5
UGMGF58048	3/4	3/4	2-1/4	5
UGMGF58064	1	1	2-1/4	5

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	0~−.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○	○	○		○				

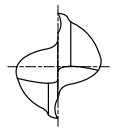
CARBIDE END MILLS

E5026 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE EXTRA LONG LENGTH

▶ Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.





MG | 2 | 30° | PLAIN P.1121

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
54558	54558TN	54558TC	54558TF	54558TE	1/8	1/8	1	3
54565	54565TN	54565TC	54565TF	54565TE	3/16	3/16	1-1/8	3
54904	54904TN	54904TC	54904TF	54904TE	3/16	3/16	1	4
54573	54573TN	54573TC	54573TF	54573TE	1/4	1/4	1-1/2	4
54901	54901TN	54901TC	54901TF	54901TE	1/4	1/4	1-1/2	6
54579	54579TN	54579TC	54579TF	54579TE	5/16	5/16	1-5/8	4
54584	54584TN	54584TC	54584TF	54584TE	3/8	3/8	1-3/4	4
54902	54902TN	54902TC	54902TF	54902TE	3/8	3/8	1-1/2	6
54588	54588TN	54588TC	54588TF	54588TE	7/16	7/16	3	6
54903	54903TN	54903TC	54903TF	54903TE	1/2	1/2	1-1/2	6
54593	54593TN	54593TC	54593TF	54593TE	1/2	1/2	3	6
54595	54595TN	54595TC	54595TF	54595TE	5/8	5/8	3	6
54598	54598TN	54598TC	54598TF	54598TE	3/4	3/4	3	6
54600	54600TN	54600TC	54600TF	54600TE	1	1	3	6

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	0~−.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○	○	○		○				

CARBIDE END MILLS

UGMGF59 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE EXTRA LONG LENGTH

▶ Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



MG | 4 | 30° | PLAIN | P.1119

MADE IN USA ◆ U.S.A Stock

Unit : Inch

EDP No. Y-COATED	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UGMGF59008	1/8	1/8	1	3
UGMGF59012	3/16	3/16	1-1/8	3
UGMGF59016	1/4	1/4	1-1/2	4
UGMGF59020	5/16	5/16	1-5/8	4
UGMGF59024	3/8	3/8	1-3/4	4
UGMGF59028	7/16	7/16	3	6
UGMGF59032	1/2	1/2	3	6
UGMGF59040	5/8	5/8	3	6
UGMGF59048	3/4	3/4	3	6
UGMGF59064	1	1	3	6
UGMGF59901	1/4	1/4	1-1/2	6
UGMGF59902	3/8	3/8	1-1/2	6
UGMGF59903	1/2	1/2	1-1/2	6
UGMGF59904	3/16	3/16	1	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	0~−.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○	○	○		○				

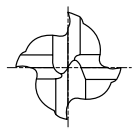
CARBIDE END MILLS

E5065 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE EXTRA LONG LENGTH

▶ Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.





MG | 4 | 30° | PLAIN P.1122

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
55558	55558TN	55558TC	55558TF	55558TE	1/8	1/8	1	3
55565	55565TN	55565TC	55565TF	55565TE	3/16	3/16	1-1/8	3
55904	55904TN	55904TC	55904TF	55904TE	3/16	3/16	1	4
55573	55573TN	55573TC	55573TF	55573TE	1/4	1/4	1-1/2	4
55901	55901TN	55901TC	55901TF	55901TE	1/4	1/4	1-1/2	6
55579	55579TN	55579TC	55579TF	55579TE	5/16	5/16	1-5/8	4
55584	55584TN	55584TC	55584TF	55584TE	3/8	3/8	1-3/4	4
55902	55902TN	55902TC	55902TF	55902TE	3/8	3/8	1-1/2	6
55588	55588TN	55588TC	55588TF	55588TE	7/16	7/16	3	6
55903	55903TN	55903TC	55903TF	55903TE	1/2	1/2	1-1/2	6
55593	55593TN	55593TC	55593TF	55593TE	1/2	1/2	3	6
55595	55595TN	55595TC	55595TF	55595TE	5/8	5/8	3	6
55598	55598TN	55598TC	55598TF	55598TE	3/4	3/4	3	6
55600	55600TN	55600TC	55600TF	55600TE	1	1	3	6

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	0~−.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○	○	○		○				

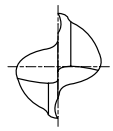
CARBIDE END MILLS

E5022 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE STUB LENGTH DOUBLE

- Same construction features as 2&4 flute single end mill in a more economical version.
- Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.





MG | 2 | 30° | PLAIN P.1121

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
32552	32552TN	32552TC	32552TF	32552TE	1/32	1/8	1/16	1-1/2
32553	32553TN	32553TC	32553TF	32553TE	3/64	1/8	3/32	1-1/2
32554	32554TN	32554TC	32554TF	32554TE	1/16	1/8	1/8	1-1/2
32555	32555TN	32555TC	32555TF	32555TE	5/64	1/8	1/8	1-1/2
32556	32556TN	32556TC	32556TF	32556TE	3/32	1/8	3/16	1-1/2
32557	32557TN	32557TC	32557TF	32557TE	7/64	1/8	3/16	1-1/2
32558	32558TN	32558TC	32558TF	32558TE	1/8	1/8	1/4	1-1/2
32560	32560TN	32560TC	32560TF	32560TE	9/64	3/16	5/16	2
32562	32562TN	32562TC	32562TF	32562TE	5/32	3/16	5/16	2
32564	32564TN	32564TC	32564TF	32564TE	11/64	3/16	5/16	2
32565	32565TN	32565TC	32565TF	32565TE	3/16	3/16	3/8	2
32569	32569TN	32569TC	32569TF	32569TE	13/64	1/4	1/2	2-1/2
32570	32570TN	32570TC	32570TF	32570TE	7/32	1/4	1/2	2-1/2
32572	32572TN	32572TC	32572TF	32572TE	15/64	1/4	1/2	2-1/2
32573	32573TN	32573TC	32573TF	32573TE	1/4	1/4	1/2	2-1/2
32579	32579TN	32579TC	32579TF	32579TE	5/16	5/16	1/2	2-1/2
32584	32584TN	32584TC	32584TF	32584TE	3/8	3/8	9/16	2-1/2
32588	32588TN	32588TC	32588TF	32588TE	7/16	7/16	9/16	2-3/4
32593	32593TN	32593TC	32593TF	32593TE	1/2	1/2	5/8	3

Mill Dia. Tolerance (inch)	
0~−.0012	**0~−.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○	○	○		○				

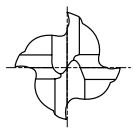
CARBIDE END MILLS

E5023 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE STUB LENGTH DOUBLE

- Same construction features as 2&4 flute single end mill in a more economical version.
- Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.





MG | 4 | 30° | PLAIN P.1122

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
33554	33554TN	33554TC	33554TF	33554TE	1/16	1/8	1/8	1-1/2
33555	33555TN	33555TC	33555TF	33555TE	5/64	1/8	1/8	1-1/2
33556	33556TN	33556TC	33556TF	33556TE	3/32	1/8	3/16	1-1/2
33557	33557TN	33557TC	33557TF	33557TE	7/64	1/8	3/16	1-1/2
33558	33558TN	33558TC	33558TF	33558TE	1/8	1/8	1/4	1-1/2
33560	33560TN	33560TC	33560TF	33560TE	9/64	3/16	5/16	2
33561	33561TN	33561TC	33561TF	33561TE	5/32	3/16	5/16	2
33564	33564TN	33564TC	33564TF	33564TE	11/64	3/16	5/16	2
33565	33565TN	33565TC	33565TF	33565TE	3/16	3/16	3/8	2
33569	33569TN	33569TC	33569TF	33569TE	13/64	1/4	1/2	2-1/2
33570	33570TN	33570TC	33570TF	33570TE	7/32	1/4	1/2	2-1/2
33572	33572TN	33572TC	33572TF	33572TE	15/64	1/4	1/2	2-1/2
33573	33573TN	33573TC	33573TF	33573TE	1/4	1/4	1/2	2-1/2
33579	33579TN	33579TC	33579TF	33579TE	5/16	5/16	1/2	2-1/2
33584	33584TN	33584TC	33584TF	33584TE	3/8	3/8	9/16	2-1/2
33588	33588TN	33588TC	33588TF	33588TE	7/16	7/16	9/16	2-3/4
33593	33593TN	33593TC	33593TF	33593TE	1/2	1/2	5/8	3

Mill Dia. Tolerance (inch)	
0~−.0012	**0~−.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○	○	○		○				

CARBIDE END MILLS

E5025 SERIES FLAT SHANK
E5024 SERIES FLAT SHANK

CARBIDE, 2&4 FLUTE REGULAR LENGTH DOUBLE

- Same construction features as single end mill in a more economical version.
- Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



MG | 2&4 | 30° | FLAT

P.1121, 1122

E5025(2 FLUTE) Series

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
11559	11559TN	11559TC	11559TF	11559TE	1/8	3/8	3/8	3-1/16
11563	11563TN	11563TC	11563TF	11563TE	5/32	3/8	7/16	3-1/8
11567	11567TN	11567TC	11567TF	11567TE	3/16	3/8	1/2	3-1/4
11571	11571TN	11571TC	11571TF	11571TE	7/32	3/8	9/16	3-3/8
11574	11574TN	11574TC	11574TF	11574TE	1/4	3/8	5/8	3-3/8
11577	11577TN	11577TC	11577TF	11577TE	9/32	3/8	11/16	3-3/8
11580	11580TN	11580TC	11580TF	11580TE	5/16	3/8	3/4	3-1/2
11582	11582TN	11582TC	11582TF	11582TE	11/32	3/8	3/4	3-1/2
11584	11584TN	11584TC	11584TF	11584TE	3/8	3/8	3/4	3-1/2
11589	11589TN	11589TC	11589TF	11589TE	7/16	1/2	7/8	4
11593	11593TN	11593TC	11593TF	11593TE	1/2	1/2	1	4

E5024(4 FLUTE) Series

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
13559	13559TN	13559TC	13559TF	13559TE	1/8	3/8	3/8	3-1/16
13563	13563TN	13563TC	13563TF	13563TE	5/32	3/8	7/16	3-1/8
13567	13567TN	13567TC	13567TF	13567TE	3/16	3/8	1/2	3-1/4
13571	13571TN	13571TC	13571TF	13571TE	7/32	3/8	9/16	3-3/8
13574	13574TN	13574TC	13574TF	13574TE	1/4	3/8	5/8	3-3/8
13577	13577TN	13577TC	13577TF	13577TE	9/32	3/8	11/16	3-3/8
13580	13580TN	13580TC	13580TF	13580TE	5/16	3/8	3/4	3-1/2
13582	13582TN	13582TC	13582TF	13582TE	11/32	3/8	3/4	3-1/2
13584	13584TN	13584TC	13584TF	13584TE	3/8	3/8	3/4	3-1/2
13589	13589TN	13589TC	13589TF	13589TE	7/16	1/2	7/8	4
13593	13593TN	13593TC	13593TF	13593TE	1/2	1/2	1	4

Mill Dia. Tolerance (inch)	
0~−.0012	**0~−.0020

**The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				○	○	○		○				

CARBIDE END MILLS

E5249 SERIES PLAIN SHANK
E5250 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE REGULAR LENGTH BALL NOSE

▶ Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



MG | 2&4 | 30° | R ±.0008 | PLAIN

P.1123, 1124

E5249(2 FLUTE) Series Unit : Inch

EDP No.					Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	R (±.0008)				
41558	41558TN	41558TC	41558TF	41558TE	R1/16	1/8	1/8	1/2	1-1/2
41561	41561TN	41561TC	41561TF	41561TE	R5/64	5/32	3/16	9/16	2
41565	41565TN	41565TC	41565TF	41565TE	R3/32	3/16	3/16	5/8	2
41570	41570TN	41570TC	41570TF	41570TE	R7/64	7/32	1/4	5/8	2-1/2
41573	41573TN	41573TC	41573TF	41573TE	R1/8	1/4	1/4	3/4	2-1/2
41579	41579TN	41579TC	41579TF	41579TE	R5/32	5/16	5/16	13/16	2-1/2
41584	41584TN	41584TC	41584TF	41584TE	R3/16	3/8	3/8	1	2-1/2
41588	41588TN	41588TC	41588TF	41588TE	R7/32	7/16	7/16	1	2-3/4
41593	41593TN	41593TC	41593TF	41593TE	R1/4	1/2	1/2	1	3
41595	41595TN	41595TC	41595TF	41595TE	R5/16	5/8	5/8	1-1/4	3-1/2
41598	41598TN	41598TC	41598TF	41598TE	R3/8	3/4	3/4	1-1/2	4
41600	41600TN	41600TC	41600TF	41600TE	R1/2	1	1	1-1/2	4

E5250(4 FLUTE) Series Unit : Inch

EDP No.					Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	R (±.0008)				
43558	43558TN	43558TC	43558TF	43558TE	R1/16	1/8	1/8	1/2	1-1/2
43561	43561TN	43561TC	43561TF	43561TE	R5/64	5/32	3/16	9/16	2
43565	43565TN	43565TC	43565TF	43565TE	R3/32	3/16	3/16	5/8	2
43570	43570TN	43570TC	43570TF	43570TE	R7/64	7/32	1/4	5/8	2-1/2
43573	43573TN	43573TC	43573TF	43573TE	R1/8	1/4	1/4	3/4	2-1/2
43579	43579TN	43579TC	43579TF	43579TE	R5/32	5/16	5/16	13/16	2-1/2
43584	43584TN	43584TC	43584TF	43584TE	R3/16	3/8	3/8	1	2-1/2
43588	43588TN	43588TC	43588TF	43588TE	R7/32	7/16	7/16	1	2-3/4
43593	43593TN	43593TC	43593TF	43593TE	R1/4	1/2	1/2	1	3
43595	43595TN	43595TC	43595TF	43595TE	R5/16	5/8	5/8	1-1/4	3-1/2
43598	43598TN	43598TC	43598TF	43598TE	R3/8	3/4	3/4	1-1/2	4
43600	43600TN	43600TC	43600TF	43600TE	R1/2	1	1	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	0~−.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○				○	○		○				

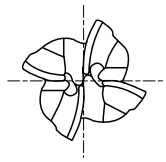
CARBIDE END MILLS

UGMF91 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE REGULAR LENGTH

- These are designed for slotting, drilling, pocketing and general operation.
- Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.





MG | 4 | 30° | PLAIN | R ±.0008 | P.1120

MADE IN USA

◆ U.S.A Stock

Unit : Inch

EDP No. Y-COATED	Radiusof BallNose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UGMF91008	1/16	**1/8**	1/8	1/2	1-1/2
UGMF91010	5/64	**5/32**	3/16	9/16	2
UGMF91012	3/32	**3/16**	3/16	5/8	2
UGMF91016	1/8	**1/4**	1/4	3/4	2-1/2
UGMF91020	5/32	**5/16**	5/16	13/16	2-1/2
UGMF91024	3/16	**3/8**	3/8	1	2-1/2
UGMF91028	7/32	**7/16**	7/16	1	2-3/4
UGMF91032	1/4	**1/2**	1/2	1	3
UGMF91040	5/16	**5/8**	5/8	1-1/4	3-1/2
UGMF91048	3/8	**3/4**	3/4	1-1/2	4
UGMF91064	1/2	**1**	1	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	0~−.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○				○	○			○				

CARBIDE END MILLS

E5014 SERIES PLAIN SHANK
E5060 SERIES PLAIN SHANK

CARBIDE, 2&4 FLUTE LONG LENGTH BALL NOSE

▶ Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



MG | 2&4 | 30° | R ±.0008 | PLAIN

P.1123, 1124

E5014(2 FLUTE) Series

Unit : Inch

EDP No.					Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	R (±.0008)				
50558	50558TN	50558TC	50558TF	50558TE	R1/16	1/8	1/8	3/4	2-1/4
50565	50565TN	50565TC	50565TF	50565TE	R3/32	3/16	3/16	3/4	2-1/2
50573	50573TN	50573TC	50573TF	50573TE	R1/8	1/4	1/4	1-1/8	3
50579	50579TN	50579TC	50579TF	50579TE	R5/32	5/16	5/16	1-1/8	3
50584	50584TN	50584TC	50584TF	50584TE	R3/16	3/8	3/8	1-1/8	3
50588	50588TN	50588TC	50588TF	50588TE	R7/32	7/16	7/16	2	4
50593	50593TN	50593TC	50593TF	50593TE	R1/4	1/2	1/2	2	4
50595	50595TN	50595TC	50595TF	50595TE	R5/16	5/8	5/8	2-1/4	5
50598	50598TN	50598TC	50598TF	50598TE	R3/8	3/4	3/4	2-1/4	5
50600	50600TN	50600TC	50600TF	50600TE	R1/2	1	1	2-1/4	5

E5060(4 FLUTE) Series

Unit : Inch

EDP No.					Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	R (±.0008)				
51558	51558TN	51558TC	51558TF	51558TE	R1/16	1/8	1/8	3/4	2-1/4
51565	51565TN	51565TC	51565TF	51565TE	R3/32	3/16	3/16	3/4	2-1/2
51573	51573TN	51573TC	51573TF	51573TE	R1/8	1/4	1/4	1-1/8	3
51579	51579TN	51579TC	51579TF	51579TE	R5/32	5/16	5/16	1-1/8	3
51584	51584TN	51584TC	51584TF	51584TE	R3/16	3/8	3/8	1-1/8	3
51588	51588TN	51588TC	51588TF	51588TE	R7/32	7/16	7/16	2	4
51593	51593TN	51593TC	51593TF	51593TE	R1/4	1/2	1/2	2	4
51595	51595TN	51595TC	51595TF	51595TE	R5/16	5/8	5/8	2-1/4	5
51598	51598TN	51598TC	51598TF	51598TE	R3/8	3/4	3/4	2-1/4	5
51600	51600TN	51600TC	51600TF	51600TE	R1/2	1	1	2-1/4	5

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	0~−.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○				○	○		○				

CARBIDE END MILLS

E5018 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE EXTRA LONG LENGTH BALL NOSE

▶ Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



MG | 2 | 30° | R ±.0008 | PLAIN

P.1123

Unit : Inch

EDP No.					Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	R (±.0008)				
52558	52558TN	52558TC	52558TF	52558TE	R1/16	1/8	1/8	1	3
52565	52565TN	52565TC	52565TF	52565TE	R3/32	3/16	3/16	1-1/8	3
52904	52904TN	52904TC	52904TF	52904TE	R3/32	3/16	3/16	1	4
52573	52573TN	52573TC	52573TF	52573TE	R1/8	1/4	1/4	1-1/2	4
52901	52901TN	52901TC	52901TF	52901TE	R1/8	1/4	1/4	1-1/2	6
52579	52579TN	52579TC	52579TF	52579TE	R5/32	5/16	5/16	1-5/8	4
52584	52584TN	52584TC	52584TF	52584TE	R3/16	3/8	3/8	1-3/4	4
52902	52902TN	52902TC	52902TF	52902TE	R3/16	3/8	3/8	1-1/2	6
52588	52588TN	52588TC	52588TF	52588TE	R7/32	7/16	7/16	3	6
52903	52903TN	52903TC	52903TF	52903TE	R1/4	1/2	1/2	1-1/2	6
52593	52593TN	52593TC	52593TF	52593TE	R1/4	1/2	1/2	3	6
52595	52595TN	52595TC	52595TF	52595TE	R5/16	5/8	5/8	3	6
52598	52598TN	52598TC	52598TF	52598TE	R3/8	3/4	3/4	3	6
52600	52600TN	52600TC	52600TF	52600TE	R1/2	1	1	3	6

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	0~−.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○				○	○		○				

CARBIDE, 4 FLUTE EXTRA LONG LENGTH BALL NOSE

▶ Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



MG | 4 | 30° | R ±.0008 | PLAIN

P.1124

Unit : Inch

EDP No.					Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	R (±.0008)				
53558	53558TN	53558TC	53558TF	53558TE	R1/16	1/8	1/8	1	3
53565	53565TN	53565TC	53565TF	53565TE	R3/32	3/16	3/16	1-1/8	3
53573	53573TN	53573TC	53573TF	53573TE	R1/8	1/4	1/4	1-1/2	4
53901	53901TN	53901TC	53901TF	53901TE	R1/8	1/4	1/4	1-1/2	6
53579	53579TN	53579TC	53579TF	53579TE	R5/32	5/16	5/16	1-5/8	4
53584	53584TN	53584TC	53584TF	53584TE	R3/16	3/8	3/8	1-3/4	4
53902	53902TN	53902TC	53902TF	53902TE	R3/16	3/8	3/8	1-1/2	6
53588	53588TN	53588TC	53588TF	53588TE	R7/32	7/16	7/16	3	6
53903	53903TN	53903TC	53903TF	53903TE	R1/4	1/2	1/2	1-1/2	6
53593	53593TN	53593TC	53593TF	53593TE	R1/4	1/2	1/2	3	6
53595	53595TN	53595TC	53595TF	53595TE	R5/16	5/8	5/8	3	6
53904	53904TN	53904TC	53904TF	53904TE	R5/16	5/8	5/8	1-1/2	6
53598	53598TN	53598TC	53598TF	53598TE	R3/8	3/4	3/4	3	6
53905	53905TN	53905TC	53905TF	53905TE	R3/8	3/4	3/4	1-1/2	6
53600	53600TN	53600TC	53600TF	53600TE	R1/2	1	1	3	6
53906	53906TN	53906TC	53906TF	53906TE	R1/2	1	1	1-1/2	6

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	0~−.0005

◎ : Excellent ○ : Good

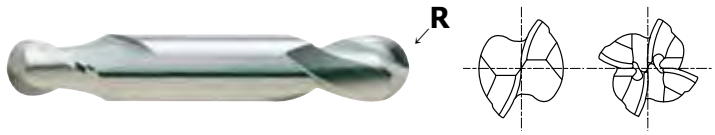
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○				○	○		○				

CARBIDE END MILLS

E5251 SERIES PLAIN SHANK
E5252 SERIES PLAIN SHANK

CARBIDE, 2&4 FLUTE STUB LENGTH DOUBLE BALL NOSE

- Same construction features as single end mill in a more economical version.
- Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



MG | 2&4 | 30° | R ±.0008 | PLAIN

P.1123, 1124

E5251 Series ■ 2 FLUTE

Unit : Inch

EDP No.					Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	R (±.0008)				
47570	**47570TN**	**47570TC**	**47570TF**	**47570TE**	R7/64	**7/32**	1/4	1/2	2-1/2
47573	**47573TN**	**47573TC**	**47573TF**	**47573TE**	R1/8	**1/4**	1/4	1/2	2-1/2
47579	**47579TN**	**47579TC**	**47579TF**	**47579TE**	R5/32	**5/16**	5/16	1/2	2-1/2
47584	**47584TN**	**47584TC**	**47584TF**	**47584TE**	R3/16	**3/8**	3/8	9/16	2-1/2
47588	**47588TN**	**47588TC**	**47588TF**	**47588TE**	R7/32	**7/16**	7/16	9/16	2-3/4
47593	**47593TN**	**47593TC**	**47593TF**	**47593TE**	R1/4	**1/2**	1/2	5/8	3

E5252 Series ■ 4 FLUTE

Unit : Inch

EDP No.					Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	R (±.0008)				
48570	**48570TN**	**48570TC**	**48570TF**	**48570TE**	R7/64	**7/32**	1/4	1/2	2-1/2
48573	**48573TN**	**48573TC**	**48573TF**	**48573TE**	R1/8	**1/4**	1/4	1/2	2-1/2
48579	**48579TN**	**48579TC**	**48579TF**	**48579TE**	R5/32	**5/16**	5/16	1/2	2-1/2
48584	**48584TN**	**48584TC**	**48584TF**	**48584TE**	R3/16	**3/8**	3/8	9/16	2-1/2
48588	**48588TN**	**48588TC**	**48588TF**	**48588TE**	R7/32	**7/16**	7/16	9/16	2-3/4
48593	**48593TN**	**48593TC**	**48593TF**	**48593TE**	R1/4	**1/2**	1/2	5/8	3

Mill Dia. Tolerance (inch)	
0~−.0012	**0~−.0020

**The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○				○	○		○				

CARBIDE END MILLS

E5216 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS

▶ Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



MG | 4 | 30° | R ±.001 | PLAIN P.1122

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	YG:TYLON F	R				
07558-015R	07558TF-015R	R.015	1/8	1/8	1/2	1-1/2
07558-030R	07558TF-030R	R.030	1/8	1/8	1/2	1-1/2
07565-015R	07565TF-015R	R.015	3/16	3/16	5/8	2
07565-030R	07565TF-030R	R.030	3/16	3/16	5/8	2
07573-015R	07573TF-015R	R.015	1/4	1/4	3/4	2-1/2
07573-030R	07573TF-030R	R.030	1/4	1/4	3/4	2-1/2
07573-045R	07573TF-045R	R.045	1/4	1/4	3/4	2-1/2
07579-015R	07579TF-015R	R.015	5/16	5/16	13/16	2-1/2
07579-030R	07579TF-030R	R.030	5/16	5/16	13/16	2-1/2
07579-045R	07579TF-045R	R.045	5/16	5/16	13/16	2-1/2
07584-015R	07584TF-015R	R.015	3/8	3/8	1	2-1/2
07584-030R	07584TF-030R	R.030	3/8	3/8	1	2-1/2
07584-045R	07584TF-045R	R.045	3/8	3/8	1	2-1/2
07584-060R	07584TF-060R	R.060	3/8	3/8	1	2-1/2
07588-015R	07588TF-015R	R.015	7/16	7/16	1	2-3/4
07588-030R	07588TF-030R	R.030	7/16	7/16	1	2-3/4
07588-045R	07588TF-045R	R.045	7/16	7/16	1	2-3/4
07588-060R	07588TF-060R	R.060	7/16	7/16	1	2-3/4
07588-090R	07588TF-090R	R.090	7/16	7/16	1	2-3/4
07593-015R	07593TF-015R	R.015	1/2	1/2	1	3
07593-030R	07593TF-030R	R.030	1/2	1/2	1	3
07593-045R	07593TF-045R	R.045	1/2	1/2	1	3
07593-060R	07593TF-060R	R.060	1/2	1/2	1	3
07593-090R	07593TF-090R	R.090	1/2	1/2	1	3
07593-125R	07593TF-125R	R.125	1/2	1/2	1	3
07595-015R	07595TF-015R	R.015	5/8	5/8	1-1/4	3-1/2
07595-030R	07595TF-030R	R.030	5/8	5/8	1-1/4	3-1/2
07595-045R	07595TF-045R	R.045	5/8	5/8	1-1/4	3-1/2

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○	○	○		○				

CARBIDE END MILLS

E5216 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS

▶ Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.



MG | 4 | 30° | R ±.001 | PLAIN

P.1122

Unit : Inch

EDP No. UNCOATED	EDP No. YG:TYLON F	Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
07595-060R	07595TF-060R	R.060	5/8	5/8	1-1/4	3-1/2
07595-090R	07595TF-090R	R.090	5/8	5/8	1-1/4	3-1/2
07595-125R	07595TF-125R	R.125	5/8	5/8	1-1/4	3-1/2
07598-015R	07598TF-015R	R.015	3/4	3/4	1-1/2	4
07598-030R	07598TF-030R	R.030	3/4	3/4	1-1/2	4
07598-045R	07598TF-045R	R.045	3/4	3/4	1-1/2	4
07598-060R	07598TF-060R	R.060	3/4	3/4	1-1/2	4
07598-090R	07598TF-090R	R.090	3/4	3/4	1-1/2	4
07598-125R	07598TF-125R	R.125	3/4	3/4	1-1/2	4
07600-015R	07600TF-015R	R.015	1	1	1-1/2	4
07600-030R	07600TF-030R	R.030	1	1	1-1/2	4
07600-045R	07600TF-045R	R.045	1	1	1-1/2	4
07600-060R	07600TF-060R	R.060	1	1	1-1/2	4
07600-090R	07600TF-090R	R.090	1	1	1-1/2	4
07600-125R	07600TF-125R	R.125	1	1	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	0~−.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○	○	○		○				

CARBIDE END MILLS

E5069 SERIES PLAIN SHANK

CARBIDE, 5 FLUTE 45° HELIX REGULAR LENGTH CORNER RADIUS

▶ Designed to machine stainless steels, Inconols and other alloys.
▶ 5 Flute and 45° medium helix allow harmonic balance and smooth cutting.



MG | 5 | 45° | R ±.001 | PLAIN

P.1118

Unit : Inch

EDP No.	Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
86573TF-030R	R.030	1/4	1/4	3/4	2-1/2
86584TF-030R	R.030	3/8	3/8	1	2-1/2
86584TF-060R	R.060	3/8	3/8	1	2-1/2
86593TF-030R	R.030	1/2	1/2	1-1/4	3
86593TF-060R	R.060	1/2	1/2	1-1/4	3
86593TF-090R	R.090	1/2	1/2	1-1/4	3
86595TF-030R	R.030	5/8	5/8	1-5/8	3-1/2
86595TF-060R	R.060	5/8	5/8	1-5/8	3-1/2
86595TF-090R	R.090	5/8	5/8	1-5/8	3-1/2
86595TF-125R	R.125	5/8	5/8	1-5/8	3-1/2
86598TF-030R	R.030	3/4	3/4	1-5/8	4
86598TF-060R	R.060	3/4	3/4	1-5/8	4
86598TF-090R	R.090	3/4	3/4	1-5/8	4
86598TF-125R	R.125	3/4	3/4	1-5/8	4
86598TF-156R	R.156	3/4	3/4	1-5/8	4
86598TF-187R	R.187	3/4	3/4	1-5/8	4
86600TF-030R	R.030	1	1	2	4
86600TF-060R	R.060	1	1	2	4
86600TF-090R	R.090	1	1	2	4
86600TF-125R	R.125	1	1	2	4
86600TF-156R	R.156	1	1	2	4
86600TF-187R	R.187	1	1	2	4

Any non stocked radius available in 1 week for uncoated tools

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	0~−.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	○	○					○	○

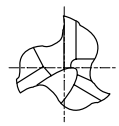
CARBIDE END MILLS

E5243 SERIES PLAIN SHANK FLAT SHANK

CARBIDE, 3 FLUTE 45° HELIX REGULAR LENGTH

- Designed to machine stainless steel, inconel, titanium and other hard to machine materials.
- It's 3 flute design gives high stability and allows good chip removal in plunging & slotting operations.
- The normal rake angle and 45° medium helix allows an extremely wide range of application.
- YG:TYLON super TiAlN coating are recommended for maximum performance.





MG | 3 | 45° | PLAIN | FLAT

Ø1/8~Ø5/16 Ø3/8~Ø1

P.1118

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
34558	**34558TN**	**34558TC**	**34558TF**	**34558TE**	**1/8**	1/8	3/8	1-1/2
34565	**34565TN**	**34565TC**	**34565TF**	**34565TE**	**3/16**	3/16	9/16	2
34573	**34573TN**	**34573TC**	**34573TF**	**34573TE**	**1/4**	1/4	3/4	2-1/2
34579	**34579TN**	**34579TC**	**34579TF**	**34579TE**	**5/16**	5/16	13/16	2-1/2
34584	**34584TN**	**34584TC**	**34584TF**	**34584TE**	**3/8**	3/8	7/8	2-1/2
34593	**34593TN**	**34593TC**	**34593TF**	**34593TE**	**1/2**	1/2	1	3
34594	**34594TN**	**34594TC**	**34594TF**	**34594TE**	**9/16**	9/16	1-1/4	3-1/2
34595	**34595TN**	**34595TC**	**34595TF**	**34595TE**	**5/8**	5/8	1-1/4	3-1/2
34598	**34598TN**	**34598TC**	**34598TF**	**34598TE**	**3/4**	3/4	1-1/2	4
34600	**34600TN**	**34600TC**	**34600TF**	**34600TE**	**1**	1	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	0~−.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	○	○					○	○

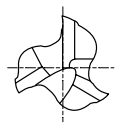
CARBIDE END MILLS

E5059 SERIES PLAIN SHANK

CARBIDE, 3 FLUTE 50° HELIX STUB & REGULAR & LONG LENGTH

- ▶ Designed to machine stainless steel, inconel, titanium and other hard to machine materials.
- ▶ It's 3 flute design gives high stability and allows good chip removal in plunging & slotting operations.
- ▶ The high rake angle and 50° helix allows an extremely wide range of application.
- ▶ YG:TYLON super TiAlN coating are recommended for maximum performance.



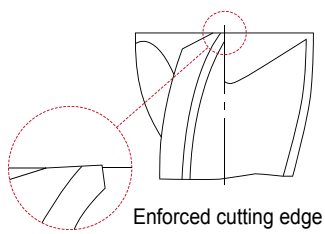


MG | 3 | 50° | PLAIN P.1118

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
83573	83573TN	83573TC	83573TF	83573TE	1/4	1/4	1/2	2
83901	83901TN	83901TC	83901TF	83901TE	1/4	1/4	3/4	2-1/2
83902	83902TN	83902TC	83902TF	83902TE	1/4	1/4	1-1/4	3
83584	83584TN	83584TC	83584TF	83584TE	3/8	3/8	1/2	2
83903	83903TN	83903TC	83903TF	83903TE	3/8	3/8	1	2-1/2
83904	83904TN	83904TC	83904TF	83904TE	3/8	3/8	1-1/2	3-1/2
83593	83593TN	83593TC	83593TF	83593TE	1/2	1/2	5/8	2-1/2
83905	83905TN	83905TC	83905TF	83905TE	1/2	1/2	1	3
83906	83906TN	83906TC	83906TF	83906TE	1/2	1/2	2	4
83595	83595TN	83595TC	83595TF	83595TE	5/8	5/8	7/8	3
83907	83907TN	83907TC	83907TF	83907TE	5/8	5/8	2-1/2	6
83598	83598TN	83598TC	83598TF	83598TE	3/4	3/4	1	3-1/2
83908	83908TN	83908TC	83908TF	83908TE	3/4	3/4	3	6

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	0~−.0005



Enforced cutting edge

◎ : Excellent ○ : Good

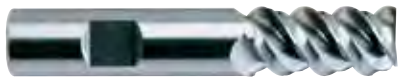
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	○	○					○	○

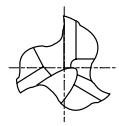
CARBIDE END MILLS

E5246 SERIES PLAIN SHANK FLAT SHANK

CARBIDE, 3 FLUTE 60° HELIX REGULAR LENGTH

▶ Excellent shearing and chip ejection due to 60˚ Helix.
▶ 20%~ 30% increase in chip load recommended over 30˚ helix tools.





MG | 3 | 60° | PLAIN | FLAT

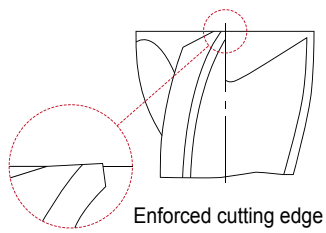
Ø1/8~Ø5/16 Ø3/8~Ø1

P.1118

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
20558	20558TN	20558TC	20558TF	20558TE	1/8	1/8	3/8	1-1/2
20565	20565TN	20565TC	20565TF	20565TE	3/16	3/16	9/16	2
20573	20573TN	20573TC	20573TF	20573TE	1/4	1/4	3/4	2-1/2
20579	20579TN	20579TC	20579TF	20579TE	5/16	5/16	13/16	2-1/2
20584	20584TN	20584TC	20584TF	20584TE	3/8	3/8	7/8	2-1/2
20593	20593TN	20593TC	20593TF	20593TE	1/2	1/2	1	3
20594	20594TN	20594TC	20594TF	20594TE	9/16	9/16	1-1/4	3-1/2
20595	20595TN	20595TC	20595TF	20595TE	5/8	5/8	1-1/4	3-1/2
20598	20598TN	20598TC	20598TF	20598TE	3/4	3/4	1-1/2	4
20600	20600TN	20600TC	20600TF	20600TE	1	1	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	0~−.0005



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	○	○					○	○

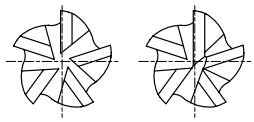
CARBIDE END MILLS

E5066 SERIES PLAIN SHANK

CARBIDE, 5 FLUTE 45° HELIX STUB LENGTH

- Designed to machine stainless steels, inconels and other alloys.
- The new design of stub length allows cutting at maximum speeds and feeds with minimum deflection
- 5 Flute and 45° medium helix allow harmonic balance and smooth cutting.





up to Ø3/16 over Ø3/16

MG 5 45° PLAIN P.1118

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
85558	85558TN	85558TC	85558TF	85558TE	1/8	1/8	1/4	1-1/2
85561	85561TN	85561TC	85561TF	85561TE	5/32	3/16	5/16	2
85565	85565TN	85565TC	85565TF	85565TE	3/16	3/16	5/16	2
85570	85570TN	85570TC	85570TF	85570TE	7/32	1/4	3/8	2
85573	85573TN	85573TC	85573TF	85573TE	1/4	1/4	3/8	2
85579	85579TN	85579TC	85579TF	85579TE	5/16	5/16	7/16	2
85584	85584TN	85584TC	85584TF	85584TE	3/8	3/8	1/2	2
85588	85588TN	85588TC	85588TF	85588TE	7/16	7/16	9/16	2-1/2
85593	85593TN	85593TC	85593TF	85593TE	1/2	1/2	5/8	2-1/2
85595	85595TN	85595TC	85595TF	85595TE	5/8	5/8	3/4	3
85598	85598TN	85598TC	85598TF	85598TE	3/4	3/4	1	3
85600	85600TN	85600TC	85600TF	85600TE	1	1	1-1/4	3

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	0~−.0003

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	○	○					○	○

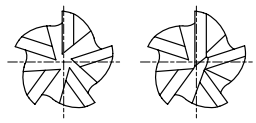
CARBIDE END MILLS

E5067 SERIES PLAIN SHANK

CARBIDE, 5 FLUTE 45° HELIX REGULAR LENGTH

- Designed to machine stainless steels, inconels and other alloys.
- The new design of stub length allows cutting at maximum speeds and feeds with minimum deflection
- 5 Flute and 45° medium helix allow harmonic balance and smooth cutting.





up to Ø3/16 over Ø3/16

MG | 5 | 45° | PLAIN P.1118

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
86558	86558TN	86558TC	86558TF	86558TE	1/8	1/8	1/2	1-1/2
86561	86561TN	86561TC	86561TF	86561TE	5/32	3/16	9/16	2
86565	86565TN	86565TC	86565TF	86565TE	3/16	3/16	9/16	2
86570	86570TN	86570TC	86570TF	86570TE	7/32	1/4	3/4	2-1/2
86573	86573TN	86573TC	86573TF	86573TE	1/4	1/4	3/4	2-1/2
86579	86579TN	86579TC	86579TF	86579TE	5/16	5/16	13/16	2-1/2
86584	86584TN	86584TC	86584TF	86584TE	3/8	3/8	1	2-1/2
86588	86588TN	86588TC	86588TF	86588TE	7/16	7/16	1	2-3/4
86593	86593TN	86593TC	86593TF	86593TE	1/2	1/2	1-1/4	3
86595	86595TN	86595TC	86595TF	86595TE	5/8	5/8	1-5/8	3-1/2
86598	86598TN	86598TC	86598TF	86598TE	3/4	3/4	1-5/8	4
86599	86599TN	86599TC	86599TF	86599TE	7/8	7/8	2	4
86600	86600TN	86600TC	86600TF	86600TE	1	1	2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	0~−.0003

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	○	○					○	○

CARBIDE END MILLS

E5068 SERIES PLAIN SHANK

CARBIDE, 5 FLUTE 45° HELIX MEDIUM & LONG LENGTH

- Designed to machine stainless steel, inconels and other alloys.
- The new design of stub length allows cutting at maximum speeds and feeds with minimum deflection
- 5 Flute and 45° medium helix allow harmonic balance and smooth cutting.



MG | 5 | 45° | PLAIN

P.1118

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
58573	58573TN	58573TC	58573TF	58573TE	1/4	1/4	1-1/4	4
58579	58579TN	58579TC	58579TF	58579TE	5/16	5/16	1-1/4	4
58584	58584TN	58584TC	58584TF	58584TE	3/8	3/8	1-1/2	4
58588	58588TN	58588TC	58588TF	58588TE	7/16	7/16	2	4
58593	58593TN	58593TC	58593TF	58593TE	1/2	1/2	2	4
58595	58595TN	58595TC	58595TF	58595TE	5/8	5/8	2-1/2	5
58598	58598TN	58598TC	58598TF	58598TE	3/4	3/4	3-1/4	6
58901	58901TN	58901TC	58901TF	58901TE	3/4	3/4	2-1/4	5
58600	58600TN	58600TC	58600TF	58600TE	1	1	3-1/4	6
58902	58902TN	58902TC	58902TF	58902TE	1	1	2-5/8	6

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	0~−.0003

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	○	○					○	○

CARBIDE END MILLS

E5073 SERIES PLAIN SHANK

CARBIDE, 5 FLUTE 45° HELIX EXTRA LONG LENGTH

- Designed to machine stainless steel, inconels and other alloys.
- The new design of stub length allows cutting at maximum speeds and feeds with minimum deflection
- 5 Flute and 45° medium helix allow harmonic balance and smooth cutting.



MG | 5 | 45° | PLAIN

P.1118

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
59579	**59579TN**	**59579TC**	**59579TF**	**59579TE**	**5/16**	5/16	2-1/8	4
59584	**59584TN**	**59584TC**	**59584TF**	**59584TE**	**3/8**	3/8	2-1/2	6
59593	**59593TN**	**59593TC**	**59593TF**	**59593TE**	**1/2**	1/2	3-1/8	6
59595	**59595TN**	**59595TC**	**59595TF**	**59595TE**	**5/8**	5/8	4	6
59598	**59598TN**	**59598TC**	**59598TF**	**59598TE**	**3/4**	3/4	4	6
59600	**59600TN**	**59600TC**	**59600TF**	**59600TE**	**1**	1	4-1/8	7

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.0012	0~−.0003

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	○	○					○	○

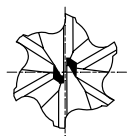
CARBIDE END MILLS

E5058 SERIES PLAIN SHANK

CARBIDE, 6 FLUTE 40° HELIX REGULAR LENGTH

- For finishing in most materials.
- 20～40% increase in inches per minute over 4 flute tools.
- YG:TYLON SUPER TiAlN coating recommended for maximum performance.





MG | 6 | 40° | PLAIN P.1118

Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
84565	**84565TN**	**84565TC**	**84565TF**	**84565TE**	**3/16**	3/16	5/8	2
84573	**84573TN**	**84573TC**	**84573TF**	**84573TE**	**1/4**	1/4	3/4	2-1/2
84579	**84579TN**	**84579TC**	**84579TF**	**84579TE**	**5/16**	5/16	7/8	2-1/2
84584	**84584TN**	**84584TC**	**84584TF**	**84584TE**	**3/8**	3/8	7/8	2-1/2
84588	**84588TN**	**84588TC**	**84588TF**	**84588TE**	**7/16**	7/16	1	2-1/2
84593	**84593TN**	**84593TC**	**84593TF**	**84593TE**	**1/2**	1/2	1	3
84595	**84595TN**	**84595TC**	**84595TF**	**84595TE**	**5/8**	5/8	1-1/4	3-1/2
84598	**84598TN**	**84598TC**	**84598TF**	**84598TE**	**3/4**	3/4	1-1/2	4

MATERIAL HARDNESS		
Recommended Coating	Under 45 Rc F	Over 45 Rc E

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~－.0012	0~－.0005

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎	○	○					○	○

CARBIDE END MILLS

E5056 SERIES FLAT SHANK
E5057 SERIES FLAT SHANK

CARBIDE, 5 FLUTE 45° HELIX STUB & REGULAR LENGTH FINE PITCH ROUGHING CORNER RADIUS

- 5 flute design gives minimum harmonic vibration.
- Stub tools for minimum deflection and maximum rigidity.
- Ideal for profile milling.
- Not recommended for slotting.



MG FINE 5 45° FLAT P.1118

E5056 Series ■ STUB LENGTH

Unit : Inch

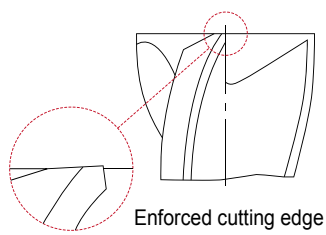
EDP No.					Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	R				
81584	81584TN	81584TC	81584TF	81584TE	.040	3/8	3/8	1/2	2
81593	81593TN	81593TC	81593TF	81593TE	.040	1/2	1/2	5/8	2-1/2
81595	81595TN	81595TC	81595TF	81595TE	.060	5/8	5/8	3/4	3
81598	81598TN	81598TC	81598TF	81598TE	.060	3/4	3/4	1	3
81600	81600TN	81600TC	81600TF	81600TE	.060	1	1	1-1/4	3

E5057 Series ■ REGULAR LENGTH

Unit : Inch

EDP No.					Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	R				
82584	82584TN	82584TC	82584TF	82584TE	.040	3/8	3/8	1	2-1/2
82593	82593TN	82593TC	82593TF	82593TE	.040	1/2	1/2	1-1/4	3
82595	82595TN	82595TC	82595TF	82595TE	.060	5/8	5/8	1-5/8	3-1/2
82598	82598TN	82598TC	82598TF	82598TE	.060	3/4	3/4	1-5/8	4
82600	82600TN	82600TC	82600TF	82600TE	.060	1	1	2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~−.003	0~−.0005


Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			◎							○	

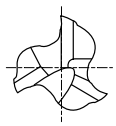
CARBIDE END MILLS

E5077 SERIES PLAIN SHANK

CARBIDE, 3 FLUTE TAPER

▶ Designed for milling die cavity.
▶ Many different center line angles are available on your job requirement.





MG | 3 | 30° | PLAIN P.1118

Unit : Inch

EDP No.					Cutting Small Diameter	Shank Diameter	Length of Cut	Overall Length	Center Ling Angle
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E					
87552	87552TN	87552TC	87552TF	87552TE	1/8	1/4	1-1/2	3	1°
87553	87553TN	87553TC	87553TF	87553TE	1/8	1/4	1-1/2	3	1.5°
87554	87554TN	87554TC	87554TF	87554TE	1/8	1/4	1-1/4	3	2°
87556	87556TN	87556TC	87556TF	87556TE	1/8	1/4	1	3	3°
87560	87560TN	87560TC	87560TF	87560TE	1/8	1/4	3/4	3	5°
87564	87564TN	87564TC	87564TF	87564TE	1/8	1/4	1/2	3	7°
87570	87570TN	87570TC	87570TF	87570TE	3/32	1/4	1/2	3	10°
87572	87572TN	87572TC	87572TF	87572TE	3/16	3/8	1-3/4	3-1/2	1°
87573	87573TN	87573TC	87573TF	87573TE	3/16	3/8	1-3/4	3-1/2	1.5°
87574	87574TN	87574TC	87574TF	87574TE	3/16	3/8	1-3/4	3-1/2	2°
87576	87576TN	87576TC	87576TF	87576TE	5/32	3/8	1-3/4	3-1/2	3°
87580	87580TN	87580TC	87580TF	87580TE	1/8	3/8	1-1/2	3-1/2	5°
87584	87584TN	87584TC	87584TF	87584TE	1/8	3/8	1	3-1/2	7°
87590	87590TN	87590TC	87590TF	87590TE	1/8	3/8	3/4	3-1/2	10°
87592	87592TN	87592TC	87592TF	87592TE	1/4	1/2	2	4	1°
87594	87594TN	87594TC	87594TF	87594TE	1/4	1/2	2	4	2°
87596	87596TN	87596TC	87596TF	87596TE	1/4	1/2	2	4	3°
87600	87600TN	87600TC	87600TF	87600TE	1/4	1/2	1-1/4	4	5°
87902	87902TN	87902TC	87902TF	87902TE	3/16	1/2	1-1/4	4	7°
87903	87903TN	87903TC	87903TF	87903TE	1/8	1/2	1	4	10°

Cutting Small Dia. Tolerance(mm)		Shank Dia. Tolerance	Center Line Angle Tolerance
Ø1/16 ~ Ø1/4	0~−.0020	0~−.0005	±5′
Ø17/64 ~ Ø1	0~−.0030		

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○	○	○		○				

CARBIDE END MILLS

E5078 SERIES PLAIN SHANK

CARBIDE, 3 FLUTE TAPER BALL NOSE

▶ Designed for milling die cavity.
▶ Many different center line angles are available on your job requirement.



MG | 3 | 30° | R ±.0008 | PLAIN P.1118

Unit : Inch

EDP No.					TIP Radius	Cutting Small Diameter	Shank Diameter	Length of Cut	Overall Length	Center Ling Angle
UNCOATED	TiN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E	R (±.0008)					
88552	88552TN	88552TC	88552TF	88552TE	.062	1/8	1/4	1-1/2	3	1°
88553	88553TN	88553TC	88553TF	88553TE	.062	1/8	1/4	1-1/2	3	1.5°
88554	88554TN	88554TC	88554TF	88554TE	.062	1/8	1/4	1-1/4	3	2°
88556	88556TN	88556TC	88556TF	88556TE	.062	1/8	1/4	1	3	3°
88560	88560TN	88560TC	88560TF	88560TE	.062	1/8	1/4	3/4	3	5°
88564	88564TN	88564TC	88564TF	88564TE	.062	1/8	1/4	1/2	3	7°
88570	88570TN	88570TC	88570TF	88570TE	.047	3/32	1/4	1/2	3	10°
88572	88572TN	88572TC	88572TF	88572TE	.093	3/16	3/8	1-3/4	3-1/2	1°
88573	88573TN	88573TC	88573TF	88573TE	.093	3/16	3/8	1-3/4	3-1/2	1.5°
88574	88574TN	88574TC	88574TF	88574TE	.093	3/16	3/8	1-3/4	3-1/2	2°
88576	88576TN	88576TC	88576TF	88576TE	.078	5/32	3/8	1-3/4	3-1/2	3°
88580	88580TN	88580TC	88580TF	88580TE	.062	1/8	3/8	1-1/2	3-1/2	5°
88584	88584TN	88584TC	88584TF	88584TE	.062	1/8	3/8	1	3-1/2	7°
88590	88590TN	88590TC	88590TF	88590TE	.062	1/8	3/8	3/4	3-1/2	10°
88592	88592TN	88592TC	88592TF	88592TE	.125	1/4	1/2	2	4	1°
88594	88594TN	88594TC	88594TF	88594TE	.125	1/4	1/2	2	4	2°
88596	88596TN	88596TC	88596TF	88596TE	.125	1/4	1/2	2	4	3°
88600	88600TN	88600TC	88600TF	88600TE	.125	1/4	1/2	1-1/4	4	5°
88902	88902TN	88902TC	88902TF	88902TE	.093	3/16	1/2	1-1/4	4	7°
88903	88903TN	88903TC	88903TF	88903TE	.062	1/8	1/2	1	4	10°

Cutting Small Dia. Tolerance(mm)		Shank Dia. Tolerance	Center Line Angle Tolerance
Ø1/16 ~ Ø1/4	0~−.0020	0~−.0005	±5′
Ø17/64 ~ Ø1	0~−.0030		

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○	○	○		○				

CARBIDE END MILLS

EH527 SERIES PLAIN SHANK

CARBIDE, 2 FLUTE LONG LENGTH - TiAlN 'F' Coated



MG | DIN 6528 | N | 2 | 30° | DIN 6535HA

P.1125

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
	h10		h6		
EH527035	3.5	.1378	3.5	7	50
EH527040	4.0	.1575	4	8	50
EH527045	4.5	.1772	4.5	8	50
EH527050	5.0	.1969	5	10	50
EH527055	5.5	.2165	5.5	10	57
EH527060	6.0	.2362	6	10	57
EH527065	6.5	.2559	6.5	13	60
EH527070	7.0	.2756	7	13	60
EH527075	7.5	.2953	7.5	16	63
EH527080	8.0	.3150	8	16	63
EH527085	8.5	.3346	8.5	16	67
EH527090	9.0	.3543	9	16	67
EH527095	9.5	.3740	9.5	19	72
EH527100	10.0	.3937	10	19	72
EH527110	11.0	.4330	11	22	83
EH527120	12.0	.4724	12	22	83
EH527130	13.0	.5118	13	22	83
EH527140	14.0	.5512	14	22	83
EH527150	15.0	.5905	15	26	92
EH527160	16.0	.6299	16	26	92
EH527180	18.0	.7087	18	26	92
EH527200	20.0	.7874	20	32	104

Tolerances according to DIN 7160 & 7161

Tolerance range in μm					
Nominal-Diameter in mm					
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 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

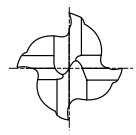
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○	○	○		○				

CARBIDE END MILLS

EH540 SERIES PLAIN SHANK

CARBIDE, 4 FLUTE LONG LENGTH - TiAlN 'F' Coated





MG | DIN 6528 | N | 4 | 30° | DIN 6535HA

P.1125

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
	h10		h6		
EH540035	3.5	.1378	3.5	10	50
EH540040	4.0	.1575	4	11	50
EH540045	4.5	.1772	4.5	11	50
EH540050	5.0	.1969	5	13	50
EH540055	5.5	.2165	5.5	13	57
EH540060	6.0	.2362	6	13	57
EH540065	6.5	.2559	6.5	16	60
EH540070	7.0	.2756	7	16	60
EH540075	7.5	.2953	7.5	19	63
EH540080	8.0	.3150	8	19	63
EH540085	8.5	.3346	8.5	19	67
EH540090	9.0	.3543	9	19	67
EH540095	9.5	.3740	9.5	22	72
EH540100	10.0	.3937	10	22	72
EH540110	11.0	.4330	11	26	83
EH540120	12.0	.4724	12	26	83
EH540130	13.0	.5118	13	26	83
EH540140	14.0	.5512	14	26	83
EH540150	15.0	.5905	15	32	92
EH540160	16.0	.6299	16	32	92
EH540180	18.0	.7087	18	32	92
EH540200	20.0	.7874	20	38	104

Tolerances according to DIN 7160 & 7161

Tolerance range in μm					
Nominal-Diameter in mm					
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 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

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○			○	○	○		○				

CARBIDE END MILLS

EH882 SERIES PLAIN SHANK

CARBIDE, 3 FLUTE 35 ° HELIX CORNER RADIUS - TiAlN 'F' Coated



MG | DIN 6527 | N | 3 | 35° | DIN 6535HA

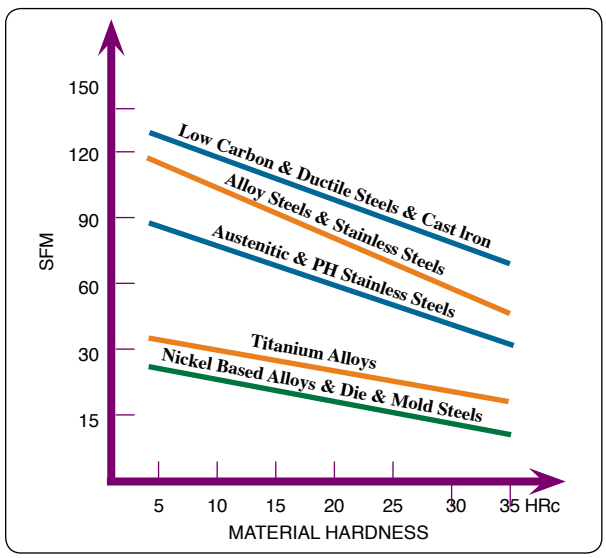
Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
		Metric	Inch			
	R	h10		h6		
EH882030	0.20~0.25	3.0	.1181	3	4	38
EH882040	0.20~0.25	4.0	.1575	6	5	54
EH882050	0.20~0.25	5.0	.1969	6	6	54
EH882060	0.40~0.50	6.0	.2362	6	7	54
EH882080	0.40~0.50	8.0	.3150	8	9	58
EH882100	0.40~0.50	10.0	.3937	10	11	66
EH882120	0.75~0.85	12.0	.4724	12	12	73
EH882160	0.75~0.85	16.0	.6299	16	16	82
EH882200	0.75~0.85	20.0	.7874	20	20	92

▶TiN & TiCN-COATING are available on your request.

Tolerances according to DIN 7160 & 7161

Tolerance range in μm					
Nominal-Diameter in mm					
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
h10	0 / — 40	0 / — 48	0 / — 58	0 / — 70	0 / — 84
h6	0 / — 6	0 / — 8	0 / — 9	0 / — 11	0 / — 13



TiAlN FEED CHART

Unit : inch

Mill Diameter	Feed / Tooth	Mill Diameter	Feed / Tooth
3	.0035 ~ .0070	10	.0018 ~ .0040
5	.0050 ~ .0025	12	.0025 ~ .0050
6	.0012 ~ .0030	16	.0030 ~ .0060
8	.0018 ~ .0035	20	.0035 ~ .0070

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎	○				○	◎		◎				

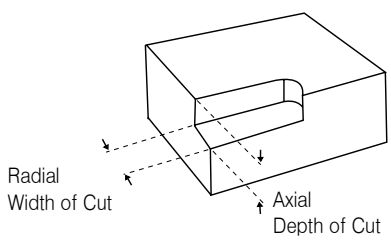
CARBIDE END MILLS

RECOMMENDED CUTTING CONDITIONS

SPEED & FEED RECOMMENDATIONS

Material	Speed	Chip Load per Tooth by End Mill Diameter			Recommended Coating
		Up to 1/4"	Up to 1/2"	Up to 1"	
Carbon + Alloy Steel <45Rc	100-700	.0002-.002	.001-.003	.003-.007	TF
Carbon + Alloy Steel >45Rc	50-400	.0002-.001	.0005-.0015	.001-.003	TE
Stainless Steels Non-Hardenable 200-300 Series	150-500	.0002-.001	.001-.002	.002-.006	TF
Stainless Steels Hardenable 400 Series Martensitic and PH Series	100-450	.0002-.0005	.0005-.001	.001-.005	TF
Cast+Ductile Iron	100-800	.0002-.0015	.002-.003	.003-.008	TF or TE
Nickel+Cobalt Based Alloys	20-200	.0003-.0008	.0008-.001	.001-.002	TE
Titanium	30-200	.0002-.0008	.0008-.002	.002-.004	TE
Aluminum	600-2000	.0002-.002	.002-.004	.004-.008	TiCN
Copper	300-1000	.0005-.002	.002-.003	.003-.006	CrN
Brass+ Bronze Alloys **Graphite**	600-1000 600-1000	.0005-.002 .0005-.005	.002-.003 .001-.008	.003-.006 .002-.010	TiCN D
Plastic	600-1200	.0006-.003	.003-.006	.006-.012	TF

TF = YG:TYLON F
TE = YG:TYLON E
D = DIAMOND
CrN = CROME NITRIDE



SPEED & FEED DETERMINANTS

1. MATERIAL HARDNESS
2. MACHINE RIGIDITY
3. TYPE OF COATING
4. TOOL GEOMETRY
5. FINISH REQUIREMENTS
6. DEPTH & WIDTH OF CUT

CARBIDE END MILLS

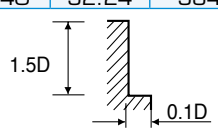
RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE - SIDE CUTTING

UGMF89, UGMGF57, UGMGF58, UGMGF59 SERIES

WORK MATERIAL	P												M			
	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				800N/mm² ~ 1000N/mm²				1000/mm² ~ 1300N/mm²							
DIAMETER	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz
1/16	11200	15.38	183	.0003	9640	13.40	158	.0003	8090	10.42	132	.0003	15560	12.90	255	.0002
5/64	10080	15.38	206	.0004	8680	13.40	178	.0004	7280	10.42	149	.0004	14000	12.90	287	.0002
3/32	9070	15.38	223	.0004	7810	13.40	192	.0004	6550	10.42	161	.0004	12600	12.90	309	.0003
7/64	7560	16.37	217	.0005	6550	14.39	188	.0005	5420	10.91	155	.0005	10650	12.90	305	.0003
1/8	6050	17.37	198	.0007	5290	15.37	173	.0007	4280	11.41	140	.0007	8690	12.90	285	.0004
9/64	5320	17.37	196	.0008	4600	15.37	169	.0008	3780	11.41	139	.0008	7620	12.90	281	.0004
5/32	4590	17.37	188	.0009	3910	15.37	160	.0010	3280	11.41	134	.0009	6550	12.90	268	.0005
11/64	4100	17.37	185	.0011	3530	15.37	159	.0011	2900	11.41	131	.0010	5920	12.90	267	.0005
3/16	3600	17.37	177	.0012	3150	15.37	155	.0012	2520	11.41	124	.0011	5290	12.90	260	.0006
13/64	3460	17.37	184	.0013	2990	15.37	159	.0013	2430	11.41	129	.0012	5040	12.90	268	.0006
7/32	3310	17.37	190	.0013	2840	15.37	162	.0014	2330	11.41	134	.0012	4790	12.90	275	.0007
15/64	3170	17.37	195	.0014	2680	15.37	164	.0014	2240	11.41	138	.0013	4540	12.90	279	.0007
1/4	3020	17.37	198	.0014	2520	15.37	165	.0015	2140	11.41	140	.0013	4280	12.90	280	.0008
9/32	2650	17.37	195	.0016	2210	15.37	162	.0017	1890	11.41	139	.0015	3780	12.90	279	.0009
5/16	2270	17.37	186	.0019	1890	15.37	155	.0020	1640	11.41	134	.0017	3280	12.90	269	.0010
3/8	1760	17.37	173	.0025	1510	15.37	149	.0025	1260	11.41	124	.0023	2520	12.90	248	.0013
7/16	1640	17.37	188	.0026	1390	15.37	159	.0028	1170	11.41	134	.0024	2330	12.90	267	.0014
1/2	1510	17.37	198	.0029	1260	15.37	165	.0031	1080	11.41	141	.0026	2140	12.90	280	.0015
9/16	1260	17.37	186	.0034	1130	15.37	167	.0034	930	11.41	137	.0031	1760	12.90	259	.0018
5/8	1130	19.34	185	.0043	1010	16.87	165	.0042	820	14.39	134	.0044	1640	14.39	269	.0022
3/4	980	19.34	193	.0049	830	16.87	164	.0051	690	14.39	136	.0052	1350	15.37	265	.0028
7/8	830	17.41	190	.0052	700	16.87	160	.0054	590	12.95	135	.0055	1130	13.83	259	.0031
1	750	15.67	197	.0052	630	16.87	165	.0054	530	11.65	139	.0055	1020	12.45	267	.0031

WORK MATERIAL	K				N							
	CAST IRON				ALUMINIUM ALLOYS				COPPER, BRASS NON-FERROUS METALS			
HARDNESS												
STRENGTH												
DIAMETER	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz
1/16	13220	28.77	216	.0005	31110	59.52	509	.0005	23330	46.63	382	.0005
5/64	11900	28.77	244	.0006	28000	59.52	573	.0005	21000	46.63	430	.0006
3/32	10710	28.77	263	.0007	25200	59.52	619	.0006	18900	46.63	464	.0006
7/64	8820	28.77	253	.0008	21420	59.52	614	.0007	15750	46.63	451	.0007
1/8	6930	28.77	227	.0010	17640	59.52	578	.0008	12600	46.63	413	.0009
9/64	6110	28.77	225	.0012	15120	59.52	557	.0010	11340	46.63	418	.0010
5/32	5290	28.77	217	.0014	12600	59.52	516	.0012	10080	46.63	413	.0012
11/64	4730	28.77	213	.0015	11530	59.52	519	.0013	8950	46.63	403	.0013
3/16	4160	28.77	204	.0017	10460	59.52	514	.0014	7810	46.63	384	.0015
13/64	3970	30.26	211	.0019	10020	60.77	533	.0015	7500	47.37	399	.0016
7/32	3780	31.75	217	.0021	9580	62.01	549	.0016	7180	48.12	412	.0017
15/64	3590	33.24	220	.0023	9140	63.25	561	.0017	6870	48.86	422	.0018
1/4	3400	34.72	223	.0026	8690	64.49	569	.0019	6550	49.60	429	.0019
9/32	2960	35.72	218	.0030	7620	64.49	561	.0021	5800	49.60	427	.0021
5/16	2520	36.71	206	.0036	6550	64.49	536	.0025	5040	49.60	413	.0025
3/8	2140	38.69	210	.0045	5290	64.49	520	.0030	3910	49.60	384	.0032
7/16	1890	39.68	217	.0052	4790	64.49	549	.0034	3590	49.60	412	.0035
1/2	1640	40.68	215	.0062	4280	64.49	561	.0038	3280	49.60	430	.0038
9/16	1510	42.66	223	.0071	3780	64.49	557	.0043	2770	49.60	408	.0045
5/8	1260	43.66	206	.0087	3280	64.49	537	.0049	2520	49.60	413	.0049
3/4	1100	38.69	216	.0088	2710	64.49	533	.0059	2100	49.60	413	.0059
7/8	950	34.82	218	.0092	2270	58.04	520	.0064	1770	44.64	406	.0063
1	850	31.34	223	.0092	2040	52.24	534	.0064	1590	40.18	417	.0063



RPM = rev./min.
Feed = inch/min.
SFM = ft/min
Fz = inch/tooth

CARBIDE END MILLS

RECOMMENDED CUTTING CONDITIONS

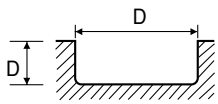
CARBIDE, 2 FLUTE - SLOTTING

UGMF90 SERIES

WORK MATERIAL	P												M			
	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				800N/mm² ~ 1000N/mm²				1000/mm² ~ 1300N/mm²							
DIAMETER	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz
1/8	6050	5.94	198	.0005	5290	5.21	173	.0005	4280	3.97	140	.0005	8690	4.22	285	.0002
3/16	3600	5.94	177	.0008	3150	5.21	155	.0008	2520	3.97	124	.0008	5290	4.22	260	.0004
1/4	3020	5.94	198	.0010	2520	5.21	165	.0010	2140	3.97	140	.0009	4280	4.22	280	.0005
3/8	1760	5.94	173	.0017	1510	5.21	148	.0017	1260	3.97	124	.0016	2520	4.22	248	.0008
1/2	1510	5.94	198	.0020	1260	5.21	165	.0021	1080	3.97	141	.0018	2140	4.22	280	.0010
5/8	1130	6.45	185	.0029	1010	5.46	165	.0027	820	4.97	134	.0030	1640	4.97	269	.0015
3/4	980	6.45	193	.0033	830	5.46	163	.0033	690	4.97	136	.0036	1350	4.97	265	.0018
1	750	5.22	197	.0035	630	4.42	165	.0035	530	4.02	139	.0038	1020	4.02	267	.0020

WORK MATERIAL	K				N							
	CAST IRON				ALUMINIUM ALLOYS				COPPER, BRASS NON-FERROUS METALS			
HARDNESS												
STRENGTH												
DIAMETER	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz
1/8	6930	9.91	227	.0007	17640	20.84	578	.0006	12600	15.37	413	.0006
3/16	4160	9.91	204	.0012	10460	20.84	514	.0010	7810	15.37	384	.0010
1/4	3400	11.41	223	.0017	8690	21.82	569	.0013	6550	16.87	429	.0013
3/8	2140	12.90	210	.0030	5290	21.82	520	.0021	3910	16.87	384	.0022
1/2	1640	13.40	215	.0041	4280	21.82	561	.0025	3280	16.87	430	.0026
5/8	1260	14.39	206	.0057	3280	21.82	537	.0033	2520	16.87	413	.0033
3/4	1100	15.37	216	.0070	2710	21.82	533	.0040	2100	16.87	413	.0040
1	850	12.45	223	.0073	2040	17.67	534	.0043	1590	13.67	417	.0043

RPM = rev./min.
Feed = inch/min.
SFM = ft/min
Fz = inch/tooth

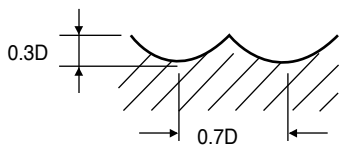


CARBIDE, 4 FLUTE BALL NOSE

UGMF91 SERIES

WORK MATERIAL	P								K				N			
	CARBON STEELS ALLOY STEELS TOOL STEELS				CARBON STEELS ALLOY STEELS TOOL STEELS				CAST IRON				ALUMINIUM ALLOYS			
HARDNESS	~ HRc 30				HRc 30 ~ HRc 40											
STRENGTH	~ 1000N/mm²				1000N/mm² ~ 1300N/mm²											
DIAMETER	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz	RPM	FEED	SFM	Fz
1/8	5670	9.91	186	.0004	4790	4.46	157	.0002	8060	15.37	264	.0005	23440	27.28	768	.0003
3/16	3400	10.42	167	.0008	2770	4.46	136	.0004	4790	22.32	235	.0012	13860	32.25	681	.0006
1/4	2770	9.91	181	.0009	2380	4.46	156	.0005	3910	24.31	256	.0016	11840	32.25	776	.0007
3/8	1640	8.94	161	.0014	1390	4.46	137	.0008	2380	30.77	234	.0032	7060	36.71	694	.0013
1/2	1390	8.43	182	.0015	1200	4.46	157	.0009	2020	30.77	265	.0038	5920	42.65	776	.0018
5/8	1070	8.43	175	.0020	880	4.46	144	.0013	1510	31.74	247	.0052	4410	36.71	722	.0021
3/4	980	8.43	193	.0022	800	4.46	157	.0014	1320	31.74	259	.0060	4030	36.71	792	.0023
1	770	6.83	202	.0022	630	3.61	165	.0014	1020	25.71	267	.0063	3160	29.73	828	.0024

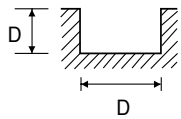
RPM = rev./min.
Feed = inch/min.
SFM = ft/min
Fz = inch/tooth



CARBIDE, 2 FLUTE - SLOTTING

E5020, E5244, E5011, E5026, E5022, E5025 SERIES

MATERIAL	P						M		K		N			
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS TITANIUM ALLOYS		CAST IRON		ALUMINUM ALLOYS		COPPER. BRASS NON-FERROUS METALS	
HARDNESS	~ HRc 20		HRc 20 ~ HRc 30		HRc 30 ~ HRc 40									
STRENGTH	500 ~ 800N/mm²		800 ~ 10 00N/mm²		1000 ~ 1300N/mm²									
DIAMETER	RPM	FEED	RPM	FEED	FEED	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	5500	3.2	4800	2.8	4000	2.2	8000	2.6	6500	5.9	16000	12.6	12000	9.5
1/8	3700	3.5	3200	3.2	2600	2.4	5300	2.6	4200	5.9	11000	12.6	8000	9.5
5/32	2800	3.5	2400	3.2	2000	2.4	4000	2.6	3200	5.9	8000	12.6	6000	9.5
3/16	2200	3.5	1900	3.2	1600	2.4	3200	2.6	2500	5.9	6400	12.6	4800	9.5
1/4	1800	3.5	1600	3.2	1300	2.4	2600	2.6	2100	7.1	5300	13.4	4000	10.2
5/16	1400	3.5	1200	3.2	1000	2.4	2000	2.6	1600	7.5	4000	13.4	3000	10.2
3/8	1100	3.5	950	3.2	800	2.4	1600	2.6	1300	7.9	3200	13.4	2400	10.2
1/2	900	3.5	800	3.2	660	2.4	1300	2.6	1000	8.3	2600	13.4	2000	10.2
9/16	800	3.5	700	3.2	570	2.4	1100	2.6	900	8.7	2300	13.4	1700	10.2
5/8	700	3.9	600	3.4	500	3.0	1000	3.0	800	8.9	2000	13.4	1500	10.2
13/16	550	3.9	480	3.4	400	3.0	800	3.2	640	9.5	1600	13.4	1200	10.2



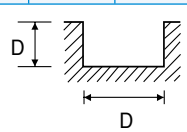
※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min. FEED = inch/min.

CARBIDE, 2 FLUTE TiAlN "F" COATED - SLOTTING

EH020, EH244, EH011, EH026, EH022, EH025 SERIES

MATERIAL	P						M		K		N			
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS TITANIUM ALLOYS		CAST IRON		ALUMINUM ALLOYS		COPPER. BRASS NON-FERROUS METALS	
HARDNESS	~ HRc 20		HRc 20 ~ HRc 30		HRc 30 ~ HRc 40									
STRENGTH	500 ~ 800N/mm²		800 ~ 1000N/mm²		1000 ~ 1300N/mm²									
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	8640	4.7	7440	4.3	6240	3.3	12000	4.0	10200	9.4	24000	19.9	18000	14.6
1/8	5760	5.7	5040	5.0	4080	3.8	8280	4.0	6600	9.4	16800	19.9	12000	14.6
5/32	4370	5.7	3720	5.0	3120	3.8	6240	4.0	5040	9.4	12000	19.9	9600	14.6
3/16	3430	5.7	3000	5.0	2400	3.8	5040	4.0	3960	9.4	9960	19.9	7440	14.6
1/4	2880	5.7	2400	5.0	2040	3.8	4080	4.0	3240	10.9	8280	20.8	6240	16.1
5/16	2160	5.7	1800	5.0	1560	3.8	3120	4.0	2400	11.8	6240	20.8	4800	16.1
3/8	1680	5.7	1440	5.0	1200	3.8	2400	4.0	2040	12.3	5040	20.8	3720	16.1
1/2	1440	5.7	1200	5.0	1030	3.8	2040	4.0	1560	12.8	4080	20.8	3120	16.1
9/16	1200	5.7	1080	5.0	890	3.8	1680	4.0	1440	13.2	3600	20.8	2640	16.1
5/8	1080	6.1	960	5.2	780	4.7	1560	4.8	1200	13.7	3120	20.8	2400	16.1
13/16	880	6.1	740	5.2	620	4.7	1200	4.8	1000	14.6	2400	20.8	1870	16.1



※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min. FEED = inch/min.

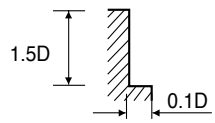
CARBIDE END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE - SIDE CUTTING

E5021, E5245, E5012, E5065, E5023, E5024, E5216 SERIES

MATERIAL	P						M		K		N			
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS TITANIUM ALLOYS		CAST IRON		ALUMINUM ALLOYS		COPPER. BRASS NON-FERROUS METALS	
HARDNESS	~ HRc 20		HRc 20 ~ HRc 30		HRc 30 ~ HRc 40									
STRENGTH	500 ~ 800N/mm²		800 ~ 1000N/mm²		1000 ~ 1300N/mm²									
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	5500	9.5	4800	8.3	4000	6.3	8000	7.9	6500	17.7	16000	37.8	12000	25.4
1/8	3700	10.6	3200	9.5	2600	7.1	5300	7.9	4200	17.7	11000	37.8	8000	25.4
5/32	2800	10.6	2400	9.5	2000	7.1	4000	7.9	3200	17.7	8000	37.8	6000	25.4
3/16	2200	10.6	1900	9.5	1600	7.1	3200	7.9	2500	17.7	6400	37.8	4800	25.4
1/4	1800	10.6	1600	9.5	1300	7.1	2600	7.9	2100	21.3	5300	40.2	4000	30.7
5/16	1400	10.6	1200	9.5	1000	7.1	2000	7.9	1600	22.4	4000	40.2	3000	30.7
3/8	1100	10.6	950	9.5	800	7.1	1600	7.9	1300	23.6	3200	40.2	2400	30.7
1/2	900	10.6	800	9.5	660	7.1	1300	7.9	1000	24.8	2600	40.2	2000	30.7
9/16	800	10.6	700	9.5	570	7.1	1100	7.9	900	26.0	2300	40.2	1700	30.7
5/8	700	11.8	600	10.2	500	8.7	1000	8.9	800	26.8	2000	40.2	1500	30.7
13/16	550	11.8	480	10.2	400	8.7	800	9.5	640	28.4	1600	40.2	1200	30.7



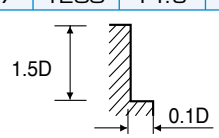
※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min. FEED = inch/min.

CARBIDE, 4 FLUTE TiAlN "F" COATED - SIDE CUTTING

EH021, EH245, EH012, EH065, EH023, EH024, EH216 SERIES

MATERIAL	P						M		K		N			
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS TITANIUM ALLOYS		CAST IRON		ALUMINUM ALLOYS		COPPER. BRASS NON-FERROUS METALS	
HARDNESS	~ HRc 20		HRc 20 ~ HRc 30		HRc 30 ~ HRc 40									
STRENGTH	500 ~ 800N/mm²		800 ~ 1000N/mm²		1000 ~ 1300N/mm²									
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	8640	14.7	7440	12.8	6240	9.9	12000	12.3	10200	27.4	24000	56.7	18000	44.4
1/8	5760	16.5	5040	14.6	4080	10.9	8280	12.3	6600	27.4	16800	56.7	12000	44.4
5/32	4370	16.5	3720	14.6	3120	10.9	6240	12.3	5040	27.4	12000	56.7	9600	44.4
3/16	3430	16.5	3000	14.6	2400	10.9	5040	12.3	3960	27.4	9960	56.7	7440	44.4
1/4	2880	16.5	2400	14.6	2040	10.9	4080	12.3	3240	33.1	8280	61.4	6240	47.2
5/16	2160	16.5	1800	14.6	1560	10.9	3120	12.3	2400	35.0	6240	61.4	4800	47.2
3/8	1680	16.5	1440	14.6	1200	10.9	2400	12.3	2040	36.9	5040	61.4	3720	47.2
1/2	1440	16.5	1200	14.6	1030	10.9	2040	12.3	1560	38.8	4080	61.4	3120	47.2
9/16	1200	16.5	1080	14.6	890	10.9	1680	12.3	1440	40.6	3600	61.4	2640	47.2
5/8	1080	18.4	960	16.1	780	13.7	1560	13.7	1200	41.6	3120	61.4	2400	47.2
13/16	880	18.4	740	16.1	620	13.7	1200	14.6	1000	36.9	2400	61.4	1870	47.2



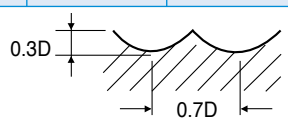
※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min. FEED = inch/min.

CARBIDE, 2 FLUTE BALL NOSE

E5249, E5014, E5018, E5251 SERIES

MATERIAL	P				K		N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CAST IRON		ALUMINUM ALLOYS	
HARDNESS	~ HRc30		HRc30 ~ HRc 40					
STRENGTH	~ 1000N/mm²		1000 ~ 1300N/mm²					
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	5200	3.5	4400	1.8	7300	5.9	21500	11.0
1/8	3500	3.9	2900	1.8	4900	6.3	14300	11.0
5/32	2600	3.9	2100	1.8	3600	7.9	10900	11.0
3/16	2100	4.1	1700	1.8	2900	9.1	8800	13.0
1/4	1700	3.9	1430	1.8	2400	9.9	7260	13.0
5/16	1270	3.7	1100	1.8	1800	12.6	5500	15.0
3/8	1000	3.7	870	1.8	1430	12.6	4300	15.0
1/2	870	3.4	730	1.8	1200	12.6	3600	17.3
9/16	750	3.4	620	1.8	1000	12.8	3000	17.3
5/8	650	3.4	540	1.8	920	12.8	2700	15.0
11/16	580	3.4	480	1.8	810	12.8	2400	15.0
13/16	500	3.4	430	1.8	730	11.4	2100	15.0



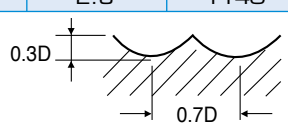
※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min. FEED = inch/min.

CARBIDE, 2 FLUTE BALL NOSE TiAlN "F" COATED

EH249, EH014, EF018, EF251 SERIES

MATERIAL	P				K		N	
	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	RPM	FEED	RPM	FEED	RPM	FEED
3/32	8110	5.7	6840	2.8	11400	9.4	33600	17.0
1/8	5400	6.1	4560	2.8	7680	9.9	22320	17.0
5/32	4080	6.1	3240	2.8	5640	12.3	16800	17.0
3/16	3240	6.4	2640	2.8	4560	14.2	13200	20.3
1/4	2640	6.1	2270	2.8	3720	15.6	11280	20.3
5/16	1920	5.7	1680	2.8	2760	19.9	8640	23.2
3/8	1560	5.7	1320	2.8	1680	19.9	6720	23.2
1/2	1320	5.2	1140	2.8	1920	19.9	5640	26.9
9/16	1180	5.2	960	2.8	1560	19.9	4680	26.9
5/8	1020	5.2	840	2.8	1440	19.9	4200	23.2
11/16	900	5.2	740	2.8	1200	19.9	3720	23.2
13/16	780	5.2	670	2.8	1140	18.0	3240	23.2



※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min. FEED = inch/min.

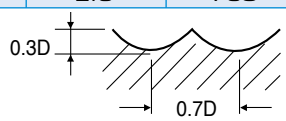
CARBIDE END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 4 FLUTE BALL NOSE

E5250, E5060, E5062, E5252 SERIES

MATERIAL	P		P		K		N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CAST IRON		IRON RPM FEED ALUMINUM ALLOYS	
HARDNESS	~ HRc30		HRc30 ~ HRc40					
STRENGTH	~ 1000N/mm²		1000 ~ 1300N/mm²					
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	5200	5.5	4400	2.8	7300	9.1	21500	16.5
1/8	3500	5.9	2900	2.8	4900	9.5	14300	16.5
5/32	2600	5.9	2100	2.8	3600	11.8	10900	16.5
3/16	2100	6.3	1700	2.8	2900	13.8	8800	19.7
1/4	1700	5.9	1430	2.8	2400	15.0	7260	19.7
5/16	1270	5.5	1100	2.8	1800	18.9	5500	22.4
3/8	1000	5.5	870	2.8	1430	18.9	4300	22.4
1/2	870	5.1	730	2.8	1200	18.9	3600	26.0
9/16	750	5.1	620	2.8	1000	19.3	3000	26.0
5/8	650	5.1	540	2.8	920	19.3	2700	22.4
11/16	580	5.1	480	2.8	810	19.3	2400	22.4
13/16	500	5.1	430	2.8	730	17.3	2100	22.4



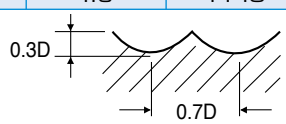
※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min. FEED = inch/min.

CARBIDE, 4 FLUTE BALL NOSE TiAlN “F” COATED

EH250, EH060, EH062, EH252 SERIES

MATERIAL	P		P		K		N	
	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	RPM	FEED	RPM	FEED	RPM	FEED
3/32	8110	8.5	6840	4.3	11400	14.2	33600	26.0
1/8	5400	9.4	4560	4.3	7680	14.6	22320	26.0
5/32	4080	9.4	3240	4.3	5640	18.4	16800	26.0
3/16	3240	9.9	2640	4.3	4560	21.3	13200	30.7
1/4	2640	9.4	2270	4.3	3720	23.2	11280	30.7
5/16	1920	8.5	1680	4.3	2760	29.3	8640	35.0
3/8	1560	8.5	1320	4.3	2270	29.3	6720	35.0
1/2	1320	8.0	1140	4.3	1920	29.3	5640	40.6
9/16	1180	8.0	960	4.3	1560	30.2	4680	40.6
5/8	1020	8.0	840	4.3	1440	30.2	4200	35.0
11/16	900	8.0	740	4.3	1200	30.2	3720	35.0
13/16	780	8.0	670	4.3	1140	26.9	3240	35.0



※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min. FEED = inch/min.

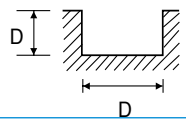
CARBIDE END MILLS

RECOMMENDED CUTTING CONDITIONS

CARBIDE, 2 FLUTE TiAlN-COATED - SLOTTING

EH527 SERIES

MATERIAL	P						M		K		N			
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS TITANIUM ALLOYS		CAST IRON		ALUMINUM ALLOYS		COPPER. BRASS NON-FERROUS METALS	
HARDNESS	~ HRc 20		HRc 20 ~ HRc 30		HRc 30 ~ HRc 40									
STRENGTH	500 ~ 800N/mm²		800 ~ 1000N/mm²		1000 ~ 1300N/mm²									
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	7700	4.3	6720	3.9	5600	3.0	11200	3.5	9100	8.3	22400	17.7	16800	13.2
3.0	5180	4.9	4480	4.3	3640	3.4	7420	3.5	5880	8.3	15400	17.7	11200	13.2
4.0	3920	4.9	3360	4.3	2800	3.4	5600	3.5	4480	8.3	11200	17.7	8400	13.2
5.0	3080	4.9	2660	4.3	2240	3.4	4480	3.5	3500	8.3	8960	17.7	6720	13.2
6.0	2520	4.9	2240	4.3	1820	3.4	3640	3.5	2940	9.8	7420	18.7	5600	14.4
8.0	1960	4.9	1680	4.3	1400	3.4	2800	3.5	2240	10.4	5600	18.7	4200	14.4
10.0	1540	4.9	1330	4.3	1120	3.4	2240	3.5	1820	11.0	4480	18.7	3360	14.4
12.0	1260	4.9	1120	4.3	924	3.4	1820	3.5	1400	11.6	3640	18.7	2800	14.4
14.0	1120	4.9	980	4.3	798	3.4	1540	3.5	1260	12.2	3220	18.7	2380	14.4
16.0	980	5.5	840	4.7	700	4.1	1400	4.1	1120	12.4	2800	18.7	2100	14.4
20.0	770	5.5	672	4.7	560	4.1	1120	4.3	900	13.2	2240	18.7	1680	14.4



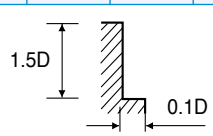
※The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min. FEED = inch/min.

CARBIDE, 4 FLUTE TiAlN-COATED - SIDE CUTTING

EH540 SERIES

MATERIAL	P						M		K		N			
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS TITANIUM ALLOYS		CAST IRON		ALUMINUM ALLOYS		COPPER. BRASS NON-FERROUS METALS	
HARDNESS	~ HRc 20		HRc 20 ~ HRc 30		HRc 30 ~ HRc 40									
STRENGTH	500 ~ 800N/mm²		800 ~ 1000N/mm²		1000 ~ 1300N/mm²									
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	7700	13.2	6720	11.6	5600	8.9	11200	11.0	9100	24.8	22400	53.0	16800	39.8
3.0	5180	15.0	4480	13.2	3640	9.8	7420	11.0	5880	24.8	15400	53.0	11200	39.8
4.0	3920	15.0	3360	13.2	2800	9.8	5600	11.0	4480	24.8	11200	53.0	8400	39.8
5.0	3080	15.0	2660	13.2	2240	9.8	4480	11.0	3500	24.8	8960	53.0	6720	39.8
6.0	2520	15.0	2240	13.2	1820	9.8	3640	11.0	2940	29.7	7420	56.3	5600	42.9
8.0	1960	15.0	1680	13.2	1400	9.8	2800	11.0	2240	31.5	5600	56.3	4200	42.9
10.0	1540	15.0	1330	13.2	1120	9.8	2240	11.0	1820	33.1	4480	56.3	3360	42.9
12.0	1260	15.0	1120	13.2	920	9.8	1820	11.0	1400	34.7	3640	56.3	2800	42.9
14.0	1120	15.0	980	13.2	800	9.8	1540	11.0	1260	36.4	3220	56.3	2380	42.9
16.0	980	16.5	840	14.4	700	12.2	1400	12.4	1120	37.4	2800	56.3	2100	42.9
20.0	770	16.5	670	14.4	560	12.2	1120	13.2	900	39.8	2240	56.3	1680	42.9



※The FEED, in long & extra long types, should be reduced by around 50%

RPM = rev./min. FEED = inch/min.

PROPERTIES AND APPLICATIONS OF COATINGS

	Titanium Nitride	Titanium Carbonitride	Super TiAlN "F" Coatings	Super TiAlN "E" Coatings
Hardness	82 Rc	92 Rc	92 Rc	95 Rc
Coefficient of Friction Against Dry Steel (.8)	.4	.4	.4	.4
Coating Thickness 3 Microns = .0001	1- 4	1- 4	1- 5	1- 3
Maximum Working Temperature	1100 F	750 F	1470 F	1470 F
Coating Color	Gold	Blue - Gray	Violet - Gray	Violet - Gray
Key Characteristics	Good General Purpose	Good Wear Resistance Good Toughness Moderate Heat Resistance	Enhanced Toughness High Heat Resistance	High Hardness Enhanced Toughness High Heat Resistance
Primary Applications	Machining of Iron Based Materials	General Machining of Various Materials	Steel, Cast Iron, Stainless, Nickel Based Alloys, High Temp and Titanium Alloys, High Speed Machining Wet, Dry, or Semi Dry Condition	Hardened Workpieces, Steel, Cast Iron, Stainless, Nickel Based Alloys, High Temp and Titanium Alloys, Machining Wet, Dry, or Semi Dry Condition
YG:TYLON SUPER TiAlN COATED TOOLS CAN BE RUN 20% - 50% FASTER THAN TiN or TiCN ON MOST MATERIALS				

HSS

Being the best through innovation



ONLY ONE COATED PM60 END MILLS

- Perfect solution to protect carbide chipping problems under vibrations

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
GYG64		PM60, 2 FLUTE (Center Cut)	D1/8	D1	1130
GYG67		PM60, 4 FLUTE BALL NOSE	R1/16	R1/2	1131
GYG65		PM60, 4 FLUTE (Center Cut)	D1/8	D1	1132
GYG66		PM60, 4 FLUTE MULTIPLE HELIX (Center Cut)	D1/8	D1	1133
GYG69		PM60, MULTI FLUTE MULTIPLE HELIX CORNER RADIUS ROUGHING - FINE (Center Cut)	D1/4	D1	1134
GYG68		PM60, MULTI FLUTE ROUGHING- FINE (Center Cut)	D1/4	D1-1/4	1135
GYG70		PM60, MULTI FLUTE ROUGHING - COARSE (Center Cut)	D1/4	D1-1/4	1136
		RECOMMENDED CUTTING CONDITIONS			1137

◎ : Excellent ○ : Good

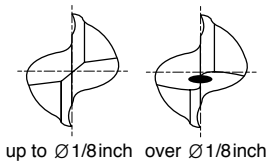
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○	○			◎	◎	○						
◎	◎	○	○			◎	◎	○						
◎	◎	○	○			◎	◎	○						
◎	◎	○	○			◎	◎	○						
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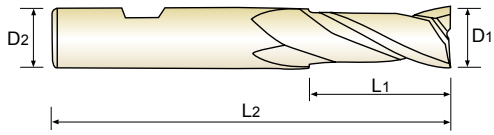
ONLY ONE END MILLS

GYG64 SERIES FLAT SHANK

PM60, 2 FLUTE (Center Cut)







PM 60 | 2 | 30° | FLAT

P. 1137

Unit : Inch

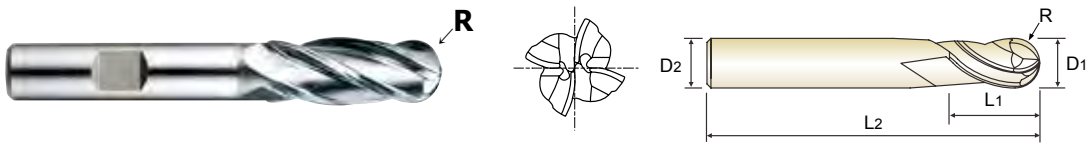
EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
Y-COATED	D_1	D_2	L_1	L_2
GYG64008	**1/8**	3/8	3/8	2-5/16
GYG64012	**3/16**	3/8	7/16	2-5/16
GYG64016	**1/4**	3/8	1/2	2-5/16
GYG64020	**5/16**	3/8	9/16	2-5/16
GYG64024	**3/8**	3/8	9/16	2-5/16
GYG64032	**1/2**	1/2	1	3
GYG64040	**5/8**	5/8	1-5/16	3-7/16
GYG64048	**3/4**	3/4	1-5/16	3-7/16
GYG64064	**1**	1	1-5/8	4-1/8

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0 ~ −.0012	h6

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○	○			◎	◎	○						

PM60, 4 FLUTE BALL NOSE



PM 60 | 4 | 30° | R ±.001 | FLAT

P.1138

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
Y-COATED	R	D_1	D_2	L_1	L_2
GYG67008	R1/16	**1/8**	3/8	3/8	2-5/16
GYG67012	R3/32	**3/16**	3/8	1/2	2-3/8
GYG67016	R1/8	**1/4**	3/8	5/8	2-7/16
GYG67020	R5/32	**5/16**	3/8	3/4	2-1/2
GYG67024	R3/16	**3/8**	3/8	3/4	2-1/2
GYG67032	R1/4	**1/2**	1/2	1-1/4	3-1/4
GYG67040	R5/16	**5/8**	5/8	1-5/8	3-3/4
GYG67048	R3/8	**3/4**	3/4	1-5/8	3-7/8
GYG67064	R1/2	**1**	1	2	4-1/2

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0 ~ −.0012	h6

◎ : Excellent ○ : Good

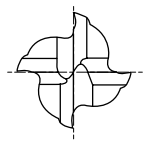
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○	○			◎	◎	○						

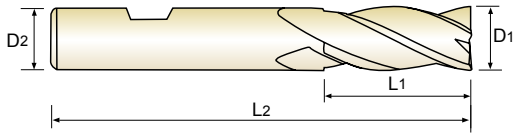
ONLY ONE END MILLS

GYG65 SERIES FLAT SHANK

PM60, 4 FLUTE (Center Cut)







PM 60 | 4 | 30° | FLAT | P.1139

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
Y-COATED	D_1	D_2	L_1	L_2
GYG65008	**1/8**	3/8	3/8	2-5/16
GYG65012	**3/16**	3/8	1/2	2-3/8
GYG65016	**1/4**	3/8	5/8	2-7/16
GYG65020	**5/16**	3/8	3/4	2-1/2
GYG65024	**3/8**	3/8	3/4	2-1/2
GYG65032	**1/2**	1/2	1-1/4	3-1/4
GYG65040	**5/8**	5/8	1-5/8	3-3/4
GYG65048	**3/4**	3/4	1-5/8	3-7/8
GYG65056	**7/8**	7/8	1-7/8	4-1/8
GYG65064	**1**	1	2	4-1/2

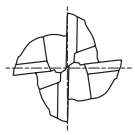
Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0 ~ −.0012	h6

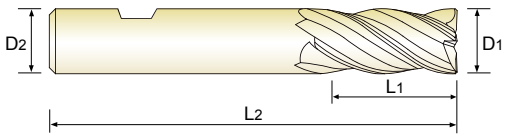
◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○	○			◎	◎	○						

PM60, 4 FLUTE MULTIPLE HELIX (Center Cut)







PM 60 | 4 | M-Helix | FLAT | P.1140

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
Y-COATED	D_1	D_2	L_1	L_2
GYG66008	**1/8**	3/8	3/8	2-5/16
GYG66012	**3/16**	3/8	1/2	2-3/8
GYG66016	**1/4**	3/8	5/8	2-7/16
GYG66020	**5/16**	3/8	3/4	2-1/2
GYG66024	**3/8**	3/8	3/4	2-1/2
GYG66032	**1/2**	1/2	1-1/4	3-1/4
GYG66040	**5/8**	5/8	1-5/8	3-3/4
GYG66048	**3/4**	3/4	1-5/8	3-7/8
GYG66064	**1**	1	2	4-1/2

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0 ~ −.0012	h6

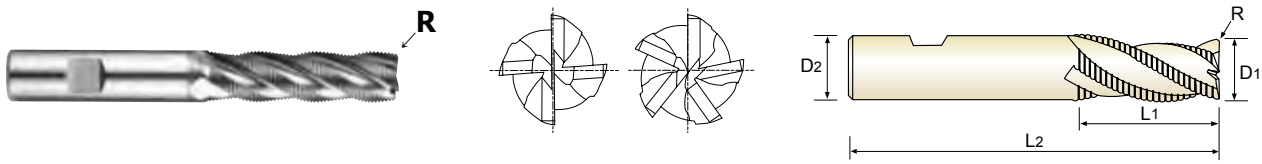
◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○	○			◎	◎	○						

ONLY ONE END MILLS

GYG69 SERIES FLAT SHANK

PM60, MULTI FLUTE MULTIPLE HELIX CORNER RADIUS ROUGHING - FINE (Center Cut)



PM 60 | 4-5 | M-Helix | FINE | FLAT P.1142

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
Y-COATED	R	D_1	D_2	L_1	L_2	
GYG69016	R.020	**1/4**	3/8	5/8	2-7/16	4
GYG69020	R.020	**5/16**	3/8	3/4	2-1/2	4
GYG69024	R.020	**3/8**	3/8	3/4	2-1/2	4
GYG69032	R.020	**1/2**	1/2	1-1/4	3-1/4	4
GYG69040	R.040	**5/8**	5/8	1-1/4	3-3/8	5
GYG69048	R.040	**3/4**	3/4	1-5/8	3-7/8	5
GYG69064	R.040	**1**	1	2	4-1/2	5

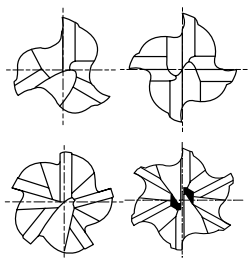
Mill Dia. Tolerance(inch)
0 ~ +.0030

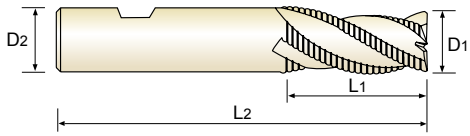
◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○	○			◎	◎	○						

PM60, MULTI FLUTE ROUGHING- FINE (Center Cut)







PM 60 | 3-6 | 30° | FINE | FLAT

P.1141

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
Y-COATED	D_1	D_2	L_1	L_2	
GYG68016	1/4	3/8	5/8	2-7/16	3
GYG68020	5/16	3/8	3/4	2-1/2	3
GYG68901	5/16	3/8	1-3/8	3_3/16	3
GYG68024	3/8	3/8	3/4	2-1/2	4
GYG68902	3/8	3/8	1-1/2	3-1/4	4
GYG68032	1/2	1/2	1-1/4	3-1/4	4
GYG68903	1/2	1/2	2	4	4
GYG68040	5/8	5/8	1-5/8	3-3/4	4
GYG68904	5/8	5/8	2-1/2	4-5/8	4
GYG68048	3/4	3/4	1-5/8	3-7/8	4
GYG68905	3/4	3/4	2-1/2	4-3/4	4
GYG68906	3/4	3/4	3	5-1/4	4
GYG68064	1	1	2	4-1/2	5
GYG68907	1	1	4	6-1/2	5
GYG68116	1-1/4	1-1/4	2	4-1/2	6

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

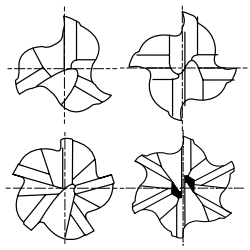
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○	○			◎	◎	○						

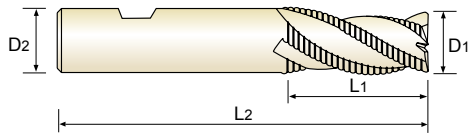
ONLY ONE END MILLS

GYG70 SERIES FLAT SHANK

PM60, MULTI FLUTE ROUGHING- COARSE (Center Cut)







PM 60 | 3-6 | 30° | COARSE | FLAT

P.1141

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
Y-COATED	D_1	D_2	L_1	L_2	
GYG70016	**1/4**	3/8	5/8	2-7/16	3
GYG70020	**5/16**	3/8	3/4	2-1/2	3
GYG70024	**3/8**	3/8	3/4	2-1/2	4
GYG70032	**1/2**	1/2	1-1/4	3-1/4	4
GYG70040	**5/8**	5/8	1-5/8	3-3/4	4
GYG70048	**3/4**	3/4	1-5/8	3-7/8	4
GYG70064	**1**	1	2	4-1/2	5
GYG70116	**1-1/4**	1-1/4	2	4-1/2	6

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

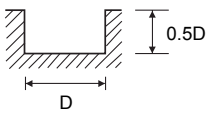
◎ : Excellent ○ : Good

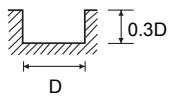
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○	○			◎	◎	○						

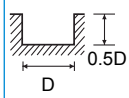
PM60, 2 FLUTE (Center Cut)

GYG64 SERIES

MATERIAL	P												M	
	STRUCTURAL STEELS CARBON STEELS		STRUCTURAL STEELS CARBON STEELS CAST IRONS		CARBON STEELS ALLOY STEELS TOOL STEELS		PREHARDENED STEELS ALLOY STEELS TOOL STEELS		ALLOY STEELS TOOL STEELS		ALLOY STEELS TOOL STEELS		STAINLESS STEELS	
HARDNESS			~ HRc20		HRc20 ~ HRc30		HRc30 ~ HRc35		HRc35 ~ HRc40		HRc40 ~ HRc45			
STRENGTH	~ 500N/mm²		500 ~ 800N/mm²		800 ~ 1000N/mm²		1000 ~ 1100N/mm²		1100 ~ 1300N/mm²		1300 ~ 1400N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	5710	7.20	4610	5.81	3810	5.10	2610	3.49	2010	2.68	1400	1.99	2210	3.13
3/16	4950	12.85	4080	9.95	3280	9.03	2140	4.88	1670	3.68	1200	2.75	1870	4.13
1/4	3960	11.85	3310	9.38	2610	8.62	1650	4.82	1300	3.69	900	2.56	1450	4.12
5/16	3130	13.05	2650	11.46	2170	9.55	1400	5.64	1080	4.01	760	2.82	1200	4.45
3/8	2640	14.76	2270	13.24	1840	11.43	1140	6.17	870	4.86	630	3.60	970	5.42
1/2	2030	12.15	1650	10.81	1300	9.34	850	5.30	650	3.64	450	2.52	730	4.06
5/8	1620	12.66	1380	9.26	1080	8.53	680	4.83	540	3.84	380	2.64	580	4.17
3/4	1200	10.99	990	8.23	890	7.46	550	4.52	450	3.52	320	2.50	500	3.99
1	890	7.22	750	6.63	580	5.40	430	3.52	300	2.37	200	1.50	330	2.51





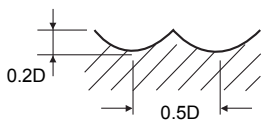


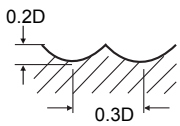
RPM = rev./min.
FEED = inch/min.

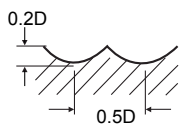
PM60, 4 FLUTE BALL NOSE

GYG67 SERIES

MATERIAL	P										M	
	STRUCTURAL STEELS CARBON STEELS		STRUCTURAL STEELS CARBON STEELS CAST IRONS		CARBON STEELS ALLOY STEELS TOOL STEELS		PREHARDENED STEELS ALLOY STEELS TOOL STEELS		ALLOY STEELS TOOL STEELS		STAINLESS STEELS	
HARDNESS			~ HRc20		HRc20 ~ HRc30		HRc30 ~ HRc40		HRc40 ~ HRc45			
STRENGTH	~ 500N/mm²		500 ~ 800N/mm²		800 ~ 1000N/mm²		1000 ~ 1300N/mm²		1300 ~ 1400N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	8320	23.59	6620	15.63	4410	8.34	2310	3.63	1600	2.53	2510	3.95
3/16	6270	29.13	4950	19.65	3260	10.71	1690	4.99	1190	3.51	1880	5.97
1/4	5010	32.37	3960	21.83	2610	11.91	1350	5.54	950	3.90	1500	6.63
5/16	4050	37.64	3130	24.63	2170	14.32	1080	5.97	760	4.20	1200	7.01
3/8	3480	44.88	2640	29.52	1770	17.29	870	7.53	600	5.40	940	7.96
1/2	2610	35.72	2030	23.34	1350	13.43	650	5.54	450	3.84	730	6.52
5/8	2070	34.48	1560	22.91	1080	12.96	540	5.80	380	4.08	600	6.63
3/4	1700	31.41	1250	20.72	870	11.22	450	5.40	320	3.75	500	6.00
1	1130	21.67	880	14.51	550	8.16	300	3.55	200	2.24	330	3.90



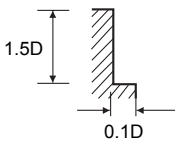
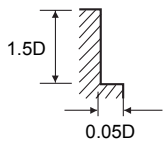
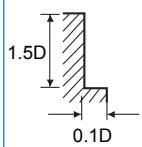




RPM =rev./min.
FEED = inch/min.

PM60, 4 FLUTE (Center Cut)

GYG65 SERIES

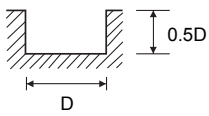
MATERIAL	P												M	
	STRUCTURAL STEELS CARBON STEELS		STRUCTURAL STEELS CARBON STEELS CAST IRONS		CARBON STEELS ALLOY STEELS TOOL STEELS		PREHARDENED STEELS ALLOY STEELS TOOL STEELS		ALLOY STEELS TOOL STEELS		ALLOY STEELS TOOL STEELS		STAINLESS STEELS	
HARDNESS			~ HRc20		HRc20 ~ HRc30		HRc30 ~ HRc35		HRc35 ~ HRc40		HRc40 ~ HRc45			
STRENGTH	~ 500N/mm²		500 ~ 800N/mm²		800 ~ 1000N/mm²		1000 ~ 1100N/mm²		1100 ~ 1300N/mm²		1300 ~ 1400N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	7520	17.76	6820	16.11	5010	11.05	3110	8.32	2710	5.54	1900	3.90	3010	6.16
3/16	5550	25.34	5010	20.53	3680	16.21	2540	11.20	2140	7.75	1470	5.56	2340	8.47
1/4	4410	24.32	4060	19.82	2960	14.91	2060	10.36	1650	8.08	1150	5.63	1800	8.81
5/16	3730	27.02	3130	22.66	2410	17.43	1680	11.41	1400	8.84	960	6.06	1520	9.36
3/8	2910	31.14	2640	26.19	2010	18.63	1270	13.40	1140	10.02	800	7.20	1240	10.91
1/2	2260	25.22	2030	21.42	1580	16.41	1000	10.74	800	8.08	580	5.90	900	8.95
5/8	1950	24.20	1680	20.43	1200	16.11	820	10.49	660	7.92	460	5.52	740	8.76
3/4	1570	21.77	1320	18.29	990	13.66	670	8.63	550	6.95	380	4.90	600	7.58
7/8	1250	19.04	1130	14.97	820	11.96	560	7.48	470	6.03	330	4.20	530	6.68
1	1180	17.25	990	14.03	750	10.66	490	6.93	430	5.84	300	4.17	460	6.43
														

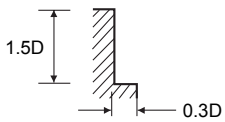
RPM = rev./min.
FEED = inch/min.

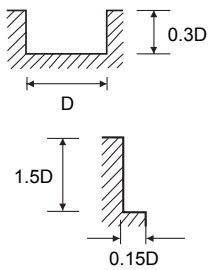
PM60, 4 FLUTE MULTIPLE HELIX (Center Cut)

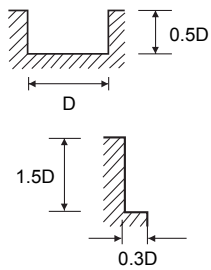
GYG66 SERIES

MATERIAL	P								M	
	STRUCTURAL STEELS CARBON STEELS CAST IRONS		CARBON STEELS ALLOY STEELS TOOL STEELS		PREHARDENED STEELS ALLOY STEELS TOOL STEELS		ALLOY STEELS TOOL STEELS		STAINLESS STEELS	
HARDNESS	~ HRc20		HRc20 ~ HRc30		HRc30 ~ HRc35		HRc35 ~ HRc45			
STRENGTH	~ 800N/mm²		800 ~ 1000N/mm²		1000 ~ 1300N/mm²		1100 ~ 1400N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	7020	5.53	6420	5.05	4410	3.47	2710	1.71	4810	3.79
3/16	4680	8.84	4210	7.29	2940	5.09	1800	2.84	3210	6.57
1/4	3510	8.84	3210	8.08	2210	5.56	1350	2.98	2410	6.82
5/16	2810	12.38	2570	11.32	1760	7.78	1080	4.09	1930	8.79
3/8	2570	15.81	2340	14.37	1640	9.80	1000	5.05	1600	12.13
1/2	1930	14.29	1750	12.99	1230	9.09	730	4.58	1200	10.61
5/8	1540	12.89	1400	11.72	980	8.05	600	4.17	960	9.55
3/4	1290	13.17	1170	11.97	820	8.51	500	4.42	800	9.73
1	970	9.57	880	8.70	610	6.29	360	3.09	600	7.39







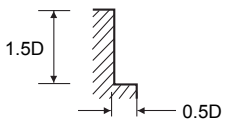


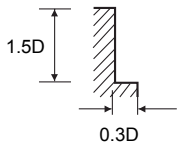
RPM = rev./min.
FEED = inch/min.

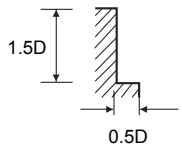
PM60, MULTI FLUTE ROUGHING (Center Cut)

GYG68, GYG70 SERIES

MATERIAL	P										M	
	STRUCTURAL STEELS CARBON STEELS		STRUCTURAL STEELS CARBON STEELS CAST IRONS		CARBON STEELS ALLOY STEELS TOOL STEELS		PREHARDENED STEELS ALLOY STEELS TOOL STEELS		ALLOY STEELS TOOL STEELS		STAINLESS STEELS	
HARDNESS			~ HRc20		HRc20 ~ HRc30		HRc30 ~ HRc40		HRc40 ~ HRc45			
STRENGTH	~ 500N/mm²		500 ~ 800N/mm²		800 ~ 1000N/mm²		1000 ~ 1300N/mm²		1300 ~ 1400N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	3160	10.07	2510	7.99	1800	5.12	1450	4.64	1050	3.48	1650	4.88
5/16	2890	13.98	2290	10.80	1680	7.56	1280	6.06	880	4.17	1440	6.65
3/8	2410	20.84	1900	15.90	1340	9.89	1140	7.87	800	5.68	1200	8.53
1/2	1800	18.47	1350	14.71	1030	10.36	850	8.05	580	5.45	900	9.09
5/8	1440	19.78	1140	15.66	800	10.99	660	8.44	460	5.96	720	9.66
3/4	1200	21.03	950	16.35	670	11.26	550	8.77	380	6.11	600	10.04
1	940	19.43	710	14.91	490	10.20	430	8.39	300	5.92	460	9.31
1 1/4	670	17.77	500	13.38	350	9.45	300	7.67	210	5.32	330	8.52







RPM =rev./min.
FEED = inch/min.

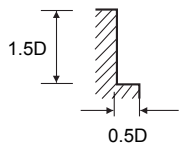
ONLY ONE END MILLS

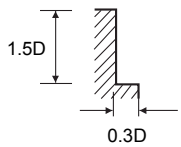
RECOMMENDED CUTTING CONDITIONS

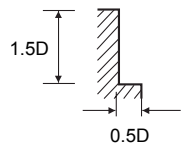
PM60, MULTI FLUTE MULTIPLE HELIX CORNER RADIUS ROUGHING - FINE (Center Cut)

GYG69 SERIES

MATERIAL	P										M	
	STRUCTURAL STEELS CARBON STEELS		STRUCTURAL STEELS CARBON STEELS CAST IRONS		CARBON STEELS ALLOY STEELS TOOL STEELS		PREHARDENED STEELS ALLOY STEELS TOOL STEELS		ALLOY STEELS TOOL STEELS		STAINLESS STEELS	
HARDNESS			~ HRc20		HRc20 ~ HRc30		HRc30 ~ HRc40		HRc40 ~ HRc45			
STRENGTH	~ 500N/mm²		500 ~ 800N/mm²		800 ~ 1000N/mm²		1000 ~ 1300N/mm²		1300 ~ 1400N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	3810	12.00	3010	9.95	2160	6.11	1750	5.53	1250	3.95	1960	5.85
5/16	3490	16.48	2770	13.07	2050	9.02	1520	7.20	1080	4.95	1720	8.15
3/8	2870	24.89	2270	18.97	1570	11.38	1340	9.47	940	6.48	1440	10.18
1/2	2180	22.32	1630	17.70	1230	12.19	1000	9.63	700	6.63	1080	10.86
5/8	1740	23.70	1380	18.79	960	13.07	800	10.42	560	7.18	860	11.71
3/4	1450	25.18	1140	19.46	800	13.58	670	10.66	470	7.37	740	12.16
1	1130	23.31	850	17.78	590	12.41	510	10.12	350	6.91	550	11.29







RPM = rev./min.
FEED = inch/min.

HSS

Being the best through innovation



SINE-POWER END MILLS

- High Performane HSS Rongher for Titanium and Titanium Alloys

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
E2F64		HSS Co8, 4&6 FLUTE	D3/4	D2	1146
		RECOMMENDED CUTTING CONDITIONS			1147

◎ : Excellent ○ : Good

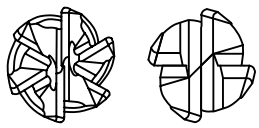
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
													◎	

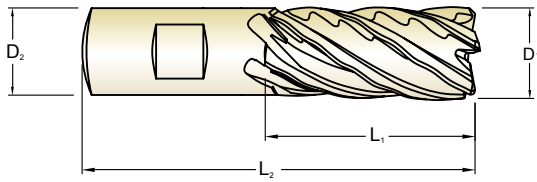
SINE-POWER END MILLS

E2F64 SERIES FLAT SHANK

HSSCo8, 4&6 FLUTE







HSS Co8 | 4&6 | 35° | C x 45° | FLAT

P.1147

Unit : Inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	Chamfer	No. of Flute
E2F64048	3/4	3/4	1 5/8	3 7/8	.030	4
E2F64901	3/4	3/4	2 1/4	4 1/2	.030	4
E2F64902	3/4	3/4	3	5 1/4	.030	4
E2F64064	1	1	2	4 1/2	.030	4
E2F64903	1	1	2	4 1/2	.030	6
E2F64904	1	1	3	5 1/2	.030	4
E2F64905	1	1	3	5 1/2	.030	6
E2F64906	1	1	4	6 1/2	.030	4
E2F64907	1	1	4	6 1/2	.030	6
E2F64116	1 1/4	1 1/4	2	4 1/2	.040	4
E2F64908	1 1/4	1 1/4	2	4 1/2	.040	6
E2F64909	1 1/4	1 1/4	3	5 1/2	.040	4
E2F64910	1 1/4	1 1/4	3	5 1/2	.040	6
E2F64911	1 1/4	1 1/4	4	6 1/2	.040	4
E2F64912	1 1/4	1 1/4	4	6 1/2	.040	6
E2F64132	1 1/2	1 1/4	2	4 1/2	.040	6
E2F64913	1 1/2	1 1/4	3	5 1/2	.040	6
E2F64914	1 1/2	1 1/4	4	6 1/2	.040	6
E2F64915	1 1/2	1 1/4	6	8 1/2	.040	6
E2F64200	2	2	2	5 3/4	.040	6
E2F64916	2	2	3	6 3/4	.040	6
E2F64917	2	2	4	7 3/4	.040	6
E2F64918	2	2	6	9 3/4	.040	6
E2F64919	2	2	8	11 3/4	.040	6

Cutting Dia. Tolerance(inch)	Shank Dia. Tolerance(inch)
0~ + .0030	- .0001~ - .0005

※ Radius, coatings and HSS-PM available on request

◎ : Excellent ○ : Good

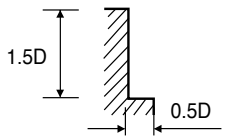
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
													◎	

HSSCo8, 4&6 FLUTE

E2F64 SERIES

SIDE CUTTING

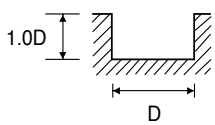
MATERIAL	S			
	TITANIUM ALLOYS		TITANIUM ALLOYS - DIFFICULT	
DIAMETER	RPM	Feed	RPM	Feed
3/4	382	4	306	3
1	287	4	229	3
1-1/4	229	4	183	3
1-1/2	191	4	153	3
2	143	4	115	3



RPM = rev./min.
FEED = inch/min.

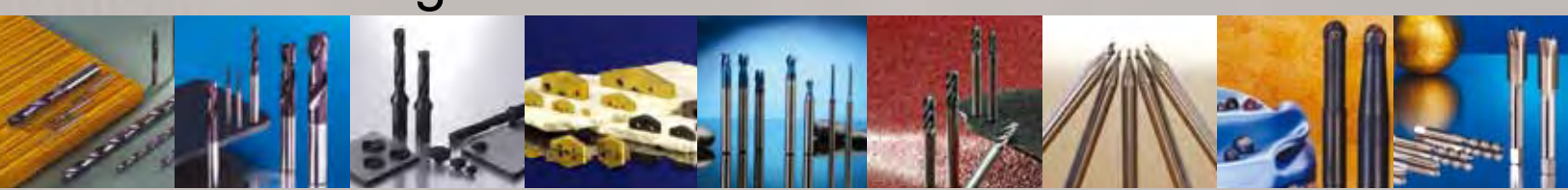
SLOTTING

MATERIAL	S			
	TITANIUM ALLOYS		TITANIUM ALLOYS - DIFFICULT	
DIAMETER	RPM	Feed	RPM	Feed
3/4	331	3	204	2
1	248	4	153	2
1-1/4	199	4	122	2
1-1/2	166	4	102	2
2	124	4	76	3



RPM = rev./min.
FEED = inch/min.

Global Cutting Tool Leader **YG-1**



HSS

YG

Being the best through innovation



TANK-POWER END MILLS

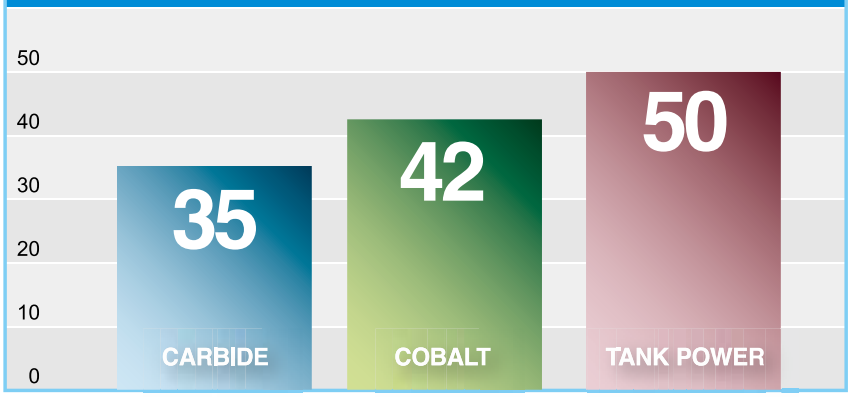
- **Next Generation of Powdered Metal End Mills**
  Higher Edge Strength & Feed Rates

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
INCH					
E9983		PREMIUM HSS-PM, 2 FLUTE REGULAR LENGTH ◆	D1/8	D1	**1152**
E9984		PREMIUM HSS-PM, 2 FLUTE REGULAR LENGTH DOUBLE ◆	D1/8	D1	**1153**
E9985		PREMIUM HSS-PM, 4 FLUTE REGULAR LENGTH ◆	D1/8	D1	**1154**
E9986		PREMIUM HSS-PM, 4 FLUTE REGULAR LENGTH DOUBLE ◆	D1/8	D1	**1155**
E9988		PREMIUM HSS-PM, 3&4 FLUTE 60° HELIX REGULAR LENGTH ◆	D1/4	D1	**1156**
E9992		PREMIUM HSS-PM, 2 FLUTE REGULAR LENGTH BALL NOSE ◆	R1/16	R1/2	**1157**
E9990		PREMIUM HSS-PM, MULTI FLUTE REGULAR LENGTH FINE PITCH ROUGHING ◆	D1/4	D1-1/4	**1158**
E9991		PREMIUM HSS-PM, MULTI FLUTE REGULAR LENGTH COARSE PITCH ROUGHING ◆	D1/4	D1-1/4	**1159**
E9A86		PREMIUM HSS-PM, MULTI FLUTE LONG LENGTH FINE PITCH ROUGHING ◆	D5/16	D1-1/4	**1160**
E9A87		PREMIUM HSS-PM, MULTI FLUTE LONG LENGTH COARSE PITCH ROUGHING ◆	D5/16	D1-1/4	**1161**
E9921		PREMIUM HSS-PM, MULTI FLUTE FINE PITCH ROUGHING EXTENDED NECK CENTER CUTTING ◆	D1/2	D1-1/4	**1162**
		RECOMMENDED CUTTING CONDITIONS			**1163**

◆ U.S.A Stock

TOUGHNESS VALUE AND EDGE STRENGTH



◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				◎	◎	○						
◎	◎	◎				◎	◎	○						
◎	◎	◎				◎	◎	○						
◎	◎	◎				◎	◎	○						
◎	◎	◎				◎	◎	○						
◎	◎	◎				◎	◎	○						
◎	◎	◎				◎	◎	○						
◎	◎	◎				◎	◎	○						
◎	◎	◎				◎	◎	○						
◎	◎	◎				◎	◎	○						

APPROXIMATE WEAR VALUES



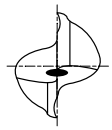
TANK-POWER END MILLS

E9983 SERIES FLAT SHANK

PREMIUM HSS-PM, 2 FLUTE REGULAR LENGTH

▶ Faster feed & speed than normal HSS can be applied to hardened steels up to Rc 45. Accordingly, YPM made by powder metallurgy makes much higher productivity possible.





YPM | 2 | 30° | FLAT

P.1163

◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TANK-POWER COATED				
E9983008	E9983008TF	1/8	3/8	3/8	2-5/16
E9983012	E9983012TF	3/16	3/8	7/16	2-5/16
E9983016	E9983016TF	1/4	3/8	1/2	2-5/16
E9983020	E9983020TF	5/16	3/8	9/16	2-5/16
E9983024	E9983024TF	3/8	3/8	9/16	2-5/16
E9983032	E9983032TF	1/2	1/2	1	3
E9983040	E9983040TF	5/8	5/8	1-5/16	3-7/16
E9983048	E9983048TF	3/4	3/4	1-5/16	3-7/16
E9983056	E9983056TF	7/8	7/8	1-1/2	3-3/4
E9983064	E9983064TF	1	1	1-5/8	4-1/8

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

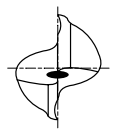
◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				◎	◎	○						

PREMIUM HSS-PM, 2 FLUTE REGULAR LENGTH DOUBLE

▶ Series E9984, E9984 two flute, end mills are the double end version of E9983, E9983 single-end tools.
Faster feed & speed than normal HSS can be applied to hardened steels up to Rc 45. Accordingly, YPM made by powder metallurgy makes much higher productivity possible.





YPM | 2 | 30° | FLAT

P.1163

◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TANK-POWER COATED				
E9984008	E9984008TF	1/8	3/8	3/8	3-1/16
E9984012	E9984012TF	3/16	3/8	7/16	3-1/8
E9984016	E9984016TF	1/4	3/8	1/2	3-1/8
E9984020	E9984020TF	5/16	3/8	9/16	3-1/8
E9984024	E9984024TF	3/8	3/8	9/16	3-1/8
E9984032	E9984032TF	1/2	1/2	13/16	3-3/4
E9984040	E9984040TF	5/8	5/8	1-1/8	4-1/2
E9984048	E9984048TF	3/4	3/4	1-5/16	5
E9984056	E9984056TF	7/8	7/8	1-9/16	5-1/2
E9984064	E9984064TF	1	1	1-5/8	5-7/8

Mill Dia. Tolerance (inch)	
0~−.0010	** 0~−.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				◎	◎	○						

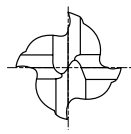
TANK-POWER END MILLS

E9985 SERIES FLAT SHANK

PREMIUM HSS-PM, 4 FLUTE REGULAR LENGTH

▶ Faster feed & speed than normal HSS can be applied to hardened steels up to Rc 45. Accordingly, YPM made by powder metallurgy makes much higher productivity possible.





YPM | 4 | 30° | FLAT

P.1163

◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TANK-POWER COATED				
E9985008	E9985008TF	1/8	3/8	3/8	2-5/16
E9985012	E9985012TF	3/16	3/8	1/2	2-3/8
E9985016	E9985016TF	1/4	3/8	5/8	2-7/16
E9985020	E9985020TF	5/16	3/8	3/4	2-1/2
E9985024	E9985024TF	3/8	3/8	3/4	2-1/2
E9985032	E9985032TF	1/2	1/2	1-1/4	3-1/4
E9985040	E9985040TF	5/8	5/8	1-5/8	3-3/4
E9985048	E9985048TF	3/4	3/4	1-5/8	3-7/8
E9985056	E9985056TF	7/8	7/8	1-7/8	4-1/8
E9985064	E9985064TF	1	1	2	4-1/2

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

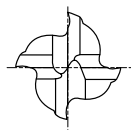
◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				◎	◎	○						

PREMIUM HSS-PM, 4 FLUTE REGULAR LENGTH DOUBLE

▶ Series E9986,EP986 four flute end mills are the double end version of E9985,EP985 single-end tools.
Faster feed & speed than normal HSS can be applied to hardened steels up to Rc 45. Accordingly, YPM made by powder metallurgy makes much higher productivity possible.





YPM | 4 | 30° | FLAT

P.1163

◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TANK-POWER COATED				
E9986008	E9986008TF	1/8	3/8	3/8	3-1/16
E9986012	E9986012TF	3/16	3/8	1/2	3-1/4
E9986016	E9986016TF	1/4	3/8	5/8	3-3/8
E9986020	E9986020TF	5/16	3/8	3/4	3-1/2
E9986024	E9986024TF	3/8	3/8	3/4	3-1/2
E9986032	E9986032TF	1/2	1/2	1	4-1/8
E9986040	E9986040TF	5/8	5/8	1-3/8	5
E9986048	E9986048TF	3/4	3/4	1-5/8	5-5/8
E9986056	E9986056TF	7/8	7/8	1-7/8	6-1/8
E9986064	E9986064TF	1	1	1-7/8	6-3/8

Mill Dia. Tolerance (inch)	
0~−.0010	** 0~−.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				◎	◎	○						

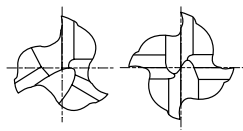
TANK-POWER END MILLS

E9988 SERIES FLAT SHANK

PREMIUM HSS-PM, 3&4 FLUTE 60° HELIX REGULAR LENGTH

▶ Faster feed & speed than normal HSS can be applied to hardened steels up to Rc 45. Accordingly, YPM made by powder metallurgy makes much higher productivity possible.





YPM | 3&4 | 60° | FLAT

P.1164

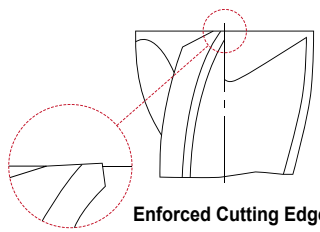
◆ U.S.A Stock

Unit : Inch

EDP No. UNCOATED	EDP No. TANK-POWER COATED	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
E9988016	E9988016TF	1/4	3/8	5/8	2-7/16	3
E9988020	E9988020TF	5/16	3/8	3/4	2-1/2	3
E9988024	E9988024TF	3/8	3/8	3/4	2-1/2	3
E9988028	E9988028TF	7/16	3/8	1	2-11/16	3
E9988032	E9988032TF	1/2	1/2	1-1/4	3-1/4	3
E9988040	E9988040TF	5/8	5/8	1-5/8	3-3/4	3
E9988048	E9988048TF	3/4	3/4	1-5/8	3-7/8	3
E9988901	E9988901TF	7/8	3/4	1-7/8	4-1/8	4
E9988056	E9988056TF	7/8	7/8	1-7/8	4-1/8	4
E9988064	E9988064TF	1	1	2	4-1/2	4

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.



Enforced Cutting Edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				◎	◎	○						

TANK-POWER END MILLS

E9992 SERIES FLAT SHANK

PREMIUM HSS-PM, 2 FLUTE REGULAR LENGTH BALL NOSE

▶ The two flute ball end mills are designed for milling of radius bottom slots, fillets and special contours. The end teeth are cut to center allowing these end mills to drill into material at the beginning of a slotting cut. The two flute design provides good chip removal ability in slotting.



YPM | 2 | 30° | R ±.001 | FLAT

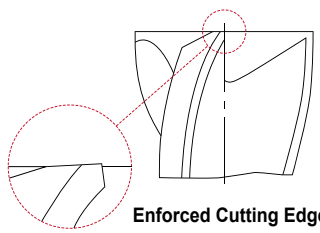
P.1165

◆ U.S.A Stock

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TANK-POWER COATED	R (±.001)				
E9992008	E9992008TF	R1/16	1/8	3/8	3/8	2-5/16
E9992012	E9992012TF	R3/32	3/16	3/8	1/2	2-3/8
E9992016	E9992016TF	R1/8	1/4	3/8	5/8	2-7/16
E9992020	E9992020TF	R5/32	5/16	3/8	3/4	2-1/2
E9992024	E9992024TF	R3/16	3/8	3/8	3/4	2-1/2
E9992032	E9992032TF	R1/4	1/2	1/2	1	3
E9992040	E9992040TF	R5/16	5/8	5/8	1-3/8	3-1/2
E9992048	E9992048TF	R3/8	3/4	3/4	1-5/8	3-7/8
E9992056	E9992056TF	R7/16	7/8	7/8	2	4-1/4
E9992064	E9992064TF	R1/2	1	1	2-1/4	4-3/4

Mill Dia. Tolerance (inch)
0~−.0015



Enforced Cutting Edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				◎	◎	○						

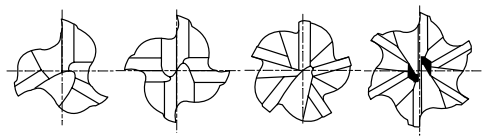
TANK-POWER END MILLS

E9990 SERIES FLAT SHANK

PREMIUM HSS-PM, MULTI FLUTE REGULAR LENGTH FINE PITCH ROUGHING

▶ This TANK-POWER rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths. In many cases, the milled surfaces are of acceptable quality.





YPM | FINE | 3-6 | 30° | FLAT

P.1164

◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
UNCOATED	TANK-POWER COATED					
E9990016	E9990016TF	1/4	3/8	5/8	2-7/16	3
E9990907	E9990907TF	1/4	3/8	1-1/8	2-15/16	3
E9990020	E9990020TF	5/16	3/8	3/4	2-1/2	3
E9990024	E9990024TF	3/8	3/8	3/4	2-1/2	4
E9990028	E9990028TF	7/16	3/8	1	2-11/16	4
E9990032	E9990032TF	1/2	1/2	1-1/4	3-1/4	4
E9990908	E9990908TF	1/2	1/2	1-5/8	3-5/8	4
E9990036	E9990036TF	9/16	1/2	1-3/8	3-3/8	4
E9990040	E9990040TF	5/8	5/8	1-5/8	3-3/4	4
E9990048	E9990048TF	3/4	3/4	1-5/8	3-7/8	4
E9990948	E9990948TF	3/4	5/8	1-5/8	3-7/8	4
E9990909	E9990909TF	3/4	3/4	2-1/2	4-3/4	4
E9990056	E9990056TF	7/8	7/8	1-7/8	4-1/8	5
E9990901	E9990901TF	7/8	3/4	1-7/8	4-1/8	5
E9990064	E9990064TF	1	1	2	4-1/2	5
E9990905	E9990905TF	1	1	3	5-1/2	5
E9990108	E9990108TF	1-1/8	1	2	4-1/2	6
E9990116	E9990116TF	1-1/4	1-1/4	2	4-1/2	6
E9990906	E9990906TF	1-1/4	1-1/4	3	5-1/2	6

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				◎	◎	○						

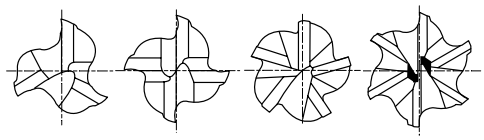
TANK-POWER END MILLS

E9991 SERIES FLAT SHANK

PREMIUM HSS-PM, MULTI FLUTE REGULAR LENGTH COARSE PITCH ROUGHING

▶ This TANK-POWER rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths.





YPM | COARSE | 3-6 | 30° | FLAT

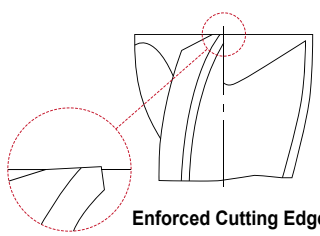
P.1164

◆ U.S.A Stock

Unit : Inch

EDP No. UNCOATED	EDP No. TANK-POWER COATED	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
E9991016	E9991016TF	1/4	3/8	5/8	2-7/16	3
E9991902	E9991902TF	1/4	3/8	1-1/8	2-15/16	3
E9991020	E9991020TF	5/16	3/8	3/4	2-1/2	3
E9991024	E9991024TF	3/8	3/8	3/4	2-1/2	4
E9991028	E9991028TF	7/16	3/8	1	2-11/16	4
E9991032	E9991032TF	1/2	1/2	1-1/4	3-1/4	4
E9991903	E9991903TF	1/2	1/2	1-5/8	3-5/8	4
E9991036	E9991036TF	9/16	1/2	1-3/8	3-3/8	4
E9991040	E9991040TF	5/8	5/8	1-5/8	3-3/4	4
E9991048	E9991048TF	3/4	3/4	1-5/8	3-7/8	4
E9991948	E9991948TF	3/4	5/8	1-5/8	3-7/8	4
E9991904	E9991904TF	3/4	3/4	2-1/2	4-3/4	4
E9991056	E9991056TF	7/8	7/8	1-7/8	4-1/8	5
E9991901	E9991901TF	7/8	3/4	1-7/8	4-1/8	5
E9991064	E9991064TF	1	1	2	4-1/2	5
E9991905	E9991905TF	1	1	3	5-1/2	5
E9991108	E9991108TF	1-1/8	1	2	4-1/2	6
E9991116	E9991116TF	1-1/4	1-1/4	2	4-1/2	6
E9991906	E9991906TF	1-1/4	1-1/4	3	5-1/2	6

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060



Enforced Cutting Edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				◎	◎	○						

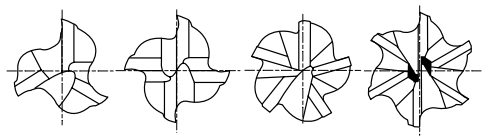
TANK-POWER END MILLS

E9A86 SERIES FLAT SHANK

PREMIUM HSS-PM, MULTI FLUTE LONG LENGTH FINE PITCH ROUGHING

▶ This TANK-POWER rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths.





YPM | FINE | 3-6 | 30° | FLAT

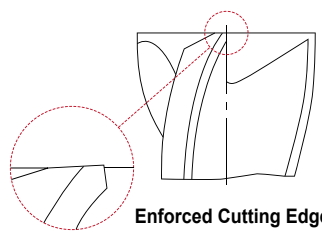
P.1164

◆ U.S.A Stock

Unit : Inch

EDP No. UNCOATED	EDP No. TANK-POWER COATED	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
E9A86020	E9A86020TF	5/16	3/8	1-3/8	3-3/16	3
E9A86024	E9A86024TF	3/8	3/8	1-1/2	3-1/4	4
E9A86924	E9A86924TF	3/8	3/8	1-1/2	4	4
E9A86032	E9A86032TF	1/2	1/2	2	4	4
E9A86040	E9A86040TF	5/8	5/8	2-1/2	4-5/8	4
E9A86048	E9A86048TF	3/4	5/8	3	5-1/8	4
E9990902	E9990902TF	3/4	3/4	3	5-1/4	4
E9A86056	E9A86056TF	7/8	3/4	3-1/2	5-3/4	5
E9A86956	E9A86956TF	7/8	7/8	3-1/2	5-3/4	5
E9990903	E9990903TF	1	1	4	6-1/2	5
E9A86116	E9A86116TF	1-1/4	3/4	4	6-1/4	6
E9990904	E9990904TF	1-1/4	1-1/4	4	6-1/2	6

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060



Enforced Cutting Edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				◎	◎	○						

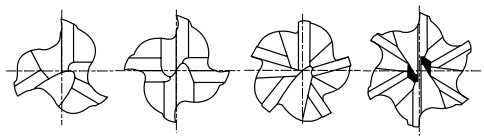
TANK-POWER END MILLS

E9A87 SERIES FLAT SHANK

PREMIUM HSS-PM, MULTI FLUTE LONG LENGTH COARSE PITCH ROUGHING

▶ This TANK-POWER rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths.





YPM | COARSE | 3-6 | 30° | FLAT

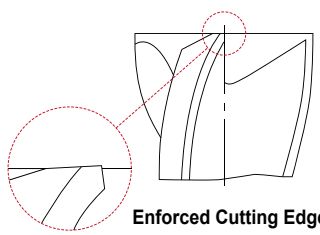
P.1164

◆ U.S.A Stock

Unit : Inch

EDP No. UNCOATED	EDP No. TANK-POWER COATED	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
E9A87020	E9A87020TF	5/16	3/8	1-3/8	3-3/16	3
E9A87024	E9A87024TF	3/8	3/8	1-1/2	3-1/4	4
E9A87924	E9A87924TF	3/8	3/8	1-1/2	4	4
E9A87032	E9A87032TF	1/2	1/2	2	4	4
E9A87040	E9A87040TF	5/8	5/8	2-1/2	4-5/8	4
E9A87048	E9A87048TF	3/4	5/8	3	5-1/8	4
E9A87948	E9A87948TF	3/4	3/4	3	5-1/4	4
E9A87056	E9A87056TF	7/8	3/4	3-1/2	5-3/4	5
E9A87956	E9A87956TF	7/8	7/8	3-1/2	5-3/4	5
E9A87064	E9A87064TF	1	1	4	6-1/2	5
E9A87116	E9A87116TF	1-1/4	3/4	4	6-1/4	6
E9A87917	E9A87917TF	1-1/4	1-1/4	4	6-1/2	6

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060



Enforced Cutting Edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				◎	◎	○						

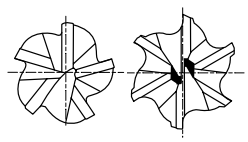
TANK-POWER END MILLS

E9921 SERIES FLAT SHANK

PREMIUM HSS-PM, MULTI FLUTE FINE PITCH ROUGHING EXTENDED NECK CENTER CUTTING

▶ This TANK-POWER rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths.





YPM | FINE | 5&6 | 35° | FLAT

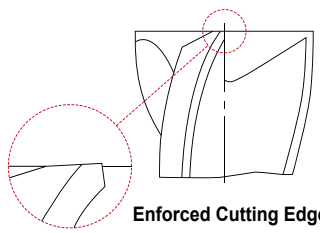
P.1164

◆ U.S.A Stock

Unit : Inch

EDP No. UNCOATED	EDP No. TiAlN COATED	Mill Diameter	Shank Diameter	Length of Cut	Reach Extended Neck	Overall Length	No. of Flute
EP20322	EP20322F	1/2	1/2	1-1/4	3	5	5
EP20402	EP20402F	5/8	5/8	1-5/8	4	6-1/8	5
EP20482	EP20482F	3/4	3/4	1-5/8	4	6-1/4	5
EP20484	EP20484F	3/4	3/4	1-5/8	6	8-1/4	5
EP20642	EP20642F	1	1	2	4	6-1/2	6
EP20643	EP20643F	1	1	2	6	8-1/2	6
EP21161	EP21161F	1-1/4	1 1/4	2	4	6-1/2	6
EP21162	EP21162F	1-1/4	1 1/4	2	6	8-1/2	6

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060



Enforced Cutting Edge

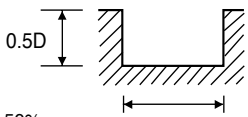
◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	◎				◎	◎	○						

PREMIUM HSS-PM, 2 FLUTE FINISH - SLOTTING

E9983, E9984 SERIES

MATERIAL	P									
	STRUCTURAL STEELS CARBON STEELS		STRUCTURAL STEELS CARBON STEELS CAST IRONS		CARBON STEELS ALLOY STEELS TOOL STEELS		PREHARDENED STEELS ALLOY STEELS TOOL STEELS		ALLOY STEELS TOOL STEELS AUSTENITIC STAINLESS STEELS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc35		HRc35~HRc40	
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1100N/mm²		1100~1300N/mm²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	4600	5.9	3800	5.0	3150	4.2	2150	2.8	1650	2.2
3/16	3800	8.5	3150	6.7	2600	6.1	1650	3.5	1350	2.6
1/4	3150	9.1	2650	7.5	2100	6.6	1350	3.8	1050	3.0
5/16	2500	9.4	2100	8.2	1700	6.9	1100	3.9	855	3.0
3/8	2100	10.1	1800	8.9	1450	7.6	910	4.2	715	3.4
1/2	1650	9.3	1350	8.1	1050	7.0	665	3.9	525	2.9
5/8	1300	9.1	1100	7.3	855	6.1	535	3.6	425	2.8
3/4	995	7.9	820	6.2	710	5.3	450	3.2	360	2.5
7/8	795	6.2	675	5.1	560	4.3	375	2.7	300	2.0
1	710	5.2	590	4.7	465	3.9	335	2.5	235	1.7



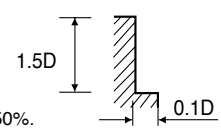
※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min. FEED = inch/min.

PREMIUM HSS-PM, 4 FLUTE FINISH - SIDE CUTTING

E9985, E9986 SERIES

MATERIAL	P									
	STRUCTURAL STEELS CARBON STEELS		STRUCTURAL STEELS CARBON STEELS CAST IRONS		CARBON STEELS ALLOY STEELS TOOL STEELS		PREHARDENED STEELS ALLOY STEELS TOOL STEELS		ALLOY STEELS TOOL STEELS AUSTENITIC STAINLESS STEELS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc35		HRc35~HRc40	
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1100N/mm²		1100~1300N/mm²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	6300	17.7	6000	14.4	4250	10.4	2700	7.2	2320	5.1
3/16	4600	19.7	4100	16.1	3040	12.6	2070	8.5	1780	6.2
1/4	3800	22.1	3300	18.1	2500	13.0	1700	9.7	1400	7.1
5/16	3100	22.4	2600	18.9	2000	14.2	1400	9.4	1150	7.2
3/8	2500	24.8	2200	20.5	1680	15.0	1180	10.2	960	7.7
1/2	1900	22.1	1720	18.5	1270	14.4	860	9.3	690	2.7
5/8	1600	20.1	1410	16.9	1000	13.3	690	8.9	620	6.7
3/4	1400	17.7	1150	15.2	830	11.5	580	7.3	470	5.7
7/8	1030	15.8	930	12.4	675	9.8	470	6.3	390	5.1
1	1000	14.6	830	11.8	620	8.8	420	5.6	360	4.9



※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min. FEED = inch/min.

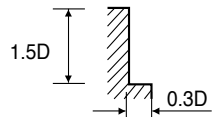
TANK-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS

PREMIUM HSS-PM, 3&4 FLUTE 60° HELIX - SIDE CUTTING

E9988 SERIES

MATERIAL	P					
	STRUCTURAL STEELS CARBON STEELS CAST IRONS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALLOY STEELS, TOOL STEELS AUSTENITIC STAINLESS STEELS	
HARDNESS	~HRc20		HRc20 ~ HRc30		HRc30 ~ HRc40	
STRENGTH	500 ~ 800N/mm²		800 ~ 1000N/mm²		1000 ~ 1300N/mm²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
1/4	3850	7.9	2500	5.3	1900	3.5
5/16	3050	7.9	2100	6.3	1700	3.5
3/8	2700	8.5	1700	6.3	1450	3.8
1/2	1850	9.7	1200	6.3	960	4.1
5/8	1300	11.0	845	8.5	690	5.4
3/4	895	14.6	580	11.9	475	7.9
7/8	720	16.6	475	14.0	380	8.8
1	630	19.0	415	16.0	335	10.0



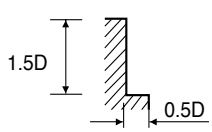
※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

PREMIUM HSS-PM, MULTI FLUTE ROUGHING - SIDE CUTTING

E9990, E9991, E9A86, E9A87, E9921 SERIES

MATERIAL	P								M	
	STRUCTURAL STEELS CARBON STEELS		STRUCTURAL STEELS CARBON STEELS CAST IRONS		CARBON STEELS ALLOY STEELS TOOL STEELS		PREHARDENED STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS	
HARDNESS	~HRc20		HRc20 ~ HRc30		HRc30 ~ HRc35		HRc35 ~ HRc40			
STRENGTH	~800N/mm²		800 ~ 1000N/mm²		1000 ~ 1100N/mm²		1100 ~ 1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	2650	7.8	2050	6.3	1450	4.4	1200	3.4	1900	5.6
3/8	1900	13.1	1500	10.1	1050	6.4	885	5.2	1270	8.6
1/2	1450	14.2	1100	11.4	805	7.9	665	6.1	950	9.3
5/8	1150	14.2	905	11.4	630	7.9	525	6.1	760	9.7
3/4	960	14.4	780	11.4	540	7.9	445	6.1	630	9.5
7/8	845	14.5	615	11.4	445	7.8	375	6.1	540	9.3
1	740	14.0	560	10.6	395	7.4	315	6.0	470	9.0



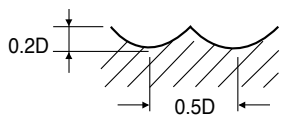
※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

PREMIUM HSS-PM, 2 FLUTE BALL NOSE - PROFILING

E9992 SERIES

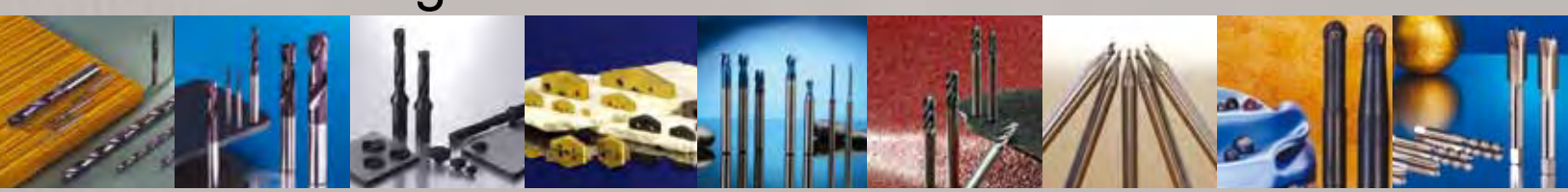
MATERIAL	P							
	STRUCTURAL STEELS CARBON STEELS		STRUCTURAL STEELS CARBON STEELS CAST IRONS		CARBON STEELS ALLOY STEELS TOOL STEELS		PREHARDENED STEELS ALLOY STEELS TOOL STEELS	
HARDNESS			~HRc20		HRc20 ~ HRc30		HRc30 ~ HRc40	
STRENGTH	~500N/mm²		500 ~ 800N/mm²		800 ~ 1000N/mm²		1000 ~ 1300N/mm²	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	6800	12.3	5300	8.2	3550	4.5	1850	2.1
3/16	5100	15.3	4000	10.3	2650	5.7	1350	2.7
1/4	4050	16.8	3150	11.2	2100	6.2	1100	3.0
5/16	3250	18.1	2550	12.2	1700	6.9	860	3.0
3/8	2750	19.9	2100	13.4	1450	7.6	700	3.4
1/2	2100	17.8	1600	12.0	1100	6.8	530	2.9
5/8	1600	16.6	1250	11.1	860	6.1	425	2.8
3/4	1350	14.7	1050	9.8	700	5.4	360	2.5
7/8	1100	12.6	865	8.4	560	4.6	300	2.1
1	890	10.5	690	7.0	445	3.9	235	1.7



※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

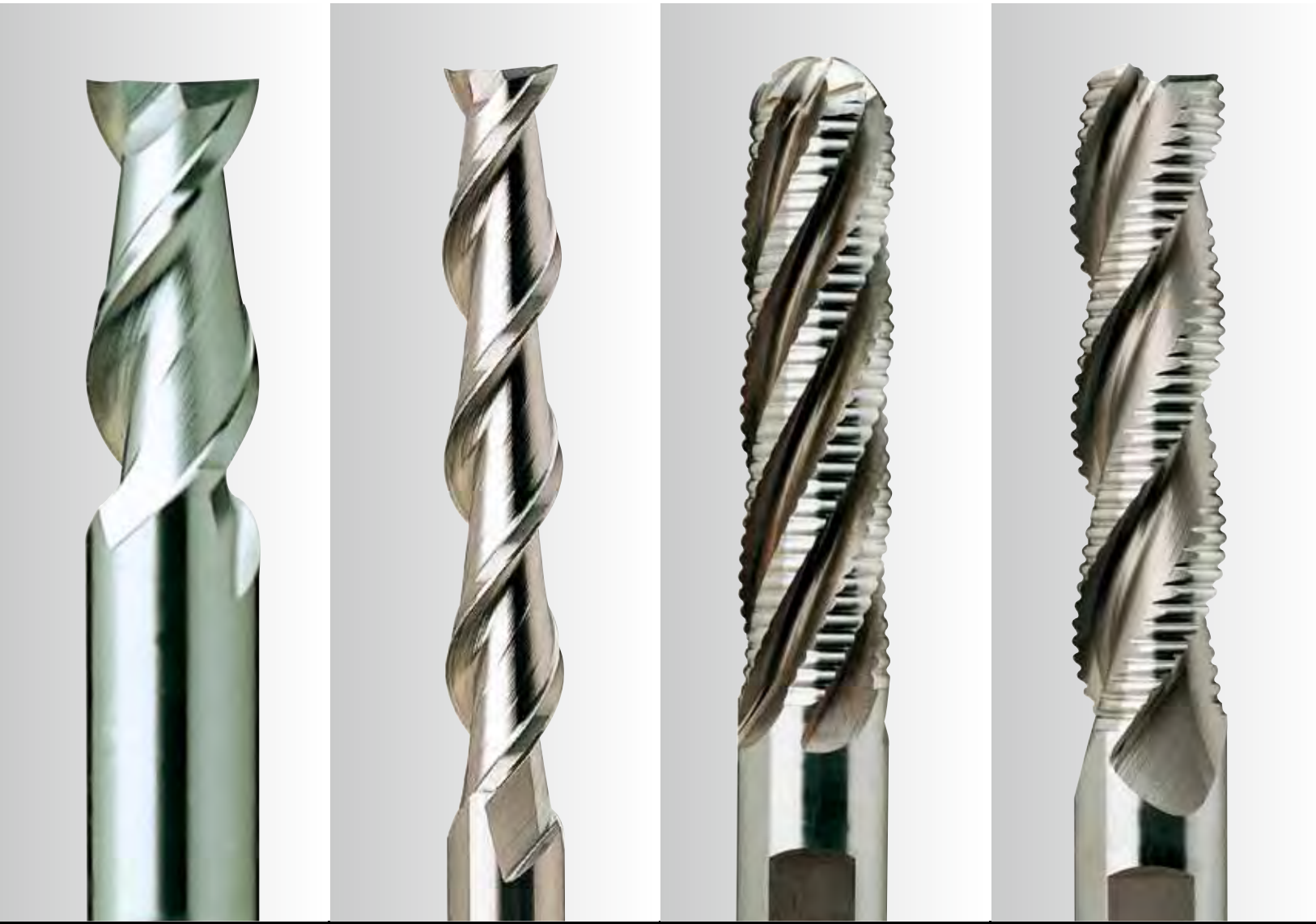
Global Cutting Tool Leader **YG-1**



HSS

YG

Being the best through innovation



COBALT & HSS END MILLS

- General Purpose, Non-coated, Many Coatings Available

SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
INCH					
E2030 E1030		HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH	D1/8	D2	1175
E2080 E1080		HSSCo8 & HSS, 2 FLUTE LONG LENGTH	D1/4	D2	1177
E2033 E1033		HSSCo8 & HSS, 2 FLUTE EXTENDED LENGTH	D1/8	D1-1/4	1178
E2050 E1050		HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH DOUBLE	D1/8	D1	1179
E2110 E1110		HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH BALL NOSE	R1/16	R1	1181
E2111 E1111		HSSCo8 & HSS, 2 FLUTE EXTENDED LENGTH BALL NOSE	R1/16	R1/2	1182
E2112 E1112		HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH BALL NOSE DOUBLE	R1/16	R1/2	1183
E2031 E1031		HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH	D1/8	D1	1184
E2032 E1032		HSSCo8 & HSS, 6 FLUTE REGULAR LENGTH	D5/8	D2	1186
E2034 E1034		HSSCo8 & HSS, 4 FLUTE LONG LENGTH	D1/4	D1	1187
E2035 E1035		HSSCo8 & HSS, 6 FLUTE LONG LENGTH	D1-1/8	D2	1187
E2036 E1036		HSSCo8 & HSS, 4 FLUTE EXTRA LONG LENGTH	D1/4	D1	1188
E2037 E1037		HSSCo8 & HSS, 6 FLUTE EXTRA LONG LENGTH	D1-1/4	D2	1188
E2051 E1051		HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH DOUBLE	D1/8	D1	1189
E2031 E1031		HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH 3/4 SHANK	D3/4	D1	1191
E2032 E1032		HSSCo8 & HSS, 6&8 FLUTE REGULAR LENGTH 3/4 SHANK	D1-1/8	D2	1191
E2020		HSSCo8, 4 FLUTE REGULAR LENGTH BALL NOSE	R1/16	R1	1192
E2021		HSSCo8, 4 FLUTE LONG LENGTH BALL NOSE	R1/8	R1/2	1193
E2069		HSSCo8, 4 FLUTE REGULAR LENGTH BALL NOSE DOUBLE	R1/16	R1/2	1194
E2039 E1039		HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH CENTER CUTTING	D1/8	D1-1/2	1195
E2042 E1042		HSSCo8 & HSS, 6 FLUTE REGULAR LENGTH CENTER CUTTING	D1/2	D2	1197

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
INCH					
E2039 E2042		HSSCo8, MULTI FLUTE MEDIUM LENGTH CENTER CUTTING	D1	D2	**1198**
E2040 E1040		HSSCo8 & HSS, 4 FLUTE LONG LENGTH CENTER CUTTING	D1/4	D1-1/2	**1199**
E2162 E1162		HSSCo8 & HSS, 6 FLUTE LONG LENGTH CENTER CUTTING	D1/2	D2	**1199**
E2041 E1041		HSSCo8 & HSS, 4 FLUTE EXTRA LONG LENGTH CENTER CUTTING	D1/4	D1-1/4	**1200**
E2175 E1175		HSSCo8 & HSS, 6 FLUTE EXTRA LONG LENGTH CENTER CUTTING	D1/2	D2	**1200**
E2053 E1053		HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH DOUBLE CENTER CUTTING	D1/8	D1	**1201**
E2100 E1100		HSSCo8 & HSS, 6 FLUTE REGULAR with COMBINATION 2″ SHANK CENTER CUTTING	D2	D2	**1203**
E2001 E1001		HSSCo8 & HSS, 2 FLUTE MINIATURE STUB LENGTH DOUBLE	D1/32	D3/16	**1204**
E2003 E1003		HSSCo8 & HSS, 2 FLUTE MINIATURE REGULAR LENGTH DOUBLE	D1/32	D3/16	**1205**
E2005 E1005		HSSCo8 & HSS, 2 FLUTE MINIATURE LONG LENGTH DOUBLE	D1/16	D3/16	**1206**
E2002 E1002		HSSCo8 & HSS, 4 FLUTE MINIATURE STUB LENGTH DOUBLE	D1/16	D3/16	**1207**
E2004 E1004		HSSCo8 & HSS, 4 FLUTE MINIATURE REGULAR LENGTH DOUBLE	D1/16	D3/16	**1208**
E2006 E1006		HSSCo8 & HSS, 4 FLUTE MINIATURE LONG LENGTH DOUBLE	D1/16	D3/16	**1209**
E2008 E1008		HSSCo8 & HSS, 2 FLUTE MINIATURE STUB LENGTH BALL NOSE DOUBLE	R1/32	R3/32	**1210**
E2013 E1013		HSSCo8 & HSS, 2 FLUTE MINIATURE REGULAR LENGTH BALL NOSE DOUBLE	R1/64	R3/32	**1211**
E2015 E1015		HSSCo8 & HSS, 2 FLUTE MINIATURE LONG LENGTH BALL NOSE DOUBLE	R1/32	R3/32	**1212**
E1070		HSS, 2 FLUTE 42° HELIX REGULAR & MEDIUM LENGTH for ALUMINUM	D1/4	D2	**1213**
E1071		HSS, 2 FLUTE 42° HELIX LONG LENGTH for ALUMINUM	D1/4	D2	**1214**
E1072		HSS, 2 FLUTE 42° HELIX EXTRA LONG LENGTH for ALUMINUM	D1/4	D1-1/2	**1214**
E2086		HSSCo8, MULTI FLUTE STUB LENGTH FINE PITCH ROUGHING CENTER CUTTING	D1/4	D1	**1215**
E2085		HSSCo8, MULTI FLUTE REGULAR LENGTH FINE PITCH ROUGHING CENTER CUTTING	D1/4	D1	**1216**

◎ : Excellent ○ : Good

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Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
INCH					
E2079		HSSCo8, MULTI FLUTE REGULAR LENGTH FINE PITCH ROUGHING	D1/4	D2	**1217**
E2077		HSSCo8, MULTI FLUTE LONG LENGTH FINE PITCH ROUGHING	D1/2	D2	**1218**
E2086		HSSCo8, 3 FLUTE STUB LENGTH FINE PITCH ROUGHING CENTER CUTTING	D1/4	D1	**1219**
E2170		HSSCo8, MULTI FLUTE REGULAR LENGTH COARSE PITCH ROUGHING	D1/4	D2	**1220**
E2171		HSSCo8, MULTI FLUTE MEDIUM LENGTH COARSE PITCH ROUGHING	D1	D2	**1221**
E2172		HSSCo8, MULTI FLUTE LONG LENGTH COARSE PITCH ROUGHING	D1/2	D2	**1222**
E2241		HSSCo8,3 FLUTE STUB LENGTH COARSE PITCH ROUGHING CENTER CUTTING	D1/4	D1	**1223**
E2195		HSSCo8, MULTI FLUTE REGULAR LENGTH COARSE PITCH ROUGHING CENTER CUTTING	D1/2	D1-1/2	**1224**
E2197		HSSCo8, MULTI FLUTE LONG LENGTH COARSE PITCH ROUGHING CENTER CUTTING	D1/2	D1-1/2	**1224**
E2193 E2125		HSSCo8, MULTI FLUTE REGULAR & LONG LENGTH COARSE PITCH ROUGHING BALL NOSE	R1/8	R3/4	**1225**
E2248		HSSCo8, MULTI FLUTE REGULAR LENGTH ROUGHING & FINISHING	D1/4	D2	**1226**
E2191		HSSCo8, 3 FLUTE 37° HELIX REGULAR LENGTH ROUGHING for ALUMINUM	D1/4	D1-1/2	**1227**
E2226 E2192		HSSCo8, 3 FLUTE 37° HELIX MEDIUM & LONG LENGTH ROUGHING for ALUMINUM	D1/2	D1-1/2	**1228**
E2163 E1163		HSSCo8 & HSS, 2 FLUTE 15° HELIX for KEYWAY CUTTING	D1/8	D1	**1229**
E2120 E2121		HSSCo8, 3&4 FLUTE 60° HELIX REGULAR LENGTH	D1/4	D3/4	**1230**
E2160		HSSCo8, 3 FLUTE SHORT LENGTH THROW AWAY	D7/8 D1/16	D2 D1/4	**1231**
E2161		HSSCo8, 3 FLUTE LONG LENGTH THROW AWAY	D1/16	D1/4	**1231**
E2237 E1237		HSSCo8 & HSS, 4 FLUTE CORNER ROUNDING	D1/4	D5/8	**1232**
METRIC					
E2482 E1482		HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH - METRIC	D2.0 (.0787)	D45.0 (1.772)	**1233**
E2483 E1483		HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH - METRIC	D2.0 (.0787)	D45.0 (1.772)	**1234**
		END MILL SET SERIES / RECOMMENDED CUTTING CONDITIONS			**1237**

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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COBALT & HSS END MILLS

SUPER CUTTING END MILLS

DESCRIPTION				YG-1	**ANSI	REMARK
TYPE	NO. OF FLUTE	LENGTH OF CUT	TYPE OF END			
SINGLE END	2	REGULAR LONG EX. LONG	ALL	+.0010 .0000 *(+.0015 .0000)	+.0030 .0000	
	MULTIPLE	ALL	ALL	+.0010 .0000 *(+.0015 .0000)	+.0030 .0000	
KEY WAY	2	ALL	CENTER CUTTING	+.0000 -.0015	+.0000 -.0015	
DOUBLE END	2	REGULAR	ALL	.0000 -.0010 *(.0000 -.0020)	.0000 -.0015	
	4	ALL	CENTER CUTTING	.0000 -.0010 *(.0000 -.0020)	.0000 -.0015	
	4	ALL	NON CENTER CUTTING	+.0010 .0000 *(.0000 -.0020)	+.0030 .0000 *(.0000 -.0025)	
3/16 SHANK DOUBLE END	2	STUB REGULAR	ALL	.0000 -.0010 *(.0000 -.0020)	.0000 -.0015	
		LONG	ALL	+.0010 .0000 *(.0000 -.0020)	+.0030 .0000 *(.0000 -.0025)	
	4	ALL	ALL	+.0010 .0000 *(.0000 -.0020)	+.0030 .0000 *(.0000 -.0025)	
ROUGHING	MULTIPLE	ALL	ALL	+.0060 .0000	+.025 -.005	
ROUGHING & FINISHING	MULTIPLE	REGULAR	ALL	+.0025 +.0005		
HELICAL 60°	3.4	REGULAR	CENTER CUTTING	+.0010 .0000 *(+.0015 .0000)		
THROW AWAY 1/4 SHANK	3	ALL	CENTER CUTTING	-.0005 -.0013		

* The shank of End Mills is the same diameter as the cutting portion.

** ANSI B94-19-1977 published by the American Society of Mechanical Engineers.

COBALT & HSS END MILLS

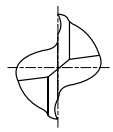
E2030 SERIES 8% COBALT (M42) FLAT SHANK

E1030 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH

▶ These end mills are furnished as regular with right-hand cutting and right-hand helical flutes. All shanks are flatted for holder set screw. These are designed for slotting, drilling, pocketing and general-purpose operation.





HSS Co8 | HSS | 2 | 30° | FLAT

P.1237, 1243, 1247

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
01289	01039	1/8	3/8	3/8	2-5/16
01291	01041	5/32	3/8	7/16	2-5/16
01293	01043	3/16	3/8	7/16	2-5/16
01295	01045	7/32	3/8	1/2	2-5/16
01297	01047	1/4	3/8	1/2	2-5/16
01299	01049	9/32	3/8	9/16	2-5/16
01301	01051	5/16	3/8	9/16	2-5/16
01303	01053	11/32	3/8	9/16	2-5/16
01305	01055	3/8	3/8	9/16	2-5/16
01308	01058	13/32	3/8	13/16	2-1/2
01312	01062	7/16	3/8	13/16	2-1/2
01316	01066	15/32	3/8	13/16	2-1/2
01320	01070	1/2	3/8	13/16	2-1/2
01321	01071	1/2	1/2	1	3
01328	01078	9/16	1/2	1-1/8	3-1/8
01336	01086	5/8	1/2	1-1/8	3-1/8
01337	01087	5/8	5/8	1-5/16	3-7/16
01348	01098	11/16	5/8	1-5/16	3-7/16
01357	01107	3/4	1/2	1-5/16	3-5/16
01358	01108	3/4	5/8	1-5/16	3-7/16
01359	01109	3/4	3/4	1-5/16	3-7/16
01373	01123	13/16	5/8	1-1/2	3-5/8
01391	01141	7/8	3/4	1-1/2	3-3/4
01394	01144	7/8	7/8	1-1/2	3-3/4
01409	01159	15/16	7/8	1-1/2	3-3/4
01420	01170	1	5/8	1-1/2	3-5/8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.

▶ NEXT PAGE

■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)

■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)

▶ Coated Price Shown in Price List. Call for Availability.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

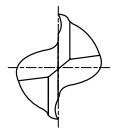
COBALT & HSS END MILLS

E2030 SERIES 8% COBALT (M42) FLAT SHANK
E1030 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH

▶ These end mills are furnished as regular with right-hand cutting and right-hand helical flutes. All shanks are flatted for holder set screw. These are designed for slotting, drilling, pocketing and general-purpose operation.





HSS Co8 | HSS | 2 | 30° | FLAT

P.1237, 1243, 1247

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
01422	01172	1	3/4	1-1/2	3-3/4
01426	01176	1	1	1-5/8	4-1/8
01435	01185	1-1/8	1	1-5/8	4-1/8
01445	01195	1-1/4	1-1/4	1-5/8	4-1/8
01451	01201	1-3/8	1	1-5/8	4-1/8
01453	01203	1-3/8	1-1/4	1-5/8	4-1/8
01459	01209	1-1/2	1	1-5/8	4-1/8
01461	01211	1-1/2	1-1/4	1-5/8	4-1/8
01469	01219	1-3/4	1-1/4	1-5/8	4-1/8
01477	01227	2	1-1/4	1-5/8	4-1/8
* 01480	* 01230	2	2	2	5-3/4

* Combination Shank

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
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COBALT & HSS END MILLS

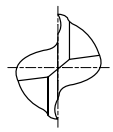
E2080 SERIES 8% COBALT (M42) FLAT SHANK

E1080 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 2 FLUTE LONG LENGTH

▶Longer flute length than E2030 type and allows deeper cutting.





HSS Co8 | HSS | 2 | 30° | FLAT

P.1237, 1243, 1247

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
02297	02047	1/4	3/8	1-1/4	3-1/8
02301	02051	5/16	3/8	1-3/8	3-1/8
02305	02055	3/8	3/8	1-1/2	3-1/4
02321	02071	1/2	1/2	2	4
02337	02087	5/8	5/8	2	4-1/8
02359	02109	3/4	3/4	2-1/4	4-1/2
02394	02144	7/8	7/8	2-1/2	4-3/4
02426	02176	1	1	3	5-1/2
02435	02185	1-1/8	1	3	5-1/2
02443	02193	1-1/4	1	3	5-1/2
02445	02195	1-1/4	1-1/4	3	5-1/2
02461	02211	1-1/2	1-1/4	3	5-1/2
02469	02219	1-3/4	1-1/4	3	5-1/2
02477	02227	2	1-1/4	3	5-1/2
* 02482	* 02232	2	2	3	6-3/4

* Combination Shank

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

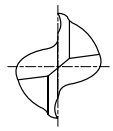
COBALT & HSS END MILLS

E2033 SERIES 8% COBALT (M42) FLAT SHANK
E1033 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 2 FLUTE EXTENDED LENGTH

▶ Provided with the longest flute length and suitable for high accuracy machining of deep step.





HSS Co8 | HSS | 2 | 30° | FLAT

P.1237, 1243, 1247

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length
03289	03039	1/8	3/8	3/8	-	2-3/8
03293	03043	3/16	3/8	1/2	1-1/8	2-11/16
03297	03047	1/4	3/8	5/8	1-1/2	3-1/16
03301	03051	5/16	3/8	3/4	1-3/4	3-5/16
03305	03055	3/8	3/8	3/4	1-3/4	3-5/16
03321	03071	1/2	1/2	1	2-7/32	4
03337	03087	5/8	5/8	1-3/8	2-23/32	4-5/8
03359	03109	3/4	3/4	1-5/8	3-11/32	5-3/8
03394	03144	7/8	7/8	2	4	6
03426	03176	1	1	2-1/2	4-31/32	7-1/4
03445	03195	1-1/4	1-1/4	3	4-31/32	7-1/4

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

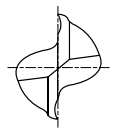
E2050 SERIES 8% COBALT (M42) FLAT SHANK

E1050 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH DOUBLE

▶ Series E2050 two flute end mills are the double-end version of E2030 single-end tools. Same excellent tool geometry for slotting, keying and general purpose milling, plus the added economy offered by the double-end design.





HSS Co8 | HSS | 2 | 30° | FLAT

P.1237, 1243, 1247

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
11289	11039	1/8	3/8	3/8	3-1/16
11290	11040	9/64	3/8	7/16	3-1/8
11291	11041	5/32	3/8	7/16	3-1/8
11292	11042	11/64	3/8	7/16	3-1/8
11293	11043	3/16	3/8	7/16	3-1/8
11294	11044	13/64	3/8	1/2	3-1/8
11295	11045	7/32	3/8	1/2	3-1/8
11296	11046	15/64	3/8	1/2	3-1/8
11297	11047	1/4	3/8	1/2	3-1/8
11298	11048	17/64	3/8	9/16	3-1/8
11299	11049	9/32	3/8	9/16	3-1/8
11300	11050	19/64	3/8	9/16	3-1/8
11301	11051	5/16	3/8	9/16	3-1/8
11302	11052	21/64	3/8	9/16	3-1/8
11303	11053	11/32	3/8	9/16	3-1/8
11304	11054	23/64	3/8	9/16	3-1/8
11305	11055	3/8	3/8	9/16	3-1/8
11307	11057	25/64	1/2	13/16	3-3/4
11309	11059	13/32	1/2	13/16	3-3/4
11311	11061	27/64	1/2	13/16	3-3/4
11313	11063	7/16	1/2	13/16	3-3/4
11315	11065	29/64	1/2	13/16	3-3/4
11317	11067	15/32	1/2	13/16	3-3/4
11319	11069	31/64	1/2	13/16	3-3/4
11321	11071	1/2	1/2	13/16	3-3/4
11326	11076	17/32	5/8	1-1/8	4-1/2

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

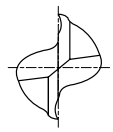
COBALT & HSS END MILLS

E2050 SERIES 8% COBALT (M42) FLAT SHANK
E1050 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH DOUBLE

▶ Series E2050 two flute end mills are the double-end version of E2030 single-end tools. Same excellent tool geometry for slotting, keying and general purpose milling, plus the added economy offered by the double-end design.





HSS Co8 | HSS | 2 | 30° | FLAT

P.1237, 1243, 1247

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
11330	11080	9/16	5/8	1-1/8	4-1/2
11334	11084	19/32	5/8	1-1/8	4-1/2
11337	11087	5/8	5/8	1-1/8	4-1/2
11344	11094	21/32	3/4	1-5/16	5
11350	11100	11/16	3/4	1-5/16	5
11354	11104	23/32	3/4	1-5/16	5
11359	11109	3/4	3/4	1-5/16	5
11368	11118	25/32	7/8	1-9/16	5-1/2
11377	11127	13/16	7/8	1-9/16	5-1/2
11384	11134	27/32	7/8	1-9/16	5-1/2
11394	11144	7/8	7/8	1-9/16	5-1/2
11402	11152	29/32	1	1-5/8	5-7/8
11410	11160	15/16	1	1-5/8	5-7/8
11417	11167	31/32	1	1-5/8	5-7/8
11426	11176	1	1	1-5/8	5-7/8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~—.0010	** 0~—.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2110 SERIES 8% COBALT (M42) FLAT SHANK

E1110 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH BALL NOSE

▶ The two flute ball end mills are designed for milling of radius bottom slots, fillets and special contours. The end teeth are cut to center allowing these end mills to drill into material at the beginning of a slotting cut. The two flute design provides good chip removal ability in slotting.



HSS Co8 | HSS | 2 | 30° | FLAT

P.1240, 1245, 1249

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)	R				
41289	**41039**	R1/16	**1/8**	3/8	3/8	2-5/16
41293	**41043**	R3/32	**3/16**	3/8	1/2	2-3/8
41297	**41047**	R1/8	**1/4**	3/8	5/8	2-7/16
41301	**41051**	R5/32	**5/16**	3/8	3/4	2-1/2
41305	**41055**	R3/16	**3/8**	3/8	3/4	2-1/2
41313	**41063**	R7/32	**7/16**	1/2	1	3
41321	**41071**	R1/4	**1/2**	1/2	1	3
41328	**41078**	R9/32	**9/16**	1/2	1-1/8	3-1/8
41336	**41086**	R5/16	**5/8**	1/2	1-1/8	3-1/8
41337	**41087**	R5/16	**5/8**	5/8	1-3/8	3-1/2
41357	**41107**	R3/8	**3/4**	1/2	1-5/16	3-5/16
41359	**41109**	R3/8	**3/4**	3/4	1-5/8	3-7/8
41391	**41141**	R7/16	**7/8**	3/4	2	4-1/4
41394	**41144**	R7/16	**7/8**	7/8	2	4-1/4
41422	**41172**	R1/2	**1**	3/4	2-1/4	4-1/2
41426	**41176**	R1/2	**1**	1	2-1/4	4-3/4
41431	**41181**	R9/16	**1-1/8**	3/4	1-5/8	3-7/8
41435	**41185**	R9/16	**1-1/8**	1	2-1/4	4-3/4
41439	**41189**	R5/8	**1-1/4**	3/4	1-5/8	3-7/8
41445	**41195**	R5/8	**1-1/4**	1-1/4	2-1/2	5
41449	**41199**	R11/16	**1-3/8**	3/4	1-5/8	4-1/8
41453	**41203**	R11/16	**1-3/8**	1-1/4	2-1/2	5
41457	**41207**	R3/4	**1-1/2**	3/4	1-5/8	4-1/8
41461	**41211**	R3/4	**1-1/2**	1-1/4	2-1/2	5
41478	**41227**	R1	**2**	1-1/4	2-1/2	5

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2111 SERIES 8% COBALT (M42) FLAT SHANK
E1111 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 2 FLUTE EXTENDED LENGTH BALL NOSE

▶Longer flute length than E2110 type and suitable for high efficient copying process and deep cutting of die mold corner radius.



HSS Co8 | HSS | 2 | 30° | FLAT

P.1240, 1245, 1249

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length
8% COBALT (M42)	HSS (M2)	R					
42289	**42039**	R1/16	**1/8**	3/8	3/8	-	2-3/8
42293	**42043**	R3/32	**3/16**	3/8	1/2	1-1/8	2-11/16
42297	**42047**	R1/8	**1/4**	3/8	5/8	1-1/2	3-1/16
42301	**42051**	R5/32	**5/16**	3/8	3/4	1-3/4	3-5/16
42305	**42055**	R3/16	**3/8**	3/8	3/4	1-3/4	3-5/16
42313	**42063**	R7/32	**7/16**	1/2	1	1-7/8	3-11/16
42321	**42071**	R1/4	**1/2**	1/2	1	2-1/4	4
42337	**42087**	R5/16	**5/8**	5/8	1-3/8	2-3/4	4-5/8
42359	**42109**	R3/8	**3/4**	3/4	1-5/8	3-3/8	5-3/8
42426	**42176**	R1/2	**1**	1	2-1/2	5	7-1/4

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2112 SERIES 8% COBALT (M42) FLAT SHANK

E1112 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH BALL NOSE DOUBLE

▶ Same construction features as E2110 end mill in a more economical version. Removes more material per grind. Machine ground notch assures positive anchorage in tool holder.



HSS Co8 | HSS | 2 | 30° | FLAT

P.1240, 1245, 1249

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)	R				
45289	**45039**	R1/16	**1/8**	3/8	3/8	3-1/16
45293	**45043**	R3/32	**3/16**	3/8	7/16	3-1/8
45297	**45047**	R1/8	**1/4**	3/8	1/2	3-1/8
45301	**45051**	R5/32	**5/16**	3/8	9/16	3-1/8
45305	**45055**	R3/16	**3/8**	3/8	9/16	3-1/8
45313	**45063**	R7/32	**7/16**	1/2	13/16	3-3/4
45321	**45071**	R1/4	**1/2**	1/2	13/16	3-3/4
45337	**45087**	R5/16	**5/8**	5/8	1-1/8	4-1/2
45359	**45109**	R3/8	**3/4**	3/4	1-5/16	5
45426	**45176**	R1/2	**1**	1	1-5/8	5-7/8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~—.0010	** 0~—.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

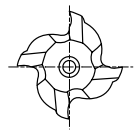
COBALT & HSS END MILLS

E2031 SERIES 8% COBALT (M42) FLAT SHANK
E1031 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH

▶ Possible for high-speed cutting, suitable for high efficiency machining. Easy to regrind.





HSS Co8 | HSS | 4 | 30° | FLAT

P.1239, 1244, 1248

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
04289	04039	1/8	3/8	3/8	2-5/16
04290	04040	9/64	3/8	7/16	2-3/8
04291	04041	5/32	3/8	7/16	2-3/8
04292	04042	11/64	3/8	1/2	2-3/8
04293	04043	3/16	3/8	1/2	2-3/8
04294	04044	13/64	3/8	9/16	2-7/16
04295	04045	7/32	3/8	9/16	2-7/16
04296	04046	15/64	3/8	5/8	2-7/16
04297	04047	1/4	3/8	5/8	2-7/16
04298	04048	17/64	3/8	11/16	2-1/2
04299	04049	9/32	3/8	11/16	2-1/2
04300	04050	19/64	3/8	3/4	2-1/2
04301	04051	5/16	3/8	3/4	2-1/2
04302	04052	21/64	3/8	3/4	2-1/2
04303	04053	11/32	3/8	3/4	2-1/2
04304	04054	23/64	3/8	3/4	2-1/2
04305	04055	3/8	3/8	3/4	2-1/2
04306	04056	25/64	3/8	1	2-11/16
04308	04058	13/32	3/8	1	2-11/16
04310	04060	27/64	3/8	1	2-11/16
04312	04062	7/16	3/8	1	2-11/16
04315	04065	29/64	1/2	1-1/4	3-1/4
04317	04067	15/32	1/2	1-1/4	3-1/4
04319	04069	31/64	1/2	1-1/4	3-1/4
04320	04070	1/2	3/8	1	2-11/16
04321	04071	1/2	1/2	1-1/4	3-1/4
04324	04074	17/32	1/2	1-3/8	3-3/8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2031 SERIES 8% COBALT (M42) FLAT SHANK

E1031 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH

▶ Possible for high-speed cutting, suitable for high efficiency machining. Easy to regrind.





HSS Co8 | HSS | 4 | 30° | FLAT

P.1239, 1244, 1248

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
04328	04078	9/16	1/2	1-3/8	3-3/8
04332	04082	19/32	1/2	1-3/8	3-3/8
04336	04086	5/8	1/2	1-3/8	3-3/8
04337	04087	5/8	5/8	1-5/8	3-3/4
04340	04090	21/32	1/2	1-5/8	3-5/8
04348	04098	11/16	5/8	1-5/8	3-3/4
04352	04102	23/32	1/2	1-5/8	3-5/8
04357	04107	3/4	1/2	1-5/8	3-5/8
04358	04108	3/4	5/8	1-5/8	3-3/4
04359	04109	3/4	3/4	1-5/8	3-7/8
04364	04114	25/32	5/8	1-7/8	4
04375	04125	13/16	3/4	1-7/8	4-1/8
04380	04130	27/32	5/8	1-7/8	4
04391	04141	7/8	3/4	1-7/8	4-1/8
04394	04144	7/8	7/8	1-7/8	4-1/8
04399	04149	29/32	3/4	1-7/8	4-1/8
04407	04157	15/16	3/4	1-7/8	4-1/8
04414	04164	31/32	3/4	1-7/8	4-1/8
04420	04170	1	5/8	1-7/8	4
04422	04172	1	3/4	1-7/8	4-1/8
04426	04176	1	1	2	4-1/2

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

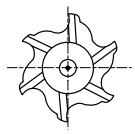
COBALT & HSS END MILLS

E2032 SERIES 8% COBALT (M42) FLAT SHANK
E1032 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 6 FLUTE REGULAR LENGTH

▶ Possible for high-speed cutting, suitable for high efficiency machining. Easy to regrind.





HSS Co8 | HSS | 6 | 30° | FLAT

P.1239, 1244, 1248

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
04338	04088	5/8	5/8	1-5/8	3-3/4
04360	04110	3/4	3/4	1-5/8	3-7/8
04376	04126	13/16	3/4	1-7/8	4-1/8
04390	04140	7/8	5/8	1-7/8	4
04395	04145	7/8	7/8	1-7/8	4-1/8
04405	04155	15/16	5/8	1-7/8	4
04421	04171	1	5/8	1-7/8	4
04427	04177	1	1	2	4-1/2
04432	04182	1-1/8	3/4	2	4-1/4
04436	04186	1-1/8	1	2	4-1/2
04440	04190	1-1/4	3/4	2	4-1/4
04444	04194	1-1/4	1	2	4-1/2
04446	04196	1-1/4	1-1/4	2	4-1/2
04452	04202	1-3/8	1	2	4-1/2
04460	04210	1-1/2	1	2	4-1/2
04462	04212	1-1/2	1-1/4	2	4-1/2
04470	04220	1-3/4	1-1/4	2	4-1/2
04478	04228	2	1-1/4	2	4-1/2
04481	04231	2	2	2	5-3/4

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

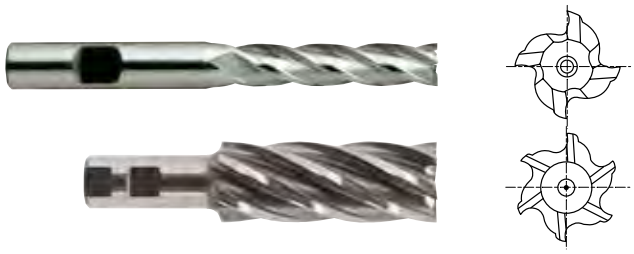
P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○						

COBALT & HSS END MILLS

E2034 / E2035 SERIES 8% COBALT (M42) FLAT SHANK
E1034 / E1035 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 4&6 FLUTE LONG LENGTH

▶ Longer flute length than E2031 type and allows deeper cutting. Easy to regrind.



HSS Co8 | HSS | 4&6 | 30° | FLAT

P.1239, 1244, 1248

E2034(8% COBALT) , E1034(HSS) Series ■ 4 FLUTE

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
05297	05047	1/4	3/8	1-1/4	3-1/16
05301	05051	5/16	3/8	1-3/8	3-1/8
05305	05055	3/8	3/8	1-1/2	3-1/4
05313	05063	7/16	1/2	1-3/4	3-3/4
05321	05071	1/2	1/2	2	4
05337	05087	5/8	5/8	2-1/2	4-5/8
05359	05109	3/4	3/4	3	5-1/4
05394	05144	7/8	7/8	3-1/2	5-3/4
05426	05176	1	1	4	6-1/2

E2035(8% COBALT) , E1035(HSS) Series ■ 6 FLUTE

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
05436	05186	1-1/8	1	4	6-1/2
05444	05194	1-1/4	1	4	6-1/2
05446	05196	1-1/4	1-1/4	4	6-1/2
05460	05210	1-1/2	1	4	6-1/2
05462	05212	1-1/2	1-1/4	4	6-1/2
05470	05220	1-3/4	1-1/4	4	6-1/2
05478	05228	2	1-1/4	4	6-1/2
* 05485	* 05235	2	2	4	7-3/4

* Combination Shank

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

Series	P					H	M	K	N					S	
	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
	~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
E1034 E2034	◎	◎	○						○		○				
E1035 E2035	◎	◎	○						○						

COBALT & HSS END MILLS

E2036 / E2037 SERIES 8% COBALT (M42) FLAT SHANK
E1036 / E1037 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 4&6 FLUTE EXTRA LONG LENGTH

▶ Provided with the longest flute length and suitable for high accuracy machining of deep step. Easy to regrind.



HSS Co8 | HSS | 4&6 | 30° | FLAT

P.1239, 1244, 1248

E2036(8% COBALT) , E1036(HSS) Series ■ 4 FLUTE

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
06297	06047	1/4	3/8	1-3/4	3-9/16
06301	06051	5/16	3/8	2	3-3/4
06305	06055	3/8	3/8	2-1/2	4-1/4
06321	06071	1/2	1/2	3	5
06337	06087	5/8	5/8	4	6-1/8
06359	06109	3/4	3/4	4	6-1/4
06394	06144	7/8	7/8	5	7-1/4
06426	06176	1	1	6	8-1/2

E2037(8% COBALT) , E1037(HSS) Series ■ 6 FLUTE

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
06446	06196	1-1/4	1-1/4	6	8-1/2
06462	06212	1-1/2	1-1/4	8	10-1/2
* 06491	* 06241	2	2	8	11-3/4

* Combination Shank

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

Series	P					H	M	K	N					S	
	Carbon Steels ~HRc20	Alloy Steels HRc20~30	Prehardened Steels HRc30~40	Hardened Steels HRc40~45	HRc45~55	High Hardened Steels HRc55~70	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
E1036 E2036	◎	◎	○						○		○				
E1037 E2037	◎	◎	○						○						

COBALT & HSS END MILLS

E2051 SERIES 8% COBALT (M42) FLAT SHANK

E1051 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH DOUBLE

▶ Series E2051 four flute end mills are the double-end version of E2031 four flute tools and are used for the same type of finishing operation. Two tools on one shank saves on sharpening set-up as well as on initial tool costs. Easy to regrind.





HSS Co8 | HSS | 4 | 30° | FLAT

P.1239, 1244, 1248

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
12289	12039	1/8	3/8	3/8	3-1/16
12290	12040	9/64	3/8	7/16	3-1/8
12291	12041	5/32	3/8	7/16	3-1/8
12292	12042	11/64	3/8	1/2	3-1/4
12293	12043	3/16	3/8	1/2	3-1/4
12294	12044	13/64	3/8	9/16	3-1/4
12295	12045	7/32	3/8	9/16	3-1/4
12296	12046	15/64	3/8	5/8	3-3/8
12297	12047	1/4	3/8	5/8	3-3/8
12298	12048	17/64	3/8	11/16	3-3/8
12299	12049	9/32	3/8	11/16	3-3/8
12300	12050	19/64	3/8	3/4	3-1/2
12301	12051	5/16	3/8	3/4	3-1/2
12302	12052	21/64	3/8	3/4	3-1/2
12303	12053	11/32	3/8	3/4	3-1/2
12304	12054	23/64	3/8	3/4	3-1/2
12305	12055	3/8	3/8	3/4	3-1/2
12307	12057	25/64	1/2	1	4-1/8
12309	12059	13/32	1/2	1	4-1/8
12311	12061	27/64	1/2	1	4-1/8
12313	12063	7/16	1/2	1	4-1/8
12315	12065	29/64	1/2	1	4-1/8
12317	12067	15/32	1/2	1	4-1/8
12319	12069	31/64	1/2	1	4-1/8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.

▶ NEXT PAGE

■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)

■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)

▶ Coated Price Shown in Price List. Call for Availability.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○						

COBALT & HSS END MILLS

E2051 SERIES 8% COBALT (M42) FLAT SHANK
E1051 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH DOUBLE

▶ Series E2051 four flute end mills are the double-end version of E2031 four flute tools and are used for the same type of finishing operation. Two tools on one shank saves on sharpening set-up as well as on initial tool costs. Easy to regrind.





HSS Co8 | HSS | 4 | 30° | FLAT

P.1239, 1244, 1248

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
12321	12071	1/2	1/2	1	4-1/8
12330	12080	9/16	5/8	1-3/8	5
12337	12087	5/8	5/8	1-3/8	5
12350	12100	11/16	3/4	1-5/8	5-5/8
12359	12109	3/4	3/4	1-5/8	5-5/8
12377	12127	13/16	7/8	1-7/8	6-1/8
12394	12144	7/8	7/8	1-7/8	6-1/8
12410	12160	15/16	1	1-7/8	6-3/8
12426	12176	1	1	1-7/8	6-3/8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~—.0010	** 0~—.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

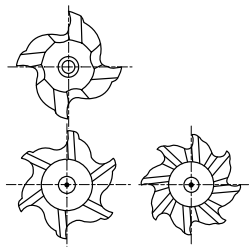
E2031 / E2032 SERIES 8% COBALT (M42) FLAT SHANK

E1031 / E1032 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 4, 6&8 FLUTE REGULAR LENGTH 3/4″ SHANK

▶ E2031(3/4″ shank, multi flute, general purpose end mills) are recommended for finishing operations for Bridgeport machines and other similar operations. Easy to regrind.





HSS Co8 | HSS | 4-8 | 30° | FLAT

P.1239, 1244, 1248

E2031(8% COBALT) , E1031(HSS) Series ■ 4 FLUTE

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
04359	04109	3/4	3/4	1-5/8	3-7/8
04375	04125	13/16	3/4	1-7/8	4-1/8
04391	04141	7/8	3/4	1-7/8	4-1/8
04407	04157	15/16	3/4	1-7/8	4-1/8
04422	04172	1	3/4	1-7/8	4-1/8

E2032(8% COBALT) , E1032(HSS) Series ■ 6&8 FLUTE

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
04432	04182	1-1/8	3/4	2	4-1/4	6
04440	04190	1-1/4	3/4	2	4-1/4	6
04458	04208	1-1/2	3/4	2	4-1/4	6
04468	04218	1-3/4	3/4	2	4-1/2	6
04476	04226	2	3/4	2	4-1/2	8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

Series	P					H	M	K	N					S	
	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
	~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
E1031 E2031	◎	◎	○						○		○				
E1032 E2032	◎	◎	○						○						

COBALT & HSS END MILLS

E2020 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, 4 FLUTE REGULAR LENGTH BALL NOSE

▶ The four flute ball end mills are designed for milling of radius bottom slots fillets and special contours. The end teeth are cut to center allowing these end mills to drill into material at the beginning of a slotting cut.



HSS Co8 | 4 | 30° | FLAT

P.1240, 1245, 1249

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	R				
43289	R1/16	**1/8**	3/8	3/8	2-5/16
43293	R3/32	**3/16**	3/8	1/2	2-3/8
43297	R1/8	**1/4**	3/8	5/8	2-7/16
43301	R5/32	**5/16**	3/8	3/4	2-1/2
43305	R3/16	**3/8**	3/8	3/4	2-1/2
43312	R7/32	**7/16**	3/8	1	2-11/16
43321	R1/4	**1/2**	1/2	1-1/4	3-1/4
43337	R5/16	**5/8**	5/8	1-5/8	3-3/4
43350	R11/32	**11/16**	5/8	1-5/8	3-3/4
43359	R3/8	**3/4**	3/4	1-5/8	3-7/8
43394	R7/16	**7/8**	7/8	1-7/8	4-1/8
43426	R1/2	**1**	1	2	4-1/2
43435	R9/16	**1-1/8**	1	2	4-1/2
43445	R5/8	**1-1/4**	1-1/4	2	4-1/2
43461	R3/4	**1-1/2**	1-1/4	2	4-1/2
43477	R1	**2**	1-1/4	2	4-1/2

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2021 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, 4 FLUTE LONG LENGTH BALL NOSE

▶Longer flute length than E2020 type and suitable for high efficient copying process and deep cutting of die mold corner radius.



HSS Co8 | 4 | 30° | FLAT

P.1240, 1245, 1249

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	R				
44297	R1/8	**1/4**	3/8	1-1/4	3-1/16
44301	R5/32	**5/16**	3/8	1-3/8	3-1/8
44305	R3/16	**3/8**	3/8	1-1/2	3-1/4
44321	R1/4	**1/2**	1/2	2	4
44337	R5/16	**5/8**	5/8	2-1/2	4-5/8
44359	R3/8	**3/4**	3/4	3	5-1/4
44394	R7/16	**7/8**	7/8	3-1/2	5-3/4
44426	R1/2	**1**	1	4	6-1/2

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2069 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, 4 FLUTE REGULAR LENGTH BALL NOSE DOUBLE

▶ Same construction features as E2020 end mill in a more economical version. Removes more material per grind. Machine ground notch assures positive anchorage in tool holder.



HSS Co8 | 4 | 30° | FLAT

P.1240, 1245, 1249

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	R				
46289	R1/16	**1/8**	3/8	3/8	3-1/16
46293	R3/32	**3/16**	3/8	1/2	3-1/4
46297	R1/8	**1/4**	3/8	5/8	3-3/8
46301	R5/32	**5/16**	3/8	3/4	3-1/2
46305	R3/16	**3/8**	3/8	3/4	3-1/2
46313	R7/32	**7/16**	1/2	1	4-1/8
46321	R1/4	**1/2**	1/2	1	4-1/8
46337	R5/16	**5/8**	5/8	1-3/8	5
46359	R3/8	**3/4**	3/4	1-5/8	5-5/8
46426	R1/2	**1**	1	1-7/8	6-3/8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~—.0010	** 0~—.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

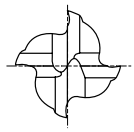
E2039 SERIES 8% COBALT (M42) FLAT SHANK

E1039 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH CENTER CUTTING

▶ Center cutting allows these end mills to drill into the part for the beginning of a slot. These center cutting end mills are recommended for pocketing, tracer milling, cam milling, die sinking and slotting.





HSS Co8 | HSS | 4 | 30° | FLAT

P.1239, 1244, 1248

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
07289	07039	1/8	3/8	3/8	2-5/16
07291	07041	5/32	3/8	7/16	2-3/8
07293	07043	3/16	3/8	1/2	2-3/8
07295	07045	7/32	3/8	9/16	2-7/16
07297	07047	1/4	3/8	5/8	2-7/16
07299	07049	9/32	3/8	11/16	2-1/2
07301	07051	5/16	3/8	3/4	2-1/2
07303	07053	11/32	3/8	3/4	2-1/2
07305	07055	3/8	3/8	3/4	2-1/2
07308	07058	13/32	3/8	1	2-11/16
07312	07062	7/16	3/8	1	2-11/16
07316	07066	15/32	3/8	1	2-11/16
07320	07070	1/2	3/8	1	2-11/16
07321	07071	1/2	1/2	1-1/4	3-1/4

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

▶ NEXT PAGE

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

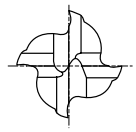
COBALT & HSS END MILLS

E2039 SERIES 8% COBALT (M42) FLAT SHANK
E1039 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH CENTER CUTTING

▶ Center cutting allows these end mills to drill into the part for the beginning of a slot. These center cutting end mills are recommended for pocketing, tracer milling, cam milling, die sinking and slotting.





HSS Co8 | HSS | 4 | 30° | FLAT

P.1239, 1244, 1248

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
07336	07086	5/8	1/2	1-3/8	3-3/8
07337	07087	5/8	5/8	1-5/8	3-3/4
07348	07098	11/16	5/8	1-5/8	3-3/4
07357	07107	3/4	1/2	1-5/8	3-5/8
07358	07108	3/4	5/8	1-5/8	3-3/4
07359	07109	3/4	3/4	1-5/8	3-7/8
07391	07141	7/8	3/4	1-7/8	4-1/8
07394	07144	7/8	7/8	1-7/8	4-1/8
07420	07170	1	5/8	1-7/8	4
07422	07172	1	3/4	1-7/8	4-1/8
07426	07176	1	1	2	4-1/2
07435	07185	1-1/8	1	2	4-1/2
07445	07195	1-1/4	1-1/4	2	4-1/2
07461	07211	1-1/2	1-1/4	2	4-1/2

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

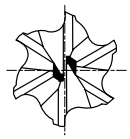
E2042 SERIES 8% COBALT (M42) FLAT SHANK

E1042 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 6 FLUTE REGULAR LENGTH CENTER CUTTING

▶ Center cutting allows these end mills to drill into the part for the beginning of a slot. These center cutting end mills are recommended for pocketing, tracer milling, cam milling, die sinking and slotting.





HSS Co8 | HSS | 6 | 30° | FLAT

P.1239, 1244, 1248

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
07322	07072	1/2	1/2	1-1/4	3-1/4
07338	07088	5/8	5/8	1-5/8	3-3/4
07349	07099	11/16	5/8	1-5/8	3-3/4
07360	07110	3/4	3/4	1-5/8	3-7/8
07395	07145	7/8	7/8	1-7/8	4-1/8
07427	07177	1	1	2	4-1/2
07436	07186	1-1/8	1	2	4-1/2
07446	07196	1-1/4	1-1/4	2	4-1/2
07448		1-5/16	3/4	2	4-1/4
07462	07212	1-1/2	1-1/4	2	4-1/2
07478	07228	2	1-1/4	2	4-1/2
* 07481	* 07231	2	2	2	5-3/4

* Combination Shank

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○						

COBALT & HSS END MILLS

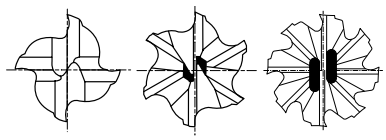
E2039 SERIES 8% COBALT (M42) FLAT SHANK

E2042 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, MULTI FLUTE MEDIUM LENGTH CENTER CUTTING

▶ Center cutting allows these end mills to drill into the part for the beginning of a slot. These center cutting end mills are recommended for pocketing, tracer milling, cam milling, die sinking and slotting.





HSS Co8 | 4-8 | 30° | FLAT

P.1239, 1244, 1248

E2039(4 FLUTE), E2042(6&8 FLUTE) Series

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
07901	1	1	3	5-1/2	4
07902	1-1/4	1-1/4	3	5-1/2	4
07903	1-1/2	1-1/4	3	5-1/2	4
07094	1	1	3	5-1/2	6
07095	1-1/4	1-1/4	3	5-1/2	6
07096	1-1/2	1-1/4	3	5-1/2	6
07097	1-3/4	1-1/4	3	5-1/2	6
99098	2	1-1/4	3	5-1/2	8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2040 / E2162 SERIES 8% COBALT (M42) FLAT SHANK

E1040 / E1162 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 4&6 FLUTE LONG LENGTH CENTER CUTTING

▶ Longer flute length than E2039 type, E2042 and allows deeper cutting.



HSS Co8 | HSS | 4&6 | 30° | FLAT

P.1239, 1244, 1248

E2040(8% COBALT) , E1040(HSS) Series ■ 4 FLUTE

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
08297	08047	1/4	3/8	1-1/4	3-1/16
08301	08051	5/16	3/8	1-3/8	3-1/8
08305	08055	3/8	3/8	1-1/2	3-1/4
08321	08071	1/2	1/2	2	4
08337	08087	5/8	5/8	2-1/2	4-5/8
08359	08109	3/4	3/4	3	5-1/4
08394	08144	7/8	7/8	3-1/2	5-3/4
08426	08176	1	1	4	6-1/2
08445	08195	1-1/4	1-1/4	4	6-1/2
08461	08211	1-1/2	1-1/4	4	6-1/2

E2162(8% COBALT) , E1162(HSS) Series ■ 6 FLUTE

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
08322	08072	1/2	1/2	2	4
08338	08088	5/8	5/8	2-1/2	4-5/8
08360	08110	3/4	3/4	3	5-1/4
08395	08145	7/8	7/8	3-1/2	5-3/4
08427	08177	1	1	4	6-1/2
08446	08196	1-1/4	1-1/4	4	6-1/2
08462	08212	1-1/2	1-1/4	4	6-1/2
08478	08228	2	1-1/4	4	6-1/2
* 08485	* 08235	2	2	4	7-3/4
* 08489	* 08239	2	2	6	9-3/4

* Combination Shank

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

◎ : Excellent ○ : Good

Series	P					H	M	K	N					S	
	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
	~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
E1040 E2040	◎	◎	○						○		○				
E1162 E2162	◎	◎	○						○						

COBALT & HSS END MILLS

E2041 / E2175 SERIES 8% COBALT (M42) FLAT SHANK
E1041 / E1175 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 4&6 FLUTE EXTRA LONG LENGTH CENTER CUTTING

▶ Provided with longest flute length and suitable for high accuracy machining of deep step.



HSS Co8 | HSS | 4&6 | 30° | FLAT

P.1239, 1244, 1248

E2041(8% COBALT) , E1041(HSS) Series ■ 4 FLUTE

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
09297	09047	1/4	3/8	1-3/4	3-9/16
09301	09051	5/16	3/8	2	3-3/4
09305	09055	3/8	3/8	2-1/2	4-1/4
09321	09071	1/2	1/2	3	5
09337	09087	5/8	5/8	4	6-1/8
09359	09109	3/4	3/4	4	6-1/4
09394	09144	7/8	7/8	5	7-1/4
09426	09176	1	1	6	8-1/2
09445	09195	1-1/4	1-1/4	6	8-1/2

E2175(8% COBALT) , E1175(HSS) Series ■ 6 FLUTE

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
09322	09072	1/2	1/2	3	5
09338	09088	5/8	5/8	4	6-1/8
09360	09110	3/4	3/4	4	6-1/4
09395	09145	7/8	7/8	5	7-1/4
09427	09177	1	1	6	8-1/2
09446	09196	1-1/4	1-1/4	6	8-1/2
09462	09212	1-1/2	1-1/4	8	10-1/2
* 09491	* 09241	2	2	8	11-3/4

* Combination Shank

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

Series	P					H	M	K	N					S	
	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
	~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
E1041 E2041	◎	◎	○						○		○				
E1175 E2175	◎	◎	○						○						

COBALT & HSS END MILLS

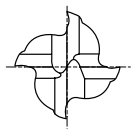
E2053 SERIES 8% COBALT (M42) FLAT SHANK

E1053 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH DOUBLE CENTER CUTTING

▶ Series E2053 end mills are the double-end version of E2039 center cutting single-end tools. They are used for slotting, shallow pocketing, tracer milling or die sinking and similar operation.





HSS Co8 | HSS | 4 | 30° | FLAT

P.1239, 1244, 1248

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
13289	13039	1/8	3/8	3/8	3-1/16
13290	13040	9/64	3/8	7/16	3-1/8
13291	13041	5/32	3/8	7/16	3-1/8
13292	13042	11/64	3/8	1/2	3-1/4
13293	13043	3/16	3/8	1/2	3-1/4
13294	13044	13/64	3/8	9/16	3-1/4
13295	13045	7/32	3/8	9/16	3-1/4
13296	13046	15/64	3/8	5/8	3-3/8
13297	13047	1/4	3/8	5/8	3-3/8
13298	13048	17/64	3/8	11/16	3-3/8
13299	13049	9/32	3/8	11/16	3-3/8
13300	13050	19/64	3/8	3/4	3-1/2
13301	13051	5/16	3/8	3/4	3-1/2
13302	13052	21/64	3/8	3/4	3-1/2
13303	13053	11/32	3/8	3/4	3-1/2
13304	13054	23/64	3/8	3/4	3-1/2
13305	13055	3/8	3/8	3/4	3-1/2
13307	13057	25/64	1/2	1	4-1/8
13309	13059	13/32	1/2	1	4-1/8
13311	13061	27/64	1/2	1	4-1/8
13313	13063	7/16	1/2	1	4-1/8
13315	13065	29/64	1/2	1	4-1/8
13317	13067	15/32	1/2	1	4-1/8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

▶ NEXT PAGE

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

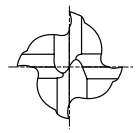
COBALT & HSS END MILLS

E2053 SERIES 8% COBALT (M42) FLAT SHANK
E1053 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH DOUBLE CENTER CUTTING

▶ Series E2053 end mills are the double-end version of E2039 center cutting single-end tools. They are used for slotting, shallow pocketing, tracer milling or die sinking and similar operation.





HSS Co8 | HSS | 4 | 30° | FLAT

P.1239, 1244, 1248

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
13319	13069	31/64	1/2	1	4-1/8
13321	13071	1/2	1/2	1	4-1/8
13330	13080	9/16	5/8	1-3/8	5
13337	13087	5/8	5/8	1-3/8	5
13350	13100	11/16	3/4	1-5/8	5-5/8
13359	13109	3/4	3/4	1-5/8	5-5/8
13377	13127	13/16	7/8	1-7/8	6-1/8
13394	13144	7/8	7/8	1-7/8	6-1/8
13426	13176	1	1	1-7/8	6-3/8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~—.0010	** 0~—.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

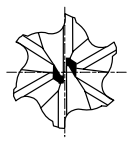
COBALT & HSS END MILLS

E2100 SERIES 8% COBALT (M42) FLAT SHANK
E1100 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 6 FLUTE REGULAR with COMBINATION 2˝ SHANK CENTER CUTTING

▶ These are to be used for heavy hogging cuts in die-sinking, tape & tracer controlled milling and similar work.
The Heavy-Duty end mills are made with toughened Combination shank, heavy web construction, accurate machine-ground end-teeth notching and a special surface treatment to reduce cutting-edge wear.





HSS Co8 | HSS | 6 | 30° | FLAT

P.1239, 1244, 1248

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
10481	**10231**	**2**	2	2	5-3/4
10485	**10235**	**2**	2	4	7-3/4
10487	**10237**	**2**	2	5	8-3/4
10489	**10239**	**2**	2	6	9-3/4
10491	**10241**	**2**	2	8	11-3/4

■ The TiN coated, TiCN coated or TiAIN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAIN F), CE(TiAIN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAIN F), HE(TiAIN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)
0~+.0030

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○						

COBALT & HSS END MILLS

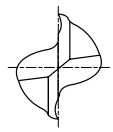
E2001 SERIES 8% COBALT (M42) PLAIN SHANK

E1001 SERIES HSS (M2) PLAIN SHANK

HSSCo8 & HSS, 2 FLUTE MINIATURE STUB LENGTH DOUBLE

▶ Tools under Miniature end mills have 3/16″ shank diameter without flats. They are designed with positive rake angle geometry and a high helix angle to insure free cutting action. The flute design provides good strength behind the cutting edge. Suitable for finishing of precision components such as watch, camera, electronic apparatus molds, etc.





HSS Co8 | HSS | 2 | 39° | 30° | PLAIN

P.1242

~Ø3/32 Ø7/64~

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
49252	49002	1/32	3/16	3/64	2
49254	49004	3/64	3/16	1/16	2
49256	49006	1/16	3/16	3/32	2
49258	49008	5/64	3/16	1/8	2
49260	49010	3/32	3/16	9/64	2
49262	49012	7/64	3/16	5/32	2
49264	49014	1/8	3/16	3/16	2
49266	49016	9/64	3/16	7/32	2
49268	49018	5/32	3/16	15/64	2
49270	49020	11/64	3/16	1/4	2
49272	49022	3/16	3/16	9/32	2

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■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~—.0010	** 0~—.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

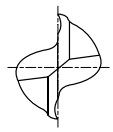
E2003 SERIES 8% COBALT (M42) PLAIN SHANK

E1003 SERIES HSS (M2) PLAIN SHANK

HSSCo8 & HSS, 2 FLUTE MINIATURE REGULAR LENGTH DOUBLE

▶ Suitable for finishing of precision components such as watch, camera electronic apparatus molds, etc.





HSS Co8 | HSS | 2 | 39° | 30° | PLAIN

~Ø3/32 Ø7/64~

P.1242

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
50252	**50002**	**1/32**	3/16	3/32	2-1/4
50254	**50004**	**3/64**	3/16	9/64	2-1/4
50256	**50006**	**1/16**	3/16	3/16	2-1/4
50258	**50008**	**5/64**	3/16	15/64	2-1/4
50260	**50010**	**3/32**	3/16	9/32	2-1/4
50262	**50012**	**7/64**	3/16	21/64	2-1/4
50264	**50014**	**1/8**	3/16	3/8	2-1/4
50266	**50016**	**9/64**	3/16	13/32	2-1/4
50268	**50018**	**5/32**	3/16	7/16	2-1/4
50270	**50020**	**11/64**	3/16	1/2	2-1/4
50272	**50022**	**3/16**	3/16	1/2	2-1/4

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~—.0010	** 0~—.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

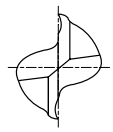
COBALT & HSS END MILLS

E2005 SERIES 8% COBALT (M42) PLAIN SHANK
E1005 SERIES HSS (M2) PLAIN SHANK

HSSCo8 & HSS, 2 FLUTE MINIATURE LONG LENGTH DOUBLE

▶ Suitable for finishing of precision components such as watch, camera electronic apparatus molds, etc.





HSS Co8 | HSS | 2 | 39° | 30° | PLAIN

~Ø3/32 Ø7/64~

P.1242

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
51256	51006	1/16	3/16	7/32	2-1/2
51258	51008	5/64	3/16	1/4	2-1/2
51260	51010	3/32	3/16	9/32	2-5/8
51262	51012	7/64	3/16	9/32	2-5/8
51264	51014	1/8	3/16	3/4	3-1/8
51266	51016	9/64	3/16	3/4	3-1/8
51268	51018	5/32	3/16	7/8	3-1/4
51270	51020	11/64	3/16	7/8	3-1/4
51272	51022	3/16	3/16	1	3-3/8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~—.0010	** 0~—.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

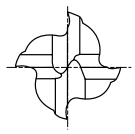
E2002 SERIES 8% COBALT (M42) PLAIN SHANK

E1002 SERIES HSS (M2) PLAIN SHANK

HSSCo8 & HSS, 4FLUTE MINIATURE STUB LENGTH DOUBLE

▶ Suitable for finishing of precision components such as watch, camera electronic apparatus molds, etc.





HSS Co8 | HSS | 4 | 39° | 30° | PLAIN

~Ø3/32 Ø7/64~

P.1242

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
52256	52006	1/16	3/16	3/32	2
52258	52008	5/64	3/16	1/8	2
52260	52010	3/32	3/16	9/64	2
52262	52012	7/64	3/16	5/32	2
52264	52014	1/8	3/16	3/16	2
52266	52016	9/64	3/16	7/32	2
52268	52018	5/32	3/16	15/64	2
52270	52020	11/64	3/16	1/4	2
52272	52022	3/16	3/16	9/32	2

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~—.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2004 SERIES 8% COBALT (M42) PLAIN SHANK
E1004 SERIES HSS (M2) PLAIN SHANK

HSSCo8 & HSS, 4FLUTE MINIATURE REGULAR LENGTH DOUBLE

▶ Suitable for finishing of precision components such as watch, camera electronic apparatus molds, etc.



HSS Co8 | HSS | 4 | 39° | 30° | PLAIN

~Ø3/32 Ø7/64~

P.1242

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
53256	**53006**	**1/16**	3/16	3/16	2-1/4
53258	**53008**	**5/64**	3/16	15/64	2-1/4
53260	**53010**	**3/32**	3/16	9/32	2-1/4
53262	**53012**	**7/64**	3/16	21/64	2-1/4
53264	**53014**	**1/8**	3/16	3/8	2-1/4
53266	**53016**	**9/64**	3/16	13/32	2-1/4
53268	**53018**	**5/32**	3/16	7/16	2-1/4
53270	**53020**	**11/64**	3/16	1/2	2-1/4
53272	**53022**	**3/16**	3/16	1/2	2-1/4

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~—.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

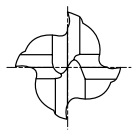
E2006 SERIES 8% COBALT (M42) PLAIN SHANK

E1006 SERIES HSS (M2) PLAIN SHANK

HSSCo8 & HSS, 4FLUTE MINIATURE LONG LENGTH DOUBLE

▶ Suitable for finishing of precision components such as watch, camera electronic apparatus molds, etc.





HSS Co8 | HSS | 4 | 39° | 30° | PLAIN

~Ø3/32 Ø7/64~

P.1242

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
54256	**54006**	**1/16**	3/16	7/32	2-1/2
54258	**54008**	**5/64**	3/16	1/4	2-1/2
54260	**54010**	**3/32**	3/16	9/32	2-5/8
54262	**54012**	**7/64**	3/16	9/32	2-5/8
54264	**54014**	**1/8**	3/16	3/4	3-1/8
54266	**54016**	**9/64**	3/16	3/4	3-1/8
54268	**54018**	**5/32**	3/16	7/8	3-1/4
54270	**54020**	**11/64**	3/16	7/8	3-1/4
54272	**54022**	**3/16**	3/16	1	3-3/8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~—.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2008 SERIES 8% COBALT (M42) PLAIN SHANK

E1008 SERIES HSS (M2) PLAIN SHANK

HSSCo8 & HSS, 2 FLUTE MINIATURE STUB LENGTH BALL NOSE DOUBLE

▶ Helical flute in the nose radius.
Suitable for high efficient copying process and cutting of die mold corner radius.



HSS Co8 | HSS | 2 | 39° | 30° | PLAIN

~Ø3/32 Ø7/64~

P.1242

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)	R				
55256	**55006**	R1/32	**1/16**	3/16	3/32	2
55260	**55010**	R3/64	**3/32**	3/16	9/64	2
55264	**55014**	R1/16	**1/8**	3/16	3/16	2
55268	**55018**	R5/64	**5/32**	3/16	15/64	2
55272	**55022**	R3/32	**3/16**	3/16	9/32	2

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~—.0010	** 0~—.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2013 SERIES 8% COBALT (M42) PLAIN SHANK

E1013 SERIES HSS (M2) PLAIN SHANK

HSSCo8 & HSS, 2 FLUTE MINIATURE REGULAR LENGTH BALL NOSE DOUBLE

▶ Helical flute in the nose radius.
Suitable for high efficient copying process and cutting of die mold corner radius.



HSS Co8 | HSS | 2 | 39° | 30° | PLAIN

P.1242

~Ø3/32 Ø7/64~

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)	R				
56252	**56002**	R1/64	**1/32**	3/16	3/32	2-1/4
56254	**56004**	R3/128	**3/64**	3/16	9/64	2-1/4
56256	**56006**	R1/64	**1/16**	3/16	3/16	2-1/4
56258	**56008**	R5/128	**5/64**	3/16	15/64	2-1/4
56260	**56010**	R3/64	**3/32**	3/16	9/32	2-1/4
56262	**56012**	R7/128	**7/64**	3/16	21/64	2-1/4
56264	**56014**	R1/16	**1/8**	3/16	3/8	2-1/4
56266	**56016**	R9/128	**9/64**	3/16	13/32	2-1/4
56268	**56018**	R5/64	**5/32**	3/16	7/16	2-1/4
56270	**56020**	R11/128	**11/64**	3/16	1/2	2-1/4
56272	**56022**	R3/32	**3/16**	3/16	1/2	2-1/4

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~—.0010	** 0~—.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2015 SERIES 8% COBALT (M42) PLAIN SHANK
E1015 SERIES HSS (M2) PLAIN SHANK

HSSCo8 & HSS, 2 FLUTE MINIATURE LONG LENGTH BALL NOSE DOUBLE

▶ Helical flute in the nose radius.
Suitable for high efficient copying process and cutting of die mold corner radius.



HSS Co8 | HSS | 2 | 39° | 30° | PLAIN

~Ø3/32 Ø7/64~

P.1242

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)	R				
57256	**57006**	R1/32	**1/16**	3/16	7/32	2-1/2
57260	**57010**	R3/64	**3/32**	3/16	9/32	2-5/8
57264	**57014**	R1/16	**1/8**	3/16	3/4	3-1/8
57268	**57018**	R5/64	**5/32**	3/16	7/8	3-1/4
57272	**57022**	R3/32	**3/16**	3/16	1	3-3/8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~—.0020

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

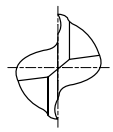
COBALT & HSS END MILLS

E1070 SERIES HSS (M2) FLAT SHANK

HSS, 2 FLUTE 42° HELIX REGULAR & MEDIUM LENGTH for ALUMINUM

▶ The two flute end mills for aluminum have High Helix flute design making them well suited for milling aluminum and other non-ferrous materials. Special rake angles and low micro inch finishes on the primary clearance angles and flute faces insure free cutting action, fine finishes and longer tool life for both non-ferrous materials as well as harder alloys. These tools are made from regular HSS(M2), which is good for aluminum cutting.





HSS | 2 | 42° | FLAT P.1237

REGULAR LENGTH

Unit : Inch

EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
17047	1/4	3/8	5/8	2-7/16
17051	5/16	3/8	3/4	2-1/2
17055	3/8	3/8	3/4	2-1/2
17062	7/16	3/8	1	2-11/16
17071	1/2	1/2	1-1/4	3-1/4
17087	5/8	5/8	1-5/8	3-3/4
17109	3/4	3/4	1-5/8	3-7/8
17141	7/8	3/4	1-7/8	4-1/8
17144	7/8	7/8	1-7/8	4-1/8
17172	1	3/4	1-7/8	4-1/8
17176	1	1	2	4-1/2
17195	1-1/4	1-1/4	2	4-1/2
17211	1-1/2	1-1/4	2	4-1/2
17219	1-3/4	1-1/4	2	4-1/2
17227	2	1-1/4	2	4-1/2

MEDIUM LENGTH

Unit : Inch

EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
99089	1	1	3	5-1/2
99090	1-1/4	1-1/4	3	5-1/2
99091	1-1/2	1-1/4	3	5-1/2
99092	1-3/4	1-1/4	3	5-1/2
99093	2	1-1/4	3	5-1/2

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○										◎				

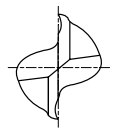
COBALT & HSS END MILLS

E1071 SERIES HSS (M2) FLAT SHANK
E1072 SERIES HSS (M2) FLAT SHANK

HSS, 2 FLUTE 42° HELIX LONG & EXTRA LONG LENGTH for ALUMINUM

▶ Sharp cutting most suitable flute shape for cutting aluminum alloy, etc.
These tools are made from regular HSS(M2), which is good for aluminum cutting.





HSS | 2 | 42° | FLAT

P.1237

LONG LENGTH

Unit : Inch

EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
18047	1/4	3/8	1-1/4	3-1/16
18051	5/16	3/8	1-3/8	3-1/8
18055	3/8	3/8	1-1/2	3-1/4
18063	7/16	1/2	1-3/4	3-3/4
18071	1/2	1/2	2	4
18087	5/8	5/8	2-1/2	4-5/8
18109	3/4	3/4	3	5-1/4
18176	1	1	4	6-1/2
18195	1-1/4	1-1/4	4	6-1/2
18211	1-1/2	1-1/4	4	6-1/2
18227	2	1-1/4	4	6-1/2

EXTRA LONG LENGTH

Unit : Inch

EDP No. HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
19047	1/4	3/8	1-3/4	3-9/16
19051	5/16	3/8	2	3-3/4
19055	3/8	3/8	2-1/2	4-1/4
19071	1/2	1/2	3	5
19087	5/8	5/8	4	6-1/8
19109	3/4	3/4	4	6-1/4
19176	1	1	6	8-1/2
19195	1-1/4	1-1/4	6	8-1/2
19211	1-1/2	1-1/4	8	10-1/2

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
○										◎				

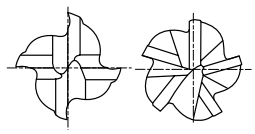
COBALT & HSS END MILLS

E2086 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, MULTI FLUTE STUB LENGTH FINE PITCH ROUGHING CENTER CUTTING

▶ This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths. In many cases, the milled surfaces are of acceptable quality.





HSS Co8 | FINE | 4&5 | 30° | FLAT

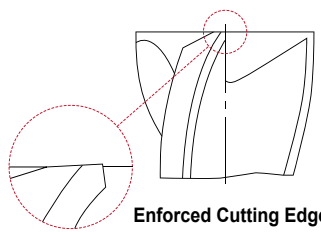
P.1241, 1246, 1250

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
75297	**1/4**	3/8	1/4	2-1/16	4
75305	**3/8**	3/8	3/8	2-5/32	4
75313	**7/16**	1/2	1/2	2-1/2	4
75321	**1/2**	1/2	1/2	2-1/2	4
75337	**5/8**	5/8	5/8	2-3/4	4
75359	**3/4**	3/4	3/4	2-7/8	4
75391	**7/8**	3/4	7/8	3-1/8	5
75426	**1**	1	1	3-1/2	5

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060



Enforced Cutting Edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

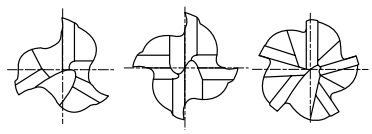
COBALT & HSS END MILLS

E2085 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, MULTI FLUTE REGULAR LENGTH FINE PITCH ROUGHING CENTER CUTTING

▶ This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths. In many cases, the milled surfaces are of acceptable quality.





HSS Co8 | FINE | 3-5 | 30° | FLAT

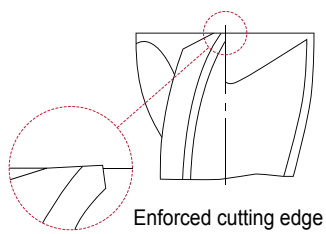
P.1241, 1246, 1250

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
76297	1/4	3/8	5/8	2-7/16	3
76301	5/16	3/8	3/4	2-1/2	3
76305	3/8	3/8	3/4	2-1/2	4
76312	7/16	3/8	1	2-11/16	4
76321	1/2	1/2	1-1/4	3-1/4	4
76328	9/16	1/2	1-3/8	3-3/8	4
76337	5/8	5/8	1-5/8	3-3/4	4
76359	3/4	3/4	1-5/8	3-7/8	4
76391	7/8	3/4	1-7/8	4-1/8	5
76394	7/8	7/8	1-7/8	4-1/8	5
76422	1	3/4	2	4-1/4	5
76426	1	1	2	4-1/2	5

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

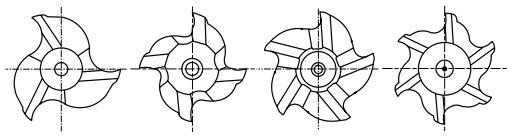
COBALT & HSS END MILLS

E2079 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, MULTI FLUTE REGULAR LENGTH FINE PITCH ROUGHING

▶ This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths. In many cases, the milled surfaces are of acceptable quality.





HSS Co8 | FINE | 3-6 | 30° | FLAT

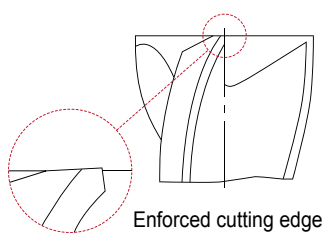
P.1241, 1246, 1250

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
70297	1/4	3/8	5/8	2-7/16	3
70301	5/16	3/8	3/4	2-1/2	3
70305	3/8	3/8	3/4	2-1/2	4
70312	7/16	3/8	1	2-11/16	4
70321	1/2	1/2	1-1/4	3-1/4	4
70328	9/16	1/2	1-3/8	3-3/8	4
70337	5/8	5/8	1-5/8	3-3/4	4
70358	3/4	5/8	1-5/8	3-3/4	4
70359	3/4	3/4	1-5/8	3-7/8	4
70391	7/8	3/4	1-7/8	4-1/8	5
70394	7/8	7/8	1-7/8	4-1/8	5
70422	1	3/4	2	4-1/4	5
70426	1	1	2	4-1/2	5
70431	1-1/8	3/4	2	4-1/4	6
70435	1-1/8	1	2	4-1/2	6
70439	1-1/4	3/4	2	4-1/4	6
70445	1-1/4	1-1/4	2	4-1/2	6
70449	1-3/8	3/4	2	4-1/4	6
70457	1-1/2	3/4	2	4-1/4	6
70461	1-1/2	1-1/4	2	4-1/2	6
70469	1-3/4	1-1/4	2	4-1/2	6
70475	2	3/4	2	4-1/4	6
70477	2	1-1/4	2	4-1/2	6

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

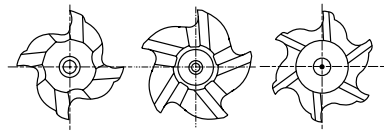
COBALT & HSS END MILLS

E2077 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, MULTI FLUTE LONG LENGTH FINE PITCH ROUGHING

▶ This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths. In many cases, the milled surfaces are of acceptable quality.





HSS Co8 | FINE | 4-6 | 30° | FLAT

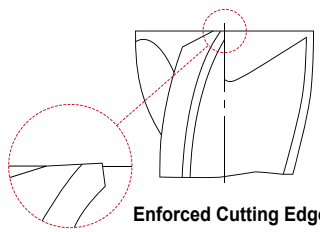
P.1241, 1246, 1250

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
71321	1/2	1/2	2	4	4
71337	5/8	5/8	2-1/2	4-5/8	4
71358	3/4	5/8	3	5-1/4	4
71359	3/4	3/4	3	5-1/4	4
71394	7/8	7/8	3-1/2	5-3/4	5
71426	1	1	4	6-1/2	5
71445	1-1/4	1-1/4	4	6-1/2	6
71457	1-1/2	3/4	4	6-1/4	6
71461	1-1/2	1-1/4	4	6-1/2	6
71469	1-3/4	1-1/4	4	6-1/2	6
71477	2	1-1/4	4	6-1/2	6

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060



Enforced Cutting Edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

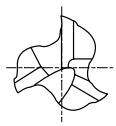
COBALT & HSS END MILLS

E2086 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, 3 FLUTE STUB LENGTH FINE PITCH ROUGHING CENTER CUTTING

▶ This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths. In many cases, the milled surfaces are of acceptable quality.





HSS Co8 | FINE | 3 | 30° | FLAT

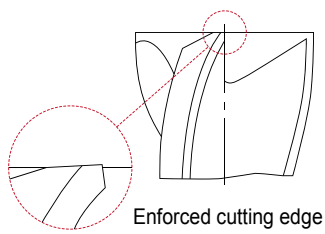
P.1241, 1246, 1250

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
72297	**1/4**	3/8	1/4	2-1/16
72305	**3/8**	3/8	3/8	2-5/32
72321	**1/2**	1/2	1/2	2-1/2
72337	**5/8**	5/8	5/8	2-3/4
72359	**3/4**	3/4	3/4	2-7/8
72391	**7/8**	3/4	7/8	3-1/8
72422	**1**	3/4	1	3-1/4
72426	**1**	1	1	3-1/2

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

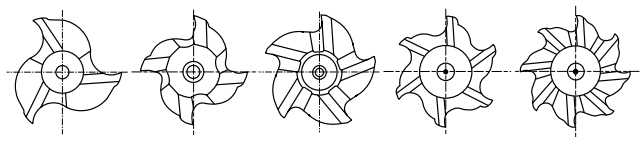
COBALT & HSS END MILLS

E2170 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, MULTI FLUTE REGULAR LENGTH COARSE PITCH ROUGHING

▶ This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is recommended for cutting steel grades and many non-ferrous materials.
The end tooth of this tool has a center hole design for many accurate resharpenings between centers.





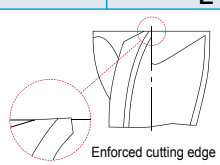
HSS Co8 | COARSE | 3-8 | 30° | FLAT

P.1241, 1246, 1250

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
60297	1/4	3/8	5/8	2-7/16	3
60301	5/16	3/8	3/4	2-1/2	3
60305	3/8	3/8	3/4	2-1/2	4
60312	7/16	3/8	1	2-11/16	4
60321	1/2	1/2	1-1/4	3-1/4	4
60328	9/16	1/2	1-3/8	3-3/8	4
60337	5/8	5/8	1-5/8	3-3/4	4
60348	11/16	5/8	1-5/8	3-3/4	4
60358	3/4	5/8	1-5/8	3-3/4	4
60359	3/4	3/4	1-5/8	3-3/4	4
60375	13/16	3/4	1-7/8	4-1/8	4
60391	7/8	3/4	1-7/8	4-1/8	5
60394	7/8	7/8	1-7/8	4-1/8	5
60409	15/16	7/8	1-7/8	4-1/8	5
60422	1	3/4	2	4-1/4	5
60426	1	1	2	4-1/2	5
60431	1-1/8	3/4	2	4-1/4	6
60435	1-1/8	1	2	4-1/2	6
60439	1-1/4	3/4	2	4-1/4	6
60445	1-1/4	1-1/4	2	4-1/2	6
60449	1-3/8	3/4	2	4-1/4	6
60457	1-1/2	3/4	2	4-1/4	6
60461	1-1/2	1-1/4	2	4-1/2	6
60467	1-3/4	3/4	2	4-1/4	6
60469	1-3/4	1-1/4	2	4-1/2	6
60475	2	3/4	2	4-1/4	6
60477	2	1-1/4	2	4-1/2	6
* 60480	2	2	2	5-3/4	8
* 60482	2	2	3	6-3/4	8
* 60484	2	2	4	7-3/4	8

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060



* Combination Shank

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

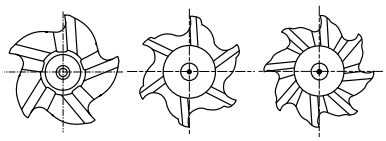
COBALT & HSS END MILLS

E2171 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, MULTI FLUTE MEDIUM LENGTH COARSE PITCH ROUGHING

▶ This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is recommended for cutting steel grades and many non-ferrous materials. The end tooth of this tool has a center hole design for many accurate resharpenings between centers.





HSS Co8 | COARSE | 5-8 | 30° | FLAT

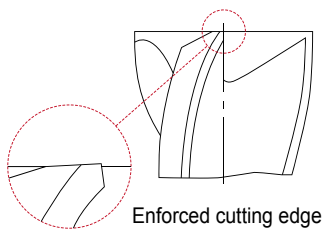
P.1241, 1246, 1250

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
61426	**1**	1	3	5-1/2	5
61445	**1-1/4**	1-1/4	3	5-1/2	6
61461	**1-1/2**	1-1/4	3	5-1/2	6
61488	**2**	2	6	9-3/4	8

■ The TiN coated, TiCN coated or TiAIN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAIN F), CE(TiAIN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

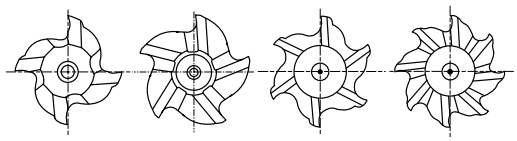
COBALT & HSS END MILLS

E2172 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, MULTI FLUTE LONG LENGTH COARSE PITCH ROUGHING

▶ This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is recommended for cutting steel grades and many non-ferrous materials. The end tooth of this tool has a center hole design for many accurate resharpenings between centers.





HSS Co8 | COARSE | 4-8 | 30° | FLAT

P.1241, 1246, 1250

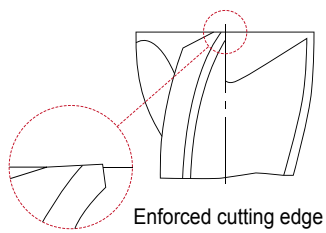
Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
62321	1/2	1/2	2	4	4
62337	5/8	5/8	2-1/2	4-5/8	4
62358	3/4	5/8	3	5-1/8	4
62359	3/4	3/4	3	5-1/4	4
62391	7/8	3/4	3-1/2	5-3/4	5
62422	1	3/4	4	6-1/4	5
62426	1	1	4	6-1/2	5
62439	1-1/4	3/4	4	6-1/4	6
62445	1-1/4	1-1/4	4	6-1/2	6
62457	1-1/2	3/4	4	6-1/4	6
62461	1-1/2	1-1/4	4	6-1/2	6
62469	1-3/4	1-1/4	4	6-1/2	6
62477	2	1-1/4	4	6-1/2	6
* 62490	2	2	8	11-3/4	8

* Combination Shank

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

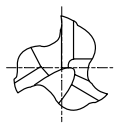
COBALT & HSS END MILLS

E2241 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, 3FLUTE STUB LENGTH COARSE PITCH ROUGHING CENTER CUTTING

▶ This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is recommended for cutting steel grades and many non-ferrous materials. The end tooth of this tool has a center hole design for many accurate resharpenings between centers.





HSS Co8 | COARSE | 3 | 30° | FLAT

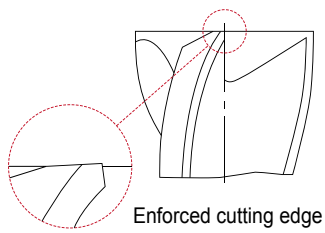
P.1241, 1246, 1250

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
63297	**1/4**	3/8	1/4	2-1/16
63305	**3/8**	3/8	3/8	2-5/32
63321	**1/2**	1/2	1/2	2-1/2
63337	**5/8**	5/8	5/8	2-3/4
63359	**3/4**	3/4	3/4	2-7/8
63426	**1**	1	1	3-1/2

■ The TiN coated, TiCN coated or TiAIN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAIN F), CE(TiAIN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

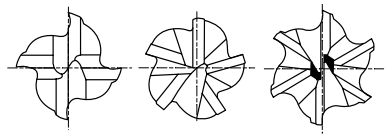
E2195 SERIES 8% COBALT (M42) FLAT SHANK

E2197 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, MULTI FLUTE REGULAR & LONG LENGTH COARSE PITCH ROUGHING CENTER CUTTING

▶ This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is recommended for cutting steel grades and many non-ferrous materials.





HSS Co8 | COARSE | 4-6 | 30° | FLAT

P.1241, 1246, 1250

E2195 Series ■ REGULAR LENGTH

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
64321	1/2	1/2	1-1/4	3-1/4	4
64337	5/8	5/8	1-5/8	3-3/4	4
64359	3/4	3/4	1-5/8	3-7/8	4
64426	1	1	2	4-1/2	5
64445	1-1/4	1-1/4	2	4-1/2	6
64461	1-1/2	1-1/4	2	4-1/2	6

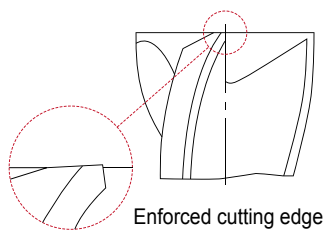
E2197 Series ■ LONG LENGTH

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
65321	1/2	1/2	2	4	4
65337	5/8	5/8	2-1/2	4-5/8	4
65359	3/4	3/4	3	5-1/4	4
65426	1	1	4	6-1/2	5
65445	1-1/4	1-1/4	4	6-1/2	6
65461	1-1/2	1-1/4	4	6-1/2	6

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2193 SERIES 8% COBALT (M42) FLAT SHANK

E2125 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, MULTI FLUTE REGULAR & LONG LENGTH COARSE PITCH ROUGHING BALL NOSE

▶ This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is recommended for cutting steel grades and many non-ferrous materials.



HSS Co8 | COARSE | 3-6 | 30° | FLAT

P.1241, 1246, 1250

E2193 Series ■ REGULAR LENGTH

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
8% COBALT (M42)	R					
68297	R1/8	**1/4**	3/8	5/8	2-7/16	3
68301	R5/32	**5/16**	3/8	3/4	2-1/2	3
68305	R3/16	**3/8**	3/8	3/4	2-1/2	4
68321	R1/4	**1/2**	1/2	1-1/4	3-1/4	4
68337	R5/16	**5/8**	5/8	1-5/8	3-3/4	4
68359	R3/8	**3/4**	3/4	1-3/4	4	4
68422	R1/2	**1**	3/4	2	4-1/2	5
68426	R1/2	**1**	1	2	4-1/2	5
68439	R5/8	**1-1/4**	3/4	2	4-1/2	6
68445	R5/8	**1-1/4**	1-1/4	2	4-1/2	6
68457	R3/4	**1-1/2**	3/4	2	4-1/2	6
68461	R3/4	**1-1/2**	1-1/4	2	4-1/2	6

E2125 Series ■ LONG LENGTH

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
8% COBALT (M42)	R					
69321	R1/4	**1/2**	1/2	2-1/2	4-1/2	4
69337	R5/16	**5/8**	5/8	2-1/2	4-5/8	4
69359	R3/8	**3/4**	3/4	3	5-1/4	4
69426	R1/2	**1**	1	4	6-1/2	5
69445	R5/8	**1-1/4**	1-1/4	4	6-1/2	6
69461	R3/4	**1-1/2**	1-1/4	4	6-1/2	6

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

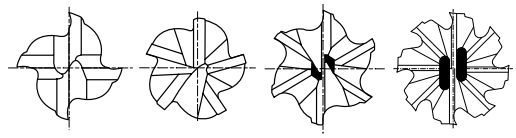
COBALT & HSS END MILLS

E2248 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, MULTI FLUTE REGULAR LENGTH ROUGHING & FINISHING

▶ This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths. In many cases, the milled surfaces are of acceptable quality.





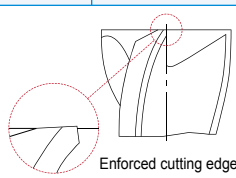
HSS Co8 | NF | 4-8 | 30° | FLAT | P.1241, 1246, 1250

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
73297	1/4	3/8	5/8	2-7/16	4
73301	5/16	3/8	3/4	2-1/2	4
73305	3/8	3/8	3/4	2-1/2	4
73312	7/16	3/8	1	2-11/16	4
73321	1/2	1/2	1-1/4	3-1/4	4
73328	9/16	1/2	1-3/8	3-3/8	4
73337	5/8	5/8	1-5/8	3-3/4	4
73348	11/16	5/8	1-5/8	3-3/4	4
73358	3/4	5/8	1-5/8	3-3/4	4
73359	3/4	3/4	1-5/8	3-3/4	4
73391	7/8	3/4	1-7/8	4-1/8	5
73394	7/8	7/8	1-7/8	4-1/8	5
73422	1	3/4	2	4-1/4	5
73426	1	1	2	4-1/2	5
73431	1-1/8	3/4	2	4-1/4	6
73435	1-1/8	1	2	4-1/2	6
73439	1-1/4	3/4	2	4-1/4	6
73445	1-1/4	1-1/4	2	4-1/2	6
73457	1-1/2	3/4	2	4-1/4	6
73461	1-1/2	1-1/4	2	4-1/2	6
73467	1-3/4	3/4	2	4-1/4	6
73469	1-3/4	1-1/4	2	4-1/2	6
73475	2	3/4	2	4-1/4	6
73477	2	1-1/4	2	4-1/2	6
* 73480	2	2	2	5-3/4	8
* 73482	2	2	3	6-3/4	8
* 73484	2	2	4	7-3/4	8

* Combination Shank

Mill Dia. Tolerance (inch)
+ .0025
+ .0005



■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

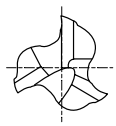
COBALT & HSS END MILLS

E2191 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, 3 FLUTE 37° HELIX REGULAR LENGTH ROUGHING for ALUMINUM

▶ This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths. In many cases, the milled surfaces are of acceptable quality.





HSS Co8 | ALU | 3 | 37° | FLAT

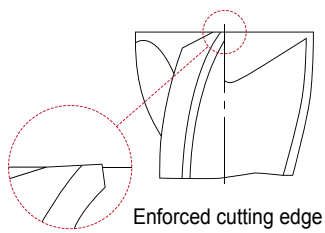
P.1241, 1246, 1250

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
66297	1/4	3/8	5/8	2-7/16
66301	5/16	3/8	3/4	2-1/2
66305	3/8	3/8	3/4	2-1/2
66321	1/2	1/2	1-1/4	3-1/4
66337	5/8	5/8	1-5/8	3-3/4
66359	3/4	3/4	1-5/8	3-7/8
66391	7/8	3/4	1-7/8	4-1/8
66426	1	1	2	4-1/2
66445	1-1/4	1-1/4	2	4-1/2
66461	1-1/2	1-1/4	2	4-1/2

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		◎				

COBALT & HSS END MILLS

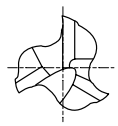
E2226 SERIES 8% COBALT (M42) FLAT SHANK

E2192 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, 3 FLUTE 37° HELIX MEDIUM & LONG LENGTH ROUGHING for ALUMINUM

▶ This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is recommended for cutting aluminum, aluminum alloy and many non-ferrous materials.





HSS Co8 | ALU | 3 | 37° | FLAT

P.1241, 1246, 1250

E2226 Series ■ MEDIUM LENGTH

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
66901	1	1	3	5-1/2
66902	1-1/4	1-1/4	3	5-1/2

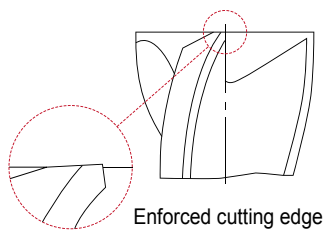
E2192 Series ■ LONG LENGTH

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
67321	1/2	1/2	2	4
67337	5/8	5/8	2-1/2	4-5/8
67359	3/4	3/4	3	5-1/4
67426	1	1	4	6-1/2
67445	1-1/4	1-1/4	4	6-1/2
67461	1-1/2	1-1/4	4	6-1/2

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

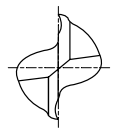
E2163 SERIES 8% COBALT (M42) FLAT SHANK

E1163 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 2 FLUTE 15° HELIX for KEYWAY CUTTING

▶ E2163(E1163) are keyway cutting end mills that have the same design as the general purpose of two flute single end mill, but are held to a mill diameter tolerance of +.0000 -.0015. These close tolerance end mills are recommended for cutting keyway which must be held close to nominal size.





HSS Co8 | HSS | 2 | 15° | FLAT

P.1237, 1243, 1247

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
14289	**14039**	**1/8**	3/8	3/8	2-5/16
14293	**14043**	**3/16**	3/8	7/16	2-5/16
14297	**14047**	**1/4**	3/8	1/2	2-5/16
14301	**14051**	**5/16**	3/8	9/16	2-5/16
14305	**14055**	**3/8**	3/8	9/16	2-5/16
14312	**14062**	**7/16**	3/8	13/16	2-1/2
14321	**14071**	**1/2**	1/2	1	3
14337	**14087**	**5/8**	5/8	1-5/16	3-7/16
14359	**14109**	**3/4**	3/4	1-5/16	3-9/16
14394	**14144**	**7/8**	7/8	1-1/2	3-3/4
14426	**14176**	**1**	1	1-5/8	4-1/8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)
0~−.0015

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

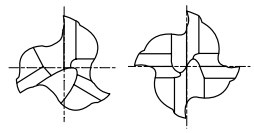
E2120 SERIES 8% COBALT (M42) FLAT SHANK

E2121 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, 3&4 FLUTE 60° HELIX REGULAR LENGTH

▶ Provided with high helix angle(60°).
Smooth cutting and small cutting resistance.
Suitable for machining of difficult-to-cut materials.





HSS Co8 | 3&4 | 60° | FLAT

P.1239

E2120 Series ■ 3 FLUTE

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
20297	1/4	3/8	5/8	2-7/16
20301	5/16	3/8	3/4	2-1/2
20305	3/8	3/8	3/4	2-1/2
20312	7/16	3/8	1	2-11/16
20321	1/2	1/2	1-1/4	3-1/4
20337	5/8	5/8	1-5/8	3-3/4
20359	3/4	3/4	1-5/8	3-7/8

E2121 Series ■ 4 FLUTE

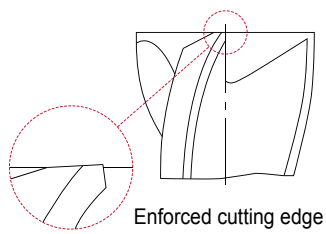
Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
20394	7/8	7/8	1-7/8	4-1/8
20426	1	1	2	4-1/2
20445	1-1/4	1-1/4	2	4-1/2
20461	1-1/2	1-1/4	2	4-1/2
20477	2	1-1/4	2	4-1/2

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.



Enforced cutting edge

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○						

COBALT & HSS END MILLS

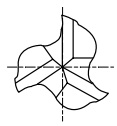
E2160 SERIES 8% COBALT (M42) FLAT SHANK

E2161 SERIES 8% COBALT (M42) FLAT SHANK

HSSCo8, 3 FLUTE SHORT & LONG LENGTH THROW AWAY

▶ Well balanced web design to minimize deflection & chattering. High accuracy for O.D. is guaranteed under the strict tolerance control. Much higher(50%) table speed than 2 Flute is allowed.





HSS Co8 | 3 | 30° | FLAT

P.1238

E2160 Series ■ SHORT LENGTH

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
22257	1/16	1/4	3/32	31/32
22261	3/32	1/4	5/32	1-1/64
22265	1/8	1/4	3/16	1-3/32
22269	5/32	1/4	1/4	1-9/32
22273	3/16	1/4	9/32	1-11/32
22277	7/32	1/4	5/16	1-13/32
22281	1/4	1/4	3/8	1-13/32

E2161 Series ■ LONG LENGTH

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
23257	1/16	1/4	5/32	1-3/32
23261	3/32	1/4	1/4	1-1/4
23265	1/8	1/4	5/16	1-11/32
23269	5/32	1/4	3/8	1-17/32
23273	3/16	1/4	7/16	1-21/32
23277	7/32	1/4	1/2	1-3/4
23281	1/4	1/4	5/8	1-3/4

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)
— .0005
— .0013

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

E2237 SERIES 8% COBALT (M42) FLAT SHANK
E1237 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 4 FLUTE CORNER ROUNDING

▶ This general corner rounding end mills are designed for machining fillets on work piece.



HSS Co8 | HSS | 4 | FLAT

Unit : Inch

EDP No. 8% COBALT (M42)	EDP No. HSS (M2)	Radius	Pilot Diameter	Outside Diameter	Shank Diameter	Overall Length
29251	29001	1/16	1/4	7/16	3/8	2-1/2
29252	29002	3/32	1/4	1/2	3/8	2-1/2
29253	29003	1/8	1/4	5/8	1/2	3
29254	29004	5/32	5/16	3/4	1/2	3
29255	29005	3/16	3/8	7/8	1/2	3
29256	29006	3/16	3/8	7/8	3/4	3-1/8
29257	29007	7/32	5/16	7/8	1/2	3-1/4
29258	29008	1/4	3/8	1	1/2	3
29259	29009	9/32	3/8	1	5/8	3
29260	29010	1/4	3/8	1	3/4	3-1/4
29261	29011	5/16	3/8	1-1/8	1/2	3-1/4
29262	29012	5/16	3/8	1-1/8	5/8	3-1/2
29263	29013	5/16	3/8	1-1/8	3/4	3-1/2
29264	29014	5/16	3/8	1-1/8	7/8	3-1/2
29265	29015	3/8	3/8	1-1/4	1/2	3-1/2
29266	29016	3/8	3/8	1-1/4	3/4	3-3/4
29267	29017	3/8	3/8	1-1/4	7/8	3-3/4
29268	29018	7/16	3/8	1-3/8	3/4	3-3/4
29269	29019	7/16	3/8	1-3/8	1	4
29270	29020	1/2	3/8	1-1/2	3/4	3-7/8
29271	29021	1/2	3/8	1-1/2	1	4-1/8
29272	29022	5/8	5/16	1-5/8	3/4	4
29273	29023	5/8	5/16	1-5/8	1	4
29274	29024	5/8	9/16	1-15/16	3/4	4
29275	29025	5/8	9/16	1-15/16	1	4-1/4
29276	29026	3/4	5/16	1-7/8	3/4	4
29277	29027	3/4	5/16	1-7/8	1	4
29278	29028	3/4	5/8	2-1/4	3/4	4-1/8
29279	29029	3/4	5/8	2-1/4	1	4-5/16
29280	29030	7/8	5/8	2-1/2	3/4	4-1/2
29281	29031	1	5/8	2-5/8	3/4	4-1/2
29282	29032	1	5/8	2-3/4	1	4-3/4

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

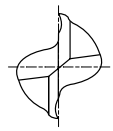
E2482 SERIES 8% COBALT (M42) FLAT SHANK

E1482 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH

▶ Two flute end mills with metric cutting diameter are especially recommended for slotting operation, pocketing keyway cutting and other general purpose work including plunge cutting.





HSS Co8 | HSS | 2 | 30° | FLAT

Unit : Inch

EDP No.		Mill Diameter		Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)	Metric	Inch			
15252	15002	2.0	.0787	3/8	5/16	2-5/16
15253	15003	2.5	.0984	3/8	5/16	2-5/16
15254	15004	3.0	.1181	3/8	5/16	2-5/16
15255	15005	3.5	.1378	3/8	7/16	2-5/16
15256	15006	4.0	.1575	3/8	7/16	2-5/16
15257	15007	4.5	.1772	3/8	1/2	2-5/16
15258	15008	5.0	.1969	3/8	1/2	2-5/16
15259	15009	5.5	.2165	3/8	1/2	2-5/16
15260	15010	6.0	.2362	3/8	1/2	2-5/16
15261	15011	7.0	.2756	3/8	9/16	2-5/16
15262	15012	8.0	.3150	3/8	9/16	2-5/16
15263	15013	9.0	.3543	3/8	9/16	2-5/16
15264	15014	10.0	.3937	3/8	13/16	2-1/2
15265	15015	11.0	.4330	3/8	13/16	2-1/2
15266	15016	12.0	.4724	3/8	13/16	2-1/2
15267	15017	12.5	.4921	1/2	1-1/8	3-1/8
15268	15018	13.0	.5118	1/2	1-1/8	3-1/8
15270	15020	14.0	.5512	1/2	1-1/8	3-1/8
15276	15026	16.0	.6299	5/8	1-5/16	3-7/16
15280	15030	18.0	.7087	5/8	1-5/16	3-7/16
15282	15032	20.0	.7874	5/8	1-1/2	3-3/4
15284	15034	22.0	.8661	3/4	1-1/2	3-3/4
15288	15038	24.0	.9449	3/4	2	4-1/2
15290	15040	25.0	.9843	1	2	4-1/2
15296	15046	32.0	1.2598	1	2	4-1/2
15298	15048	36.0	1.4173	1	2	4-1/2
15300	15050	40.0	1.5748	1-1/4	2	4-1/2
15302	15052	45.0	1.7717	1-1/4	2	4-1/2

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

COBALT & HSS END MILLS

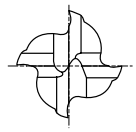
E2483 SERIES 8% COBALT (M42) FLAT SHANK

E1483 SERIES HSS (M2) FLAT SHANK

HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH

▶ E2483 have an extensive range of standard regular length in metric diameter.
End mills with center cutting are recommended for a wide range of cutting jobs, including slotting, shallow pocketing and tracer milling.





HSS Co8 | HSS | 4 | 30° | FLAT

Unit : Inch

EDP No.		Mill Diameter		Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)	Metric	Inch			
16252	16002	2.0	.0787	3/8	3/8	2-5/16
16253	16003	2.5	.0984	3/8	3/8	2-5/16
16254	16004	3.0	.1181	3/8	3/8	2-5/16
16255	16005	3.5	.1378	3/8	1/2	2-3/8
16256	16006	4.0	.1575	3/8	1/2	2-3/8
16257	16007	4.5	.1772	3/8	9/16	2-1/2
16258	16008	5.0	.1969	3/8	9/16	2-1/2
16259	16009	5.5	.2165	3/8	5/8	2-1/2
16260	16010	6.0	.2362	3/8	5/8	2-1/2
16261	16011	7.0	.2756	3/8	11/16	2-1/2
16262	16012	8.0	.3150	3/8	3/4	2-1/2
16263	16013	9.0	.3543	3/8	3/4	2-1/2
16264	16014	10.0	.3937	3/8	1	2-11/16
16265	16015	11.0	.4330	3/8	1	2-11/16
16266	16016	12.0	.4724	3/8	1	2-11/16
16267	16017	12.5	.4921	1/2	1-1/4	3-1/4
16268	16018	13.0	.5118	1/2	1-1/4	3-1/4
16270	16020	14.0	.5512	1/2	1-3/8	3-3/8
16276	16026	16.0	.6299	5/8	1-5/8	3-3/4
16280	16030	18.0	.7087	5/8	1-5/8	3-3/4
16282	16032	20.0	.7874	5/8	1-7/8	4-1/8
16284	16034	22.0	.8661	3/4	1-7/8	4-1/8
16288	16038	24.0	.9449	3/4	2	4-1/2
16290	16040	25.0	.9843	1	2	4-1/2
16296	16046	32.0	1.2598	1	2	4-1/2
16298	16048	36.0	1.4173	1	2	4-1/2
16300	16050	40.0	1.5748	1-1/4	2	4-1/2
16302	16052	45.0	1.7717	1-1/4	2	4-1/2

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

** The shank of end mills is the same diameter as the cutting portion.

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■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

◎ : Excellent ○ : Good

P					H	M	K	N					S	
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Stainless Steels	Cast Iron	Copper	Graphite	Aluminum	Acrylic	CFRP	Titanium	High Temperature Alloy
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70									
◎	◎	○						○		○				

END MILL SET SERIES

▶ Various range of sizes in these end mill sets gives you plenty of opportunities to reduce manufacturing costs and improve productivity.

SET OF MINIATURE, (3/16" SHANK) DOUBLE

EDP No.	ITEM No.	EDP No.	ITEM No.	Type	Length	Mill Diameter	No.of Flute
8% COBALT (M42)		HSS (M2)					
96002	CMR211	96001	MR211	Sq. END (11PCS.)	REGULAR	1/32, 3/64, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 11/64, 3/16	2
96004	CMR409	96003	MR409	Sq. END (9PCS.)	REGULAR	1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 11/64, 3/16	4
96006	CMS211	96005	MS211	Sq. END (11PCS.)	STUB	1/32, 3/64, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 11/64, 3/16	2
96008	CMS409	96007	MS409	Sq. END (9PCS.)	STUB	1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 11/64, 3/16	4

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■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAIN F), CE(TiAIN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAIN F), HE(TiAIN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

* WITH TRANSPARENT PLASTIC CASE

SET OF 3/8" SHANK, (WELDON) SINGLE

EDP No.	ITEM No.	EDP No.	ITEM No.	Type	Length	Mill Diameter	No.of Flute
8% COBALT (M42)		HSS (M2)					
96010	CWR205	96009	WR205	Sq. END (5PCS.)	REGULAR	1/8, 3/16, 1/4, 5/16, 3/8	2
96012	CWR405	96011	WR405	Sq. END (5PCS.)	REGULAR	1/8, 3/16, 1/4, 5/16, 3/8	4
96014	CWRC05	96013	WRC05	CENTER CUT (5PCS.)	REGULAR	1/8, 3/16, 1/4, 5/16, 3/8	04

■ The TiN coated, TiCN coated or TiAIN coated is available on your request.
■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAIN F), CE(TiAIN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAIN F), HE(TiAIN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

* WITH TRANSPARENT PLASTIC CASE

COBALT & HSS END MILLS

END MILL SET SERIES

▶ Various range of sizes in these end mill sets gives you a plenty of opportunities to reduce manufacturing costs and improve productivity.

SET OF 3/8" SHANK, (WELDON) DOUBLE

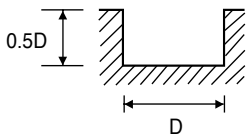
EDP No.	ITEM No.	EDP No.	ITEM No.	Type	Length	Mill Diameter	No.of Flute
8% COBALT (M42)		HSS (M2)					
96016	CDR209	96015	DR209	Sq. END (9PCS.)	REGULAR	1/8, 5/32, 3/16, 7/32, 1/4, 9/32, 5/16, 11/32, 3/8	2
96018	CDR409	96017	DR409	Sq. END (9PCS.)	REGULAR	1/8, 5/32, 3/16, 7/32, 1/4, 9/32, 5/16, 11/32, 3/8	4
96020	CDRC09	96019	DRC09	CENTER CUT (9PCS.)	REGULAR	1/8, 5/32, 3/16, 7/32, 1/4, 9/32, 5/16, 11/32, 3/8	4

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■ Coating Codes for Cobalt
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
■ Coating Codes for HSS
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
▶ Coated Price Shown in Price List. Call for Availability.

* WITH TRANSPARENT PLASTIC CASE

HSSCo8 & HSS, 2 FLUTE FINISH - SLOTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	3500	2.2	3200	1.8	2500	1.6	1600	0.8	11000	9.8
1/4	1800	3.5	1600	3.1	1200	2.4	800	1.6	5600	12.2
3/8	1100	4.0	900	3.5	800	3.1	450	1.8	3100	15.8
1/2	900	4.3	800	4.0	630	3.1	400	2.0	2500	15.0
5/8	700	4.3	560	3.5	450	2.8	280	1.8	2000	13.8
3/4	630	4.0	500	3.5	400	2.8	250	1.8	1800	13.8
7/8	500	4.0	450	3.5	350	2.8	220	1.8	1400	11.8
1	450	3.5	400	3.1	310	2.4	180	1.4	1200	11.0
1-1/8	400	3.1	350	2.8	280	2.2	160	1.2	1100	10.5
1-3/8	310	2.4	250	2.0	200	1.6	120	1.0	900	8.7
1-1/2	310	2.4	250	2.0	200	1.6	120	1.0	900	8.7
1-3/4	280	2.4	220	2.0	180	1.6	110	1.0	800	7.8
2	250	2.0	190	1.8	110	1.0	80	0.8	630	6.3

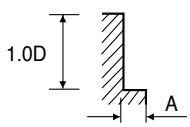


※ The Feed, in long & extra long types, should be reduced by around 50%.

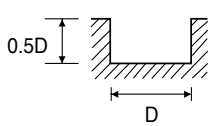
RPM = rev./min.
FEED = inch/min.

HSS, 2 FLUTE, 42° HELIX FINISH for ALUMINUM

MATERIAL	K		N	
	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALUMINUM NONFERROUS METALS	
DIAMETER	RPM	FEED	RPM	FEED
1/8	8000	29.0	8000	22.5
3/16	7400	32.5	7400	25.0
1/4	6800	37.0	6800	28.5
5/16	5200	55.0	5200	43.5
7/16	5000	47.0	5000	47.0
1/2	4500	61.0	4500	47.0
9/16	3500	63.0	3500	49.0
5/8	3500	63.0	3500	49.0
3/4	2300	67.0	2300	51.0
13/16	2000	67.0	2000	51.0



A : Ø1/8 ~ Ø5/16 = 0.25 × D
Ø7/16 ~ Ø13/16 = 0.5 × D



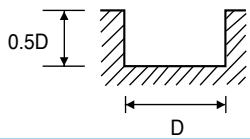
RPM = rev./min.
FEED = inch/min.

COBALT & HSS END MILLS

RECOMMENDED CUTTING CONDITIONS

HSSCo8, 3 FLUTE FINISH - SLOTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	5600	2.4	4500	1.8	4000	1.8	2200	0.8	12000	9.4
1/8	3500	3.1	3200	2.6	2500	2.4	1600	1.2	11000	15.0
1/4	1800	5.3	1600	4.7	1200	3.5	800	2.4	5600	18.5
3/8	1100	6.0	900	5.3	800	4.7	450	2.6	3100	23.6
1/2	900	6.5	800	6.0	630	4.7	400	3.0	2500	22.4
9/16	800	6.5	700	5.3	560	4.7	350	3.0	2200	20.9
5/8	700	6.5	560	5.3	450	4.1	280	2.6	2000	20.9
7/8	500	6.0	450	5.3	350	4.1	220	2.6	1400	17.7
1	450	5.3	400	4.7	310	3.5	180	2.0	1200	16.5
1-1/8	400	4.7	350	4.1	280	3.1	160	1.8	1100	15.8

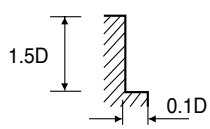


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min. FEED = inch/min.

HSSCo8, 3 FLUTE FINISH - SIDE CUTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	5600	2.4	4500	1.6	4000	1.4	2200	0.6	12000	7.1
1/8	3500	3.1	3200	2.4	2500	1.8	1600	0.8	11000	11.0
5/32	2800	4.1	2200	3.0	1800	2.0	1100	1.2	8000	13.0
3/16	2200	5.3	1800	3.7	1600	2.6	900	1.4	6300	13.8
1/4	1800	5.3	1600	4.3	1200	2.6	800	1.8	5600	13.8
5/16	1400	6.0	1100	4.7	900	3.1	560	2.0	4000	17.3
3/8	1100	6.0	900	4.7	800	3.8	450	2.0	3100	17.7
1/2	900	6.5	800	5.3	630	3.8	400	2.2	2500	16.9
9/16	800	6.5	700	4.7	560	3.8	350	2.2	2200	15.8
5/8	700	6.5	560	4.7	450	3.1	280	2.0	2000	15.8
11/16	630	6.0	500	4.7	400	3.1	250	2.0	1800	15.8
13/16	560	6.0	450	4.7	400	3.1	220	2.0	1600	14.2
7/8	500	6.0	450	4.7	350	3.1	220	2.0	1400	13.4
1	450	5.3	400	4.3	310	2.6	180	1.4	1200	12.6
1-1/8	400	4.7	350	3.7	280	2.4	160	1.2	1100	11.8
1-3/16	350	4.1	310	3.1	250	2.2	160	1.2	1100	11.8



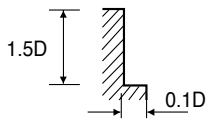
※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min. FEED = inch/min.

RECOMMENDED CUTTING CONDITIONS

HSSCo8 & HSS, MULTI FLUTE FINISH - SIDE CUTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	3500	4.3	3200	3.1	2500	2.4	1600	1.2	11000	15.0
1/4	1800	7.1	1600	5.7	1200	3.5	800	2.4	5600	18.5
3/8	1100	7.9	900	6.3	800	4.7	450	2.6	3100	23.6
1/2	900	8.7	800	7.1	630	4.7	400	3.0	2500	22.4
5/8	700	8.7	560	6.3	450	4.1	280	2.6	2000	20.9
3/4	630	7.9	500	6.3	400	4.1	250	2.6	1800	20.9
13/16	500	7.9	450	6.3	350	4.1	220	2.6	1400	17.7
15/16	500	7.9	450	6.3	350	4.1	220	2.6	1400	17.7
1	450	7.1	400	5.7	310	3.5	180	2.0	1200	16.5
1-1/2	310	4.7	250	3.5	200	2.4	120	1.4	900	13.0
1-3/4	280	4.7	220	3.5	150	2.4	110	1.4	800	11.8
2	280	4.7	190	3.5	110	1.8	80	1.0	630	11.8

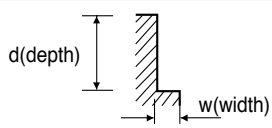


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSSCo8, MULTI FLUTE 60° HELIX FINISH - SIDE CUTTING

MATERIAL		P				M		K	
		MILD STEELS		ALLOY STEELS		TOOL STEELS STAINLESS STEELS		CAST IRON	
HARDNESS		~HRc13		HRc13~HRc32		HRc25~HRc35		~HRc20	
DIAMETER	w×d	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	0.02 × 0.35	1840	3.6	1250	2.2	980	1.8	2050	4.8
1/4	0.08 × 0.35	1600	3.6	650	2.2	510	1.6	1100	4.5
5/8	0.02 × 1	750	2.9	460	2.0	390	1.4	840	4.1
5/8	0.18 × 1	650	2.9	400	2.0	340	1.4	730	4.1
3/4	0.02 × 1.2	520	2.5	370	1.8	300	1.4	630	4.1
3/4	0.26 × 1.2	450	2.5	320	1.8	260	1.4	550	4.1
1	0.02 × 1.6	460	2.9	290	1.8	240	1.4	510	4.3
1	0.30 × 1.6	400	2.9	250	1.8	210	1.4	440	4.3
1-1/2	0.02 × 1.6	280	2.5	170	1.4	150	1.3	320	3.6
1-1/2	0.80 × 1.6	240	2.5	150	1.4	130	1.3	280	3.6
2	0.02 × 2	220	2.2	140	1.3	115	1.1	260	2.9
2	1.60 × 2	190	2.2	120	1.3	100	1.1	225	2.9



※ The Feed, in long & extra long types, should be reduced by around 50%.

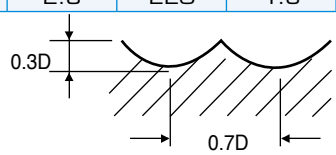
RPM = rev./min.
FEED = inch/min.

COBALT & HSS END MILLS

RECOMMENDED CUTTING CONDITIONS

HSSCo8 & HSS, 2 FLUTE BALL NOSE

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm^2		500~800N/mm^2		800~1000N/mm^2		1000~1300N/mm^2			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	4500	3.7	3400	2.8	2000	1.2	1400	0.8	11000	9.1
R5/64 × 5/32	3200	4.5	2400	3.1	1400	1.4	1000	1.0	8000	10.2
R1/8 × 1/4	2200	5.3	1700	3.5	1000	1.8	700	1.0	5600	11.0
R5/32 × 5/16	1600	6.3	1200	4.1	700	2.0	500	1.2	4000	13.8
R3/16 × 3/8	1300	7.1	1000	4.7	560	2.4	400	1.4	3200	14.2
R1/4 × 1/2	1000	6.7	800	4.1	450	2.2	320	1.4	2500	13.4
R5/16 × 5/8	800	6.0	600	4.0	350	2.2	250	1.4	2000	11.8
R3/32 × 3/16	600	5.5	500	3.4	300	2.0	200	1.4	1600	11.0
R1/2 × 1	500	5.1	400	2.8	220	1.6	160	1.2	1300	9.8

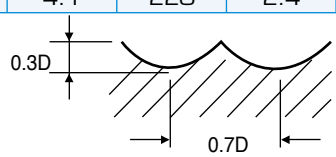


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSSCo8 & HSS, MULTI FLUTE BALL NOSE

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm^2		500~800N/mm^2		800~1000N/mm^2		1000~1300N/mm^2			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/8 × 1/4	2200	7.9	1700	5.3	1000	2.8	700	1.6	5600	16.5
R5/32 × 5/16	1600	9.4	1200	6.3	700	3.0	500	1.8	4000	20.9
R3/16 × 3/8	1300	10.6	1000	7.1	560	3.5	400	2.0	3200	21.3
R1/4 × 1/2	1000	10.2	800	6.3	450	3.1	320	2.0	2500	20.1
R5/16 × 5/8	800	9.1	600	6.0	350	3.1	250	2.0	2000	17.7
R3/32 × 3/16	600	8.3	500	5.1	300	3.0	200	2.0	1600	16.5
R1/2 × 1	500	7.9	400	4.1	220	2.4	160	1.8	1300	15.0

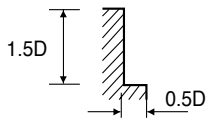


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSSCo8, MULTI FLUTE ROUGHING - SIDE CUTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm^2		500~800N/mm^2		800~1000N/mm^2		1000~1300N/mm^2			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	1800	3.1	1600	2.4	1200	2.2	800	1.2	4500	7.9
5/16	1400	4.1	1100	3.0	900	2.6	560	1.4	3100	9.1
3/8	1100	6.0	900	4.7	800	4.3	450	2.4	2500	13.8
1/2	900	7.1	800	5.5	630	4.3	400	2.8	2000	15.8
5/8	700	7.1	560	5.5	450	4.3	280	2.8	1600	17.7
11/16	630	7.1	500	5.5	400	4.3	250	2.8	1400	18.5
7/8	500	8.7	450	6.7	350	5.5	220	3.4	1100	18.5
1	450	8.7	400	6.7	310	5.5	180	3.4	1000	17.7
1-1/8	400	8.1	350	6.3	280	5.1	160	3.4	900	20.1
1-1/4	350	8.1	280	6.3	220	5.1	140	3.4	800	19.7
1-3/8	310	8.1	250	6.3	200	5.1	120	3.4	700	18.5
1-3/4	280	7.9	220	6.0	180	4.7	110	3.1	630	17.7
2	220	7.9	180	6.7	160	5.5	90	3.1	500	14.6

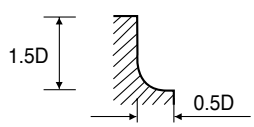


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSSCo8, MULTI FLUTE BALL NOSE ROUGHING - SIDE CUTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm^2		500~800N/mm^2		800~1000N/mm^2		1000~1300N/mm^2			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R5/32 × 5/16	1400	4.1	1100	3.0	900	2.6	560	1.4	3100	9.1
R3/16 × 3/8	1100	6.0	900	4.7	800	4.3	450	2.4	2500	9.8
R1/4 × 1/2	900	7.1	800	5.5	630	4.3	400	2.8	2000	15.8
R5/16 × 5/8	700	7.1	560	5.5	450	4.3	280	2.8	1600	17.7
R7/16 × 7/8	560	7.1	450	5.5	400	4.3	220	2.8	1200	19.7
R1/2 × 1	450	8.7	400	6.7	310	5.5	180	3.4	1000	17.7
R5/8 × 1-1/4	350	8.1	280	6.3	220	5.1	140	3.4	800	19.7
R7/8 × 1-3/4	280	7.9	220	6.0	180	4.7	110	3.1	630	17.7



※ The Feed, in long & extra long types, should be reduced by around 50%.

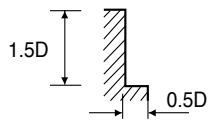
RPM = rev./min.
FEED = inch/min.

COBALT & HSS END MILLS

RECOMMENDED CUTTING CONDITIONS

HSSCo8 & HSS, MULTI FLUTE ROUGHING & FINISHING - SIDE CUTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	1800	2.5	1300	2.0	1200	1.8	800	1.0	4500	6.3
5/16	1400	3.4	1100	2.4	900	2.2	560	1.2	3100	7.3
3/8	1100	4.7	900	3.7	800	3.5	450	2.0	2500	11.0
1/2	900	5.7	800	4.3	630	3.5	400	2.2	2000	12.6
5/8	700	5.7	560	4.3	450	3.5	280	2.2	1600	14.2
11/16	630	5.7	500	4.3	400	3.5	250	2.2	1400	15.0
7/8	500	6.9	450	5.3	350	4.3	220	2.8	1100	15.0
1	450	6.9	400	5.3	310	4.3	180	2.8	1000	14.2
1-1/4	350	6.7	280	5.1	220	4.1	140	2.8	800	15.8
1-3/8	310	6.7	250	5.1	200	4.1	120	2.8	700	15.0
2	240	5.4	190	4.0	150	3.4	110	2.6	500	11.2



※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSSCo8 & HSS, MINIATURE

MATERIAL	P								N	
	HIGH TENSILE STEELS MEDIUM STRENGTH STAINLESS STEELS MEDIUM STRENGTH TITANIUM SLOOYS		MEDIUM TENSILE STEELS UNALLOYED TITANIUM TOOL STEELS HEAT RESISTANT FERRITIC LOW ALLOYS		VILD STEEL FORGING HARD BRASS & BRONZE COPPER		ALUMINUM ALUMINUM ALLOYS PLASTIC WOODS		ALUMINUM ALUMINUM ALLOYS	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	6600~8800	0.3	11000 up	0.5	11000 up	0.8	11000 up	1.2	11000 up	1.5
1/32	3300~4400	0.5	5500~5600	0.6	7700~9900	1.6	11000 up	1.6	11000 up	2.5
3/64	2200~2935	0.6	3665~4400	0.6	5135~6600	2.5	7335~8800	2.0	11000 up	2.6
1/16	1650~2260	0.6	2750~3300	1.0	3350~4950	3.3	5500~6600	2.6	11000 up	4.2
5/64	1320~1760	0.6	2200~2640	1.0	3850~3960	3.3	4400~5820	2.6	8500 up	4.2
3/32	1100~1285	0.6	1835~2200	1.0	2565~3300	3.3	3665~4400	2.6	7330up	4.2
7/64	345~1255	0.6	1570~1885	1.0	2200~2830	3.3	3140~3770	2.6	5625 up	4.3
1/8	825~1100	0.6	1375~1650	1.0	1925~2475	3.3	2750~3300	2.8	5500 up	4.5
9/64	735~980	0.6	1220~1465	1.0	1710~2200	3.4	2445~3770	2.8	4890~9780	4.5
5/32	560~880	0.8	1100~1320	1.1	1540~1980	3.6	2205~2640	2.9	4400~8800	4.5
11/64	600~800	0.9	1000~1200	1.2	1400~1800	3.7	2000~2400	3.0	4000~3000	4.6
3/16	550~735	1.0	915~1100	1.4	1285~1650	3.3	1535~2200	3.3	3685~7335	4.7

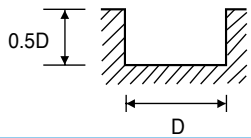
NOTES :

(1) The cutting conditions in this table are given for reference, which should be varied depending on the machine, tooling, depth of cut. cutting fluid and other conditons.
(2) Use a holder of strong gripping force and machine of high stiffness

RPM = rev./min.
FEED = inch/min.

HSSCo8 & HSS, 2 FLUTE FINISH TiN-COATED - SLOTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	4200	2.6	3840	2.2	3000	1.9	1920	1.0	13200	11.8
1/4	2160	4.2	1920	3.7	1440	2.9	960	1.9	6720	14.6
3/8	1320	4.8	1080	4.2	960	3.7	540	2.2	3720	19.0
1/2	1090	5.2	960	4.8	756	3.7	480	2.4	3000	18.0
5/8	840	5.2	672	4.2	540	3.7	336	2.2	2400	16.6
3/4	756	4.8	600	4.2	480	3.4	300	2.2	2160	16.6
7/8	600	4.8	540	4.2	420	3.4	264	2.2	1680	14.2
1	540	4.2	480	3.7	372	2.9	260	2.2	1440	13.2
1-1/8	480	3.7	420	3.4	336	2.6	432	1.7	1320	12.6
1-3/8	372	2.9	300	2.4	240	1.9	144	1.2	1080	10.4
1-1/2	372	2.9	300	2.4	240	1.9	144	1.2	1080	10.4
1-3/4	336	2.9	264	2.4	216	1.9	132	1.2	960	9.5
2	300	2.4	228	2.2	132	1.2	96	1.0	756	7.6

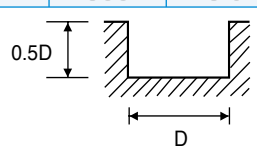


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSSCo8 & HSS, 3 FLUTE FINISH TiN-COATED - SLOTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	6720	2.8	5400	2.2	4800	2.2	2640	1.0	14400	11.3
1/5	4200	3.7	3840	3.1	3000	2.9	1920	1.4	13200	18.0
1/4	2160	6.4	1920	5.6	1440	4.2	960	2.9	6720	21.7
3/8	1320	7.2	1080	6.4	960	5.6	540	3.1	3720	28.3
1/2	1080	7.8	960	7.2	756	5.6	480	3.6	3000	26.9
5/8	840	7.8	672	6.4	540	4.9	336	3.1	2400	25.1
11/16	756	7.2	600	6.4	480	4.9	300	3.1	2160	25.1
7/8	600	7.2	540	6.4	420	4.9	264	3.1	1680	21.2
1	540	6.4	480	5.6	372	4.2	216	2.4	1440	19.8
1-1/8	430	5.6	420	4.9	336	3.7	192	2.2	1320	19.0
1-3/16	420	4.9	372	4.2	300	3.6	192	2.2	1320	19.0



※ The Feed, in long & extra long types, should be reduced by around 50%.

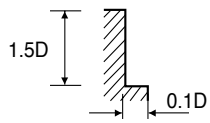
RPM = rev./min.
FEED = inch/min.

COBALT & HSS END MILLS

RECOMMENDED CUTTING CONDITIONS

HSSCo8 & HSS, 3 FLUTE FINISH TiN-COATED - SIDE CUTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	6720	2.9	5400	1.9	4800	1.7	2640	0.7	14400	8.5
1/8	4200	3.7	3840	2.9	3000	2.2	1920	1.0	13200	13.2
1/4	2160	6.4	1920	5.2	1440	3.1	960	2.2	6720	16.6
3/8	1320	7.2	1080	5.6	960	4.2	540	2.4	3720	21.2
1/2	1080	7.8	960	6.4	756	4.2	480	2.6	3000	20.3
9/16	960	7.8	840	5.6	672	4.2	420	2.6	2640	19.0
5/8	840	7.8	672	5.6	540	3.7	336	2.4	2400	19.0
11/16	756	7.2	600	5.6	480	3.7	300	2.4	2160	19.0
7/8	600	7.2	540	5.6	420	3.7	264	2.4	1680	16.1
1	540	6.4	480	5.2	372	3.1	216	1.7	1440	15.1
1-1/8	430	5.6	420	4.4	336	2.9	192	1.4	1320	14.2

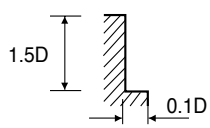


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSSCo8 & HSS, MULTI FLUTE FINISH TiN-COATED - SIDE CUTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	4200	5.2	3840	3.7	3000	2.9	1920	1.4	13200	18.0
1/4	2640	8.5	1920	6.8	1440	4.2	960	2.9	6720	22.2
3/8	1320	9.5	1080	7.6	960	5.6	540	3.1	3700	28.3
1/2	1080	10.4	960	8.5	756	5.6	480	3.6	3000	26.9
5/8	840	10.4	672	7.6	540	4.9	336	3.1	2400	25.1
3/4	756	9.5	600	7.6	480	4.9	300	3.1	2160	25.1
7/8	600	9.5	540	7.6	420	4.9	264	3.1	1680	21.2
15/16	600	9.5	540	7.6	420	4.9	264	3.1	1680	21.2
1	540	8.5	480	6.8	372	4.2	216	2.4	1440	19.8
1-1/2	372	5.6	300	4.2	240	2.9	144	1.7	1080	15.6
1-3/4	336	5.6	264	4.2	216	2.9	132	1.7	960	14.2
2	336	5.6	264	4.2	168	2.2	96	1.2	960	14.2

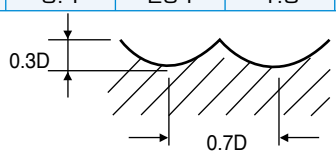


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSSCo8 & HSS, 2 FLUTE BALL NOSE TiN-COATED

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm^2		500~800N/mm^2		800~1000N/mm^2		1000~1300N/mm^2			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	5400	4.4	4080	3.4	2400	1.4	1680	1.0	13200	10.9
R5/64 × 5/32	3840	5.4	2880	3.7	1680	1.7	1200	1.2	9600	12.2
R1/8 × 1/4	2640	6.4	2040	4.2	1200	2.2	840	1.2	6720	13.2
R5/32 × 5/16	1920	7.6	1440	4.9	840	2.4	600	1.4	4800	16.6
R3/16 × 3/8	1560	8.5	1200	5.6	672	2.9	480	1.7	3840	17.0
R1/4 × 1/2	1200	8.0	960	4.9	540	2.6	384	1.7	3330	16.1
R5/16 × 5/8	960	7.2	720	4.8	420	2.6	300	1.7	2400	14.2
R3/32 × 3/16	720	6.6	600	4.1	360	2.4	240	1.7	1923	13.2
R1/2 × 1	600	6.1	480	3.4	264	1.9	192	1.4	1560	11.8

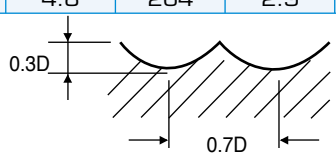


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSSCo8 & HSS, MULTI FLUTE BALL NOSE TiN-COATED

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm^2		500~800N/mm^2		800~1000N/mm^2		1000~1300N/mm^2			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/8 × 1/4	2640	9.5	2040	6.4	1200	3.4	840	1.9	6720	19.8
R5/32 × 5/16	1920	11.3	1440	7.6	840	3.6	600	2.2	4800	25.1
R3/16 × 3/8	1560	12.7	1200	8.5	672	4.2	480	2.4	3840	25.6
R1/4 × 1/2	1200	12.2	960	7.6	540	3.7	384	2.4	3000	24.1
R5/16 × 5/8	960	10.9	720	7.2	420	3.7	300	2.4	2400	21.2
R3/32 × 3/16	720	10.0	600	6.1	380	3.6	240	2.4	1920	19.8
R1/2 × 1	600	9.5	480	4.8	264	2.9	192	2.2	1560	18.0



※ The Feed, in long & extra long types, should be reduced by around 50%.

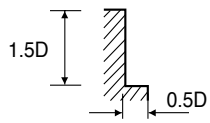
RPM = rev./min.
FEED = inch/min.

COBALT & HSS END MILLS

RECOMMENDED CUTTING CONDITIONS

HSSCo8, MULTI FLUTE ROUGHING TiN-COATED - SIDE CUTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	2160	3.7	1920	2.9	1440	2.6	960	1.4	5400	9.5
5/16	1680	4.9	1320	3.6	1080	3.1	672	1.7	3720	10.9
3/8	1320	7.2	1080	5.6	960	5.2	540	2.9	3000	16.6
1/2	1080	8.5	960	6.6	756	5.2	480	3.4	2400	19.0
5/8	840	8.5	672	6.6	540	5.2	336	3.4	1920	22.2
11/16	756	8.5	600	6.6	480	5.2	300	3.4	1680	22.2
7/8	600	10.4	540	8.0	420	6.6	264	4.1	1320	21.2
1	540	10.4	480	8.0	372	6.6	216	4.1	1200	21.2
1-1/8	480	9.7	420	7.6	336	6.1	192	4.1	1680	24.1
1-1/4	420	9.7	336	7.6	264	6.1	168	4.1	960	23.6
1-3/8	372	9.7	300	7.6	240	6.1	144	4.1	840	22.2
1-3/4	336	9.5	264	7.2	216	5.6	132	3.7	756	21.2
2	264	9.5	216	8.0	192	6.6	108	3.7	600	17.5

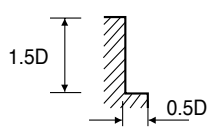


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSSCo8, MULTI FLUTE ROUGHING & FINISHING TiN-COATED - SIDE CUTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	2160	3.0	1920	2.4	1440	2.2	960	1.2	5400	7.6
5/16	1680	4.0	1320	2.9	1080	2.4	672	1.4	3720	8.8
3/8	1320	5.6	1080	4.4	960	4.2	540	2.4	3000	13.2
1/2	1080	6.8	960	5.2	756	4.2	480	2.6	2400	15.1
5/8	840	6.8	672	5.2	540	4.2	336	2.6	1920	17.6
11/16	756	6.8	600	5.2	480	4.2	300	2.6	1680	18.0
7/8	600	8.3	540	6.4	420	5.2	264	3.4	1320	18.0
1	540	8.3	480	6.4	372	5.2	216	3.4	1200	17.6
1-1/4	420	8.0	336	6.1	264	4.9	168	3.4	960	19.0
1-3/8	372	8.0	300	6.1	240	4.9	144	3.4	840	18.0
2	288	6.4	228	4.8	192	4.1	132	3.1	600	13.4

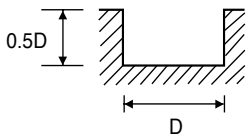


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSSCo8 & HSS, 2 FLUTE FINISH TiCN-COATED - SLOTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	4550	2.9	3840	2.3	3250	2.1	2048	1.0	14300	12.7
1/4	2340	4.6	2080	4.0	1560	3.1	1040	3.2	7280	15.9
3/8	1430	5.2	1170	4.6	1040	4.0	585	3.2	4030	20.5
1/2	1170	5.6	1040	5.2	819	4.0	520	2.8	3250	19.5
5/8	910	5.6	728	4.6	585	3.6	364	2.3	2600	17.9
3/4	819	5.2	650	4.6	520	3.6	325	2.3	2340	17.9
7/8	650	5.2	585	4.6	455	3.6	286	2.3	1820	15.3
1	585	4.6	520	4.0	403	3.1	234	1.8	1560	14.3
1-1/8	520	4.0	455	3.6	364	2.9	208	1.6	1430	13.7
1-3/8	403	3.1	325	2.6	260	2.1	156	1.3	1170	11.3
1-1/2	403	3.1	325	2.6	260	2.1	156	1.3	1170	11.3
1-3/4	364	3.1	286	2.6	234	2.1	143	1.3	1040	10.3
2	325	2.6	228	2.3	143	1.3	104	1.0	819	8.2

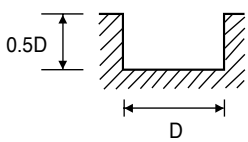


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSSCo8, 3 FLUTE FINISH TiCN-COATED - SLOTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	7280	3.1	5850	2.3	5200	2.3	2860	1.0	15600	12.2
1/8	4550	4.0	2340	3.4	3250	3.1	2080	1.6	14300	19.5
1/4	2340	6.9	2080	6.1	1560	4.6	1040	3.1	7280	23.5
3/8	1430	7.8	1170	6.9	1040	6.1	585	3.4	4030	30.7
1/2	1170	8.5	1040	7.8	819	6.1	520	3.8	3250	29.1
9/16	1040	8.5	910	6.9	728	6.1	455	3.8	2860	27.2
5/8	910	8.5	728	6.9	585	5.3	364	3.4	2600	27.2
7/8	650	7.8	585	6.9	455	5.3	286	3.4	1820	23.0
1	585	6.9	520	6.1	403	4.6	234	2.6	1560	21.5
1-1/8	520	6.9	455	5.3	364	4.3	208	2.3	1430	20.5



※ The Feed, in long & extra long types, should be reduced by around 50%.

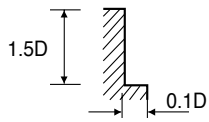
RPM = rev./min.
FEED = inch/min.

COBALT & HSS END MILLS

RECOMMENDED CUTTING CONDITIONS

HSSCo8 & HSS, 3 FLUTE FINISH TiCN-COATED - SIDE CUTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	7280	3.1	5850	2.1	5200	1.8	2860	0.8	15600	9.2
1/8	4550	4.0	4160	3.1	3250	2.3	2080	1.0	14300	14.3
1/4	2240	6.9	2080	5.6	1560	3.4	1040	2.3	7280	17.9
5/16	1820	7.8	1430	5.1	1170	4.0	728	2.6	5200	22.5
1/2	1170	8.5	1040	6.9	819	4.6	520	2.9	3250	22.0
9/16	1040	8.5	910	6.1	728	4.6	455	2.9	2860	20.5
5/8	910	8.5	728	6.1	585	4.6	364	2.6	2600	20.5
11/16	819	7.8	650	6.1	520	4.0	325	2.6	2340	20.5
7/8	650	7.8	585	6.1	455	4.0	286	2.6	1820	17.4
1	585	6.9	520	5.6	403	3.4	234	1.8	1560	16.4
1-1/8	520	6.1	455	4.8	362	3.1	208	1.6	1430	15.3

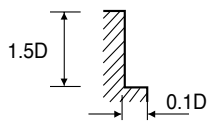


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSSCo8 & HSS, MULTI FLUTE FINISH TiCN-COATED - SIDE CUTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	4550	5.6	4160	4.0	3250	3.1	22080	1.6	14300	19.5
1/4	2340	9.2	2090	8.4	1560	4.6	1040	3.1	7280	24.1
3/8	1430	10.3	1170	8.2	1040	6.1	585	3.4	4030	30.7
1/2	1170	11.3	1040	9.2	818	6.1	520	3.9	3250	29.1
5/8	910	11.3	728	8.2	585	5.3	364	3.4	2600	27.2
3/4	819	10.3	650	8.2	520	5.3	325	3.4	2340	27.2
7/8	650	10.3	585	8.2	455	5.3	286	3.4	1820	23.0
15/16	650	10.3	585	8.2	455	5.3	234	3.4	1820	23.0
1	585	9.2	520	8.4	403	4.6	208	2.6	1560	21.9
1-1/2	403	6.1	325	4.6	260	3.1	156	1.8	1170	16.9
1-3/4	364	6.1	286	4.6	234	3.1	143	1.8	1040	15.3
2	364	6.1	286	4.6	182	2.3	104	1.3	1040	15.3

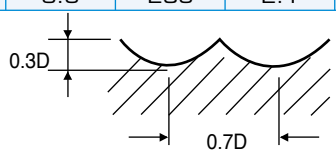


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSSCo8 & HSS, 2 FLUTE BALL NOSE TiCN-COATED

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	5850	4.8	4420	3.6	2600	1.6	1820	1.0	14300	11.8
R5/64 × 5/32	4160	5.9	3120	4.0	1820	1.8	1300	1.3	10400	13.3
R1/8 × 1/4	2860	6.9	2210	4.6	1300	2.3	910	1.3	7280	12.3
R5/32 × 5/16	2080	8.2	1560	5.3	910	2.6	650	1.6	5200	17.9
R3/16 × 3/8	1690	9.2	1300	6.1	728	3.1	520	1.8	4160	18.5
R1/4 × 1/2	1300	8.7	1040	5.3	585	2.9	416	1.8	3250	17.4
R5/16 × 5/8	1043	7.8	780	5.2	455	2.9	325	1.8	2600	15.3
R3/32 × 3/16	780	7.2	650	4.4	390	2.6	263	1.8	2080	14.8
R1/2 × 1	650	6.6	520	3.6	286	2.1	208	1.6	1690	12.7

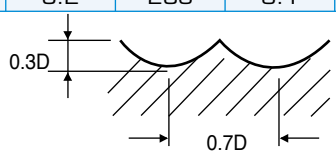


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSSCo8 & HSS, MULTI FLUTE BALL NOSE TiCN-COATED

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/8 × 1/4	2860	10.3	2210	6.9	1300	3.6	910	2.1	7280	21.5
R5/32 × 5/16	2080	12.2	1560	8.2	910	3.9	650	2.3	5200	27.2
R3/16 × 3/8	1690	13.8	1300	9.2	728	4.6	520	2.6	4160	27.7
R1/4 × 1/2	1300	13.3	1040	8.2	585	4.0	416	2.6	3250	26.1
R5/16 × 5/8	1040	11.8	780	7.8	455	4.0	325	2.6	2600	23.0
R3/32 × 3/16	780	10.8	650	6.6	390	3.9	260	2.6	2080	21.5
R1/2 × 1	650	10.3	520	5.2	286	3.1	208	2.3	1690	19.5



※ The Feed, in long & extra long types, should be reduced by around 50%.

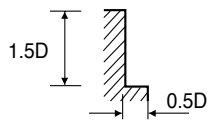
RPM = rev./min.
FEED = inch/min.

COBALT & HSS END MILLS

RECOMMENDED CUTTING CONDITIONS

HSSCo8, MULTI FLUTE ROUGHING TiCN-COATED - SIDE CUTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	2340	4.0	2080	3.1	1560	2.9	1040	1.6	5850	10.3
5/16	1820	5.3	1430	3.9	1170	3.4	728	1.8	4030	11.5
3/8	1430	7.8	1170	6.1	1040	5.6	585	3.1	3250	17.9
1/2	1170	9.2	1040	7.2	819	5.6	520	3.6	2600	20.5
5/8	910	9.2	728	7.2	585	5.6	364	3.6	2080	24.1
11/16	819	9.2	650	7.2	520	5.6	325	3.6	1820	24.1
7/8	650	11.3	585	8.7	455	7.2	286	4.4	1430	23.0
1	585	11.3	520	8.7	403	7.2	234	4.4	1300	23.0
1-1/8	520	10.5	455	8.2	364	6.6	208	4.4	1170	26.1
1-1/4	455	10.5	364	8.2	286	6.6	182	4.4	1040	25.6
1-3/8	403	10.5	325	8.2	260	6.6	156	4.4	910	24.1
1-3/4	364	10.3	286	7.8	234	6.1	143	4.0	819	23.0
2	286	10.3	234	8.7	208	7.2	117	4.0	650	19.0

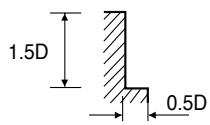


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

HSSCo8, MULTI FLUTE ROUGHING & FINISHING TiCN-COATED - SIDE CUTTING

MATERIAL	P								N	
	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm²		500~800N/mm²		800~1000N/mm²		1000~1300N/mm²			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	2340	3.3	2080	2.6	1560	2.3	1040	1.3	5850	8.2
5/16	1820	4.4	1430	3.1	1170	2.6	728	1.6	4030	9.5
3/8	1430	6.1	1170	4.8	1040	4.6	585	2.6	3250	14.3
1/2	1170	7.4	1040	5.6	819	4.6	520	2.9	2600	16.4
5/8	910	7.4	728	5.6	585	4.6	364	2.9	2080	18.5
11/16	819	7.4	650	5.6	520	4.6	325	2.9	1820	19.5
7/8	650	9.0	585	6.9	455	5.6	286	3.6	1430	19.5
1	585	9.0	520	6.9	403	5.6	234	3.6	1300	18.5
1-1/4	455	8.7	384	6.6	286	5.3	182	3.6	1040	20.5
1-3/4	403	8.7	325	6.6	260	5.3	156	3.6	910	19.5
2	312	7.0	247	5.2	238	4.4	143	3.9	650	14.6



※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.
FEED = inch/min.

END MILLS

Being the best through innovation

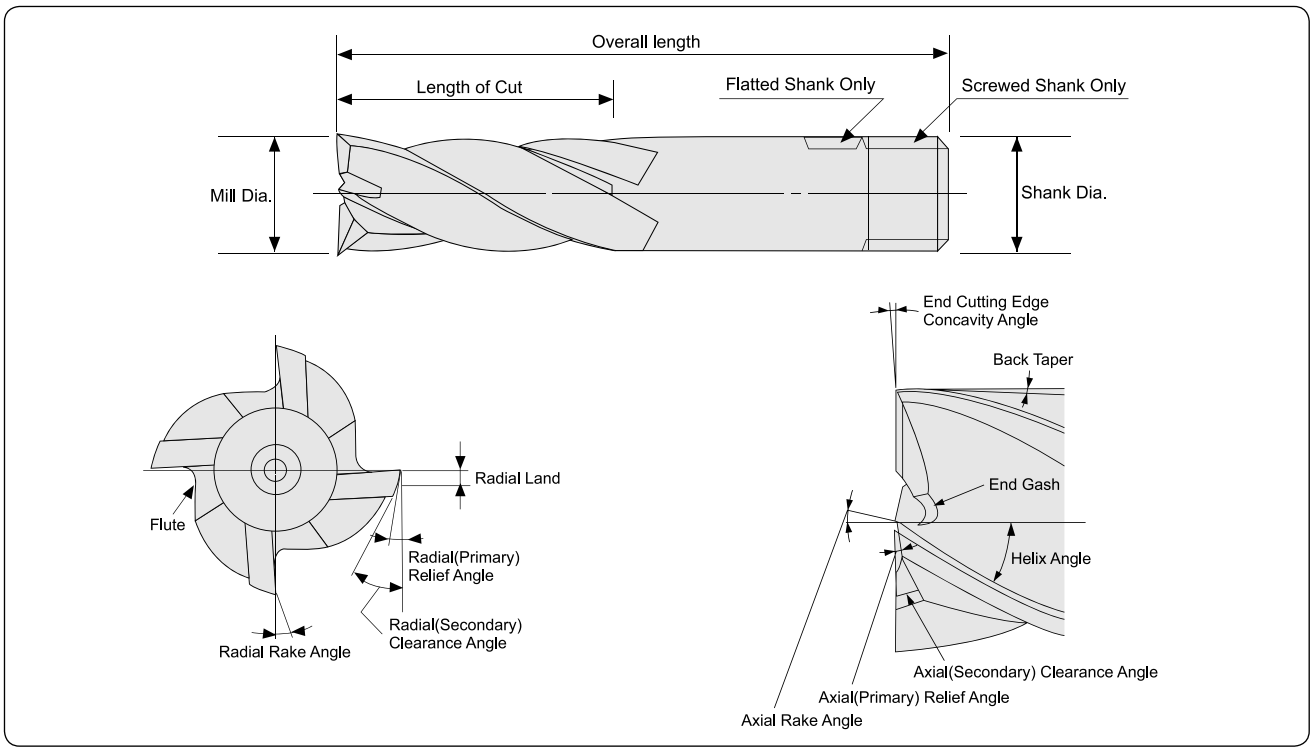


TECHNICAL DATA

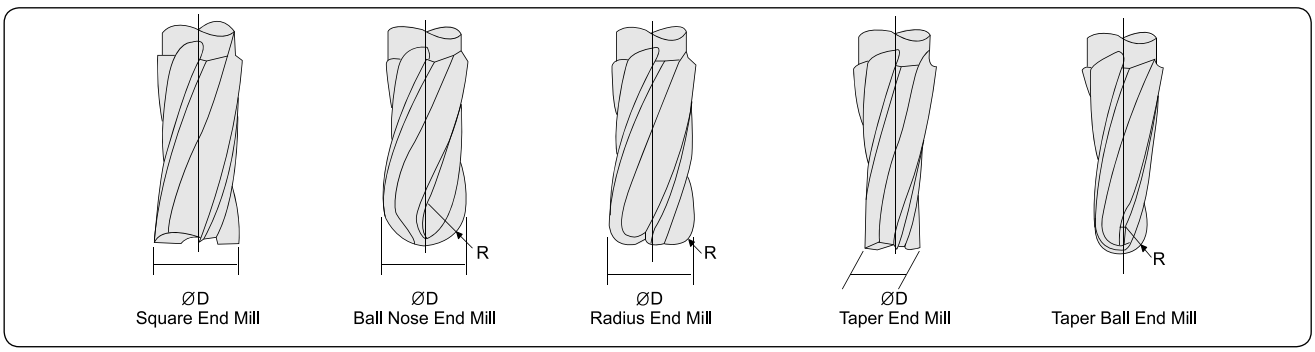
TECHNICAL DATA

SUPER CUTTING END MILLS

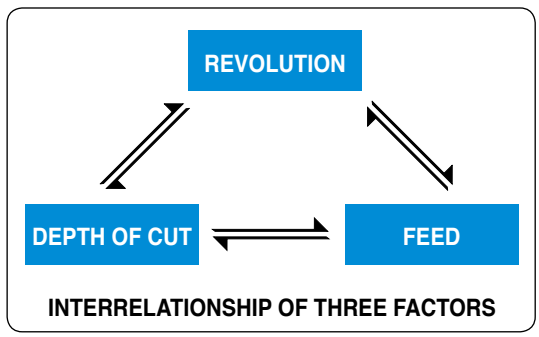
1 Names of End Mill Parts



2 Type of End Mill



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.



INTERRELATIONSHIP OF THREE FACTORS

Speeds

In milling, Speed is measured in peripheral feet per minute.(revolution per minute × cutter circumference in feet) This is frequently referred to as “peripheral speed” “cutting speed” or “surface speed”.

Revolutions per Minute $N = \frac{1000V}{\pi \times D}$

V : Cutting Speed(m/min)
D : Diameter of Tool(mm)
N : Revolution per minute(rev/min)
π : 3.1416

They will have to be tempered to suit the conditons ON THE JOB. For example:

Use Lower Speed Ranges for	Use Higher Speed Ranges for
Hard materials	Softer materials
Tough materials	Better finishes
Abrasive materials	Smaller diameter cutters
Heavy cuts	Light cuts
Minimum tool wear	Frail work pieces or set-ups
Maximum cutter life	Hand feed operations
	Maximum production rates
	Non-metallics

Feeds

Feed is usually measured in millimeters 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.

Feed in milimeters per Minute

F.M = F.R. × R.P.M

F.R. : Feed per Revolutions in milimeters
R.P.M .: Revolutions per Minutes

The following factors should be kept in mind when using the recommended stating feed per tooth.

Use Higher Feeds For	Use Lower Feeds For
Heavy, roughing cuts	Light, and finishing cuts
Rigid set-ups	Frail set-ups
Easy-to-machine work materials	Hard to machine work materials
Rugged cutters	Frail and small cutters
Slab milling cuts	Deep slots
Low tensile strength materials	High tensile strength materials
Coarse tooth cutters	Fine tooth cutters
Abrasive materials	

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.	$F.M.=F.R.\times R.P.M.$
Number of Cutting Teeth per Minute=T.M.	Number of Teeth in Tool Revolution per Minute	=T =R.P.M.	$T.M=T\times R.P.M.$
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

When the product finish become worse, the cutting edge must get dulled, chips become smaller and the cutting sound gets louder. In such cases, an end mill must be resharpened. The following are the damages of end mills when the resharpening is required.

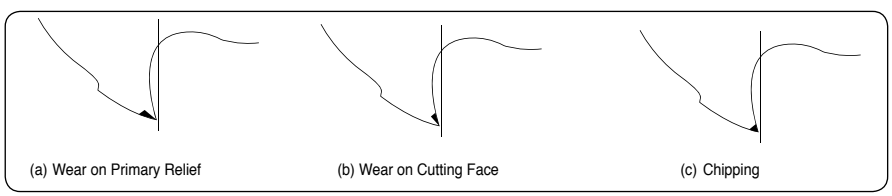


Fig. 1. Damages of Cutting Edge

6 Sharpen at Predetermined Wear Land

Cutters should be sharpened as soon 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 hundreths 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.

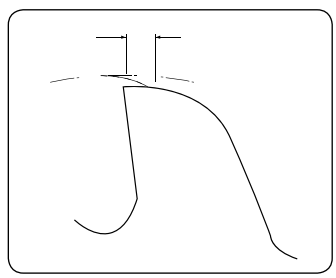


Fig. 2. Wear Land

Resharpening Peripheral Cutting Edge

1 RESHARPENING PERIPHERAL CUTTING EDGE

The geometry of relief angle in an end mill consists of three methods as shown in Fig.3 concave, flat, and eccentric. Recently, most end mills have the eccentric relief(eccentric 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.

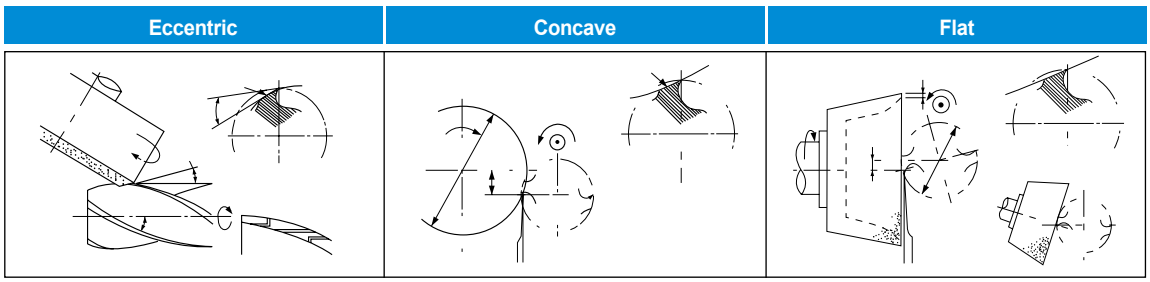


Fig. 3. Three Types of Primary Relief

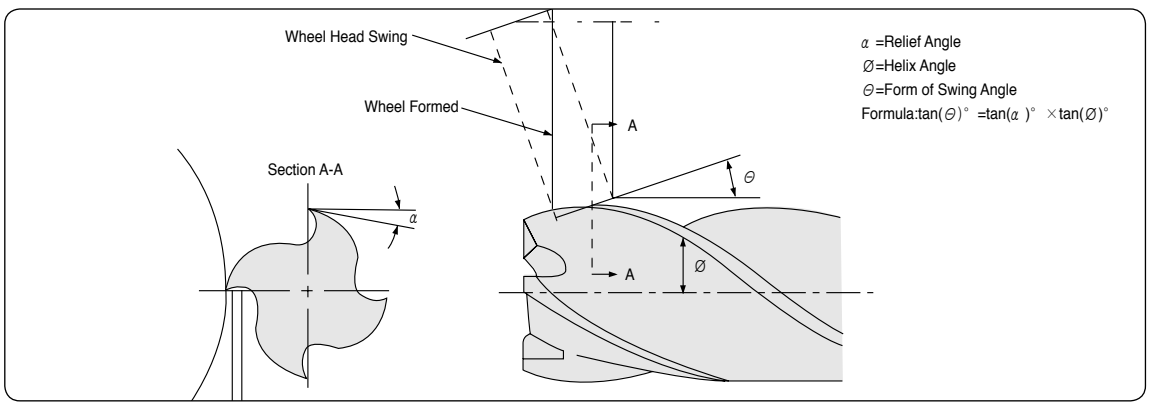


Fig. 4. Toothing of Eccentric Relief Angle

2 ANGLE OF WHEEL INCLINATION

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.

Table 1. RECOMMENDED RELIEF ON END MILLS

Mill Diameter (inches)	Eccentric relief indicator drop for relief Angles shown		Checking Distance	Wheel Angles(Deg.)Θ			Radial Relief Angles(α 1)	Clearance Angles(α 2)
				15° Helix	30° Helix	60° Helix		
-	Min	Max.	-	*Angle	*Angle	*Angle	*Angle	*Angle
1/8	.0040	.0052	.015	4° 42′	10° 02′	27° 58′	17° 03′	25°
1/4	.0035	.0050	.020	3° 15′	6° 59′	20° 12′	12° 00′	25°
1/2	.0040	.0053	.025	2° 51′	6° 07′	17° 51′	10° 32′	25°
1	.0038	.0055	1/32	2° 16′	4° 54′	14° 27′	8° 27′	25°
1-1/2	.0033	.0050	1/32	2° 02′	4° 22′	12° 57′	7° 33′	25°
2	.0033	.0050	1/32	2° 02′	4° 22′	12° 57′	7° 33′	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.
* Angle is calculated from the basic mean at the radical angle.

8 Resharpening End Teeth

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.

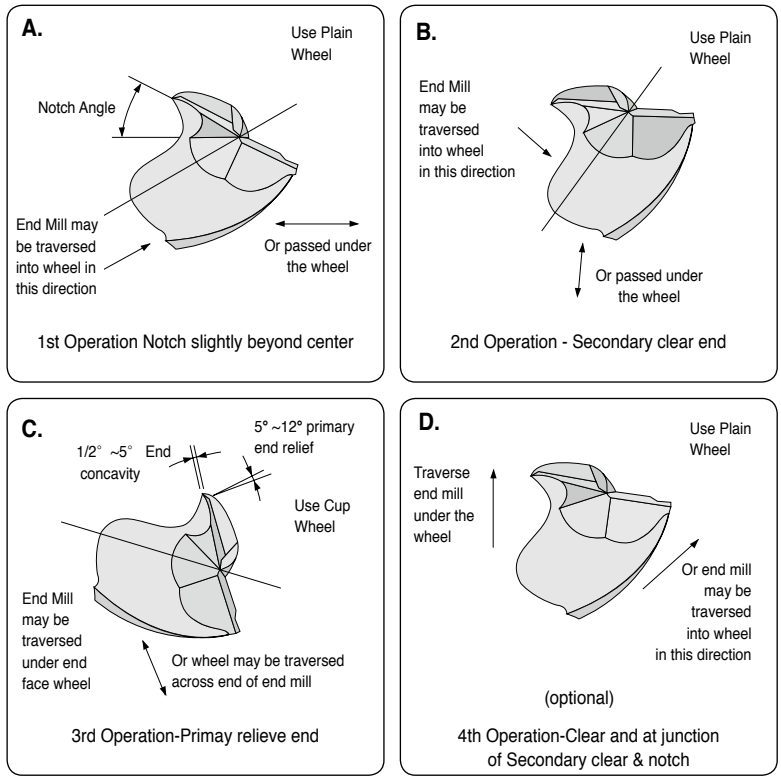


Fig 5. PROCEDURE FOR SHARPENING END OF 2 FLUTE SQUARE END MILLS

9 Inspection

The inspection is calculated 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 Figure6
3. Roll the cutter 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.

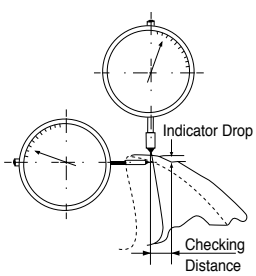
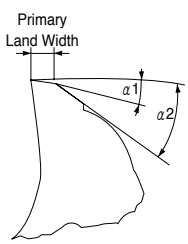
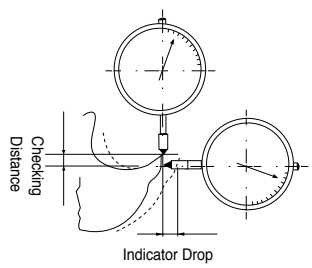
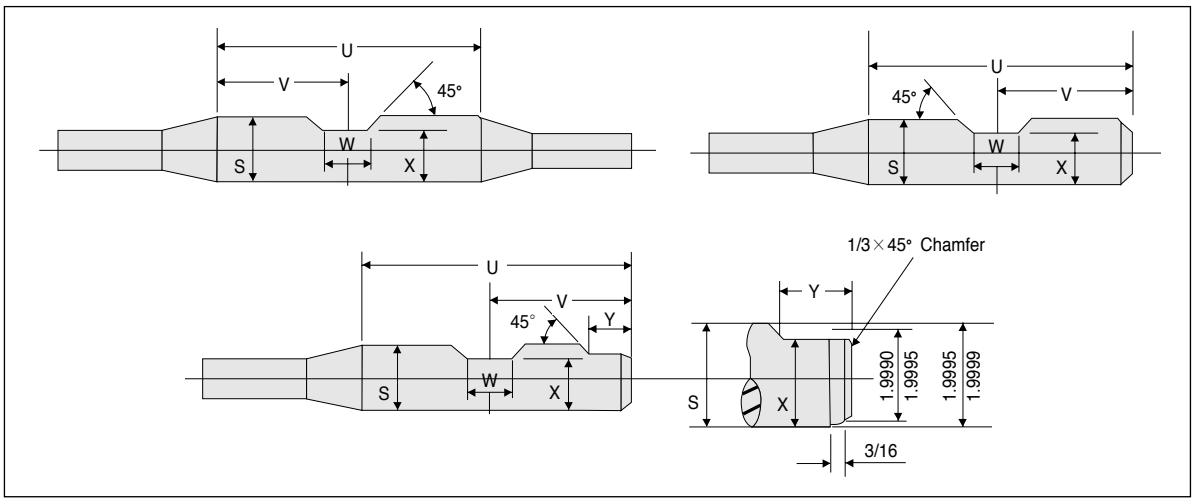
Radial Relief	Peripheral Cutting Edge	Cutting Angle
		

Fig. 6. Indicator Set-Up for Checking

10 Standard Weldon Shanks



11 Dimensions

All dimensions are given in inches.

Diameter of Shank S	Length of Shank U	V	W		X	Y
			Min.	Max.		
3/8	1-9/16	25/32	0.280	0.282	0.325	-
1/2	1-25/32	57/64	0.330	0.332	0.440	-
5/8	1-29/32	61/64	0.400	0.402	0.560	-
3/4	2-1/32	1-1/64	0.455	0.457	0.675	-
7/8	2-1/32	1-1/64	0.455	0.457	0.810	1/2
1	2-9/32	1-9/64	0.515	0.517	0.925	1/2
1-1/4	2-9/32	1-9/64	0.515	0.517	1.156	1/2
1-1/2	2-11/16	1-3/16	0.515	0.517	1.406	9/16
2	3-1/4	1-27/32	0.700	0.702	1.900	27/32
2-1/2	3-1/2	1-15/16	0.700	0.702	2.400	27/32

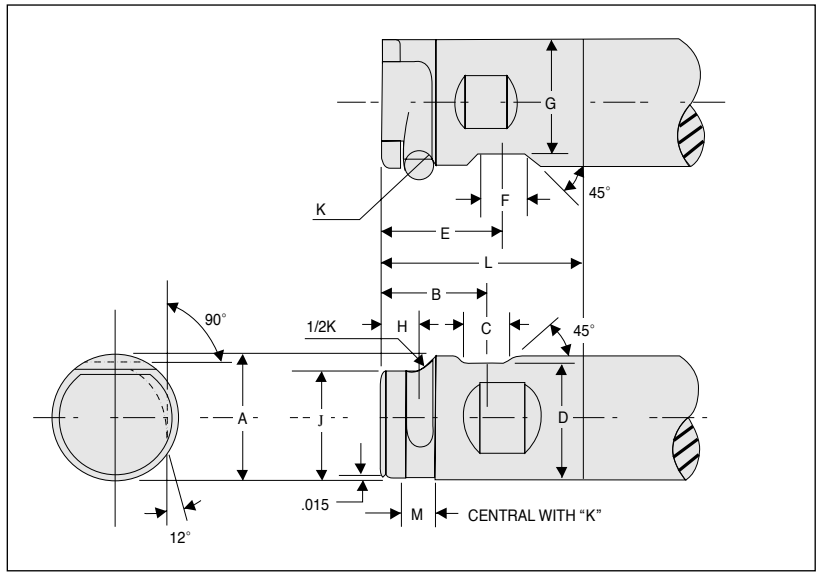
12 Tolerances

Element	Range	Direction	Tolerance
Diameter of Shank, S	All Sizes	minus	.0001 to .0005
Length of Shank, U	All Sizes	plus or minus	1/32
Dimension, V	All Sizes	plus or minus	1/64
Dimension, X	All Sizes	minus	1/64
Dimension, Y	7/8 to 2-1/2 inc.	plus or minus	1/32

Extracted from Milling Cutters and End Mills. MCTI 1989.

13 Combination Shanks for End Mills

Right hand End Mill shank shown. For left hand End Mills flat "F" and pin groove "K" should be located 180° from that shown, maintaining 12° relationship of flat "F" and groove "K"



14 Dimensions

All dimensions are given in inches.

Diameter of Shank A	Length of Shank L	B	C	D	E	F	G	H	J	K	M
1-1/2	2-11/16	1-3/16	0.515	1.406	1-1/2	0.515	1.371	9/16	1.302	0.377	7/16
2	3-1/4	1-23/32	0.700	1.900	1-3/4	0.700	1.809	5/8	1.772	0.440	1/2
2-1/2	3-1/2	1-15/16	0.700	2.400	2	0.700	2.312	3/4	2.245	0.503	9/16

15 Tolerances

Element	Direction	Tolerance
Diameter of Shank, A	minus	.0001 to .0005
Length of Shank, L	plus or minus	1/32
Dimension, B	plus or minus	1/64
Dimension, C	plus	.002
Dimension, D	minus	1/64
Dimension, E	plus or minus	1/64
Dimension, F	plus or minus	.005
Dimension, G	minus	1/64
Dimension, H	plus	1/64
Dimension, J	plus or minus	.002
Dimension, K	plus	.003

Extracted from Milling Cutters and End Mills. MCTI 1989.

Troubleshooting in Endmilling

Trouble	Occurrences of trouble	Countermeasures
Breaking of tool	· At time of engaging with work material · When ending cut	1. Decrease feed rate. 2. Decrease projection amount 3. Shorten cutting edge length to required minimum limit
	· During normal cutting	1. Decrease feed rate 2. Control wear → replace tool early 3. Replace chuck or collet 4. Decrease projection amount 5. Carry out honing 6. If 4 flute, reduce to 2 flute(clogging of chipping) 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.
	· When changing direction of feed	1. Utilize circular interpolation(in case of NC machine) or temporarily stop feed(Dowelling) 2. Reduce feed rate before and after change of directions 3. Replace chuck or collect
Fracture of cutting edge	· Fracture of corners	1. Carry out chamfering or nose with hand lapper. 2. Down cut → Up cut
	· Fracture at boundary of depth of cut	1. Down cut → Up cut 2. Reduce cutting speed
	· Chipping at center part or overall	1. Carry out honing. Or enlarge. 2. Change number of rotation(in case machine vibrates) 3. Increase cutting speed 4. In ease of squeaking noise during cutting, increase feed. 5. It dry cutting use cutting fluid or blow air. 6. Replace chuck or collet 7. Reduce cutting speed
	· Large fracturing of cutting edge	1. Decrease feed rate 2. If 4 flute reduce to 2 flute 3. Carry out honing. Or enlarge 4. Replace chuck or collet 5. Reduce cutting speed 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.
Rapid tool wear		1. Reduce cutting speed 2. Up cut → Down cut 3. Increase feed 4. Utilize wet cutting or air 5. If reground tool, improve surface roughness of flank.

TECHNICAL DATA

SUPER CUTTING END MILLS

Trouble	Occurrences of trouble	Countermeasures
Inferior finished surface	· Surface is good but rough	1. Decrease feed 2. In case using 2 flute, increase to 4 flute
	· Small chip welding	1. Increase cutting speed 2. Utilize wet cutting air blow(ample supply) 3. Carry out fine honing 4. Up cut → Down cut 5. Increase feed or enlarge finish allowance
	· With transverse streaks	1. Carry out fine honing 2. Use water insoluble cutting fluid 3. Down cut → Up cut
	· Signs of excessive cutting	1. Reduce finishing depth of cut 2. Increase cutting speed 3. Reduce feed
Poor machining accuracy	· Finish dimensions are on minus side	1. Up cut → Down cut 2. Reduce finishing depth of cut 3. Replace chuck or collet 4. Reduce projection amount 5. Increase cutting speed
	· Poor perpendicularity	1. Reduce finishing depth of cut 2. Replace chuck or collet 3. Reduce projection amount 4. Increase cutting speed 5. 2Flute → 4 Flute 6. Reduce feed 7. Check wear rate → Replace tool
Chattering		1. Increase feed rate(in case over 0.05 mm/Zahn, try reducing) 2. Change cutting speed 3. Replace chuck or collet 4. Reduce projection amount 5. Use 2 flute cutter for rough cutting and 4 flute for finishing 6. Down cut → Up cut

ROTARY TOOL HOLDERS

HYDRAULIC CHUCK - CAT, BT

DUAL CONTACT HYDRAULIC CHUCK - CCT, CBT, HSK

HYDRAULIC CHUCK COLLET (REDUCTION SLEEVE)

SHRINK FIT HOLDER - CAT, BT

DUAL CONTACT SHRINK FIT HOLDER - CCT, CBT, HSK

SHRINK FIT EXTENSION - ST

END MILL HOLDER & SIDE LOCK ARBOR - CAT, BT

DUAL CONTACT SIDE LOCK ARBOR - CCT, CBT

DUAL CONTACT END MILL HOLDER - HSK

ER COLLET CHUCK - CAT, BT

DUAL CONTACT ER COLLET CHUCK - HSK

SHORT & TENSION ER COLLET CHUCK - SHORT, TENSION (For TAPPING)

NC ER COLLET CHUCK - NC (For CNC LATHE)

ER COLLET

DUAL CONTACT SK SLIM CHUCK - CCT, CBT, HSK

STRAIGHT SK SLIM CHUCK - K

SK COLLET

TG COLLET CHUCK - CAT, BT

MILLING CHUCK - CAT, BT

DUAL CONTACT HIGH SPEED MILLING CHUCK - CCT, CBT, HSK

MILLING CHUCK COLLET

MORSE TAPER ADAPTER - CAT, BT

TAPPING CHUCK - CAT, BT

SYNCHRO TAPPING ER CHUCK - CAT

QUICK CHANGE TAP ADAPTER

SHELL MILL ARBOR - CAT, BT

DUAL CONTACT SHELL MILL ARBOR - CCT, CBT

NC DRILL CHUCK - CAT, BT

DUAL CONTACT NC DRILL CHUCK - HSK

STRAIGHT NC DRILL CHUCK - K

JACOBS TAPER ARBOR - CAT, BT

STUB ARBOR - CAT, BT

SLITTING SAW ARBOR - CAT, BT

PULL STUD

TOOL CLAMP

YG-1 CO., LTD.

SELECTION GUIDE

HYDRAULIC CHUCK - CAT, BT	1263-1272
DUAL CONTACT HYDRAULIC CHUCK - CCT, CBT, HSK	1273-1280
HYDRAULIC CHUCK COLLET (REDUCTION SLEEVE)	1281-1286
SHRINK FIT HOLDER - CAT, BT	1287-1288
DUAL CONTACT SHRINK FIT HOLDER - CCT, CBT, HSK	1289-1291
SHRINK FIT EXTENSION - ST	1292-1294
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TG COLLET CHUCK - CAT, BT	1332-1334
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HYDRAULIC CHUCK (SLIM)



FIG.1

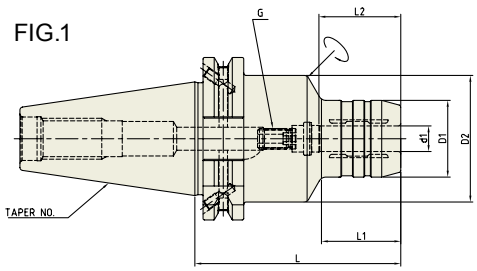
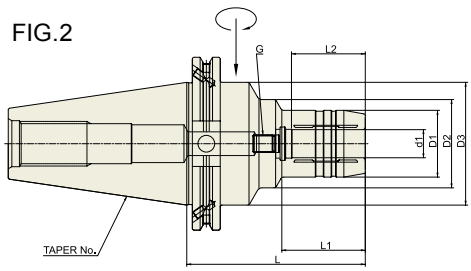


FIG.2



ASME B5.50 - CAT	Taper Accuracy	G Value	RPM	Run-Out (at 3D)	Coolant System
	AT3	2.5	25,000	≤0.00012"	AD/B

■ ASME B5.50-2009-CAT

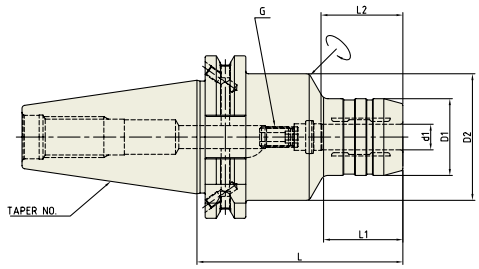
Unit : inch

EDP No.	TAPER No.	MODEL No.	d1	D1	D2	D3	L	L1	L2	G	Remarks
WK020	40	CAT40 AD/B - HC1/4-4.00	0.250	1.024	1.750	-	4.000	1.280	1.063	M5x0.8mm	Fig.1
WK022		CAT40 AD/B - HC3/8-4.00	0.375	1.181	1.750	-	4.000	1.634	1.260	M6x1.0mm	
WK024		CAT40 AD/B - HC1/2-4.00	0.500	1.260	1.750	-	4.000	1.634	1.457	M10x1.0mm	
WK026		CAT40 AD/B - HC5/8-4.00	0.625	1.496	1.750	-	4.000	1.949	1.654	M10x1.0mm	
WK028		CAT40 AD/B - HC3/4-4.00	0.750	1.654	1.750	-	4.000	1.949	1.654	M10x1.0mm	
WK030		CAT40 AD/B - HC1-4.00	1.000	2.165	2.480	-	4.000	2.618	1.890	M16x1.0mm	
WK032		CAT40 AD/B - HC1 1/4-4.00	1.250	2.480	3.150	-	4.000	1.378	2.165	M16x1.0mm	
WL020	50	CAT50 AD/B - HC1/4-4.00	0.250	1.024	1.978	2.752	4.000	1.280	1.063	M5x0.8mm	Fig.2
WL022		CAT50 AD/B - HC3/8-4.00	0.375	1.181	1.978	2.752	4.000	1.417	1.260	M6x1.0mm	
WL024		CAT50 AD/B - HC1/2-4.00	0.500	1.260	1.978	2.752	4.000	1.634	1.457	M10x1.0mm	
WL026		CAT50 AD/B - HC5/8-4.00	0.625	1.496	1.978	2.752	4.000	1.870	1.654	M10x1.0mm	
WL028		CAT50 AD/B - HC3/4-4.00	0.750	1.654	1.978	2.752	4.000	1.949	1.654	M10x1.0mm	
WL030		CAT50 AD/B - HC1-4.00	1.000	2.244	2.480	2.752	4.000	1.949	1.890	M16x1.0mm	
WL032		CAT50 AD/B - HC1 1/4-4.00	1.250	2.520	-	2.752	4.000	2.559	2.165	M16x1.0mm	

* APPLICABLE HYDRAULIC CHUCK COLLETS(REDUCTION SLEEVES) ON PAGE 925~930.

HYDRAULIC CHUCK (SLIM) CAT





ASME B5.50 - CAT	Taper Accuracy	G Value	RPM	Run-Out (at 3D)	Coolant System
	AT3	2.5	25,000	≤3Um	AD/B

■ ASME B5.50-2009-CAT

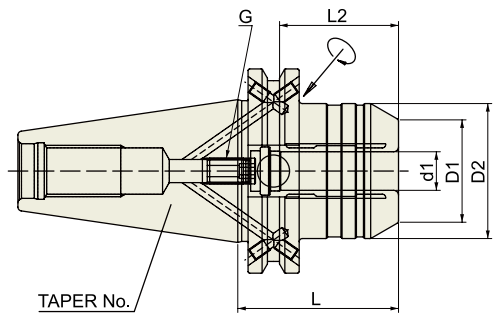
Unit : mm

EDP No.	TAPER No.	MODEL No.	d1	D1	D2	L	L1	L2	G
WK060	40	CAT40 AD/B - HC6-80.5	6	26	49.5	80.5	29.5	27	M5x0.8mm
WK062		CAT40 AD/B - HC6-110	6	26	49.5	110	29.5	27	M5x0.8mm
WK064		CAT40 AD/B - HC8-80.5	8	28	49.5	80.5	30	27	M6x1.0mm
WK066		CAT40 AD/B - HC8-110	8	28	49.5	110	30	27	M6x1.0mm
WK068		CAT40 AD/B - HC10-80.5	10	30	49.5	80.5	31	32	M8x1.0mm
WK070		CAT40 AD/B - HC10-110	10	30	49.5	110	31	32	M8x1.0mm
WK072		CAT40 AD/B - HC12-80.5	12	32	49.5	80.5	31.5	37	M10x1.0mm
WK074		CAT40 AD/B - HC12-110	12	32	49.5	110	31.5	37	M10x1.0mm
WK076		CAT40 AD/B - HC16-80.5	16	38	49.5	80.5	33	42	M12x1.0mm
WK078		CAT40 AD/B - HC16-110	16	38	49.5	110	33	42	M12x1.0mm
WK080		CAT40 AD/B - HC20-80.5	20	42	49.5	80.5	34	42	M16x1.0mm
WK082		CAT40 AD/B - HC20-110	20	42	49.5	110	34	42	M16x1.0mm
WK084		CAT40 AD/B - HC25-80.5	25	55	66	80.5	22	48	M16x1.0mm
WK086		CAT40 AD/B - HC32-80.5	32	63	80	80.5	25.5	55	M16x1.0mm
WL060	50	CAT50 AD/B - HC6-80.5	6	26	49.5	80.5	30	27	M5x0.8mm
WL062		CAT50 AD/B - HC8-80.5	8	28	49.5	80.5	30	27	M6x1.0mm
WL064		CAT50 AD/B - HC10-80.5	10	30	49.5	80.5	32	32	M8x1.0mm
WL066		CAT50 AD/B - HC12-80.5	12	32	49.5	80.5	35	37	M10x1.0mm
WL068		CAT50 AD/B - HC16-80.5	16	38	49.5	80.5	40	42	M12x1.0mm
WL070		CAT50 AD/B - HC20-80.5	20	42	49.5	80.5	40	42	M16x1.0mm

* APPLICABLE HYDRAULIC CHUCK COLLETS(REDUCTION SLEEVES) ON PAGE 925~930.

HYDRAULIC CHUCK (SHORT & RIGID)





ASME B5.50 - CAT	Taper Accuracy	G Value	RPM	Run-Out (at 3D)	Coolant System
	AT3	2.5	25,000	≤0.00012"	AD/B

■ ASME B5.50-2009-CAT

Unit : inch

EDP No.	TAPER No.	MODEL No.	d1	D1	D2	L	L2	G
WK020SNR	40	CAT40 AD/B - HC 1/2S-2.52	0.500	1.260	1.654	2.520	1.457	M8x1.0mm
WK021SNR		CAT40 AD/B - HC 5/8S-2.52	0.625	1.362	1.752	2.520	1.654	M10x1.0mm
WK022SNR		CAT40 AD/B - HC 3/4S-2.52	0.750	1.469	1.949	2.520	1.654	M10x1.0mm
WK024SNR		CAT40 AD/B - HC 1S-3.50	1.000	2.244	2.598	3.500	1.890	M16x1.0mm
WL020SNR	50	CAT50 AD/B - HC 1/2S-3.19	0.500	1.879	2.752	3.189	1.457	M8x1.0mm
WL022SNR		CAT50 AD/B - HC 5/8S-3.19	0.625	1.819	2.752	3.189	1.654	M8x1.0mm
WL024SNR		CAT50 AD/B - HC 3/4S-3.19	0.750	2.185	2.752	3.189	1.654	M10x1.0mm
WL026SNR		CAT50 AD/B - HC 1.00S-3.19	1.000	2.185	2.752	3.189	1.890	M16x1.0mm
WL028SNR		CAT50 AD/B - HC 1.25S-3.19	1.250	2.185	2.752	3.189	2.165	M16x1.0mm

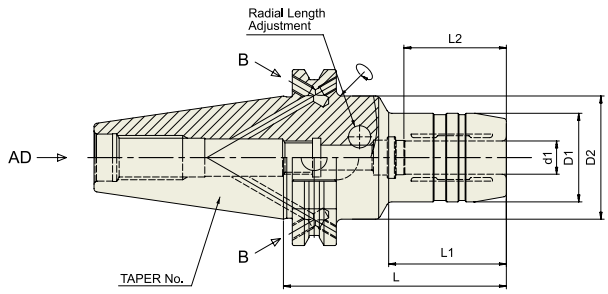
Unit : mm

EDP No.	TAPER No.	MODEL No.	d1	D1	D2	L	L2	G
WK100SNR	40	CAT40 AD/B - HC12S-50	12	32	42	50	37	M8x1.0mm
WK102SNR		CAT40 AD/B - HC20S-64.5	20	37	49.5	64.5	42	M16x1.0mm
WL100SNR	50	CAT50 AD/B - HC12S-50	12	32	42	50	37	M8x1.0mm
WL102SNR		CAT50 AD/B - HC20S-64.5	20	37	49.5	64.5	42	M16x1.0mm
WL104SNR		CAT50 AD/B - HC32S-81	32	55	72	81	55	M16x1.0mm

* APPLICABLE HYDRAULIC CHUCK COLLETS(REDUCTION SLEEVES) ON PAGE 925~930.

HYDRAULIC CHUCK (RADIAL TOOL LENGTH PRE-SETTING TYPE) CAT





ASME B5.50 - CAT	Taper Accuracy	G Value	RPM	Run-Out (at 3D)	Coolant System
	AT3	2.5	25,000	≤0.00012"	AD/B

■ ASME B5.50-2009-CAT

Unit : mm

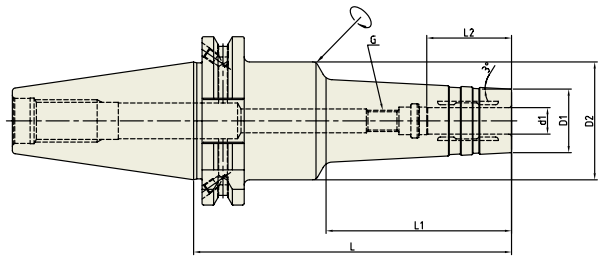
EDP No.	TAPER No.	MODEL No.	d1	D1	D2	L	L1	L2
WK100HCR	40	CAT40 AD/B - HCR12-80.5	12	32	49.5	80.5	31.5	37
WK102HCR		CAT40 AD/B - HCR20-80.5	20	42	49.5	80.5	34	42
WK104HCR		CAT40 AD/B - HCR32-110	32	64	80	110	50	55
WL100HCR	50	CAT50 AD/B - HCR12-80.5	12	32	49.5	80.5	31.5	37
WL102HCR		CAT50 AD/B - HCR20-80.5	20	42	49.5	80.5	34	42
WL104HCR		CAT50 AD/B - HCR32-100	32	60	60	100	-	55

* APPLICABLE HYDRAULIC CHUCK COLLETS(REDUCTION SLEEVES) ON PAGE 925~930.

HYDRAULIC CHUCK (For MOULD)

CAT





ASME B5.50 -CAT	Taper Accuracy	G Value	RPM	Run-Out (at 3D)	Coolant System
	AT3	2.5	25,000	≤0.00012"	AD/B

■ ASME B5.50-2009-CAT

Unit : inch

EDP No.	TAPER No.	MODEL No.	d1	D1	D2	L	L1	L2	G
WK020HMC	40	CAT40 AD/B - HMC 1/4-4.72	0.250	0.787	1.949	4.724	2.756	1.063	M5x0.8mm
WK022HMC		CAT40 AD/B - HMC 1/4-5.91	0.250	0.787	1.949	5.906	3.937	1.063	M5x0.8mm
WK024HMC		CAT40 AD/B - HMC 5/16-4.72	0.313	0.866	1.949	4.724	2.756	1.063	M6x1.0mm
WK026HMC		CAT40 AD/B - HMC 5/16-5.91	0.313	0.866	1.949	5.906	3.937	1.063	M6x1.0mm
WK028HMC		CAT40 AD/B - HMC 3/8-4.72	0.375	0.945	1.949	4.724	2.756	1.260	M8x1.0mm
WK030HMC		CAT40 AD/B - HMC 3/8-5.91	0.375	0.945	1.949	5.906	3.937	1.260	M8x1.0mm
WK032HMC		CAT40 AD/B - HMC 1/2-4.72	0.500	1.024	1.949	4.724	2.756	1.457	M10x1.0mm
WK034HMC		CAT40 AD/B - HMC 1/2-5.91	0.500	1.024	1.949	5.906	3.937	1.457	M10x1.0mm
WK036HMC		CAT40 AD/B - HMC 5/8-4.72	0.625	1.260	1.949	4.724	2.756	1.654	M12x1.0mm
WK038HMC		CAT40 AD/B - HMC 5/8-5.91	0.625	1.260	1.949	5.906	3.937	1.654	M12x1.0mm
WK040HMC		CAT40 AD/B - HMC 3/4-4.72	0.750	1.339	1.949	4.724	2.756	1.654	M16x1.0mm
WK042HMC		CAT40 AD/B - HMC 3/4-5.91	0.750	1.339	1.949	5.906	3.937	1.654	M16x1.0mm
WL020HMC	50	CAT50 AD/B - HMC 1/4-5.91	0.250	0.787	1.752	5.906	3.937	1.063	M5x0.8mm
WL022HMC		CAT50 AD/B - HMC 5/16-5.91	0.313	0.866	1.752	5.906	3.937	1.063	M6x1.0mm
WL024HMC		CAT50 AD/B - HMC 3/8-5.91	0.375	0.945	1.752	5.906	3.937	1.260	M8x1.0mm
WL026HMC		CAT50 AD/B - HMC 1/2-5.91	0.500	1.024	1.752	5.906	3.937	1.457	M10x1.0mm
WL028HMC		CAT50 AD/B - HMC 5/8-5.91	0.625	1.260	1.752	5.906	3.937	1.654	M12x1.0mm
WL030HMC		CAT50 AD/B - HMC 3/4-5.91	0.750	1.339	1.752	5.906	3.937	1.654	M16x1.0mm

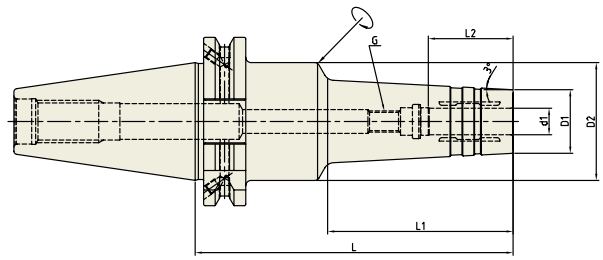
Unit : mm

EDP No.	TAPER No.	MODEL No.	d1	D1	D2	L	L1	L2	G
WK100HMC	40	CAT40 AD/B - HMC 6-120	6	20	49.5	120	70	27	M5X0.8mm
WK102HMC		CAT40 AD/B - HMC 6-150	6	20	49.5	150	100	27	M5X0.8mm
WK104HMC		CAT40 AD/B - HMC 8-120	8	22	49.5	120	70	27	M6X1.0mm
WK106HMC		CAT40 AD/B - HMC 8-150	8	22	49.5	150	100	27	M6X1.0mm
WK108HMC		CAT40 AD/B - HMC 10-120	10	24	49.5	120	70	32	M8X1.0mm
WK110HMC		CAT40 AD/B - HMC 10-150	10	24	49.5	150	100	32	M8X1.0mm
WK112HMC		CAT40 AD/B - HMC 12-120	12	25	49.5	120	70	37	M10X1.0mm
WK114HMC		CAT40 AD/B - HMC 12-150	12	25	49.5	150	100	37	M10X1.0mm
WK116HMC		CAT40 AD/B - HMC 16-120	16	32	49.5	120	70	42	M12X1.0mm
WK118HMC		CAT40 AD/B - HMC 16-150	16	32	49.5	150	100	42	M12X1.0mm
WK120HMC		CAT40 AD/B - HMC 20-120	20	36	49.5	120	70	42	M16X1.0mm
WK122HMC		CAT40 AD/B - HMC 20-150	20	36	49.5	150	100	42	M16X1.0mm
WL100HMC	50	CAT50 AD/B - HMC 6-150	6	20	44.5	150	100	27	M5X0.8mm
WL102HMC		CAT50 AD/B - HMC 8-150	8	22	44.5	150	100	27	M6X1.0mm
WL104HMC		CAT50 AD/B - HMC 10-150	10	24	44.5	150	100	32	M8X1.0mm
WL106HMC		CAT50 AD/B - HMC 12-150	12	25	44.5	150	100	37	M10X1.0mm
WL108HMC		CAT50 AD/B - HMC 16-150	16	32	44.5	150	100	42	M12X1.0mm
WL110HMC		CAT50 AD/B - HMC 20-150	20	36	44.5	150	100	42	M16X1.0mm

* APPLICABLE HYDRAULIC CHUCK COLLETS(REDUCTION SLEEVES) ON PAGE 925~930.

HYDRAULIC CHUCK (SLIM) BT





JIS B6339 - BT	Taper Accuracy	G Value	RPM	Run-Out (at 3D)	Coolant System
	AT3	2.5	25,000	≤0.00012"	AD/B

■ JIS B6339/MAS 403-BT

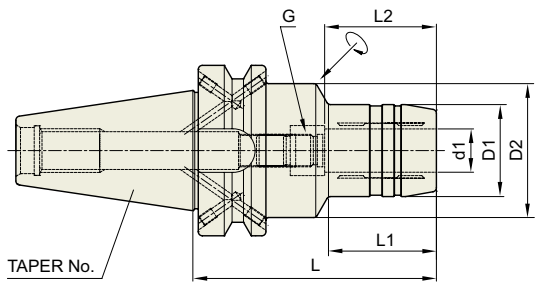
Unit : inch

EDP No.	TAPER No.	MODEL No.	d1	D1	D2	L	L1	L2	G
WG020	30	BT30 AD/B - HC 1/4-2.75	0.250	1.024	1.752	2.750	1.161	1.063	M5x0.8mm
WG022		BT30 AD/B - HC 5/16-2.75	0.313	1.102	1.752	2.750	1.181	1.063	M6x1.0mm
WG024		BT30 AD/B - HC 3/8-2.95	0.375	1.181	1.752	2.953	1.220	1.260	M8x1.0mm
WG026		BT30 AD/B - HC 1/2-3.35	0.500	1.260	1.772	3.346	1.575	1.457	M10x1.0mm
WG028		BT30 AD/B - HC 5/8-3.54	0.625	1.496	1.772	3.543	1.811	1.654	M10x1.0mm
WG030		BT30 AD/B - HC 3/4-3.54	0.750	1.654	1.772	3.543	1.890	1.654	M6x1.0mm
WH020	40	BT40 AD/B - HC 1/4-3.54	0.250	1.024	1.752	3.543	1.181	1.063	M5x0.8mm
WH022		BT40 AD/B - HC 5/16-3.54	0.313	1.102	1.752	3.543	1.280	1.063	M6x1.0mm
WH024		BT40 AD/B - HC 3/8-3.54	0.375	1.181	1.752	3.543	1.260	1.260	M8x1.0mm
WH026		BT40 AD/B - HC 1/2-3.54	0.500	1.260	1.752	3.543	1.378	1.457	M10x1.0mm
WH028		BT40 AD/B - HC 5/8-3.54	0.625	1.496	1.870	3.543	1.575	1.654	M12x1.0mm
WH030		BT40 AD/B - HC 3/4-3.54	0.750	1.654	1.870	3.543	1.575	1.654	M16x1.0mm
WH032		BT40 AD/B - HC 1-3.94	1.000	1.969	2.362	3.937	1.772	1.890	M16x1.0mm
WH034		BT40 AD/B - HC 1 1/4-4.13	1.250	2.362	-	4.134	-	2.165	M16x1.0mm

* APPLICABLE HYDRAULIC CHUCK COLLETS(REDUCTION SLEEVES) ON PAGE 925~930.

HYDRAULIC CHUCK (SLIM)





JIS B6339 - BT	Taper Accuracy	G Value	RPM	Run-Out (at 3D)	Coolant System
	AT3	2.5	25,000	≤0.00012"	AD/B

■ JIS B6339/MAS 403-BT

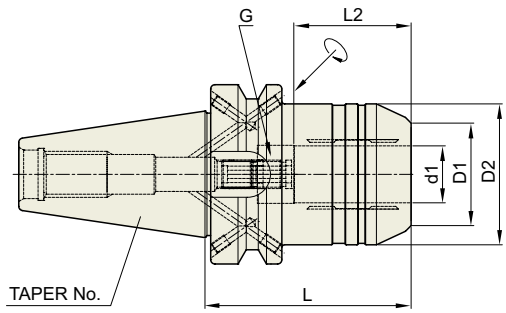
Unit : mm

EDP No.	TAPER No.	MODEL No.	d1	D1	D2	L	L1	L2	G
WG100	30	BT30 AD/B - HC6-70	6	26	44.5	70	29.5	27	M5x0.8mm
WG102		BT30 AD/B - HC8-70	8	28	44.5	70	30	27	M6x1.0mm
WG104		BT30 AD/B - HC10-75	10	30	44.5	75	31	32	M8x1.0mm
WG106		BT30 AD/B - HC12-85	12	32	45	85	45	37	M10x1.0mm
WG108		BT30 AD/B - HC14-85	14	34	45	85	45	37	M10x1.0mm
WG110		BT30 AD/B - HC16-90	16	38	45	90	50	42	M10x1.0mm
WG112		BT30 AD/B - HC18-90	18	40	45	90	50	42	M10x1.0mm
WG114		BT30 AD/B - HC20-90	20	42	45	90	50	42	M6x1.0mm
WH100	40	BT40 AD/B - HC6-90	6	26	44.5	90	43	27	M5x0.8mm
WH102		BT40 AD/B - HC8-90	8	28	44.5	90	44.5	27	M6x1.0mm
WH104		BT40 AD/B - HC10-90	10	30	44.5	90	44.5	32	M8x1.0mm
WH106		BT40 AD/B - HC12-90	12	32	44.5	90	44.5	37	M10x1.0mm
WH108		BT40 AD/B - HC14-90	14	34	44.5	90	44.5	37	M10x1.0mm
WH110		BT40 AD/B - HC16-90	16	38	44.5	90	47.5	42	M12x1.0mm
WH112		BT40 AD/B - HC18-90	18	40	44.5	90	47.5	42	M12x1.0mm
WH114		BT40 AD/B - HC20-90	20	42	44.5	90	47.5	42	M16x1.0mm
WH116		BT40 AD/B - HC25-100	25	50	60	100	47.5	48	M16x1.0mm
WH118		BT40 AD/B - HC32-105	32	60	-	105	-	55	M16x1.0mm

* APPLICABLE HYDRAULIC CHUCK COLLETS(REDUCTION SLEEVES) ON PAGE 925~930.

HYDRAULIC CHUCK (SHORT & RIGID) BT





JIS B6339 - BT	Taper Accuracy	G Value	RPM	Run-Out (at 3D)	Coolant System
	AT3	2.5	25,000	≤0.00012"	AD/B

■ JIS B6339/MAS 403-BT

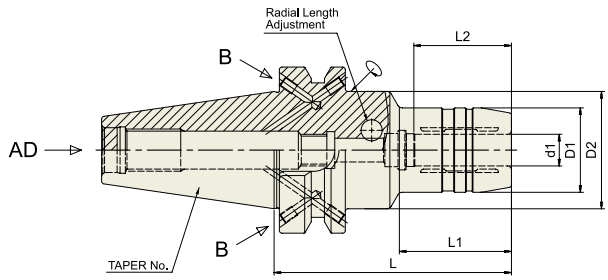
Unit : mm

EDP No.	TAPER No.	MODEL No.	d1	D1	D2	L	L2	G
WG100SNR	30	BT30 AD/B - HC20S-85	20	41	44	85	42	M6x1.0mm
WH100SNR	40	BT40 AD/B - HC12S-58	12	32	42	58	37	M8x1.0mm
WH102SNR		BT40 AD/B - HC20S-72.5	20	38	49.25	72.5	42	M8x1.0mm

* APPLICABLE HYDRAULIC CHUCK COLLETS(REDUCTION SLEEVES) ON PAGE 925~930.

HYDRAULIC CHUCK (RADIAL TOOL LENGTH PRE-SETTING TYPE)





JIS B6339 - BT	Taper Accuracy	G Value	RPM	Run-Out (at 3D)	Coolant System
	AT3	2.5	25,000	≤0.00012"	AD/B

■ JIS B6339/MAS 403-BT

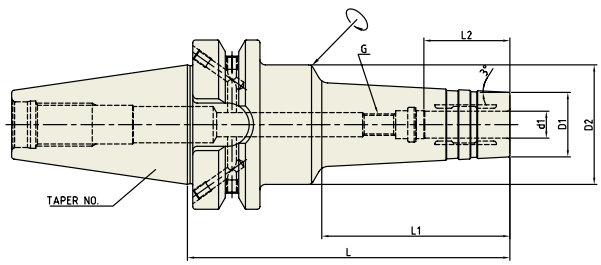
Unit : mm

EDP No.	TAPER No.	MODEL No.	d1	D1	D2	L	L1	L2
WG100HCR	30	BT30 AD/B - HCR12-85	12	32	45	85	45	37
WG102HCR		BT30 AD/B - HCR20-85	20	44	-	85	-	42
WH100HCR	40	BT40 AD/B - HCR12-90	12	32	44.5	90	42.5	37
WH102HCR		BT40 AD/B - HCR20-90	20	42	44.5	90	47.5	42
WH104HCR		BT40 AD/B - HCR32-105	32	60	-	105	-	55

* APPLICABLE HYDRAULIC CHUCK COLLETS(REDUCTION SLEEVES) ON PAGE 925~930.

HYDRAULIC CHUCK (For MOULD) BT





JIS B6339 - BT	Taper Accuracy	G Value	RPM	Run-Out (at 3D)	Coolant System
	AT3	2.5	25,000	≤0.00012"	AD/B

■ JIS B6339/MAS 403-BT

Unit : mm

EDP No.	TAPER No.	MODEL No.	d1	D1	D2	L	L1	L2	G
WH100HMC	40	BT40 AD/B - HMC6-120	6	20	44.5	120	70	27	M5x0.8mm
WH102HMC		BT40 AD/B - HMC6-150	6	20	44.5	150	100	27	M5x0.8mm
WH104HMC		BT40 AD/B - HMC8-120	8	22	44.5	120	70	27	M6x1.0mm
WH106HMC		BT40 AD/B - HMC8-150	8	22	44.5	150	100	27	M6x1.0mm
WH108HMC		BT40 AD/B - HMC10-120	10	24	44.5	120	70	32	M8x1.0mm
WH110HMC		BT40 AD/B - HMC10-150	10	24	44.5	150	100	32	M8x1.0mm
WH112HMC		BT40 AD/B - HMC12-120	12	25	44.5	120	70	37	M10x1.0mm
WH114HMC		BT40 AD/B - HMC12-150	12	25	44.5	150	100	37	M10x1.0mm
WH116HMC		BT40 AD/B - HMC16-120	16	32	44.5	120	70	42	M12x1.0mm
WH118HMC		BT40 AD/B - HMC16-150	16	32	44.5	150	100	42	M12x1.0mm
WH120HMC		BT40 AD/B - HMC20-120	20	36	43.75	120	-	42	M16x1.0mm
WH122HMC		BT40 AD/B - HMC20-150	20	36	46.9	150	-	42	M16x1.0mm

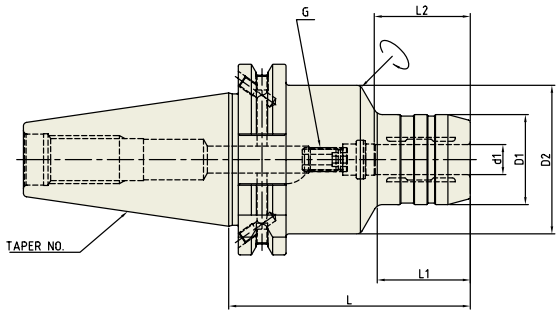
* APPLICABLE HYDRAULIC CHUCK COLLETS(REDUCTION SLEEVES) ON PAGE 925~930.

DUAL CONTACT HYDRAULIC CHUCK (SLIM)

CCT

HYDRAULIC CHUCK





CCT	Taper Accuracy	G Value	RPM	Run-Out (at 3D)	Coolant System
	AT3	2.5	25,000	≤0.00012"	AD/B

■ CCT (CAT DUAL CONTACT)

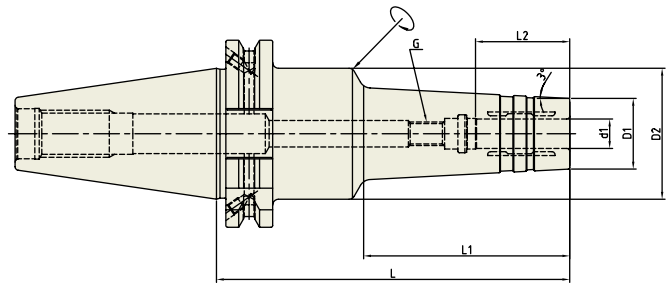
Unit : inch

EDP No.	TAPER No.	MODEL No.	d1	D1	D2	L	L1	L2	G
WB020	40	CCT40 AD/B - HC1/4-3.54	0.250	1.024	1.752	3.543	1.280	1.063	M5x0.8mm
WB022		CCT40 AD/B - HC5/16-3.54	0.313	1.102	1.752	3.543	1.280	1.063	M6x1.0mm
WB024		CCT40 AD/B - HC3/8-3.54	0.375	1.181	1.752	3.543	1.634	1.260	M8x1.0mm
WB026		CCT40 AD/B - HC1/2-3.54	0.500	1.260	1.752	3.543	1.634	1.457	M10x1.0mm
WB028		CCT40 AD/B - HC5/8-3.54	0.625	1.496	1.752	3.543	1.949	1.654	M10x1.0mm
WB030		CCT40 AD/B - HC3/4-3.54	0.750	1.654	1.752	3.543	1.949	1.654	M10x1.0mm
WB032		CCT40 AD/B - HC1-3.94	1.000	2.165	2.480	3.937	2.559	1.890	M16x1.0mm
WB034		CCT40 AD/B - HC1 1/4-4.13	1.250	2.480	3.150	4.134	1.378	2.165	M16x1.0mm
WC020	50	CCT50 AD/B - HC1/4-3.54	0.250	1.024	1.969	3.543	1.181	1.063	M5x0.8mm
WC022		CCT50 AD/B - HC5/16-3.54	0.313	1.102	1.969	3.543	1.181	1.063	M6x1.0mm
WC024		CCT50 AD/B - HC3/8-3.54	0.375	1.181	1.969	3.543	1.260	1.260	M8x1.0mm
WC026		CCT50 AD/B - HC1/2-3.54	0.500	1.260	1.969	3.543	1.378	1.457	M10x1.0mm
WC028		CCT50 AD/B - HC5/8-3.54	0.625	1.496	1.969	3.543	1.575	1.654	M10x1.0mm
WC030		CCT50 AD/B - HC3/4-3.54	0.750	1.654	1.969	3.543	1.575	1.654	M10x1.0mm
WC032		CCT50 AD/B - HC1-4.13	1.000	2.244	2.480	4.134	2.047	1.890	M16x1.0mm
WC034		CCT50 AD/B - HC1 1/4-4.53	1.250	2.480	2.953	4.528	2.441	2.165	M16x1.0mm

* APPLICABLE HYDRAULIC CHUCK COLLETS(REDUCTION SLEEVES) ON PAGE 925~930.

DUAL CONTACT HYDRAULIC CHUCK (For MOULD) CCT





CCT	Taper Accuracy	G Value	RPM	Run-Out (at 3D)	Coolant System
	AT3	2.5	25,000	≤0.00012"	AD/B

■ CCT (CAT DUAL CONTACT)

Unit : inch

EDP No.	TAPER No.	MODEL No.	d1	D1	D2	L	L1	L2	G
WB020HMC	40	CCT40 AD/B - HMC 1/4-4.72	0.250	0.787	1.949	4.724	2.756	1.063	M5x0.8mm
WB022HMC		CCT40 AD/B - HMC 1/4-5.91	0.250	0.787	1.949	5.906	3.937	1.063	M5x0.8mm
WB024HMC		CCT40 AD/B - HMC 5/16-4.72	0.313	0.866	1.949	4.724	2.756	1.063	M6x1.0mm
WB026HMC		CCT40 AD/B - HMC 5/16-5.91	0.313	0.866	1.949	5.906	3.937	1.063	M6x1.0mm
WB028HMC		CCT40 AD/B - HMC 3/8-4.72	0.375	0.945	1.949	4.724	2.756	1.260	M8x1.0mm
WB030HMC		CCT40 AD/B - HMC 3/8-5.91	0.375	0.945	1.949	5.906	3.937	1.260	M8x1.0mm
WB032HMC		CCT40 AD/B - HMC 1/2-4.72	0.500	1.024	1.949	4.724	2.756	1.457	M10x1.0mm
WB034HMC		CCT40 AD/B - HMC 1/2-5.91	0.500	1.024	1.949	5.906	3.937	1.457	M10x1.0mm
WB036HMC		CCT40 AD/B - HMC 5/8-4.72	0.625	1.260	1.949	4.724	2.756	1.654	M12x1.0mm
WB038HMC		CCT40 AD/B - HMC 5/8-5.91	0.625	1.260	1.949	5.906	3.937	1.654	M12x1.0mm
WB040HMC		CCT40 AD/B - HMC 3/4-4.72	0.750	1.339	1.949	4.724	2.756	1.654	M16x1.0mm
WB042HMC		CCT40 AD/B - HMC 3/4-5.91	0.750	1.339	1.949	5.906	3.937	1.654	M16x1.0mm
WC020HMC	50	CCT50 AD/B - HMC 1/4-5.91	0.250	0.787	1.752	5.906	3.937	1.063	M5x0.8mm
WC022HMC		CCT50 AD/B - HMC 5/16-5.91	0.313	0.866	1.752	5.906	3.937	1.063	M6x1.0mm
WC024HMC		CCT50 AD/B - HMC 3/8-5.91	0.375	0.945	1.752	5.906	3.937	1.260	M8x1.0mm
WC026HMC		CCT50 AD/B - HMC 1/2-5.91	0.500	1.024	1.752	5.906	3.937	1.457	M10x1.0mm
WC028HMC		CCT50 AD/B - HMC 5/8-5.91	0.625	1.260	1.752	5.906	3.937	1.654	M12x1.0mm
WC030HMC		CCT50 AD/B - HMC 3/4-5.91	0.750	1.339	1.752	5.906	3.937	1.654	M16x1.0mm

Unit : mm

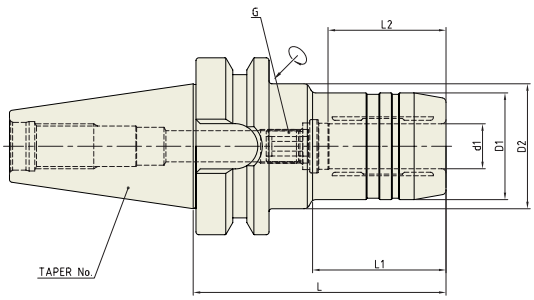
EDP No.	TAPER No.	MODEL No.	d1	D1	D2	L	L1	L2	G
WB100HMC	40	CCT40 AD/B - HMC6-120	6	20	49.5	120	70	27	M5X0.8mm
WB102HMC		CCT40 AD/B - HMC6-150	6	20	49.5	150	100	27	M5X0.8mm
WB104HMC		CCT40 AD/B - HMC8-120	8	22	49.5	120	70	27	M6X1.0mm
WB106HMC		CCT40 AD/B - HMC8-150	8	22	49.5	150	100	27	M6X1.0mm
WB108HMC		CCT40 AD/B - HMC10-120	10	24	49.5	120	70	32	M8X1.0mm
WB110HMC		CCT40 AD/B - HMC10-150	10	24	49.5	150	100	32	M8X1.0mm
WB112HMC		CCT40 AD/B - HMC12-120	12	25	49.5	120	70	37	M10X1.0mm
WB114HMC		CCT40 AD/B - HMC12-150	12	25	49.5	150	100	37	M10X1.0mm
WB116HMC		CCT40 AD/B - HMC16-120	16	32	49.5	120	70	42	M12X1.0mm
WB118HMC		CCT40 AD/B - HMC16-150	16	32	49.5	150	100	42	M12X1.0mm
WB120HMC		CCT40 AD/B - HMC20-120	20	36	49.5	120	70	42	M16X1.0mm
WB122HMC		CCT40 AD/B - HMC20-150	20	36	49.5	150	100	42	M16X1.0mm
WC100HMC	50	CCT50 AD/B - HMC6-150	6	20	44.5	150	100	27	M5X0.8mm
WC102HMC		CCT50 AD/B - HMC8-150	8	22	44.5	150	100	27	M6X1.0mm
WC104HMC		CCT50 AD/B - HMC10-150	10	24	44.5	150	100	32	M8X1.0mm
WC106HMC		CCT50 AD/B - HMC12-150	12	25	44.5	150	100	37	M10X1.0mm
WC108HMC		CCT50 AD/B - HMC16-150	16	32	44.5	150	100	42	M12X1.0mm
WC110HMC		CCT50 AD/B - HMC20-150	20	36	44.5	150	100	42	M16X1.0mm

* APPLICABLE HYDRAULIC CHUCK COLLETS(REDUCTION SLEEVES) ON PAGE 925~930.

DUAL CONTACT HYDRAULIC CHUCK (SLIM)

CBT





CBT	Taper Accuracy	G Value	RPM	Run-Out (at 3D)	Coolant System
	AT3	2.5	25,000	≤0.00012"	AD

■ CBT (BT DUAL CONTACT)

Unit : inch

EDP No.	TAPER No.	MODEL No.	d1	D1	D2	L	L1	L2	G
WD020	30	CBT30 - HC1/4-2.76	0.250	1.024	1.752	2.756	1.161	1.063	M5x0.8mm
WD022		CBT30 - HC5/16-2.76	0.313	1.102	1.752	2.756	1.220	1.063	M6x1.0mm
WD024		CBT30 - HC3/8-2.95	0.375	1.181	1.752	2.953	1.220	1.260	M8x1.0mm
WD026		CBT30 - HC1/2-3.35	0.500	1.260	1.772	3.346	1.575	1.457	M10x1.0mm
WD028		CBT30 - HC5/8-3.54	0.625	1.496	1.772	3.543	1.811	1.654	M12x1.0mm
WD030		CBT30 - HC3/4-3.54	0.750	1.654	1.772	3.543	1.890	1.654	M16x1.0mm
WE020	40	CBT40 - HC1/4-3.54	0.250	1.024	1.752	3.543	1.181	1.063	M5x0.8mm
WE022		CBT40 - HC5/16-3.54	0.313	1.102	1.752	3.543	1.280	1.063	M6x1.0mm
WE024		CBT40 - HC3/8-3.54	0.375	1.181	1.752	3.543	1.260	1.260	M8x1.0mm
WE026		CBT40 - HC1/2-3.54	0.500	1.260	1.752	3.543	1.378	1.457	M10x1.0mm
WE028		CBT40 - HC5/8-3.54	0.625	1.496	1.870	3.543	1.575	1.654	M12x1.0mm
WE030		CBT40 - HC3/4-3.54	0.750	1.654	1.870	3.543	1.575	1.654	M10x1.0mm
WE032		CBT40 - HC1"-3.94	1.000	1.969	2.362	3.937	1.772	1.890	M16x1.0mm
WE034		CBT40 - HC1 1/4-4.13	1.250	2.362	-	4.134	-	2.165	M16x1.0mm

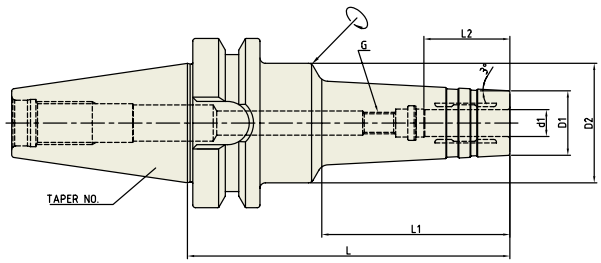
Unit : mm

EDP No.	TAPER No.	MODEL No.	d1	D1	D2	L	L1	L2	G
WD100	30	CBT30 - HC6-70	6	26	44.5	70	29.5	27	M5x0.8mm
WD102		CBT30 - HC8-70	8	28	44.5	70	30	27	M6x1.0mm
WD104		CBT30 - HC10-75	10	30	44.5	75	31	32	M8x1.0mm
WD106		CBT30 - HC12-85	12	32	44.5	85	45	37	M10x1.0mm
WD108		CBT30 - HC14-85	14	34	44.5	85	45	37	M10x1.0mm
WD110		CBT30 - HC16-90	16	38	45	90	50	42	M10x1.0mm
WD112		CBT30 - HC18-90	18	40	45	90	50	42	M10x1.0mm
WD114		CBT30 - HC20-90	20	42	45	90	50	42	M6x1.0mm
WE100	40	CBT40 - HC6-90	6	26	44.5	90	43	27	M5x0.8mm
WE102		CBT40 - HC8-90	8	28	44.5	90	44.5	27	M6x1.0mm
WE104		CBT40 - HC10-90	10	30	44.5	90	44.5	32	M8x1.0mm
WE106		CBT40 - HC12-90	12	32	44.5	90	44.5	37	M10x1.0mm
WE108		CBT40 - HC14-90	14	34	44.5	90	44.5	37	M10x1.0mm
WE110		CBT40 - HC16-90	16	38	44.5	90	47.5	42	M12x1.0mm
WE112		CBT40 - HC18-90	18	40	44.5	90	47.5	42	M12x1.0mm
WE114		CBT40 - HC20-90	20	42	44.5	90	47.5	42	M16x1.0mm
WE116		CBT40 - HC25-100	25	50	60	100	47.5	48	M16x1.0mm
WE118		CBT40 - HC32-105	32	60	-	105	-	55	M16x1.0mm

* APPLICABLE HYDRAULIC CHUCK COLLETS(REDUCTION SLEEVES) ON PAGE 925~930.

DUAL CONTACT HYDRAULIC CHUCK (For MOULD) CBT





CBT	Taper Accuracy	G Value	RPM	Run-Out (at 3D)	Coolant System
	AT3	2.5	25,000	≤0.00012"	AD

■ CBT (BT DUAL CONTACT)

Unit : inch

EDP No.	TAPER No.	MODEL No.	d1	D1	D2	L	L1	L2	G
WE020HMC	40	CBT40 - HMC1/4-4.72	0.250	0.787	1.752	4.724	2.756	1.063	M5x0.8mm
WE022HMC		CBT40 - HMC1/4-5.91	0.250	0.787	1.752	5.906	3.937	1.063	M5x0.8mm
WE024HMC		CBT40 - HMC5/16-4.72	0.313	0.866	1.752	4.724	2.756	1.063	M6x1.0mm
WE026HMC		CBT40 - HMC5/16-5.91	0.313	0.866	1.752	5.906	3.937	1.063	M6x1.0mm
WE028HMC		CBT40 - HMC3/8-4.72	0.375	0.945	1.752	4.724	2.756	1.260	M8x1.0mm
WE030HMC		CBT40 - HMC3/8-5.91	0.375	0.945	1.752	5.906	3.937	1.260	M8x1.0mm
WE032HMC		CBT40 - HMC1/2-4.72	0.500	1.024	1.752	4.724	2.756	1.457	M10x1.0mm
WE034HMC		CBT40 - HMC1/2-5.91	0.500	1.024	1.752	5.906	3.937	1.457	M10x1.0mm
WE036HMC		CBT40 - HMC5/8-4.72	0.625	1.260	1.752	4.724	2.756	1.654	M12x1.0mm
WE038HMC		CBT40 - HMC5/8-5.91	0.625	1.260	1.752	5.906	3.937	1.654	M12x1.0mm
WE040HMC		CBT40 - HMC3/4-4.72	0.750	1.339	1.722	4.724	-	1.654	M16x1.0mm
WE042HMC		CBT40 - HMC3/4-5.91	0.750	1.339	1.846	5.906	-	1.654	M16x1.0mm

Unit : mm

EDP No.	TAPER No.	MODEL No.	d1	D1	D2	L	L1	L2	G
WE100HMC	40	CBT40 - HMC6-120	6	20	44.5	120	70	27	M5x0.8mm
WE102HMC		CBT40 - HMC6-150	6	20	44.5	150	100	27	M5x0.8mm
WE104HMC		CBT40 - HMC8-120	8	22	44.5	120	70	27	M6x1.0mm
WE106HMC		CBT40 - HMC8-150	8	22	44.5	150	100	27	M6x1.0mm
WE108HMC		CBT40 - HMC10-120	10	24	44.5	120	70	32	M8x1.0mm
WE110HMC		CBT40 - HMC10-150	10	24	44.5	150	100	32	M8x1.0mm
WE112HMC		CBT40 - HMC12-120	12	25	44.5	120	70	37	M10x1.0mm
WE114HMC		CBT40 - HMC12-150	12	25	44.5	150	100	37	M10x1.0mm
WE116HMC		CBT40 - HMC16-120	16	32	44.5	120	70	42	M12x1.0mm
WE118HMC		CBT40 - HMC16-150	16	32	44.5	150	100	42	M12x1.0mm
WE120HMC		CBT40 - HMC20-120	20	36	43.8	120	-	42	M16x1.0mm
WE122HMC		CBT40 - HMC20-150	20	36	46.9	150	-	42	M16x1.0mm

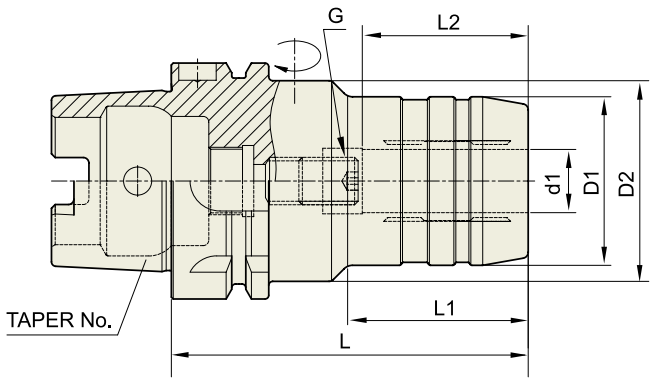
* APPLICABLE HYDRAULIC CHUCK COLLETS(REDUCTION SLEEVES) ON PAGE 925~930.

DUAL CONTACT HYDRAULIC CHUCK (SLIM)

HSK

HYDRAULIC CHUCK





DIN 69893 - HSK	Taper Accuracy	G Value	RPM	Run-Out (at 3D)	Coolant System
	-	2.5	25,000	≤0.00012"	AD

■ DIN69893/ISO 12164-1 HSK FROM A

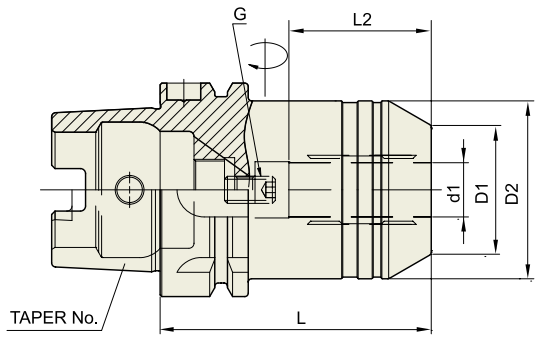
Unit : inch

EDP No.	TAPER No.	MODEL No.	d1	D1	D2	L	L1	L2	G
WQ020	63A	HSK63A - HC 1/4-2.76	0.250	1.024	1.969	2.756	0.945	1.063	M5x0.8mm
WQ022		HSK63A - HC 3/8-3.15	0.375	1.181	1.969	3.150	1.378	1.260	M8x1.0mm
WQ024		HSK63A - HC 1/2-3.35	0.500	1.260	1.969	3.346	1.575	1.457	M10x1.0mm
WQ026		HSK63A - HC 3/4-3.54	0.750	1.654	1.969	3.543	1.890	1.654	M16x1.0mm
WQ028		HSK63A - HC 1-4.72	1.000	2.244	2.480	4.724	2.323	1.890	M16x1.0mm
WQ030		HSK63A - HC 1 1/4-4.92	1.250	2.520	2.953	4.921	2.480	2.165	M16x1.0mm
WR020	100A	HSK100A - HC 1/4-2.95	0.250	1.024	1.969	2.953	1.024	1.063	M5x0.8mm
WR022		HSK100A - HC 3/8-2.95	0.375	1.181	1.969	3.543	1.654	1.260	M8x1.0mm
WR024		HSK100A - HC 1/2-3.74	0.500	1.260	1.969	3.740	1.850	1.457	M10x1.0mm
WR026		HSK100A - HC 3/4-4.13	0.750	1.654	1.969	4.134	2.323	1.654	M16x1.0mm
WR028		HSK100A - HC 1-4.33	1.000	2.244	2.480	4.331	2.441	1.890	M16x1.0mm
WR032		HSK100A - HC 1 1/4-4.33	1.250	2.520	2.953	4.331	2.441	2.165	M16x1.0mm

* APPLICABLE HYDRAULIC CHUCK COLLETS(REDUCTION SLEEVES) ON PAGE 925~930.

DUAL CONTACT HYDRAULIC CHUCK (SHORT & RIGID) HSK





DIN69893 -HSK	Taper Accuracy	G Value	RPM	Run-Out (at 3D)	Coolant System
	-	2.5	25,000	≤0.00012"	AD

■ DIN 69893/ISO 12164-1-HSK FORM A

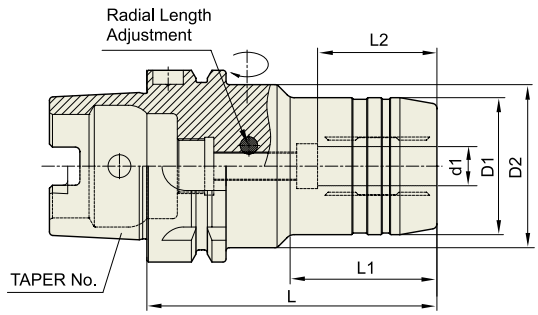
Unit : mm

EDP No.	TAPER No.	MODEL No.	d1	D1	D2	L	L1	G
WQ100SNR	63A	HSK63A - HC12S-80	12	32	42	80	37	M8x1.0mm
WQ102SNR		HSK63A - HC20S-80	20	38	52.5	80	42	M8x1.0mm
WR100SNR	100A	HSK100A - HC12S-85	12	32	42	85	35	M8x1.0mm
WR102SNR		HSK100A - HC20S-90	20	38	52.5	90	42	M8x1.0mm

* APPLICABLE HYDRAULIC CHUCK COLLETS(REDUCTION SLEEVES) ON PAGE 925~930.

DUAL CONTACT HYDRAULIC CHUCK (RADIAL TOOL LENGTH PRE-SETTING TYPE) HSK





DIN 69893 - HSK	Taper Accuracy	G Value	RPM	Run-Out (at 3D)	Coolant System
	-	2.5	25,000	≤0.00012"	AD

■ DIN 69893/ISO 12164-1-HSK FORM A

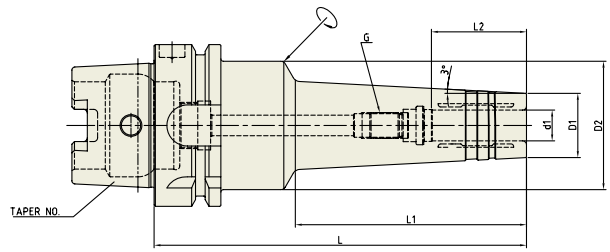
Unit : mm

EDP No.	TAPER No.	MODEL No.	d1	D1	D2	L	L1	L2
WQ100HCR	63A	HSK63A - HCR6-85	6	26	50	85	33	27
WQ102HCR		HSK63A - HCR8-85	8	28	50	85	33	27
WQ104HCR		HSK63A - HCR10-85	10	30	50	85	38	32
WQ106HCR		HSK63A - HCR12-95	12	32	50	95	40	37
WQ108HCR		HSK63A - HCR14-95	14	34	50	95	46	37
WQ110HCR		HSK63A - HCR16-95	16	38	50	95	51	42
WQ112HCR		HSK63A - HCR18-95	18	40	50	95	52	42
WQ114HCR		HSK63A - HCR20-100	20	42	50	100	51	42
WQ116HCR		HSK63A - HCR25-120	25	57	63	120	54.5	48
WQ118HCR		HSK63A - HCR32-125	32	64	75	125	57.5	55
WR100HCR	100A	HSK100A - HCR6-90	6	26	63	90	33	27
WR102HCR		HSK100A - HCR8-90	8	28	63	90	33	27
WR104HCR		HSK100A - HCR10-95	10	30	63	95	36	32
WR106HCR		HSK100A - HCR12-100	12	32	63	100	40	37
WR108HCR		HSK100A - HCR14-100	14	34	63	100	41	37
WR110HCR		HSK100A - HCR16-105	16	38	63	105	46	42
WR112HCR		HSK100A - HCR18-105	18	40	63	105	46	42
WR114HCR		HSK100A - HCR20-105	20	42	75	105	51	42
WR116HCR		HSK100A - HCR25-115	25	57	75	115	55.5	48
WR118HCR		HSK100A - HCR32-120	32	64	75	120	63.5	55

* APPLICABLE HYDRAULIC CHUCK COLLETS(REDUCTION SLEEVES) ON PAGE 925~930.

DUAL CONTACT HYDRAULIC CHUCK (For MOULD) HSK





DIN69893 -HSK	Taper Accuracy	G Value	RPM	Run-Out (at 3D)	Coolant System
	-	2.5	25,000	≤0.00012"	AD

■ DIN 69893/ISO 12164-1-HSK FORM A

Unit : inch

EDP No.	TAPER No.	MODEL No.	d1	D1	D2	L	L1	L2	G
WQ020HMC	63A	HSK63A - HMC1/4-5.71	0.250	0.787	1.969	5.709	3.543	1.063	M5x0.8mm
WQ022HMC		HSK63A - HMC5/16-5.71	0.313	0.866	1.969	5.709	3.543	1.063	M6x1.0mm
WQ024HMC		HSK63A - HMC3/8-5.71	0.375	0.945	1.969	5.709	3.543	1.260	M8x1.0mm
WQ026HMC		HSK63A - HMC1/2-5.71	0.500	1.024	1.969	5.709	3.543	1.457	M10x1.0mm
WQ028HMC		HSK63A - HMC5/8-5.71	0.625	1.260	1.969	5.709	3.543	1.654	M12x1.0mm
WQ030HMC		HSK63A - HMC3/4-5.71	0.750	1.339	1.969	5.709	3.543	1.654	M16x1.0mm
WR100HMC	100A	HSK100A - HMC1/4-5.71	0.250	0.787	1.969	5.709	3.543	1.063	M5x0.8mm
WR102HMC		HSK100A - HMC5/16-5.71	0.313	0.866	1.969	5.709	3.543	1.063	M6x1.0mm
WR104HMC		HSK100A - HMC3/8-5.71	0.375	0.945	1.969	5.709	3.543	1.260	M8x1.0mm
WR106HMC		HSK100A - HMC1/2-5.71	0.500	1.024	1.969	5.709	3.543	1.457	M10x1.0mm
WR108HMC		HSK100A - HMC5/8-5.71	0.625	1.260	1.969	5.709	3.543	1.654	M12x1.0mm
WR110HMC		HSK100A - HMC3/4-5.71	0.750	1.339	1.969	5.709	3.543	1.654	M16x1.0mm

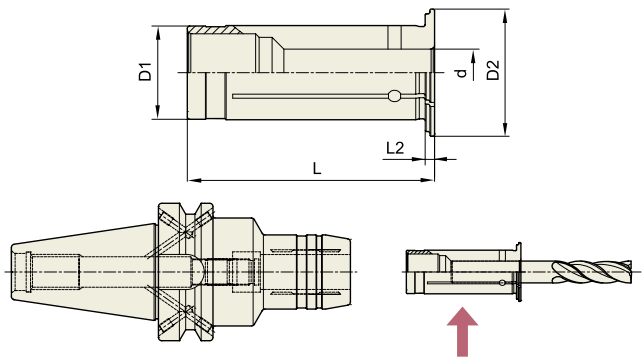
Unit : inch

EDP No.	TAPER No.	MODEL No.	d1	D1	D2	L	L1	L2	G
WQ100HMC	63A	HSK63A - HMC6-145	6	20	50	145	90	27	M5x0.8mm
WQ102HMC		HSK63A - HMC8-145	8	22	50	145	90	27	M6x1.0mm
WQ104HMC		HSK63A - HMC10-145	10	24	50	145	90	32	M8x1.0mm
WQ106HMC		HSK63A - HMC12-145	12	25	50	145	90	37	M10x1.0mm
WQ108HMC		HSK63A - HMC16-145	16	32	50	145	90	42	M12x1.0mm
WQ110HMC		HSK63A - HMC20-145	20	36	50	145	90	42	M16x1.0mm
WR200HMC	100A	HSK100A - HMC6-150	6	20	50	150	90	27	M5x0.8mm
WR202HMC		HSK100A - HMC8-150	8	22	50	150	90	27	M6x1.0mm
WR204HMC		HSK100A - HMC10-150	10	24	50	150	90	32	M8x1.0mm
WR206HMC		HSK100A - HMC12-150	12	25	50	150	90	37	M10x1.0mm
WR208HMC		HSK100A - HMC16-150	16	32	50	150	90	42	M12x1.0mm
WR210HMC		HSK100A - HMC20-150	20	36	50	150	90	42	M16x1.0mm

* APPLICABLE HYDRAULIC CHUCK COLLETS(REDUCTION SLEEVES) ON PAGE 925~930.

HYDRAULIC CHUCK COLLET (REDUCTION SLEEVE : OPEN TYPE)





Hydraulic Chuck collet

■ METRIC / INCH

Unit : inch

EDP No.	TYPE		d	D1	D2	L	L2
412108	HK12	1/8"	0.125	0.472	0.748	1.850	0.079
412316		3/16"	0.188	0.472	0.748	1.850	0.079
412104		1/4"	0.250	0.472	0.748	1.850	0.079
412516		5/16"	0.313	0.472	0.748	1.850	0.079
420108	HK20	1/8"	0.125	0.787	1.063	2.067	0.079
420316		3/16"	0.188	0.787	1.063	2.067	0.079
420104		1/4"	0.250	0.787	1.063	2.067	0.079
420516		5/16"	0.313	0.787	1.063	2.067	0.079
420308		3/8"	0.375	0.787	1.063	2.067	0.079
420102		1/2"	0.500	0.787	1.063	2.067	0.079
420508		5/8"	0.625	0.787	1.063	2.067	0.079
432108	HK32	1/8"	0.125	1.260	1.535	2.500	0.118
432316		3/16"	0.188	1.260	1.535	2.500	0.118
432104		1/4"	0.250	1.260	1.535	2.500	0.118
432516		5/16"	0.313	1.260	1.535	2.500	0.118
432308		3/8"	0.375	1.260	1.535	2.500	0.118
432102		1/2"	0.500	1.260	1.535	2.500	0.118
432508		5/8"	0.625	1.260	1.535	2.500	0.118
432304		3/4"	0.750	1.260	1.535	2.500	0.118
432100		1	1.000	1.260	1.535	2.500	0.118

* OTHER SPECIAL SIZES OF HYDRAULIC CHUCK COLLETS CAN BE SUPPLIED ON REQUEST.

▶ Feature

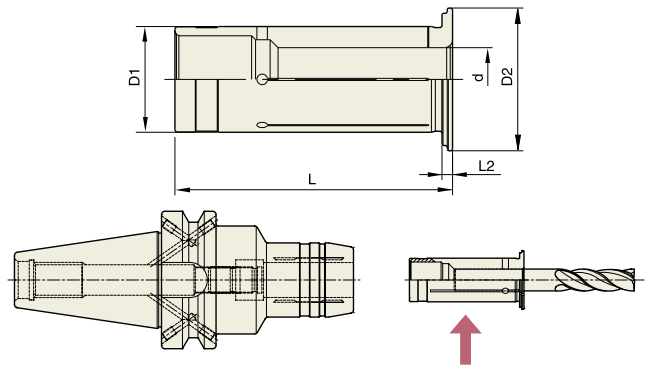
Hydraulic Chuck collet (reduction sleeve) is cut into trisection by high precision cutting to guarantee precise I.D and strong clamping power.

▶ Chucking Method

Please assemble cutting tool with collet first, and then insert collet into Hydraulic Chuck.

HYDRAULIC CHUCK COLLET (REDUCTION SLEEVE : CLOSED TYPE)





Hydraulic Chuck collet

■ METRIC / INCH

Unit : inch

EDP No.	TYPE		d	D1	D2	L	L2
512108	HS12	1/8"	0.125	0.472	0.748	1.850	0.079
512316		3/16"	0.188	0.472	0.748	1.850	0.079
512104		1/4"	0.250	0.472	0.748	1.850	0.079
512516		5/16"	0.313	0.472	0.748	1.850	0.079
520108	HS20	1/8"	0.125	0.787	1.063	2.067	0.079
520316		3/16"	0.188	0.787	1.063	2.067	0.079
520104		1/4"	0.250	0.787	1.063	2.067	0.079
520516		5/16"	0.313	0.787	1.063	2.067	0.079
520308		3/8"	0.375	0.787	1.063	2.067	0.079
520102		1/2"	0.500	0.787	1.063	2.067	0.079
520508		5/8"	0.625	0.787	1.063	2.067	0.079
532108	HS32	1/8"	0.125	1.260	1.535	2.500	0.118
532316		3/16"	0.188	1.260	1.535	2.500	0.118
532104		1/4"	0.250	1.260	1.535	2.500	0.118
532516		5/16"	0.313	1.260	1.535	2.500	0.118
532308		3/8"	0.375	1.260	1.535	2.500	0.118
532102		1/2"	0.500	1.260	1.535	2.500	0.118
532508		5/8"	0.625	1.260	1.535	2.500	0.118
532304		3/4"	0.750	1.260	1.535	2.500	0.118
532100		1	1.000	1.260	1.535	2.500	0.118

* OTHER SPECIAL SIZES OF HYDRAULIC CHUCK COLLETS CAN BE SUPPLIED ON REQUEST.

▶ Feature

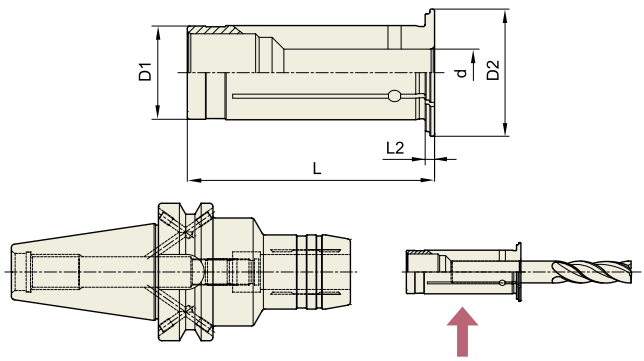
The wall of Hydraulic Chuck collet (reduction sleeve) is cut by high precision wire-cutting to guarantee precise I.D and strong clamping power.

▶ Chucking Method

Please assemble cutting tool with collet first, and then insert collet into Hydraulic Chuck.

HYDRAULIC CHUCK COLLET (REDUCTION SLEEVE : OPEN TYPE)





Hydraulic Chuck collet

■ INCH / INCH

Unit : inch

EDP No.	TYPE		d	D1	D2	L	L2
612108	HK1/2"	1/8"	0.125	0.500	0.748	1.850	0.079
612316		3/16"	0.188	0.500	0.748	1.850	0.079
612104		1/4"	0.250	0.500	0.748	1.850	0.079
612516		5/16"	0.313	0.500	0.748	1.850	0.079
625108	HK3/4"	1/8"	0.125	0.750	1.063	2.067	0.079
625316		3/16"	0.188	0.750	1.063	2.067	0.079
625104		1/4"	0.250	0.750	1.063	2.067	0.079
625516		5/16"	0.313	0.750	1.063	2.067	0.079
625308		3/8"	0.375	0.750	1.063	2.067	0.079
625102		1/2"	0.500	0.750	1.063	2.067	0.079
625508		5/8"	0.625	0.750	1.063	2.067	0.079
632108	HK1 1/4"	1/8"	0.125	1.250	1.535	2.500	0.118
632316		3/16"	0.188	1.250	1.535	2.500	0.118
632104		1/4"	0.250	1.250	1.535	2.500	0.118
632516		5/16"	0.313	1.250	1.535	2.500	0.118
632308		3/8"	0.375	1.250	1.535	2.500	0.118
632102		1/2"	0.500	1.250	1.535	2.500	0.118
632508		5/8"	0.625	1.250	1.535	2.500	0.118
632304		3/4"	0.750	1.250	1.535	2.500	0.118
632100		1	1.000	1.250	1.535	2.500	0.118

* OTHER SPECIAL SIZES OF HYDRAULIC CHUCK COLLETS CAN BE SUPPLIED ON REQUEST.

▶ Feature

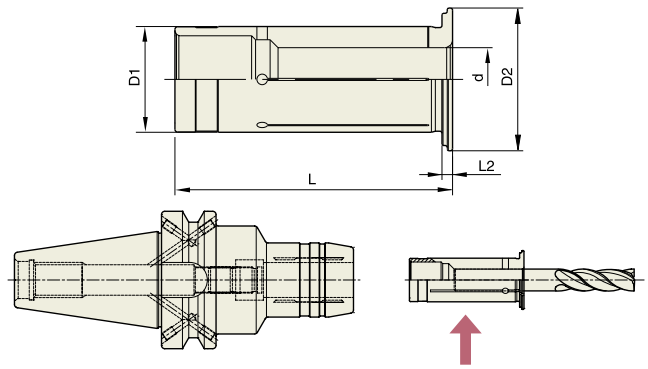
Hydraulic Chuck collet (reduction sleeve) is cut into trisection by high precision cutting to guarantee precise I.D and strong clamping power.

▶ Chucking Method

Please assemble cutting tool with collet first, and then insert collet into Hydraulic Chuck.

HYDRAULIC CHUCK COLLET (REDUCTION SLEEVE : CLOSED TYPE)





Hydraulic Chuck collet

■ INCH / INCH

Unit : inch

EDP No.	TYPE		d	D1	D2	L	L2
712108	HS1/2"	1/8"	0.125	0.500	0.748	1.850	0.079
712316		3/16"	0.188	0.500	0.748	1.850	0.079
712104		1/4"	0.250	0.500	0.748	1.850	0.079
712516		5/16"	0.313	0.500	0.748	1.850	0.079
725108	HS3/4"	1/8"	0.125	0.750	1.063	2.067	0.079
725316		3/16"	0.188	0.750	1.063	2.067	0.079
725104		1/4"	0.250	0.750	1.063	2.067	0.079
725516		5/16"	0.313	0.750	1.063	2.067	0.079
725308		3/8"	0.375	0.750	1.063	2.067	0.079
725102		1/2"	0.500	0.750	1.063	2.067	0.079
725508		5/8"	0.625	0.750	1.063	2.067	0.079
732108	HS1 1/4"	1/8"	0.125	1.250	1.535	2.500	0.118
732316		3/16"	0.188	1.250	1.535	2.500	0.118
732104		1/4"	0.250	1.250	1.535	2.500	0.118
732516		5/16"	0.313	1.250	1.535	2.500	0.118
732308		3/8"	0.375	1.250	1.535	2.500	0.118
732102		1/2"	0.500	1.250	1.535	2.500	0.118
732508		5/8"	0.625	1.250	1.535	2.500	0.118
732304		3/4"	0.750	1.250	1.535	2.500	0.118
732100		1	1.000	1.250	1.535	2.500	0.118

* OTHER SPECIAL SIZES OF HYDRAULIC CHUCK COLLETS CAN BE SUPPLIED ON REQUEST.

▶ Feature

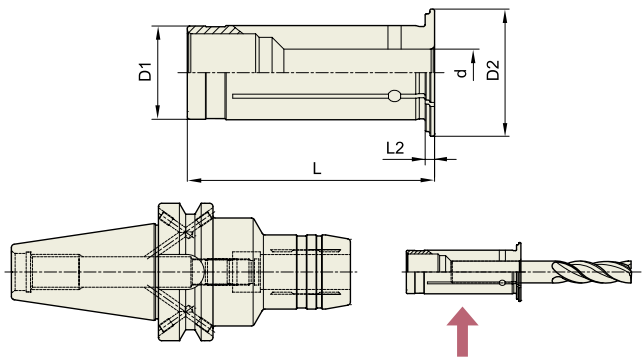
The wall of Hydraulic Chuck collet (reduction sleeve) is cut by high precision wire-cutting to guarantee precise I.D and strong clamping power.

▶ Chucking Method

Please assemble cutting tool with collet first, and then insert collet into Hydraulic Chuck.

HYDRAULIC CHUCK COLLET (REDUCTION SLEEVE : OPEN TYPE)





Hydraulic Chuck collet

■ METRIC / METRIC

Unit : mm

EDP No.	TYPE	d	D1	D2	L	L2
812030	HK12	3	12	19	47	2
812040		4	12	19	47	2
812050		5	12	19	47	2
812060		6	12	19	47	2
812070		7	12	19	47	2
812008		8	12	19	47	2
820030	HK20	3	20	27	52.5	2
820040		4	20	27	52.5	2
820050		5	20	27	52.5	2
820060		6	20	27	52.5	2
820070		7	20	27	52.5	2
820080		8	20	27	52.5	2
820090		9	20	27	52.5	2
820100		10	20	27	52.5	2
820110		11	20	27	52.5	2
820120		12	20	27	52.5	2
820130		13	20	27	52.5	2
820140		14	20	27	52.5	2
820150		15	20	27	52.5	2
820160		16	20	27	52.5	2
832060	HK32	6	32	39	63.5	3
832080		8	32	39	63.5	3
832100		10	32	39	63.5	3
832120		12	32	39	63.5	3
832140		14	32	39	63.5	3
832160		16	32	39	63.5	3
832180		18	32	39	63.5	3
832200		20	32	39	63.5	3
832250		25	32	39	63.5	3

* OTHER SPECIAL SIZES OF HYDRAULIC CHUCK COLLETS CAN BE SUPPLIED ON REQUEST.

▶ Feature

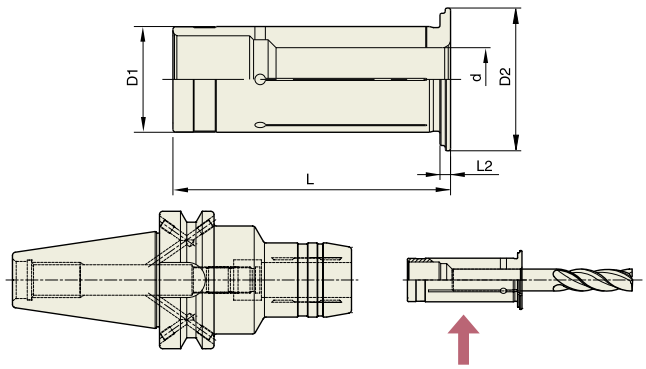
Hydraulic Chuck collet (reduction sleeve) is cut into trisection by high precision cutting to guarantee precise I.D and strong clamping power.

▶ Chucking Method

Please assemble cutting tool with collet first, and then insert collet into Hydraulic Chuck.

HYDRAULIC CHUCK COLLET (REDUCTION SLEEVE : CLOSED TYPE)





Hydraulic Chuck collet

■ METRIC / METRIC

Unit : mm

EDP No.	TYPE		d	D1	D2	L	L2
912030	HS12	3	3	12	19	47	2
912040		4	4	12	19	47	2
912050		5	5	12	19	47	2
912060		6	6	12	19	47	2
912070		7	7	12	19	47	2
912008		8	8	12	19	47	2
920030	HS20	3	3	20	27	52.5	2
920040		4	4	20	27	52.5	2
920050		5	5	20	27	52.5	2
920060		6	6	20	27	52.5	2
920070		7	7	20	27	52.5	2
920080		8	8	20	27	52.5	2
920090		9	9	20	27	52.5	2
920100		10	10	20	27	52.5	2
920110		11	11	20	27	52.5	2
920120		12	12	20	27	52.5	2
920130		13	13	20	27	52.5	2
920140		14	14	20	27	52.5	2
920150		15	15	20	27	52.5	2
920160		16	16	20	27	52.5	2
932060	HS32	6	6	32	39	63.5	3
932080		8	8	32	39	63.5	3
932100		10	10	32	39	63.5	3
932120		12	12	32	39	63.5	3
932140		14	14	32	39	63.5	3
932160		16	16	32	39	63.5	3
932180		18	18	32	39	63.5	3
932200		20	20	32	39	63.5	3
932250		25	25	32	39	63.5	3

* OTHER SPECIAL SIZES OF HYDRAULIC CHUCK COLLETS CAN BE SUPPLIED ON REQUEST.

▶ Feature

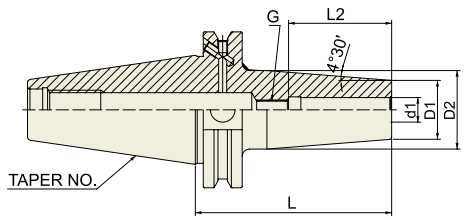
The wall of Hydraulic Chuck collet (reduction sleeve) is cut by high precision wire-cutting to guarantee precise I.D and strong clamping power.

▶ Chucking Method

Please assemble cutting tool with collet first, and then insert collet into Hydraulic Chuck.

SHRINK FIT HOLDER





ASME B5.50 - CAT	Taper Accuracy	G Value	RPM	Run-Out (at LD)	Coolant System
	AT3	2.5	25,000	≤0.00012"	AD/B

■ ASME B5.50-2009-CAT

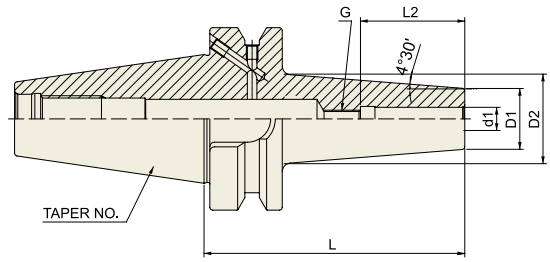
Unit : inch

EDP No.	TAPER No.	MODEL No.	d1	D1	D2	L	L2	G
VK020	40	CAT40 AD/B - SFH1/8-3.15	0.125	0.394	0.748	3.150	0.354	-
VK022		CAT40 AD/B - SFH3/16-3.15	0.188	0.394	0.748	3.150	0.472	-
VK024		CAT40 AD/B - SFH1/4-3.15	0.250	0.827	1.063	3.150	1.417	M5x0.8mm
VK026		CAT40 AD/B - SFH1/4-6.30	0.250	0.827	1.063	6.299	1.417	M5x0.8mm
VK028		CAT40 AD/B - SFH3/8-3.15	0.375	0.945	1.260	3.150	1.654	M8x1.0mm
VK030		CAT40 AD/B - SFH3/8-6.30	0.375	0.945	1.260	6.299	1.654	M8x1.0mm
VK032		CAT40 AD/B - SFH1/2-3.15	0.500	0.945	1.260	3.150	1.850	M10x1.0mm
VK034		CAT40 AD/B - SFH1/2-6.30	0.500	0.945	1.260	6.299	1.850	M10x1.0mm
VK036		CAT40 AD/B - SFH5/8-3.15	0.625	1.063	1.339	3.150	1.969	M12x1.0mm
VK038		CAT40 AD/B - SFH5/8-6.30	0.625	1.063	1.339	6.299	1.969	M12x1.0mm
VK040		CAT40 AD/B - SFH3/4-3.15	0.750	1.299	1.654	3.150	2.047	M16x1.0mm
VK042		CAT40 AD/B - SFH3/4-6.30	0.750	1.299	1.654	6.299	2.047	M16x1.0mm
VK044		CAT40 AD/B - SFH1-3.94	1.000	1.732	2.087	3.937	2.283	M16x1.0mm
VK046		CAT40 AD/B - SFH1-6.30	1.000	1.732	2.087	6.299	2.283	M16x1.0mm
VK048		CAT40 AD/B - SFH1-1/4-3.94	1.250	1.732	2.087	3.937	2.283	M16x1.0mm
VK050		CAT40 AD/B - SFH1-1/4-6.30	1.250	1.732	2.087	6.299	2.283	M16x1.0mm
VL020	50	CAT50 AD/B - SFH1/8-3.15	0.125	0.394	0.748	3.150	0.354	-
VL022		CAT50 AD/B - SFH3/16-3.15	0.188	0.394	0.748	3.150	0.472	-
VL024		CAT50 AD/B - SFH1/4-3.15	0.250	0.827	1.063	3.150	1.417	M5x0.8mm
VL026		CAT50 AD/B - SFH1/4-6.30	0.250	0.827	1.063	6.299	1.417	M5x0.8mm
VL028		CAT50 AD/B - SFH3/8-3.15	0.375	0.945	1.260	3.150	1.654	M8x1.0mm
VL030		CAT50 AD/B - SFH3/8-6.30	0.375	0.945	1.260	6.299	1.654	M8x1.0mm
VL032		CAT50 AD/B - SFH1/2-3.15	0.500	0.945	1.260	3.150	1.850	M10x1.0mm
VL034		CAT50 AD/B - SFH1/2-6.30	0.500	0.945	1.260	6.299	1.850	M10x1.0mm
VL036		CAT50 AD/B - SFH5/8-3.15	0.625	1.063	1.339	3.150	1.969	M12x1.0mm
VL038		CAT50 AD/B - SFH5/8-6.30	0.625	1.063	1.339	6.299	1.969	M12x1.0mm
VL040		CAT50 AD/B - SFH3/4-3.15	0.750	1.299	1.654	3.150	2.047	M16x1.0mm
VL042		CAT50 AD/B - SFH3/4-6.30	0.750	1.299	1.654	6.299	2.047	M16x1.0mm
VL044		CAT50 AD/B - SFH1-3.94	1.000	1.732	2.087	3.937	2.283	M16x1.0mm
VL046		CAT50 AD/B - SFH1-6.30	1.000	1.732	2.087	6.299	2.283	M16x1.0mm
VL048		CAT50 AD/B - SFH1-1/4-3.94	1.250	1.732	2.087	3.937	2.283	M16x1.0mm
VL050		CAT50 AD/B - SFH1-1/4-6.30	1.250	1.732	2.087	6.299	2.283	M16x1.0mm

SHRINK FIT HOLDER

BT





JIS B6339 - BT	Taper Accuracy	G Value	RPM	Run-Out (at LD)	Coolant System
	AT3	2.5	25,000	≤0.00012"	AD/B

■ JIS B6339/MAS 403-BT

Unit : inch

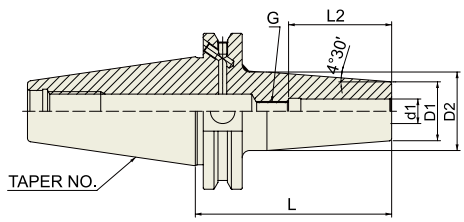
EDP No.	TAPER No.	MODEL No.	d1	D1	D2	L	L2	G
VG020	30	BT30 AD/B - SFH1/8-2.36	0.125	0.394	0.629	2.362	0.354	-
VG022		BT30 AD/B - SFH3/16-2.36	0.188	0.394	0.629	2.362	0.472	-
VG024		BT30 AD/B - SFH1/4-2.36	0.250	0.827	1.062	2.362	1.417	M5x0.8mm
VG026		BT30 AD/B - SFH3/8-2.36	0.375	0.945	1.180	2.362	1.654	M8x1.0mm
VG028		BT30 AD/B - SFH1/2-3.15	0.500	0.945	1.260	3.150	1.850	M10x1.0mm
VG030		BT30 AD/B - SFH5/8-3.15	0.625	1.063	1.339	3.150	1.969	M12x1.0mm
VG032		BT30 AD/B - SFH3/4-3.54	0.750	1.299	1.654	3.543	2.047	M16x1.0mm
VH020	40	BT40 AD/B - SFH1/8-3.54	0.125	0.394	0.748	3.543	0.354	-
VH022		BT40 AD/B - SFH3/16-3.54	0.188	0.394	0.748	3.543	0.472	-
VH024		BT40 AD/B - SFH1/4-3.54	0.250	0.827	1.063	3.543	1.417	M5x0.8mm
VH026		BT40 AD/B - SFH1/4-6.30	0.250	0.827	1.063	6.299	1.417	M5x0.8mm
VH028		BT40 AD/B - SFH3/8-3.54	0.375	0.945	1.260	3.543	1.654	M8x1.0mm
VH030		BT40 AD/B - SFH3/8-6.30	0.375	0.945	1.260	6.299	1.654	M8x1.0mm
VH032		BT40 AD/B - SFH1/2-3.54	0.500	0.945	1.260	3.543	1.850	M10x1.0mm
VH034		BT40 AD/B - SFH1/2-6.30	0.500	0.945	1.260	6.299	1.850	M10x1.0mm
VH036		BT40 AD/B - SFH5/8-3.54	0.625	1.063	1.339	3.543	1.969	M12x1.0mm
VH038		BT40 AD/B - SFH5/8-6.30	0.625	1.063	1.339	6.299	1.969	M12x1.0mm
VH040		BT40 AD/B - SFH3/4-3.54	0.750	1.299	1.654	3.543	2.047	M16x1.0mm
VH042		BT40 AD/B - SFH3/4-6.30	0.750	1.299	1.654	6.299	2.047	M16x1.0mm
VH044		BT40 AD/B - SFH1-3.94	1.000	1.732	2.087	3.937	2.283	M16x1.0mm
VH046		BT40 AD/B - SFH1-6.30	1.000	1.732	2.087	6.299	2.283	M16x1.0mm

DUAL CONTACT SHRINK FIT HOLDER

CCT

SHRINK FIT HOLDER





CCT	Taper Accuracy	G Value	RPM	Run-Out (at LD)	Coolant System
	AT3	2.5	25,000	≤0.00012"	AD/B

■ CCT (CAT DUAL CONTACT)

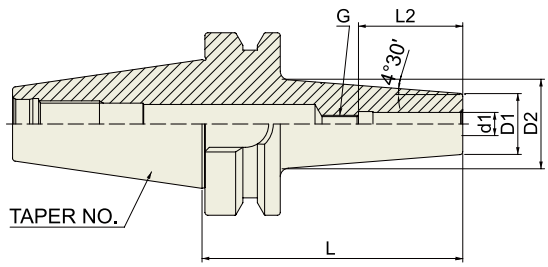
Unit : inch

EDP No.	TAPER No.	MODEL No.	d1	D1	D2	L	L2	G
VB020	40	CCT40 AD/B - SFH1/8-3.15	0.125	0.394	0.748	3.150	0.354	-
VB022		CCT40 AD/B - SFH3/16-3.15	0.188	0.394	0.748	3.150	0.472	-
VB024		CCT40 AD/B - SFH1/4-3.15	0.250	0.827	1.063	3.150	1.417	M5x0.8mm
VB026		CCT40 AD/B - SFH1/4-6.30	0.250	0.827	1.063	6.299	1.417	M5x0.8mm
VB028		CCT40 AD/B - SFH3/8-3.15	0.375	0.945	1.260	3.150	1.654	M8x1.0mm
VB030		CCT40 AD/B - SFH3/8-6.30	0.375	0.945	1.260	6.299	1.654	M8x1.0mm
VB032		CCT40 AD/B - SFH1/2-3.15	0.500	0.945	1.260	3.150	1.850	M10x1.0mm
VB034		CCT40 AD/B - SFH1/2-6.30	0.500	0.945	1.260	6.299	1.850	M10x1.0mm
VB036		CCT40 AD/B - SFH5/8-3.15	0.625	1.063	1.339	3.150	1.969	M12x1.0mm
VB038		CCT40 AD/B - SFH5/8-6.30	0.625	1.063	1.339	6.299	1.969	M12x1.0mm
VB040		CCT40 AD/B - SFH3/4-3.15	0.750	1.299	1.654	3.150	2.047	M16x1.0mm
VB042		CCT40 AD/B - SFH3/4-6.30	0.750	1.299	1.654	6.299	2.047	M16x1.0mm
VB044		CCT40 AD/B - SFH1-3.94	1.000	1.732	2.087	3.937	2.283	M16x1.0mm
VB046		CCT40 AD/B - SFH1-6.30	1.000	1.732	2.087	6.299	2.283	M16x1.0mm
VB048		CCT40 AD/B - SFH1-1/4-3.94	1.250	1.732	2.087	3.937	2.283	M16x1.0mm
VB050		CCT40 AD/B - SFH1-1/4-6.30	1.250	1.732	2.087	6.299	2.283	M16x1.0mm
VC020	50	CCT50 AD/B - SFH1/8-3.15	0.125	0.394	0.748	3.150	0.354	-
VC022		CCT50 AD/B - SFH3/16-3.15	0.188	0.394	0.748	3.150	0.472	-
VC024		CCT50 AD/B - SFH1/4-3.15	0.250	0.827	1.063	3.150	1.417	M5x0.8mm
VC026		CCT50 AD/B - SFH1/4-6.30	0.250	0.827	1.063	6.299	1.417	M5x0.8mm
VC028		CCT50 AD/B - SFH3/8-3.15	0.375	0.945	1.260	3.150	1.654	M8x1.0mm
VC030		CCT50 AD/B - SFH3/8-6.30	0.375	0.945	1.260	6.299	1.654	M8x1.0mm
VC032		CCT50 AD/B - SFH1/2-3.15	0.500	0.945	1.260	3.150	1.850	M10x1.0mm
VC034		CCT50 AD/B - SFH1/2-6.30	0.500	0.945	1.260	6.299	1.850	M10x1.0mm
VC036		CCT50 AD/B - SFH5/8-3.15	0.625	1.063	1.339	3.150	1.969	M12x1.0mm
VC040		CCT50 AD/B - SFH5/8-6.30	0.625	1.063	1.339	6.299	1.969	M12x1.0mm
VC042		CCT50 AD/B - SFH3/4-3.15	0.750	1.299	1.654	3.150	2.047	M16x1.0mm
VC044		CCT50 AD/B - SFH3/4-6.30	0.750	1.299	1.654	6.299	2.047	M16x1.0mm
VC046		CCT50 AD/B - SFH1-3.94	1.000	1.732	2.087	3.937	2.283	M16x1.0mm
VC048		CCT50 AD/B - SFH1-6.30	1.000	1.732	2.087	6.299	2.283	M16x1.0mm
VC050		CCT50 AD/B - SFH1-1/4-3.94	1.250	1.732	2.087	3.937	2.283	M16x1.0mm
VC052		CCT50 AD/B - SFH1-1/4-6.30	1.250	1.732	2.087	6.299	2.283	M16x1.0mm

DUAL CONTACT SHRINK FIT HOLDER

CBT





CBT	Taper Accuracy	G Value	RPM	Run-Out (at LD)	Coolant System
	AT3	2.5	25,000	≤0.00012"	AD

■ CBT (BT DUAL CONTACT)

Unit : inch

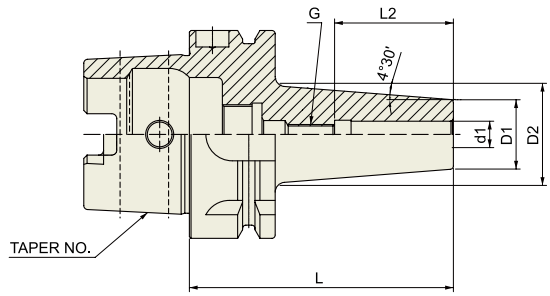
EDP No.	TAPER No.	MODEL No.	d1	D1	D2	L	L2	G
VD020	30	CBT30 - SFH1/8-2.36	0.125	0.394	0.629	2.362	0.354	-
VD022		CBT30 - SFH3/16-2.36	0.188	0.394	0.629	2.362	0.472	-
VD024		CBT30 - SFH1/4-2.36	0.250	0.827	1.062	2.362	1.417	M5x0.8mm
VD026		CBT30 - SFH3/8-2.36	0.375	0.945	1.180	2.362	1.654	M8x1.0mm
VD028		CBT30 - SFH1/2-3.15	0.500	0.945	1.260	3.150	1.850	M10x1.0mm
VD030		CBT30 - SFH5/8-3.15	0.625	1.063	1.339	3.150	1.969	M12x1.0mm
VD032		CBT30 - SFH3/4-3.54	0.750	1.299	1.654	3.543	2.047	M16x1.0mm
VE020	40	CBT40 - SFH1/8-3.54	0.125	0.394	0.748	3.543	0.354	-
VE022		CBT40 - SFH3/16-3.54	0.188	0.394	0.748	3.543	0.472	-
VE024		CBT40 - SFH1/4-3.54	0.250	0.827	1.063	3.543	1.417	M5x0.8mm
VE026		CBT40 - SFH1/4-6.30	0.250	0.827	1.063	6.299	1.417	M5x0.8mm
VE028		CBT40 - SFH3/8-3.54	0.375	0.945	1.260	3.543	1.654	M8x1.0mm
VE030		CBT40 - SFH3/8-6.30	0.375	0.945	1.260	6.299	1.654	M8x1.0mm
VE032		CBT40 - SFH1/2-3.54	0.500	0.945	1.260	3.543	1.850	M10x1.0mm
VE034		CBT40 - SFH1/2-6.30	0.500	0.945	1.260	6.299	1.850	M10x1.0mm
VE036		CBT40 - SFH5/8-3.54	0.625	1.063	1.339	3.543	1.969	M12x1.0mm
VE038		CBT40 - SFH5/8-6.30	0.625	1.063	1.339	6.299	1.969	M12x1.0mm
VE040		CBT40 - SFH3/4-3.54	0.750	1.299	1.654	3.543	2.047	M16x1.0mm
VE042		CBT40 - SFH3/4-6.30	0.750	1.299	1.654	6.299	2.047	M16x1.0mm
VE044		CBT40 - SFH1-3.94	1.000	1.732	2.087	3.937	2.283	M16x1.0mm
VE046		CBT40 - SFH1-6.30	1.000	1.732	2.087	6.299	2.283	M16x1.0mm

DUAL CONTACT SHRINK FIT HOLDER

HSK

SHRINK FIT HOLDER





DIN 69893 - HSK	Taper Accuracy	G Value	RPM	Run-Out (at LD)	Coolant System
	AT3	2.5	25,000	≤0.00012"	AD

■ DIN 69893/ISO 12164-1-HSK FORM A

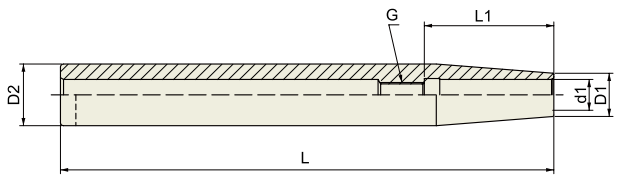
Unit : inch

EDP No.	TAPER No.	MODEL No.	d1	D1	D2	L	L2	G
VQ020	63A	HSK63A - SFH1/8-3.15	0.125	0.394	0.728	3.150	0.354	-
VQ022		HSK63A - SFH3/16-3.15	0.188	0.394	0.728	3.150	0.472	-
VQ024		HSK63A - SFH1/4-3.15	0.250	0.827	1.063	3.150	1.417	M5x0.8mm
VQ026		HSK63A - SFH1/4-6.30	0.250	0.827	1.063	6.299	1.417	M5x0.8mm
VQ028		HSK63A - SFH3/8-3.35	0.375	0.945	1.260	3.346	1.654	M8x1.0mm
VQ030		HSK63A - SFH3/8-6.30	0.375	0.945	1.260	6.299	1.654	M8x1.0mm
VQ032		HSK63A - SFH1/2-3.54	0.500	0.945	1.260	3.543	1.850	M10x1.0mm
VQ034		HSK63A - SFH1/2-6.30	0.500	0.945	1.260	6.299	1.850	M10x1.0mm
VQ036		HSK63A - SFH5/8-3.74	0.625	1.063	1.339	3.740	1.969	M12x1.0mm
VQ038		HSK63A - SFH5/8-6.30	0.625	1.063	1.339	6.299	1.969	M12x1.0mm
VQ040		HSK63A - SFH3/4-3.94	0.750	1.299	1.654	3.937	2.047	M16x1.0mm
VQ042		HSK63A - SFH3/4-6.30	0.750	1.299	1.654	6.299	2.047	M16x1.0mm
VQ046		HSK63A - SFH1-4.53	1.000	1.732	2.087	4.528	2.283	M16x1.0mm
VQ048		HSK63A - SFH1-6.30	1.000	1.732	2.087	6.299	2.283	M16x1.0mm
VR020	100A	HSK100A - SFH1/8-3.15	0.125	0.394	0.648	3.150	0.354	-
VR022		HSK100A - SFH3/16-3.15	0.188	0.394	0.648	3.150	0.472	-
VR023		HSK100A - SFH1/4-3.15	0.250	0.827	1.063	3.150	1.417	M5x0.8mm
VR024		HSK100A - SFH3/8-3.54	0.375	0.945	1.260	3.543	1.654	M8x1.0mm
VR026		HSK100A - SFH3/8-6.30	0.375	0.945	1.260	6.299	1.654	M8x1.0mm
VR028		HSK100A - SFH1/2-3.74	0.500	0.945	1.260	3.740	1.850	M10x1.0mm
VR030		HSK100A - SFH1/2-6.30	0.500	0.945	1.260	6.299	1.850	M10x1.0mm
VR032		HSK100A - SFH5/8-3.94	0.625	1.063	1.339	3.937	1.969	M12x1.0mm
VR034		HSK100A - SFH5/8-6.30	0.625	1.063	1.339	6.299	1.969	M12x1.0mm
VR036		HSK100A - SFH3/4-4.13	0.750	1.299	1.654	4.134	2.047	M16x1.0mm
VR038		HSK100A - SFH3/4-6.30	0.750	1.299	1.654	6.299	2.047	M16x1.0mm
VR040		HSK100A - SFH1-4.53	1.000	1.732	2.087	4.528	2.283	M16x1.0mm
VR042		HSK100A - SFH1-6.30	1.000	1.732	2.087	6.299	2.283	M16x1.0mm
VR044		HSK100A - SFH1-1/4-4.72	1.250	1.732	2.087	4.724	2.283	M16x1.0mm
VR046		HSK100A - SFH1-1/4"-6.30	1.250	1.732	2.087	6.299	2.283	M16x1.0mm

SHRINK FIT EXTENSION

ST





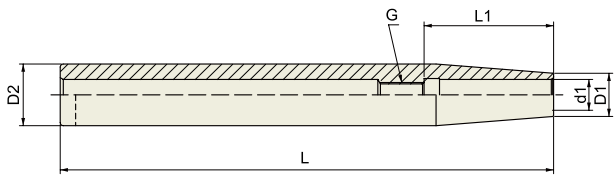
■ INCH

Unit : inch

EDP No.	TAPER No.	MODEL No.	d1	D1	D2	L	L1	G
VS010	ST1/2	ST1/2 - SFH1/8-6.30	0.125	0.394	0.500	6.299	0.354	-
VS011		ST1/2 - SFH3/16-6.30	0.188	0.394	0.500	6.299	0.472	-
VS012		ST1/2 - SFH1/4-6.30	0.250	0.394	0.500	6.299	1.417	M5x0.8mm
VS020	ST5/8	ST5/8 - SFH1/8-6.30	0.125	0.394	0.625	6.299	0.354	-
VS021		ST5/8 - SFH3/16-6.30	0.188	0.394	0.625	6.299	0.472	-
VS022		ST5/8 - SFH1/4-6.30	0.250	0.394	0.625	6.299	1.417	M5x0.8mm
VS023		ST5/8 - SFH5/16-6.30	0.313	0.472	0.625	6.299	1.535	M6x0.8mm
VS030	ST3/4	ST3/4 - SFH1/8-6.30	0.125	0.394	0.750	6.299	0.354	-
VS031		ST3/4 - SFH3/16-6.30	0.188	0.394	0.750	6.299	0.472	-
VS032		ST3/4 - SFH1/4-6.30	0.250	0.551	0.750	6.299	1.417	M5x0.8mm
VS033		ST3/4 - SFH5/16-6.30	0.313	0.551	0.750	6.299	1.535	M6x1.0mm
VS034		ST3/4 - SFH3/8-6.30	0.375	0.551	0.750	6.299	1.654	M8x1.0mm
VS035		ST3/4 - SFH1/2-6.30	0.500	0.630	0.750	6.299	1.850	M10x1.0mm
VS040	ST1	ST1 - SFH1/8-6.30	0.125	0.394	1.000	6.299	0.354	-
VS041		ST1 - SFH3/16-6.30	0.188	0.394	1.000	6.299	0.472	-
VS042		ST1 - SFH1/4-6.30	0.250	0.551	1.000	6.299	1.417	M6x1.0mm
VS043		ST1 - SFH5/16-6.30	0.313	0.551	1.000	6.299	1.535	M6x1.0mm
VS044		ST1 - SFH3/8-6.30	0.375	0.787	1.000	6.299	1.654	M8x1.0mm
VS045		ST1 - SFH1/2-6.30	0.500	0.787	1.000	6.299	1.850	M10x1.0mm
VS046		ST1 - SFH5/8-6.30	0.625	0.866	1.000	6.299	1.969	M12x1.0mm
VS050	ST1-1/4	ST1-1/4 - SFH1/8-6.30	0.125	0.394	1.250	6.299	0.354	-
VS051		ST1-1/4 - SFH3/16-6.30	0.188	0.394	1.250	6.299	0.472	-
VS052		ST1-1/4 - SFH1/4-6.30	0.250	0.551	1.250	6.299	1.417	M5x0.8mm
VS053		ST1-1/4 - SFH5/16-6.30	0.313	0.551	1.250	6.299	1.535	M6x1.0mm
VS054		ST1-1/4 - SFH3/8-6.30	0.375	0.945	1.250	6.299	1.654	M8x1.0mm
VS055		ST1-1/4 - SFH1/2-6.30	0.500	0.945	1.250	6.299	1.850	M10x1.0mm
VS056		ST1-1/4 - SFH5/8-6.30	0.625	1.063	1.250	6.299	1.969	M12x1.0mm
VS057		ST1-1/4 - SFH3/4-6.30	0.750	1.063	1.250	6.299	2.047	M16x1.0mm

SHRINK FIT EXTENSION





■ METRIC (STANDARD)

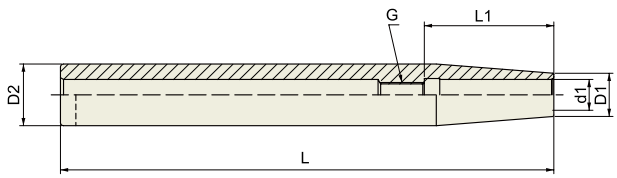
Unit : mm

EDP No.	TAPER No.	MODEL No.	d1	D1	D2	L	L1	G
VS010M	12	ST12-SFH3-120	3	8	12	120	10	-
VS011M		ST12-SFH4-120	4	8	12	120	12	-
VS012M		ST12-SFH5-120	5	10	12	120	15	-
VS013M		ST12-SFH6-120	6	10	12	120	36	M5x0.8mm
VS020M	16	ST16-SFH3-120	3	10	16	120	10	-
VS021M		ST16-SFH4-120	4	10	16	120	12	-
VS022M		ST16-SFH5-120	5	10	16	120	15	-
VS023M		ST16-SFH6-120	6	10	16	120	36	M5x0.8mm
VS024M		ST16-SFH8-120	8	12	16	120	36	M6x1.0mm
VS030M	20	ST20-SFH3-120	3	10	20	120	10	-
VS031M		ST20-SFH4-120	4	10	20	120	12	-
VS032M		ST20-SFH5-120	5	10	20	120	15	-
VS033M		ST20-SFH6-120	6	10	20	120	36	M5x0.8mm
VS034M		ST20-SFH8-120	8	12	20	120	36	M6x1.0mm
VS035M		ST20-SFH10-120	10	14	20	120	43	M8x1.0mm
VS036M		ST20-SFH12-120	12	16	20	120	48	M10x1.0mm

SHRINK FIT EXTENSION

ST





■ METRIC (EXTENDED)

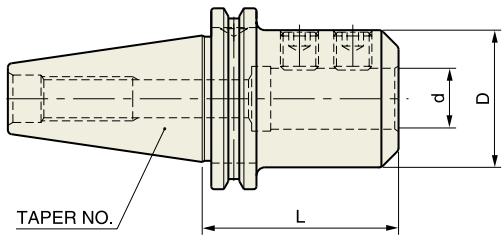
Unit : mm

EDP No.	TAPER No.	MODEL No.	d1	D1	D2	L	L1	G
VS110M	12	ST12-SFH3-160	3	8	12	160	10	-
VS111M		ST12-SFH4-160	4	8	12	160	12	-
VS112M		ST12-SFH5-160	5	10	12	160	15	-
VS113M		ST12-SFH6-160	6	10	12	160	36	M5x0.8mm
VS210M	16	ST16-SFH3-160	3	10	16	160	10	-
VS211M		ST16-SFH4-160	4	10	16	160	12	-
VS212M		ST16-SFH5-160	5	10	16	160	15	-
VS213M		ST16-SFH6-160	6	10	16	160	36	M5x0.8mm
VS214M		ST16-SFH8-160	8	12	16	160	36	M6x1.0mm
VS310M	20	ST20-SFH3-160	3	10	20	160	10	-
VS311M		ST20-SFH4-160	4	10	20	160	12	-
VS312M		ST20-SFH5-160	5	10	20	160	15	-
VS313M		ST20-SFH6-160	6	10	20	160	36	M5x0.8mm
VS314M		ST20-SFH8-160	8	12	20	160	36	M6x1.0mm
VS315M		ST20-SFH10-160	10	14	20	160	43	M8x1.0mm
VS316M		ST20-SFH12-160	12	16	20	160	48	M10x1.0mm
VS410M	25	ST25-SFH3-160	3	10	25	160	10	-
VS411M		ST25-SFH4-160	4	10	25	160	12	-
VS412M		ST25-SFH5-160	5	15	25	160	15	-
VS413M		ST25-SFH6-160	6	20	25	160	36	M5x0.8mm
VS414M		ST25-SFH8-160	8	20	25	160	36	M6x1.0mm
VS415M		ST25-SFH10-160	10	20	25	160	43	M8x1.0mm
VS416M		ST25-SFH12-160	12	20	25	160	48	M10x1.0mm
VS417M		ST25-SFH14-160	14	20	25	160	48	M10x1.0mm
VS418M		ST25-SFH16-160	16	22	25	160	51	M12x1.0mm
VS510M	32	ST32-SFH6-160	6	20	32	160	36	M5x0.8mm
VS511M		ST32-SFH8-160	8	20	32	160	36	M6x1.0mm
VS512M		ST32-SFH10-160	10	24	32	160	43	M8x1.0mm
VS513M		ST32-SFH12-160	12	24	32	160	48	M10x1.0mm
VS514M		ST32-SFH14-160	14	27	32	160	48	M10x1.0mm
VS515M		ST32-SFH16-160	16	27	32	160	51	M12x1.0mm
VS516M		ST32-SFH18-160	18	27	32	160	51	M12x1.0mm
VS517M		ST32-SFH20-160	20	27	32	160	53	M16x1.0mm

END MILL HOLDER

CAT





ASME B5.50 - CAT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	15,000	AD

■ ASME B5.50-2009-CAT

■ STUB

Unit : inch

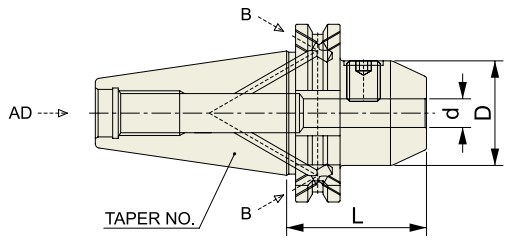
EDP No.	TAPER No.	MODEL No.	d	D	L
AK206	40	CAT40 - EMH 1/2 - 1.75	0.500	1.25	1.75
AK208		CAT40 - EMH 5/8 - 1.75	0.625	1.50	1.75
AK210		CAT40 - EMH 3/4 - 1.75	0.750	1.75	1.75
AK214		CAT40 - EMH 1"- 1.75	1.000	1.75	1.75
AK217		CAT40 - EMH 1 1/4 - 2.00	1.250	2.25	2.00

* HIGH BALANCED END MIll HOLDERS ON PAGE 943~944.
* SET SCREWS FOR END MILL HOLDERS ON PAGE 952.

END MILL HOLDER

CAT





ASME B5.50 - CAT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	15,000	AD/B

■ ASME B5.50-2009-CAT

■ STANDARD

Unit : inch

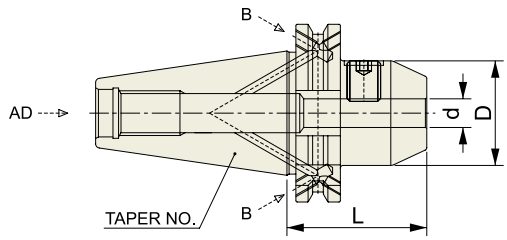
EDP No.	TAPER No.	MODEL No.	d	D	L
AK000B	40	CAT40 AD/B - EMH 1/8 - 2.50	0.125	0.69	2.50
AK001B		CAT40 AD/B - EMH 3/16 - 2.50	0.187	0.69	2.50
AK002B		CAT40 AD/B - EMH 1/4 - 2.50	0.250	0.78	2.50
AK003B		CAT40 AD/B - EMH 5/16 - 2.50	0.312	0.88	2.50
AK004B		CAT40 AD/B - EMH 3/8 - 2.50	0.375	1.00	2.50
AK005B		CAT40 AD/B - EMH 7/16 - 2.50	0.437	1.13	2.50
AK006B		CAT40 AD/B - EMH 1/2 - 2.63	0.500	1.25	2.63
AK008B		CAT40 AD/B - EMH 5/8 - 3.75	0.625	1.50	3.75
AK010B		CAT40 AD/B - EMH 3/4 - 3.75	0.750	1.75	3.75
AK012B		CAT40 AD/B - EMH 7/8 - 4.00	0.875	1.88	4.00
AK014B		CAT40 AD/B - EMH 1" - 4.00	1.000	2.00	4.00
AK017B		CAT40 AD/B - EMH 1 1/4 - 4.25	1.250	2.50	4.25
AK021B		CAT40 AD/B - EMH 1 1/2 - 4.63	1.500	2.50	4.63
AL002B	50	CAT50 AD/B - EMH 1/4 - 2.50	0.250	0.78	2.50
AL003B		CAT50 AD/B - EMH 5/16 - 2.50	0.312	0.88	2.50
AL004B		CAT50 AD/B - EMH 3/8 - 2.50	0.375	1.00	2.50
AL005B		CAT50 AD/B - EMH 7/16 - 2.63	0.437	1.13	2.63
AL006B		CAT50 AD/B - EMH 1/2 - 2.63	0.500	1.25	2.63
AL008B		CAT50 AD/B - EMH 5/8 - 3.75	0.625	1.50	3.75
AL010B		CAT50 AD/B - EMH 3/4 - 3.75	0.750	1.75	3.75
AL012B		CAT50 AD/B - EMH 7/8 - 3.75	0.875	1.88	3.75
AL014B		CAT50 AD/B - EMH 1" - 4.00	1.000	2.00	4.00
AL017B		CAT50 AD/B - EMH 1 1/4 - 4.00	1.250	2.50	4.00
AL021B		CAT50 AD/B - EMH 1 1/2 - 4.00	1.500	2.50	4.00
AL029B		CAT50 AD/B - EMH 2" - 5.63	2.000	3.75	5.63

* HIGH BALANCED END MILL HOLDERS ARE AVAILABLE ON REQUEST.
* SET SCREWS FOR END MILL HOLDERS ON PAGE 952.

END MILL HOLDER

CAT





ASME B5.50 - CAT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	15,000	AD/B

■ ASME B5.50-2009-CAT

■ EXTENDED

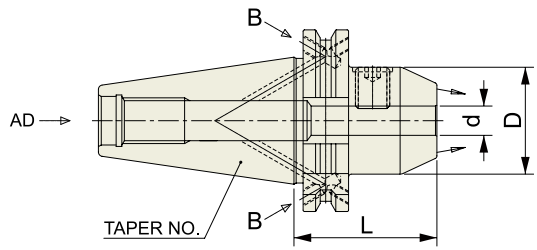
Unit : inch

EDP No.	TAPER No.	MODEL No.	d	D	L
AK104B	40	CAT40 AD/B - EMH 3/8 - 4.50	0.375	1.00	4.50
AK106B		CAT40 AD/B - EMH 1/2 - 4.63	0.500	1.25	4.63
AK108B		CAT40 AD/B - EMH 5/8 - 5.75	0.625	1.50	5.75
AK110B		CAT40 AD/B - EMH 3/4 - 5.75	0.750	1.75	5.75
AK112B		CAT40 AD/B - EMH 7/8 - 6.00	0.875	1.88	6.00
AK114B		CAT40 AD/B - EMH 1" - 6.00	1.000	2.00	6.00
AK117B		CAT40 AD/B - EMH 1 1/4 - 6.25	1.250	2.50	6.25
AK121B		CAT40 AD/B - EMH 1 1/2 - 6.63	1.500	2.50	6.63
AL104B	50	CAT50 AD/B - EMH 3/8 - 4.50	0.375	1.00	4.50
AL106B		CAT50 AD/B - EMH 1/2 - 4.63	0.500	1.25	4.63
AL108B		CAT50 AD/B - EMH 5/8 - 5.75	0.625	1.50	5.75
AL110B		CAT50 AD/B - EMH 3/4 - 5.75	0.750	1.75	5.75
AL112B		CAT50 AD/B - EMH 7/8 - 5.75	0.875	1.88	5.75
AL114B		CAT50 AD/B - EMH 1" - 6.00	1.000	2.00	6.00
AL117B		CAT50 AD/B - EMH 1 1/4 - 6.00	1.250	2.50	6.00
AL121B		CAT50 AD/B - EMH 1 1/2 - 6.00	1.500	2.50	6.00
AL129B		CAT50 AD/B - EMH 2" - 7.63	2.000	3.75	7.63

* HIGH BALANCED END MILL HOLDERS ARE AVAILABLE ON REQUEST.
* SET SCREWS FOR END MILL HOLDERS ON PAGE 952.

END MILL HOLDER (SPRAY NOZZLE TYPE) CAT





ASME B5.50 - CAT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	15,000	AD/B+C

■ ASME B5.50-2009-CAT

Unit : inch

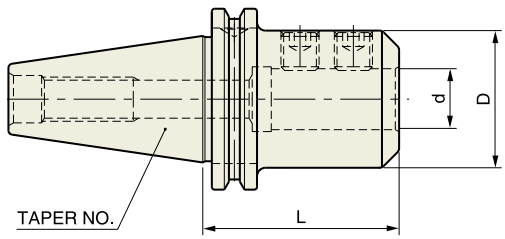
EDP No.	TAPER No.	MODEL No.	d	D	L
AK002C	40	CAT40AD/B - EMH 1/4C-1.97	0.250	0.780	1.969
AK003C		CAT40AD/B - EMH 5/16C-1.97	0.313	0.880	1.969
AK004C		CAT40AD/B - EMH 3/8C-1.97	0.375	1.000	1.969
AK005C		CAT40AD/B - EMH 1/2C-1.97	0.500	1.250	1.969
AK008C		CAT40AD/B - EMH 5/8C-2.48	0.625	1.500	2.480
AK010C		CAT40AD/B - EMH 3/4C-2.48	0.750	1.750	2.480
AK012C		CAT40AD/B - EMH 1C-3.94	1.000	2.000	3.937
AK017C		CAT40AD/B - EMH 1 1/4C-3.94	1.250	2.500	3.937
AL002C	50	CAT50AD/B - EMH 1/4C-2.48	0.250	0.780	2.480
AL003C		CAT50AD/B - EMH 5/16C-2.48	0.313	0.880	2.480
AL004C		CAT50AD/B - EMH 3/8C-2.48	0.375	1.000	2.480
AL005C		CAT50AD/B - EMH 1/2C-2.48	0.500	1.250	2.480
AL008C		CAT50AD/B - EMH 5/8C-2.48	0.625	1.500	2.480
AL010C		CAT50AD/B - EMH 3/4C-2.48	0.750	1.750	2.480
AL012C		CAT50AD/B - EMH 1C-3.15	1.000	2.000	3.150
AL017C		CAT50AD/B - EMH 1 1/4C-3.94	1.250	2.500	3.937

* HIGH BALANCED END MILL HOLDERS ARE AVAILABLE ON REQUEST.
* SET SCREWS FOR END MILL HOLDERS ON PAGE 952.

HIGH BALANCED END MILL HOLDER

CAT





ASME B5.50 - CAT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	25,000	AD

■ ASME B5.50-2009-CAT

■ STUB

Unit : inch

EDP No.	TAPER No.	MODEL No.	d	D	L
AK206B25	40	CAT40 - EMH 1/2 - 1.75	0.500	1.25	1.75
AK208B25		CAT40 - EMH 5/8 - 1.75	0.625	1.50	1.75
AK210B25		CAT40 - EMH 3/4 - 1.75	0.750	1.75	1.75
AK214B25		CAT40 - EMH 1" - 1.75	1.000	1.75	1.75
AK217B25		CAT40 - EMH 1 1/4 - 2.00	1.250	2.25	2.00

■ STANDARD

Unit : inch

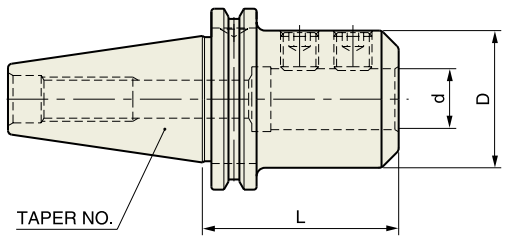
EDP No.	TAPER No.	MODEL No.	d	D	L
AK000B25	40	CAT40 - EMH 1/8 - 2.50	0.125	0.69	2.50
AK001B25		CAT40 - EMH 3/16 - 2.50	0.187	0.69	2.50
AK002B25		CAT40 - EMH 1/4 - 2.50	0.250	0.78	2.50
AK003B25		CAT40 - EMH 5/16 - 2.50	0.312	0.88	2.50
AK004B25		CAT40 - EMH 3/8 - 2.50	0.375	1.00	2.50
AK005B25		CAT40 - EMH 7/16 - 2.50	0.437	1.13	2.50
AK006B25		CAT40 - EMH 1/2 - 2.63	0.500	1.25	2.63
AK008B25		CAT40 - EMH 5/8 - 3.75	0.625	1.50	3.75
AK010B25		CAT40 - EMH 3/4 - 3.75	0.750	1.75	3.75
AK012B25		CAT40 - EMH 7/8 - 4.00	0.875	1.88	4.00
AK014B25		CAT40 - EMH 1" - 4.00	1.000	2.00	4.00
AK017B25		CAT40 - EMH 1 1/4 - 4.25	1.250	2.50	4.25
AK021B25		CAT40 - EMH 1 1/2 - 4.63	1.500	2.50	4.63
AL002B25	50	CAT50 - EMH 1/4 - 2.50	0.250	0.78	2.50
AL003B25		CAT50 - EMH 5/16 - 2.50	0.312	0.88	2.50
AL004B25		CAT50 - EMH 3/8 - 2.50	0.375	1.00	2.50
AL005B25		CAT50 - EMH 7/16 - 2.63	0.437	1.13	2.63
AL006B25		CAT50 - EMH 1/2 - 2.63	0.500	1.25	2.63
AL008B25		CAT50 - EMH 5/8 - 3.75	0.625	1.50	3.75
AL010B25		CAT50 - EMH 3/4 - 3.75	0.750	1.75	3.75
AL012B25		CAT50 - EMH 7/8 - 3.75	0.875	1.88	3.75
AL014B25		CAT50 - EMH 1" - 4.00	1.000	2.00	4.00
AL017B25		CAT50 - EMH 1 1/4 - 4.00	1.250	2.50	4.00
AL021B25		CAT50 - EMH 1 1/2 - 4.00	1.500	2.50	4.00
AL029B25		CAT50 - EMH 2" - 5.63	2.000	3.75	5.63

* SET SCREWS FOR END MILL HOLDERS ON PAGE 952.

HIGH BALANCED END MILL HOLDER

CAT





ASME B5.50 - CAT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	25,000	AD

■ ASME B5.50-2009-CAT

■ EXTENDED

Unit : inch

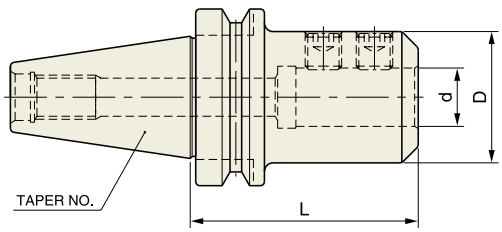
EDP No.	TAPER No.	MODEL No.	d	D	L
AK104B25	40	CAT40 - EMH 3/8 - 4.50	0.375	1.00	4.50
AK106B25		CAT40 - EMH 1/2 - 4.63	0.500	1.25	4.63
AK108B25		CAT40 - EMH 5/8 - 5.75	0.625	1.50	5.75
AK110B25		CAT40 - EMH 3/4 - 5.75	0.750	1.75	5.75
AK112B25		CAT40 - EMH 7/8 - 6.00	0.875	1.88	6.00
AK114B25		CAT40 - EMH 1" - 6.00	1.000	2.00	6.00
AK117B25		CAT40 - EMH 1 1/4 - 6.25	1.250	2.50	6.25
AK121B25		CAT40 - EMH 1 1/2 - 6.63	1.500	2.50	6.63
AL104B25	50	CAT50 - EMH 3/8 - 4.50	0.375	1.00	4.50
AL106B25		CAT50 - EMH 1/2 - 4.63	0.500	1.25	4.63
AL108B25		CAT50 - EMH 5/8 - 5.75	0.625	1.50	5.75
AL110B25		CAT50 - EMH 3/4 - 5.75	0.750	1.75	5.75
AL112B25		CAT50 - EMH 7/8 - 5.75	0.875	1.88	5.75
AL114B25		CAT50 - EMH 1" - 6.00	1.000	2.00	6.00
AL117B25		CAT50 - EMH 1 1/4 - 6.00	1.250	2.50	6.00
AL121B25		CAT50 - EMH 1 1/2 - 6.00	1.500	2.50	6.00
AL129B25		CAT50 - EMH 2" - 7.63	2.000	3.75	7.63

* SET SCREWS FOR END MILL HOLDERS ON PAGE 952.

END MILL HOLDER

BT





JIS B6339 - BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	15,000	AD

■ JIS B6339/MAS 403-BT

■ STUB

Unit : inch

EDP No.	TAPER No.	MODEL No.	d	D	L
AH206	40	BT40 - EMH 1/2 - 1.25	0.500	1.25	1.25
AH208		BT40 - EMH 5/8 - 1.38	0.625	1.50	1.38
AH210		BT40 - EMH 3/4 - 1.44	0.750	1.75	1.44
AH214		BT40 - EMH 1" - 2.50	1.000	2.00	2.50
AH217		BT40 - EMH 1 1/4 - 2.50	1.250	2.50	2.50

■ STANDARD

Unit : inch

EDP No.	TAPER No.	MODEL No.	d	D	L
AI002	50	BT50 - EMH 1/4 - 3.00	0.250	0.78	3.00
AI004		BT50 - EMH 3/8 - 3.00	0.375	1.00	3.00
AI006		BT50 - EMH 1/2 - 3.00	0.500	1.25	3.00
AI008		BT50 - EMH 5/8 - 3.00	0.625	1.50	3.00
AI010		BT50 - EMH 3/4 - 3.00	0.750	1.75	3.00
AI012		BT50 - EMH 7/8 - 4.00	0.875	1.88	4.00
AI014		BT50 - EMH 1" - 4.25	1.000	2.00	4.25
AI017		BT50 - EMH 1 1/4 - 4.25	1.250	2.50	4.25
AI021		BT50 - EMH 1 1/2 - 4.25	1.500	2.50	4.25
AI029		BT50 - EMH 2" - 5.00	2.000	3.75	5.00

■ EXTENDED

Unit : inch

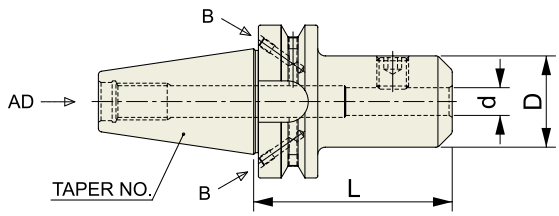
EDP No.	TAPER No.	MODEL No.	d	D	L
AI104	50	BT50 - EMH 3/8 - 6.00	0.375	1.00	6.00
AI106		BT50 - EMH 1/2 - 6.00	0.500	1.25	6.00
AI108		BT50 - EMH 5/8 - 6.00	0.625	1.50	6.00
AI110		BT50 - EMH 3/4 - 6.00	0.750	1.75	6.00
AI112		BT50 - EMH 7/8 - 6.00	0.875	1.88	6.00
AI114		BT50 - EMH 1" - 6.00	1.000	2.00	6.00
AI117		BT50 - EMH 1 1/4 - 6.00	1.250	2.50	6.00
AI121		BT50 - EMH 1 1/2 - 6.00	1.500	2.50	6.00
AI129		BT50 - EMH 2" - 6.00	2.000	3.75	6.00

* HIGH BALANCED END MIII HOLDEERS ON PAGE 948~949.
* SET SCREWS FOR END MILL HOLDERS ON PAGE 952.

END MILL HOLDER

BT





JIS B6339 - BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	15,000	AD/B

■ JIS B6339/MAS 403-BT

■ STANDARD

Unit : inch

EDP No.	TAPER No.	MODEL No.	d	D	L
AH000B	40	BT40 AD/B - EMH 1/8 - 2.50	0.125	0.69	2.50
AH001B		BT40 AD/B - EMH 3/16 - 2.50	0.187	0.69	2.50
AH002B		BT40 AD/B - EMH 1/4 - 2.50	0.250	0.78	2.50
AH003B		BT40 AD/B - EMH 5/16 - 2.50	0.312	0.88	2.50
AH004B		BT40 AD/B - EMH 3/8 - 2.50	0.375	1.00	2.50
AH005B		BT40 AD/B - EMH 7/16 - 2.50	0.437	1.13	2.50
AH006B		BT40 AD/B - EMH 1/2 - 2.50	0.500	1.25	2.50
AH008B		BT40 AD/B - EMH 5/8 - 2.50	0.625	1.50	2.50
AH010B		BT40 AD/B - EMH 3/4 - 2.50	0.750	1.75	2.50
AH012B		BT40 AD/B - EMH 7/8 - 3.50	0.875	1.88	3.50
AH014B		BT40 AD/B - EMH 1" - 3.75	1.000	2.00	3.75
AH017B		BT40 AD/B - EMH 1 1/4 - 3.75	1.250	2.50	3.75
AH021B		BT40 AD/B - EMH 1 1/2 - 4.25	1.500	2.50	4.25

■ EXTENDED

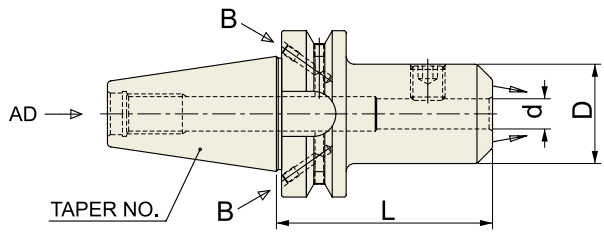
Unit : inch

EDP No.	TAPER No.	MODEL No.	d	D	L
AH104B	40	BT40 AD/B - EMH 3/8 - 4.00	0.375	1.00	4.00
AH106B		BT40 AD/B - EMH 1/2 - 4.00	0.500	1.25	4.00
AH108B		BT40 AD/B - EMH 5/8 - 4.00	0.625	1.50	4.00
AH110B		BT40 AD/B - EMH 3/4 - 4.00	0.750	1.75	4.00
AH114B		BT40 AD/B - EMH 1"- 5.00	1.000	2.00	5.00
AH117B		BT40 AD/B - EMH 1 1/4 - 5.00	1.250	2.50	5.00
AH121B		BT40 AD/B - EMH 1 1/2 - 6.00	1.500	2.50	6.00

* HIGH BALANCED END MILL HOLDERS ARE AVAILABLE ON REQUEST.
* SET SCREWS FOR END MILL HOLDERS ON PAGE 952.

END MILL HOLDER (SPRAY NOZZLE TYPE)





JIS B6339 - BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	15,000	AD/B+C

■ JIS B6339/MAS 403-BT

Unit : inch

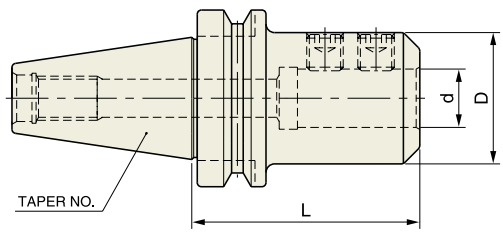
EDP No.	TAPER No.	MODEL No.	d	D	L
AH002C	40	BT40AD/B - EMH 1/4C-1.97	0.250	0.780	1.969
AH003C		BT40AD/B - EMH 5/16C-1.97	0.313	0.880	1.969
AH004C		BT40AD/B - EMH 3/8C-2.48	0.375	1.000	2.480
AH006C		BT40AD/B - EMH 1/2C-2.48	0.500	1.250	2.480
AH008C		BT40AD/B - EMH 5/8C-2.48	0.625	1.500	2.480
AH010C		BT40AD/B - EMH 3/4C-2.48	0.750	1.750	2.480
AH012C		BT40AD/B - EMH 1C-3.54	1.000	2.000	3.543
AH014C		BT40AD/B - EMH 1 1/4-3.94	1.250	2.500	3.937

* HIGH BALANCED END MILL HOLDERS ARE AVAILABLE ON REQUEST.
* SET SCREWS FOR END MILL HOLDERS ON PAGE 952.

HIGH BALANCED END MILL HOLDER

BT





JIS B6339 - BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	25,000	AD

■ JIS B6339/MAS 403-BT

■ STUB

Unit : inch

EDP No.	TAPER No.	MODEL No.	d	D	L
AH206B25	40	BT40 - EMH 1/2 - 1.25	0.500	1.25	1.25
AH208B25		BT40 - EMH 5/8 - 1.38	0.625	1.50	1.38
AH210B25		BT40 - EMH 3/4 - 1.44	0.750	1.75	1.44
AH214B25		BT40 - EMH 1"- 2.50	1.000	2.00	2.50
AH217B25		BT40 - EMH 1 1/4 - 2.50	1.250	2.50	2.50

■ STANDARD

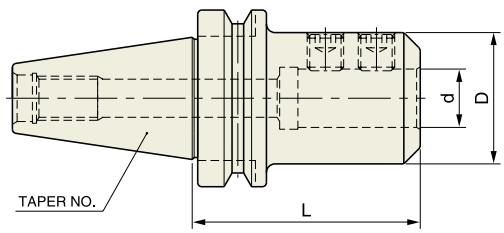
Unit : inch

EDP No.	TAPER No.	MODEL No.	d	D	L
AH000B25	40	BT40 - EMH 1/8 - 2.50	0.125	0.69	2.50
AH001B25		BT40 - EMH 3/16 - 2.50	0.187	0.69	2.50
AH002B25		BT40 - EMH 1/4 - 2.50	0.250	0.78	2.50
AH003B25		BT40 - EMH 5/16 - 2.50	0.312	0.88	2.50
AH004B25		BT40 - EMH 3/8 - 2.50	0.375	1.00	2.50
AH005B25		BT40 - EMH 7/16 - 2.50	0.437	1.13	2.50
AH006B25		BT40 - EMH 1/2 - 2.50	0.500	1.25	2.50
AH008B25		BT40 - EMH 5/8 - 2.50	0.625	1.50	2.50
AH010B25		BT40 - EMH 3/4 - 2.50	0.750	1.75	2.50
AH012B25		BT40 - EMH 7/8 - 3.50	0.875	1.88	3.50
AH014B25		BT40 - EMH 1"- 3.75	1.000	2.00	3.75
AH017B25		BT40 - EMH 1 1/4 - 3.75	1.250	2.50	3.75
AH021B25		BT40 - EMH 1 1/2 - 4.25	1.500	2.50	4.25
AI002B25	50	BT50 - EMH 1/4 - 3.00	0.250	0.78	3.00
AI004B25		BT50 - EMH 3/8 - 3.00	0.375	1.00	3.00
AI006B25		BT50 - EMH 1/2 - 3.00	0.500	1.25	3.00
AI008B25		BT50 - EMH 5/8 - 3.00	0.625	1.50	3.00
AI010B25		BT50 - EMH 3/4 - 3.00	0.750	1.75	3.00
AI012B25		BT50 - EMH 7/8 - 4.00	0.875	1.88	4.00
AI014B25		BT50 - EMH 1"- 4.25	1.000	2.00	4.25
AI017B25		BT50 - EMH 1 1/4 - 4.25	1.250	2.50	4.25
AI021B25		BT50 - EMH 1 1/2 - 4.25	1.500	2.50	4.25
AI029B25		BT50 - EMH 2"- 5.00	2.000	3.75	5.00

* SET SCREWS FOR END MILL HOLDERS ON PAGE 952.

HIGH BALANCED END MILL HOLDER





JIS B6339 - BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	25,000	AD

■ JIS B6339/MAS 403-BT

■ EXTENDED

Unit : inch

EDP No.	TAPER No.	MODEL No.	d	D	L
AH104B25	40	BT40 - EMH 3/8 - 4.00	0.375	1.00	4.00
AH106B25		BT40 - EMH 1/2 - 4.00	0.500	1.25	4.00
AH108B25		BT40 - EMH 5/8 - 4.00	0.625	1.50	4.00
AH110B25		BT40 - EMH 3/4 - 4.00	0.750	1.75	4.00
AH114B25		BT40 - EMH 1"- 5.00	1.000	2.00	5.00
AH117B25		BT40 - EMH 1 1/4 - 5.00	1.250	2.50	5.00
AH121B25		BT40 - EMH 1 1/2 - 6.00	1.500	2.50	6.00
AI104B25	50	BT50 - EMH 3/8 - 6.00	0.375	1.00	6.00
AI106B25		BT50 - EMH 1/2 - 6.00	0.500	1.25	6.00
AI108B25		BT50 - EMH 5/8 - 6.00	0.625	1.50	6.00
AI110B25		BT50 - EMH 3/4 - 6.00	0.750	1.75	6.00
AI112B25		BT50 - EMH 7/8 - 6.00	0.875	1.88	6.00
AI114B25		BT50 - EMH 1"- 6.00	1.000	2.00	6.00
AI117B25		BT50 - EMH 1 1/4 - 6.00	1.250	2.50	6.00
AI121B25		BT50 - EMH 1 1/2 - 6.00	1.500	2.50	6.00
AI129B25		BT50 - EMH 2"- 6.00	2.000	3.75	6.00

* SET SCREWS FOR END MILL HOLDERS ON PAGE 952.

DUAL CONTACT SIDE LOCK ARBOR

CCT



FIG.1

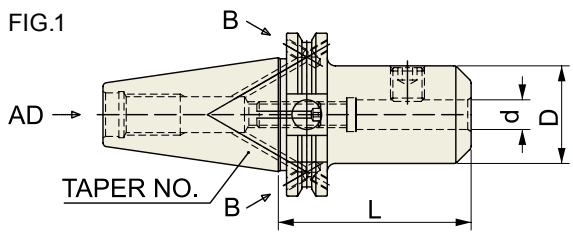
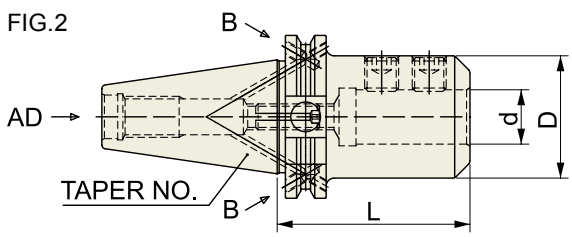


FIG.2



CCT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	25,000	AD/B

■ CCT (CAT DUAL CONTACT)

Unit : inch

EDP No.	TAPER No.	MODEL No.	d	D	L	Remarks
AB020	40	CCT40 AD/B - SLA1/4-2.36	0.250	0.780	2.362	FIG.1
AB022		CCT40 AD/B - SLA5/16-2.36	0.313	0.880	2.362	
AB024		CCT40 AD/B - SLA3/8-2.36	0.375	1.000	2.362	
AB026		CCT40 AD/B - SLA1/2-2.36	0.500	1.250	2.362	
AB028		CCT40 AD/B - SLA5/8-3.54	0.625	1.500	3.543	
AB030		CCT40 AD/B - SLA3/4-3.54	0.750	1.750	3.543	
AB032		CCT40 AD/B - SLA1-3.54	1.000	2.000	3.543	FIG.2
AB034		CCT40 AD/B - SLA1-1/4-3.54	1.250	2.500	3.543	
AC020	50	CCT50 AD/B - SLA1/4-3.54	0.250	0.780	3.543	FIG.1
AC022		CCT50 AD/B - SLA5/16-3.54	0.313	0.880	3.543	
AC024		CCT50 AD/B - SLA3/8-3.54	0.375	1.000	3.543	
AC026		CCT50 AD/B - SLA1/2-3.54	0.500	1.250	3.543	
AC028		CCT50 AD/B - SLA5/8-4.13	0.625	1.500	4.134	
AC030		CCT50 AD/B - SLA3/4-4.13	0.750	1.750	4.134	
AC032		CCT50 AD/B - SLA1-4.13	1.000	2.000	4.134	FIG.2
AC034		CCT50 AD/B - SLA1-1/4-4.13	1.250	2.500	4.134	

* SET SCREWS FOR END MILL HOLDERS ON PAGE 952.

DUAL CONTACT SIDE LOCK ARBOR

CBT



FIG.1

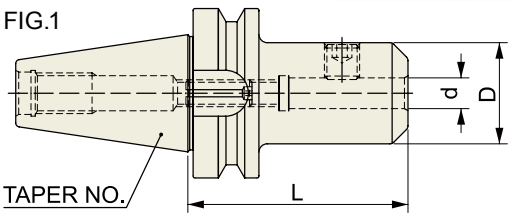
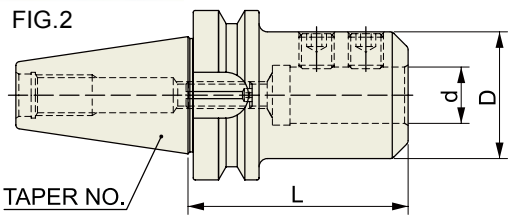


FIG.2



CBT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	25,000	AD

■ CBT (BT DUAL CONTACT)

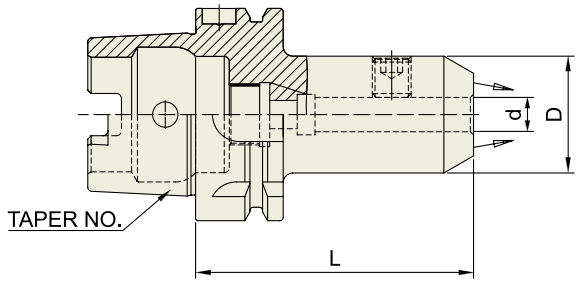
Unit : inch

EDP No.	TAPER No.	MODEL No.	d	D	L	Remarks
AD020	30	CBT30 - SLA1/4-2.36	0.250	0.780	2.362	FIG.1
AD022		CBT30 - SLA5/16-2.36	0.313	0.880	2.362	
AD024		CBT30 - SLA3/8-2.36	0.375	1.000	2.362	
AD026		CBT30 - SLA1/2-2.36	0.500	1.250	2.362	
AD028		CBT30 - SLA5/8-2.95	0.625	1.500	2.953	
AD030		CBT30 - SLA3/4-2.95	0.750	1.750	2.953	FIG.2
AD032		CBT30 - SLA1-2.95	1.000	2.000	2.953	
AE020	40	CBT40 - SLA1/4-2.36	0.250	0.780	2.362	FIG.1
AE022		CBT40 - SLA5/16-2.36	0.313	0.880	2.362	
AE024		CBT40 - SLA3/8-2.36	0.375	1.000	2.362	
AE026		CBT40 - SLA1/2-2.36	0.500	1.250	2.362	
AE028		CBT40 - SLA5/8-3.54	0.625	1.500	3.540	
AE030		CBT40 - SLA3/4-3.54	0.750	1.750	3.540	
AE032		CBT40 - SLA1-3.54	1.000	2.000	3.540	FIG.2
AE034		CBT40 - SLA1-1/4-3.54	1.250	2.500	3.540	

* SET SCREWS FOR END MILL HOLDERS ON PAGE 952.

DUAL CONTACT END MILL HOLDER (SPRAY NOZZLE TYPE) HSK





DIN 69893 - HSK	Taper Accuracy	G Value	RPM	Coolant System
	-	2.5	25,000	AD+C

■ DIN 69893/ISO 12164-1-HSK FORM A

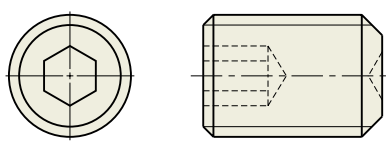
Unit : inch

EDP No.	TAPER No.	MODEL No.	d	D	L
AQ020C	63A	HSK63A - EMH1/4C-2.56	0.250	0.780	2.559
AQ022C		HSK63A - EMH5/16C-2.56	0.313	0.880	2.559
AQ024C		HSK63A - EMH3/8C-2.56	0.375	1.000	2.559
AQ026C		HSK63A - EMH1/2C-3.15	0.500	1.250	3.150
AQ028C		HSK63A - EMH5/8C-3.15	0.625	1.500	3.150
AQ030C		HSK63A - EMH3/4C-3.15	0.750	1.750	3.150
AQ032C		HSK63A - EMH1C-4.33	1.000	2.000	4.331
AQ034C		HSK63A - EMH1-1/4C-4.33	1.250	2.500	4.331
AR020C	100A	HSK100A - EMH1/4C-3.15	0.250	0.780	3.150
AR022C		HSK100A - EMH5/16C-3.15	0.313	0.880	3.150
AR024C		HSK100A - EMH3/8C-3.15	0.375	1.000	3.150
AR026C		HSK100A - EMH1/2C-3.15	0.500	1.250	3.150
AR028C		HSK100A - EMH5/8C-3.94	0.625	1.500	3.937
AR030C		HSK100A - EMH3/4C-3.94	0.750	1.750	3.937
AR032C		HSK100A - EMH1C-3.94	1.000	2.000	3.937
AR034C		HSK100A - EMH1-1/4C-3.94	1.250	2.500	3.937

END MILL HOLDER SCREWS

■ HEXAGON SOCKET SET SCREW (FLAT TYPE)

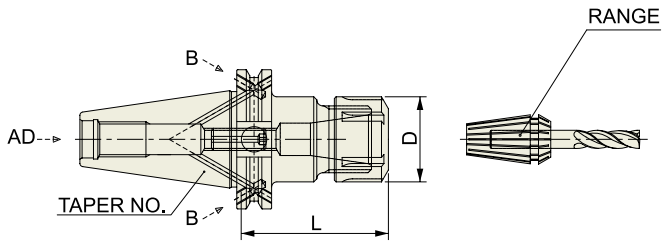
EDP No.	SCREW	END MILL DIA.
ZZ000	UNC#8-32	1/8
ZZ001	UNF#10-32	3/16
ZZ002	UNF1/4-28	1/4
ZZ003	UNF5/16-24	5/16
ZZ004	UNF3/8-24	3/8
ZZ005	UNF3/8-24	7/16
ZZ006	UNF7/16-20	1/2
ZZ007	UNF1/2-20	5/8
ZZ008	UNF5/8-18	3/4
ZZ009	UNF5/8-18	7/8
ZZ010	UNF3/4-16	1"
ZZ011	UNF3/4-16	1 1/4
ZZ012	UNF3/4-16	1 1/2
ZZ013	UN1"-14	2"



ER COLLET CHUCK

CAT





ASME B5.50 - CAT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	15,000	AD/B

■ ASME B5.50-2009-CAT

■ STUB

Unit : inch

EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	D	L	COLLET SERIES
BK232B	40	CAT40 AD/B - ER20 - 2.55	0.039-0.511	1.26	2.55	ER20
BK233B		CAT40 AD/B - ER25 - 2.50	0.039-0.629	1.65	2.50	ER25
BK234B		CAT40 AD/B - ER32 - 2.70	0.078-0.787	1.88	2.70	ER32

■ STANDARD

Unit : inch

EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	D	L	COLLET SERIES
BK030B	40	CAT40 AD/B - ER11 - 3.00	0.019-0.275	0.75	3.00	ER11
BK031B		CAT40 AD/B - ER16 - 3.00	0.019-0.393	1.10	3.00	ER16
BK032B		CAT40 AD/B - ER20 - 4.00	0.039-0.511	1.33	4.00	ER20
BK133B		CAT40 AD/B - ER25 - 4.00	0.039-0.629	1.65	4.00	ER25
BK134B		CAT40 AD/B - ER32 - 4.00	0.078-0.787	1.96	4.00	ER32
BK136B		CAT40 AD/B - ER40 - 4.00	0.118-1.024	2.48	4.00	ER40
BL031B	50	CAT50 AD/B - ER16 - 4.00	0.031-0.406	1.10	4.00	ER16
BL032B		CAT50 AD/B - ER20 - 4.00	0.039-0.511	1.33	4.00	ER20
BL033B		CAT50 AD/B - ER25 - 4.00	0.039-0.629	1.65	4.00	ER25
BL034B		CAT50 AD/B - ER32 - 4.00	0.078-0.787	1.96	4.00	ER32
BL036B		CAT50 AD/B - ER40 - 4.00	0.118-1.024	2.48	4.00	ER40

■ EXTENDED

Unit : inch

EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	D	L	COLLET SERIES
BK331B	40	CAT40 AD/B - ER16 - 6.00	0.019-0.393	1.10	6.00	ER16
BK332B		CAT40 AD/B - ER20 - 6.00	0.039-0.511	1.33	6.00	ER20
BK333B		CAT40 AD/B - ER25 - 6.00	0.039-0.629	1.65	6.00	ER25
BK334B		CAT40 AD/B - ER32 - 6.00	0.078-0.787	1.96	6.00	ER32
BL331B	50	CAT50 AD/B - ER16 - 6.00	0.031-0.406	1.10	6.00	ER16
BL332B		CAT50 AD/B - ER20 - 6.00	0.039-0.511	1.33	6.00	ER20
BL333B		CAT50 AD/B - ER25 - 6.00	0.039-0.629	1.65	6.00	ER25
BL334B		CAT50 AD/B - ER32 - 6.00	0.078-0.787	1.96	6.00	ER32

■ EXTRA EXTENDED

Unit : inch

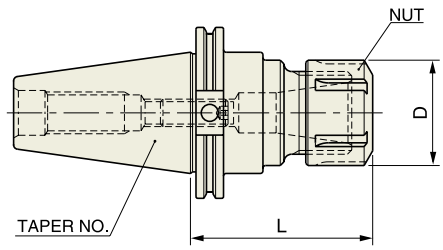
EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	D	L	COLLET SERIES
BK432B	40	CAT40 AD/B - ER20 - 8.00	0.039-0.511	1.33	8.00	ER20

* HIGH BALANCED ER COLLET CHUCKS ARE AVAILABLE ON REQUEST.
* SUPPLIED WITHOUT WRENCH
* ER COLLETS ON PAGE 962~968 AND NUT/WRENCH/STOP SCREW ON PAGE 961.

HIGH BALANCED ER COLLET CHUCK

CAT





ASME B5.50 - CAT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	25,000	AD

■ ASME B5.50-2009-CAT

■ STUB

Unit : inch

EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	D	L	COLLET SERIES
BK232B25	40	CAT40 - ER20 - 2.55	0.039-0.511	1.339	2.55	ER20
BK233B25		CAT40 - ER25 - 2.50	0.039-0.629	1.654	2.50	ER25
BK234B25		CAT40 - ER32 - 2.70	0.078-0.787	1.969	2.70	ER32

■ STANDARD

Unit : inch

EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	D	L	COLLET SERIES
BK030B25	40	CAT40 - ER11 - 3.00	0.019-0.275	0.748	3.00	ER11
BK031B25		CAT40 - ER16 - 3.00	1/32-13/32	1.102	2.88	ER16
BK032B25		CAT40 - ER20 - 4.00	0.039-0.511	1.339	4.00	ER20
BK133B25		CAT40 - ER25 - 4.00	0.039-0.629	1.654	4.00	ER25
BK134B25		CAT40 - ER32 - 4.00	0.078-0.787	1.969	4.00	ER32
BL031B25	50	CAT50 - ER16 - 4.00	1/32-13/32	1.102	4.88	ER16
BL032B25		CAT50 - ER20 - 4.00	0.039-0.511	1.339	4.00	ER20
BL033B25		CAT50 - ER25 - 4.00	0.039-0.629	1.654	4.00	ER25
BL034B25		CAT50 - ER32 - 4.00	0.078-0.787	1.969	4.00	ER32

■ EXTENDED

Unit : inch

EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	D	L	COLLET SERIES
BK331B25	40	CAT40 - ER16 - 4.88	1/32-13/32	1.102	4.88	ER16
BK332B25		CAT40 - ER20 - 6.00	0.039-0.511	1.339	6.00	ER20
BK333B25		CAT40 - ER25 - 6.00	0.039-0.629	1.654	6.00	ER25
BK334B25		CAT40 - ER32 - 6.00	0.078-0.787	1.969	6.00	ER32
BL331B25	50	CAT50 - ER16 - 6.88	1/32-13/32	1.102	6.88	ER16
BL332B25		CAT50 - ER20 - 6.00	0.039-0.511	1.339	6.00	ER20
BL333B25		CAT50 - ER25 - 6.00	0.039-0.629	1.654	6.00	ER25
BL334B25		CAT50 - ER32 - 6.00	0.078-0.787	1.969	6.00	ER32

■ EXTRA EXTENDED

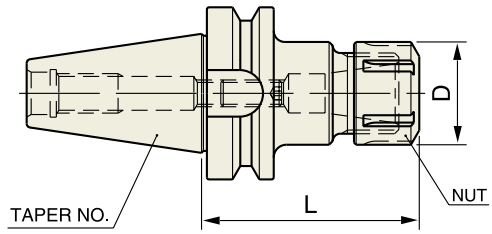
Unit : inch

EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	D	L	COLLET SERIES
BK432B25	40	CAT40 - ER20 - 8.00	0.039-0.511	1.339	8.00	ER20

* SUPPLIED WITHOUT WRENCH
* ER COLLETS ON PAGE 962~968 AND NUT/WRENCH/STOP SCREW ON PAGE 961.

ER COLLET CHUCK





JIS B6339 - BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	15,000	AD

■ JIS B6339/MAS 403-BT

■ STANDARD

Unit : inch

EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	D	L	COLLET SERIES
BI031	50	BT50 - ER16 - 4.88	1/32-13/32	1.102	4.88	ER16
BI032		BT50 - ER20 - 2.63	0.039-0.511	1.339	2.63	ER20
BI033		BT50 - ER25 - 2.63	0.039-0.629	1.654	2.63	ER25
BI034		BT50 - ER32 - 4.00	0.078-0.787	1.969	4.00	ER32

■ EXTENDED

Unit : inch

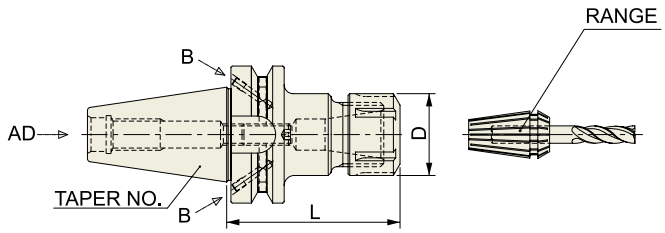
EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	D	L	COLLET SERIES
BI331	50	BT50 - ER16 - 6.00	1/32-13/32	1.102	6.00	ER16
BI332		BT50 - ER20 - 6.00	0.039-0.511	1.339	6.00	ER20
BI333		BT50 - ER25 - 6.00	0.039-0.629	1.654	6.00	ER25
BI334		BT50 - ER32 - 6.00	0.078-0.787	1.969	6.00	ER32

* HIGH BALANCED ER COLLET CHUCKS ARE ON PAGE 957 .
* SUPPLIED WITHOUT WRENCH
* ER COLLETS ON PAGE 962~968 AND NUT/WRENCH/STOP SCREW ON PAGE 961.

ER COLLET CHUCK

BT





JIS B6339 - BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	15,000	AD/B

■ JIS B6339/MAS 403-BT

■ STUB

Unit : inch

EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	D	L	COLLET SERIES
BH232B	40	BT40 AD/B - ER20 - 2.20	0.039-0.511	1.33	2.20	ER20
BH233B		BT40 AD/B - ER25 - 2.50	0.039-0.629	1.65	2.50	ER25
BH234B		BT40 AD/B - ER32 - 2.40	0.078-0.787	1.96	2.40	ER32

■ STANDARD

Unit : inch

EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	D	L	COLLET SERIES
BH030B	40	BT40 AD/B - ER11 - 3.00	0.019-0.275	0.75	3.00	ER11
BH031B		BT40 AD/B - ER16 - 3.00	0.019-0.393	1.10	3.00	ER16
BH032B		BT40 AD/B - ER20 - 4.00	0.039-0.511	1.33	4.00	ER20
BH133B		BT40 AD/B - ER25 - 4.00	0.039-0.629	1.65	4.00	ER25
BH134B		BT40 AD/B - ER32 - 4.00	0.078-0.787	1.96	4.00	ER32
BH136B		BT40 AD/B - ER40 - 4.00	0.118-1.024	2.48	4.00	ER40

■ EXTENDED

Unit : inch

EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	D	L	COLLET SERIES
BH331B	40	BT40 AD/B - ER16 - 6.00	0.019-0.393	1.10	6.00	ER16
BH332B		BT40 AD/B - ER20 - 6.00	0.039-0.511	1.33	6.00	ER20
BH333B		BT40 AD/B - ER25 - 6.00	0.039-0.629	1.65	6.00	ER25
BH334B		BT40 AD/B - ER32 - 6.00	0.078-0.787	1.96	6.00	ER32

■ EXTRA EXTENDED

Unit : inch

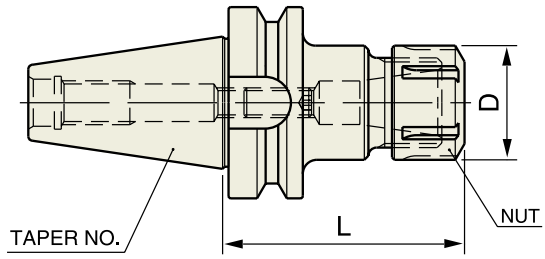
EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	D	L	COLLET SERIES
BH432B	40	BT40 AD/B - ER20 - 8.00	0.039-0.511	1.33	8.00	ER20

* HIGH BALANCED ER COLLET CHUCKS ARE AVAILABLE ON REQUEST.
* SUPPLIED WITHOUT WRENCH
* ER COLLETS ON PAGE 962~968 AND NUT/WRENCH/STOP SCREW ON PAGE 961.

HIGH BALANCED ER COLLET CHUCK

BT





JIS B6339 - BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	25,000	AD

■ **JIS B6339/MAS 403-BT**

■ STUB

Unit : inch

EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	D	L	COLLET SERIES
BH232B25	40	BT40 - ER20 - 2.20	0.039-0.511	1.339	2.20	ER20
BH233B25		BT40 - ER25 - 2.50	0.039-0.629	1.654	2.50	ER25
BH234B25		BT40 - ER32 - 2.40	0.078-0.787	1.969	2.40	ER32

■ STANDARD

Unit : inch

EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	D	L	COLLET SERIES
BH030B25	40	BT40 - ER11 - 3.00	0.019-0.275	0.748	3.00	ER11
BH031B25		BT40 - ER16 - 2.88	1/32-13/32	1.102	2.88	ER16
BH032B25		BT40 - ER20 - 4.00	0.039-0.511	1.339	4.00	ER20
BH133B25		BT40 - ER25 - 4.00	0.039-0.629	1.654	4.00	ER25
BH134B25		BT40 - ER32 - 4.00	0.078-0.787	1.969	4.00	ER32
BI031B25	50	BT50 - ER16 - 4.88	1/32-13/32	1.102	4.88	ER16
BI032B25		BT50 - ER20 - 2.63	0.039-0.511	1.339	2.63	ER20
BI033B25		BT50 - ER25 - 2.63	0.039-0.629	1.654	2.63	ER25
BI034B25		BT50 - ER32 - 4.00	0.078-0.787	1.969	4.00	ER32

■ EXTENDED

Unit : inch

EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	D	L	COLLET SERIES
BH331B25	40	BT40 - ER16 - 4.88	1/32-13/32	1.102	4.88	ER16
BH332B25		BT40 - ER20 - 6.00	0.039-0.511	1.339	6.00	ER20
BH333B25		BT40 - ER25 - 6.00	0.039-0.629	1.654	6.00	ER25
BH334B25		BT40 - ER32 - 6.00	0.078-0.787	1.969	6.00	ER32
BI331B25	50	BT50 - ER16 - 6.00	1/32-13/32	1.102	6.00	ER16
BI332B25		BT50 - ER20 - 6.00	0.039-0.511	1.339	6.00	ER20
BI333B25		BT50 - ER25 - 6.00	0.039-0.629	1.654	6.00	ER25
BI334B25		BT50 - ER32 - 6.00	0.078-0.787	1.969	6.00	ER32

■ EXTRA EXTENDED

Unit : inch

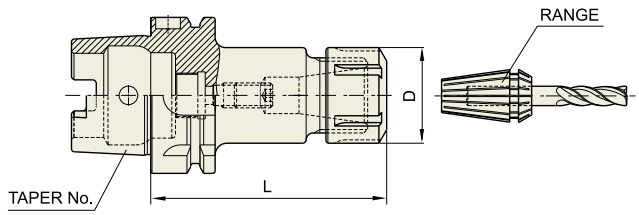
EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	D	L	COLLET SERIES
BH432B25	40	BT40 - ER20 - 8.00	0.039-0.511	1.339	8.00	ER20

* SUPPLIED WITHOUT WRENCH
* ER COLLETS ON PAGE 962~968 AND NUT/WRENCH/STOP SCREW ON PAGE 961.

DUAL CONTACT ER COLLET CHUCK

HSK





DIN69893 - HSK	Taper Accuracy	G Value	RPM	Coolant System
	-	2.5	25,000	AD

■ DIN 69893/ISO 12164-1-HSK FORM A

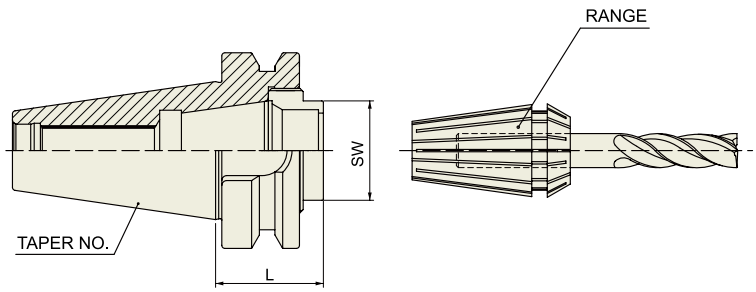
Unit : inch

EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	D	L	COLLET SERIES
BQ010	63A	HSK63A - ER16 - 3.94	0.019-0.393	1.10	3.94	ER16
BQ012		HSK63A - ER20 - 3.94	0.039-0.511	1.33	3.94	ER20
BQ014		HSK63A - ER25 - 3.94	0.039-0.629	1.65	3.94	ER25
BQ016		HSK63A - ER32 - 3.94	0.078-0.787	1.96	3.94	ER32
BQ018		HSK63A - ER40 - 4.72	0.118-1.18	2.48	4.72	ER40
BR010	100A	HSK100A - ER16 - 3.94	0.019-0.393	1.10	3.94	ER16
BR012		HSK100A - ER20 - 3.94	0.039-0.511	1.33	3.94	ER20
BR014		HSK100A - ER25 - 3.94	0.039-0.629	1.65	3.94	ER25
BR016		HSK100A - ER32 - 3.94	0.078-0.787	1.96	3.94	ER32
BR018		HSK100A - ER40 - 4.72	0.118-1.18	2.48	4.72	ER40

* SUPPLIED WITHOUT WRENCH
* ER COLLETS ON PAGE 962~968 AND NUT/WRENCH/STOP SCREW ON PAGE 961.

ER COLLET CHUCK (SHORT)

CAT/ BT



■ ASME B5.50-2009-CAT

Unit : inch

EDP No.	TAPER No.	MODEL No.	L	ER WRENCH
BK020SHT	40	CAT40-ER32-SHORT	1.063	32(for Hex. Nut)
BL020SHT	50	CAT50-ER32-SHORT	1.063	32(for Hex. Nut)

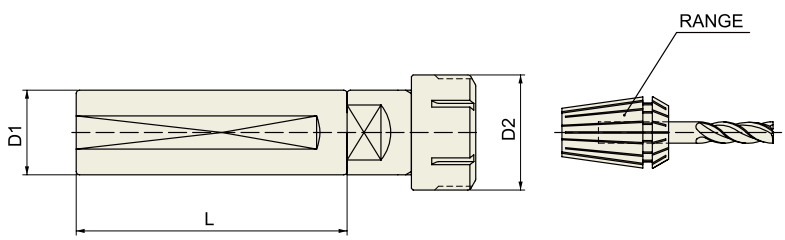
■ JIS B6339/MAS 403-BT

Unit : inch

EDP No.	TAPER No.	MODEL No.	L	ER WRENCH
BH020SHT	40	BT40-ER32-SHORT	1.378	32(for Hex. Nut)

TENSION ER COLLET CHUCK (For TAPPING)

K



■ STRAIGHT-K

Unit : inch

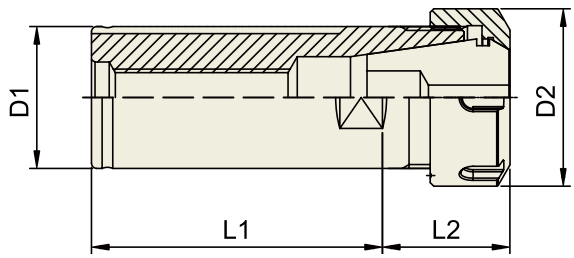
EDP No.	TAPER No.	MODEL No.	D1	D2	L
BS110	K	K1-ERT16-2.76	1.000	1.102	2.756
BS111		K1-ERT20-3.15	1.000	1.339	3.150
BS112		K1 1/4-ERT16-2.76	1.250	1.102	2.756
BS113		K1 1/4-ERT20-3.15	1.250	1.339	3.150
BS114		K1 1/4-ERT25-3.15	1.250	1.654	3.150
BS115		K1 1/4-ERT32-3.15	1.250	1.969	3.150

* SUPPLIED WITHOUT WRENCH
* ER COLLETS ON PAGE 962~968 AND NUT/WRENCH/STOP SCREW ON PAGE 961.

NC ER COLLET CHUCK

NC





■ NC-FOR CNC LATHE

Unit : inch

EDP No.	TAPER No.	MODEL No.	D1	D2	L1	L2
BN110	NC	NC1 - ER11	1.000	0.748	2.559	1.260
BN111		NC1 - ER16	1.000	1.102	2.559	1.260
BN112		NC1 - ER20	1.000	1.339	2.559	1.260
BN113		NC1 - ER25	1.000	1.654	2.559	1.260
BN114		NC1-1/4 - ER20	1.250	1.339	2.756	1.260
BN115		NC1-1/4 - ER25	1.250	1.654	2.756	1.496
BN116		NC1-1/4 - ER32	1.250	1.969	2.756	1.496
BN117		NC1-1/4 - ER40	1.250	2.480	2.953	1.496
BN118		NC1-1/2 - ER25	1.500	1.654	2.953	2.087
BN119		NC1-1/2 - ER32	1.500	1.969	2.953	2.087
BN120		NC1-1/2 - ER40	1.500	2.480	2.953	2.087

* SUPPLIED WITHOUT WRENCH
* ER COLLETS ON PAGE 962~968 AND NUT/WRENCH/STOP SCREW ON PAGE 961.

ER NUT

■ FIG.1

EDP No.	SERIES	TYPE
ZZ061	ER11 - NUT	FIG.1
ZZ063	ER16 - NUT	FIG.1
ZZ066	ER20 - NUT	FIG.1

■ FIG.2

EDP No.	SERIES	TYPE
ZZ069	ER25 - NUT	FIG.2
ZZ072	ER32 - NUT	FIG.2

FIG. 1

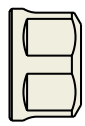
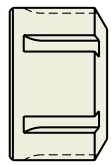


FIG. 2



ER WRENCH

■ FIG.1

EDP No.	SERIES	TYPE
ZZ062	ER11	FIG.1
ZZ064	ER16	FIG.1
ZZ067	ER20	FIG.1

■ FIG.2

EDP No.	SERIES	TYPE
ZZ070	ER25	FIG.2
ZZ073	ER32	FIG.2



FIG. 1



FIG. 2

ER STOP SCREW

FIG. 1

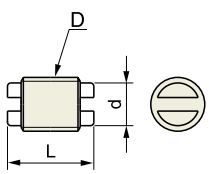
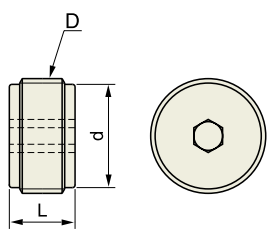


FIG. 2



■ FIG.1

Unit : inch

EDP No.	SERIES	L	d	D	TYPE
ZZ060	ER11	0.50	0.25	UN5/16 - 18	FIG.1

■ FIG.2

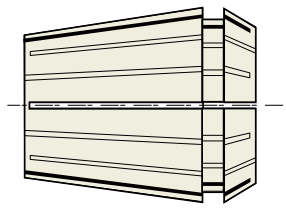
Unit : inch

EDP No.	SERIES	L	d	D	TYPE
ZZ065	ER16	0.50	0.35	UN7/16 - 16	FIG.2
ZZ068	ER20	0.50	0.48	UN9/16 - 16	FIG.2
ZZ071	ER25	0.50	0.60	UN11/16 - 16	FIG.2
ZZ074	ER32	0.50	0.79	UN7/8 - 16	FIG.2

ER COLLET (INCH TYPE)







Unit : inch

TYPE ER11		TYPE ER16		TYPE ER20		TYPE ER25		TYPE ER32		TYPE ER40	
EDP No.	CLAMPING CAPACITY	EDP No.	CLAMPING CAPACITY	EDP No.	CLAMPING CAPACITY	EDP No.	CLAMPING CAPACITY	EDP No.	CLAMPING CAPACITY	EDP No.	CLAMPING CAPACITY
110116	1/16	160116	1/16	200116	1/16	250116	1/16	320332	3/32	400108	1/8
110332	3/32	160332	3/32	200332	3/32	250332	3/32	320108	1/8	400532	5/32
110108	1/8	160108	1/8	200108	1/8	250108	1/8	320532	5/32	400316	3/16
110532	5/32	160532	5/32	200532	5/32	250532	5/32	320316	3/16	400732	7/32
110316	3/16	160316	3/16	200316	3/16	250316	3/16	320732	7/32	400104	1/4
110732	7/32	160732	7/32	200732	7/32	250732	7/32	320104	1/4	400932	9/32
110104	1/4	160104	1/4	200104	1/4	250104	1/4	320932	9/32	400516	5/16
		160932	9/32	200932	9/32	250932	9/32	320516	5/16	401132	11/32
		160516	5/16	200516	5/16	250516	5/16	321132	11/32	400308	3/8
		161132	11/32	201132	11/32	251132	11/32	320308	3/8	401332	13/32
		160308	3/8	200308	3/8	250308	3/8	321332	13/32	400716	7/16
		161332	13/32	201332	13/32	251332	13/32	320716	7/16	401532	15/32
				200716	7/16	250716	7/16	321532	15/32	400102	1/2
				201532	15/32	251532	15/32	320102	1/2	401732	17/32
				200102	1/2	250102	1/2	321732	17/32	400916	9/16
						251732	17/32	320916	9/16	401932	19/32
						250916	9/16	321932	19/32	400508	5/8
						251932	19/32	320508	5/8	402132	21/32
						250508	5/8	322132	21/32	401116	11/16
								321116	11/16	402332	23/32
								322332	23/32	400304	3/4
								320304	3/4	402532	25/32
										401316	13/16
										402732	27/32
										400708	7/8
										402932	29/32
										401516	15/16
										403132	31/32
										401000	1
ER11S07	STANDARD SET	ER16S12	STANDARD SET	ER20S15	STANDARD SET	ER25S19	STANDARD SET	ER32S22	STANDARD SET	ER40S29	STANDARD SET
Ø 1/16" to 1/4"		Ø 1/16" to 13/32"		Ø 1/16" to 1/2"		Ø 1/16" to 5/8"		Ø 3/32" to 3/4"		Ø 1/8" to 1"	
7PCS		12PCS		15PCS		19PCS		22PCS		29PCS	

*** HIGH PRECISION ER COLLETS(T.I.R ≤ 0.0002" at 3D) ARE AVAILABLE ON REQUEST.**

ER COLLET (METRIC TYPE)



Unit : mm

TYPE ER8		TYPE ER11		TYPE ER16		TYPE ER20	
EDP No.	CLAMPING RANGE	EDP No.	CLAMPING RANGE	EDP No.	CLAMPING RANGE	EDP No.	CLAMPING RANGE
208010	1.0-0.5	**211010**	1.0-0.5	**216010**	1.0-0.5	**220010**	1.0-0.5
208015	1.5-1.0	**211015**	1.5-1.0	**216015**	1.5-1.0	**220015**	1.5-1.0
208020	2.0-1.5	**211020**	2.0-1.5	**216020**	2.0-1.0	**220020**	2.0-1.0
208025	2.5-2.0	**211025**	2.5-2.0	**216025**	2.5-2.0	**220025**	2.5-2.0
208030	3.0-2.5	**211030**	3.0-2.5	**216030**	3.0-2.0	**220030**	3.0-2.0
208035	3.5-3.0	**211035**	3.5-3.0	**216040**	4.0-3.0	**220040**	4.0-3.0
208040	4.0-3.5	**211040**	4.0-3.5	**216050**	5.0-4.0	**220050**	5.0-4.0
208045	4.5-4.0	**211045**	4.5-4.0	**216060**	6.0-5.0	**220060**	6.0-5.0
208050	5.0-4.5	**211050**	5.0-4.5	**216070**	7.0-6.0	**220070**	7.0-6.0
		211055	5.5-5.0	**216080**	8.0-7.0	**220080**	8.0-7.0
		211060	6.0-5.5	**216090**	9.0-8.0	**220090**	9.0-8.0
		211065	6.5-6.0	**216100**	10.0-9.0	**220100**	10.0-9.0
		211070	7.0-6.5			**220110**	11.0-10.0
						220120	12.0-11.0
						220130	13.0-12.0
208000	STANDARD SET	211000	STANDARD SET	216000	STANDARD SET	220000	STANDARD SET
Ø 1.0-5.0mm		Ø 1.0-7.0mm		Ø 1.0-10.0mm		Ø 2.0-13.0mm	
9PCS		13PCS		10PCS		12PCS	
108110	WOODEN TRAY ZWT 8	011110	WOODEN TRAY ZWT 11	016110	WOODEN TRAY ZWT 16	020110	WOODEN TRAY ZWT 20

*** HIGH PRECISION ER COLLETS(T.I.R ≤ 0.0002" at 3D) ARE AVAILABLE ON REQUEST.**

ER COLLET (METRIC TYPE)



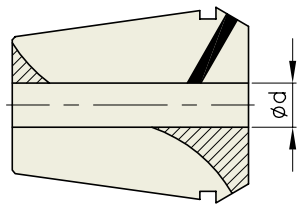
Unit : mm

TYPE ER25		TYPE ER32		TYPE ER40		TYPE ER50	
EDP No.	CLAMPING RANGE	EDP No.	CLAMPING RANGE	EDP No.	CLAMPING RANGE	EDP No.	CLAMPING RANGE
225010	1.0-1.5	**232020**	2.0-1.0	**240030**	3.0-2.0	**250060**	6.0-4.0
225015	1.5-1.0	**232025**	2.5-2.0	**240040**	4.0-3.0	**250080**	8.0-6.0
225020	2.0-1.0	**232030**	3.0-2.0	**240050**	5.0-4.0	**250100**	10.0-8.0
225025	2.5-2.0	**232040**	4.0-3.0	**240060**	6.0-5.0	**250120**	12.0-10.0
225030	3.0-2.0	**232050**	5.0-4.0	**240070**	7.0-6.0	**250140**	14.0-12.0
225040	4.0-3.0	**232060**	6.0-5.0	**240080**	8.0-7.0	**250160**	16.0-14.0
225050	5.0-4.0	**232070**	7.0-6.0	**240090**	9.0-8.0	**250180**	18.0-16.0
225060	6.0-5.0	**232080**	8.0-7.0	**240100**	10.0-9.0	**250200**	20.0-18.0
225070	7.0-6.0	**232090**	9.0-8.0	**240110**	11.0-10.0	**250220**	22.0-20.0
225080	8.0-7.0	**232100**	10.0-9.0	**240120**	12.0-11.0	**250240**	24.0-22.0
225090	9.0-8.0	**232110**	11.0-10.0	**240130**	13.0-12.0	**250250**	25.0-23.0
225100	10.0-9.0	**232120**	12.0-11.0	**240140**	14.0-13.0	**250260**	26.0-24.0
225110	11.0-10.0	**232130**	13.0-12.0	**240150**	15.0-14.0	**250280**	28.0-26.0
225120	12.0-11.0	**232140**	14.0-13.0	**240160**	16.0-15.0	**250300**	30.0-28.0
225130	13.0-12.0	**232150**	15.0-14.0	**240170**	17.0-16.0	**250320**	32.0-30.0
225140	14.0-13.0	**232160**	16.0-15.0	**240180**	18.0-17.0	**250340**	34.0-32.0
225150	15.0-14.0	**232170**	17.0-16.0	**240190**	19.0-18.0		
225160	16.0-15.0	**232180**	18.0-17.0	**240200**	20.0-19.0		
		232190	19.0-18.0	**240210**	21.0-20.0		
		232200	20.0-19.0	**240220**	22.0-21.0		
				240230	23.0-22.0		
				240240	24.0-23.0		
				240250	25.0-24.0		
				240260	26.0-25.0		
				240270	27.0-26.0		
				240280	28.0-27.0		
				240290	29.0-28.0		
				240300	30.0-29.0		
225000	STANDARD SET	232000	STANDARD SET	240000	STANDARD SET	250000	STANDARD SET
Ø 2.0-16.0mm		Ø 3.0-20.0mm		Ø 4.0-26.0mm		Ø 12.0-34.0mm	
15PCS		18PCS		23PCS		12PCS	
025110	WOODEN TRAY ZWT 25	032110	WOODEN TRAY ZWT 32	040110	WOODEN TRAY ZWT 40	050110	WOODEN TRAY ZWT 50

*** HIGH PRECISION ER COLLETS(T.I.R ≤ 0.0002" at 3D) ARE AVAILABLE ON REQUEST.**

SEALED ER COLLET (INCH TYPE)





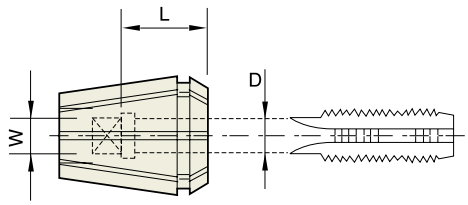
Unit : inch

TYPE ER11S		TYPE ER16S		TYPE ER20S		TYPE ER25S		TYPE ER32S		TYPE ER40S	
EDP No.	CLAMPING CAPACITY	EDP No.	CLAMPING CAPACITY	EDP No.	CLAMPING CAPACITY	EDP No.	CLAMPING CAPACITY	EDP No.	CLAMPING CAPACITY	EDP No.	CLAMPING CAPACITY
110108S	1/8	**160108S**	1/8	**200108S**	1/8	**250108S**	1/8	**320108S**	1/8	**400108S**	1/8
110532S	5/32	**160532S**	5/32	**200532S**	5/32	**250532S**	5/32	**320532S**	5/32	**400532S**	5/32
110316S	3/16	**160316S**	3/16	**200316S**	3/16	**250316S**	3/16	**320316S**	3/16	**400316S**	3/16
110732S	7/32	**160732S**	7/32	**200732S**	7/32	**250732S**	7/32	**320732S**	7/32	**400732S**	7/32
110104S	1/4	**160104S**	1/4	**200104S**	1/4	**250104S**	1/4	**320104S**	1/4	**400104S**	1/4
		160932S	9/32	**200932S**	9/32	**250932S**	9/32	**320932S**	9/32	**400932S**	9/32
		160516S	5/16	**200516S**	5/16	**250516S**	5/16	**320516S**	5/16	**400516S**	5/16
		161132S	11/32	**201132S**	11/32	**251132S**	11/32	**321132S**	11/32	**401132S**	11/32
		160308S	3/8	**200308S**	3/8	**250308S**	3/8	**320308S**	3/8	**400308S**	3/8
		161332S	13/32	**201332S**	13/32	**251332S**	13/32	**321332S**	13/32	**401332S**	13/32
				200716S	7/16	**250716S**	7/16	**320716S**	7/16	**400716S**	7/16
				201532S	15/32	**251532S**	15/32	**321532S**	15/32	**401532S**	15/32
				200102S	1/2	**250102S**	1/2	**320102S**	1/2	**400102S**	1/2
						251732S	17/32	**321732S**	17/32	**401732S**	17/32
						250916S	9/16	**320916S**	9/16	**400916S**	9/16
						251932S	19/32	**321932S**	19/32	**401932S**	19/32
						250508S	5/8	**320508S**	5/8	**400508S**	5/8
								322132S	21/32	**402132S**	21/32
								321116S	11/16	**401116S**	11/16
								322332S	23/32	**402332S**	23/32
								320304S	3/4	**400304S**	3/4
										402532S	25/32
										401316S	13/16
										402732S	27/32
										400708S	7/8
										402932S	29/32
										401516S	15/16
										403132S	31/32
										401000S	1
ER11S05S	STANDARD SET	ER16S10S	STANDARD SET	ER20S13S	STANDARD SET	ER25S17S	STANDARD SET	ER32S21S	STANDARD SET	ER40S29S	STANDARD SET
Ø 1/8" to 1/4"		Ø 1/8" to 13/32"		Ø 1/8" to 1/2"		Ø 1/8" to 5/8"		Ø 1/8" to 3/4"		Ø 1/8" to 1"	
5PCS		10PCS		13PCS		17PCS		21PCS		29PCS	

*** METRIC SEALED ER COLLETS ARE AVAILABLE ON REQUEST.**

TAP ER COLLET (INCH TYPE)





■ FOR STANDARD TAPS

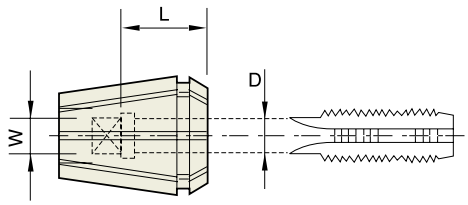
Unit : inch

RD 11TC						RD 16TC						RD 20TC					
EDP No.	TAP		D(Φ)	W(□)	L	EDP No.	TAP		D(Φ)	W(□)	L	EDP No.	TAP		D(Φ)	W(□)	L
	Inch	Metric					Inch	Metric					Inch	Metric			
11TC1411	#6 1/8	M3	0.141	0.110	0.472	16TC1411	#6 1/8	M3	0.141	0.110	0.709	20TC1411	#6 1/8	M3	0.141	0.110	0.709
11TC1613	#8 5/32	M4	0.168	0.131	0.472	16TC1613	#8 5/32	M4	0.168	0.131	0.709	20TC1613	#8 5/32	M4	0.168	0.131	0.709
11TC1915	#10 3/16	M4.5+M5	0.194	0.152	0.472	16TC1915	#10 3/16	M4.5+M5	0.194	0.152	0.709	20TC1915	#10 3/16	M4.5+M5	0.194	0.152	0.709
11TC2216	#12 7/32	-	0.220	0.165	0.551	16TC2216	#12 7/32	-	0.220	0.165	0.709	20TC2216	#12 7/32	-	0.220	0.165	0.709
11TC2519	#14 1/4	M6+M6.5	0.255	0.191	0.551	16TC2519	#14 1/4	M6+M6.5	0.255	0.191	0.709	20TC2519	#14 1/4	M6+M6.5	0.255	0.191	0.709
						16TC3123	5/16	M7+M8	0.318	0.238	0.709	20TC3123	5/16	M7+M8	0.318	0.238	0.866
						16TC3224	7/16	-	0.323	0.242	0.709	20TC3224	7/16	-	0.323	0.242	0.866
												20TC3622	1/2	M10	0.367	0.275	0.866
												20TC3828	3/8	M12+M12.5	0.381	0.286	0.866

RD 25TC						RD 32TC						RD 40TC					
EDP No.	TAP		D(Φ)	W(□)	L	EDP No.	TAP		D(Φ)	W(□)	L	EDP No.	TAP		D(Φ)	W(□)	L
	Inch	Metric					Inch	Metric					Inch	Metric			
25TC1411	#6 1/8	M3	0.141	0.110	0.709	32TC1411	#6 1/8	M3	0.141	0.110	0.709	40TC1411	#6 1/8	M3	0.141	0.110	0.709
25TC1613	#8 5/32	M4	0.168	0.131	0.709	32TC1613	#8 5/32	M4	0.168	0.131	0.709	40TC1613	#8 5/32	M4	0.168	0.131	0.709
25TC1915	#10 3/16	M4.5+M5	0.194	0.152	0.709	32TC1915	#10 3/16	M4.5+M5	0.194	0.152	0.709	40TC1915	#10 3/16	M4.5+M5	0.194	0.152	0.709
25TC2216	#12 7/32	-	0.220	0.165	0.709	32TC2216	#12 7/32	-	0.220	0.165	0.709	40TC2216	#12 7/32	-	0.220	0.165	0.709
25TC2519	#14 1/4	M6+M6.5	0.255	0.191	0.709	32TC2519	#14 1/4	M6+M6.5	0.255	0.191	0.709	40TC2519	#14 1/4	M6+M6.5	0.255	0.191	0.709
25TC3123	5/16	M7+M8	0.318	0.238	0.866	32TC3123	5/16	M7+M8	0.318	0.238	0.866	40TC3123	5/16	M7+M8	0.318	0.238	0.866
25TC3224	7/16	-	0.323	0.242	0.866	32TC3224	7/16	-	0.323	0.242	0.866	40TC3224	7/16	-	0.323	0.242	0.866
25TC3622	1/2	M10	0.367	0.275	0.866	32TC3627	1/2	M10	0.367	0.275	0.866	40TC3627	1/2	M10	0.367	0.275	0.866
25TC3828	3/8	M12+M12.5	0.381	0.286	0.866	32TC3828	3/8	M12+M12.5	0.381	0.286	0.866	40TC3828	3/8	M12+M12.5	0.381	0.286	0.866
25TC4232	9/16	M14	0.429	0.322	0.984	32TC4232	9/16	M14	0.429	0.322	0.984	40TC4232	9/16	M14	0.429	0.322	0.984
25TC4836	5/8	M16	0.480	0.360	0.984	32TC4836	5/8	M16	0.480	0.360	0.984	40TC4836	5/8	M16	0.480	0.360	0.984
25TC5440	11/16	M18	0.542	0.406	0.984	32TC5440	11/16	M18	0.542	0.406	0.984	40TC5440	11/16	M18	0.542	0.406	0.984
25TC5944	3/4	-	0.590	0.442	0.984	32TC5944	3/4	-	0.590	0.442	0.984	40TC5944	3/4	-	0.590	0.442	0.984
						32TC6548	13/16	M20	0.652	0.489	0.984	40TC6548	13/16	M20	0.652	0.489	0.984
												40TC6952	7/8	M22	0.697	0.523	0.984
												40TC7657	15/16	M24	0.760	0.570	0.984
												40TC8060	1	M25	0.800	0.600	1.102

TAP ER COLLET (INCH TYPE)





■ FOR PIPE TAPS

Unit : inch

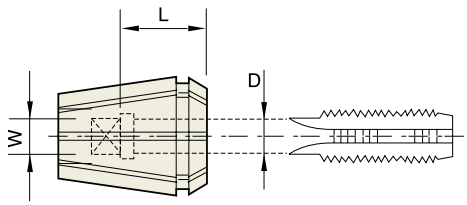
RD 16TCP						RD 20TCP						RD 25TCP					
EDP No.	TAP		D(Φ)	W(□)	L	EDP No.	TAP		D(Φ)	W(□)	L	EDP No.	TAP		D(Φ)	W(□)	L
	Inch	Metric					Inch	Metric					Inch	Metric			
16TP3123	1/8(SS)	-	0.312	0.234	0.709	20TP3123	1/8(SS)	-	0.312	0.234	0.787	25TP3123	1/8(SS)	-	0.312	0.234	0.787
16TP4332	1/8(LS)	-	0.437	0.328	0.709	20TP4332	1/8(LS)	-	0.437	0.328	0.787	25TP4332	1/8(LS)	-	0.437	0.328	0.787
												25TP5642	1/4	-	0.562	0.420	0.787

RD 32TCP						RD 40TCP					
EDP No.	TAP		D(Φ)	W(□)	L	EDP No.	TAP		D(Φ)	W(□)	L
	Inch	Metric					Inch	Metric			
32TP3123	1/8(SS)	-	0.312	0.234	0.787	40TP3123	1/8(SS)	-	0.312	0.234	0.787
32TP4332	1/8(LS)	-	0.437	0.328	0.787	40TP4332	1/8(LS)	-	0.437	0.328	0.787
32TP5642	1/4	-	0.562	0.420	0.787	40TP5642	1/4	-	0.562	0.420	0.787
						40TP7053	3/8		0.700	0.530	0.866
						40TP6851	1/2		0.687	0.515	0.866
						40TP9067	3/4		0.906	0.679	0.945

* SS : SHORT SERIES LS : LONG SERIES

TAP ER COLLET (METRIC TYPE)





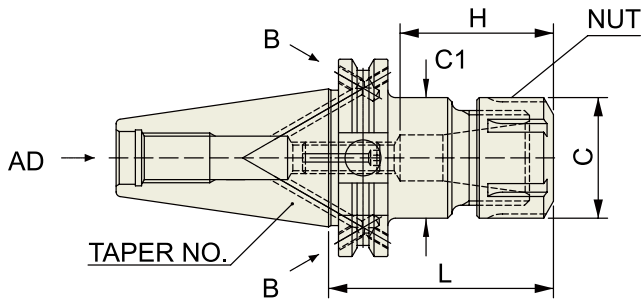
Unit : mm

RDT 16					RDT 20					RDT 25					RDT 32					RDT 40				
EDP No.	TAP	D (Φ)	W (□)	L	EDP No.	TAP	D (Φ)	W (□)	L	EDP No.	TAP	D (Φ)	W (□)	L	EDP No.	TAP	D (Φ)	W (□)	L	EDP No.	TAP	D (Φ)	W (□)	L
16T30025	M2	3.0	2.5	15																				
16T40032	M3	4.0	3.2	15	20T40032	M3	4.0	3.2	15	25T40032	M3	4.0	3.2	15										
16T50040	M4	5.0	4.0	15	20T50040	M4	5.0	4.0	15	25T50032	M4	5.0	4.0	15	32T50040	M4	5.0	4.0	15					
16T55045	M5	5.5	4.5	15	20T55045	M5	5.5	4.5	15	25T55045	M5	5.5	4.5	15	32T55045	M5	5.5	4.5	15					
16T60045	M6	6.0	4.5	15	20T60045	M6	6.0	4.5	15	25T60045	M6	6.0	4.5	15	32T60045	M6	6.0	4.5	15					
16T62050	M8	6.2	5.0	15	20T62050	M8	6.2	5.0	20	25T62050	M8	6.2	5.0	20	32T62050	M8	6.2	5.0	20	40T62050	M8	6.2	5.0	20
					20T70055	M10	7.0	5.5	20	25T70055	M10	7.0	5.5	20	32T70055	M10	7.0	5.5	20	40T70055	M10	7.0	5.5	20
										25T85065	M12	8.5	6.5	20	32T85065	M12	8.5	6.5	20	40T85065	M12	8.5	6.5	25
										25T10580	M14	10.5	8.0	20	32T10560	M14	10.5	8.0	20	40T10580	M14	10.5	8.0	25
															32T12510	M16	12.5	10.0	20	40T12510	M16	12.5	10.0	25
															32T14011	M18	14.0	11.0	20	40T14011	M18	14.0	11.0	25
																				40T15012	M20	15.0	12.0	28
																				40T17013	M22	17.0	13.0	28
																				40T19015	M24	19.0	15.0	28

DUAL CONTACT SK SLIM CHUCK

CCT





CCT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	25,000	AD/B

■ CCT (CAT DUAL CONTACT)

Unit : inch

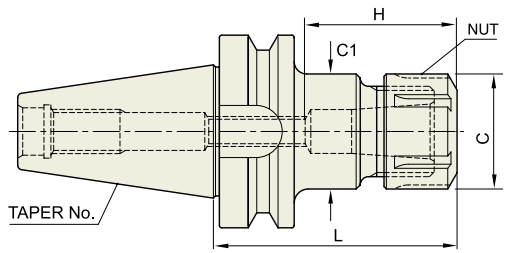
EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	L	C	C1	H		COLLET
							Min.	Max.	
TB020	40	CCT40 AD/B - SKA6-3.54	0.036-0.236	3.540	0.787	0.768	0.827	1.378	SKC6
TB021		CCT40 AD/B - SKA6-4.72	0.036-0.236	4.720	0.787	0.768	0.827	1.378	SKC6
TB022		CCT40 AD/B - SKA6-5.90	0.036-0.236	5.900	0.787	0.768	0.827	1.378	SKC6
TB023		CCT40 AD/B - SKA10-3.54	0.068-0.394	3.540	1.102	1.083	1.181	1.969	SKC10
TB024		CCT40 AD/B - SKA10-4.72	0.068-0.394	4.720	1.102	1.083	1.181	1.969	SKC10
TB025		CCT40 AD/B - SKA10-5.90	0.068-0.394	5.900	1.102	1.083	1.181	1.969	SKC10
TB026		CCT40 AD/B - SKA13-3.54	0.108-0.512	3.540	1.299	1.299	1.220	2.559	SKC13
TB027		CCT40 AD/B - SKA13-4.72	0.108-0.512	4.720	1.299	1.299	1.220	2.559	SKC13
TB028		CCT40 AD/B - SKA13-5.90	0.108-0.512	5.900	1.299	1.299	1.220	2.559	SKC13
TB029		CCT40 AD/B - SKA16-3.54	0.108-0.630	3.540	1.575	1.575	1.772	2.756	SKC16
TB030		CCT40 AD/B - SKA16-4.72	0.108-0.630	4.720	1.575	1.575	1.772	2.756	SKC16
TB031		CCT40 AD/B - SKA16-5.90	0.108-0.630	5.900	1.575	1.575	1.772	2.756	SKC16
TB032		CCT40 AD/B - SKA20-3.54	0.138-0.787	3.540	1.909	1.909	1.850	3.150	SKC20
TB033		CCT40 AD/B - SKA20-4.72	0.138-0.787	4.720	1.909	1.909	1.850	3.150	SKC20
TB034		CCT40 AD/B - SKA20-5.90	0.138-0.787	5.900	1.909	1.909	1.850	3.150	SKC20
TB035		CCT40 AD/B - SKA25-3.54	0.630-1.000	3.540	2.165	2.165	2.165	3.346	SKC25
TB036		CCT40 AD/B - SKA25-4.72	0.630-1.000	4.720	2.165	2.165	2.165	3.346	SKC25
TB037		CCT40 AD/B - SKA25-5.90	0.630-1.000	5.900	2.165	2.165	2.165	3.346	SKC25
TC020	50	CCT50 AD/B - SKA6-4.13	0.036-0.236	4.130	0.787	0.768	0.827	1.378	SKC6
TC021		CCT50 AD/B - SKA6-5.31	0.036-0.236	5.310	0.787	0.768	0.827	1.378	SKC6
TC022		CCT50 AD/B - SKA6-6.50	0.036-0.236	6.500	0.787	0.768	0.827	1.378	SKC6
TC023		CCT50 AD/B - SKA6-7.68	0.036-0.236	7.680	0.787	0.768	0.827	1.378	SKC6
TC024		CCT50 AD/B - SKA10-4.13	0.068-0.394	4.130	1.102	1.083	1.181	1.969	SKC10
TC025		CCT50 AD/B - SKA10-5.31	0.068-0.394	5.310	1.102	1.083	1.181	1.969	SKC10
TC026		CCT50 AD/B - SKA10-6.50	0.068-0.394	6.500	1.102	1.083	1.181	1.969	SKC10
TC027		CCT50 AD/B - SKA10-7.68	0.068-0.394	7.680	1.102	1.083	1.181	1.969	SKC10
TC028		CCT50 AD/B - SKA13-4.13	0.108-0.512	4.130	1.299	1.299	1.220	2.559	SKC13
TC029		CCT50 AD/B - SKA13-5.31	0.108-0.512	5.310	1.299	1.299	1.220	2.559	SKC13
TC030		CCT50 AD/B - SKA13-6.50	0.108-0.512	6.500	1.299	1.299	1.220	2.559	SKC13
TC031		CCT50 AD/B - SKA13-7.68	0.108-0.512	7.680	1.299	1.299	1.220	2.559	SKC13
TC032		CCT50 AD/B - SKA16-4.13	0.108-0.630	4.130	1.575	1.575	1.772	2.362	SKC16
TC033		CCT50 AD/B - SKA16-5.31	0.108-0.630	5.310	1.575	1.575	1.772	2.756	SKC16
TC034		CCT50 AD/B - SKA16-6.50	0.108-0.630	6.500	1.575	1.575	1.772	2.756	SKC16
TC035		CCT50 AD/B - SKA16-7.68	0.108-0.630	7.680	1.575	1.575	1.772	2.756	SKC16
TC036		CCT50 AD/B - SKA20-4.13	0.138-0.787	4.130	1.909	1.909	1.850	3.150	SKC20
TC037		CCT50 AD/B - SKA20-5.31	0.138-0.787	5.310	1.909	1.909	1.850	3.150	SKC20
TC038		CCT50 AD/B - SKA20-6.50	0.138-0.787	6.500	1.909	1.909	1.850	3.150	SKC20
TC039		CCT50 AD/B - SKA20-7.68	0.138-0.787	7.680	1.909	1.909	1.850	3.150	SKC20
TC040		CCT50 AD/B - SKA25-4.13	0.630-1.000	4.130	2.165	2.165	2.165	3.346	SKC25
TC041		CCT50 AD/B - SKA25-5.31	0.630-1.000	5.310	2.165	2.165	2.165	3.346	SKC25
TC042		CCT50 AD/B - SKA25-6.50	0.630-1.000	6.500	2.165	2.165	2.165	3.346	SKC25
TC043		CCT50 AD/B - SKA25-7.68	0.630-1.000	7.680	2.165	2.165	2.165	3.346	SKC25

* SK COLLET ON PAGE 973~975.

DUAL CONTACT SK SLIM CHUCK

CBT





CBT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	25,000	AD

■ CBT (BT DUAL CONTACT)

Unit : mm

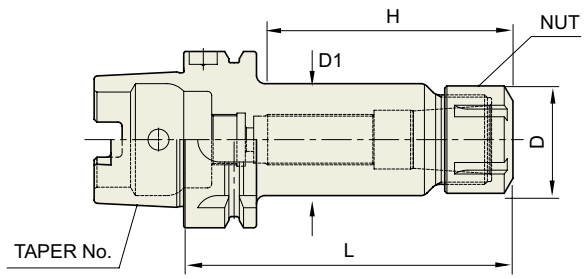
EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	L	C	C1	H		COLLET
							Min.	Max.	
TD100	30	CBT30 - SKA06-60	0.9-6.0	60	20	19.5	21	35	SKC6
TD102		CBT30 - SKA06-90	0.9-6.0	90	20	19.5	21	35	SKC6
TD104		CBT30 - SKA10-60	1.75-10.0	60	28	27.5	30	50	SKC10
TD106		CBT30 - SKA10-90	1.75-10.0	90	28	27.5	30	50	SKC10
TD108		CBT30 - SKA13-60	2.75-13.0	60	33	33	31	65	SKC13
TD110		CBT30 - SKA13-90	2.75-13.0	90	33	33	31	65	SKC13
TD112		CBT30 - SKA16-60	2.75-16.0	60	40	40	45	60	SKC16
TD114		CBT30 - SKA16-90	2.75-16.0	90	40	40	45	60	SKC16
TD116		CBT30 - SKA20-60	4.0-20.0	60	48.5	48.5	65	75	SKC20
TD118		CBT30 - SKA20-90	4.0-20.0	90	48.5	48.5	65	75	SKC20
TD120		CBT30 - SKA25-90	16.0-25.4	90	55	55	55	75	SKC25
TE100	40	CBT40 - SKA06-90	0.9-6.0	90	20	19.5	21	35	SKC6
TE102		CBT40 - SKA06-120	0.9-6.0	120	20	19.5	21	35	SKC6
TE104		CBT40 - SKA06-150	0.9-6.0	150	20	19.5	21	35	SKC6
TE106		CBT40 - SKA10-90	1.75-10.0	90	28	27.5	30	50	SKC10
TE108		CBT40 - SKA10-120	1.75-10.0	120	28	27.5	30	50	SKC10
TE110		CBT40 - SKA10-150	1.75-10.0	150	28	27.5	30	50	SKC10
TE112		CBT40 - SKA13-90	2.75-13.0	90	33	33	31	65	SKC13
TE114		CBT40 - SKA13-120	2.75-13.0	120	33	33	31	65	SKC13
TE116		CBT40 - SKA13-150	2.75-13.0	150	33	40	31	65	SKC13
TE118		CBT40 - SKA16-90	2.75-16.0	90	40	40	45	70	SKC16
TE121		CBT40 - SKA16-120	2.75-16.0	120	40	40	45	70	SKC16
TE122		CBT40 - SKA16-150	2.75-16.0	150	40	40	45	70	SKC16
TE124		CBT40 - SKA20-90	4.0-20.0	90	48.5	48.5	47	80	SKC20
TE126		CBT40 - SKA20-120	4.0-20.0	120	48.5	48.5	47	80	SKC20
TE128		CBT40 - SKA20-150	4.0-20.0	150	48.5	48.5	47	80	SKC20
TE130		CBT40 - SKA25-90	16.0-25.4	90	55	55	55	85	SKC25
TE132		CBT40 - SKA25-120	16.0-25.4	120	55	55	55	85	SKC25
TE134		CBT40 - SKA25-150	16.0-25.4	150	55	55	55	85	SKC25

* SK COLLET ON PAGE 973~975.

DUAL CONTACT SK SLIM CHUCK

HSK





DIN69893 - HSK	Taper Accuracy	G Value	RPM	Coolant System
	-	2.5	25,000	AD

■ DIN 69893/ISO 12164-1-HSK FORM A

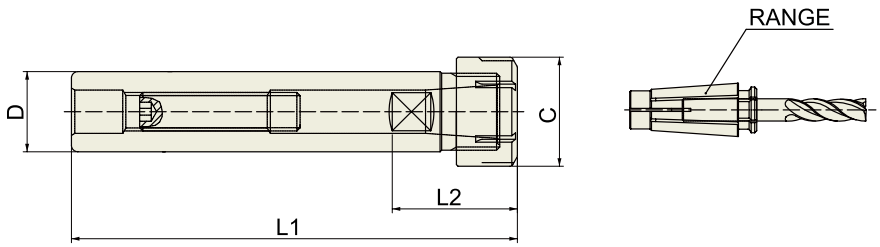
Unit : mm

EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	D	D1	L	H		COLLET
							Min.	Max.	
TQ100	63A	HSK63A - SKA06-100	0.75-6.0	20	19.5	100	21	35	SKC6
TQ102		HSK63A - SKA10-100	1.75-10.0	28	27.5	100	30	50	SKC10
TQ104		HSK63A - SKA13-100	2.75-13.0	33	33	100	31	65	SKC13
TQ106		HSK63A - SKA16-120	2.75-16.0	40	40	120	45	70	SKC16
TQ108		HSK63A - SKA20-120	4.0-20.0	48.5	48.5	120	65	75	SKC20
TQ110		HSK63A - SKA25-150	16.0-25.4	55	55	150	55	85	SKC25
TR100	100A	HSK100A - SKA06-120	0.75-6.0	20	19.5	120	21	35	SKC6
TR102		HSK100A - SKA10-150	1.75-10.0	28	27.5	150	30	50	SKC10
TR104		HSK100A - SKA13-150	2.75-13.0	33	40	150	31	65	SKC13
TR106		HSK100A - SKA16-150	2.75-16.0	40	40	150	45	70	SKC16
TR108		HSK100A - SKA20-150	4.0-20.0	48.5	48.5	150	65	75	SKC20
TR110		HSK100A - SKA25-160	16.0-25.4	55	55	160	55	85	SKC25

* SK COLLET ON PAGE 973~975.

STRAIGHT SK SLIM CHUCK

K



■ STRAIGHT-K

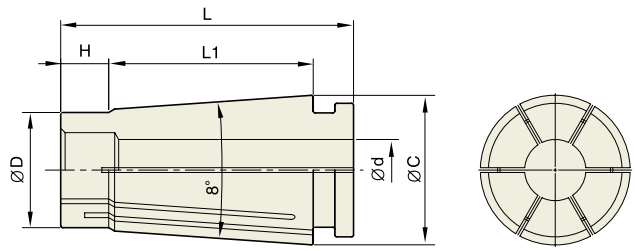
Unit : inch

EDP No.	TAPER No.	MODEL No.	D	C	L1	L2
TS020	K3/4	K3/4 - SKA6-100	0.750	0.787	3.937	0.827-1.378
TS021		K3/4 - SKA6-140	0.750	0.787	5.512	0.827-1.378
TS022		K3/4 - SKA10-100	0.750	1.102	3.937	1.181-1.969
TS023		K3/4 - SKA10-140	0.750	1.102	5.512	1.181-1.969
TS030	K1	K1 - SKA6-100	1.000	0.787	3.937	0.827-1.378
TS031		K1 - SKA6-140	1.000	0.787	5.512	0.827-1.378
TS032		K1 - SKA10-100	1.000	1.102	3.937	1.181-1.969
TS033		K1 - SKA10-150	1.000	1.102	5.906	1.181-1.969
TS034		K1 - SKA13-100	1.000	1.299	3.937	1.220-2.559
TS035		K1 - SKA13-150	1.000	1.299	5.906	1.220-2.559
TS040	K1 1/4	K1 1/4 - SKA10-100	1.250	1.102	3.937	1.181-1.969
TS041		K1 1/4 - SKA10-150	1.250	1.102	5.906	1.181-1.969
TS042		K1 1/4 - SKA13-100	1.250	1.299	3.937	1.220-2.559
TS043		K1 1/4 - SKA13-150	1.250	1.299	5.906	1.220-2.559
TS044		K1 1/4 - SKA16-100	1.250	1.575	3.937	1.575-2.756
TS045		K1 1/4 - SKA16-150	1.250	1.575	5.906	1.575-2.756
TS046		K1 1/4 - SKA20-100	1.250	1.909	3.937	1.850-3.150
TS047		K1 1/4" - SKA20-150	1.250	1.909	5.906	1.850-3.150

* SK COLLET ON PAGE 973~975.

SK COLLET (METRIC TYPE)





□ T.I.R of standard collet is 5Um at 3D.
(Special collet with 3Um T.I.R at 3D is available upon request.)

Unit : mm

EDP No.	TYPE	MODEL No.	CLAMPING RANGE (d)	EDP No.	TYPE	MODEL No.	CLAMPING RANGE (d)	EDP No.	TYPE	MODEL No.	CLAMPING RANGE (d)
306010	SKC 6	SKC6 - 1	0.9 - 1.0	310020	SKC 10	SKC10 - 2	1.75 - 2.0	313030	SKC 13	SKC13 - 3	2.75 - 3.0
306015		SKC6 - 1.5	1.3 - 1.5	310025		SKC10 - 2.5	2.25 - 2.5	313035		SKC13 - 3.5	3.0 - 3.5
306020		SKC6 - 2	1.8 - 2.0	310030		SKC10 - 3	2.75 - 3.0	313040		SKC13 - 4	3.5 - 4.0
306025		SKC6 - 2.5	2.3 - 2.5	310035		SKC10 - 3.5	3.0 - 3.5	313045		SKC13 - 4.5	4.0 - 4.5
306030		SKC6 - 3	2.8 - 3.0	310040		SKC10 - 4	3.5 - 4.0	313050		SKC13 - 5	4.5 - 5.0
306035		SKC6 - 3.5	3.0 - 3.5	310045		SKC10 - 4.5	4.0 - 4.5	313055		SKC13 - 5.5	5.0 - 5.5
306040		SKC6 - 4	3.5 - 4.0	310050		SKC10 - 5	4.5 - 5.0	313060		SKC13 - 6	5.5 - 6.0
306045		SKC6 - 4.5	4.0 - 4.5	310055		SKC10 - 5.5	5.0 - 5.5	313065		SKC13 - 6.5	6.0 - 6.5
306050		SKC6 - 5	4.5 - 5.0	310060		SKC10 - 6	5.5 - 6.0	313070		SKC13 - 7	6.5 - 7.0
306055		SKC6 - 5.5	5.0 - 5.5	310065		SKC10 - 6.5	6.0 - 6.5	313075		SKC13 - 7.5	7.0 - 7.5
306060		SKC6 - 6	5.5 - 6.0	310070		SKC10 - 7	6.5 - 7.0	313080		SKC13 - 8	7.5 - 8.0
				310075		SKC10 - 7.5	7.0 - 7.5	313085		SKC13 - 8.5	8.0 - 8.5
				310080		SKC10 - 8	7.5 - 8.0	313090		SKC13 - 9	8.5 - 9.0
				310085		SKC10 - 8.5	8.0 - 8.5	313095		SKC13 - 9.5	9.0 - 9.5
				310090		SKC10 - 9	8.5 - 9.0	313100		SKC13 - 10	9.5 - 10.0
				310095		SKC10 - 9.5	9.0 - 9.5	313105		SKC13 - 10.5	10.0 - 10.5
				310100		SKC10 - 10	9.5 - 10.0	313110		SKC13 - 11	10.5 - 11.0
								313115		SKC13 - 11.5	11.0 - 11.5
								313120		SKC13 - 12	11.5 - 12.0
								313125		SKC13 - 12.5	12.0 - 12.5
								313130		SKC13 - 13	12.5 - 13.0

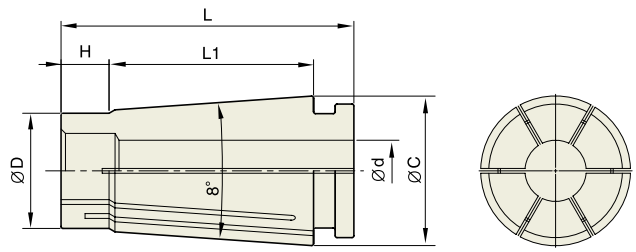
■ SKC COLLET Dimension

Unit : mm

TYPE	D	L	L1	H	C
SKC6	7.5	25.7	17.6	3.8	10
SKC10	12	32	21.3	5	15
SKC13	15.4	39	28.3	5.5	20
SKC16	18.8	46	32	8	24
SKC20	22.5	54.2	41	8	29
SKC25	28.9	58.2	43	8.5	35

SK COLLET (METRIC TYPE)





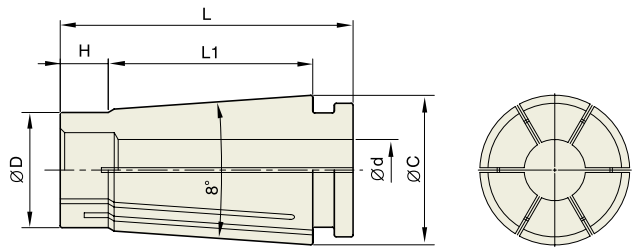
□ T.I.R of standard collet is 5Um at 3D.
(Special collet with 3Um T.I.R at 3D is available upon request.)

Unit : mm

EDP No.	TYPE	MODEL No.	CLAMPING RANGE (d)	EDP No.	TYPE	MODEL No.	CLAMPING RANGE (d)	EDP No.	TYPE	MODEL No.	CLAMPING RANGE (d)
316030	SKC 16	SKC16 - 3	2.75 - 3.0	**323040**	SKC 20	SKC20 - 4	3.5 - 4.0	**325165**	SKC 25	SKC25 - 16.5	16.0 - 16.5
316035		SKC16 - 3.5	3.0 - 3.5	**323045**		SKC20 - 4.5	4.0 - 4.5	**325170**		SKC25 - 17	16.5 - 17.0
316040		SKC16 - 4	3.5 - 4.0	**323050**		SKC20 - 5	4.5 - 5.0	**325175**		SKC25 - 17.5	17.0 - 17.5
316045		SKC16 - 4.5	4.0 - 4.5	**323055**		SKC20 - 5.5	5.0 - 5.5	**325180**		SKC25 - 18	17.5 - 18.0
316050		SKC16 - 5	4.5 - 5.0	**323060**		SKC20 - 6	5.5 - 6.0	**325185**		SKC25 - 18.5	18.0 - 18.5
316055		SKC16 - 5.5	5.0 - 5.5	**323065**		SKC20 - 6.5	6.0 - 6.5	**325190**		SKC25 - 19	18.5 - 19.0
316060		SKC16 - 6	5.5 - 6.0	**323070**		SKC20 - 7	6.5 - 7.0	**325195**		SKC25 - 19.5	19.0 - 19.5
316605		SKC16 - 6.5	6.0 - 6.5	**323075**		SKC20 - 7.5	7.0 - 7.5	**325200**		SKC25 - 20	19.5 - 20.0
316070		SKC16 - 7	6.5 - 7.0	**323080**		SKC20 - 8	7.5 - 8.0	**325205**		SKC25 - 20.5	20.0 - 20.5
316075		SKC16 - 7.5	7.0 - 7.5	**323085**		SKC20 - 8.5	8.0 - 8.5	**325210**		SKC25 - 21	20.5 - 21.0
316080		SKC16 - 8	7.5 - 8.0	**323090**		SKC20 - 9	8.5 - 9.0	**325215**		SKC25 - 21.5	21.0 - 21.5
316085		SKC16 - 8.5	8.0 - 8.5	**323095**		SKC20 - 9.5	9.0 - 9.5	**325220**		SKC25 - 22	21.5 - 22.0
316090		SKC16 - 9	8.5 - 9.0	**323100**		SKC20 - 10	9.5 - 10.0	**325225**		SKC25 - 22.5	22.0 - 22.5
316095		SKC16 - 9.5	9.0 - 9.5	**323105**		SKC20 - 10.5	10.0 - 10.5	**325230**		SKC25 - 23	22.5 - 23.0
316100		SKC16 - 10	9.5 - 10.0	**323110**		SKC20 - 11	10.5 - 11.0	**325235**		SKC25 - 23.5	23.0 - 23.5
316105		SKC16 - 10.5	10.0 - 10.5	**323115**		SKC20 - 11.5	11.0 - 11.5	**325240**		SKC25 - 24	23.5 - 24.0
316110		SKC16 - 11	10.5 - 11.0	**323120**		SKC20 - 12	11.5 - 12.0	**325245**		SKC25 - 24.5	24.0 - 24.5
316115		SKC16 - 11.5	10.0 - 11.5	**323125**		SKC20 - 12.5	12.0 - 12.5	**325250**		SKC25 - 25	24.5 - 25.0
316120		SKC16 - 12	11.5 - 12.0	**323130**		SKC20 - 13	12.5 - 13.0	**325254**		SKC25 - 25.4	25.0 - 25.4
316125		SKC16 - 12.5	12.0 - 12.5	**323135**		SKC20 - 13.5	13.0 - 13.5				
316130		SKC16 - 13	12.5 - 13.0	**323140**		SKC20 - 14	13.5 - 14.0				
316135		SKC16 - 13.5	13.0 - 13.5	**323145**		SKC20 - 14.5	14.0 - 14.5				
316140		SKC16 - 14	13.5 - 14.0	**323150**		SKC20 - 15	14.5 - 15.0				
316145		SKC16 - 14.5	14.0 - 14.5	**323155**		SKC20 - 15.5	15.0 - 15.5				
316150		SKC16 - 15	14.5 - 15.0	**323160**		SKC20 - 16	15.5 - 16.0				
316155		SKC16 - 15.5	15.0 - 15.5	**323165**		SKC20 - 16.5	16.0 - 16.5				
316160		SKC16 - 16	15.5 - 16.0	**323170**		SKC20 - 17	16.5 - 17.0				
				323175		SKC20 - 17.5	17.0 - 17.5				
				323180		SKC20 - 18	17.5 - 18.0				
				323185		SKC20 - 18.5	18.0 - 18.5				
				323190		SKC20 - 19	18.5 - 19.0				
				323195		SKC20 - 19.5	19.0 - 19.5				
				323200		SKC20 - 20.0	19.5 - 20.0				

SK COLLET (INCH TYPE)





□ T.I.R of standard collet is 0.00020" at 3D.
(Special collet with 0.00012" T.I.R at 3D is available upon request.)

Unit : inch

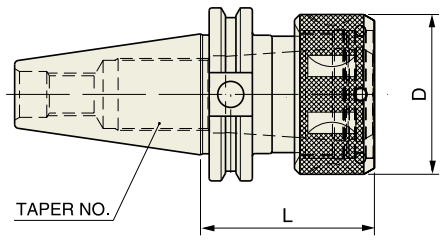
EDP No.	TYPE	MODEL No.	CLAMPING RANGE (d1)	EDP No.	TYPE	MODEL No.	CLAMPING RANGE (d1)
3060108A	SKC6	SKC6 - 1/8A	0.125	**3100108A**	SKC10	SKC10 - 1/8A	0.125
3060316A		SKC6 - 3/16A	0.187	**3100316A**		SKC10 - 3/16A	0.187
				3100104A		SKC10 - 1/4A	0.25
				3100516A		SKC10 - 5/16A	0.312
				3100308A		SKC10 - 3/8A	0.375

EDP No.	TYPE	MODEL No.	CLAMPING RANGE (d1)	EDP No.	TYPE	MODEL No.	CLAMPING RANGE (d1)
3160108A	SKC16	SKC16 - 1/8A	0.125	**3250316A**	SKC25	SKC25 - 3/16A	0.187
3160316A		SKC16 - 3/16A	0.187	**3250104A**		SKC25 - 1/4A	0.25
3160104A		SKC16 - 1/4A	0.25	**3250516A**		SKC25 - 5/16A	0.312
3160516A		SKC16 - 5/16A	0.312	**3250308A**		SKC25 - 3/8A	0.375
3160308A		SKC16 - 3/8A	0.375	**3250716A**		SKC25 - 7/16A	0.437
3160716A		SKC16 - 7/16A	0.437	**3250102A**		SKC25 - 1/2A	0.5
3160102A		SKC16 - 1/2A	0.5	**3250508A**		SKC25 - 5/8A	0.625
3160916A		SKC16 - 9/16A	0.562	**3250304A**		SKC25 - 3/4A	0.75
3160508A		SKC16 - 5/8A	0.625				

TG COLLET CHUCK

CAT





ASME B5.50 - CAT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	-	-	AD

■ **ASME B5.50-2009-CAT**

TG75

■ STANDARD

Unit : inch

EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	L	D	COLLET SERIES
VK012	40	CAT40 - TG75 - 2.50	0.047-0.750	2.50	1.81	75TG

■ EXTENDED

Unit : inch

EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	L	D	COLLET SERIES
VK312	40	CAT40 - TG75 - 3.00	0.047-0.750	3.00	1.81	75TG

TG100

■ STANDARD

Unit : inch

EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	L	D	COLLET SERIES
OK014	40	CAT40 - TG100 - 3.25	0.063-1.000	3.25	2.36	100TG
OL014	50	CAT50 - TG100 - 3.25	0.063-1.000	3.25	2.36	100TG

■ EXTENDED

Unit : inch

EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	L	D	COLLET SERIES
OK314	40	CAT40 - TG100 - 4.50	0.063-1.000	4.50	2.36	100TG
OL314	50	CAT50 - TG100 - 5.50	0.063-1.000	5.50	2.36	100TG

TG150

■ STANDARD

Unit : inch

EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	L	D	COLLET SERIES
UL052	50	CAT50 - TG150 - 3.50	0.500 - 1.500	3.50	3.43	150TG

■ EXTENDED

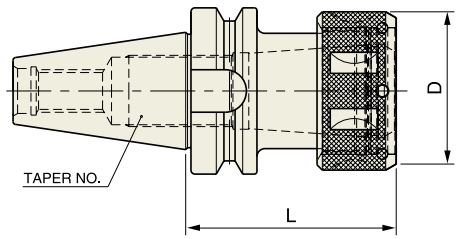
Unit : inch

EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	L	D	COLLET SERIES
UL352	50	CAT50 - TG150 - 6.00	0.500 - 1.500	6.00	3.43	150TG

* TG NUT : SWISS MADE PRECISION TG NUT
* WRENCHES ON PAGE 978.

TG COLLET CHUCK





JIS B6339 - BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	-	-	AD

■ JIS B6339/MAS 403-BT

TG75

■ STANDARD

Unit : inch

EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	L	D	COLLET SERIES
VH012	40	BT40 - TG75 - 3.00	0.047-0.750	3.00	1.81	75TG

TG100

■ STANDARD

Unit : inch

EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	L	D	COLLET SERIES
OH014	40	BT40 - TG100 - 3.50	0.063-1.000	3.50	2.36	100TG
OI014	50	BT50 - TG100 - 3.50	0.063-1.000	3.50	2.36	100TG

■ EXTENDED

Unit : inch

EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	L	D	COLLET SERIES
OH314	40	BT40 - TG100 - 5.50	0.063-1.000	5.50	2.36	100TG
OI314	50	BT50 - TG100 - 6.00	0.063-1.000	6.00	2.36	100TG

TG150

■ STANDARD

Unit : inch

EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	L	D	COLLET SERIES
UI052	50	BT50 - TG150 - 4.00	0.500 - 1.500	4.00	3.43	150TG

■ EXTENDED

Unit : inch

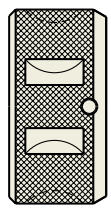
EDP No.	TAPER No.	MODEL No.	CLAMPING RANGE	L	D	COLLET SERIES
UI352	50	BT50 - TG150 - 6.00	0.500 - 1.500	6.00	3.43	150TG

* TG NUT : SWISS MADE PRECISION TG NUT
* WRENCHES ON PAGE 978.

TG NUT

■ **TG NUT**

EDP No.	SERIES
ZZ084	TG75 - NUT
ZZ081	TG100 - NUT
ZZ087	TG150 - NUT



TG WRENCH

■ **TG WRENCH**

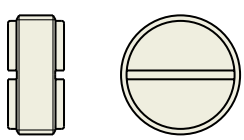
EDP No.	SERIES
ZZ085	TG75
ZZ082	TG100
ZZ088	TG150



TG STOP SCREW

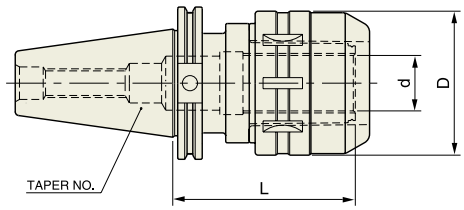
■ **TG STOP SCREW**

EDP No.	SERIES
ZZ086	TG75
ZZ083	TG100
ZZ089	TG150



MILLING CHUCK CAT





ASME B5.50 - CAT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	-	-	-

■ **ASME B5.50-2009-CAT**

■ **STANDARD**

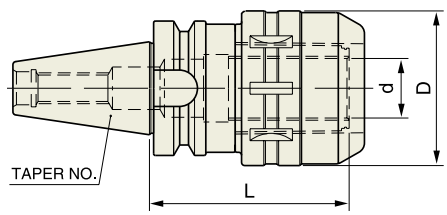
Unit : inch

EDP No.	TAPER No.	MODEL No.	d	D	L
LK010	40	CAT40 - C 3/4 - 4.13	0.750	2.050	4.13
LK014		CAT40 - C 1" - 4.13	1.000	2.360	4.13
LK017		CAT40 - C 1 1/4 - 4.13	1.250	2.835	4.13
LL010	50	CAT50 - C 3/4 - 4.13	0.750	2.050	4.13
LL014		CAT50 - C 1" - 4.13	1.000	2.360	4.13
LL017		CAT50 - C 1 1/4 - 4.13	1.250	2.835	4.13

* COLLETS / WRENCHS FOR MILLING CHUCKS ON PAGE 983.

MILLING CHUCK BT





JIS B6339 - BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	-	-	-

■ **JIS B6339/MAS 403-BT**

■ **STANDARD**

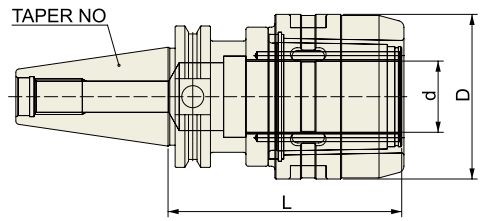
Unit : inch

EDP No.	TAPER No.	MODEL No.	d	D	L
LH010	40	BT40 - C3/4 - 3.56	0.750	2.050	3.56
LH014		BT40 - C1 - 4.13	1.000	2.360	4.13
LH017		BT40 - C1 1/4 - 4.13	1.250	2.835	4.13
LI010	50	BT50 - C 3/4 - 4.13	0.750	2.050	4.13
LI014		BT50 - C 1"4.13	1.000	2.360	4.13
LI017		BT50 - C 1 1/4 - 4.13	1.250	2.835	4.13

* COLLETS / WRENCHS FOR MILLING CHUCKS ON PAGE 983.

DUAL CONTACT HIGH SPEED MILLING CHUCK CCT





CCT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	20,000	-

■ CCT (CAT DUAL CONTACT)

Unit : inch

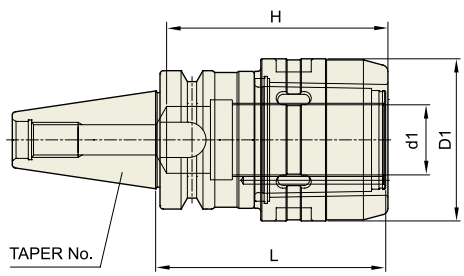
EDP No.	TAPER No.	MODEL No.	d	D	L
LB020	40	CCT40 - C3/4-4.13HS	0.750	2.050	4.13
LB022		CCT40 - C1-4.13HS	1.000	2.360	4.13
LB024		CCT40 - C1 1/4-4.13HS	1.250	2.835	4.13
LB026		CCT40 - C1 1/4-5.31HS	1.250	2.835	5.31
LC020	50	CCT50 - C3/4-4.13HS	0.750	2.050	4.13
LC022		CCT50 - C1-4.13HS	1.000	2.360	4.13
LC024		CCT50 - C1 1/4-4.13HS	1.250	2.835	4.13
LC026		CCT50 - C1 1/4-5.31HS	1.250	2.835	5.31
LC028		CCT50 - C1 1/4-6.5HS	1.250	2.835	6.50

* COLLETS / WRENCHS FOR MILLING CHUCKS ON PAGE 983.

DUAL CONTACT HIGH SPEED MILLING CHUCK

CBT





CBT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	20,000	-

■ CBT (BT DUAL CONTACT)

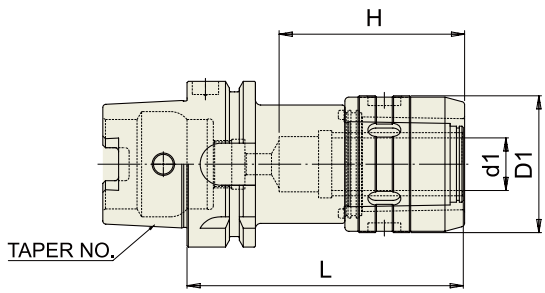
Unit : inch

EDP No.	TAPER No.	MODEL No.	d1	D1	L
LE020	40	CBT40 - C3/4-3.15HS	0.750	2.050	3.15
LE022		CBT40 - C3/4-4.13HS	0.750	2.050	4.13
LE024		CBT40 - C1-4.13HS	1.000	2.360	4.13
LE026		CBT40 - C1 1/4-3.54HS	1.250	2.835	3.54
LE028		CBT40 - C1 1/4-4.13HS	1.250	2.835	4.13
LE030		CBT40 - C1 1/4-5.31HS	1.250	2.835	5.31

* COLLETS / WRENCHS FOR MILLING CHUCKS ON PAGE 983.

DUAL CONTACT HIGH SPEED MILLING CHUCK HSK





DIN 69893 - HSK	Taper Accuracy	G Value	RPM	Coolant System
	-	6.3	20,000	-

■ DIN 69893/ISO 12164-1-HSK FORM A

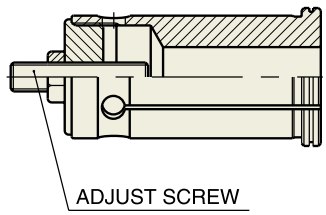
Unit : inch

EDP No.	TAPER No.	MODEL No.	d1	D1	L
LQ020	63A	HSK63A - C3/4-4.13HS	0.750	2.050	4.13
LQ022		HSK63A - C1-4.72HS	1.000	2.360	4.72
LQ024		HSK63A - C1 1/4-5.31HS	1.250	2.835	5.31
LR020	100A	HSK100A - C3/4-4.33HS	0.750	2.050	4.33
LR022		HSK100A - C1-5.12HS	1.000	2.360	5.12
LR024		HSK100A - C1 1/4-5.31HS	1.250	2.835	5.31

* COLLETS / WRENCHS FOR MILLING CHUCKS ON PAGE 983.

MILLING CHUCK COLLET





Unit : inch

EDP No.	TYPE	D
MZ002	C3/4	1/4
MZ003	C3/4	5/16
MZ004	C3/4	3/8
MZ006	C3/4	1/2
MZ008	C3/4	5/8

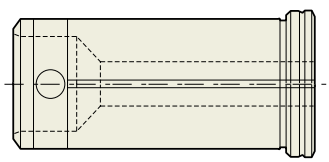
Unit : inch

EDP No.	TYPE	D
MZ102	C1	1/4
MZ103	C1	5/16
MZ104	C1	3/8
MZ106	C1	1/2
MZ108	C1	5/8
MZ110	C1	3/4

Unit : inch

EDP No.	TYPE	D
MZ302	C1 1/4	1/4
MZ303	C1 1/4	5/16
MZ304	C1 1/4	3/8
MZ306	C1 1/4	1/2
MZ308	C1 1/4	5/8
MZ310	C1 1/4	3/4
MZ312	C1 1/4	7/8
MZ314	C1 1/4	1"





Unit : inch

EDP No.	TYPE	D
MY002	C3/4	1/4
MY003	C3/4	5/16
MY004	C3/4	3/8
MY006	C3/4	1/2
MY008	C3/4	5/8

Unit : inch

EDP No.	TYPE	D
MY102	C1	1/4
MY103	C1	5/16
MY104	C1	3/8
MY106	C1	1/2
MY108	C1	5/8
MY110	C1	3/4

Unit : inch

EDP No.	TYPE	D
MY302	C1 1/4	1/4
MY303	C1 1/4	5/16
MY304	C1 1/4	3/8
MY306	C1 1/4	1/2
MY308	C1 1/4	5/8
MY310	C1 1/4	3/4
MY312	C1 1/4	7/8
MY314	C1 1/4	1"

WRENCH

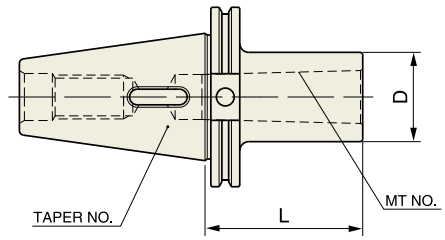
Unit : inch

EDP No.	SERIES
ZZ056	C3/4
ZZ057	C1
ZZ058	C1 1/4



MORSE TAPER ADAPTER CAT





ASME B5.50 - CAT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	15,000	AD

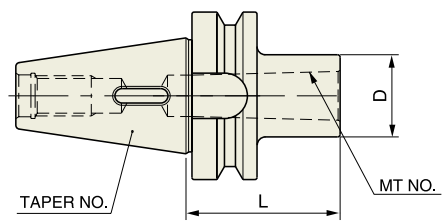
■ ASME B5.50-2009-CAT

Unit : inch

EDP No.	TAPER No.	MODEL No.	MT NO.	D	L
CK037	40	CAT40 - MTA 1 - 1.75	#1	1.00	1.75
CK038		CAT40 - MTA 2 - 2.00	#2	1.75	2.00
CK039		CAT40 - MTA 3 - 2.75	#3	1.75	2.75
CK040		CAT40 - MTA 4 - 3.63	#4	1.75	3.63
CL038	50	CAT50 - MTA 2 - 1.38	#2	2.75	1.38
CL039		CAT50 - MTA 3 - 1.88	#3	1.57	1.88
CL040		CAT50 - MTA 4 - 2.75	#4	1.97	2.75
CL041		CAT50 - MTA 5 - 4.06	#5	2.48	4.06

MORSE TAPER ADAPTER BT





JIS B6339 - BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	15,000	AD

■ JIS B6339/MAS 403-BT

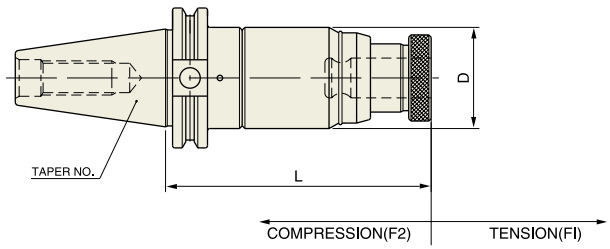
Unit : inch

EDP No.	TAPER No.	MODEL No.	MT NO.	D	L
CH037	40	BT40 - MTA 1 - 1.75	#1	1.00	1.75
CH038		BT40 - MTA 2 - 2.36	#2	1.26	2.36
CH039		BT40 - MTA 3 - 2.95	#3	1.57	2.95
CH040		BT40 - MTA 4 - 3.74	#4	1.97	3.74
CI038	50	BT50 - MTA 2 - 2.36	#2	1.26	2.36
CI039		BT50 - MTA 3 - 2.95	#3	1.58	2.95
CI040		BT50 - MTA 4 - 3.74	#4	1.97	3.74
CI041		BT50 - MTA 5 - 4.13	#5	2.55	4.13

TAPPING CHUCK

CAT





ASME B5.50 - CAT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	-	-	-

■ ASME B5.50-2009-CAT

■ TO USE TAP ADAPTER QCT12

Unit : inch

EDP No.	TAPER No.	MODEL No.	D	L	F1	F2
JK048	40	CAT40 - TC #1 - 4.56	1.77	4.56	0.591	0.197
JL048	50	CAT50 - TC #1 - 4.56	1.77	4.56	0.591	0.197

■ TO USE TAP ADAPTER QCT24

Unit : inch

EDP No.	TAPER No.	MODEL No.	D	L	F1	F2
JK049	40	CAT40 - TC #2 - 6.47	2.48	6.47	0.787	0.197
JL049	50	CAT50 - TC #2 - 5.82	2.48	5.82	0.787	0.197

■ TO USE TAP ADAPTER QCT32

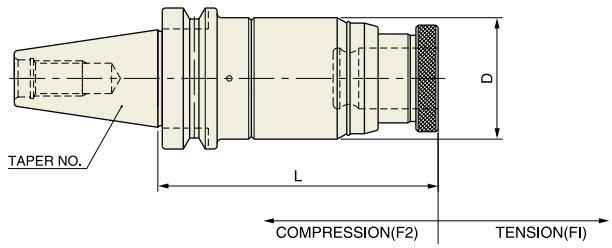
Unit : inch

EDP No.	TAPER No.	MODEL No.	D	L	F1	F2
JL050	50	CAT50 - TC #3 - 7.75	3.86	7.75	0.984	0.394

* TAP ADAPTERS ARE ON PAGE 988.

TAPPING CHUCK BT





JIS B6339 - BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	-	-	-

■ JIS B6339/MAS 403-BT

■ TO USE TAP ADAPTER QCT12

Unit : inch

EDP No.	TAPER No.	MODEL No.	D	L	F1	F2
JH048	40	BT40 - TC #1 - 4.53	1.77	4.53	0.591	0.197
JI048	50	BT50 - TC #1 - 4.64	1.77	4.64	0.591	0.197

■ TO USE TAP ADAPTER QCT24

Unit : inch

EDP No.	TAPER No.	MODEL No.	D	L	F1	F2
JH049	40	BT40 - TC #2 - 6.72	2.48	6.72	0.787	0.197
JI049	50	BT50 - TC #2 - 6.72	2.48	6.72	0.787	0.197

■ TO USE TAP ADAPTER QCT38

Unit : inch

EDP No.	TAPER No.	MODEL No.	D	L	F1	F2
JI050	50	BT50 - TC #3 - 8.33	3.86	8.33	0.984	0.394

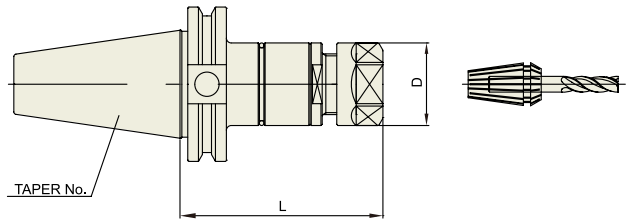
* TAP ADAPTERS ARE ON PAGE 988.

SYNCHRO TAPPING ER CHUCK

CAT

TAPPING CHUCK





ASME B5.50 - CAT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	-	-	AD/B

■ ASME B5.50-2009-CAT

Unit : mm

EDP No.	TAPER No.	MODEL No.	TAP SIZE	CLAMPING RANGE	NUT	D	L
JK060SYT	40	CAT40AD/B-SYTER12-79	M3-M12	3.5-10	ER16	28	79
JK062SYT		CAT40AD/B-SYTER16-85	M3-M16	3.5-10	ER20	35	85
JK064SYT		CAT40AD/B-SYTER20-90	M3-M20	3.5-16	ER25	42	90
JK066SYT		CAT40AD/B-SYTER27-100	M4-M27	3.5-16	ER32	50	100
JK068SYT		CAT40AD/B-SYTER33-105	M4-M33	7-16	ER40	63	105
JL060SYT	50	CAT50AD/B-SYTER12-79	M3-M12	3.5-10	ER16	28	79
JL062SYT		CAT50AD/B-SYTER16-85	M3-M16	3.5-10	ER20	35	85
JL064SYT		CAT50AD/B-SYTER20-90	M3-M20	3.5-16	ER25	42	90
JL066SYT		CAT50AD/B-SYTER27-100	M4-M27	3.5-16	ER32	50	100
JL068SYT		CAT50AD/B-SYTER33-105	M4-M33	7-16	ER40	63	105

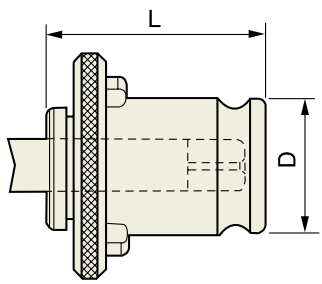
* BT(JIS B6339/MAS-403), HSK(DIN 69893/ISO 12164-1) AND K-STRAIGHT TAPER PRODUCTS ARE AVAILABLE.
  FOR DETAILS, PLEASE DISCUSS SEPARATELY.

* FEATURE :
  - TO COMPENSATE FOR SYNCHRONIZATION ERRORS TO EXTEND TAP LIFE AND TO IMPROVE THREAD QUALITY
  - TO COMPENSATE FOR PITCH TOLERANCES OF TAPS.
  - FOR MACHINE WITH SYNCHRONIZED SPINDLE.

* APPLICABLE TAP ER COLLETS ON PAGE 966~968.

QUICK CHANGE TAP ADAPTER





■ POSITIVE DRIVE-SOLID TYPE

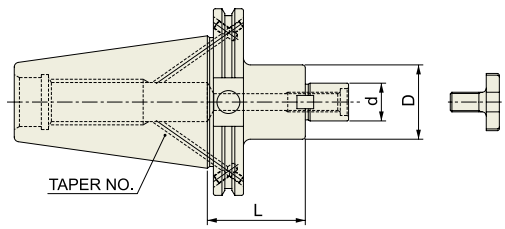
Unit : inch

EDP No.	ADAPTER SIZE	TAP SIZE RANGE	TAP SIZE	TAP DIA	TAP SQUARE
QCT12001	QCT 12 D = 19mm/0.748" L = 28.5mm/1.122"	0-9/16"	# 0-6	0.141	0.110
QCT12002			# 8	0.168	0.131
QCT12003			# 10	0.194	0.152
QCT12004			# 12	0.220	0.165
QCT12005			1/4	0.255	0.191
QCT12006			5/16	0.318	0.238
QCT12007			3/8	0.381	0.286
QCT12008			7/16	0.323	0.242
QCT12009			1/2	0.367	0.275
QCT12010			9/16	0.429	0.322
QCT12011		1/8" PIPE	1/8pss	0.3125	0.234
QCT12012			1/8pls	0.4370	0.328
QCT24001	QCT 24 D = 31mm/1.220" L = 46mm/1.811"	5/16-7/8"	5/16	0.318	0.238
QCT24002			3/8	0.381	0.286
QCT24003			7/16	0.323	0.242
QCT24004			1/2	0.367	0.275
QCT24005			9/16	0.429	0.322
QCT24006			5/8	0.480	0.360
QCT24007			11/16	0.542	0.406
QCT24008			3/4	0.590	0.421
QCT24009			13/16	0.652	0.489
QCT24010			7/8	0.697	0.523
QCT24011		1/4" - 3/8" 1/2" PIPE	1/4p	0.5620	0.420
QCT24012			3/8p	0.7000	0.531
QCT24013			1/2p	0.6875	0.515
QCT32001	QCT 32 D = 48mm/1.890" L = 69.5mm/2.736"	13/16-1-3/8"	13/16	0.652	0.489
QCT32002			7/8	0.697	0.523
QCT32003			15/16	0.760	0.570
QCT32004			1	0.800	0.600
QCT32005			1-1/8	0.896	0.672
QCT32006			1-1/4	1.021	0.766
QCT32007			1-3/8	1.108	0.831
QCT32008		1/2/3/4 & 1" PIPE	1/2p	0.6875	0.515
QCT32009			3/4p	0.9060	0.679
QCT32010			1p	1.1250	0.843

SHELL MILL ARBOR

CAT





ASME B5.50 - CAT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	15,000	AD/B

■ ASME B5.50-2009-CAT

■ STANDARD

Unit : inch

EDP No.	TAPER No.	MODEL No.	d	L	D
EK006B	40	CAT40 AD/B - SMA 1/2 - 1.50	0.500	1.50	1.44
EK010B		CAT40 AD/B - SMA 3/4 - 1.50	0.750	1.50	1.69
EK014B		CAT40 AD/B - SMA 1 - 2.00	1.000	2.00	2.19
EK017B		CAT40 AD/B - SMA 1 1/4 - 2.00	1.250	2.00	2.75
EK021B		CAT40 AD/B - SMA 1 1/2 - 3.00	1.500	3.00	3.81
EL010B	50	CAT50 AD/B - SMA 3/4 - 1.50	0.750	1.50	1.69
EL014B		CAT50 AD/B - SMA 1 - 2.00	1.000	2.00	2.19
EL017B		CAT50 AD/B - SMA 1 1/4 - 2.00	1.250	2.00	2.75
EL021B		CAT50 AD/B - SMA 1 1/2 - 2.50	1.500	2.50	3.81
EL029B		CAT50 AD/B - SMA 2 - 3.00	2.000	3.00	4.88

■ EXTENDED

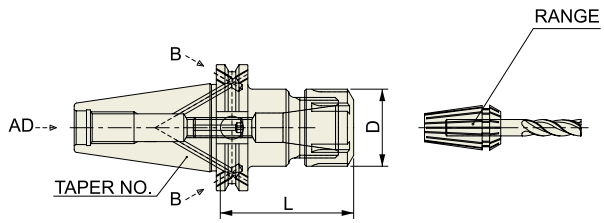
Unit : inch

EDP No.	TAPER No.	MODEL No.	d	L	D
EK306B	40	CAT40 AD/B - SMA 1/2 - 3.50	0.500	3.50	1.44
EK310B		CAT40 AD/B - SMA 3/4 - 3.50	0.750	3.50	1.69
EK314B		CAT40 AD/B - SMA 1 - 4.00	1.000	4.00	2.19
EK317B		CAT40 AD/B - SMA 1 1/4 - 4.00	1.250	4.00	2.75
EK321B		CAT40 AD/B - SMA 1 1/2 - 4.00	1.500	4.00	3.81
EL310B	50	CAT50 AD/B - SMA 3/4 - 3.50	0.750	3.50	1.69
EL314B		CAT50 AD/B - SMA 1 - 4.00	1.000	4.00	2.19
EL317B		CAT50 AD/B - SMA 1 1/4 - 4.00	1.250	4.00	2.75
EL321B		CAT50 AD/B - SMA 1 1/2 - 4.00	1.500	4.00	3.81
EL329B		CAT50 AD/B - SMA 2 - 4.00	2.000	4.00	4.88

* HIGH BALANCED SHELL MILL ARBORS ARE AVAILABLE ON REQUEST.
* DRIVE KEY / LOCK SCREW FOR SHELL MILL ARBORS ON PAGE 993.

SHELL MILL ARBOR BT





JIS B6339 - BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	6.3	15,000	AD/B

■ JIS B6339/MAS 403-BT

■ STANDARD

Unit : inch

EDP No.	TAPER No.	MODEL No.	d	L	D
EH006B	40	BT40 AD/B - SMA 1/2 - 1.75	0.500	1.75	1.44
EH010B		BT40 AD/B - SMA 3/4 - 1.77	0.750	1.77	1.69
EH014B		BT40 AD/B - SMA 1 - 1.77	1.000	1.77	2.19
EH017B		BT40 AD/B - SMA 1 1/4 - 1.81	1.250	1.81	2.75
EH021B		BT40 AD/B - SMA 1 1/2 - 2.36	1.500	2.36	3.81
EI010	50	BT50 - SMA 3/4 - 1.75	0.750	1.75	1.69
EI014		BT50 - SMA 1 - 1.75	1.000	1.75	2.19
EI017		BT50 - SMA 1 1/4 - 1.75	1.250	1.75	2.75
EI021		BT50 - SMA 1/2 - 1.75	1.500	1.75	3.81
EI029		BT50 - SMA 2 - 3.00	2.000	3.00	4.88

■ EXTENDED

Unit : inch

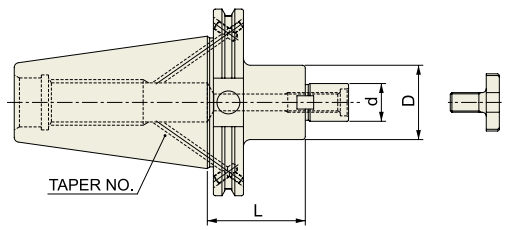
EDP No.	TAPER No.	MODEL No.	d	L	D
EH306B	40	BT40 AD/B - SMA 1/2 - 3.50	0.500	3.50	1.44
EH310B		BT40 AD/B - SMA 3/4 - 4.13	0.750	4.13	1.69
EH314B		BT40 AD/B - SMA 1 - 4.13	1.000	4.13	2.19
EH317B		BT40 AD/B - SMA 1 1/4 - 4.13	1.250	4.13	2.75
EH321B		BT40 AD/B - SMA 1 1/2 - 4.72	1.500	4.72	3.81
EI310	50	BT50 - SMA 3/4 - 3.50	0.750	3.50	1.69
EI314		BT50 - SMA 1 - 4.00	1.000	4.00	2.19
EI317		BT50 - SMA 1 1/4 - 4.00	1.250	4.00	2.75
EI321		BT50 - SMA 1 1/2 - 4.00	1.500	4.00	3.81
EI329		BT50 - SMA 2 - 4.00	2.000	4.00	4.88

* HIGH BALANCED SHELL MILL ARBORS ARE AVAILABLE ON REQUEST.
* DRIVE KEY / LOCK SCREW FOR SHELL MILL ARBORS ON PAGE 993.

DUAL CONTACT SHELL MILL ARBOR

CCT





CCT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	25,000	AD/B

■ CCT (CAT DUAL CONTACT)

Unit : inch

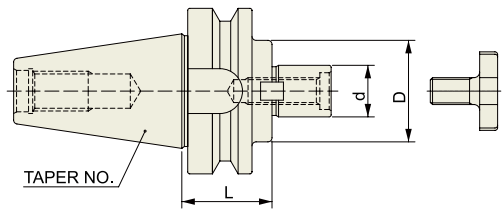
EDP No.	TAPER No.	MODEL No.	d	D	L
EB020	40	CCT40 AD/B - SMA1/2-2.36	0.500	1.438	2.360
EB022		CCT40 AD/B - SMA1/2-4.72	0.500	1.438	4.720
EB024		CCT40 AD/B - SMA3/4-2.36	0.750	1.688	2.360
EB026		CCT40 AD/B - SMA3/4-4.72	0.750	1.688	4.720
EB028		CCT40 AD/B - SMA1-2.36	1.000	2.188	2.360
EB030		CCT40 AD/B - SMA1-4.72	1.000	2.188	4.720
EB032		CCT40 AD/B - SMA1-1/4-2.36	1.250	2.750	2.360
EB034		CCT40 AD/B - SMA1-1/4-4.72	1.250	2.750	4.720
EC020	50	CCT50 AD/B - SMA1/2-2.95	0.500	1.438	2.950
EC022		CCT50 AD/B - SMA1/2-4.72	0.500	1.438	4.720
EC024		CCT50 AD/B - SMA3/4-2.95	0.750	1.688	2.950
EC026		CCT50 AD/B - SMA3/4-4.72	0.750	1.688	4.720
EC028		CCT50 AD/B - SMA1-2.95	1.000	2.188	2.950
EC030		CCT50 AD/B - SMA1-4.72	1.000	2.188	4.720
EC032		CCT50 AD/B - SMA1-1/4-2.95	1.250	2.750	2.950
EC034		CCT50 AD/B - SMA1-1/4-4.72	1.250	2.750	4.720
EC036		CCT50 AD/B - SMA1-1/2-2.95	1.500	3.813	2.950
EC038		CCT50 AD/B - SMA1-1/2-4.72	1.500	3.813	4.720

* DRIVE KEY / LOCK SCREW FOR SHELL MILL ARBORS ON PAGE 993.

DUAL CONTACT SHELL MILL ARBOR

CBT





CBT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	2.5	25,000	AD

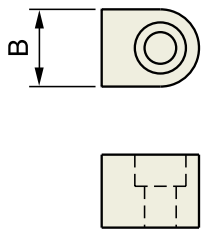
■ CBT (BT DUAL CONTACT)

Unit : inch

EDP No.	TAPER No.	MODEL No.	d	D	L
ED100	30	CBT30 - SMA1/2-1.97	0.500	1.438	1.970
ED102		CBT30 - SMA3/4-1.97	0.750	1.688	1.970
ED104		CBT30 - SMA1-1.97	1.000	2.188	1.970
ED106		CBT30 - SMA1-1/4-1.97	1.250	2.750	1.970
EE100	40	CBT40 - SMA1/2-2.36	0.500	1.438	2.360
EE102		CBT40 - SMA3/4-2.36	0.750	1.688	2.360
EE104		CBT40 - SMA1-2.36	1.000	2.188	2.360
EE106		CBT40 - SMA1-1/4-2.36	1.250	2.750	2.360

* DRIVE KEY / LOCK SCREW FOR SHELL MILL ARBORS ON PAGE 993.

SHELL MILL DRIVE KEY

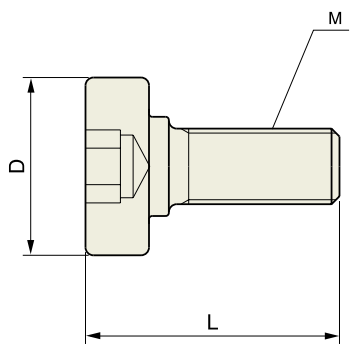


■ **SHELL MILL DRIVE KEY**

Unit : inch

EDP No.	SERIES	B
ZZ021	SMA 1/2 - KEY	0.25
ZZ022	SMA 3/4 - KEY	0.312
ZZ023	SMA 1" - KEY	0.375
ZZ024	SMA 1 1/4 - KEY	0.5
ZZ025	SMA 1 1/2 - KEY	0.625
ZZ026	SMA 2" - KEY	0.75

SHELL MILL LOCK SCREW



■ **SHELL MILL LOCK SCREW**

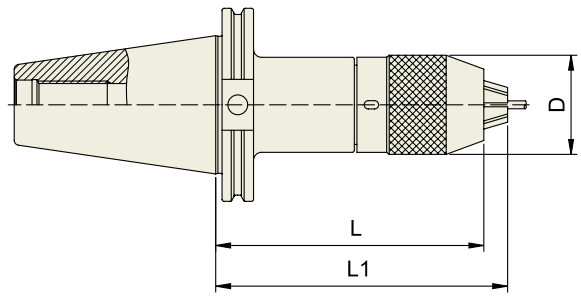
Unit : inch

EDP No.	TYPE(M)	L	D	SERIES
ZZ031	UNF 1/4 - 28	0.906	0.618	SMA 1/2 - SCREW
ZZ032	UNF 3/8 - 24	1.26	0.882	SMA 3/4 - SCREW
ZZ033	UNF 1/2 - 20	1.69	1.181	SMA 1" - SCREW
ZZ034	UNF 5/8 - 18	2.05	1.5	SMA 1 1/4 - SCREW
ZZ035	UNF 3/4 - 16	2.36	1.88	SMA 1 1/2 - SCREW
ZZ036	UN 1" - 14	2.52	2.5	SMA 2" - SCREW

NC DRILL CHUCK

CAT





ASME B5.50 - CAT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	-	-	-

■ ASME B5.50-2009-CAT

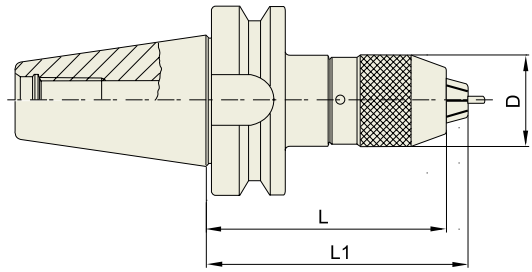
Unit : inch

EDP No.	TAPER No.	MODEL No.	D	L	L1
RK020	40	CAT40 - NPU8-2.76	1.437	2.756	2.980
RK022		CAT40 - NPU8-4.33	1.437	4.331	4.555
RK024		CAT40 - NPU8-5.91	1.437	5.906	5.906
RK026		CAT40 - NPU13-3.54	1.984	3.543	3.937
RK028		CAT40 - NPU13-5.12	1.984	5.118	5.512
RK030		CAT40 - NPU13-5.91	1.984	5.906	6.299
RL020	50	CAT50 - NPU8-3.54	1.437	3.543	3.768
RL022		CAT50 - NPU8-4.33	1.437	4.331	4.555
RL024		CAT50 - NPU8-6.69	1.437	6.693	6.917
RL026		CAT50 - NPU13-3.94	1.984	3.937	4.331
RL028		CAT50 - NPU13-5.12	1.984	5.118	5.512
RL030		CAT50 - NPU13-5.91	1.984	5.906	6.299
RL032		CAT50 - NPU13-6.69	1.984	6.693	7.087

NC DRILL CHUCK

BT





JIS B6339 - BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	-	-	-

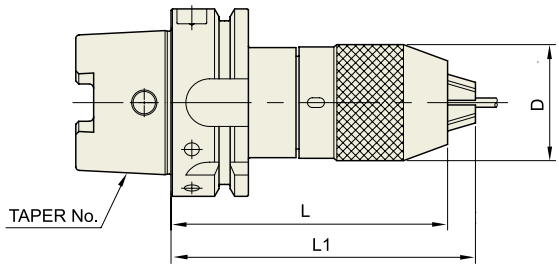
■ JIS B6339/MAS 403-BT

Unit : mm

EDP No.	TAPER No.	MODEL No.	RANGE	D	L(MIN)	L1(MAX)
RG100	30	BT30 - NPU 8-70	0.3~8	36.5	70	75.7
RG102		BT30 - NPU 13-100	1~13	50.4	100	110
RH100	40	BT40 - NPU 8-70	0.3~8	36.5	70	75.7
RH102		BT40 - NPU 8-110	0.3~8	36.5	110	115.7
RH104		BT40 - NPU 8-150	0.3~8	36.5	150	155.7
RH106		BT40 - NPU 13-90	1~13	50.4	90	95.7
RH108		BT40 - NPU 13-130	1~13	50.4	130	140
RH110		BT40 - NPU 13-150	1~13	50.4	150	160

* CHUCKING LENGTH
  - NPU8 : 20mm
  - NPU13 : 28mm

DUAL CONTACT NC DRILL CHUCK — HSK



DIN 69893 - HSK	Taper Accuracy	G Value	RPM	Coolant System
	-	-	-	-

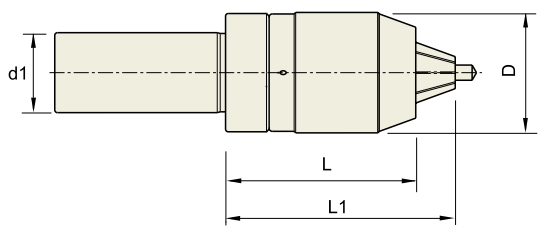
■ **DIN 69893/ISO 12164-1-HSK FORM A**

Unit : mm

EDP No.	TAPER No.	MODEL No.	CAPACITY	D	L(MIN)	L1(MAX)
RQ100	63A	HSK63A - NPU 8-125	0.3 - 8	36.5	125	130.7
RQ102		HSK63A - NPU13-150	1 - 13	50.4	150	160
RR100	100A	HSK100A - NPU 8-130	0.3 - 8	36.5	130	135.7
RR102		HSK100A - NPU13-150	1 - 13	50.4	150	160

STRAIGHT NC DRILL CHUCK — K





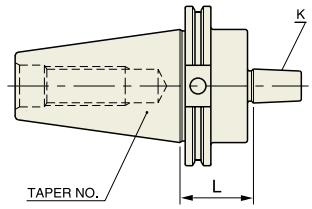
■ **STRAIGHT-K**

Unit : mm

EDP No.	TYPE	MODEL No.	RANGE	D	L(MIN)	L1(MAX)	d1
RS100	32	K32 - NPU 8-70	0.3~8	36.5	70	75.7	32.0
RS102		K32 - NPU 13-100	1~13	50.4	100	110	32.0
RS104	42	K42 - NPU 8-70	0.3~8	36.5	70	75.7	42.0
RS106		K42 - NPU 13-100	1~13	50.4	100	110	42.0

JACOBS TAPER ARBOR CAT





ASME B5.50 - CAT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	-	-	-

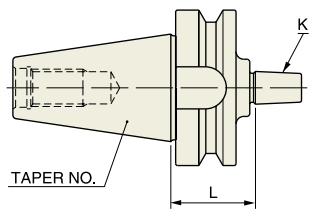
■ **ASME B5.50-2009-CAT**

Unit : inch

EDP No.	TAPER No.	MODEL No.	K	L
GK042	40	CAT40 - JTA 1 - 1.50	#1	1.50
GK043		CAT40 - JTA 2 - 1.50	#2	1.50
GK044		CAT40 - JTA 3 - 1.50	#3	1.50
GK045		CAT40 - JTA 4 - 1.50	#4	1.50
GK046		CAT40 - JTA 6 - 1.50	#6	1.50
GK047		CAT40 - JTA 33 - 1.50	#33	1.50
GL042	50	CAT50 - JTA 1 - 1.50	#1	1.50
GL043		CAT50 - JTA 2 - 1.50	#2	1.50
GL044		CAT50 - JTA 3 - 1.50	#3	1.50
GL045		CAT50 - JTA 4 - 1.50	#4	1.50
GL046		CAT50 - JTA 6 - 1.50	#6	1.50
GL047		CAT50 - JTA 33 - 1.50	#33	1.50

JACOBS TAPER ARBOR BT





JIS B6339 - BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	-	-	-

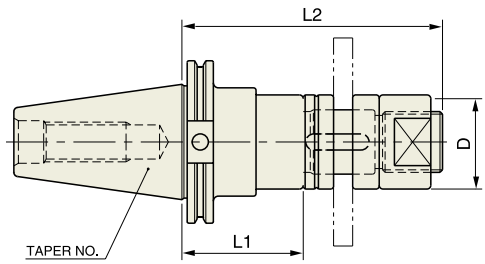
■ **JIS B6339/MAS 403-BT**

Unit : inch

EDP No.	TAPER No.	MODEL No.	K	L
GH042	40	BT40 - JTA 1 - 1.34	#1	1.34
GH043		BT40 - JTA 2 - 1.77	#2	1.77
GH044		BT40 - JTA 3 - 1.77	#3	1.77
GH045		BT40 - JTA 4 - 1.77	#4	1.77
GH046		BT40 - JTA 6 - 1.77	#6	1.77
GH047		BT40 - JTA 33 - 1.77	#33	1.77
GI042	50	BT50 - JTA 1 - 1.80	#1	1.80
GI043		BT50 - JTA 2 - 1.77	#2	1.77
GI044		BT50 - JTA 3 - 1.77	#3	1.77
GI045		BT50 - JTA 4 - 1.77	#4	1.77
GI046		BT50 - JTA 6 - 1.77	#6	1.77
GI047		BT50 - JTA 33 - 1.77	#33	1.77

STUB ARBOR CAT





ASME B5.50 - CAT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	-	-	-

■ **ASME B5.50-2009-CAT**

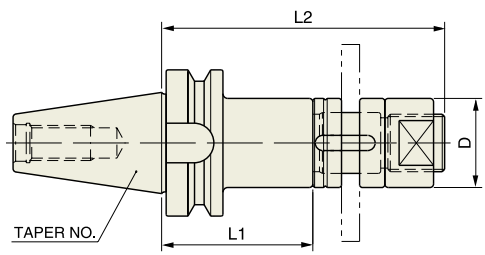
■ **STANDARD**

Unit : inch

EDP No.	TAPER No.	MODEL No.	CUTTER SIZE I.D	L1	D	L2
PK014	40	CAT40 - STUB 1 - 4.00	1.000	4.00	1.56	6.25
PK017		CAT40 - STUB 1 1/4 - 4.00	1.250	4.00	1.87	6.50
PK021		CAT40 - STUB 1 1/2 - 4.00	1.500	4.00	2.12	6.75
PL014	50	CAT50 - STUB 1 - 4.00	1.000	4.00	1.56	6.25
PL017		CAT50 - STUB 1 1/4 - 4.00	1.250	4.00	1.87	6.50
PL021		CAT50 - STUB 1 1/2 - 4.00	1.500	4.00	2.12	6.75

STUB ARBOR BT





JIS B6339 - BT	Taper Accuracy	G Value	RPM	Coolant System
	AT3	-	-	-

■ **JIS B6339/MAS 403-BT**

■ **STANDARD**

Unit : inch

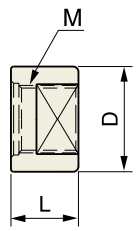
EDP No.	TAPER No.	MODEL No.	CUTTER SIZE I.D	L1	D	L2
PH014	40	BT40 - STUB 1 - 3.00	1.000	3.00	1.56	5.25
PH017		BT40 - STUB 1 1/4 - 3.00	1.250	3.00	1.87	5.50
PH021		BT40 - STUB 1 1/2 - 3.00	1.500	3.00	2.12	5.75
PI014	50	BT50 - STUB 1 - 4.00	1.000	4.00	1.56	6.25
PI017		BT50 - STUB 1 1/4 - 4.00	1.250	4.00	1.87	6.50
PI021		BT50 - STUB 1 1/2 - 4.00	1.500	4.00	2.12	6.75

* NUTS / KEY / SPACER FOR STUB ARBORS ON PAGE 999.

NUT

Unit : inch

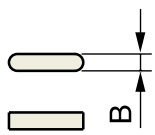
EDP No.	TYPE(M)	L	D	SERIES
ZZ041	UNF 1 -12	1.00	1.56	STUB 1"
ZZ046	UNF1 1/4-12	1.25	1.87	STUB 1 1/4
ZZ052	UNF1 1/2-12	1.50	2.12	STUB 1 1/2



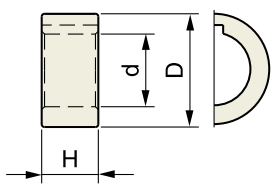
KEY

Unit : inch

EDP No.	SERIES	B
ZZ042	STUB 1	0.25
ZZ047	STUB 1 1/4	0.312
ZZ054	STUB 1 1/2	0.375



SPACER



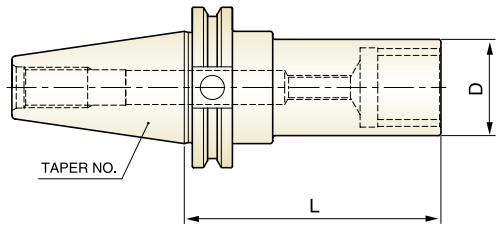
Unit : inch

EDP No.	TYPE	H	D	d	SERIES
ZZ043	1/4 - SPACER	0.25	1.56	1.00	STUB 1"
ZZ044	3/8 - SPACER	0.375	1.56	1.00	STUB 1"
ZZ045	3/4 - SPACER	0.75	1.56	1.00	STUB 1"

EDP No.	TYPE	H	D	d	SERIES
ZZ048	1/4 - SPACER	0.25	1.87	1.25	STUB 1 1/4
ZZ049	3/8 - SPACER	0.375	1.87	1.25	STUB 1 1/4
ZZ050	3/4 - SPACER	0.75	1.87	1.25	STUB 1 1/4

EDP No.	TYPE	H	D	d	SERIES
ZZ037	1/4 - SPACER	0.25	2.12	1.50	STUB 1 1/2
ZZ038	3/8 - SPACER	0.375	2.12	1.50	STUB 1 1/2
ZZ039	3/4 - SPACER	0.75	2.12	1.50	STUB 1 1/2

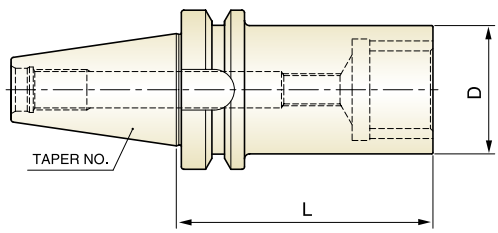
SLITTING SAW ARBOR — CAT



■ STANDARD

EDP No.	Type	TAPER No.	Collet Series	L	D
QK014	CAT40-SSA1˝- 4.00	40	1.000	4.00	1.50
QK017	CAT40-SSA1 1/4 - 4.00	40	1.250	4.00	2.00
QL014	CAT50-SSA1˝- 4.00	50	1.000	4.00	1.50
QL017	CAT50-SSA1 1/4 - 4.00	50	1.250	4.00	2.00

SLITTING SAW ARBOR — BT

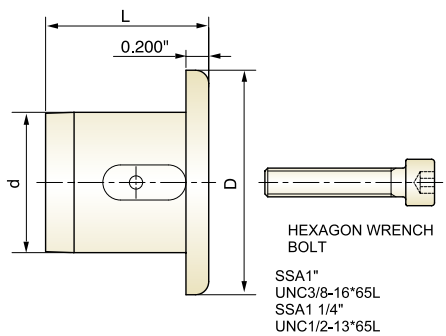


■ STANDARD

EDP No.	Type	TAPER No.	Collet Series	L	D
QH014	BT40 - SSA 1˝ - 4.00	40	1.000	4.00	1.50
QH017	BT40 - SSA 1 1/4 - 4.00	40	1.250	4.00	2.00

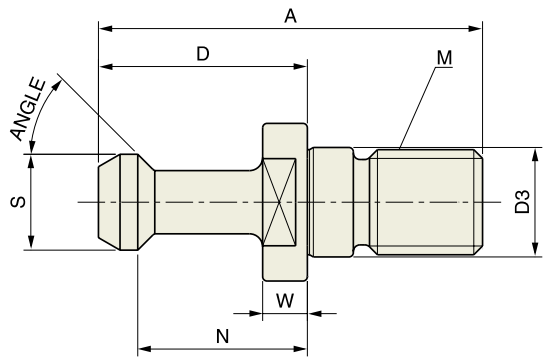
CAP — CAT /BT

EDP No.	Type	L	D	d
ZZ051	SSA 1˝	1.02	1.50	1.00
ZZ053	SSA 1 1/4˝	1.30	2.00	1.25



PULL STUD





EDP NO.	MODEL No.	Angle	S	P	D3	A	N	D	W	M
SK661	CAT-40 ANSI C	45°	0.740	0.490	0.490	1.500	0.440	0.640	0.120	5/8-11
SL661	CAT-50 ANSI C	45°	1.140	0.820	0.820	2.300	0.700	1.000	0.200	1-8
SK561	CAT-40 ANSI	45°	0.740	0.490	0.490	1.500	0.440	0.640	0.120	5/8-11
SL561	CAT-50 ANSI	45°	1.140	0.820	0.820	2.300	0.700	1.000	0.200	1-8
SK761	CAT-40 TYPE I	45°	0.590	0.394	0.512	2.250	0.990	1.266	0.120	5/8-11
SK762	CAT-40 TYPE II	60°	0.590	0.394	0.512	2.250	0.990	1.266	0.120	5/8-11
SK763	CAT-40 TYPE "	90°	0.590	0.394	0.512	2.250	0.990	1.266	0.120	5/8-11
SK861	CAT-40 TYPE "C	45°	0.590	0.394	0.512	2.250	0.990	1.266	0.120	5/8-11
SK862	CAT-40 TYPE "C	60°	0.590	0.394	0.512	2.250	0.990	1.266	0.120	5/8-11
SK863	CAT-40 TYPE "C	90°	0.590	0.394	0.512	2.250	0.990	1.266	0.120	5/8-11
SL761	CAT-50 TYPE "	45°	0.906	0.669	0.827	3.346	1.377	1.772	0.390	1-8
SL762	CAT-50 TYPE "	60°	0.906	0.669	0.827	3.346	1.377	1.772	0.390	1-8
SL763	CAT-50 TYPE "	90°	0.906	0.669	0.827	3.346	1.377	1.772	0.390	1-8
SL861	CAT-50 TYPE "C	45°	0.906	0.669	0.827	3.346	1.377	1.772	0.390	1-8
SL862	CAT-50 TYPE "C	60°	0.906	0.669	0.827	3.346	1.377	1.772	0.390	1-8
SL863	CAT-50 TYPE "C	90°	0.906	0.669	0.827	3.346	1.377	1.772	0.390	1-8
SH061	BT-40 PS 1	45°	0.590	0.394	0.669	2.360	1.102	1.378	0.230	M16
SI061	BT-50 PS 5	45°	0.905	0.669	0.984	3.346	1.377	1.772	0.390	M24
SH062	BT-40 PS 2	60°	0.590	0.394	0.669	2.360	1.102	1.378	0.230	M16
SI062	BT-50 PS 6	60°	0.905	0.669	0.984	3.346	1.377	1.772	0.390	M24
SH063	BT-40 PS 8	90°	0.590	0.394	0.669	2.360	1.102	1.378	0.230	M16
SI063	BT-50 PS O	90°	0.905	0.669	0.984	3.346	1.377	1.772	0.390	M24
SK161	CAT-40 TYPE "	45°	0.590	0.394	0.512	2.250	0.990	1.266	0.236	5/8-11
SK162	CAT-40 TYPE "	60°	0.590	0.394	0.512	2.250	0.990	1.266	0.236	5/8-11
SK163	CAT-40 TYPE "	90°	0.590	0.394	0.512	2.250	0.990	1.266	0.236	5/8-11
SK261	CAT-40 TYPE "C	45°	0.590	0.394	0.512	2.250	0.990	1.266	0.236	5/8-11
SK262	CAT-40 TYPE "C	60°	0.590	0.394	0.512	2.250	0.990	1.266	0.236	5/8-11
SK263	CAT-40 TYPE "C	90°	0.590	0.394	0.512	2.250	0.990	1.266	0.236	5/8-11

* SUFFIX "C" IN MODEL NO. IS THROUGH COOLANT TYPE .
* IMPROPER SELECTION OF PULL STUDS CAN CAUSE SERIOUS DAMAGE AND POSSIBLE INJURY.
  PLEASE MAKE SURE THE MACHINE ACCEPTS THE PULL STUD YOU SELECT.

TOOL CLAMP

EDP No.	MODEL No.	SHANK FLANGE TYPE
RK099	TCT-40	CAT-40
RH099	TBT-40	BT-40
RL099	TCT-50	CAT-50
RM099	TBT-50	BT-50

*AVAILABLE IN ALL TAPERS.

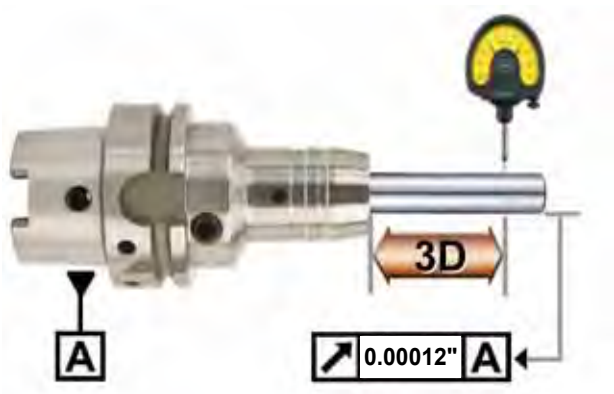


FEATURES :

* ACCESS BOTH ENDS OF YOUR TOOL HOLDERS SIMULTANEOUSLY
* MINIMIZES TOOL HOLDERS HANDLING
* SPEEDS UP YOUR OPERATIONS
* CONVENIENT

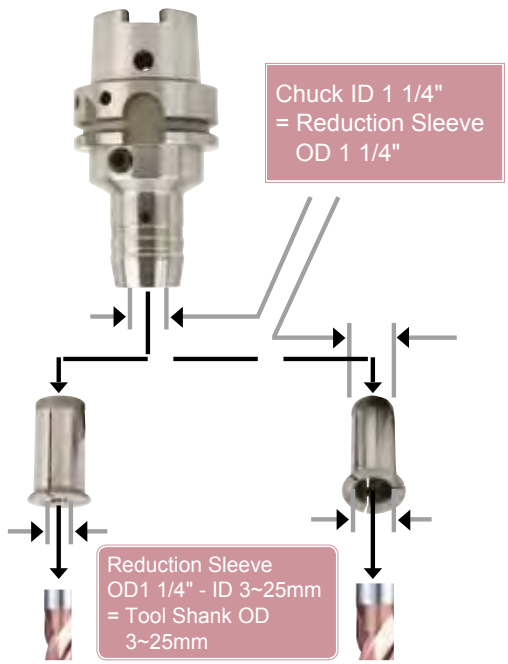
HYDRAULIC CHUCK

01 High precision T.I.R : ≤ 0.00012" (Without Reduction Sleeve)

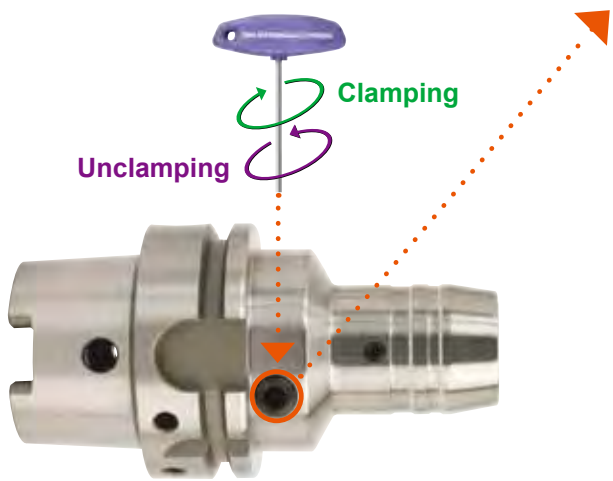


- Less than 0.00012" T.I.R
  - Suitable for high-speed precision machining

02 Flexible use of cutting tools by using reduction sleeves

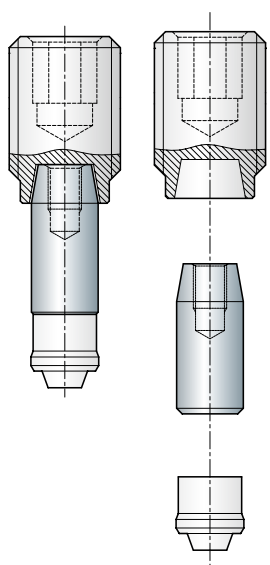


03 Easy Tool Change



- Easy clamping and unclamping by use of T wrench
  - Reducing tool change time

CLAMPING SCREW



PATENT
Clamping Screw

PATENT
Piston Pin

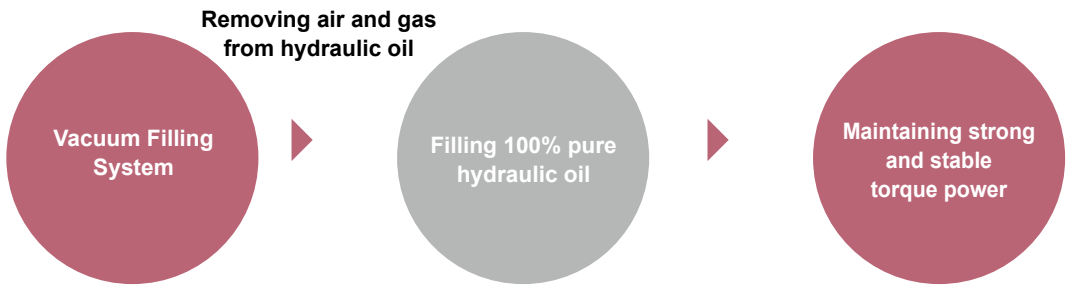
Oil Seal

HYDRAULIC CHUCK

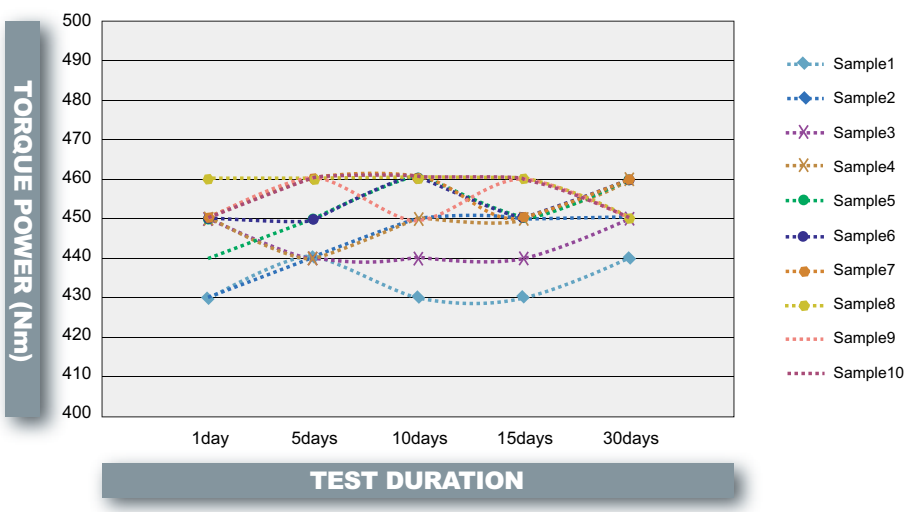
04 Strong Torque Power

Hydraulic Chuck ID (mm)	Tool Shank OD (mm)	Applicable RPM	Minimum clamping depth (mm)	Min. Torque Power (Nm)
6	6	25,000	27	16
8	8	25,000	27	23
10	10	25,000	32	45
12	12	25,000	27	90
14	14	25,000	37	110
16	16	25,000	42	185
18	18	25,000	42	240
20	20	25,000	42	330
25	25	25,000	48	400
32	32	25,000	55	650

- **Tool holder ID Tolerance : H6**
- **Operating Temperature : 68~122 °F**
- **Maximum oil pressure of coolant oil**



05 Test of torque power and hydraulic oil leakage



- TEST Model : BT40AD/B-HC20S-72.5
- No oil leakage for long period ⇒ Maintaining stable torque power

HYDRAULIC CHUCK

Radial tool length pre-setting type

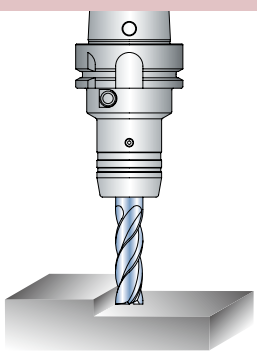
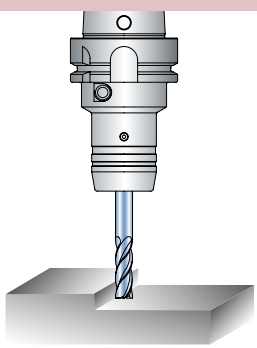
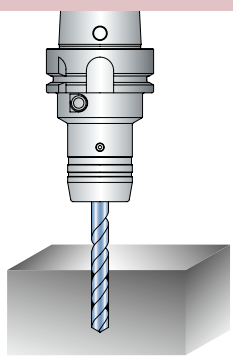
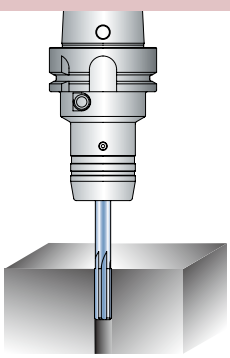
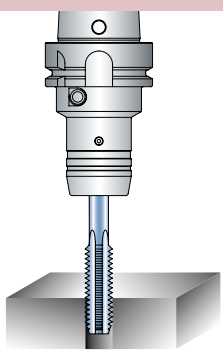
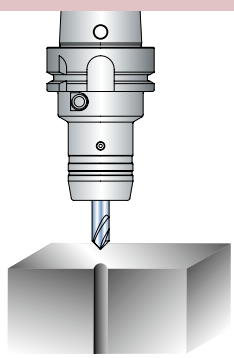
- Easy to adjust pre-setting length of cutting tool (Saving time to pre-set cutting tool to one fifth compared with conventional Hydraulic Chuck)
- Precise adjustment of cutting tool length
- Designed to separate tool length adjustment screw from clamping screw





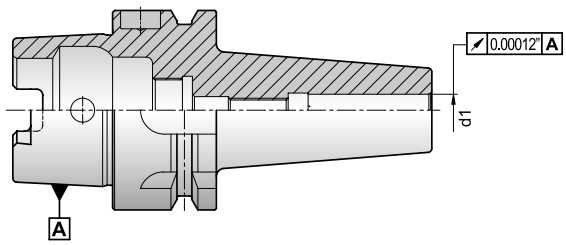
Adjustable range of
cutting tool length : 0~0.394"

APPLICATION

Milling	High Speed Cutting	Fine Drilling
		
Reaming	**Tapping & Thread Milling**	**Chamfering**
		

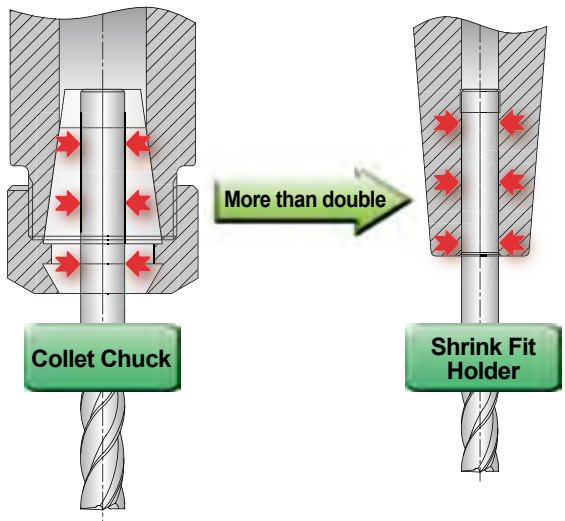
SHRINK FIT HOLDER

01 High Precision ID Run-out : ≤0.00012"



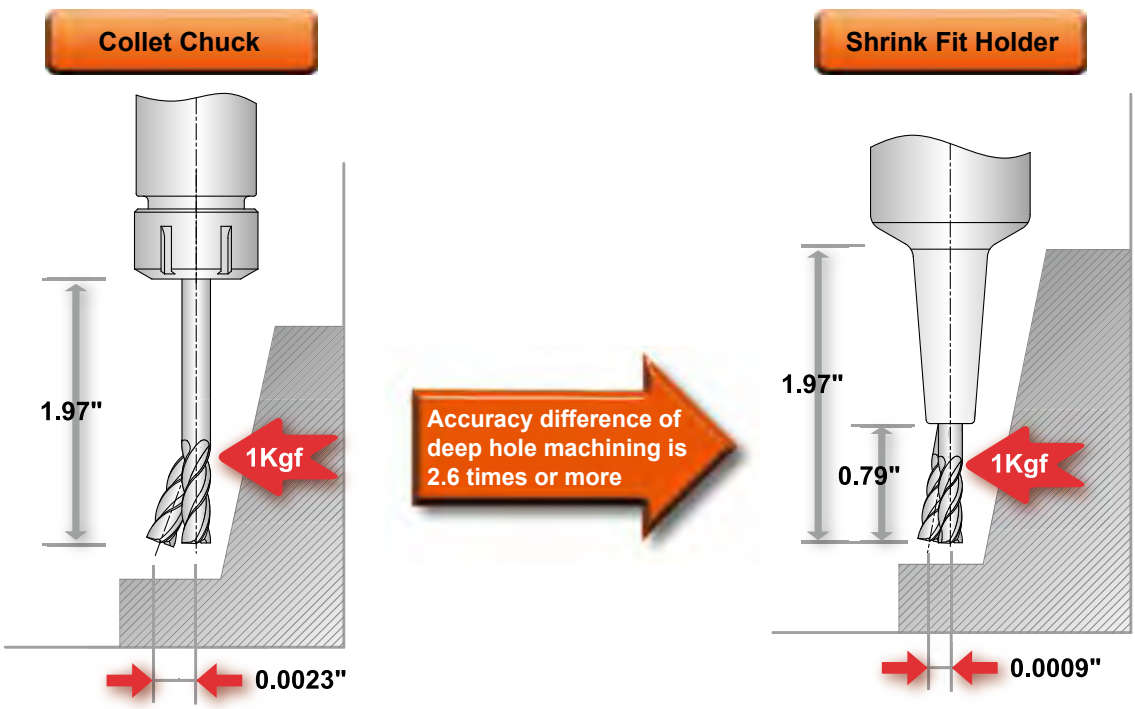
• Less than 0.00012" of Tool Holder accuracy at I.D.

02 Strong and consistent torque power



• Achieving strong torque power by integration of chuck and tool

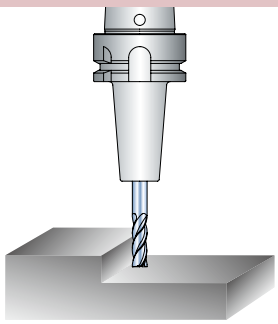
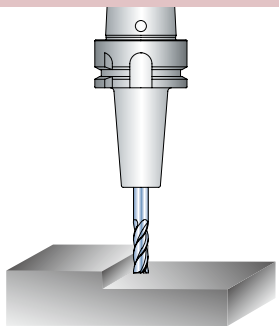
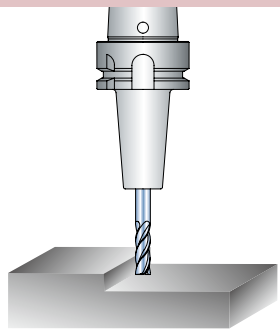
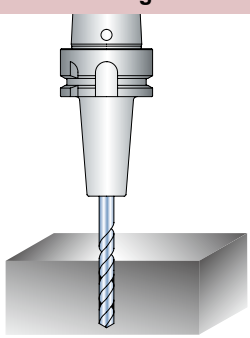
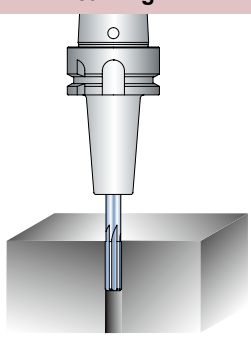
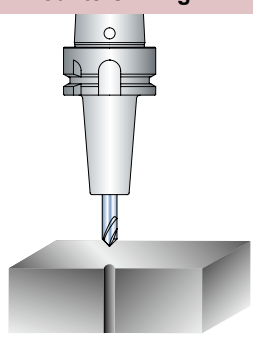
03 Deep hole Machining



• Suitable for high-speed precision deep hole machining

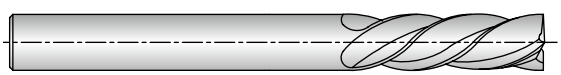
SHRINK FIT HOLDER

APPLICATION

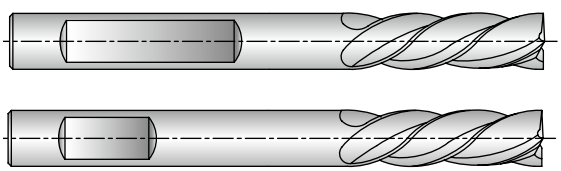
Rough Milling	Finish Milling	High Speed Cutting
		
Drilling	**Reaming**	**Countersinking**
		

04 Shank type of cutting tool

Straight shank



One weldon flat shaft type



• One Weldon flat shaft type tool is usable, but there is a possibility that the I.D of shrink fit holder may be deformed.

05 Material of cutting tool



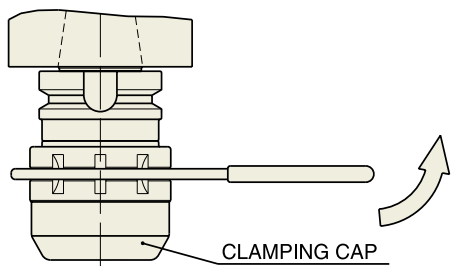
MILLING CHUCK

SPECIAL FEATURES

TOOL CLAMPING

For complete tool clamping, clamping cap should be fully turned up to the point where the bottom of clamping cap touches the flange of tool holder.

CLAMPING



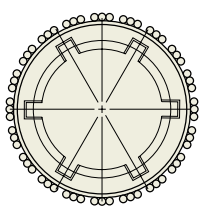
HOLDING POWER

Thicker body structure od clamping cap assures strong holding power maximum durability and smooth movement of needle bearings 300 kgf holding force.

ACCURACY

Slots on the inside of bore help prevent excessive oil and grime from building up between shank of end mill and inside of bore which increases accuracy and holding power.

STRUCTURE



DURABILITY

Special engineered steels and alloys are used in the bearing and stop seal to increase life and reduce maintenance.

T.I.R and TOLEARANCE

T.I.R (Total Indicated Run-out)

HYDRAULIC CHUCK
Concentric to 0.00012" T.I.R (at 3D)

SHRINK FIT HOLDER
Concentric to 0.00012" T.I.R (at I.D)

ER COLLET CHUCK
Concentric to 0.0002" T.I.R (at I.D)

END MILL HOLDER
Concentric to 0.0002" T.I.R (at I.D)

SLITTING SAW ARBOR
Face perpendicular to taper within 0.0002" T.I.R (at I.D)

STUB ARBOR
Face perpendicular to taper within 0.0002" T.I.R (at I.D)

SHELL MILL ARBOR
Face perpendicular to taper within 0.0001" T.I.R
Out diameter to taper within 0.0002" T.I.R

MORSE & JACOBS TAPER ARBOR
Concentric to 0.0003" T.I.R

* To put tool precisely on spindle center line for getting correct T.I.R.

---

01 **AT3 or better accuracy on all shank tapers**

02 **Accurate and rigid tool holder mounting to spindle**

TAPER	AT3
#30	0.000078"
#40	0.00012"
#50	0.00016"

03 **The bore diameter of all tool holders is controlled by H5 grade tolerance limit.**

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UGMG53	950
UGMG54	950
UGMGF57	1085
UGMGF58	1088
UGMGF59	1090
UI052	1333
UI352	1333
UL052	1332
UL352	1332
VB020~VB050	1289
VC020~VC052	1289
VD020~VD032	1290
VE020~VE046	1290
VG020~VG032	1288
VH012	1333
VH020~VH046	1288
VK012	1332
VK020~VK050	1287
VK312	1332
VL020~VL050	1287
VQ020~VQ048	1291
VR020~VR046	1291
VS010~VS012	1292
VS010M~VS013M	1293
VS020~VS023	1292
VS020M~VS024M	1293
VS030~VS035	1292
VS030M~VS036M	1293
VS040~VS046	1292
VS050~VS057	1292
VS110M~VS113M	1294
VS210M~VS214M	1294
VS310M~VS316M	1294
VS410M~VS418M	1294
VS510M~VS517M	1294
WB020~WB034	1273
WB020HMC~WB042HMC	1274
WB100HMC~WB122HMC	1274
WC020~WC034	1273
WC020HMC~WC030HMC	1274
WC100HMC~WC110HMC	1274
WD020~WD030	1275
WD100~WD114	1275
WE020~WE034	1275
WE020HMC~WE042HMC	1276
WE100~WE118	1275
WE100HMC~WE122HMC	1276
WG020~WG030	1268
WG100~WG114	1269
WG100HCR~WG102HCR	1271
WG100SNR	1270
WH020~WH034	1268
WH100~WH118	1269
WH100HCR~WH104HCR	1271
WH100HMC~WH122HMC	1272
WH100SNR~WH102SNR	1270
WK020~WK032	1263
WK020HMC~WK042HMC	1267
WK020SNR~WK024SNR	1265
WK060~WK086	1264
WK100HCR~WK104HCR	1266
WK100HMC~WK122HMC	1267
WK100SNR~WK102SNR	1265
WL020~WL032	1263
WL020HMC~WL030HMC	1267
WL020SNR~WL028SNR	1265
WL060~WL070	1264
WL100HCR~WL104HCR	1266
WL100HMC~WL110HMC	1267
WL100SNR~WL104SNR	1265
WQ020~WQ030	1277
WQ020HMC~WQ030HMC	1280
WQ100HCR~WQ118HCR	1279
WQ100HMC~WQ110HMC	1280
WQ100SNR~WQ102SNR	1278
WR020~WR032	1277
WR100HCR~WR118HCR	1279
WR100HMC~WR110HMC	1280
WR100SNR~WR102SNR	1279
WR200HMC~WR210HMC	1280
XB1A	566
XB1D	566
XB1N	571
XB2C	566
XB2N	571
XBAD	571
XGMF15	584
XGMF17	585
XGMF20	586
XGMF25	587
XGMF29	588
XR1A	569
XR1D	569
XR2A	569
XRAA	574~575
XRAD	574~575
XRBA	574~575
Z0	463~464
Z1	463~464
Z2	463~464
Z3	463~464
Z4	465~466
Z5	465~466
Z6	465~466
Z7	465~466
Z8	467
Z9	467
ZA	467
ZB	467
ZBC	568
ZBC	573
ZBS	567
ZBS	572
ZBT	567
ZBT	572
ZC	467
ZD	467
ZF	462
ZMC	589
ZMS	590
ZMT	591
ZRS	570
ZRS	576
ZRT	570
ZRT	576
ZZ000~ZZ013	1308
ZZ021~ZZ026	1349
ZZ031~ZZ036	1349
ZZ037~ZZ039	1355
ZZ041~ZZ052	1355
ZZ042~ZZ054	1355
ZZ043~ZZ045	1355
ZZ048~ZZ050	1355
ZZ051~ZZ053	1356
ZZ056~ZZ058	1339
ZZ060	1317
ZZ061~ZZ066	1317
ZZ062~ZZ067	1317
ZZ065~ZZ074	1317
ZZ069~ZZ072	1317
ZZ070~ZZ073	1317
ZZ081~ZZ087	1334
ZZ082~ZZ088	1334
ZZ083~ZZ089	1334
ZZ501~ZZ503	1356