

**YU13**  
**AMERICA**



# CUTTING TOOLS

DRILLING TOOLS / THREADING TOOLS / MILLING TOOLS / OTHER TOOLS

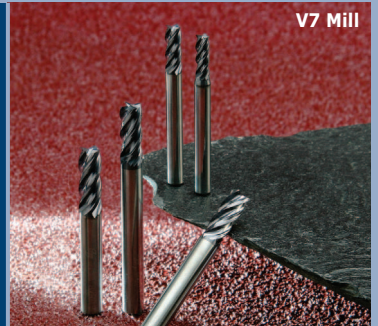
[www.yg1usa.com](http://www.yg1usa.com)

 YG-1 CO., LTD.

CBN End Mill



V7 Mill



X5070 End Mill



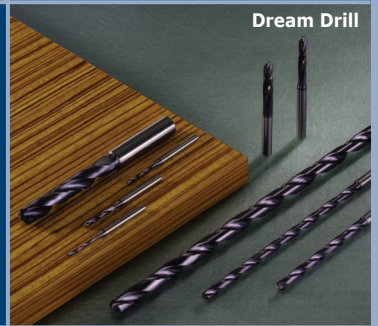
D-Power End Mill



Multi-1 Drill



Dream Drill



Tank-Power End Mill



HSS End Mill



i-Xmill



i-Dream Drill



Spade Drill Inserts



Combo Tap







# GUIDE LINE TO ICONS

## Tool Material

- CBN** Cubic Boron Nitride
- NG HM** Nano Grain Carbide
- MG HM** Micro Grain Carbide
- YPM** YG-1 Premium Powder Metallurgy HSS
- PREMIUM HSS-PM** Premium Powder Metallurgy HSS
- HSS Co8** 8% Cobalt HSS
- HSS EX** High Vanadium HSS
- HSS-E** 5% Cobalt HSS
- HSS** High Speed Steel





## Helix Angle

-   End Mills
-   Drills
-   Taps

## Point Angle

-  




## Tolerance of Dimension

-   Tolerance of Outside Diameter
-   Tolerance of Shank Diameter




## Standard of Tools

- ANSI** ANSI Standard
- DIN 338** Number of DIN Standard





## Tolerance of Radius

-   Tolerance of Ball Radius  
±.0002", ±.0004"
-  Tolerance of Corner Radius  
±.0002"






## The Type of Shank

-  Plain shank
-  Flat shank
-  Range of Morse Taper Shank

## The Type of Periphery

-  Roughing, Coarse Pitch
-  Roughing, Fine Pitch
-  Roughing for Aluminium
-  Roughing & Finishing type

## No. of Flute

-    1,2,3 Flutes
-  4~6 Flutes
-  3&4 Flutes

# GUIDE LINE TO ICONS

## Thread Angle



## Chamfer Lead



## Class of Thread



## Cutting Condition



Cutting Condition of Tool  
See the Page 000

## Surface Treatment

**Bright**

Bright Finish

**TiCN**

Titanium Carbon Nitride Coating

**Hardslick**

TiAlN+WC/C Coating

**Steam  
Oxide**

Steam Tempered

**TiN**

Titanium Nitride Coating

**TiAlN**

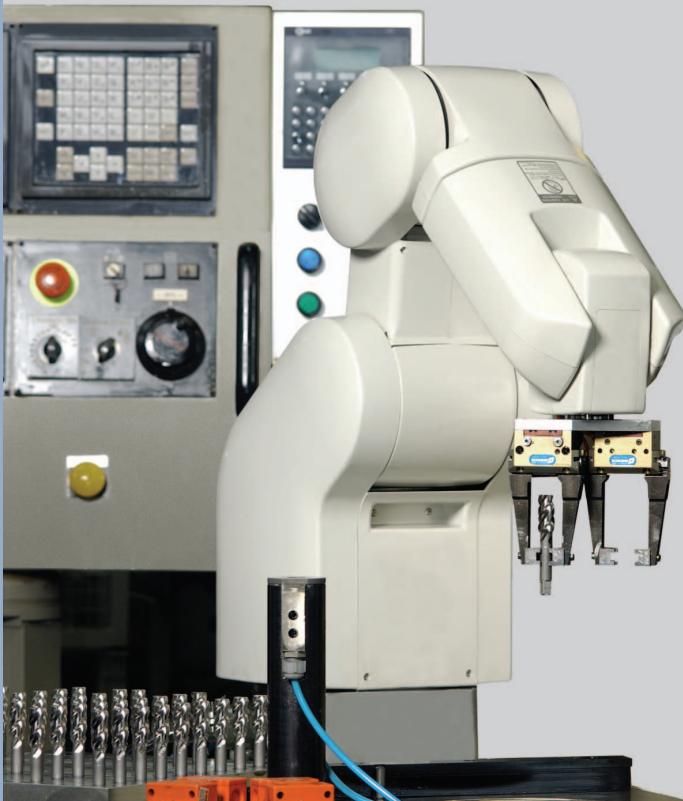
Titanium Aluminum Nitride Coating

**BLUE**

Blue-Coating

## Another name for our product is No.1

It would be a disgrace to the name of YG-1, if the No.1 doesn't have any significance. To become the No.1 in technology and quality, the 24 hours of YG-1 does not stop to rest.





# CUTTING TOOLS



# DRILLING

	PRODUCTS	DESCRIPTION	PAGE
	<b>i-DREAM DRILLS, CARBIDE INSERT</b>	- For Steels and Stainless Steel Alloys	<b>29</b>
	<b>SOLID CARBIDE DREAM DRILLS (with &amp; without Coolant Holes)</b>	- With & without Coolant Holes General Purpose HRc30 to HRc50	<b>43</b>
	<b>SOLID CARBIDE DREAM DRILLS - INOX (with Coolant Holes)</b>	- with Coolant Holes Stainless Steels, Nickel Alloys and Titanium up to HRc35.	<b>61</b>
	<b>SOLID CARBIDE DREAM DRILLS - ALU (with Coolant Holes)</b>	- with Coolant Holes for Aluminum & Aluminum Alloys	<b>73</b>
	<b>SOLID CARBIDE DREAM DRILLS - MQL TYPE (with Coolant Holes)</b>	- with Coolant Holes Minimum Quantity Lubrication. Drilling Deep Holes, 10D, 15D & 20D	<b>81</b>
	<b>SOLID CARBIDE DREAM DRILLS - For HIGH HARDENED STEELS</b>	- High Hardened Steels, HRc50~HRc70	<b>87</b>
	<b>STANDARD CARBIDE DRILLS</b>	- General Purpose 118° Point	<b>95</b>
	<b>HSS-PM MULTI-1 DRILLS</b>	- HSS-PM MULTI-1 DRILLS Multi Purpose Drilling. Particularly for Stainless Steels	<b>103</b>
	<b>HPD DRILLS</b>	- HSS-EX HPD STRAIGHT SHANK DRILLS for Stainless Steels	<b>111</b>

# DRILLING

	PRODUCTS	DESCRIPTION	PAGE
	HSS GOLD-P DRILLS	- Gold-P Coating	<b>121</b>
	HSS STRAIGHT SHANK DRILLS	- General Purpose	<b>141</b>
	AIRCRAFT DRILLS	- 6 and 12 inch Length Drills	<b>163</b>
	SILVER & DEMING DRILLS	- 118° Split Point 3 Flats Black and Gold	<b>173</b>
	HSS MORSE TAPER SHANK DRILLS	- General Purpose Standard Length	<b>179</b>
	HSS (8% Cobalt) NC-SPOTTING DRILLS	- HSS(8% Cobalt) Centering and Chamfering of Holes	<b>185</b>
	HSS CENTER DRILLS	- Regular and Long Length	<b>191</b>
	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	<b>195</b>
	TECHNICAL DATA		<b>237</b>

# THREADING






	PRODUCTS	DESCRIPTION	PAGE
	<b>HSS COMBO TAPS (Spiral Point &amp; Spiral Flute)</b>	- Spiral Point and Spiral Flute Taps Multi Purpose tapping, YG-1's Patent, HSS-EX for Prevention of Oversize Threads	<b>261</b>
	<b>HSS SPIRAL FLUTE TAPS</b>	- Tapping Blind Holes, HSS-E & HSS-PM	<b>269</b>
	<b>HSS SPIRAL POINT TAPS</b>	- Tapping Through Holes, HSS-E & HSS-PM	<b>293</b>
	<b>HSS TAPER PIPE TAPS</b>	- Tapping NPT and NPTF Pipe threads	<b>313</b>
	<b>HSS FORMING TAPS</b>	- Tapping by Forming Soft Materials, HSS-E & HSS-PM	<b>319</b>
	<b>HSS STANDARD TAPS</b>	- Spiral Point and Spiral Flute Taps	<b>325</b>
	<b>HSS HAND TAPS</b>		<b>329</b>
	<b>TECHNICAL DATA</b>		<b>333</b>




# MILLING

	PRODUCTS	DESCRIPTION	PAGE
	<b>CBN END MILLS</b>	- Cubic Boron Nitride, Machining High Hardened Steels up to HRc70, Mirror Finish	<b>375</b>
	<b>i-Xmills, CARBIDE INSERT END MILLS</b>	- Available for General Steels and for Hardened Steels up to HRc65	<b>381</b>
	<b>X5070 NANO SOLID CARBIDE END MILLS</b>	- High Hardened Steels HRc45 to HRc70, High Speed Machining, Dry Cutting	<b>397</b>
	<b>X-SPEED ROUGHER SOLID CARBIDE END MILLS</b>	- Carbide Roughing End Mills for High-Feed Machining with reduced vibrations	<b>431</b>
	<b>X-POWER SOLID CARBIDE END MILLS</b>	- Medium Steels to High Hardened Steels up to HRc70	<b>441</b>
	<b>JET-POWER SOLID CARBIDE &amp; HSS-PM END MILLS</b>	- Exotic materials like Stainless Steels, Nickel alloys and Titanium	<b>529</b>
	<b>V7 Mill STEEL SOLID CARBIDE END MILLS</b>	- Silent Cutting of Steels up to HRc40. Designed as Unequal Leads.	<b>551</b>
	<b>V7 Mill INOX SOLID CARBIDE END MILLS</b>	- Silent Cutting of Stainless Steels up to HRc40. Designed as Variable Leads, YG-1's Patent.	<b>563</b>
	<b>ALU-POWER SOLID CARBIDE &amp; HSS-PM END MILLS</b>	- Silent Cutting of Aluminium Alloys Mirror Surface.	<b>581</b>

# MILLING

	PRODUCTS	DESCRIPTION	PAGE
	<b>D-POWER DIAMOND COATED SOLID CARBIDE END MILLS</b>	- Diamond Coated Carbide End Mills for Graphite	<b>625</b>
	<b>GENERAL SOLID CARBIDE END MILLS</b>	- General Purpose, Non-coated, Many Coatings Available	<b>641</b>
	<b>TANK-POWER HSS-PM END MILLS</b>	- Next Generation of Powered Metal End Mills Higher Edge Strength & Feed Rates	<b>685</b>
	<b>COBALT &amp; HSS END MILLS</b>	- General Purpose, Non-coated, Many Coatings Available	<b>703</b>
	<b>TECHNICAL DATA</b>		<b>787</b>

# OTHER TOOLS

	PRODUCTS	DESCRIPTION	PAGE
	<b>TOOL HOLDERS</b>	- According to CAT + BT Standards	<b>797</b>

# CASE STUDY ♦ i-DREAM DRILL (Reference page : p.29 ~ p.42)

## ● i-DREAM DRILL - GENERAL

### TOOL

HOLDER	ZB0302
INSERT	Y03B07

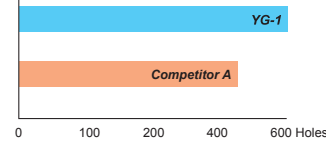
### WORKPIECE - Structural Steels

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

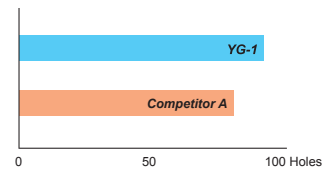
### WORKPIECE - Stainless Steels

AISI	304
DIN	X5CrNi189
JIS	SUS304

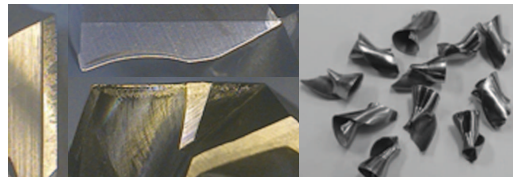
### CONDITIONS

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



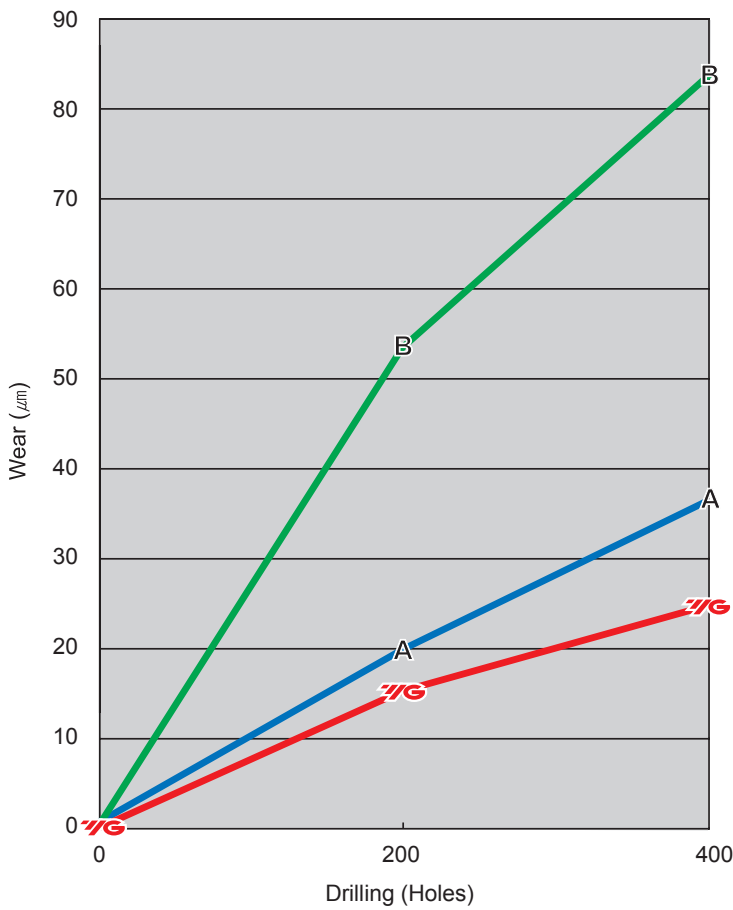
#### YG-1 (Total Drilling 100 Holes)



#### Competitor A (Total Drilling 80 Holes)



# CASE STUDY ♦ DREAM DRILLS INOX (Reference page : p.61 ~ p.72)



- YG-1
- Competitor A
- Competitor B

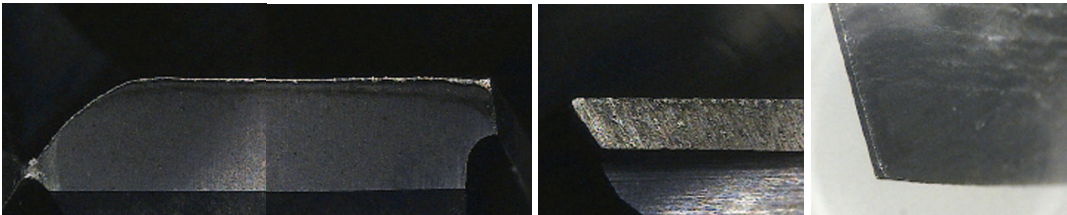
## CUTTING CONDITION

**Tools :** DREAM DRILLS-INOX  
**Size :** Ø6 x Ø6 x 44 x 82  
**Work Material :**

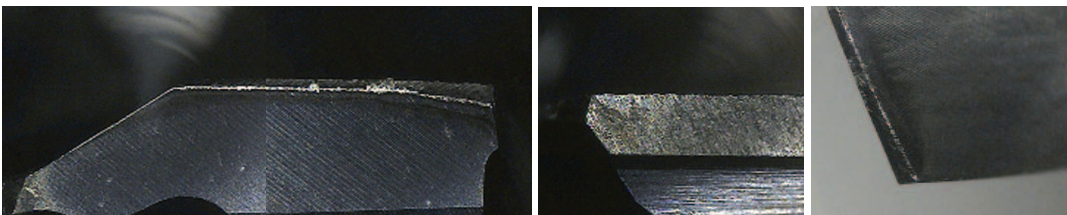
- JIS:SUS304
- DIN:X5CrNi1810 (X4CrNi18-10)
- WR:1.4301

**R.P.M :** 3700 rev./min.  
**SFM :** 229 ft/min.  
**Feed :** .0028 inch/rev.  
**Drilling Depth :** .94"  
**Coolant :** Wet Cut

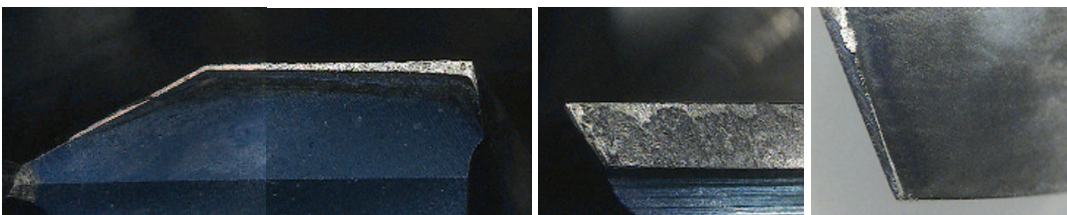
**YG-1 (Total Drilling 400 Holes)**



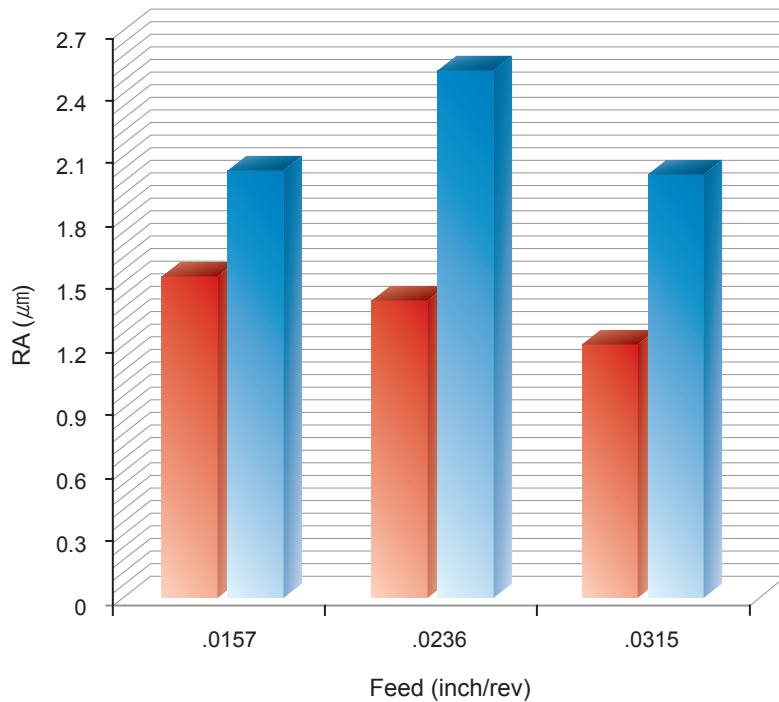
**Competitor A (Total Drilling 400 Holes)**



**Competitor B (Total Drilling 400 Holes)**



● **Surface Roughness of Work Piece**



■ YG-1  
■ COMPETITOR

**CUTTING CONDITION**

**Tools :** DREAM DRILL ALU

**Size :** Ø10

**Work Material :**

- Al(6061)
- JIS:A6061
- DIN:AlMgSiCu

**R.P.M :** 6367 rev./min.

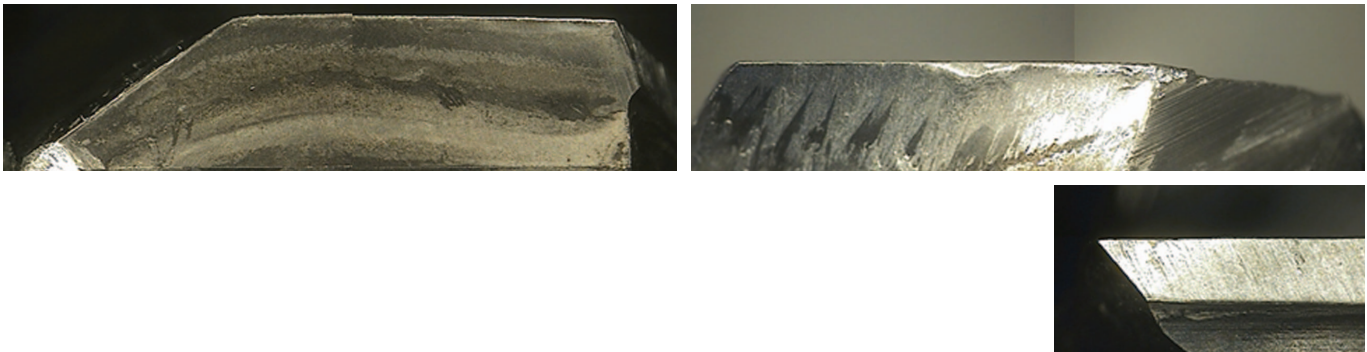
**SFM :** 656 ft/min.

**Feed :** .0157 ~ .0315 inch/rev.

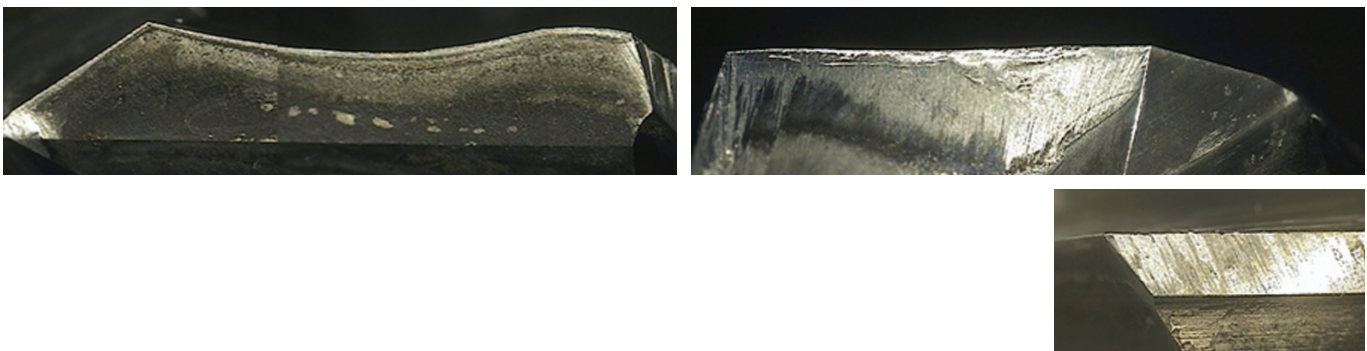
**Drilling Depth :** 1.77"

**Coolant :** Wet cut

▶ **YG-1 (Total Drilling 820 Holes)**



▶ **COMPETITOR (Total Drilling 820 Holes)**

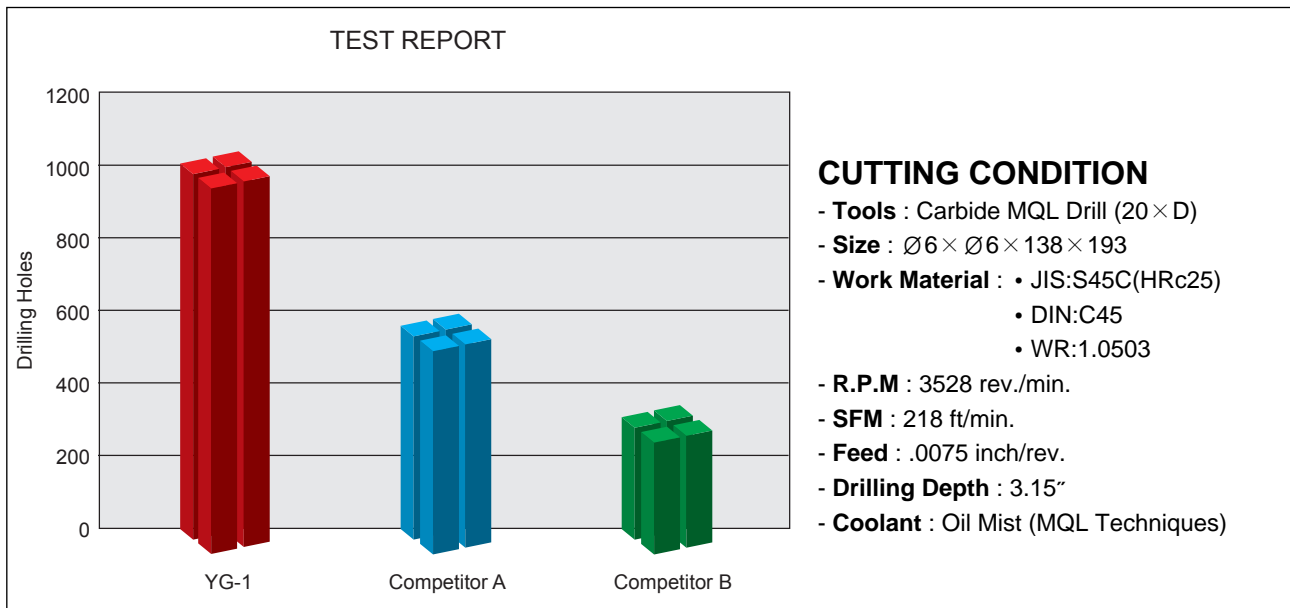


# CASE STUDY ♦ MQL DRILLS (Reference page : p.81 ~ p.86)

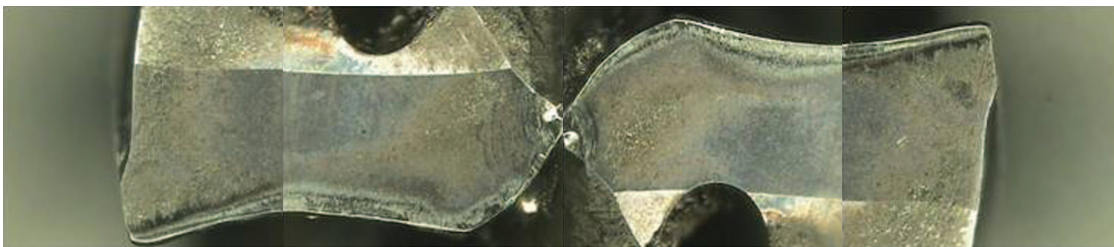
## FEATURES OF DREAM DRILLS MQL TYPE

- 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



YG-1 (After Drilling 1,000 Holes)



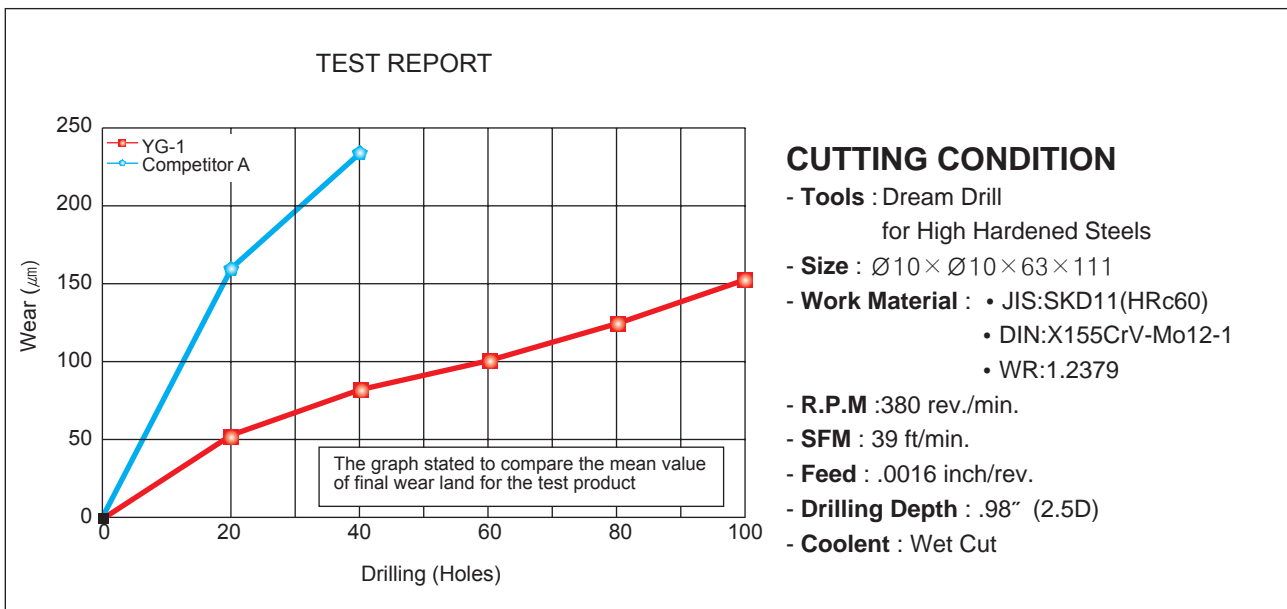
Competitor A (After Drilling 546 Holes)



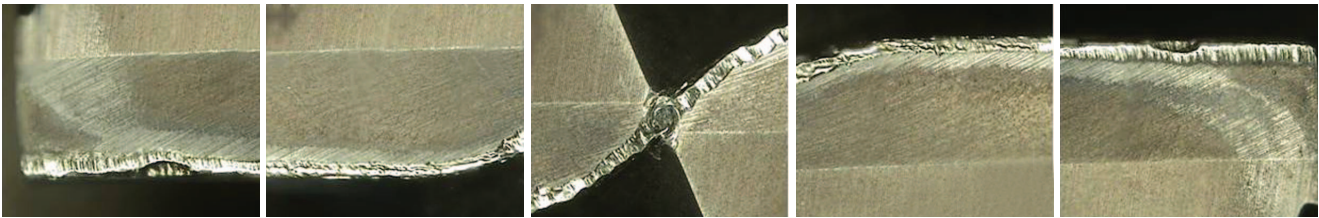
## FEATURES OF DREAM DRILLS HARDENED STEELS

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

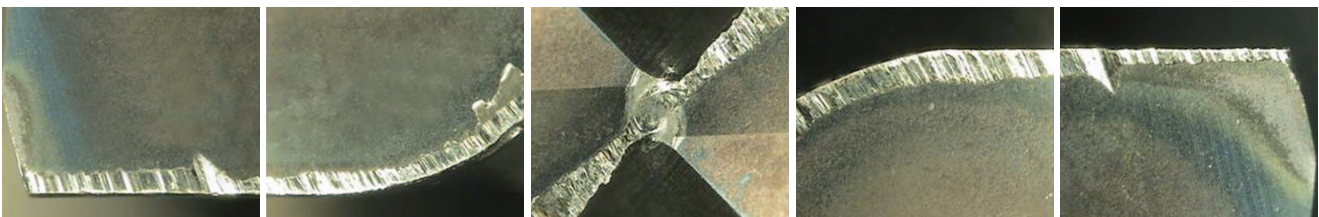
## TEST RESULT AGAINST COMPETITOR'S DRILLS



**YG-1 (After Drilling 100 Holes)**

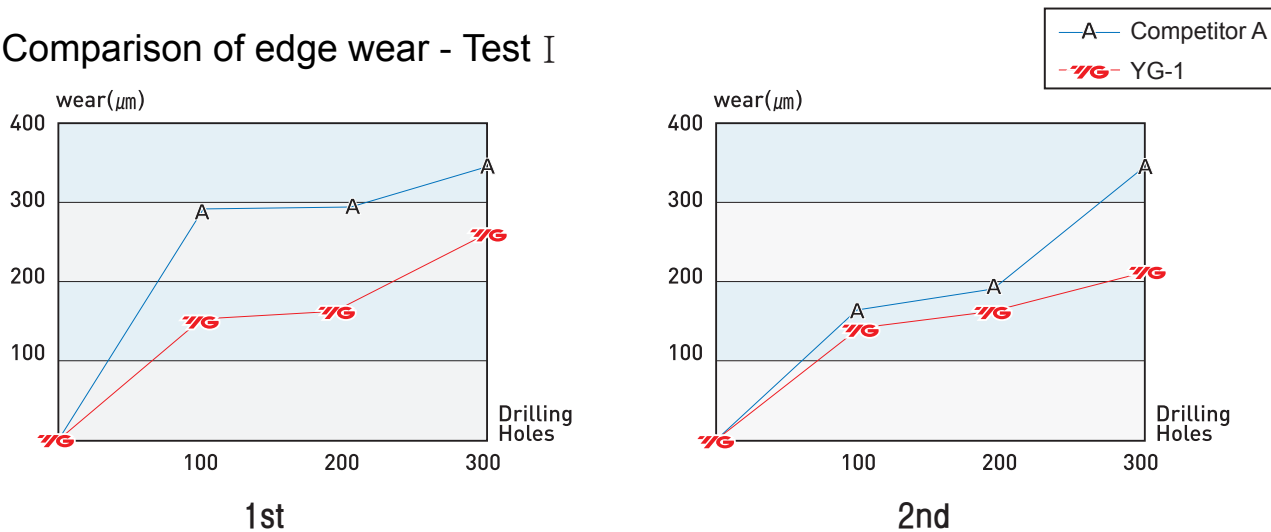


**Competitor A (After Drilling 40 Holes)**



# CASE STUDY ♦ MULTI-1 DRILLS (Reference page : p.103 ~ p.109)

## Comparison of edge wear - Test I

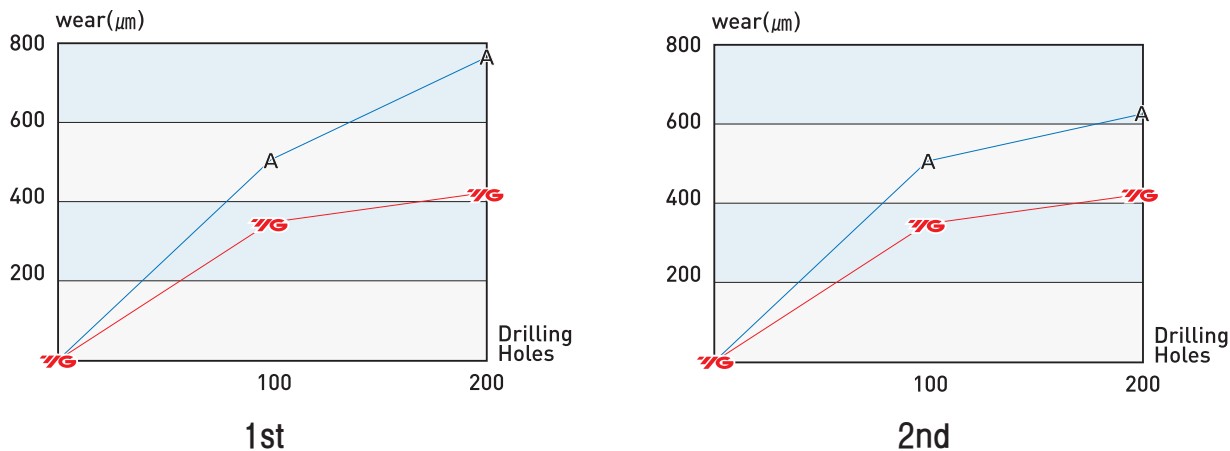


### CUTTING CONDITION

- Work material : • JIS:SUS316
  - DIN:X3CrNiMo17-13-3
  - WR:1.4436

- 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

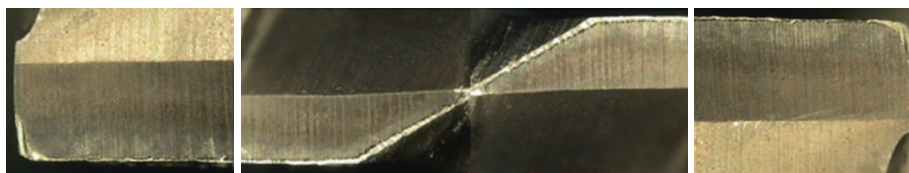


### CUTTING CONDITION

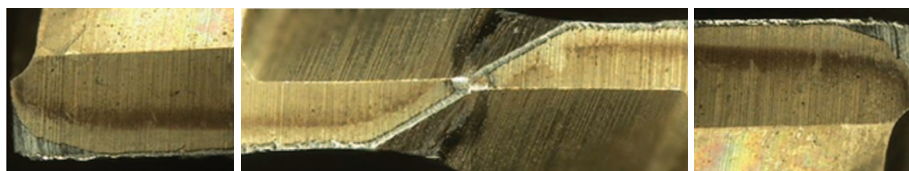
- Work material : • JIS:SKD11
  - DIN:X155CrVMo12-1
  - WR:1.4436

- 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**

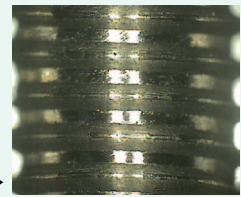
**Cutting Condition**

- **Tools** : Combo Spiral Flute Tap
- **Size** : M8×1.25
- **Work Material** : • JIS:S45C(HRc35)
  - DIN:C45
  - WR:1.0503
- **Tapping Depth** : .79"
- **Coolant** : Water Soluble Oil
- **SFM (Tapping Speed)** : 33 ft/min.

**YG-1 (Total Tapping 204 Holes)**

Surface Roughness of Work Piece

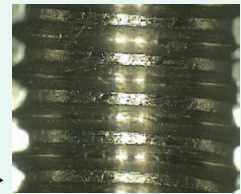
204 Holes ▶



**Competitor A (Total Tapping 159 Holes)**

Surface Roughness of Work Piece

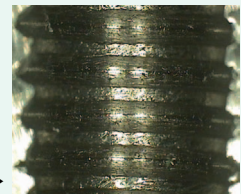
159 Holes ▶



**Competitor B (Total Tapping 204 Holes)**

Surface Roughness of Work Piece

204 Holes ▶

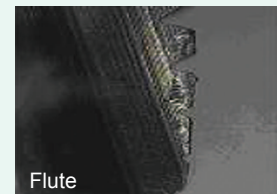


● **COMBO - SPIRAL POINT**

**Cutting Condition**

- **Tools** : Combo Spiral Point Tap
- **Size** : M2×0.4
- **Work Material** : • JIS:S45C(HRc35)
  - DIN:C45
  - WR:1.0503
- **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 318 holes tapping

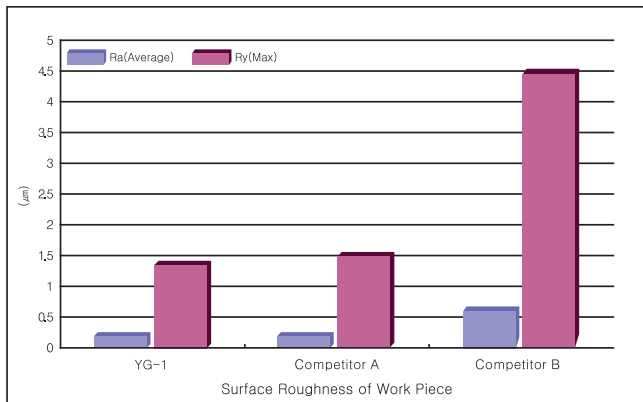
**Competitor B (Total Tapping 103 Holes)**

Tool was broken after 103 holes tapping

# CASE STUDY ◆ CBN END MILLS (Reference page : p.375 ~ p.380)

## ● TEST I (Total Milling Length : 787 ft)

### ▶ Surface Roughness of Work Piece



### CUTTING CONDITION (Ø1mm)

Tools : 2Flute, CBN Ball Nose End mill

Size : Ø1 × Ø4 × 0.6 × 50

Work Material : • JIS:SKD11(HRc60)  
• DIN:X155CrV-Mo12-1  
• WR:1.2379

Cutting Speed : 309 ft/min.

R.P.M : 30000 rev./min.

Feed : 59.06 inch/min.

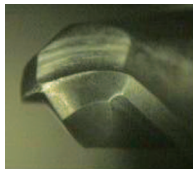
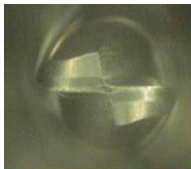
Milling Depth : .0004"

Coolant : Oil Mist

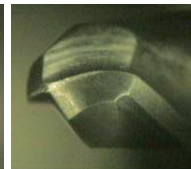
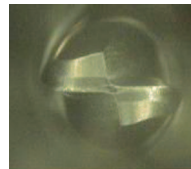
Machine : Machining Center

### ▶ Maximum Wear (μm)

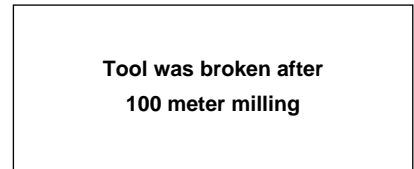
YG-1 (19.611 μm)



Competitor A (32.249 μm)

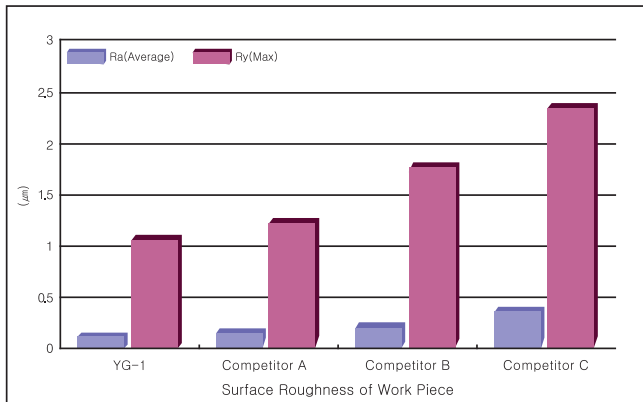


Competitor B



## ● TEST II (Total Milling Length : 2.460 ft)

### ▶ Surface Roughness of Work Piece



### CUTTING CONDITION (Ø2mm)

Tools : 2Flute, CBN Ball Nose End mill

Size : Ø2 × Ø4 × 1.8 × 50

Work Material : • JIS:SKD11(HRc60)  
• DIN:X155CrV-Mo12-1  
• WR:1.2379

Cutting Speed : 618 ft/min.

R.P.M : 30000 rev./min.

Feed : 78.74 inch/min.

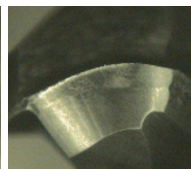
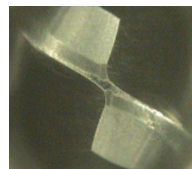
Milling Depth : .0004"

Coolant : Oil Mist

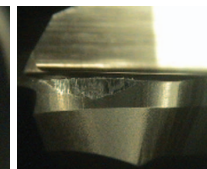
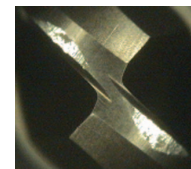
Machine : Machining Center

### ▶ Maximum Wear (μm)

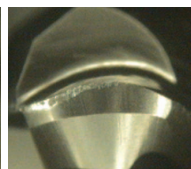
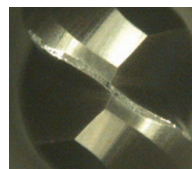
YG-1  
(57.630 μm)



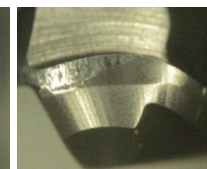
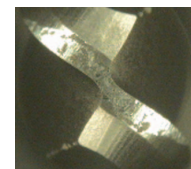
Competitor A  
(100.314 μm)



Competitor B  
(71.471 μm)

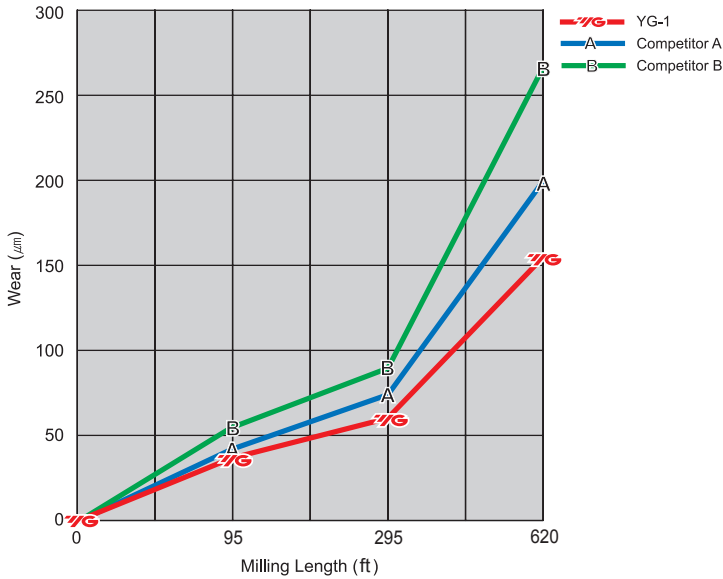


Competitor C  
(170.200 μm)

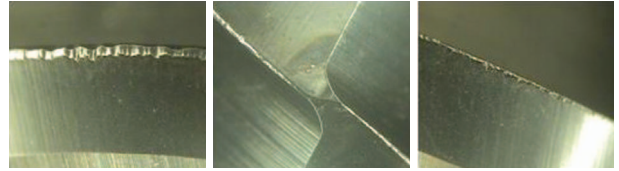


# CASE STUDY ◆ **i-Xmill** (Reference page : p.381 ~ p.396)

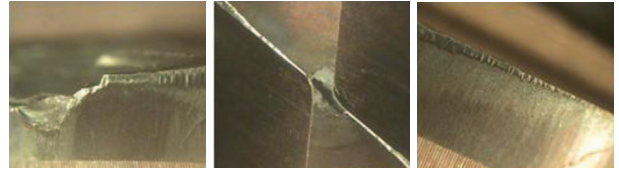
## ● i-Xmill - **BALL**



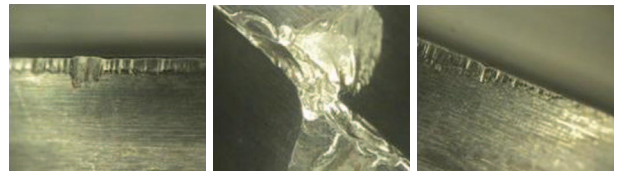
### YG-1 *i-Xmill* (Total Milling Length 620 ft)



### Competitor A (Total Milling Length 620 ft)



### Competitor B (Total Milling Length 620 ft)



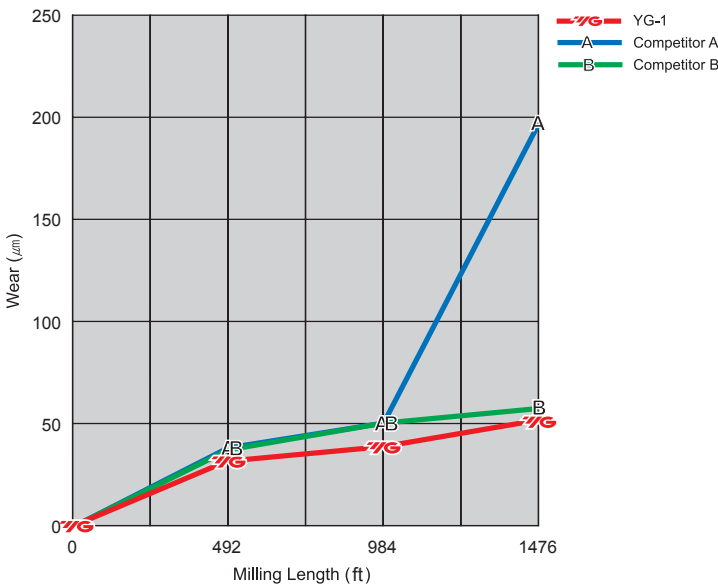
### CUTTING CONDITION

**Tools :** i-Xmill Ball  
**Size :**  $\varnothing 16 \times R8.0$   
**Work Material :** JIS : SKD61 (HRc50),  
 DIN : X40GrMoV51(1.2344)  
 AISI : H13

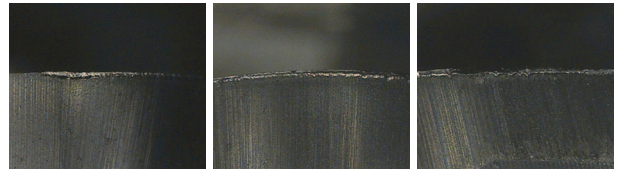
**Cutting Speed :** 264 ft/min.  
**R.P.M :** 1,600 rev./min.  
**Feed :** 15.35 inch/min.  
**Feed per tooth :** .0047 inch/tooth  
**Milling Method :** Side Cutting

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

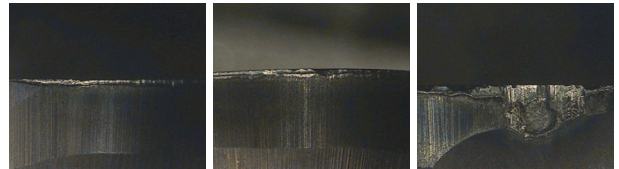
## ● i-Xmill - **CORNER RADIUS**



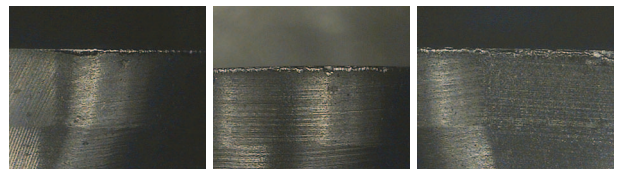
### YG-1 *i-Xmill* (Total Milling Length 1476 ft)



### Competitor A (Total Milling Length 1476 ft)



### Competitor B (Total Milling Length 1476 ft)



### CUTTING CONDITION

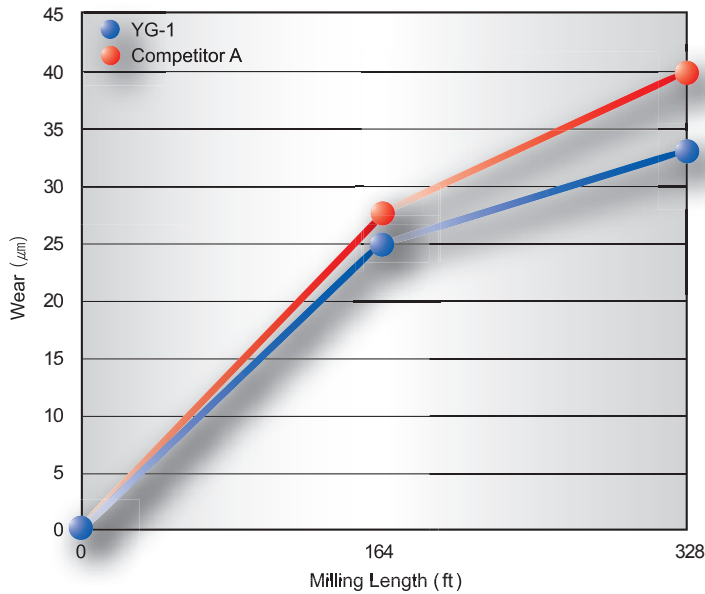
**Tools :** i-Xmill Corner Radius  
**Size :**  $\varnothing 16 \times R2.0$   
**Work Material :** KS : KP4M (Mold steels HRc35)  
 DIN : 40CrMnNiMo8-6-4(1.2738)  
 AISI : P20+Ni

**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

# CASE STUDY ♦ X5070 END MILLS (Reference page : p.397 ~ p.430)

## ● Carbide 6 Flute 45° Helix End Mill for Hardened Steel



### CUTTING CONDITION

**Tools :** 6Flute, X5070 45° Helix

**Size :** Ø16 × Ø16 × 40 × 110

**Work Material :**

- JIS:SKD61(HRc50)
- DIN:X40CrMoV5-1(1.2344)
- AISI:H13

**Cutting Speed :** 317 ft/min.

**R.P.M :** 1,920 rev./min.

**Feed :** 35.91

**Milling Method :** Down & Side Cutting

**Milling Depth :** Axial : .9449

Radial : .0378

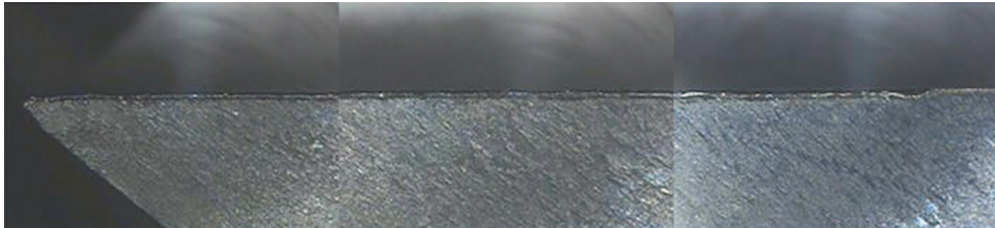
**Coolant :** Dry Cut

**Overhang :** 2.05

**Machine :** Machining Center

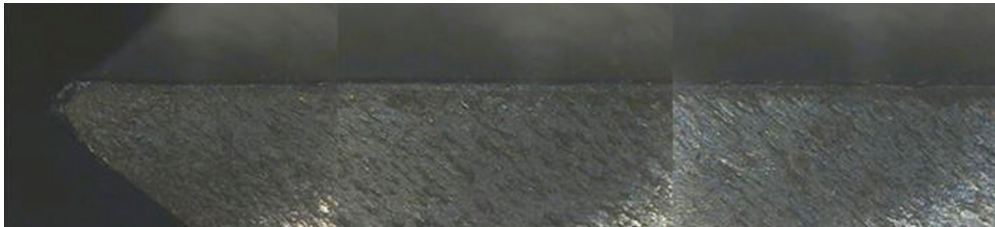
### YG-1

(Total Milling Length 328 ft)

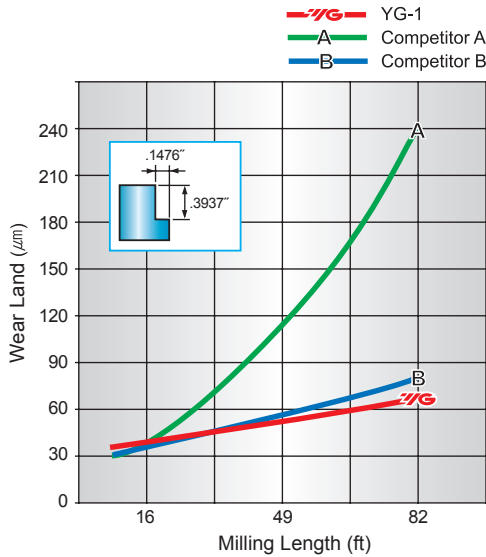


### Competitor A

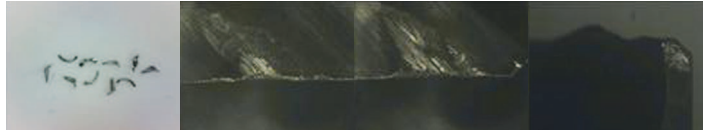
(Total Milling Length 328 ft)



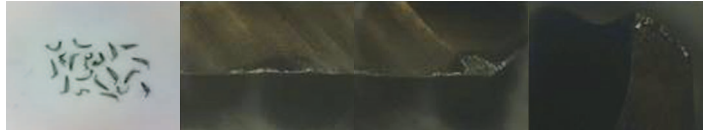
**TEST REPORT (DOWN & SIDE CUTTING)**



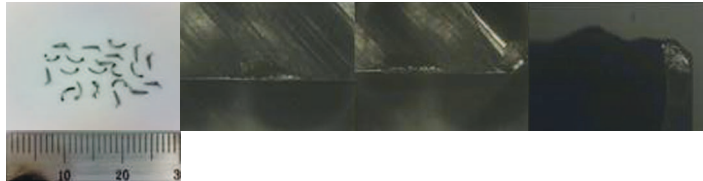
**COMPETITOR A**



**COMPETITOR B**



**X-SPEED ROUGHER**

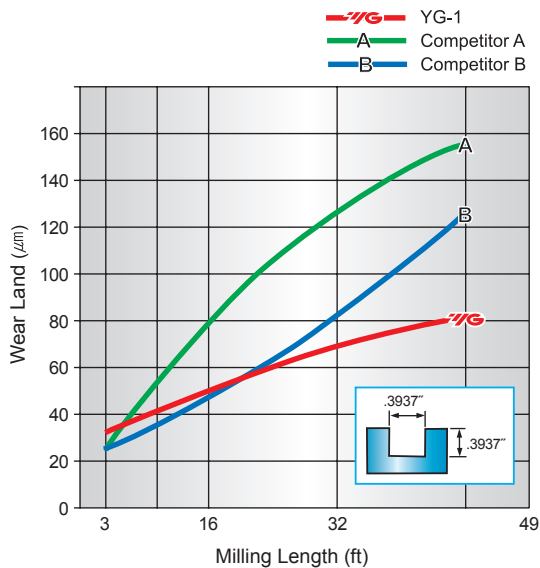


**CUTTING CONDITION**

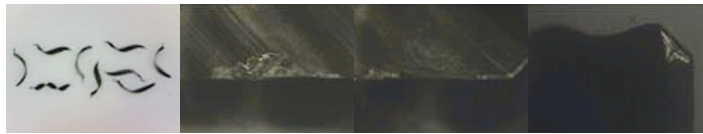
**SIZE :** X-SPEED ROUGHER :  $\varnothing 10 \times 10 \times 15 \times 72$   
 COMPETITOR A :  $\varnothing 10 \times 10 \times 20 \times 72$   
 COMPETITOR B :  $\varnothing 10 \times 10 \times 15 \times 80$   
**Work Material :** DIN : X40CrMoV51(1.2344)  
 JIS : SKD61 (HRc30)  
 AISI : H13

**R.P.M :** 5,000 rev./min. (515 ft/min.)  
**FEED :** 51.18 inch/min.  
**Milling Method :** Down & Side Cutting  
**Coolant :** Wet Cut  
**Overhang :** 1.26  
**Machine :** Machining Center

**TEST REPORT (SLOTTING)**



**COMPETITOR A**



**COMPETITOR B**



**X-SPEED ROUGHER**

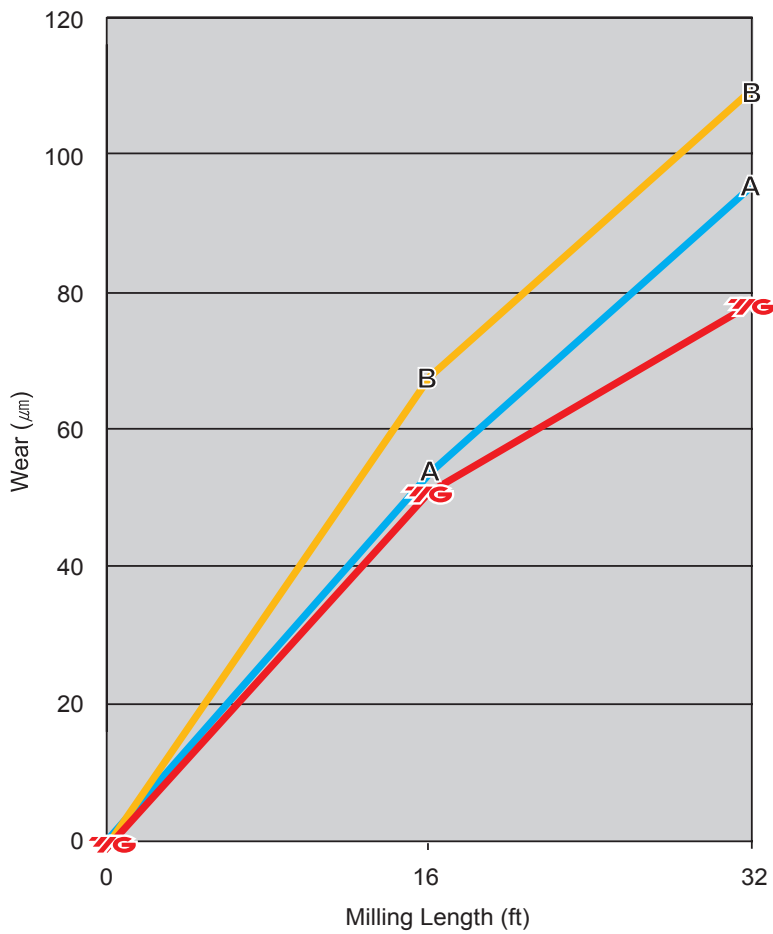


**CUTTING CONDITION**

**SIZE :** X-SPEED ROUGHER :  $\varnothing 10 \times 10 \times 15 \times 72$   
 COMPETITOR A :  $\varnothing 10 \times 10 \times 20 \times 72$   
 COMPETITOR B :  $\varnothing 10 \times 10 \times 15 \times 80$   
**Work Material :** DIN : X40CrMoV51(1.2344)  
 JIS : SKD61 (HRc20)  
 AISI : H13

**R.P.M :** 4,000rev./min. (412 ft/min.)  
**FEED :** 39.37 inch/min.  
**Milling Method :** Slottting  
**Coolant :** Wet Cut  
**Overhang :** 1.26  
**Machine :** Machining Center

# CASE STUDY ♦ V7 STEELS END MILLS (Reference page : p.551 ~ p.562)



- YG-1
- Competitor A
- Competitor B

## CUTTING CONDITION

**Tools:** V7 STEELS, 4Flute

**Size :**  $\varnothing 12 \times \varnothing 12 \times 26 \times 83$

- Work Material :**
- JIS : SKD61 (HRC30)
  - DIN : X40GrMoV51(1.2344)
  - AISI : H13

**Cutting Speed :** 456 ft/min.

**R.P.M :** 3,688 rev./min.

**Feed :** 27.153 inch/min.

**Milling Method :** Down & Side Cutting

**Milling Depth :** Axial : .71

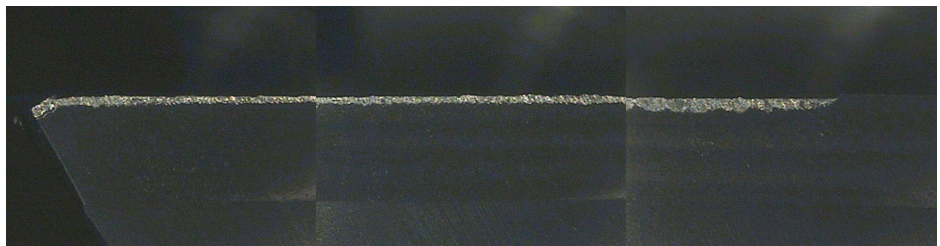
Radial : .23

**Coolant :** Wet Cut

**Overhang :** 1.57

**Machine :** Machining Center

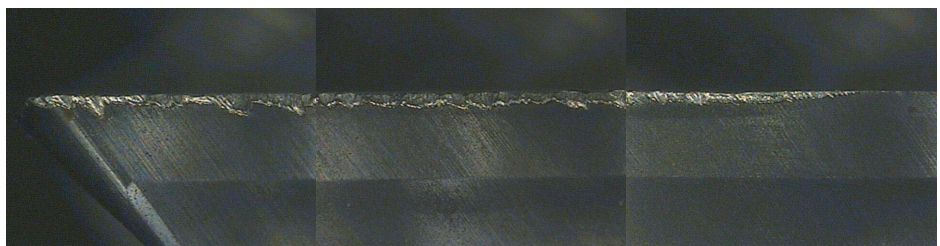
**YG-1**  
(Total Milling Length 32 ft)



**Competitor A**  
(Total Milling Length 32 ft)



**Competitor B**  
(Total Milling Length 32 ft)



# DRILLING TOOLS

i-DREAM DRILLS, CARBIDE INSERT

SOLID CARBIDE DREAM DRILLS  
(with & without coolant Holes)

SOLID CARBIDE DREAM DRILLS - INOX  
(with coolant Holes)

SOLID CARBIDE DREAM DRILLS - ALU  
(with coolant Holes)

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 CENTER DRILLS

CARBIDE & HSS-PM SPADE DRILLS

TECHNICAL DATA

# Contents

## DRILLING TOOLS

CARBIDE INSERT DRILLS

SOLID CARBIDE DRILLS

HSS DRILLS

CARBIDE & HSS-PM SPADE DRILLS

TECHNICAL DATA



# Contents / DRILLING TOOLS

## i-DREAM DRILLS

for Steels and Stainless Steel Alloys

i-DREAM  
DRILLS

## SOLID CARBIDE DREAM DRILLS (with & without Coolant Holes)

General Purpose HRc30 to HRc50

DREAM  
DRILLS

## SOLID CARBIDE DREAM DRILLS - INOX (with Coolant Holes)

Stainless Steels, Nickel Alloys and Titanium up to HRc35.

DREAM  
DRILLS  
-INOX

## SOLID CARBIDE DREAM DRILLS - ALU (with Coolant Holes)

for Aluminum & Aluminum Alloy

DREAM  
DRILLS  
-ALU

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

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

DREAM  
DRILLS  
-MQL TYPE

## SOLID CARBIDE DREAM DRILLS - For HIGH HARDENED STEELS

High Hardened Steels, HRc50~HRc70

DREAM  
DRILLS  
for HARDENED  
STEELS

## STANDARD CARBIDE DRILLS

General Purpose, 118° Point

STANDARD  
CARBIDE  
DRILLS

## HSS-PM MULTI-1 DRILLS

Multi Purpose Drilling. Particularly for Stainless Steels, Titanium

MULTI-1  
DRILLS

## HPD DRILLS

for Stainless Steels

HPD DRILLS

## HSS GOLD-P DRILLS

Gold-P Coating

GOLD-P  
DRILLS

## HSS STRAIGHT SHANK DRILLS

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 &  
DEAMING  
DRILLS

## HSS MORSE TAPER SHANK DRILLS

General Purpose, Standard Length

TAPER  
SHANK  
DRILLS

## HSS (8% Cobalt) NC-SPOTTING DRILLS

Centering and Chamfering of Holes

NC SPOTTING  
DRILLS

## HSS CENTER DRILLS

Regular and Long Length

CENTER  
DRILLS

## 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	
<b>i-Dream Drills</b>	Y03 *		Insert for General Purpose	.4724 (#A)	1.2500 (#J)	<b>32~37</b>
	Y13 *		Insert for Stainless Steels	.4724 (#A)	1.2500 (#J)	<b>32~37</b>
<b>Spade Drills</b>	S01~S04		HSS M4 Insert	.7031 (#1)	4.5000 (#8)	<b>198~201</b>
	S06~S09 (SM08)		Super Cobalt T15 Insert	.3740 (#Y)	4.5000 (#8)	<b>202~208 218~221</b>
	S11~S14		Premium HSS M48 Insert	.3740 (#Y)	1.3780 (#2)	<b>209~211</b>
	S21~S23		Carbide C2 Insert (K20)	.3740 (#Y)	1.8750 (#3)	<b>212~216</b>
	S26~S28 (SM28)		Carbide C5 Insert (P40)	.3740 (#Y)	1.8750 (#3)	<b>212~216 222~223</b>
	S16~S18		Carbide C3 Insert (K10)	.3740 (#Y)	1.3780 (#2)	<b>212~215</b>
	SF05 SF15		Super Cobalt T15 Flat Bottom	.3750 (#Y)	1.3750 (#2)	<b>224</b>

	ITEM	MODEL	INCH / METRIC	LENGTH	SIZE		PAGE
					MIN	MAX	
<b>DREAM DRILLS</b>	DH414		Inch	Short(3XD)	D1/8	D5/8	<b>46</b>
	DH416		Inch	Short(3XD)	D1/8	D5/8	<b>47</b>
	DH418		Inch	Long(5XD)	D13/64	D1/2	<b>48</b>
	DH404		Metric	Stub(3XD)	D3.0	D20.0	<b>49</b>
	DH406		Metric	Short(3XD)	D3.0	D20.0	<b>51</b>
	DH424		Metric	Long(5XD)	D1.0	D2.9	<b>53</b>
	DH408		Metric	Long(5XD)	D1.0	D20.0	<b>54</b>
	DH421		Metric	Extra Long(8XD)	D3.0	D14.0	<b>57</b>

# INSERT

⊙ : Excellent  
○ : Good






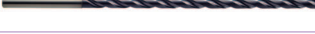
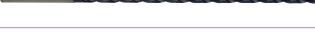






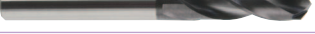






Non-alloy Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloy
	~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙		⊙	⊙		
○	○		○				○		○		⊙			○	○
○	○	○	○		○		○	○			⊙	⊙	○	⊙	⊙
⊙	⊙	⊙	⊙	○	○	○	⊙	⊙	○	○	○	○	⊙	○	○
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○	○	⊙	○	○
○	○	○	○	○	⊙	⊙	○	○	○	○	⊙	○	○	⊙	⊙
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○	○	○	○	○
												⊙	⊙		
⊙	⊙	⊙	⊙	○	○	○	⊙	⊙	○	○	○	○	⊙	○	○

# SOLID

⊙ : Excellent ○ : Good

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

# DRILLING TOOLS **APPLICATION TABLE**

	ITEM	MODEL	INCH / METRIC	LENGTH	SIZE		PAGE
					MIN	MAX	
<b>DREAM DRILLS-INOX</b>	DH463		Inch	Short(3XD)	D1/8	D5/8	<b>64</b>
	DH464		Inch	Long(5XD)	D13/64	D1/2	<b>65</b>
	DH451		Metric	Short(3XD)	D3.0	D20.0	<b>66</b>
	DH452		Metric	Long(5XD)	D3.0	D20.0	<b>68</b>
	DH453		Metric	Extra Long(8XD)	D3.0	D14.0	<b>70</b>
<b>DREAM DRILLS-ALU</b>	DGE466		Inch	Long(5XD)	D13/64	D1/2	<b>76</b>
	DGE433		Metric	Long(5XD)	D3.0	D20.0	<b>77</b>
<b>DREAM DRILLS-MQL TYPE</b>	DH510		Metric	Extra Long(10XD)	D3.0	D14.0	<b>84</b>
	DH515		Metric	Extra Long(15XD)	D3.0	D12.0	<b>85</b>
	DH520		Metric	Extra Long(20XD)	D3.0	D12.0	<b>85</b>
<b>DREAM DRILLS -For HIGH HARDENED STEELS</b>	DH501		Inch		D1/8	D3/4	<b>90</b>
	DH500		Metric		D2.6	D14.0	<b>92</b>
<b>STANDARD CARBIDE DRILLS</b>	D5412		Inch	Jobber	#56	#1	<b>98</b>
	D5413		Inch	Jobber	A	Z	<b>99</b>
	D5417		Inch	Jobber	D3/64	D1/2	<b>100</b>
<b>MULTI-1 DRILLS</b>	CDRA05		Inch		D3/32	D1/2	<b>106</b>
	CDRA06		Inch		#45	#1	<b>107</b>
	CDRA07		Inch		B	Z	<b>108</b>
<b>HPD DRILLS</b>	DJ543		Metric	Stub	D2.0	D13.0	<b>114</b>
	DJ544		Metric	Jobber	D2.0	D20.0	<b>116</b>
<b>GOLD-P DRILLS</b>	D1GP182 D8182		Inch	Jobber	D3/64	D3/4	<b>124</b>
	D1GP139		Inch	Jobber	A	Z	<b>125</b>
	D1GP138		Inch	Jobber	#56	#1	<b>126</b>
	D2GP185		Inch	Jobber	D3/64	D1/2	<b>127</b>
	D2GP186		Inch	Jobber	A	Z	<b>128</b>
	D2GP187		Inch	Jobber	#56	#1	<b>129</b>
	DLGP511		Inch	Jobber	D5/64	D1/2	<b>130</b>
	DLGP513		Inch	Jobber	A	Z	<b>131</b>

⊙ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
			~HB225	HB225~325							
○	○	○				○	⊙	○	○		
○	○	○				○	⊙	○	○		
○	○	○				○	⊙	○	○		
○	○	○				○	⊙	○	○		
○	○	○				○	⊙	○	○		
						⊙					
						⊙					
○	○	○			○				○		
○	○	○			○				○		
○	○	○			○				○		
			○	○							
			○	○							
○	○				○	○	○	○	⊙		
○	○				○	○	○	○	⊙		
○	○				○	○	○	○	⊙		
○	○	○			○	○	○	⊙	⊙		
○	○	○			○	○	○	⊙	⊙		
○						○	⊙	○	○	○	
○						○	⊙	○	○	○	
○	○					○	○	○	○		
○	○					○	○	○	○		
○	○					○	○	○	○		
○	○					○	○	○	○		
○	○					○	○	○	○		
○	○					○	○	○	○		
○	○					○	○	○	○		
○	○					○	○	○	○		
○	○				○	○			○		
○	○				○	○			○		

# DRILLING TOOLS APPLICATION TABLE

	ITEM	MODEL	INCH / METRIC	LENGTH	SIZE		PAGE
					MIN	MAX	
<b>GOLD-P DRILLS</b>	DLGP512		Inch	Jobber	#47	#1	<b>132</b>
	DLGP195		Metric	Jobber	D1.0	D13.0	<b>133</b>
	DLGP506		Metric	Jobber	D2.0	D13.0	<b>135</b>
<b>STRAIGHT SHANK DRILLS</b>	D1118		Inch	Screw Machine	D3/64	D1/2	<b>144</b>
	D1115		Inch	Screw Machine	A	Z	<b>145</b>
	D1119		Inch	Screw Machine	#60	#1	<b>146</b>
	D2146 D4146		Inch	Screw Machine	D3/64	D1/2	<b>147</b>
	D2147 D4147		Inch	Screw Machine	A	Z	<b>148</b>
	D2148 D4148		Inch	Screw Machine	#60	#1	<b>149</b>
	DN514		Inch	Screw Machine	D3/32	D1/2	<b>151</b>
	DN516		Inch	Screw Machine	A	Z	<b>152</b>
	DN515		Inch	Screw Machine	#47	#1	<b>153</b>
	DX517 DL517		Inch	Taper Length	D5/64	D1/2	<b>154</b>
	D4107		Metric	Screw Machine	D1.0	D31.0	<b>155</b>
<b>AIRCRAFT DRILLS</b>	DL601 DL604		Inch	Extension Length	D5/64	D1/2	<b>166</b>
	DL602 DL605		Inch	Extension Length	A	Z	<b>167</b>
	DL603 DL606		Inch	Extension Length	#43	#1	<b>168</b>
	D1631 D1634		Inch	Extension Length	D5/64	D1/2	<b>169</b>
	D1632 D1635		Inch	Extension Length	A	Z	<b>170</b>
	D1633 D1636		Inch	Extension Length	#43	#1	<b>171</b>
<b>SILVER &amp; DEMING DRILLS</b>	D1191		Inch	—	D1/2	D1-1/2	<b>176</b>
<b>MORSE TAPER SHANK DRILLS</b>	D1211		Inch	—	D1/2	D2-1/2	<b>182</b>
<b>NC-SPOTTING DRILLS</b>	D2N90(90°)		Inch	—	D1/8	D1	<b>188</b>
	D2N90(120°)		Inch	—	D1/8	D1	<b>188</b>
<b>CENTER DRILLS</b>	D1C90		Inch	—	D3/64	D7/32	<b>194</b>

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
			~HB225	HB225~325							
○	◎				○	○			○		
○	◎					○	○	○	○		
○	◎				○	○			○		
○	◎				○	○	○	○	○		
○	◎				○	○	○	○	○		
○	◎				○	○	○	○	○		
○	◎					○	○	○	○		
○	◎					○	○	○	○		
○	◎					○	○	○	○		
○	◎					○	○	○	○		
○	◎				○	○			○		
○	◎				○	○			○		
○	◎				○	○			○		
○	◎				○	○	○	○	○		
○	○				○	○	○		○	○	○
○	○				○	○	○		○	○	○
○	○				○	○	○		○	○	○
○	◎	○			○	○	○	○	○	○	○
○	◎	○			○	○	○	○	○	○	○
○	◎	○			○	○	○	○	○	○	○
○	◎				○	○	○		○		
○	◎	○			○	○	○		○		
○	◎					○	○		○		○
○	◎					○	○		○		○
○	◎				○	○	○	○	○	○	○



Global Cutting Tool Leader **YG-1**

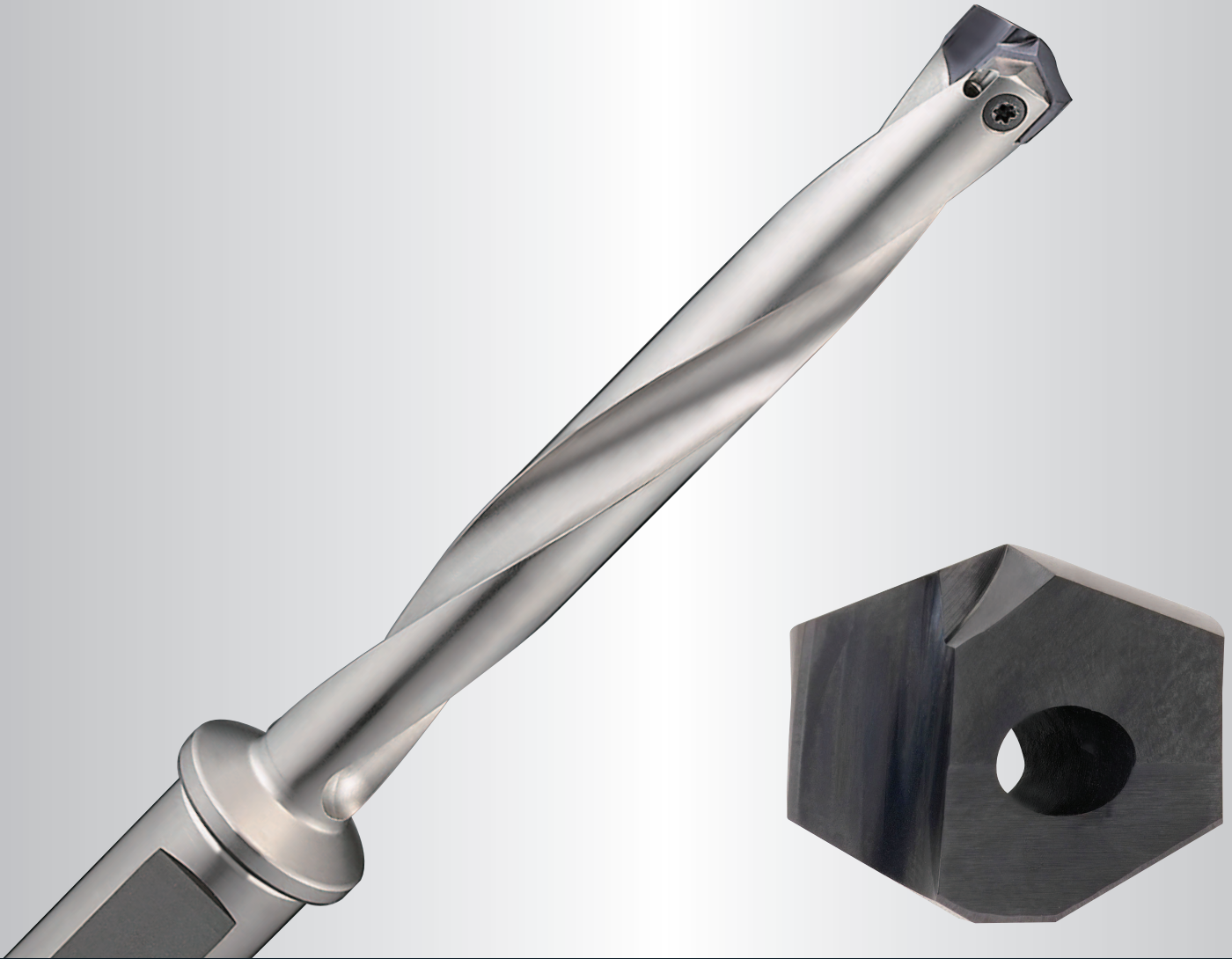






Being the best through innovation

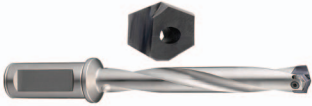











# CARBIDE INSERT



# *i* - Dream Drills

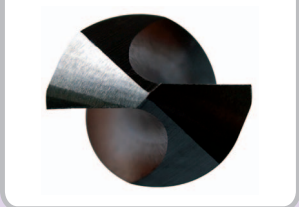
- For Steels and Stainless Steel Alloys

# SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	PAGE
<b>Y03A / Y03B</b>		<i>i</i> -Dream Drills General	<b>32</b>
<b>YI3A / YI3B</b>		<i>i</i> -Dream Drills INOX	
<b>Y03B / Y03C</b>		<i>i</i> -Dream Drills General	<b>33</b>
<b>YI3B / YI3C</b>		<i>i</i> -Dream Drills INOX	
<b>Y03C / Y03D</b>		<i>i</i> -Dream Drills General	<b>34</b>
<b>YI3C / YI3D</b>		<i>i</i> -Dream Drills INOX	
<b>Y03E / Y03F</b>		<i>i</i> -Dream Drills General	<b>35</b>
<b>YI3E / YI3F</b>		<i>i</i> -Dream Drills INOX	
<b>Y03G / Y03H</b>		<i>i</i> -Dream Drills General	<b>36</b>
<b>YI3G / YI3H</b>		<i>i</i> -Dream Drills INOX	
<b>Y03I / Y03J</b>		<i>i</i> -Dream Drills General	<b>37</b>
<b>YI3I / YI3J</b>		<i>i</i> -Dream Drills INOX	
RECOMMENDED CUTTING CONDITIONS			<b>38</b>

## Comparison with Split Point Drill, Spade Drill & Dream Drill

Solid Tool



Normal Split Point Drill

Insert Tool



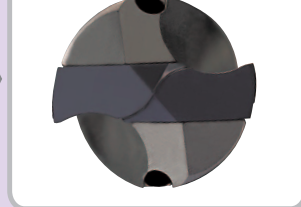
Spade Drill

Solid Tool



Dream Drill

Insert Tool



i-Dream Drill

# i-DREAM DRILLS, CARBIDE INSERT

⊙ : Excellent  
○ : Good

Non-alloy 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
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙			⊙	⊙		
○	○		○					○		○		⊙			○	○
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙		⊙	⊙		
○	○		○					○		○		⊙			○	○
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙		⊙	⊙		
○	○		○					○		○		⊙			○	○
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙		⊙	⊙		
○	○		○					○		○		⊙			○	○
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙		⊙	⊙		
○	○		○					○		○		⊙			○	○
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙		⊙	⊙		
○	○		○					○		○		⊙			○	○

## 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

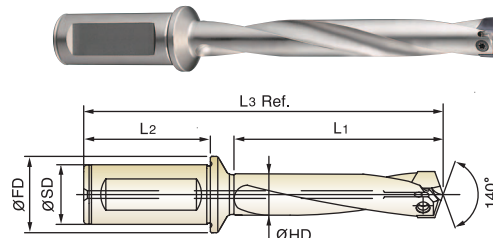
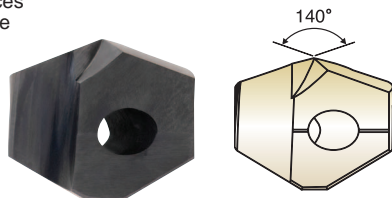
- ▶ For most steels materials

#### 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.38~39

Unit : inch

Series Range (mm)	Insert EDP No.		Insert O.D.		Length	Holder EDP No.	Diameter HD	Shank Dia. SD	Shank Length L2	Flange Dia. FD	Drilling Depth L1	Overall Length L3 Ref.	Torx Screw No.		
	TiAlN General	TiCN INOX	h7 dec. inch / mm												
A Ø12.00 to Ø13.99 3.6mm Thick	Y03A01	YI3A01	.4724	12.00	3D	ZA0301	.4528	3/4	2	1	1-27/64	4-29/64	TA1213		
	Y03A02	YI3A02	.4764	12.10	5D	ZA0501					2-23/64	5-13/32			
	Y03A03	YI3A03	.4803	12.20	7D	ZA0701					3-5/16	6-11/32			
	Y03A04	YI3A04	.4844	31/64	3D	ZA0302	.4724	3/4	2	1	1-15/32	4-1/2			
	Y03A05	YI3A05	.4921	12.50							5D	ZA0502		2-29/64	5-31/64
	Y03A06	YI3A06	.4961	12.60							7D	ZA0702		3-7/16	6-15/32
	Y03A07	YI3A07	.5000	1/2	3D	ZA0303	.4921	3/4	2	1	1-17/32	4-37/64			
	Y03A08	YI3A08	.5039	12.80							5D	ZA0503		2-9/16	5-19/32
	Y03A09	YI3A09	.5079	12.90							7D	ZA0703		3-37/64	6-5/8
	Y03A10	YI3A10	.5118	13.00	3D	ZA0304	.5118	3/4	2	1	1-19/32	4-39/64			
	Y03A11	YI3A11	.5156	33/64							5D	ZA0504		2-21/32	5-43/64
	Y03A12	YI3A12	.5197	13.20							7D	ZA0704		3-23/32	6-47/64
	Y03A13	YI3A13	.5312	17/32	3D	ZB0301	.5315	3/4	2	1	1-21/32	4-23/32			
	Y03A14	YI3A14	.5315	13.50							5D	ZB0501		2-3/4	5-13/16
	Y03A15	YI3A15	.5354	13.60							7D	ZB0701		3-55/64	6-59/64
	Y03A16	YI3A16	.5394	13.70	3D	ZB0301	.5315	3/4	2	1	1-21/32	4-23/32			
	Y03A17	YI3A17	.5433	13.80							5D	ZB0501		2-3/4	5-13/16
	Y03A18	YI3A18	.5469	35/64							7D	ZB0701		3-55/64	6-59/64
Y03A19	YI3A19	.5469	35/64	3D	ZB0301	.5315	3/4	2	1	1-21/32	4-23/32				
Y03B01	YI3B01	.5512	14.00							5D	ZB0501	2-3/4	5-13/16		
Y03B02	YI3B02	.5551	14.10							7D	ZB0701	3-55/64	6-59/64		
Y03B03	YI3B03	.5591	14.20	3D	ZB0301	.5315	3/4	2	1	1-21/32	4-23/32				
Y03B04	YI3B04	.5625	9/16							5D	ZB0501	2-3/4	5-13/16		
Y03B05	YI3B05	.5630	14.30							7D	ZB0701	3-55/64	6-59/64		
Y03B06	YI3B06	.5669	14.40	3D	ZB0301	.5315	3/4	2	1	1-21/32	4-23/32				
Y03B07	YI3B07	.5669	14.40							5D	ZB0501	2-3/4	5-13/16		
Y03B08	YI3B08	.5669	14.40							7D	ZB0701	3-55/64	6-59/64		

Coating : TiN, TiCN, TiAlN & Hardslick are available on your request.

◎ : Excellent ○ : Good

	Non-alloy 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 DRILL INSERTS & HOLDERS

**- Features of i-Dream Drill Inserts**

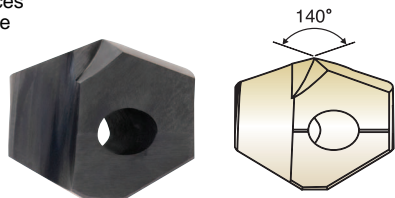
- ▶ Secure and accurate seating resulting in accurate repeatability and concentricity.

**i-Dream Drill General**

- ▶ For most steels materials

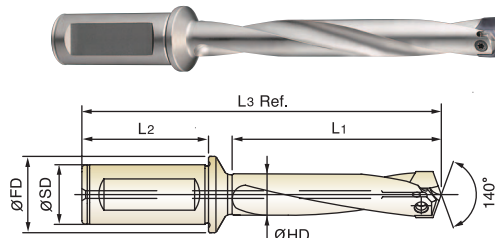
**i-Dream Drill INOX**

- ▶ 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.38~39

Unit : inch

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

Coating : TiN, TiCN, TiAIN & Hardslick are available on your request.

◎ : Excellent ○ : Good

	Non-alloy 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 DRILL INSERTS & HOLDERS**

**- Features of i-Dream Drill Inserts**

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

**i-Dream Drill General**

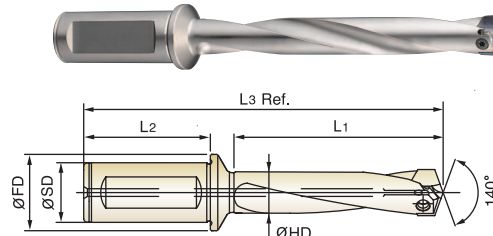
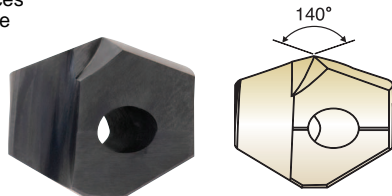
- ▶ For most steels materials

**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.38~39

Unit : inch

Series Range (mm)	Insert EDP No.		Insert O.D.		Length	Holder EDP No.	Diameter HD	Shank Dia. SD	Shank Length L2	Flange Dia. FD	Drilling Depth L1	Overall Length L3 Ref.	Torx Screw No.			
	TiAIN General	TiCN INOX	h7 dec. inch / mm													
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					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				
	Y03D03	YI3D03	.7283	18.50	3D	ZD0302					4-61/64	8-11/32				
	Y03D04	YI3D04	.7344	47/64	5D	ZD0502					2-3/16	5-35/64				
	Y03D05	YI3D05	.7402	18.80	7D	ZD0702					3-41/64	7				
	Y03D06	YI3D06	.7480	19.00	7D	ZD0702					5-3/32	8-29/64				
	Y03D07	YI3D07	.7500	3/4	3D	ZD0303					2-1/4	5-43/64				
	Y03D08	YI3D08	.7587	19.27	5D	ZD0503					3-47/64	7-5/32				
	Y03D09	YI3D09	.7656	49/64	7D	ZD0703					5-15/64	8-21/32				
	Y03D10	YI3D10	.7677	19.50	3D	ZD0304					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									

Coating : TiN, TiCN, TiAIN & Hardslick are available on your request.

◎ : Excellent ○ : Good

	Non-alloyed Steels, Free Machining Steels	Carbon Steels			Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
	~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (~HB275~)	~HRc28 (~HB275)	HRc28~ (~HB275~)	~HRc37 (~HB350)	HRc37~ (~HB350~)	~HRc24 (~HB250)	HRc24~ (~HB250~)	~HRc13 (~HB200)	HRc13~ (~HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (~HB220~)	~HRc8 (~HB180)		~HB110
Y03 *	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎			◎	◎		
YI3 *	○	○	○	○	○							◎				○	○

## I-DREAM DRILL INSERTS & HOLDERS

### - Features of *i-Dream Drill Inserts*

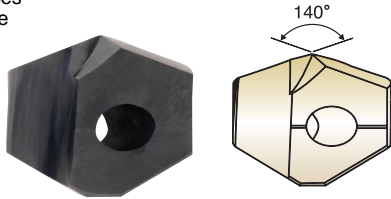
- ▶ Secure and accurate seating resulting in accurate repeatability and concentricity.

#### *i-Dream Drill General*

- ▶ For most steels materials

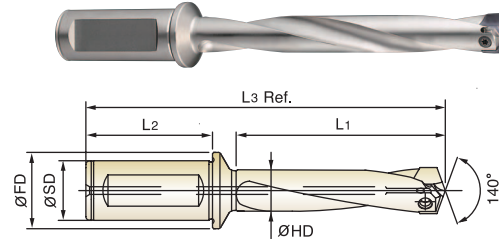
#### *i-Dream Drill INOX*

- ▶ 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.38~39

Unit : inch

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

Coating : TiN, TiCN, TiAlN & Hardslick are available on your request.

◎ : Excellent ○ : Good

	Non-alloy 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 DRILL INSERTS & HOLDERS

### - Features of i-Dream Drill Inserts

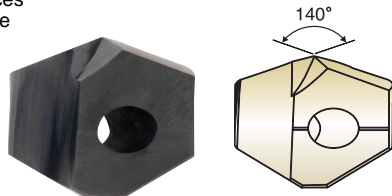
- ▶ Secure and accurate seating resulting in accurate repeatability and concentricity.

#### i-Dream Drill General

- ▶ For most steels materials

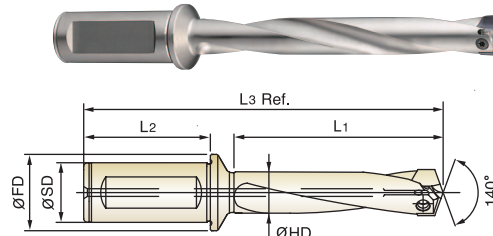
#### i-Dream Drill INOX

- ▶ 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.38~39

Unit : inch

Series Range (mm)	Insert EDP No.		Insert O.D.		Length	Holder EDP No.	Diameter HD	Shank Dia. SD	Shank Length L2	Flange Dia. FD	Drilling Depth L1	Overall Length L3 Ref.	Torx Screw No.
	TiAIN General	TiCN INOX	h7 dec. inch / mm										
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
	Y03G02	YI3G02	.9531	61/64	5D	ZG0501					4-23/32	8-25/64	
	Y03G03	YI3G03	.9646	24.50	7D	ZG0701					6-39/64	10-9/32	
	Y03G04	YI3G04	.9688	31/32	3D	ZG0302	.9409	1-1/4	2-3/8	1-15/32	2-57/64	6-17/32	
	Y03G05	YI3G05	.9724	24.70	5D	ZG0502					4-53/64	8-15/32	
	Y03G06	YI3G06	.9843	63/64	7D	ZG0702					6-3/4	10-25/64	
	Y03G07	YI3G07	1.0000	1	3D	ZG0303	.9606	1-1/4	2-3/8	1-15/32	2-61/64	6-39/64	
	Y03G08	YI3G08	1.0039	25.50	5D	ZG0503					4-59/64	8-37/64	
	Y03G09	YI3G09	1.0106	25.67	7D	ZG0703					6-57/64	10-35/64	
	Y03G10	YI3G10	1.0118	25.70	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	3D	ZG0304	1.0000	1-1/4	2-3/8	1-15/32	3-5/64	6-3/4	TH2627	
Y03H01	YI3H01	1.0236	26.00	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					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					3-3/16	6-7/8		
Y03H06	YI3H06	1.0630	27.00	5D	ZH0503					5-5/16	9		
Y03H06	YI3H06	1.0630	27.00	7D	ZH0703					7-7/16	11-1/8		
Y03H07	YI3H07	1.0827	27.50	3D	ZH0304					3-1/4	6-29/32		
Y03H07	YI3H07	1.0827	27.50	5D	ZH0504					5-13/32	9-5/64		
Y03H08	YI3H08	1.0938	1-3/32	7D	ZH0704	7-37/64	11-15/64						

Coating : TiN, TiCN, TiAIN & Hardslick are available on your request.

◎ : Excellent ○ : Good

	Non-alloy 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 DRILL INSERTS & HOLDERS

### - Features of *i-Dream Drill Inserts*

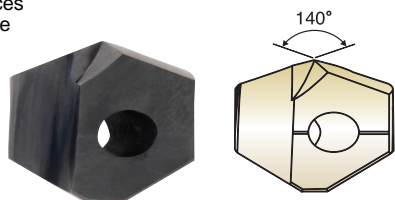
- ▶ Secure and accurate seating resulting in accurate repeatability and concentricity.

#### *i-Dream Drill General*

- ▶ For most steels materials

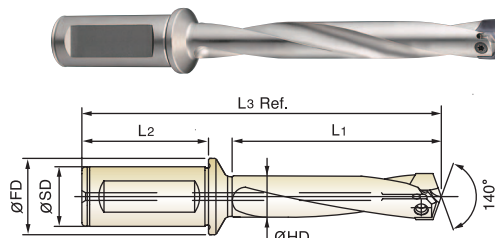
#### *i-Dream Drill INOX*

- ▶ 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.38~39

Unit : inch

Series Range (mm)	Insert EDP No.		Insert O.D.		Length	Holder EDP No.	Diameter HD	Shank Dia. SD	Shank Length L2	Flange Dia. FD	Drilling Depth L1	Overall Length L3 Ref.	Torx Screw No.
	TiAIN General	TiCN INOX	h7 dec.	inch / mm									
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
	Y03I02	YI3I02	1.1094	1*7/64	5D	ZI0501					5-33/64	9-15/64	
	Y03I03	YI3I03	1.1220	28.50	3D	ZI0302	1.0945	1-1/4	2-3/8	1-15/32	7-23/32	11-7/16	
	Y03I04	YI3I04	1.1250	1*1/8	5D	ZI0502					5-39/64	9-5/16	
	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
	Y03I06	YI3I06	1.1562	1*5/32	5D	ZI0503					5-45/64	9-15/32	
	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	
	Y03I08	YI3I08	1.1719	1*11/64	5D	ZI0504					5-13/16	9-35/64	
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
	Y03J02	YI3J02	1.1875	1*3/16	5D	ZJ0501					5-29/32	9-45/64	
	Y03J03	YI3J03	1.2008	30.50	3D	ZJ0302	1.1732	1-1/4	2-3/8	1-15/32	8-17/64	12-1/16	
	Y03J04	YI3J04	1.2031	1*11/64	5D	ZJ0502					6	9-25/32	
	Y03J05	YI3J05	1.2188	1*7/32	3D	ZJ0702	1.1929	1-1/4	2-3/8	1-15/32	8-13/32	12-11/64	TJ3132
	Y03J06	YI3J06	1.2205	31.00	5D	ZJ0503					6-7/64	9-55/64	
	Y03J07	YI3J07	1.2402	31.50	3D	ZJ0304	1.2126	1-1/4	2-3/8	1-15/32	8-35/64	12-19/64	
	Y03J08	YI3J08	1.2500	1*1/4	5D	ZJ0504					6-13/64	10-1/64	
					7D	ZJ0704					8-11/16	12-31/64	

Coating : TiN, TiCN, TiAlN & Hardslick are available on your request.

◎ : Excellent ○ : Good

	Non-alloy 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 *	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

# METRIC

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

Y03 □ / Y13 □

Y13 □

\*Formulas :

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

$$mm/min = (RPM) \cdot (mm/rev)$$

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

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

## INCH

Material		Tensile Strength	Hardness		Cutting Speed Vc [SFM]	Feed [IPR]				
		MPa	HB	HRc		Ø31/64 ~Ø37/64	Ø19/32 ~Ø45/64	Ø23/32 ~Ø55/64	Ø7/8 ~Ø1-1/16	Ø1-3/32 ~Ø1-1/4
Non-alloyed steels, Cast steels Free-machining steels	9SMn28, 9SMnPb28,	~500	100-150		312-394	.006~.011	.008~.014	.011~.016	.013~.020	.015~.022
	10SPb20 etc	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	C15, C22, 20Mn5, Ck45, C45 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	45CrMo4, 42CrMo4, 16MnCr5, Ck75, 35CrMo4, 16MnCr5 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	36CrNiMo4, 41CrAlMo7 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	St33, St37-2, St44-2, St52, St60 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	102Cr6, 105WCr6, C75W 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
Grey cast iron	Pearlitic, Ferritic Pearlitic	500-700	150-210	~16	328-410	.006~.010	.008~.015	.011~.017	.014~.020	.016~.022
		700-850	210-250	16-24	246-312	.004~.008	.006~.011	.008~.012	.010~.014	.011~.016
Cast iron nodular	Ferritic Pearlitic	540	165	4	312-394	.005~.009	.007~.012	.008~.013	.011~.016	.013~.017
		850	250	24	246-312	.004~.008	.006~.010	.007~.011	.010~.014	.011~.016
Malleable cast iron	Ferritic Pearlitic	450	125		328-410	.005~.009	.007~.012	.008~.013	.011~.016	.013~.017
		780	230	21	246-312	.004~.007	.006~.010	.007~.011	.010~.014	.011~.016
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
	Electrolytic copper	100			312-394	.002~.004	.004~.005	.004~.005	.006~.007	.007~.009
Non ferrous material	Duroplastics									
	Fiber plastics									
	Hard rubber									
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

\*Formulas :

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

$$\text{IPM} = (\text{RPM}) \cdot (\text{IPR})$$

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

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

► 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.



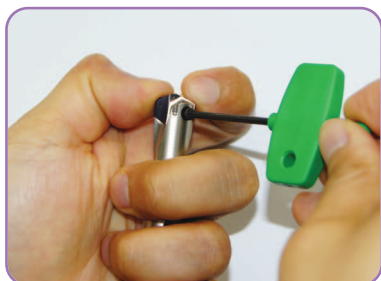
## Assembly of *i-Dream* Drills



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**

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA



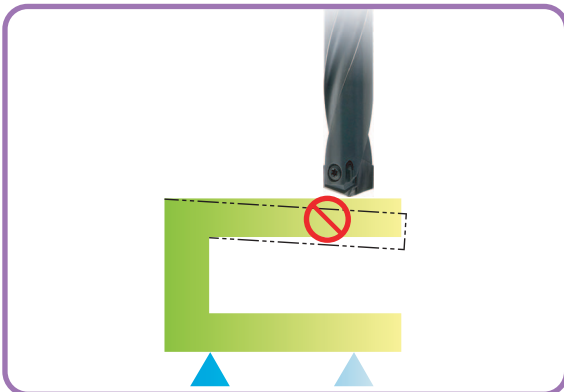
**Intersecting cross hole is bigger than the drill insert's Margin Length.**



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

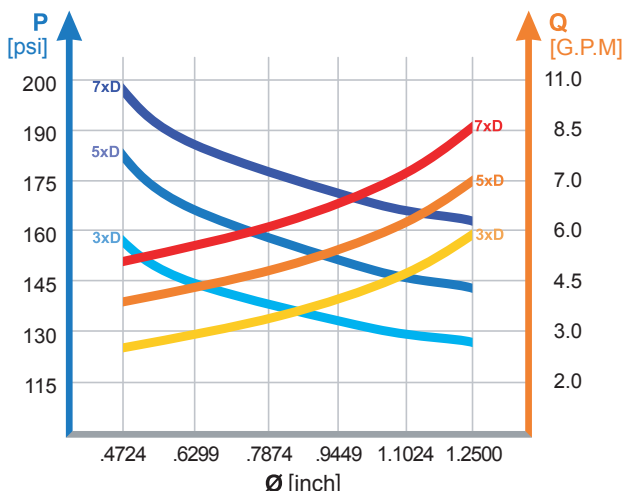


**For drilling stacked plates, minimize the space between the plates. The space stacked plates can cause insert breakage or poor chip control.**



**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



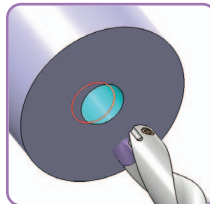
- 3) Build up on cutting edge**
- Increase cutting speed
  - Use a coated insert



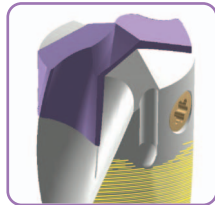
- 4) Chipping or break down on outer corner**
- Reduce feed
  - Rigid clamping of workpiece



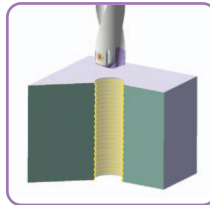
- 5) Wear of land margin**
- Rigid clamping of workpiece
  - Reduce cutting speed
  - Increase coolant flow



- 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



Being the best through innovation

# CARBIDE




# DREAM DRILLS

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

# SELECTION GUIDE

## SOLID CARBIDE DREAM DRILLS (with & without Coolant Holes)

General Purpose 30Rc to 50Rc Alloys

ITEM	MODEL	DESCRIPTION	SIZE		PAGE	
			MIN	MAX		
<b>INCH</b>						
<b>3XD DH414</b>		CARBIDE, DREAM DRILLS without COOLANT HOLES	<i>SHORT</i>	D1/8	D5/8	<b>46</b>
<b>3XD DH416</b>		CARBIDE, DREAM DRILLS with COOLANT HOLES	<i>SHORT</i>	D1/8	D5/8	<b>47</b>
<b>5XD DH418</b>		CARBIDE, DREAM DRILLS with COOLANT HOLES	<i>LONG</i>	D13/64	D1/2	<b>48</b>
<b>METRIC</b>						
<b>3XD DH404</b>		CARBIDE, DREAM DRILLS without COOLANT HOLES	<i>STUB</i>	D3.0	D20.0	<b>49</b>
<b>3XD DH406</b>		CARBIDE, DREAM DRILLS with COOLANT HOLES	<i>SHORT</i>	D3.0	D20.0	<b>51</b>
<b>5XD DH424</b>		CARBIDE, DREAM DRILLS without COOLANT HOLES	<i>LONG</i>	D1.0	D2.9	<b>53</b>
<b>5XD DH408</b>		CARBIDE, DREAM DRILLS with COOLANT HOLES	<i>LONG</i>	D1.0	D20.0	<b>54</b>
<b>8XD DH421</b>		CARBIDE, DREAM DRILLS with COOLANT HOLES	<i>EXTRA LONG</i>	D3.0	D14.0	<b>57</b>
RECOMMENDED CUTTING CONDITIONS					<b>59</b>	



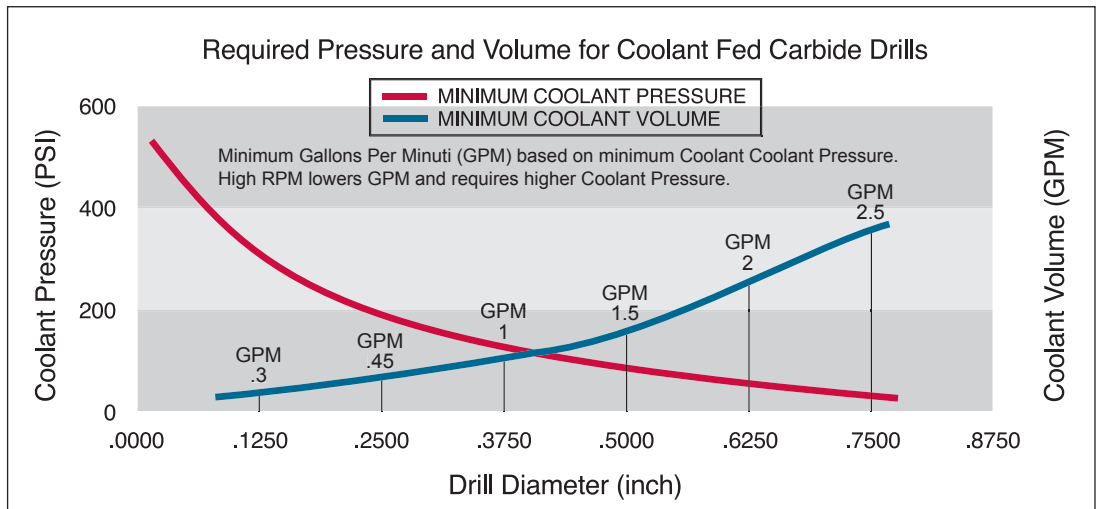
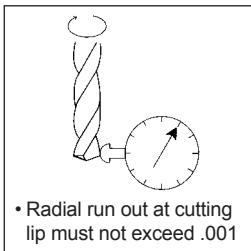
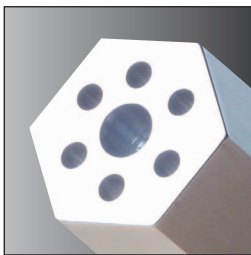
# SOLID CARBIDE DREAM DRILLS

⊙ : Excellent  
○ : Good

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

○	⊙	⊙			○		○				
○	⊙	⊙			○		○				
○	⊙	⊙			○		○				

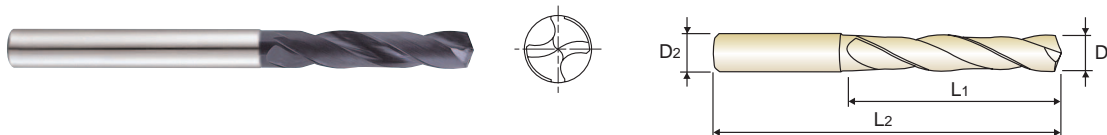
○	⊙	⊙			○		○				
○	⊙	⊙			○		○				
○	⊙	⊙			○		○				
○	⊙	⊙			○		○				
○	⊙	⊙			○		○				



**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
- ▶ **Tolerance** : Dia. Tolerance  $\varnothing D1$ : See page 247, Shank Tolerance  $\varnothing D2$ : -.0001 -.0005



MG

$D_1 = D_2$   
 $3 \times D$

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

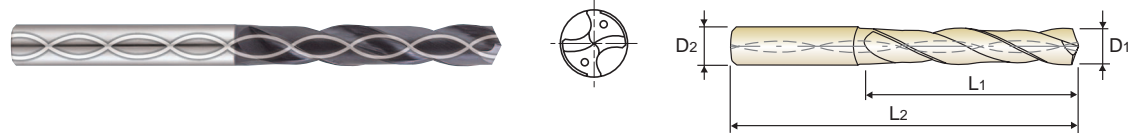
▶ Other shank types are available on your request.

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

◎ : Excellent ○ : Good

# 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
- ▶ **Tolerance** : Dia. Tolerance ØD1: See page 247, Shank Tolerance ØD2: -.0001 -.0005



MG
h6
140°
P.59

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
0081BTF	1/8	.1250	15/64	1.102	2.992	0241BTF	3/8	.3750	25/64	1.969	4.174
0111BTF	11/64	.1719	15/64	1.417	3.386	0251BTF	25/64	.3906	25/64	1.969	4.174
0121BTF	3/16	.1875	15/64	1.575	3.543	0261BTF	13/32	.4062	27/64	2.067	4.567
0131BTF	13/64	.2031	15/64	1.082	3.228	0271BTF	27/64	.4219	27/64	2.165	4.567
0141BTF	7/32	.2188	15/64	1.181	3.228	0281BTF	7/16	.4375	15/32	2.264	4.803
0151BTF	15/64	.2344	15/64	1.181	3.228	0291BTF	29/64	.4531	15/32	2.264	4.803
0161BTF	1/4	.2500	17/64	1.279	3.465	0301BTF	15/32	.4688	15/32	2.362	4.803
2061BTF	F	.2570	17/64	1.279	3.465	0311BTF	31/64	.4844	1/2	2.461	5.039
0171BTF	17/64	.2656	17/64	1.378	3.465	0321BTF	1/2	.5000	1/2	2.559	5.039
2091BTF	I	.2720	.2720	1.378	3.465	0331BTF	33/64	.5156	35/64	2.657	5.276
0181BTF	9/32	.2812	5/16	1.476	3.701	0341BTF	17/32	.5312	35/64	2.756	5.276
0191BTF	19/64	.2969	5/16	1.476	3.701	0351BTF	35/64	.5469	35/64	2.756	5.276
0201BTF	5/16	.3125	5/16	1.575	3.701	0361BTF	9/16	.5625	37/64	2.854	5.512
0211BTF	21/64	.3281	11/32	1.673	3.937	0371BTF	37/64	.5781	37/64	2.953	5.512
2171BTF	Q	.3320	11/32	1.673	3.937	0381BTF	19/32	.5937	5/8	3.051	5.709
0221BTF	11/32	.3438	11/32	1.772	3.937	0391BTF	39/64	.6094	5/8	3.051	5.709
0231BTF	23/64	.3594	25/64	1.870	4.174	0401BTF	5/8	.6250	5/8	3.150	5.709
2211BTF	U	.3680	25/64	1.870	4.174						

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
~HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							
○	◎	◎			○		○				

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for HARDENED STEELS

STANDARD CARBIDE DRILLS

MULTI-1 DRILLS

HPD DRILLS

GOLD-P DRILLS

STRAIGHT SHANK DRILLS

AIRCRAFT DRILLS

SILVER &amp; DEMING DRILLS

TAPER SHANK DRILLS

NC SPOTTING DRILLS

CENTER DRILLS

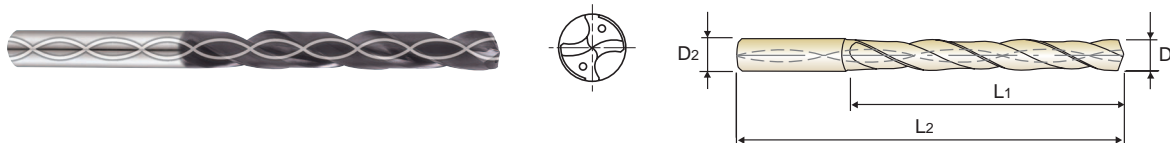
SPADE DRILLS

TECHNICAL DATA

**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
- ▶ **Tolerance** : Dia. Tolerance  $\varnothing D1$ : See page 247, Shank Tolerance  $\varnothing D2$ : -.0001 -.0005



**5 x 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
0131CTF	13/64	.2031	15/64	1-3/4	3-15/16	0221CTF	11/32	.3438	11/32	2-27/32	5
0141CTF	7/32	.2188	15/64	1-57/64	3-15/16	0231CTF	23/64	.3594	25/64	3	5-23/64
0151CTF	15/64	.2344	15/64	1-57/64	3-15/16	2211CTF	U	.3680	25/64	3	5-23/64
0161CTF	1/4	.2500	17/64	2-3/64	4-19/64	0241CTF	3/8	.3750	25/64	3-5/32	5-23/64
2061CTF	F	.2570	17/64	2-13/64	4-19/64	0251CTF	25/64	.3906	25/64	3-5/32	5-23/64
0171CTF	17/64	.2656	17/64	2-13/64	4-19/64	0261CTF	13/32	.4062	27/64	3-5/16	5-7/8
2091CTF	I	.2720	.2720	2-13/64	4-19/64	0271CTF	27/64	.4219	27/64	3-15/32	5-7/8
0181CTF	9/32	.2812	5/16	2-23/64	4-41/64	0281CTF	7/16	.4375	15/32	3-5/8	6-7/32
0191CTF	19/64	.2969	5/16	2-33/64	4-41/64	0291CTF	29/64	.4531	15/32	3-25/32	6-7/32
0201CTF	5/16	.3125	5/16	2-33/64	4-41/64	0301CTF	15/32	.4688	15/32	3-25/32	6-7/32
0211CTF	21/64	.3281	11/32	2-43/64	5	0311CTF	31/64	.4844	1/2	3-15/16	6-37/64
2171CTF	Q	.3320	11/32	2-43/64	5	0321CTF	1/2	.5000	1/2	4-3/32	6-37/64

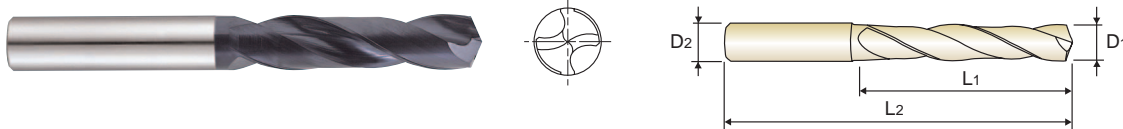
▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
~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
  - Excellent positioning
  - Special design
  - center drilling is not required
  - bushing is not necessary
  - reaming is not required
  - good chip removal
  - powerful drilling



DIN 6539

MG

h6

h7

140°

P.60

**D1=D2**
**3 × D**

Unit : mm

EDP No.	Diameter		Flute Length	Overall Length	EDP No.	Diameter		Flute Length	Overall Length
	Metric	Inch				Metric	Inch		
TiAlN	D1 = D2		L1	L2	TiAlN	D1 = D2		L1	L2
DH404030	3.0	.1181	16	46	DH404057	5.7	.2244	28	66
DH404031	3.1	.1220	18	49	DH404058	5.8	.2283	28	66
DH404032	3.2	.1260	18	49	DH404059	5.9	.2323	28	66
DH404033	3.3	.1299	18	49	DH404060	6.0	.2362	28	66
DH404034	3.4	.1339	20	52	DH404061	6.1	.2402	31	70
DH404035	3.5	.1378	20	52	DH404062	6.2	.2441	31	70
DH404036	3.6	.1417	20	52	DH404063	6.3	.2480	31	70
DH404037	3.7	.1457	20	52	DH404064	6.4	.2520	31	70
DH404038	3.8	.1496	22	55	DH404065	6.5	.2559	31	70
DH404039	3.9	.1535	22	55	DH404066	6.6	.2598	31	70
DH404040	4.0	.1575	22	55	DH404067	6.7	.2638	31	70
DH404041	4.1	.1614	22	55	DH404068	6.8	.2677	34	74
DH404042	4.2	.1654	22	55	DH404069	6.9	.2717	34	74
DH404043	4.3	.1693	24	58	DH404070	7.0	.2756	34	74
DH404044	4.4	.1732	24	58	DH404071	7.1	.2795	34	74
DH404045	4.5	.1772	24	58	DH404072	7.2	.2835	34	74
DH404046	4.6	.1811	24	58	DH404073	7.3	.2874	34	74
DH404047	4.7	.1850	24	58	DH404074	7.4	.2913	34	74
DH404048	4.8	.1890	26	62	DH404075	7.5	.2953	34	74
DH404049	4.9	.1929	26	62	DH404076	7.6	.2992	37	79
DH404050	5.0	.1969	26	62	DH404077	7.7	.3031	37	79
DH404051	5.1	.2008	26	62	DH404078	7.8	.3071	37	79
DH404052	5.2	.2047	26	62	DH404079	7.9	.3110	37	79
DH404053	5.3	.2087	26	62	DH404080	8.0	.3150	37	79
DH404054	5.4	.2126	28	66	DH404081	8.1	.3189	37	79
DH404055	5.5	.2165	28	66	DH404082	8.2	.3228	37	79
DH404056	5.6	.2205	28	66	DH404083	8.3	.3268	37	79

▶ Other shank types are available on your request.

◎ : Excellent    ○ : Good

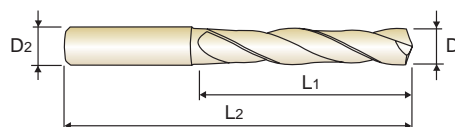
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
~HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							
○	◎	◎			○		○				

**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.60

D<sub>1</sub>=D<sub>2</sub>

3 × D

Unit : mm

EDP No.	Diameter		Flute Length	Overall Length	EDP No.	Diameter		Flute Length	Overall Length
	Metric	Inch				Metric	Inch		
TiAlN	D <sub>1</sub> = D <sub>2</sub>		L <sub>1</sub>	L <sub>2</sub>	TiAlN	D <sub>1</sub> = D <sub>2</sub>		L <sub>1</sub>	L <sub>2</sub>
DH404084	8.4	.3307	37	79	DH404110	11.0	.4331	47	95
DH404085	8.5	.3346	37	79	DH404115	11.5	.4528	47	95
DH404086	8.6	.3386	40	84	DH404120	12.0	.4724	51	102
DH404087	8.7	.3425	40	84	DH404130	13.0	.5118	51	102
DH404088	8.8	.3465	40	84	DH404135	13.5	.5314	54	107
DH404089	8.9	.3504	40	84	DH404140	14.0	.5512	54	107
DH404090	9.0	.3543	40	84	DH404145	14.5	.5708	56	111
DH404091	9.1	.3583	40	84	DH404150	15.0	.5905	56	111
DH404092	9.2	.3622	40	84	DH404155	15.5	.6102	58	115
DH404093	9.3	.3661	40	84	DH404160	16.0	.6299	58	115
DH404094	9.4	.3701	40	84	DH404165	16.5	.6495	60	119
DH404095	9.5	.3740	40	84	DH404170	17.0	.6692	60	119
DH404096	9.6	.3780	43	89	DH404175	17.5	.6889	62	123
DH404097	9.7	.3819	43	89	DH404180	18.0	.7087	62	123
DH404098	9.8	.3858	43	89	DH404185	18.5	.7283	64	127
DH404099	9.9	.3898	43	89	DH404190	19.0	.7480	64	127
DH404100	10.0	.3937	43	89	DH404195	19.5	.7676	66	131
DH404102	10.2	.4016	43	89	DH404200	20.0	.7874	66	131
DH404105	10.5	.4134	43	89					

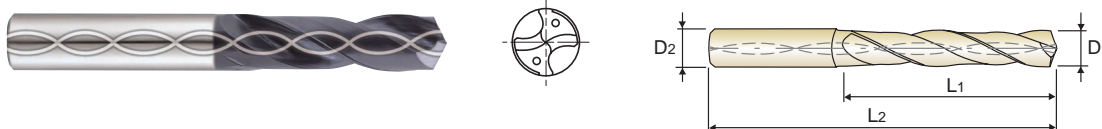
► Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
~HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							
○	◎	◎			○		○				

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



DIN 6537

MG

h6

m7

140°

P.60

**3 × D**

Unit : mm

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length	EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Metric	Inch					Metric	Inch			
TiAlN	D1		D2	L1	L2	TiAlN	D1		D2	L1	L2
DH406030	3.0	.1181	6	20	62	DH406057	5.7	.2244	6	28	66
DH406031	3.1	.1220	6	20	62	DH406058	5.8	.2283	6	28	66
DH406032	3.2	.1260	6	20	62	DH406059	5.9	.2323	6	28	66
DH406033	3.3	.1299	6	20	62	DH406060	6.0	.2362	6	28	66
DH406034	3.4	.1339	6	20	62	DH406061	6.1	.2402	8	34	79
DH406035	3.5	.1378	6	20	62	DH406062	6.2	.2441	8	34	79
DH406036	3.6	.1417	6	20	62	DH406063	6.3	.2480	8	34	79
DH406037	3.7	.1457	6	20	62	DH406064	6.4	.2520	8	34	79
DH406038	3.8	.1496	6	24	66	DH406065	6.5	.2559	8	34	79
DH406039	3.9	.1535	6	24	66	DH406066	6.6	.2598	8	34	79
DH406040	4.0	.1575	6	24	66	DH406067	6.7	.2638	8	34	79
DH406041	4.1	.1614	6	24	66	DH406068	6.8	.2677	8	34	79
DH406042	4.2	.1654	6	24	66	DH406069	6.9	.2717	8	34	79
DH406043	4.3	.1693	6	24	66	DH406070	7.0	.2756	8	34	79
DH406044	4.4	.1732	6	24	66	DH406071	7.1	.2795	8	41	79
DH406045	4.5	.1772	6	24	66	DH406072	7.2	.2835	8	41	79
DH406046	4.6	.1811	6	24	66	DH406073	7.3	.2874	8	41	79
DH406047	4.7	.1850	6	24	66	DH406074	7.4	.2913	8	41	79
DH406048	4.8	.1890	6	28	66	DH406075	7.5	.2953	8	41	79
DH406049	4.9	.1929	6	28	66	DH406076	7.6	.2992	8	41	79
DH406050	5.0	.1969	6	28	66	DH406077	7.7	.3031	8	41	79
DH406051	5.1	.2008	6	28	66	DH406078	7.8	.3071	8	41	79
DH406052	5.2	.2047	6	28	66	DH406079	7.9	.3110	8	41	79
DH406053	5.3	.2087	6	28	66	DH406080	8.0	.3150	8	41	79
DH406054	5.4	.2126	6	28	66	DH406081	8.1	.3189	10	47	89
DH406055	5.5	.2165	6	28	66	DH406082	8.2	.3228	10	47	89
DH406056	5.6	.2205	6	28	66	DH406083	8.3	.3268	10	47	89

▶ Other shank types are available on your request.

◎ : Excellent    ○ : Good

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

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for HARDENED STEELS

STANDARD CARBIDE DRILLS

MULTI-1 DRILLS

HPD DRILLS

GOLD-P DRILLS

STRAIGHT SHANK DRILLS

AIRCRAFT DRILLS

SILVER &amp; DEMING DRILLS

TAPER SHANK DRILLS

NC SPOTTING DRILLS

CENTER DRILLS

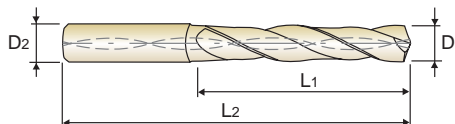
SPADE DRILLS

TECHNICAL DATA

**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°
P.60

**3 × D**

Unit : mm

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length	EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Metric	Inch					Metric	Inch			
TiAlN	D1		D2	L1	L2	TiAlN	D1		D2	L1	L2
DH406084	8.4	.3307	10	47	89	DH406111	11.1	.4370	12	55	102
DH406085	8.5	.3346	10	47	89	DH406112	11.2	.4409	12	55	102
DH406086	8.6	.3386	10	47	89	DH406113	11.3	.4448	12	55	102
DH406087	8.7	.3425	10	47	89	DH406114	11.4	.4488	12	55	102
DH406088	8.8	.3465	10	47	89	DH406115	11.5	.4527	12	55	102
DH406089	8.9	.3504	10	47	89	DH406116	11.6	.4566	12	55	102
DH406090	9.0	.3543	10	47	89	DH406117	11.7	.4606	12	55	102
DH406091	9.1	.3583	10	47	89	DH406118	11.8	.4645	12	55	102
DH406092	9.2	.3622	10	47	89	DH406119	11.9	.4685	12	55	102
DH406093	9.3	.3661	10	47	89	DH406120	12.0	.4724	12	55	102
DH406094	9.4	.3701	10	47	89	DH406125	12.5	.4921	14	60	107
DH406095	9.5	.3740	10	47	89	DH406130	13.0	.5118	14	60	107
DH406096	9.6	.3780	10	47	89	DH406135	13.5	.5314	14	60	107
DH406097	9.7	.3819	10	47	89	DH406140	14.0	.5512	14	60	107
DH406098	9.8	.3858	10	47	89	DH406145	14.5	.5708	16	65	115
DH406099	9.9	.3898	10	47	89	DH406150	15.0	.5905	16	65	115
DH406100	10.0	.3937	10	47	89	DH406155	15.5	.6102	16	65	115
DH406101	10.1	.3976	12	55	102	DH406160	16.0	.6299	16	65	115
DH406102	10.2	.4016	12	55	102	DH406165	16.5	.6495	18	73	123
DH406103	10.3	.4055	12	55	102	DH406170	17.0	.6692	18	73	123
DH406104	10.4	.4094	12	55	102	DH406175	17.5	.6889	18	73	123
DH406105	10.5	.4134	12	55	102	DH406180	18.0	.7087	18	73	123
DH406106	10.6	.4173	12	55	102	DH406185	18.5	.7283	20	79	131
DH406107	10.7	.4212	12	55	102	DH406190	19.0	.7480	20	79	131
DH406108	10.8	.4252	12	55	102	DH406195	19.5	.7676	20	79	131
DH406109	10.9	.4291	12	55	102	DH406200	20.0	.7874	20	79	131
DH406110	11.0	.4330	12	55	102						

▶ Other shank types are available on your request.

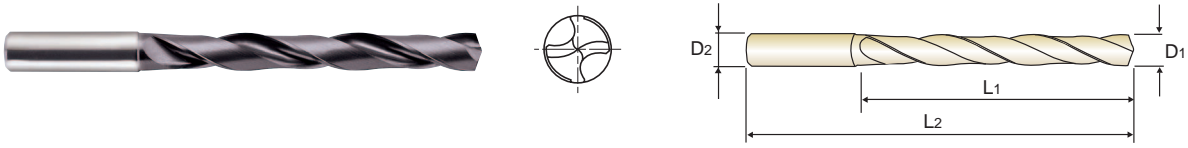
◎ : Excellent ○ : Good

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



# 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
  - Excellent positioning
  - Special design
  - center drilling is not required
  - bushing is not necessary
  - reaming is not required
  - good chip removal
  - powerful drilling



DIN 6537

MG

h6

m7

140°

P.60

5 × D

Unit : mm

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length	EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Metric	Inch					Metric	Inch			
TiAlN	D1		D2	L1	L2	TiAlN	D1		D2	L1	L2
DH424010	1.0	.0394	3	8	55	DH424020	2.0	.0787	4	21	57
DH424011	1.1	.0433	3	12	55	DH424021	2.1	.0827	4	21	57
DH424012	1.2	.0472	3	12	55	DH424022	2.2	.0866	4	21	57
DH424013	1.3	.0512	3	12	55	DH424023	2.3	.0906	4	21	57
DH424014	1.4	.0551	3	12	55	DH424024	2.4	.0945	4	21	57
DH424015	1.5	.0591	3	16	55	DH424025	2.5	.0984	4	21	57
DH424016	1.6	.0630	3	16	55	DH424026	2.6	.1024	4	21	57
DH424017	1.7	.0669	3	16	55	DH424027	2.7	.1063	4	21	57
DH424018	1.8	.0709	3	16	55	DH424028	2.8	.1102	4	21	57
DH424019	1.9	.0748	3	16	55	DH424029	2.9	.1142	4	21	57

▶ Other shank types are available on your request.

◎ : Excellent   ○ : Good

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

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for HARDENED STEELS

STANDARD CARBIDE DRILLS

MULTI-1 DRILLS

HPD DRILLS

GOLD-P DRILLS

STRAIGHT SHANK DRILLS

AIRCRAFT DRILLS

SILVER &amp; DEMING DRILLS

TAPER SHANK DRILLS

NC SPOTTING DRILLS

CENTER DRILLS

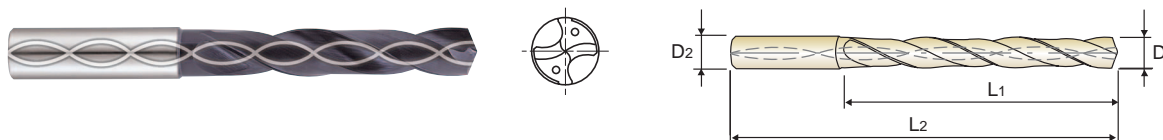
SPADE DRILLS

TECHNICAL DATA

**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°
P.60

**5 × D**

Unit : mm

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length	EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Metric	Inch					Metric	Inch			
TiAlN	D1		D2	L1	L2	TiAlN	D1		D2	L1	L2
DH408010	1.0	.0394	3	8	55	DH408033	3.3	.1299	6	28	66
DH408011	1.1	.0433	3	12	55	DH408034	3.4	.1339	6	28	66
DH408012	1.2	.0472	3	12	55	DH408035	3.5	.1378	6	28	66
DH408013	1.3	.0512	3	12	55	DH408036	3.6	.1417	6	28	66
DH408014	1.4	.0551	3	12	55	DH408037	3.7	.1457	6	28	66
DH408015	1.5	.0591	3	16	55	DH408038	3.8	.1496	6	36	74
DH408016	1.6	.0630	3	16	55	DH408039	3.9	.1535	6	36	74
DH408017	1.7	.0669	3	16	55	DH408040	4.0	.1575	6	36	74
DH408018	1.8	.0709	3	16	55	DH408041	4.1	.1614	6	36	74
DH408019	1.9	.0748	3	16	55	DH408042	4.2	.1654	6	36	74
DH408020	2.0	.0787	4	21	57	DH408043	4.3	.1693	6	36	74
DH408021	2.1	.0827	4	21	57	DH408044	4.4	.1732	6	36	74
DH408022	2.2	.0866	4	21	57	DH408045	4.5	.1772	6	36	74
DH408023	2.3	.0906	4	21	57	DH408046	4.6	.1811	6	36	74
DH408024	2.4	.0945	4	21	57	DH408047	4.7	.1850	6	36	74
DH408025	2.5	.0984	4	21	57	DH408048	4.8	.1890	6	44	82
DH408026	2.6	.1024	4	21	57	DH408049	4.9	.1929	6	44	82
DH408027	2.7	.1063	4	21	57	DH408050	5.0	.1969	6	44	82
DH408028	2.8	.1102	4	21	57	DH408051	5.1	.2008	6	44	82
DH408029	2.9	.1142	4	21	57	DH408052	5.2	.2047	6	44	82
DH408030	3.0	.1181	6	28	66	DH408053	5.3	.2087	6	44	82
DH408031	3.1	.1220	6	28	66	DH408054	5.4	.2126	6	44	82
DH408032	3.2	.1260	6	28	66	DH408055	5.5	.2165	6	44	82

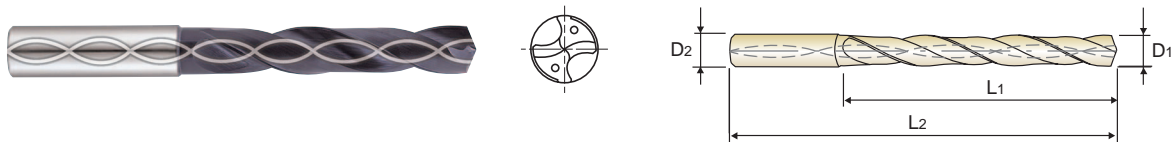
▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

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

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



DIN 6537

MG

h6

m7

140°

P.60

**5 × D**

Unit : mm

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length	EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Metric	Inch					Metric	Inch			
TiAlN	D1		D2	L1	L2	TiAlN	D1		D2	L1	L2
DH408056	5.6	.2205	6	44	82	DH408079	7.9	.3110	8	53	91
DH408057	5.7	.2244	6	44	82	DH408080	8.0	.3150	8	53	91
DH408058	5.8	.2283	6	44	82	DH408081	8.1	.3189	10	61	103
DH408059	5.9	.2323	6	44	82	DH408082	8.2	.3228	10	61	103
DH408060	6.0	.2362	6	44	82	DH408083	8.3	.3268	10	61	103
DH408061	6.1	.2402	8	53	91	DH408084	8.4	.3307	10	61	103
DH408062	6.2	.2441	8	53	91	DH408085	8.5	.3346	10	61	103
DH408063	6.3	.2480	8	53	91	DH408086	8.6	.3386	10	61	103
DH408064	6.4	.2520	8	53	91	DH408087	8.7	.3425	10	61	103
DH408065	6.5	.2559	8	53	91	DH408088	8.8	.3465	10	61	103
DH408066	6.6	.2598	8	53	91	DH408089	8.9	.3504	10	61	103
DH408067	6.7	.2638	8	53	91	DH408090	9.0	.3543	10	61	103
DH408068	6.8	.2677	8	53	91	DH408091	9.1	.3583	10	61	103
DH408069	6.9	.2717	8	53	91	DH408092	9.2	.3622	10	61	103
DH408070	7.0	.2756	8	53	91	DH408093	9.3	.3661	10	61	103
DH408071	7.1	.2795	8	53	91	DH408094	9.4	.3701	10	61	103
DH408072	7.2	.2835	8	53	91	DH408095	9.5	.3740	10	61	103
DH408073	7.3	.2874	8	53	91	DH408096	9.6	.3780	10	61	103
DH408074	7.4	.2913	8	53	91	DH408097	9.7	.3819	10	61	103
DH408075	7.5	.2953	8	53	91	DH408098	9.8	.3858	10	61	103
DH408076	7.6	.2992	8	53	91	DH408099	9.9	.3898	10	61	103
DH408077	7.7	.3031	8	53	91	DH408100	10.0	.3937	10	61	103
DH408078	7.8	.3071	8	53	91	DH408101	10.1	.3976	12	71	118

▶ Other shank types are available on your request.

◎ : Excellent   ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
-HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							
○	◎	◎			○		○				

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for HARDENED STEELS

STANDARD CARBIDE DRILLS

MULTI-1 DRILLS

HPD DRILLS

GOLD-P DRILLS

STRAIGHT SHANK DRILLS

AIRCRAFT DRILLS

SILVER &amp; DEMING DRILLS

TAPER SHANK DRILLS

NC SPOTTING DRILLS

CENTER DRILLS

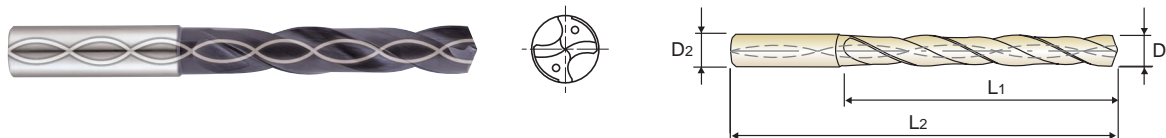
SPADE DRILLS

TECHNICAL DATA

**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°
P.60

**5 × D**

Unit : mm

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length	EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Metric	Inch					Metric	Inch			
	D1		D2	L1	L2		D1		D2	L1	L2
TiAlN						TiAlN					
DH408102	10.2	.4016	12	71	118	DH408120	12.0	.4724	12	71	118
DH408103	10.3	.4055	12	71	118	DH408125	12.5	.4921	14	77	124
DH408104	10.4	.4094	12	71	118	DH408130	13.0	.5118	14	77	124
DH408105	10.5	.4134	12	71	118	DH408135	13.5	.5314	14	77	124
DH408106	10.6	.4173	12	71	118	DH408140	14.0	.5512	14	77	124
DH408107	10.7	.4212	12	71	118	DH408145	14.5	.5708	16	83	133
DH408108	10.8	.4252	12	71	118	DH408150	15.0	.5905	16	83	133
DH408109	10.9	.4291	12	71	118	DH408155	15.5	.6102	16	83	133
DH408110	11.0	.4330	12	71	118	DH408160	16.0	.6299	16	83	133
DH408111	11.1	.4370	12	71	118	DH408165	16.5	.6495	18	93	143
DH408112	11.2	.4409	12	71	118	DH408170	17.0	.6692	18	93	143
DH408113	11.3	.4448	12	71	118	DH408175	17.5	.6889	18	93	143
DH408114	11.4	.4488	12	71	118	DH408180	18.0	.7087	18	93	143
DH408115	11.5	.4527	12	71	118	DH408185	18.5	.7283	20	101	153
DH408116	11.6	.4566	12	71	118	DH408190	19.0	.7480	20	101	153
DH408117	11.7	.4606	12	71	118	DH408195	19.5	.7676	20	101	153
DH408118	11.8	.4645	12	71	118	DH408200	20.0	.7874	20	101	153
DH408119	11.9	.4685	12	71	118						

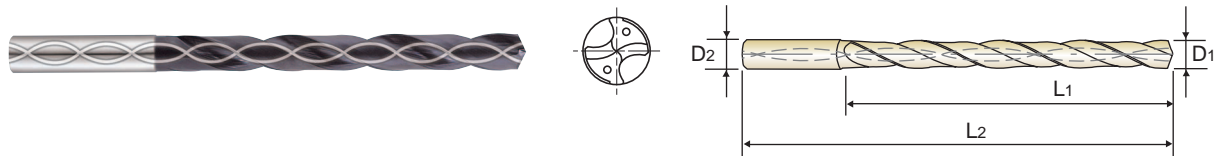
▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

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

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



DIN 6537

MG

h6

m7

140°

P.60

**8 × D**

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length	EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Metric	Inch					Metric	Inch			
TiAlN	D1		D2	L1	L2	TiAlN	D1		D2	L1	L2
DH421030	3.0	.1181	6	34	72	DH421057	5.7	.2244	6	57	95
DH421031	3.1	.1220	6	34	72	DH421058	5.8	.2283	6	57	95
DH421032	3.2	.1260	6	34	72	DH421059	5.9	.2323	6	57	95
DH421033	3.3	.1299	6	34	72	DH421060	6.0	.2362	6	57	95
DH421034	3.4	.1339	6	34	72	DH421061	6.1	.2402	8	76	114
DH421035	3.5	.1378	6	34	72	DH421062	6.2	.2441	8	76	114
DH421036	3.6	.1417	6	34	72	DH421063	6.3	.2480	8	76	114
DH421037	3.7	.1457	6	34	72	DH421064	6.4	.2520	8	76	114
DH421038	3.8	.1496	6	43	81	DH421065	6.5	.2559	8	76	114
DH421039	3.9	.1535	6	43	81	DH421066	6.6	.2598	8	76	114
DH421040	4.0	.1575	6	43	81	DH421067	6.7	.2638	8	76	114
DH421041	4.1	.1614	6	43	81	DH421068	6.8	.2677	8	76	114
DH421042	4.2	.1654	6	43	81	DH421069	6.9	.2717	8	76	114
DH421043	4.3	.1693	6	43	81	DH421070	7.0	.2756	8	76	114
DH421044	4.4	.1732	6	43	81	DH421071	7.1	.2795	8	76	114
DH421045	4.5	.1772	6	43	81	DH421072	7.2	.2835	8	76	114
DH421046	4.6	.1811	6	43	81	DH421073	7.3	.2874	8	76	114
DH421047	4.7	.1850	6	43	81	DH421074	7.4	.2913	8	76	114
DH421048	4.8	.1890	6	57	95	DH421075	7.5	.2953	8	76	114
DH421049	4.9	.1929	6	57	95	DH421076	7.6	.2992	8	76	114
DH421050	5.0	.1969	6	57	95	DH421077	7.7	.3031	8	76	114
DH421051	5.1	.2008	6	57	95	DH421078	7.8	.3071	8	76	114
DH421052	5.2	.2047	6	57	95	DH421079	7.9	.3110	8	76	114
DH421053	5.3	.2087	6	57	95	DH421080	8.0	.3150	8	76	114
DH421054	5.4	.2126	6	57	95	DH421081	8.1	.3189	10	95	142
DH421055	5.5	.2165	6	57	95	DH421082	8.2	.3228	10	95	142
DH421056	5.6	.2205	6	57	95	DH421083	8.3	.3268	10	95	142

▶ Other shank types are available on your request.

◎ : Excellent    ○ : Good

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

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for HARDENED STEELS

STANDARD CARBIDE DRILLS

MULTI-1 DRILLS

HPD DRILLS

GOLD-P DRILLS

STRAIGHT SHANK DRILLS

AIRCRAFT DRILLS

SILVER &amp; DEMING DRILLS

TAPER SHANK DRILLS

NC SPOTTING DRILLS

CENTER DRILLS

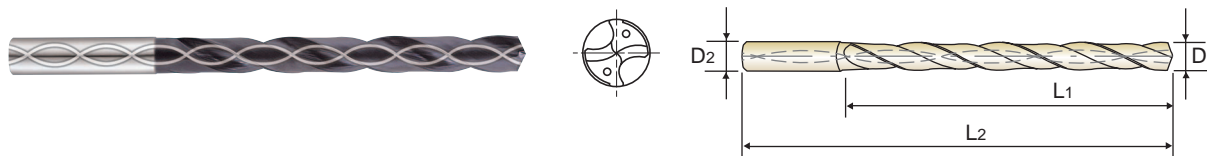
SPADE DRILLS

TECHNICAL DATA

**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.
- ▶ **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.60

**8 × D**

Unit : mm

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length	EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Metric	Inch					Metric	Inch			
TiAlN	D1		D2	L1	L2	TiAlN	D1		D2	L1	L2
DH421084	8.4	.3307	10	95	142	DH421105	10.5	.4134	12	114	162
DH421085	8.5	.3346	10	95	142	DH421106	10.6	.4173	12	114	162
DH421086	8.6	.3386	10	95	142	DH421107	10.7	.4212	12	114	162
DH421087	8.7	.3425	10	95	142	DH421108	10.8	.4252	12	114	162
DH421088	8.8	.3465	10	95	142	DH421109	10.9	.4291	12	114	162
DH421089	8.9	.3504	10	95	142	DH421110	11.0	.4330	12	114	162
DH421090	9.0	.3543	10	95	142	DH421111	11.1	.4370	12	114	162
DH421091	9.1	.3583	10	95	142	DH421112	11.2	.4409	12	114	162
DH421092	9.2	.3622	10	95	142	DH421113	11.3	.4448	12	114	162
DH421093	9.3	.3661	10	95	142	DH421114	11.4	.4488	12	114	162
DH421094	9.4	.3701	10	95	142	DH421115	11.5	.4527	12	114	162
DH421095	9.5	.3740	10	95	142	DH421116	11.6	.4566	12	114	162
DH421096	9.6	.3780	10	95	142	DH421117	11.7	.4606	12	114	162
DH421097	9.7	.3819	10	95	142	DH421118	11.8	.4645	12	114	162
DH421098	9.8	.3858	10	95	142	DH421119	11.9	.4685	12	114	162
DH421099	9.9	.3898	10	95	142	DH421120	12.0	.4724	12	114	162
DH421100	10.0	.3937	10	95	142	DH421125	12.5	.4921	14	133	178
DH421101	10.1	.3976	12	114	162	DH421130	13.0	.5118	14	133	178
DH421102	10.2	.4016	12	114	162	DH421135	13.5	.5314	14	133	178
DH421103	10.3	.4055	12	114	162	DH421140	14.0	.5512	14	133	178
DH421104	10.4	.4094	12	114	162						

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

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

**CARBIDE, DREAM DRILLS without COOLANT HOLES, TiAIN COATED**

**DH414 SERIES**

WORK MATERIAL	CAST IRON		CAST IRON		CARBON STEELS		ALLOY STEELS	
	< HRC24		> HRC24		< HRC30		HRC30 - 42	
	N	S	N	S	N	S	N	S
1/8 ~ 3/16	13120	.006	8750	.005	7880	.005	7000	.005
3/16 ~ 5/16	8200	.008	5470	.006	4920	.006	4370	.006
5/16 ~ 3/8	5970	.011	3980	.009	3560	.009	3190	.009
3/8 ~ 1/2	4690	.014	3120	.011	2810	.011	2500	.011
1/2 ~ 9/16	3860	.016	2570	.012	2310	.012	2060	.012
9/16 ~ 13/16	2980	.018	1990	.014	1790	.014	1590	.014

► Recommend to reduce the feed rate as following  
**Feed 100% : DH414(3 × D)**

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

**CARBIDE, DREAM DRILLS with COOLANT HOLES, TiAIN COATED**

**DH416, DH418 SERIES**

WORK MATERIAL	CAST IRON		CAST IRON		CARBON STEELS		ALLOY STEELS	
	< HRC24		> HRC24		< HRC30		HRC30 - 42	
	N	S	N	S	N	S	N	S
1/8 ~ 3/16	14870	.006	9620	.006	8750	.006	7880	.005
3/16 ~ 5/16	8200	.008	6010	.008	5470	.008	4920	.006
5/16 ~ 3/8	6760	.011	4370	.011	3980	.011	3580	.009
3/8 ~ 1/2	5310	.014	3440	.014	3120	.014	2810	.011
1/2 ~ 9/16	4370	.016	2830	.016	2570	.016	2310	.012
9/16 ~ 13/16	3380	.018	2190	.018	1990	.018	1790	.014

► Recommend to reduce the feed rate as following  
**Feed 100% : DH416(3 × D)**  
**Feed 85% : DH418(5 × D)**

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

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA



**CARBIDE, DREAM DRILLS without COOLANT HOLES, TiAIN COATED**

**DH404, DH424 SERIES**

WORK MATERIAL		NON-ALLOY STEELS		ALLOY STEELS		SOFT GREY CAST IRON		HARD GREY CAST IRON	
STRENGTH		< HRc 20		> HRc 20		< 240 BHN		< 300 BHN	
DIAMETER		N	S	N	S	N	S	N	S
METRIC	INCH								
1.0	.0394	13000	.002	11250	.002	21300	.002	14200	.002
2.0	.0787	13000	.002	11250	.002	21300	.002	14200	.002
3.0	.1181	13000	.005	11000	.005	21000	.005	14000	.005
4.0	.1575	9500	.006	8400	.006	16000	.006	10500	.006
5.0	.1969	7600	.006	6700	.006	13000	.006	8300	.006
6.0	.2362	6400	.007	5600	.007	11000	.007	6900	.007
7.0	.2756	5500	.007	4800	.007	9100	.007	5900	.007
8.0	.3150	4800	.008	4200	.008	8000	.008	5200	.008
9.0	.3543	4200	.009	3700	.009	7100	.009	4600	.009
10.0	.3937	3800	.010	3350	.010	6400	.010	4150	.010
12.0	.4724	3200	.011	2800	.011	5300	.011	3450	.011
14.0	.5512	2750	.011	2400	.011	4550	.011	3000	.011
16.0	.6299	2400	.012	2100	.012	4000	.012	2600	.012
18.0	.7087	2100	.013	1850	.013	3550	.013	2300	.013
20.0	.7874	1900	.014	1650	.014	3200	.014	2100	.014

► Recommend to reduce the feed rate as following

**Feed 100% : DH404(3 × D)**

N = R.P.M

S = Inch per Revolution(inch/rev.)

**CARBIDE, DREAM DRILLS with COOLANT HOLES, TiAIN COATED**

**DH406, DH408, DH421 SERIES**

WORK MATERIAL		NON-ALLOY STEELS		ALLOY STEELS		SOFT GREY CAST IRON		HARD GREY CAST IRON	
STRENGTH		< HRc 20		> HRc 20		< 240 BHN		< 300 BHN	
DIAMETER		N	S	N	S	N	S	N	S
METRIC	INCH								
1.0	.0394	16250	.002	14800	.002	26600	.002	17300	.002
2.0	.0787	16250	.003	14800	.003	26600	.003	17300	.003
3.0	.1181	16000	.006	14500	.006	26000	.006	17000	.006
4.0	.1575	12000	.007	11000	.007	20000	.007	13000	.007
5.0	.1969	9550	.007	8600	.007	16000	.007	10000	.007
6.0	.2362	8000	.008	7200	.008	13000	.008	8500	.008
7.0	.2756	6800	.009	6100	.009	11500	.009	7300	.009
8.0	.3150	6000	.009	5400	.009	9900	.009	6400	.009
9.0	.3543	5300	.011	4800	.011	8800	.011	5700	.011
10.0	.3937	4800	.012	4300	.012	8000	.012	5100	.012
12.0	.4724	4000	.013	3600	.013	6600	.013	4250	.013
14.0	.5512	3400	.014	3050	.014	5700	.014	3650	.014
16.0	.6299	3000	.015	2700	.015	5000	.015	3200	.015
18.0	.7087	2650	.017	2400	.017	4400	.017	2850	.017
20.0	.7874	2400	.018	2150	.018	4000	.018	2550	.018

► Recommend to reduce the feed rate as following

**Feed 100% : DH406(3 × D), Feed 85% : DH408(5 × D),**

**Feed 70% : DH421(8 × D)**

N = R.P.M

S = Inch per Revolution(inch/rev.)





Being the best through innovation

**CARBIDE**



# 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		PAGE	
			MIN	MAX		
<b>INCH</b>						
<b>3XD DH463</b>		CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES	<i>SHORT</i>	D1/8	D5/8	<b>64</b>
<b>5XD DH464</b>		CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES	<i>LONG</i>	D13/64	D1/2	<b>65</b>
<b>METRIC</b>						
<b>3XD DH451</b>		CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES	<i>SHORT</i>	D3.0	D20.0	<b>66</b>
<b>5XD DH452</b>		CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES	<i>LONG</i>	D3.0	D20.0	<b>68</b>
<b>8XD DH453</b>		CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES	<i>EXTRA LONG</i>	D3.0	D14.0	<b>70</b>
RECOMMENDED CUTTING CONDITIONS					<b>72</b>	

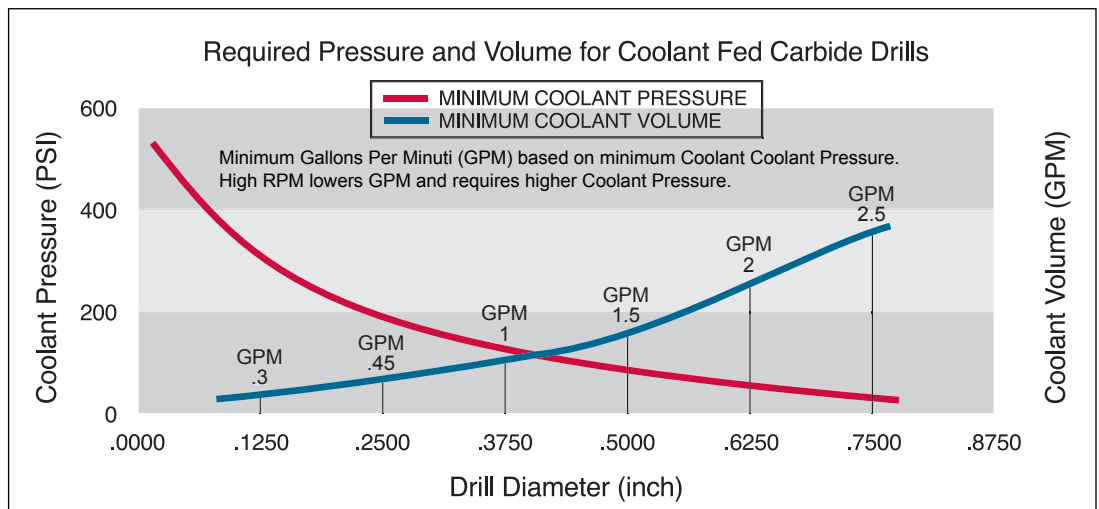
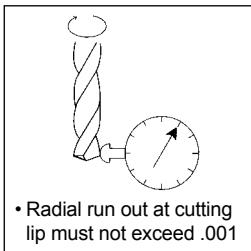
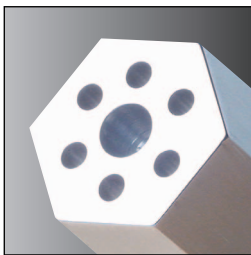
# SOLID CARBIDE DREAM DRILLS-INOX

⊙ : Excellent  
○ : Good

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

⊙	⊙	○				○	⊙	○	○		
⊙	⊙	○				○	⊙	○	○		

⊙	⊙	○				○	⊙	○	○		
⊙	⊙	○				○	⊙	○	○		
⊙	⊙	○				○	⊙	○	○		

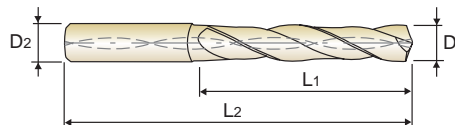




**CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES**

**SHORT**

- ▶ The tool has the special flute shape and geometry for suitable machining of stainless steel.
- ▶ Excellent chip evacuation due to better surface treatment.
- ▶ Point R-thinning makes the superior centering and chip curl.
- ▶ TiAlN coating achieves the better surface finishes and longer tool life.
- ▶ Tolerance : Dia. Tolerance ØD1: See page 218, Shank Tolerance ØD2: -.0001 -.0005



▶ **for stainless steel**

**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
DH463008	1/8	.1250	15/64	1.102	2.992	DH463024	3/8	.3750	25/64	1.969	4.174
DH463011	11/64	.1719	15/64	1.417	3.386	DH463025	25/64	.3906	25/64	1.969	4.174
DH463012	3/16	.1875	15/64	1.575	3.543	DH463026	13/32	.4062	27/64	2.067	4.567
DH463013	13/64	.2031	15/64	1.082	3.228	DH463027	27/64	.4219	27/64	2.165	4.567
DH463014	7/32	.2188	15/64	1.181	3.228	DH463028	7/16	.4375	15/32	2.264	4.803
DH463015	15/64	.2344	15/64	1.181	3.228	DH463029	29/64	.4531	15/32	2.264	4.803
DH463016	1/4	.2500	17/64	1.279	3.465	DH463030	15/32	.4688	15/32	2.362	4.803
DH463206	F	.2570	17/64	1.279	3.465	DH463031	31/64	.4844	1/2	2.461	5.039
DH463017	17/64	.2656	17/64	1.378	3.465	DH463032	1/2	.5000	1/2	2.559	5.039
DH463209	I	.2720	.2720	1.378	3.465	DH463033	33/64	.5156	35/64	2.657	5.276
DH463018	9/32	.2812	5/16	1.476	3.701	DH463034	17/32	.5312	35/64	2.756	5.276
DH463019	19/64	.2969	5/16	1.476	3.701	DH463035	35/64	.5469	35/64	2.756	5.276
DH463020	5/16	.3125	5/16	1.575	3.701	DH463036	9/16	.5625	37/64	2.854	5.512
DH463021	21/64	.3281	11/32	1.673	3.937	DH463037	37/64	.5781	37/64	2.953	5.512
DH463217	Q	.3320	11/32	1.673	3.937	DH463038	19/32	.5937	5/8	3.051	5.709
DH463022	11/32	.3438	11/32	1.772	3.937	DH463039	39/64	.6094	5/8	3.051	5.709
DH463023	23/64	.3594	25/64	1.870	4.174	DH463040	5/8	.6250	5/8	3.150	5.709
DH463221	U	.3680	25/64	1.870	4.174						

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
~HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							
◎	◎	○				○	◎	○	○		

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

- ▶ The tool has the special flute shape and geometry for suitable machining of stainless steel.
- ▶ Excellent chip evacuation due to better surface treatment.
- ▶ Point R-thinning makes the superior centering and chip curl.
- ▶ TiAlN coating achieves the better surface finishes and longer tool life.
- ▶ Tolerance : Dia. Tolerance  $\varnothing D1$ : See page 218, Shank Tolerance  $\varnothing D2$ : -.0001 -.0005


**▶ for stainless steel**
**5 × 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
DH464013	13/64	.2031	15/64	1-3/4	3-15/16	DH464022	11/32	.3438	11/32	2-27/32	5
DH464014	7/32	.2188	15/64	1-57/64	3-15/16	DH464023	23/64	.3594	25/64	3	5-23/64
DH464015	15/64	.2344	15/64	1-57/64	3-15/16	DH464221	U	.3680	25/64	3	5-23/64
DH464016	1/4	.2500	17/64	2-3/64	4-19/64	DH464024	3/8	.3750	25/64	3-5/32	5-23/64
DH464206	F	.2570	17/64	2-13/64	4-19/64	DH464025	25/64	.3906	25/64	3-5/32	5-23/64
DH464017	17/64	.2656	17/64	2-13/64	4-19/64	DH464026	13/32	.4062	27/64	3-5/16	5-7/8
DH464209	I	.2720	.2720	2-13/64	4-19/64	DH464027	27/64	.4219	27/64	3-15/32	5-7/8
DH464018	9/32	.2812	5/16	2-23/64	4-41/64	DH464028	7/16	.4375	15/32	3-5/8	6-7/32
DH464019	19/64	.2969	5/16	2-33/64	4-41/64	DH464029	29/64	.4531	15/32	3-25/32	6-7/32
DH464020	5/16	.3125	5/16	2-33/64	4-41/64	DH464030	15/32	.4688	15/32	3-25/32	6-7/32
DH464021	21/64	.3281	11/32	2-43/64	5	DH464031	31/64	.4844	1/2	3-15/16	6-37/64
DH464217	Q	.3320	11/32	2-43/64	5	DH464032	1/2	.5000	1/2	4-3/32	6-37/64

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

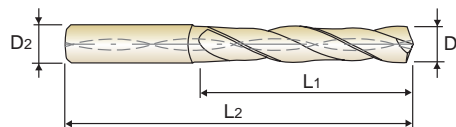
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
-HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							
◎	◎	○				○	◎	○	○		



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

**SHORT**

- ▶ The tool has the special flute shape and geometry for suitable machining of stainless steel.
- ▶ Excellent chip evacuation due to better surface treatment.
- ▶ Point R-thinning makes the superior centering and chip curl.
- ▶ TiAlN coating achieves the better surface finishes and longer tool life.
- ▶ Tolerance : Dia. Tolerance ØD1:m7, Shank Tolerance ØD2: h6



**DIN 6537**

**MG**

**h6**

**m7**

**140°**



P.72

▶ **for stainless steel**

**3 × D**

Unit : mm

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length	EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Metric	Inch					Metric	Inch			
TiAlN	D1		D2	L1	L2	TiAlN	D1		D2	L1	L2
DH451030	3.0	.1181	6	20	62	DH451057	5.7	.2244	6	28	66
DH451031	3.1	.1220	6	20	62	DH451058	5.8	.2283	6	28	66
DH451032	3.2	.1260	6	20	62	DH451059	5.9	.2323	6	28	66
DH451033	3.3	.1299	6	20	62	DH451060	6.0	.2362	6	28	66
DH451034	3.4	.1339	6	20	62	DH451061	6.1	.2402	8	34	79
DH451035	3.5	.1378	6	20	62	DH451062	6.2	.2441	8	34	79
DH451036	3.6	.1417	6	20	62	DH451063	6.3	.2480	8	34	79
DH451037	3.7	.1457	6	20	62	DH451064	6.4	.2520	8	34	79
DH451038	3.8	.1496	6	24	66	DH451065	6.5	.2559	8	34	79
DH451039	3.9	.1535	6	24	66	DH451066	6.6	.2598	8	34	79
DH451040	4.0	.1575	6	24	66	DH451067	6.7	.2638	8	34	79
DH451041	4.1	.1614	6	24	66	DH451068	6.8	.2677	8	34	79
DH451042	4.2	.1654	6	24	66	DH451069	6.9	.2717	8	34	79
DH451043	4.3	.1693	6	24	66	DH451070	7.0	.2756	8	34	79
DH451044	4.4	.1732	6	24	66	DH451071	7.1	.2795	8	41	79
DH451045	4.5	.1772	6	24	66	DH451072	7.2	.2835	8	41	79
DH451046	4.6	.1811	6	24	66	DH451073	7.3	.2874	8	41	79
DH451047	4.7	.1850	6	24	66	DH451074	7.4	.2913	8	41	79
DH451048	4.8	.1890	6	28	66	DH451075	7.5	.2953	8	41	79
DH451049	4.9	.1929	6	28	66	DH451076	7.6	.2992	8	41	79
DH451050	5.0	.1969	6	28	66	DH451077	7.7	.3031	8	41	79
DH451051	5.1	.2008	6	28	66	DH451078	7.8	.3071	8	41	79
DH451052	5.2	.2047	6	28	66	DH451079	7.9	.3110	8	41	79
DH451053	5.3	.2087	6	28	66	DH451080	8.0	.3150	8	41	79
DH451054	5.4	.2126	6	28	66	DH451081	8.1	.3189	10	47	89
DH451055	5.5	.2165	6	28	66	DH451082	8.2	.3228	10	47	89
DH451056	5.6	.2205	6	28	66	DH451083	8.3	.3268	10	47	89

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

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

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

- ▶ The tool has the special flute shape and geometry for suitable machining of stainless steel.
- ▶ Excellent chip evacuation due to better surface treatment.
- ▶ Point R-thinning makes the superior centering and chip curl.
- ▶ TiAlN coating achieves the better surface finishes and longer tool life.
- ▶ Tolerance : Dia. Tolerance  $\varnothing D1:m7$ , Shank Tolerance  $\varnothing D2: h6$



DIN 6537
MG
h6
m7
140°
P.72

▶ for stainless steel

3 × D

Unit : mm

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length	EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Metric	Inch					Metric	Inch			
TiAlN	D1		D2	L1	L2	TiAlN	D1		D2	L1	L2
DH451084	8.4	.3307	10	47	89	DH451111	11.1	.4370	12	55	102
DH451085	8.5	.3346	10	47	89	DH451112	11.2	.4409	12	55	102
DH451086	8.6	.3386	10	47	89	DH451113	11.3	.4448	12	55	102
DH451087	8.7	.3425	10	47	89	DH451114	11.4	.4488	12	55	102
DH451088	8.8	.3465	10	47	89	DH451115	11.5	.4527	12	55	102
DH451089	8.9	.3504	10	47	89	DH451116	11.6	.4566	12	55	102
DH451090	9.0	.3543	10	47	89	DH451117	11.7	.4606	12	55	102
DH451091	9.1	.3583	10	47	89	DH451118	11.8	.4645	12	55	102
DH451092	9.2	.3622	10	47	89	DH451119	11.9	.4685	12	55	102
DH451093	9.3	.3661	10	47	89	DH451120	12.0	.4724	12	55	102
DH451094	9.4	.3701	10	47	89	DH451125	12.5	.4921	14	60	107
DH451095	9.5	.3740	10	47	89	DH451130	13.0	.5118	14	60	107
DH451096	9.6	.3780	10	47	89	DH451135	13.5	.5314	14	60	107
DH451097	9.7	.3819	10	47	89	DH451140	14.0	.5512	14	60	107
DH451098	9.8	.3858	10	47	89	DH451145	14.5	.5708	16	65	115
DH451099	9.9	.3898	10	47	89	DH451150	15.0	.5905	16	65	115
DH451100	10.0	.3937	10	47	89	DH451155	15.5	.6102	16	65	115
DH451101	10.1	.3976	12	55	102	DH451160	16.0	.6299	16	65	115
DH451102	10.2	.4016	12	55	102	DH451165	16.5	.6495	18	73	123
DH451103	10.3	.4055	12	55	102	DH451170	17.0	.6692	18	73	123
DH451104	10.4	.4094	12	55	102	DH451175	17.5	.6889	18	73	123
DH451105	10.5	.4134	12	55	102	DH451180	18.0	.7087	18	73	123
DH451106	10.6	.4173	12	55	102	DH451185	18.5	.7283	20	79	131
DH451107	10.7	.4212	12	55	102	DH451190	19.0	.7480	20	79	131
DH451108	10.8	.4252	12	55	102	DH451195	19.5	.7676	20	79	131
DH451109	10.9	.4291	12	55	102	DH451200	20.0	.7874	20	79	131
DH451110	11.0	.4330	12	55	102						

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
-HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							
◎	◎	○				○	◎	○	○		

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for HARDENED STEELS

STANDARD CARBIDE DRILLS

MULTI-1 DRILLS

HPD DRILLS

GOLD-P DRILLS

STRAIGHT SHANK DRILLS

AIRCRAFT DRILLS

SILVER &amp; DEMING DRILLS

TAPER SHANK DRILLS

NC SPOTTING DRILLS

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA



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

**LONG**

- ▶ The tool has the special flute shape and geometry for suitable machining of stainless steel.
- ▶ Excellent chip evacuation due to better surface treatment.
- ▶ Point R-thinning makes the superior centering and chip curl.
- ▶ TiAlN coating achieves the better surface finishes and longer tool life.
- ▶ Tolerance : Dia. Tolerance ØD1:m7, Shank Tolerance ØD2: h6



▶ **for stainless steel** 5 × D

Unit : mm

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length	EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Metric	Inch					Metric	Inch			
TiAlN	D1		D2	L1	L2	TiAlN	D1		D2	L1	L2
DH452030	3.0	.1181	6	28	66	DH452057	5.7	.2244	6	44	82
DH452031	3.1	.1220	6	28	66	DH452058	5.8	.2283	6	44	82
DH452032	3.2	.1260	6	28	66	DH452059	5.9	.2323	6	44	82
DH452033	3.3	.1299	6	28	66	DH452060	6.0	.2362	6	44	82
DH452034	3.4	.1339	6	28	66	DH452061	6.1	.2402	8	53	91
DH452035	3.5	.1378	6	28	66	DH452062	6.2	.2441	8	53	91
DH452036	3.6	.1417	6	28	66	DH452063	6.3	.2480	8	53	91
DH452037	3.7	.1457	6	28	66	DH452064	6.4	.2520	8	53	91
DH452038	3.8	.1496	6	36	74	DH452065	6.5	.2559	8	53	91
DH452039	3.9	.1535	6	36	74	DH452066	6.6	.2598	8	53	91
DH452040	4.0	.1575	6	36	74	DH452067	6.7	.2638	8	53	91
DH452041	4.1	.1614	6	36	74	DH452068	6.8	.2677	8	53	91
DH452042	4.2	.1654	6	36	74	DH452069	6.9	.2717	8	53	91
DH452043	4.3	.1693	6	36	74	DH452070	7.0	.2756	8	53	91
DH452044	4.4	.1732	6	36	74	DH452071	7.1	.2795	8	53	91
DH452045	4.5	.1772	6	36	74	DH452072	7.2	.2835	8	53	91
DH452046	4.6	.1811	6	36	74	DH452073	7.3	.2874	8	53	91
DH452047	4.7	.1850	6	36	74	DH452074	7.4	.2913	8	53	91
DH452048	4.8	.1890	6	44	82	DH452075	7.5	.2953	8	53	91
DH452049	4.9	.1929	6	44	82	DH452076	7.6	.2992	8	53	91
DH452050	5.0	.1969	6	44	82	DH452077	7.7	.3031	8	53	91
DH452051	5.1	.2008	6	44	82	DH452078	7.8	.3071	8	53	91
DH452052	5.2	.2047	6	44	82	DH452079	7.9	.3110	8	53	91
DH452053	5.3	.2087	6	44	82	DH452080	8.0	.3150	8	53	91
DH452054	5.4	.2126	6	44	82	DH452081	8.1	.3189	10	61	103
DH452055	5.5	.2165	6	44	82	DH452082	8.2	.3228	10	61	103
DH452056	5.6	.2205	6	44	82	DH452083	8.3	.3268	10	61	103

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
-HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							
◎	◎	○				○	◎	○	○		



# CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES LONG

- ▶ The tool has the special flute shape and geometry for suitable machining of stainless steel.
- ▶ Excellent chip evacuation due to better surface treatment.
- ▶ Point R-thinning makes the superior centering and chip curl.
- ▶ TiAlN coating achieves the better surface finishes and longer tool life.
- ▶ Tolerance : Dia. Tolerance  $\varnothing D1:m7$ , Shank Tolerance  $\varnothing D2: h6$



DIN 6537
MG
h6
m7
140°
P.72

▶ for stainless steel 5 × D

Unit : mm

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length	EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Metric	Inch					Metric	Inch			
TiAlN	D1		D2	L1	L2	TiAlN	D1		D2	L1	L2
DH452084	8.4	.3307	10	61	103	DH452111	11.1	.4370	12	71	118
DH452085	8.5	.3346	10	61	103	DH452112	11.2	.4409	12	71	118
DH452086	8.6	.3386	10	61	103	DH452113	11.3	.4448	12	71	118
DH452087	8.7	.3425	10	61	103	DH452114	11.4	.4488	12	71	118
DH452088	8.8	.3465	10	61	103	DH452115	11.5	.4527	12	71	118
DH452089	8.9	.3504	10	61	103	DH452116	11.6	.4566	12	71	118
DH452090	9.0	.3543	10	61	103	DH452117	11.7	.4606	12	71	118
DH452091	9.1	.3583	10	61	103	DH452118	11.8	.4645	12	71	118
DH452092	9.2	.3622	10	61	103	DH452119	11.9	.4685	12	71	118
DH452093	9.3	.3661	10	61	103	DH452120	12.0	.4724	12	71	118
DH452094	9.4	.3701	10	61	103	DH452125	12.5	.4921	14	77	124
DH452095	9.5	.3740	10	61	103	DH452130	13.0	.5118	14	77	124
DH452096	9.6	.3780	10	61	103	DH452135	13.5	.5314	14	77	124
DH452097	9.7	.3819	10	61	103	DH452140	14.0	.5512	14	77	124
DH452098	9.8	.3858	10	61	103	DH452145	14.5	.5708	16	83	133
DH452099	9.9	.3898	10	61	103	DH452150	15.0	.5905	16	83	133
DH452100	10.0	.3937	10	61	103	DH452155	15.5	.6102	16	83	133
DH452101	10.1	.3976	12	71	118	DH452160	16.0	.6299	16	83	133
DH452102	10.2	.4016	12	71	118	DH452165	16.5	.6495	18	93	143
DH452103	10.3	.4055	12	71	118	DH452170	17.0	.6692	18	93	143
DH452104	10.4	.4094	12	71	118	DH452175	17.5	.6889	18	93	143
DH452105	10.5	.4134	12	71	118	DH452180	18.0	.7087	18	93	143
DH452106	10.6	.4173	12	71	118	DH452185	18.5	.7283	20	101	153
DH452107	10.7	.4212	12	71	118	DH452190	19.0	.7480	20	101	153
DH452108	10.8	.4252	12	71	118	DH452195	19.5	.7676	20	101	153
DH452109	10.9	.4291	12	71	118	DH452200	20.0	.7874	20	101	153
DH452110	11.0	.4330	12	71	118						

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
-HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							
◎	◎	○				○	◎	○	○		

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for HARDENED STEELS

STANDARD CARBIDE DRILLS

MULTI-1 DRILLS

HPD DRILLS

GOLD-P DRILLS

STRAIGHT SHANK DRILLS

AIRCRAFT DRILLS

SILVER &amp; DEMING DRILLS

TAPER SHANK DRILLS

NC SPOTTING DRILLS

CENTER DRILLS

SPADE DRILLS

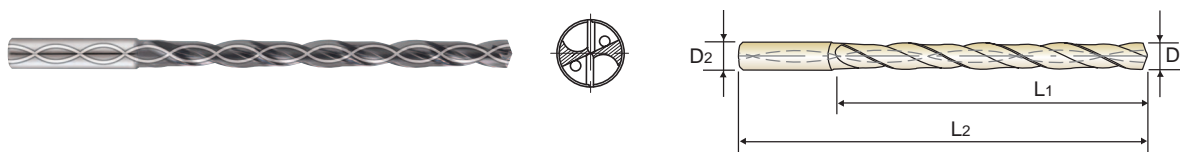
TECHNICAL DATA



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

**EXTRA LONG**

- ▶ The tool has the special flute shape and geometry for suitable machining of stainless steel.
- ▶ Excellent chip evacuation due to better surface treatment.
- ▶ Point R-thinning makes the superior centering and chip curl.
- ▶ TiAlN coating achieves the better surface finishes and longer tool life.
- ▶ Tolerance : Dia. Tolerance ØD1:m7, Shank Tolerance ØD2: h6



DIN 6537
MG
h6
m7
140°
P.72

▶ for stainless steel

8 × D

Unit : mm

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length	EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Metric	Inch					Metric	Inch			
TiAlN	D1		D2	L1	L2	TiAlN	D1		D2	L1	L2
DH453030	3.0	.1181	6	34	72	DH453057	5.7	.2244	6	57	95
DH453031	3.1	.1220	6	34	72	DH453058	5.8	.2283	6	57	95
DH453032	3.2	.1260	6	34	72	DH453059	5.9	.2323	6	57	95
DH453033	3.3	.1299	6	34	72	DH453060	6.0	.2362	6	57	95
DH453034	3.4	.1339	6	34	72	DH453061	6.1	.2402	8	76	114
DH453035	3.5	.1378	6	34	72	DH453062	6.2	.2441	8	76	114
DH453036	3.6	.1417	6	34	72	DH453063	6.3	.2480	8	76	114
DH453037	3.7	.1457	6	34	72	DH453064	6.4	.2520	8	76	114
DH453038	3.8	.1496	6	43	81	DH453065	6.5	.2559	8	76	114
DH453039	3.9	.1535	6	43	81	DH453066	6.6	.2598	8	76	114
DH453040	4.0	.1575	6	43	81	DH453067	6.7	.2638	8	76	114
DH453041	4.1	.1614	6	43	81	DH453068	6.8	.2677	8	76	114
DH453042	4.2	.1654	6	43	81	DH453069	6.9	.2717	8	76	114
DH453043	4.3	.1693	6	43	81	DH453070	7.0	.2756	8	76	114
DH453044	4.4	.1732	6	43	81	DH453071	7.1	.2795	8	76	114
DH453045	4.5	.1772	6	43	81	DH453072	7.2	.2835	8	76	114
DH453046	4.6	.1811	6	43	81	DH453073	7.3	.2874	8	76	114
DH453047	4.7	.1850	6	43	81	DH453074	7.4	.2913	8	76	114
DH453048	4.8	.1890	6	57	95	DH453075	7.5	.2953	8	76	114
DH453049	4.9	.1929	6	57	95	DH453076	7.6	.2992	8	76	114
DH453050	5.0	.1969	6	57	95	DH453077	7.7	.3031	8	76	114
DH453051	5.1	.2008	6	57	95	DH453078	7.8	.3071	8	76	114
DH453052	5.2	.2047	6	57	95	DH453079	7.9	.3110	8	76	114
DH453053	5.3	.2087	6	57	95	DH453080	8.0	.3150	8	76	114
DH453054	5.4	.2126	6	57	95	DH453081	8.1	.3189	10	95	142
DH453055	5.5	.2165	6	57	95	DH453082	8.2	.3228	10	95	142
DH453056	5.6	.2205	6	57	95	DH453083	8.3	.3268	10	95	142

▶ Other shank types are available on your request.

⊙ : Excellent ○ : Good

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

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

- ▶ The tool has the special flute shape and geometry for suitable machining of stainless steel.
- ▶ Excellent chip evacuation due to better surface treatment.
- ▶ Point R-thinning makes the superior centering and chip curl.
- ▶ TiAlN coating achieves the better surface finishes and longer tool life.
- ▶ Tolerance : Dia. Tolerance  $\varnothing D1:m7$ , Shank Tolerance  $\varnothing D2: h6$



DIN 6537
MG
h6
m7
140°
P.72

▶ for stainless steel

8 × D

Unit : mm

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length	EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Metric	Inch					Metric	Inch			
TiAlN	D1		D2	L1	L2	TiAlN	D1		D2	L1	L2
DH453084	8.4	.3307	10	95	142	DH453105	10.5	.4134	12	114	162
DH453085	8.5	.3346	10	95	142	DH453106	10.6	.4173	12	114	162
DH453086	8.6	.3386	10	95	142	DH453107	10.7	.4212	12	114	162
DH453087	8.7	.3425	10	95	142	DH453108	10.8	.4252	12	114	162
DH453088	8.8	.3465	10	95	142	DH453109	10.9	.4291	12	114	162
DH453089	8.9	.3504	10	95	142	DH453110	11.0	.4330	12	114	162
DH453090	9.0	.3543	10	95	142	DH453111	11.1	.4370	12	114	162
DH453091	9.1	.3583	10	95	142	DH453112	11.2	.4409	12	114	162
DH453092	9.2	.3622	10	95	142	DH453113	11.3	.4448	12	114	162
DH453093	9.3	.3661	10	95	142	DH453114	11.4	.4488	12	114	162
DH453094	9.4	.3701	10	95	142	DH453115	11.5	.4527	12	114	162
DH453095	9.5	.3740	10	95	142	DH453116	11.6	.4566	12	114	162
DH453096	9.6	.3780	10	95	142	DH453117	11.7	.4606	12	114	162
DH453097	9.7	.3819	10	95	142	DH453118	11.8	.4645	12	114	162
DH453098	9.8	.3858	10	95	142	DH453119	11.9	.4685	12	114	162
DH453099	9.9	.3898	10	95	142	DH453120	12.0	.4724	12	114	162
DH453100	10.0	.3937	10	95	142	DH453125	12.5	.4921	14	133	178
DH453101	10.1	.3976	12	114	162	DH453130	13.0	.5118	14	133	178
DH453102	10.2	.4016	12	114	162	DH453135	13.5	.5314	14	133	178
DH453103	10.3	.4055	12	114	162	DH453140	14.0	.5512	14	133	178
DH453104	10.4	.4094	12	114	162						

▶ Other shank types are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
~HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							
◎	◎	○				○	◎	○	○		



**CARBIDE, DREAM DRILLS - INOX with COOLANT HOLES, TiAIN COATED**

**DH463, DH464, DH451, DH452, DH453 SERIES**

WORK MATERIAL			STAINLESS STEELS 400Series		STAINLESS STEELS 300Series		ALUMINUM		ALUMINUM	
STRENGTH			< 800 N/mm <sup>2</sup>		> 800 N/mm <sup>2</sup>		< 10% Si		> 10% Si	
DIAMETER			N	S	N	S	N	S	N	S
Metric(mm)	Fractional	Decimal								
3.0	1/8	.1181	7400	.002	4700	.001	23000	.005	18500	.004
4.0	5/32	.1575	5600	.002	3600	.001	17500	.007	13900	.006
5.0	13/64	.1969	4400	.002	2800	.001	14000	.008	11000	.007
6.0	15/64	.2362	3700	.002	2400	.002	11700	.010	9300	.010
8.0	5/16	.3150	2800	.003	1800	.002	8800	.012	7000	.012
10.0	25/64	.3937	2200	.004	1400	.003	7000	.016	5600	.014
12.0	15/32	.4724	1900	.005	1200	.004	5800	.020	4600	.016
14.0	35/64	.5512	1600	.006	1000	.005	5000	.024	4000	.020
16.0	5/8	.6299	1400	.008	900	.006	4380	.031	3500	.024
18.0	45/64	.7087	1250	.009	800	.007	3900	.039	3100	.028
20.0	25/32	.7874	1120	.009	720	.007	3500	.047	2800	.031

WORK MATERIAL			TITANIUM TI ALLOY		CARBON STEEL ALLOY STEEL		NON FRERROUS	
STRENGTH			N	S	N	S	N	S
DIAMETER								
Metric(mm)	Fractional	Decimal						
3.0	1/8	.1181	5300	.001	13000	.002	16000	.003
4.0	5/32	.1575	4000	.002	10000	.002	11900	.004
5.0	13/64	.1969	3200	.002	8000	.002	9500	.005
6.0	15/64	.2362	2650	.002	6600	.002	8000	.006
8.0	5/16	.3150	2000	.003	5000	.003	6000	.007
10.0	25/64	.3937	1600	.003	4000	.004	4800	.009
12.0	15/32	.4724	1300	.004	3300	.005	4000	.010
14.0	35/64	.5512	1100	.005	2800	.006	3400	.012
16.0	5/8	.6299	1000	.006	2500	.008	3000	.016
18.0	45/64	.7087	900	.006	2200	.009	2650	.018
20.0	25/32	.7874	800	.007	2000	.009	2400	.020

► Recommend to reduce the feed rate as following

**Feed 100%** : DH463(3×D), DH464(5×D)  
 DH451(3×D), DH452(5×D)  
**Feed 85%** : DH453(8×D)

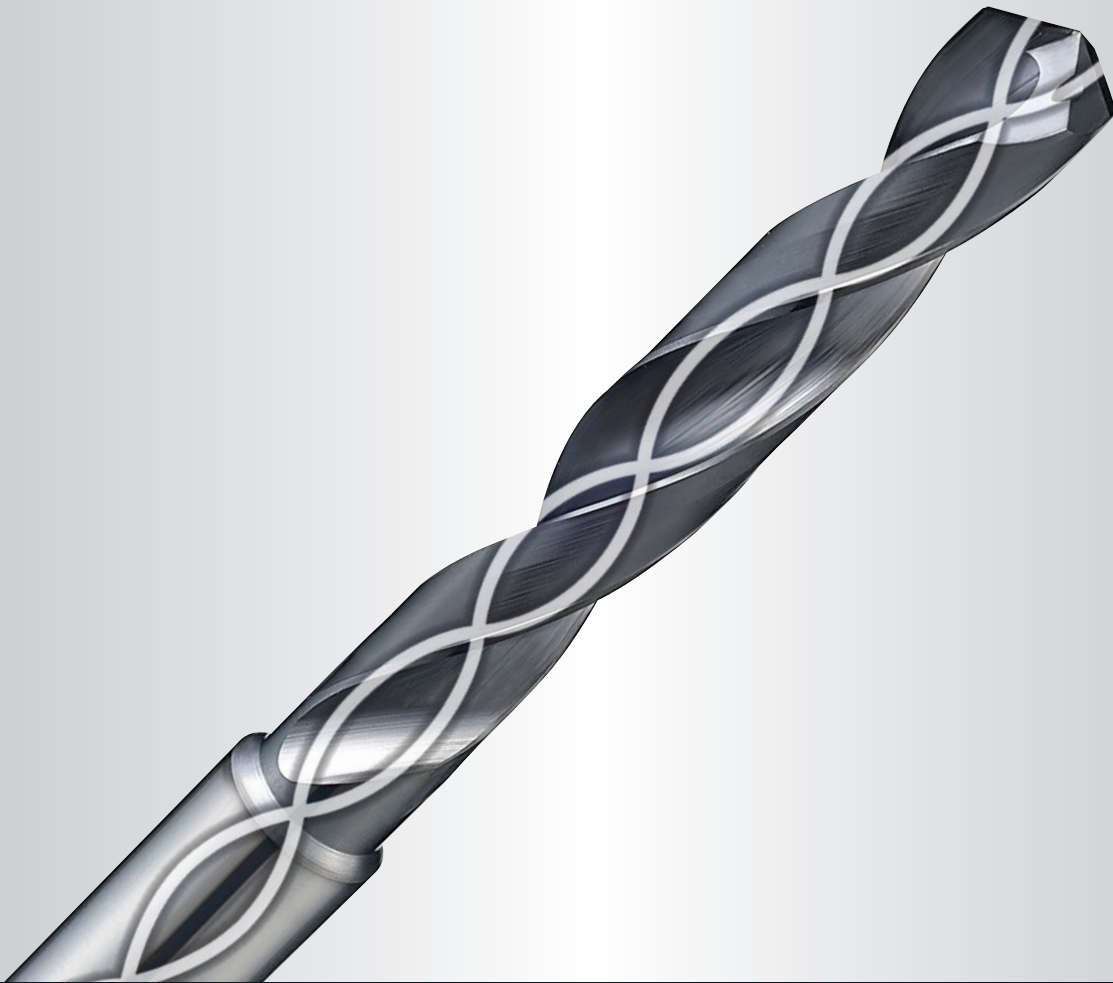
N = R.P.M

S = Inch per Revolution(inch/rev.)

**CARBIDE**



Being the best through innovation





# **DREAM DRILLS -ALU**

- WITH COOLANT HOLES  
for Aluminum & Aluminum Alloys

# SELECTION GUIDE

## SOLID CARBIDE DREAM DRILLS - ALU (with Coolant Holes)

ITEM	MODEL	DESCRIPTION	SIZE		PAGE	
			MIN	MAX		
<b>INCH</b>						
<b>5XD DGE466</b>		CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES	LONG	D13/64	D1/2	<b>76</b>
<b>METRIC</b>						
<b>5XD DGE433</b>		CARBIDE, DREAM DRILLS - ALU with COOLANT HOLES	LONG	D3.0	D20.0	<b>77</b>
RECOMMENDED CUTTING CONDITIONS					<b>79</b>	

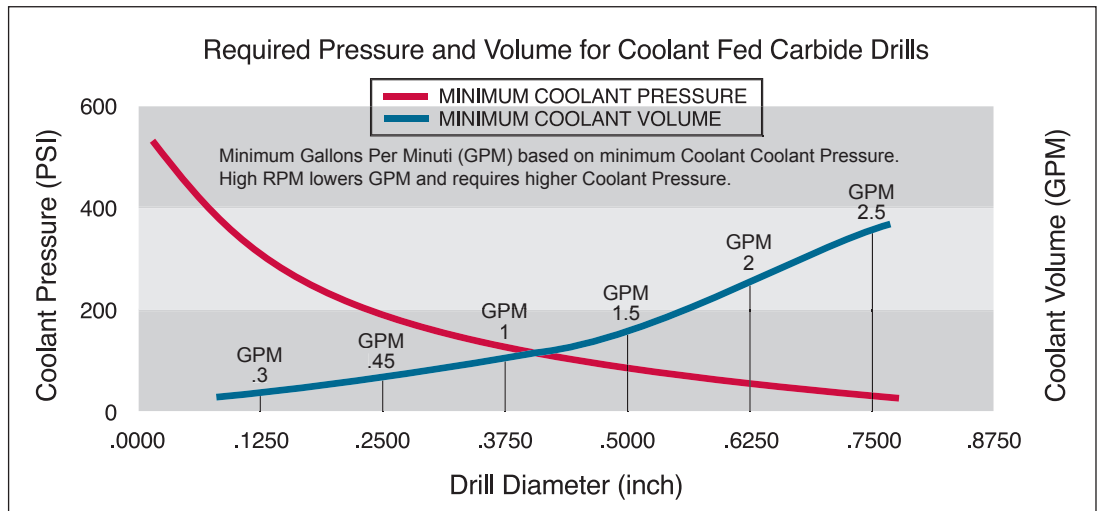
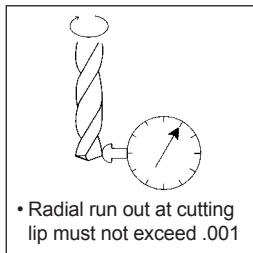
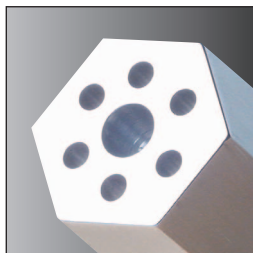
# SOLID CARBIDE DREAM DRILLS-ALU

⊙ : Excellent  
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
~HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							

						⊙					
--	--	--	--	--	--	---	--	--	--	--	--

						⊙					
--	--	--	--	--	--	---	--	--	--	--	--





**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



**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
DGE466014	7/32	.2188	15/64	1-57/64	3-15/16
DGE466015	15/64	.2344	15/64	1-57/64	3-15/16
DGE466016	1/4	.2500	17/64	2-3/64	4-19/64
DGE466206	F	.2570	17/64	2-13/64	4-19/64
DGE466017	17/64	.2656	17/64	2-13/64	4-19/64
DGE466209	I	.2720	0.272	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
DGE466217	Q	.3320	11/32	2-43/64	5
DGE466022	11/32	.3438	11/32	2-27/32	5
DGE466023	23/64	.3594	25/64	3	5-23/64
DGE466221	U	.3680	25/64	3	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
DGE466026	13/32	.4062	27/64	3-5/16	5-7/8
DGE466027	27/64	.4219	27/64	3-15/32	5-7/8
DGE466028	7/16	.4375	15/32	3-5/8	6-7/32
DGE466029	29/64	.4531	15/32	3-25/32	6-7/32
DGE466030	15/32	.4688	15/32	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

- i-DREAM DRILLS
- DREAM DRILLS
- DREAM DRILLS -INOX
- DREAM DRILLS -ALU
- DREAM DRILLS -MQL TYPE
- DREAM DRILLS for 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
- CENTER DRILLS
- SPADE DRILLS
- TECHNICAL DATA

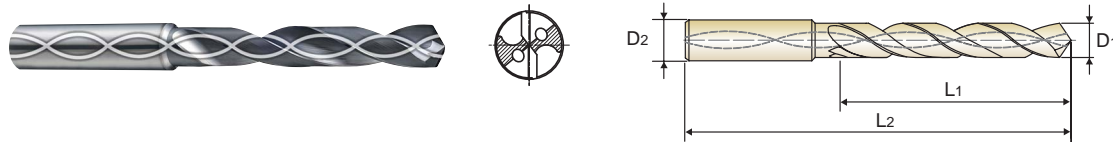
◎ : Excellent ○ : Good

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



**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°
P.79

**5 × D**

Unit : mm

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length	EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Metric	Inch					Metric	Inch			
DLC	D1		D2	L1	L2	DLC	D1		D2	L1	L2
DGE433030	3.0	.1181	6	28	66	DGE433057	5.7	.2244	6	44	82
DGE433031	3.1	.1220	6	28	66	DGE433058	5.8	.2283	6	44	82
DGE433032	3.2	.1260	6	28	66	DGE433059	5.9	.2323	6	44	82
DGE433033	3.3	.1299	6	28	66	DGE433060	6.0	.2362	6	44	82
DGE433034	3.4	.1339	6	28	66	DGE433061	6.1	.2402	8	53	91
DGE433035	3.5	.1378	6	28	66	DGE433062	6.2	.2441	8	53	91
DGE433036	3.6	.1417	6	28	66	DGE433063	6.3	.2480	8	53	91
DGE433037	3.7	.1457	6	28	66	DGE433064	6.4	.2520	8	53	91
DGE433038	3.8	.1496	6	36	74	DGE433065	6.5	.2559	8	53	91
DGE433039	3.9	.1535	6	36	74	DGE433066	6.6	.2598	8	53	91
DGE433040	4.0	.1575	6	36	74	DGE433067	6.7	.2638	8	53	91
DGE433041	4.1	.1614	6	36	74	DGE433068	6.8	.2677	8	53	91
DGE433042	4.2	.1654	6	36	74	DGE433069	6.9	.2717	8	53	91
DGE433043	4.3	.1693	6	36	74	DGE433070	7.0	.2756	8	53	91
DGE433044	4.4	.1732	6	36	74	DGE433071	7.1	.2795	8	53	91
DGE433045	4.5	.1772	6	36	74	DGE433072	7.2	.2835	8	53	91
DGE433046	4.6	.1811	6	36	74	DGE433073	7.3	.2874	8	53	91
DGE433047	4.7	.1850	6	36	74	DGE433074	7.4	.2913	8	53	91
DGE433048	4.8	.1890	6	44	82	DGE433075	7.5	.2953	8	53	91
DGE433049	4.9	.1929	6	44	82	DGE433076	7.6	.2992	8	53	91
DGE433050	5.0	.1969	6	44	82	DGE433077	7.7	.3031	8	53	91
DGE433051	5.1	.2008	6	44	82	DGE433078	7.8	.3071	8	53	91
DGE433052	5.2	.2047	6	44	82	DGE433079	7.9	.3110	8	53	91
DGE433053	5.3	.2087	6	44	82	DGE433080	8.0	.3150	8	53	91
DGE433054	5.4	.2126	6	44	82	DGE433081	8.1	.3189	10	61	103
DGE433055	5.5	.2165	6	44	82	DGE433082	8.2	.3228	10	61	103
DGE433056	5.6	.2205	6	44	82	DGE433083	8.3	.3268	10	61	103

◎ : Excellent ○ : Good

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

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for HARDENED STEELS

STANDARD CARBIDE DRILLS

MULTI-1 DRILLS

HPD DRILLS

GOLD-P DRILLS

STRAIGHT SHANK DRILLS

AIRCRAFT DRILLS

SILVER &amp; DEMING DRILLS

TAPER SHANK DRILLS

NC SPOTTING DRILLS

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA



**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°
P.79

5 × D

Unit : mm

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length	EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Metric	Inch					Metric	Inch			
DLC	D1		D2	L1	L2	DLC	D1		D2	L1	L2
DGE433084	8.4	.3307	10	61	103	DGE433111	11.1	.4370	12	71	118
DGE433085	8.5	.3346	10	61	103	DGE433112	11.2	.4409	12	71	118
DGE433086	8.6	.3386	10	61	103	DGE433113	11.3	.4448	12	71	118
DGE433087	8.7	.3425	10	61	103	DGE433114	11.4	.4488	12	71	118
DGE433088	8.8	.3465	10	61	103	DGE433115	11.5	.4527	12	71	118
DGE433089	8.9	.3504	10	61	103	DGE433116	11.6	.4566	12	71	118
DGE433090	9.0	.3543	10	61	103	DGE433117	11.7	.4606	12	71	118
DGE433091	9.1	.3583	10	61	103	DGE433118	11.8	.4645	12	71	118
DGE433092	9.2	.3622	10	61	103	DGE433119	11.9	.4685	12	71	118
DGE433093	9.3	.3661	10	61	103	DGE433120	12.0	.4724	12	71	118
DGE433094	9.4	.3701	10	61	103	DGE433125	12.5	.4921	14	77	124
DGE433095	9.5	.3740	10	61	103	DGE433130	13.0	.5118	14	77	124
DGE433096	9.6	.3780	10	61	103	DGE433135	13.5	.5314	14	77	124
DGE433097	9.7	.3819	10	61	103	DGE433140	14.0	.5512	14	77	124
DGE433098	9.8	.3858	10	61	103	DGE433145	14.5	.5708	16	83	133
DGE433099	9.9	.3898	10	61	103	DGE433150	15.0	.5905	16	83	133
DGE433100	10.0	.3937	10	61	103	DGE433155	15.5	.6102	16	83	133
DGE433101	10.1	.3976	12	71	118	DGE433160	16.0	.6299	16	83	133
DGE433102	10.2	.4016	12	71	118	DGE433165	16.5	.6495	18	93	143
DGE433103	10.3	.4055	12	71	118	DGE433170	17.0	.6692	18	93	143
DGE433104	10.4	.4094	12	71	118	DGE433175	17.5	.6889	18	93	143
DGE433105	10.5	.4134	12	71	118	DGE433180	18.0	.7087	18	93	143
DGE433106	10.6	.4173	12	71	118	DGE433185	18.5	.7283	20	101	153
DGE433107	10.7	.4212	12	71	118	DGE433190	19.0	.7480	20	101	153
DGE433108	10.8	.4252	12	71	118	DGE433195	19.5	.7676	20	101	153
DGE433109	10.9	.4291	12	71	118	DGE433200	20.0	.7874	20	101	153
DGE433110	11.0	.4330	12	71	118						

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

◎ : Excellent ○ : Good

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

**DGE466, DGE433 SERIES**

WORK MATERIAL		ALUMINUM ALLOY CASTING ALUMINUM DIE CASTING		WROUGHT ALUMINUM ALLOY	
DIAMETER		N	S	N	S
METRIC	INCH				
3.0 ~ 6.0	.1181 ~ .2362	8000 ~ 15000	.008 ~ .020	8000 ~ 15000	.006 ~ .012
10.0	~ .3937	6000 ~ 10500	.012 ~ .039	6000 ~ 10500	.008 ~ .016
14.0	~ .5512	4500 ~ 5800	.012 ~ .039	4500 ~ 5800	.008 ~ .016
20.0	~ .7874	3200 ~ 4600	.012 ~ .039	3200 ~ 4600	.008 ~ .016

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

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA



Global Cutting Tool Leader **YG-1**





Being the best through innovation

**CARBIDE**






# **DREAM DRILLS -MQL TYPE**

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

# SELECTION GUIDE

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

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

ITEM	MODEL	DESCRIPTION	SIZE		PAGE	
			MIN	MAX		
<b>METRIC</b>						
<b>10XD DH510</b>		CARBIDE, DREAM DRILLS MQL TYPE with COOLANT HOLES	<i>EXTRA LONG</i>	D3.0	D14.0	<b>84</b>
<b>15XD DH515</b>		CARBIDE, DREAM DRILLS MQL TYPE with COOLANT HOLES	<i>EXTRA LONG</i>	D3.0	D12.0	<b>85</b>
<b>20XD DH520</b>		CARBIDE, DREAM DRILLS MQL TYPE with COOLANT HOLES	<i>EXTRA LONG</i>	D3.0	D12.0	<b>85</b>
RECOMMENDED CUTTING CONDITIONS					<b>86</b>	

# SOLID CARBIDE DREAM DRILLS-MQL TYPE

◎ : Excellent  
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
			HRC30~45	HRC45~55							
~HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							

◎	◎	○			○				○		
◎	◎	○			○				○		
◎	◎	○			○				○		



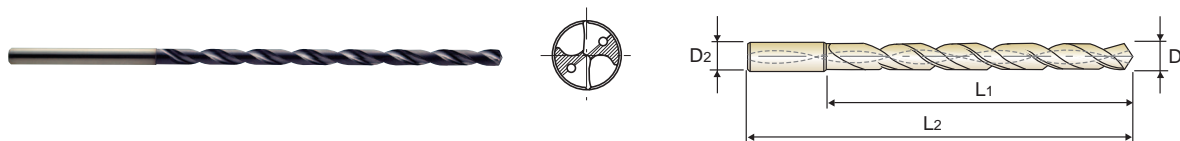
**DREAM DRILLS  
-MQL TYPE**

**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



**10 × D**

Unit : mm

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length	EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Metric	Inch					Metric	Inch			
TiAlN	D1		D2	L1	L2	TiAlN	D1		D2	L1	L2
DH510030	3.0	.1181	3	39	90	DH510080	8.0	.3150	8	104	161
DH510033	3.3	.1299	4	46	97	DH510085	8.5	.3346	9	111	169
DH510035	3.5	.1378	4	46	97	DH510090	9.0	.3543	9	117	175
DH510040	4.0	.1575	4	52	103	DH510095	9.5	.3740	10	124	182
DH510042	4.2	.1654	5	59	112	DH510100	10.0	.3937	10	130	188
DH510045	4.5	.1772	5	59	112	DH510105	10.5	.4134	11	137	201
DH510050	5.0	.1969	5	65	118	DH510110	11.0	.4330	11	143	207
DH510055	5.5	.2165	6	72	127	DH510115	11.5	.4527	12	150	215
DH510060	6.0	.2362	6	78	133	DH510120	12.0	.4724	12	156	221
DH510065	6.5	.2559	7	85	141	DH510125	12.5	.4921	13	163	229
DH510068	6.8	.2677	7	91	147	DH510130	13.0	.5118	13	169	235
DH510070	7.0	.2756	7	91	147	DH510135	13.5	.5314	14	176	243
DH510075	7.5	.2953	8	98	155	DH510140	14.0	.5512	14	182	249

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
~HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							
◎	◎	○			○				○		

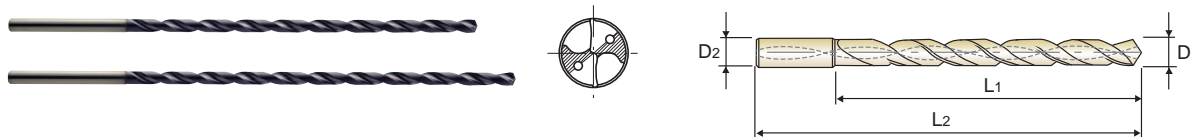
◎ : Excellent ○ : Good



**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



Unit : mm

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length	EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Metric	Inch					Metric	Inch			
TiAlN	D1		D2	L1	L2	TiAlN	D1		D2	L1	L2
DH515030	3.0	.1181	3	54	105	DH520030	3.0	.1181	3	69	120
DH515035	3.5	.1378	4	63	114	DH520035	3.5	.1378	4	81	132
DH515040	4.0	.1575	4	72	123	DH520040	4.0	.1575	4	92	143
DH515045	4.5	.1772	5	81	134	DH520045	4.5	.1772	5	104	157
DH515050	5.0	.1969	5	90	143	DH520050	5.0	.1969	5	115	168
DH515055	5.5	.2165	6	99	154	DH520055	5.5	.2165	6	127	182
DH515060	6.0	.2362	6	108	163	DH520060	6.0	.2362	6	138	193
DH515070	7.0	.2756	7	126	182	DH520070	7.0	.2756	7	161	217
DH515080	8.0	.3150	8	144	201	DH520080	8.0	.3150	8	184	241
DH515090	9.0	.3543	9	162	220	DH520090	9.0	.3543	9	207	265
DH515100	10.0	.3937	10	180	238	DH520100	10.0	.3937	10	230	288
DH515110	11.0	.4330	11	198	262	DH520120	12.0	.4724	12	276	341
DH515120	12.0	.4724	12	216	281						

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
~HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							
◎	◎	○			○				○		

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA



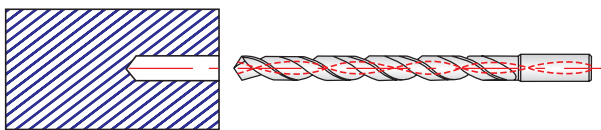
**CARBIDE, DREAM DRILLS MQL TYPE with COOLANT HOLES,  
TiAIN COATED**

**DH510, DH515, DH520 SERIES**

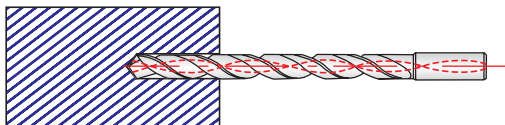
WORK MATERIAL		CARBON STEELS ALLOY STEELS ~ 1060 N/mm <sup>2</sup>		CAST IRON 250 ~ 350 N/mm <sup>2</sup>		DUCTILE CAST IRON 400 ~ 500 N/mm <sup>2</sup>		DUCTILE CAST IRON	
STRENGTH		< HRc 25		< HRc 10		> HRc 10			
DIAMETER		N	S	N	S	N	S	N	S
METRIC	INCH								
3.0	.1181	7500	.0023~.0047	7500	.0023~.0047	7500	.0023~.0047	5300	.0023~.0047
4.0	.1575	6400	.0031~.0063	6400	.0031~.0063	5600	.0031~.0063	5000	.0031~.0063
5.0	.1969	5800	.0039~.0078	5800	.0039~.0078	4500	.0039~.0078	4500	.0039~.0078
6.0	.2362	4800	.0047~.0094	4800	.0047~.0094	3800	.0047~.0094	3800	.0047~.0094
8.0	.3150	3600	.0063~.0110	3600	.0063~.0110	2800	.0063~.0110	2800	.0063~.0110
10.0	.3937	2900	.0078~.0137	2900	.0078~.0137	2300	.0078~.0137	2300	.0078~.0137
12.0	.4724	2400	.0094~.0165	2400	.0094~.0165	1900	.0094~.0165	1900	.0094~.0165

► **Coolant Pressure : 900 PSI**

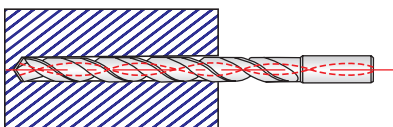
N = R.P.M  
S = Inch per Revolution(inch/rev)



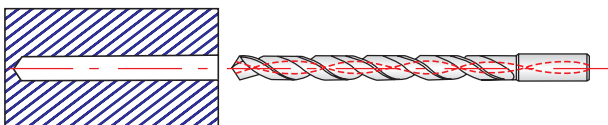
1. Use a YG 3xD Drill to produce a guide hole no larger than .004 over the required drill size. Drill the pilot hole 2xD deep hole.



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.

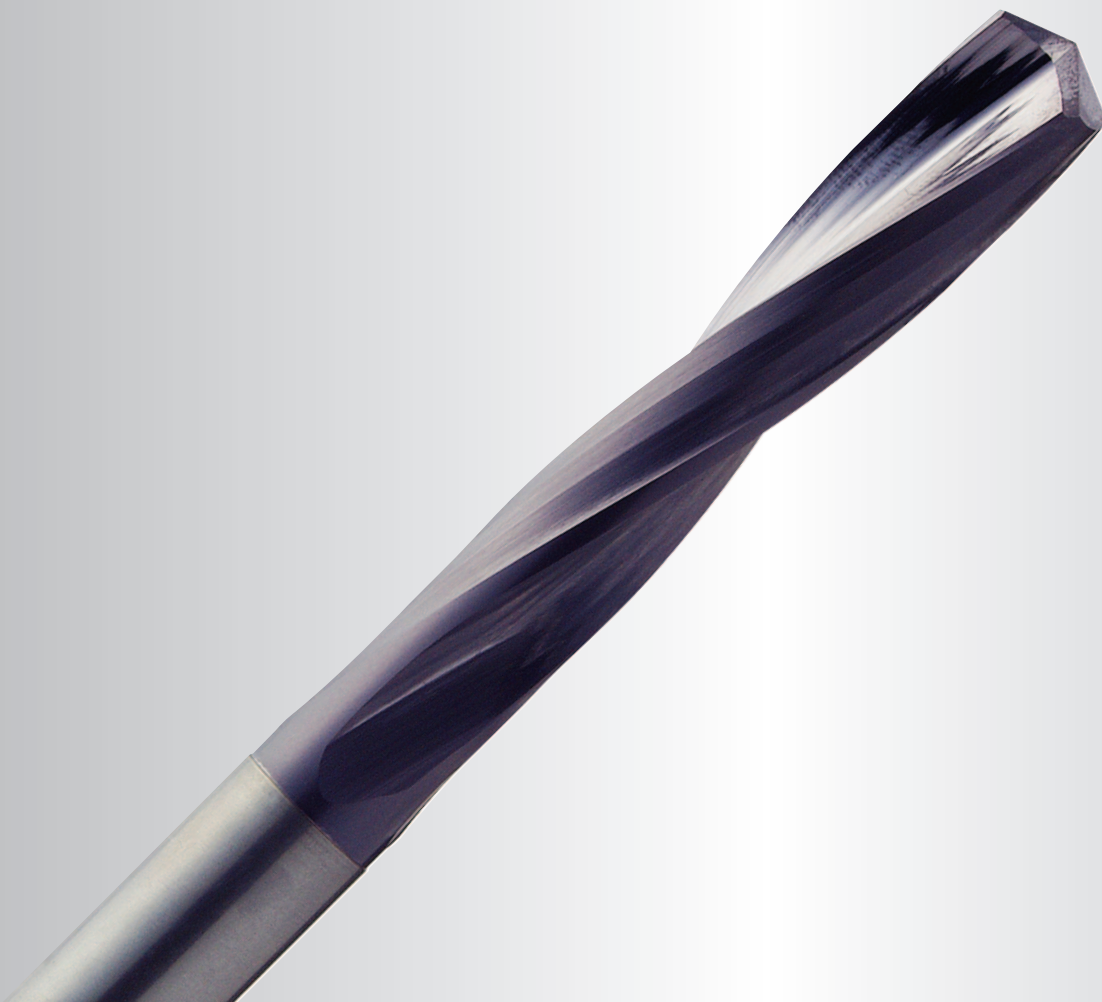


4. After drilling, to withdraw drill, reduce SFM to 50 @ 10 inches per minute.

**CARBIDE**



Being the best through innovation



# **DREAM DRILLS**



**- For HIGH HARDENED STEELS**

- HIGH HARDENED STEELS, HRc50~HRc70

# SELECTION GUIDE

## SOLID CARBIDE DREAM DRILLS for HIGH HARDENED STEELS

High Hardened Steels, HRc50~HRc70

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
<b>INCH</b>					
<b>DH501</b>		CARBIDE, DREAM DRILLS for HIGH HARDENED STEEL	D1/8	D3/4	<b>90</b>
<b>METRIC</b>					
<b>DH500</b>		CARBIDE, DREAM DRILLS for HIGH HARDENED STEEL	D2.6	D14.0	<b>92</b>
RECOMMENDED CUTTING CONDITIONS					<b>93</b>

# SOLID CARBIDE DREAM DRILLS for HIGH HARDENED STEELS

◎ : Excellent  
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
			HRC30~45	HRC45~55							
~HB225	HB225~325	HRC30~45									
			◎	◎							
			◎	◎							

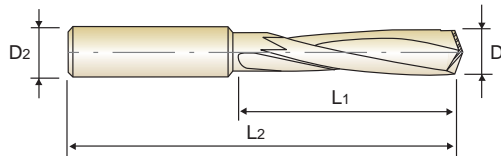


**DREAM DRILLS**  
for HIGH HARDENED STEELS

**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  $\varnothing D1$ : See page 247, Shank Tolerance  $\varnothing D2$ : -.0001 -.0005



P.93

Unit : Inch

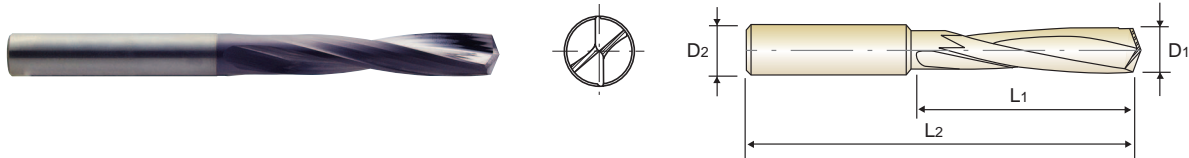
EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length	EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decimal					Fractional	Decimal			
TiAlN	D1		D2	L1	L2	TiAlN	D1		D2	L1	L2
DH501001	1/8	.1250	1/8	21/32	2	DH501026	#5	.2055	1/4	1-9/32	2-7/8
DH501002	#30	.1285	3/16	23/32	2	DH501027	#4	.2090	1/4	1-9/32	2-7/8
DH501003	#29	.1360	3/16	13/16	2	DH501028	#3	.2130	1/4	1-13/32	3
DH501004	#28	.1405	3/16	13/16	2	DH501029	7/32	.2188	1/4	1-13/32	3
DH501005	9/64	.1406	3/16	13/16	2	DH501030	#2	.2210	1/4	1-13/32	3
DH501006	#27	.1440	3/16	13/16	2	DH501031	#1	.2280	1/4	1-13/32	3
DH501007	#26	.1470	3/16	13/16	2	DH501032	15/64	.2344	1/4	1-13/32	3
DH501008	#25	.1495	3/16	7/8	2-1/16	DH501033	B	.2380	1/4	1-19/32	3-1/8
DH501009	#24	.1520	3/16	7/8	2-1/16	DH501034	C	.2420	1/4	1-19/32	3-1/8
DH501010	#23	.1540	3/16	7/8	2-1/16	DH501035	D	.2460	1/4	1-19/32	3-1/8
DH501011	5/32	.1562	3/16	7/8	2-1/16	DH501036	1/4	.2500	1/4	1-19/32	3-1/8
DH501012	#22	.1570	3/16	7/8	2-1/16	DH501037	F	.2570	3/8	1-19/32	3-1/8
DH501013	#21	.1590	3/16	7/8	2-1/16	DH501038	G	.2610	3/8	1-19/32	3-1/8
DH501014	#20	.1610	3/16	1	2-1/2	DH501039	17/64	.2656	3/8	1-19/32	3-1/8
DH501015	#19	.1660	3/16	1	2-1/2	DH501040	I	.2720	3/8	1-25/32	3-3/8
DH501016	11/64	.1719	3/16	1-1/8	2-3/4	DH501041	J	.2770	3/8	1-25/32	3-3/8
DH501017	#15	.1800	3/16	1-1/8	2-3/4	DH501042	9/32	.2812	3/8	1-25/32	3-3/8
DH501018	#14	.1820	3/16	1-1/8	2-3/4	DH501043	L	.2900	3/8	1-25/32	3-3/8
DH501019	3/16	.1875	3/16	1-1/8	2-3/4	DH501044	M	.2950	3/8	1-25/32	3-3/8
DH501020	#10	.1935	1/4	1-9/32	2-7/8	DH501045	19/64	.2969	3/8	1-25/32	3-3/8
DH501021	#9	.1960	1/4	1-9/32	2-7/8	DH501046	N	.3020	3/8	1-31/32	3-7/8
DH501022	#8	.1990	1/4	1-9/32	2-7/8	DH501047	5/16	.3125	3/8	1-31/32	3-7/8
DH501023	#7	.2010	1/4	1-9/32	2-7/8	DH501048	O	.3160	3/8	1-31/32	3-7/8
DH501024	13/64	.2031	1/4	1-9/32	2-7/8	DH501049	21/64	.3281	3/8	1-31/32	3-7/8
DH501025	#6	.2040	1/4	1-9/32	2-7/8	DH501050	Q	.3320	3/8	1-31/32	3-7/8

◎ : Excellent ○ : Good

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

### 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  $\varnothing D1$ : See page 247, Shank Tolerance  $\varnothing D2$ : -.0001 -.0005



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
DH501051	R	.3390	3/8	2-1/4	4-1/8	DH501068	33/64	.5156	5/8	3-1/16	5
DH501052	11/32	.3438	3/8	2-1/4	4-1/8	DH501069	17/32	.5312	5/8	3-1/16	5
DH501053	23/64	.3594	3/8	2-1/4	4-1/8	DH501070	35/64	.5469	5/8	3-1/16	5
DH501054	U	.3680	3/8	2-1/4	4-1/8	DH501071	9/16	.5625	5/8	3-1/16	5
DH501055	3/8	.3750	3/8	2-1/4	4-1/8	DH501072	37/64	.5781	5/8	3-9/32	5-1/4
DH501056	V	.3770	1/2	2-1/2	4-3/8	DH501073	19/32	.5937	5/8	3-9/32	5-1/4
DH501057	25/64	.3906	1/2	2-1/2	4-3/8	DH501074	39/64	.6094	5/8	3-9/32	5-1/4
DH501058	X	.3970	1/2	2-1/2	4-3/8	DH501075	5/8	.6250	5/8	3-9/32	5-1/4
DH501059	Y	.4040	1/2	2-1/2	4-3/8	DH501076	41/64	.6406	3/4	3-9/32	5-1/4
DH501060	13/32	.4062	1/2	2-1/2	4-3/8	DH501077	21/32	.6563	3/4	3-11/16	5-5/8
DH501061	Z	.4130	1/2	2-1/2	4-3/8	DH501078	43/64	.6719	3/4	3-11/16	5-5/8
DH501062	27/64	.4219	1/2	2-13/16	4-5/8	DH501079	11/16	.6875	3/4	3-11/16	5-5/8
DH501063	7/16	.4375	1/2	2-13/16	4-5/8	DH501080	45/64	.7031	3/4	3-11/16	5-5/8
DH501064	29/64	.4531	1/2	2-13/16	4-5/8	DH501081	23/32	.7188	3/4	3-3/4	6
DH501065	15/32	.4688	1/2	2-13/16	4-5/8	DH501082	47/64	.7344	3/4	3-3/4	6
DH501066	31/64	.4844	1/2	2-13/16	4-5/8	DH501083	3/4	.7500	3/4	3-3/4	6
DH501067	1/2	.5000	1/2	3-1/16	5						

◎ : Excellent    ○ : Good

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

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA

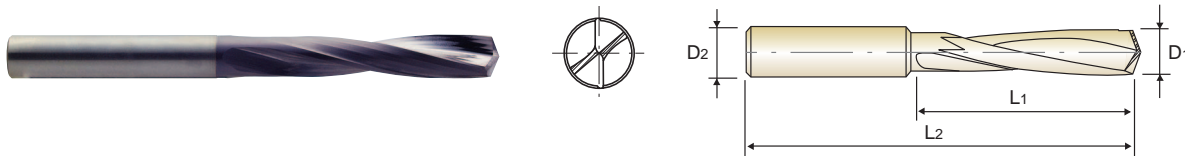


**DREAM DRILLS**  
for HIGH HARDENED STEELS

**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



Unit : mm

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length	EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Metric	Inch					Metric	Inch			
TiAlN	D1		D2	L1	L2	TiAlN	D1		D2	L1	L2
DH500010	1.0	.0394	3	6	40	DH500051	5.1	.2008	6	32	72
DH500011	1.1	.0433	3	6	40	DH500052	5.2	.2047	6	32	72
DH500012	1.2	.0472	3	6	40	DH500053	5.3	.2087	6	32	72
DH500013	1.3	.0512	3	8	40	DH500055	5.5	.2165	6	35	75
DH500014	1.4	.0551	3	8	40	DH500060	6.0	.2362	6	35	75
DH500015	1.5	.0591	3	8	40	DH500062	6.2	.2441	8	40	80
DH500016	1.6	.0630	3	10	40	DH500065	6.5	.2559	8	40	80
DH500017	1.7	.0669	3	10	40	DH500068	6.8	.2677	8	45	85
DH500018	1.8	.0709	3	10	40	DH500069	6.9	.2717	8	45	85
DH500019	1.9	.0748	3	10	40	DH500070	7.0	.2756	8	45	85
DH500020	2.0	.0787	3	12	42	DH500075	7.5	.2953	8	45	85
DH500025	2.5	.0984	3	14	44	DH500080	8.0	.3150	8	50	98
DH500026	2.6	.1024	3	16	44	DH500085	8.5	.3346	10	50	98
DH500028	2.8	.1102	3	16	46	DH500086	8.6	.3386	10	57	105
DH500030	3.0	.1181	3	18	46	DH500088	8.8	.3465	10	57	105
DH500033	3.3	.1299	4	18	48	DH500090	9.0	.3543	10	57	105
DH500034	3.4	.1339	4	20	50	DH500093	9.3	.3661	10	57	105
DH500035	3.5	.1378	4	20	50	DH500095	9.5	.3740	10	57	105
DH500038	3.8	.1496	4	22	52	DH500100	10.0	.3937	10	63	111
DH500040	4.0	.1575	4	22	52	DH500102	10.2	.4016	12	63	111
DH500041	4.1	.1614	6	25	65	DH500103	10.3	.4055	12	63	111
DH500042	4.2	.1654	6	25	65	DH500105	10.5	.4134	12	71	111
DH500043	4.3	.1693	6	28	68	DH500108	10.8	.4252	12	71	119
DH500044	4.4	.1732	6	28	68	DH500110	11.0	.4331	12	71	119
DH500045	4.5	.1772	6	28	68	DH500115	11.5	.4528	12	71	119
DH500046	4.6	.1811	6	28	68	DH500120	12.0	.4724	12	71	119
DH500048	4.8	.1890	6	32	72	DH500121	12.1	.4764	14	77	125
DH500049	4.9	.1929	6	32	72	DH500140	14.0	.5512	14	77	125
DH500050	5.0	.1969	6	32	72						

◎ : Excellent ○ : Good

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





**RECOMMENDED CUTTING CONDITIONS**

**HSS**

**CARBIDE, DREAM DRILLS for High HARDENED STEEL HRc50~HRc70, TiAIN COATED**

**DH501 SERIES**

WORK MATERIAL	HARDENED STEELS					
	HRc 50 ~ 55		HRc 55 ~ 60		HRc 60 ~ 70	
DRILLING SPEED	45 ~ 72 SFM		32 ~ 52 SFM		26 ~ 42 SFM	
DIAMETER	N	S	N	S	N	S
5/64	2860	~ .0015	2000	~ .0015	1900	~ .0011
1/8	1900	~ .0015	1330	~ .0015	1250	~ .0015
5/32	1430	~ .0015	1000	~ .0015	950	~ .0015
13/64	1150	~ .0015	800	~ .0015	750	~ .0015
15/64	960	~ .0015	670	~ .0015	630	~ .0015
5/16	720	~ .0015	500	~ .0015	480	~ .0015
25/64	570	~ .0015	400	~ .0015	380	~ .0015
15/32	480	~ .0015	330	~ .0015	320	~ .0015
9/16	435	~ .0015	280	~ .0015	270	~ .0015
41/64	380	~ .0015	250	~ .0015	240	~ .0015
11/16	325	~ .0015	235	~ .0015	190	~ .0015
47/64	310	~ .0015	220	~ .0015	180	~ .0015

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

**DH500 SERIES**

WORK MATERIAL		HARDENED STEELS					
		HRc 50 ~ 55		HRc 55 ~ 60		HRc 60 ~ 70	
DRILLING SPEED		45 ~ 72 SFM		32 ~ 52 SFM		26 ~ 42 SFM	
DIAMETER		N	S	N	S	N	S
METRIC	INCH						
3.0	.1181	1900	~ .0015	1330	~ .0015	1250	~ .0015
4.0	.1575	1430	~ .0015	1000	~ .0015	950	~ .0015
5.0	.1969	1150	~ .0015	800	~ .0015	750	~ .0015
6.0	.2362	960	~ .0015	670	~ .0015	630	~ .0015
8.0	.3150	720	~ .0015	500	~ .0015	480	~ .0015
10.0	.3937	570	~ .0015	400	~ .0015	380	~ .0015
12.0	.4724	480	~ .0015	330	~ .0015	320	~ .0015
14.0	.5512	438	~ .0015	282	~ .0015	272	~ .0015

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

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA



Global Cutting Tool Leader **YG-1**





Being the best through innovation

**CARBIDE**






# **STANDARD CARBIDE DRILLS**

- General Purpose  
118° Point

# SELECTION GUIDE

## STANDARD SOLID CARBIDE DRILLS

General Purpose  
118° Point

ITEM	MODEL	DESCRIPTION	SIZE		PAGE	
			MIN	MAX		
<b>INCH</b>						
<b>D5412</b>		CARBIDE DRILLS / Wire gauge sizes	<i>JOBBER</i>	#56	#1	<b>98</b>
<b>D5413</b>		CARBIDE DRILLS / Letter sizes	<i>JOBBER</i>	A	Z	<b>99</b>
<b>D5417</b>		CARBIDE DRILLS / Fractional sizes	<i>JOBBER</i>	D3/64	D1/2	<b>100</b>
RECOMMENDED CUTTING CONDITIONS					<b>101</b>	

# STANDARD SOLID CARBIDE DRILLS

◎ : Excellent  
○ : Good

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

◎	◎				○	○	○	○	◎		
◎	◎				○	○	○	○	◎		
◎	◎				○	○	○	○	◎		

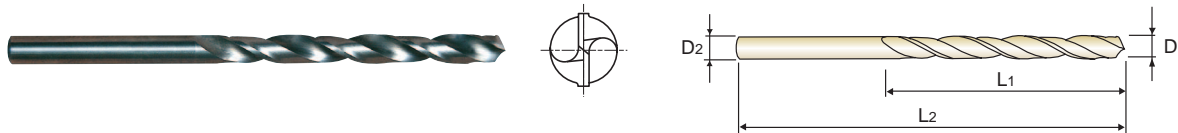


**STANDARD CARBIDE DRILLS**

**D5412 SERIES**

**CARBIDE DRILLS**

**JOBBER**



D1=D2

► **Wire gauge sizes**

Unit : Inch

EDP No.	Diameter		Flute Length L1	Overall Length L2	EDP No.	Diameter		Flute Length L1	Overall Length L2
	Wire gauge	Decimal				Wire gauge	Decimal		
	D1 = D2					D1 = D2			
D5412101	1	.2280	1-3/4	3	D5412129	29	.1360	1-3/8	2-1/2
D5412102	2	.2210	1-3/4	3	D5412130	30	.1285	1-1/4	2-1/4
D5412103	3	.2130	1-3/4	3	D5412131	31	.1200	1-1/4	2-1/4
D5412104	4	.2090	1-3/4	3	D5412132	32	.1160	1-1/4	2-1/4
D5412105	5	.2055	1-3/4	3	D5412133	33	.1130	1-1/4	2-1/4
D5412106	6	.2040	1-3/4	3	D5412134	34	.1110	1-1/4	2-1/4
D5412107	7	.2010	1-3/4	3	D5412135	35	.1100	1-1/4	2-1/4
D5412108	8	.1990	1-3/4	3	D5412136	36	.1065	1-1/4	2-1/4
D5412109	9	.1960	1-3/4	3	D5412137	37	.1040	1-1/4	2-1/4
D5412110	10	.1935	1-5/8	2-3/4	D5412138	38	.1015	1-1/4	2-1/4
D5412111	11	.1910	1-5/8	2-3/4	D5412139	39	.0995	1-1/4	2-1/4
D5412112	12	.1890	1-5/8	2-3/4	D5412140	40	.0980	1	2
D5412113	13	.1850	1-5/8	2-3/4	D5412141	41	.0960	1	2
D5412114	14	.1820	1-5/8	2-3/4	D5412142	42	.0935	1	2
D5412115	15	.1800	1-5/8	2-3/4	D5412143	43	.0890	1	2
D5412116	16	.1770	1-5/8	2-3/4	D5412144	44	.0860	1	2
D5412117	17	.1730	1-5/8	2-3/4	D5412145	45	.0820	7/8	1-3/4
D5412118	18	.1695	1-5/8	2-3/4	D5412146	46	.0810	7/8	1-3/4
D5412119	19	.1660	1-5/8	2-3/4	D5412147	47	.0785	7/8	1-3/4
D5412120	20	.1610	1-3/8	2-1/2	D5412148	48	.0760	7/8	1-3/4
D5412121	21	.1590	1-3/8	2-1/2	D5412149	49	.0730	7/8	1-3/4
D5412122	22	.1570	1-3/8	2-1/2	D5412150	50	.0700	7/8	1-3/4
D5412123	23	.1540	1-3/8	2-1/2	D5412151	51	.0670	3/4	1-1/2
D5412124	24	.1520	1-3/8	2-1/2	D5412152	52	.0635	3/4	1-1/2
D5412125	25	.1495	1-3/8	2-1/2	D5412153	53	.0595	3/4	1-1/2
D5412126	26	.1470	1-3/8	2-1/2	D5412154	54	.0550	3/4	1-1/2
D5412127	27	.1440	1-3/8	2-1/2	D5412155	55	.0520	3/4	1-1/2
D5412128	28	.1405	1-3/8	2-1/2	D5412156	56	.0465	3/4	1-1/2

◎ : Excellent ○ : Good

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

### CARBIDE DRILLS

JOBBER



D1=D2

#### Letter sizes

Unit : Inch

EDP No.	Diameter		Flute Length L1	Overall Length L2	EDP No.	Diameter		Flute Length L1	Overall Length L2
	Letter	Decimal				Letter	Decimal		
D5413201	A	.2340	2	3-1/4	D5413214	N	.3020	2-3/8	3-3/4
D5413202	B	.2380	2	3-1/4	D5413215	O	.3160	2-3/8	3-3/4
D5413203	C	.2420	2	3-1/4	D5413216	P	.3230	2-3/8	3-3/4
D5413204	D	.2460	2	3-1/4	D5413217	Q	.3320	2-1/2	4
D5413205	E	.2500	2	3-1/4	D5413218	R	.3390	2-1/2	4
D5413206	F	.2570	2	3-1/4	D5413219	S	.3480	2-1/2	4
D5413207	G	.2610	2-1/8	3-1/2	D5413220	T	.3580	2-3/4	4-1/4
D5413208	H	.2660	2-1/8	3-1/2	D5413221	U	.3680	2-3/4	4-1/4
D5413209	I	.2720	2-1/8	3-1/2	D5413222	V	.3770	2-3/4	4-1/4
D5413210	J	.2770	2-1/8	3-1/2	D5413223	W	.3860	2-7/8	4-1/2
D5413211	K	.2810	2-1/8	3-1/2	D5413224	X	.3970	2-7/8	4-1/2
D5413212	L	.2900	2-1/8	3-1/2	D5413225	Y	.4040	2-7/8	4-1/2
D5413213	M	.2950	2-3/8	3-3/4	D5413226	Z	.4130	2-7/8	4-1/2

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
~HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							
◎	◎				○	○	○	○	◎		

◎ : Excellent ○ : Good

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA

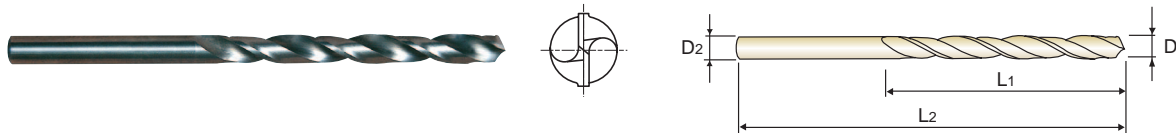


**STANDARD CARBIDE DRILLS**

**D5417 SERIES**

**CARBIDE DRILLS**

**JOBBER**



D1=D2

► **Fractional sizes**

Unit : Inch

EDP No.	Diameter		Flute Length L1	Overall Length L2	EDP No.	Diameter		Flute Length L1	Overall Length L2
	Fractional D1 = D2	Decimal				Fractional D1 = D2	Decimal		
D5417003	3/64	.0469	3/4	1-1/2	D5417018	9/32	.2813	2-1/8	3-1/2
D5417004	1/16	.0625	3/4	1-1/2	D5417019	19/64	.2969	2-3/8	3-3/4
D5417005	5/64	.0781	7/8	1-3/4	D5417020	5/16	.3125	2-3/8	3-3/4
D5417006	3/32	.0938	1	2	D5417021	21/64	.3281	2-1/2	4
D5417007	7/64	.1094	1-1/4	2-1/4	D5417022	11/32	.3438	2-1/2	4
D5417008	1/8	.1250	1-1/4	2-1/4	D5417023	23/64	.3594	2-3/4	4-1/4
D5417009	9/64	.1406	1-3/8	2-1/2	D5417024	3/8	.3750	2-3/4	4-1/4
D5417010	5/32	.1563	1-3/8	2-1/2	D5417025	25/64	.3906	2-7/8	4-1/2
D5417011	11/64	.1719	1-5/8	2-3/4	D5417026	13/32	.4063	2-7/8	4-1/2
D5417012	3/16	.1875	1-5/8	2-3/4	D5417027	27/64	.4219	2-7/8	4-1/2
D5417013	13/64	.2031	1-3/4	3	D5417028	7/16	.4375	2-7/8	4-1/2
D5417014	7/32	.2188	1-3/4	3	D5417029	29/64	.4531	3	4-3/4
D5417015	15/64	.2344	2	3-1/4	D5417030	15/32	.4688	3	4-3/4
D5417016	1/4	.2500	2x	3-1/4	D5417031	31/64	.4844	3	4-3/4
D5417017	17/64	.2656	2-1/8	3-1/2	D5417032	1/2	.5000	3	4-3/4

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

◎ : Excellent ○ : Good





**RECOMMENDED CUTTING CONDITIONS**

**HSS**

**CARBIDE DRILLS**

**D5412, D5413, D5417 SERIE**

WORK MATERIAL DIAMETER	NON-ALLOY STEELS		ALLOY STEELS		SOFT GREY CAST IRON		HARD GREY CAST IRON	
	N	S	N	S	N	S	N	S
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 DIAMETER	STAINLESS STEELS		Al-Si ALLOY, Si<10%		Al-Si ALLOY, Si>10%		Ti, Ni ALLOY STEELS	
	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.)

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA



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

# SELECTION GUIDE

## 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		PAGE
			MIN	MAX	
<b>INCH</b>					
<b>CDRA05</b>		PREMIUM HSS-PM MULTI-1 DRILLS / M15 Fractional sizes	D3/32	D1/2	<b>106</b>
<b>CDRA06</b>		PREMIUM HSS-PM MULTI-1 DRILLS / M16 Wire gauge sizes	#45	#1	<b>107</b>
<b>CDRA07</b>		PREMIUM HSS-PM MULTI-1 DRILLS / M17 Letter sizes	B	Z	<b>108</b>
RECOMMENDED CUTTING CONDITIONS					<b>109</b>

# HSS-PM MULTI-1 DRILLS

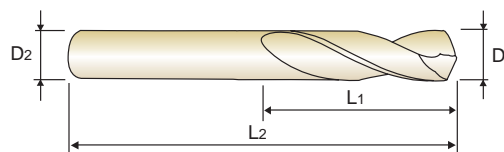
◎ : Excellent  
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
			HRC30~45	HRC45~55							
~HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							

◎	◎	○			○	○	○	◎	◎		
◎	◎	○			○	○	○	◎	◎		
◎	◎	○			○	○	○	◎	◎		

**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.109

► **M15 / Fractional sizes**

Unit : Inch

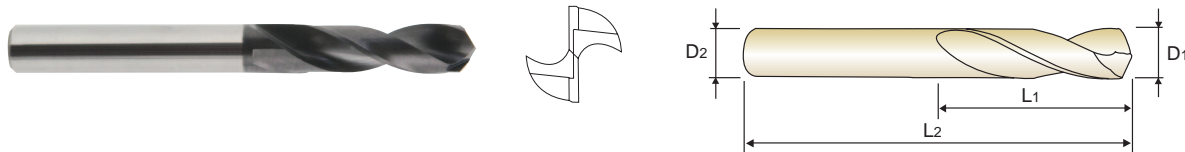
EDP No.	Diameter		Shank Diameter D2	Flute Length L1	Overall Length L2	EDP No.	Diameter		Shank Diameter D2	Flute Length L1	Overall Length L2
	Fractional D1	Decimal					Fractional D1	Decimal			
M15006	3/32	.0938	1/8	1/2	1-3/4	M15020	5/16	.3125	3/8	1-1/2	3-3/8
M15007	7/64	.1094	1/8	5/8	1-7/8	M15021	21/64	.3281	3/8	1-1/2	3-3/8
M15008	1/8	.1250	1/8	3/4	2	M15022	11/32	.3438	3/8	1-5/8	3-1/2
M15009	9/64	.1406	3/16	13/16	2-1/8	M15023	23/64	.3594	3/8	1-5/8	3-1/2
M15010	5/32	.1563	3/16	13/16	2-1/8	M15024	3/8	.3750	3/8	1-5/8	3-1/2
M15011	11/64	.1719	3/16	1	2-3/8	M15025	25/64	.3906	1/2	1-11/16	3-7/8
M15012	3/16	.1875	3/16	1	2-3/8	M15026	13/32	.4063	1/2	1-11/16	3-7/8
M15013	13/64	.2031	1/4	1-1/8	2-7/8	M15027	27/64	.4219	1/2	1-7/8	4-1/8
M15014	7/32	.2188	1/4	1-1/8	2-7/8	M15028	7/16	.4375	1/2	1-7/8	4-1/8
M15015	15/64	.2344	1/4	1-1/4	3	M15029	29/64	.4531	1/2	1-7/8	4-1/8
M15016	1/4	.2500	1/4	1-1/4	3	M15030	15/32	.4688	1/2	2	4-1/4
M15017	17/64	.2656	3/8	1-3/8	3-3/16	M15031	31/64	.4844	1/2	2	4-1/4
M15018	9/32	.2813	3/8	1-3/8	3-3/16	M15032	1/2	.5000	1/2	2	4-1/4
M15019	19/64	.2969	3/8	1-3/8	3-3/16						

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
~HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							
◎	◎	○			○	○	○	◎	◎		

◎ : Excellent ○ : Good

### 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.



#### ► M16 / Wire gauge sizes

Unit : Inch

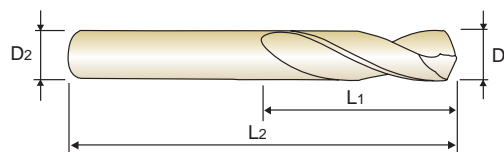
EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length	EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Wire gauge	Decimal					Wire gauge	Decimal			
TiAlN	D1	D2	D2	L1	L2	TiAlN	D1	D2	D2	L1	L2
M16045	45	.0820	1/8	3/4	2	M16022	22	.1570	3/16	1-1/16	2-1/2
M16044	44	.0860	1/8	3/4	2	M16021	21	.1590	3/16	1-1/16	2-1/2
M16043	43	.0890	1/8	3/4	2	M16020	20	.1610	3/16	1-1/16	2-1/2
M16042	42	.0935	1/8	3/4	2	M16019	19	.1660	3/16	1-1/16	2-1/2
M16041	41	.0960	1/8	13/16	2-1/16	M16018	18	.1695	3/16	1-1/16	2-1/2
M16040	40	.0980	1/8	13/16	2-1/16	M16017	17	.1730	3/16	1-1/8	2-9/16
M16039	39	.0995	1/8	13/16	2-1/4	M16016	16	.1770	3/16	1-1/8	2-9/16
M16038	38	.1015	1/8	13/16	2-1/4	M16015	15	.1800	3/16	1-1/8	2-9/16
M16037	37	.1040	1/8	13/16	2-1/4	M16014	14	.1820	3/16	1-1/8	2-9/16
M16036	36	.1065	1/8	13/16	2-1/4	M16013	13	.1850	3/16	1-1/8	2-9/16
M16035	35	.1100	1/8	7/8	2-5/16	M16012	12	.1890	1/4	1-3/16	3
M16034	34	.1110	1/8	7/8	2-5/16	M16011	11	.1910	1/4	1-3/16	3
M16033	33	.1130	1/8	7/8	2-5/16	M16010	10	.1935	1/4	1-3/16	3
M16032	32	.1160	1/8	7/8	2-5/16	M16009	9	.1960	1/4	1-3/16	3
M16031	31	.1120	1/8	7/8	2-5/16	M16008	8	.1990	1/4	1-3/16	3
M16030	30	.1285	3/16	15/16	2-3/8	M16007	7	.2010	1/4	1-3/16	3
M16029	29	.1360	3/16	15/16	2-3/8	M16006	6	.2040	1/4	1-1/4	3-1/16
M16028	28	.1405	3/16	15/16	2-3/8	M16005	5	.2055	1/4	1-1/4	3-1/16
M16027	27	.1440	3/16	1	2-7/16	M16004	4	.2090	1/4	1-1/4	3-1/16
M16026	26	.1470	3/16	1	2-7/16	M16003	3	.2130	1/4	1-1/4	3-1/16
M16025	25	.1495	3/16	1	2-7/16	M16002	2	.2210	1/4	1-5/16	3-1/8
M16024	24	.1520	3/16	1	2-7/16	M16001	1	.2280	1/4	1-5/16	3-1/8
M16023	23	.1540	3/16	1	2-7/16						

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
-HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							
◎	◎	○			○	○	○	◎	◎		

**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.109

► **M17 / Letter sizes**

Unit : Inch

EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length	EDP No.	Diameter		Shank Diameter	Flute Length	Overall Length
	Fractional	Decimal					Fractional	Decimal			
TiAIN	D1		D2	L1	L2	TiAIN	D1		D2	L1	L2
M1700B	B	.2380	1/4	1-3/8	3-3/16	M1700N	N	.3020	3/8	1-5/8	3-7/16
M1700C	C	.2420	1/4	1-3/8	3-3/16	M1700O	O	.3160	3/8	1-11/16	3-1/2
M1700D	D	.2460	1/4	1-3/8	3-3/16	M1700Q	Q	.3320	3/8	1-11/16	3-1/2
M1700F	F	.2570	3/8	1-7/16	3-1/4	M1700R	R	.3390	3/8	1-11/16	3-1/2
M1700G	G	.2610	3/8	1-7/16	3-1/4	M1700U	U	.3680	3/8	1-13/16	3-5/8
M1700I	I	.2720	3/8	1-1/2	3-5/16	M1700V	V	.3770	1/2	1-7/8	3-31/32
M1700J	J	.2770	3/8	1-1/2	3-5/16	M1700X	X	.3970	1/2	1-15/16	4-1/32
M1700L	L	.2900	3/8	1-9/16	3-3/8	M1700Y	Y	.4040	1/2	1-15/16	4-1/32
M1700M	M	.2950	3/8	1-9/16	3-3/8	M1700Z	Z	.4130	1/2	2	4-1/32

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
~HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							
◎	◎	○			○	○	○	◎	◎		

◎ : Excellent ○ : Good



**PREMIUM HSS-PM MULTI-1 DRILLS**

**CDRA05, CDRA06, CDRA07 SERIE**

WORK MATERIAL	STRUCTURAL STEEL CARBON STEEL			ALLOY STEEL			MOLD STEEL STAINLESS STEEL			
	DIAMETER	RPM	FEED		RPM	FEED		RPM	FEED	
			(IPR)	(inch/min)		(IPR)	(inch/min)		(IPR)	(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	NICKEL ALLOY TITANIUM ALLOY			CAST IRON			ALUMINIUM ALLOY COPPER ALLOY NONFERROUS ALLOY			
	DIAMETER	RPM	FEED		RPM	FEED		RPM	FEED	
			(IPR)	(inch/min)		(IPR)	(inch/min)		(IPR)	(inch/min)
3/32	800	.0010	0.80	5700	.0040	22.80	8700	.0040	34.80	
1/8	600	.0020	1.20	4250	.0060	25.50	6500	.0060	39.00	
5/32	500	.0020	1.00	3400	.0070	23.80	5200	.0070	36.40	
3/16	400	.0020	0.80	2850	.0080	22.80	4300	.0080	34.40	
1/4	300	.0030	0.90	2100	.0100	21.00	3200	.0090	28.80	
5/16	250	.0030	0.75	1750	.0120	21.00	2600	.0110	28.60	
3/8	200	.0040	0.80	1450	.0120	17.40	2200	.0130	28.60	
1/2	150	.0050	0.75	1100	.0150	16.50	1650	.0150	24.75	

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

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA



Global Cutting Tool Leader **YG-1**



**HSS**



Being the best through innovation





# HPD DRILLS

- HSS-EX HPD STRAIGHT SHANK DRILLS  
for Stainless Steels

# SELECTION GUIDE

## HPD - HIGH PERFORMANCE DRILLS

HPD-SUS Drills for High precision drilling in Stainless steels

ITEM	MODEL	DESCRIPTION	SIZE		PAGE	
			MIN	MAX		
<b>METRIC</b>						
<b>DJ543</b>		HSS-EX, HPD-SUS DRILLS	<i>STUB</i>	D2.0	D13.0	<b>114</b>
<b>DJ544</b>		HSS-EX, HPD-SUS DRILLS	<i>JOBBER</i>	D2.0	D20.0	<b>116</b>
RECOMMENDED CUTTING CONDITIONS					<b>119</b>	

# PREMIUM HSS HPD STRAIGHT SHANK DRILLS

◎ : Excellent  
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
~HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							

◎						○	◎	○	○	○	
◎						○	◎	○	○	○	

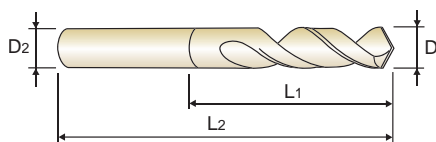
**HSS-EX, HPD-SUS DRILLS**

**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  
 Excellent positioning - bush is not necessary  
 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.119

up to 4mm over 4mm

D<sub>1</sub>=D<sub>2</sub>

Unit : mm

EDP No.	Diameter		Flute Length	Overall Length	EDP No.	Diameter		Flute Length	Overall Length
	Metric	Inch				Metric	Inch		
TiN	D <sub>1</sub> = D <sub>2</sub>		L <sub>1</sub>	L <sub>2</sub>	TiN	D <sub>1</sub> = D <sub>2</sub>		L <sub>1</sub>	L <sub>2</sub>
0201JCN	2.0	.0787	12	44	0481JCN	4.8	.1890	26	70
0211JCN	2.1	.0827	12	44	0491JCN	4.9	.1929	26	70
0221JCN	2.2	.0866	13	45	0501JCN	5.0	.1969	26	70
0231JCN	2.3	.0906	13	45	0511JCN	5.1	.2008	26	70
0241JCN	2.4	.0945	14	46	0521JCN	5.2	.2047	26	70
0251JCN	2.5	.0984	14	46	0531JCN	5.3	.2087	26	70
0261JCN	2.6	.1024	14	46	0541JCN	5.4	.2126	28	72
0271JCN	2.7	.1063	16	48	0551JCN	5.5	.2165	28	72
0281JCN	2.8	.1102	16	48	0561JCN	5.6	.2205	28	72
0291JCN	2.9	.1142	16	48	0571JCN	5.7	.2244	28	72
0301JCN	3.0	.1181	16	48	0581JCN	5.8	.2283	28	72
0311JCN	3.1	.1220	18	50	0591JCN	5.9	.2323	28	72
0321JCN	3.2	.1260	18	50	0601JCN	6.0	.2362	28	72
0331JCN	3.3	.1299	18	50	0611JCN	6.1	.2402	31	75
0341JCN	3.4	.1339	20	52	0621JCN	6.2	.2441	31	75
0351JCN	3.5	.1378	20	52	0631JCN	6.3	.2480	31	75
0361JCN	3.6	.1417	20	52	0641JCN	6.4	.2520	31	75
0371JCN	3.7	.1457	20	52	0651JCN	6.5	.2559	31	75
0381JCN	3.8	.1496	22	54	0661JCN	6.6	.2598	31	75
0391JCN	3.9	.1535	22	54	0671JCN	6.7	.2638	31	75
0401JCN	4.0	.1575	22	54	0681JCN	6.8	.2677	34	78
0411JCN	4.1	.1614	22	66	0691JCN	6.9	.2717	34	78
0421JCN	4.2	.1654	22	66	0701JCN	7.0	.2756	34	78
0431JCN	4.3	.1693	24	68	0711JCN	7.1	.2795	34	78
0441JCN	4.4	.1732	24	68	0721JCN	7.2	.2835	34	78
0451JCN	4.5	.1772	24	68	0731JCN	7.3	.2874	34	78
0461JCN	4.6	.1811	24	68	0741JCN	7.4	.2913	34	78
0471JCN	4.7	.1850	24	68	0751JCN	7.5	.2953	34	78

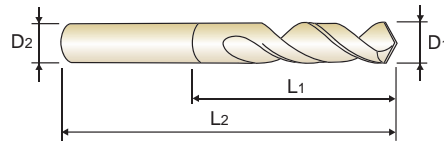
\* Individually packaged

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
~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
  - 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.119

up to 4mm    over 4mm

**D1=D2**

Unit : mm

EDP No.	Diameter		Flute Length	Overall Length	EDP No.	Diameter		Flute Length	Overall Length
	Metric	Inch				Metric	Inch		
TiN	D1 = D2		L1	L2	TiN	D1 = D2		L1	L2
0761JCN	7.6	.2992	37	81	1041JCN	10.4	.4094	43	100
0771JCN	7.7	.3031	37	81	1051JCN	10.5	.4134	43	100
0781JCN	7.8	.3071	37	81	1061JCN	10.6	.4173	43	100
0791JCN	7.9	.3110	37	81	1071JCN	10.7	.4212	47	104
0801JCN	8.0	.3150	37	81	1081JCN	10.8	.4252	47	104
0811JCN	8.1	.3189	37	87	1091JCN	10.9	.4291	47	104
0821JCN	8.2	.3228	37	87	1101JCN	11.0	.4330	47	104
0831JCN	8.3	.3268	37	87	1111JCN	11.1	.4370	47	104
0841JCN	8.4	.3307	37	87	1121JCN	11.2	.4409	47	104
0851JCN	8.5	.3346	37	87	1131JCN	11.3	.4448	47	104
0861JCN	8.6	.3386	40	90	1141JCN	11.4	.4488	47	104
0871JCN	8.7	.3425	40	90	1151JCN	11.5	.4527	47	104
0881JCN	8.8	.3465	40	90	1161JCN	11.6	.4566	47	104
0891JCN	8.9	.3504	40	90	1171JCN	11.7	.4606	47	104
0901JCN	9.0	.3543	40	90	1181JCN	11.8	.4645	47	104
0911JCN	9.1	.3583	40	90	1191JCN	11.9	.4685	51	108
0921JCN	9.2	.3622	40	90	1201JCN	12.0	.4724	51	108
0931JCN	9.3	.3661	40	90	1211JCN	12.1	.4764	51	108
0941JCN	9.4	.3701	40	90	1221JCN	12.2	.4803	51	108
0951JCN	9.5	.3740	40	90	1231JCN	12.3	.4843	51	108
0961JCN	9.6	.3780	43	93	1241JCN	12.4	.4882	51	108
0971JCN	9.7	.3819	43	93	1251JCN	12.5	.4921	51	108
0981JCN	9.8	.3858	43	93	1261JCN	12.6	.4961	51	108
0991JCN	9.9	.3898	43	93	1271JCN	12.7	.5000	51	108
1001JCN	10.0	.3937	43	93	1281JCN	12.8	.5039	51	108
1011JCN	10.1	.3976	43	100	1291JCN	12.9	.5079	51	108
1021JCN	10.2	.4016	43	100	1301JCN	13.0	.5118	51	108
1031JCN	10.3	.4055	43	100					

\* Individually packaged

◎ : Excellent    ○ : Good

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

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for HARDENED STEELS

STANDARD CARBIDE DRILLS

MULTI-1 DRILLS

HPD DRILLS

GOLD-P DRILLS

STRAIGHT SHANK DRILLS

AIRCRAFT DRILLS

SILVER &amp; DEMING DRILLS

TAPER SHANK DRILLS

NC SPOTTING DRILLS

CENTER DRILLS

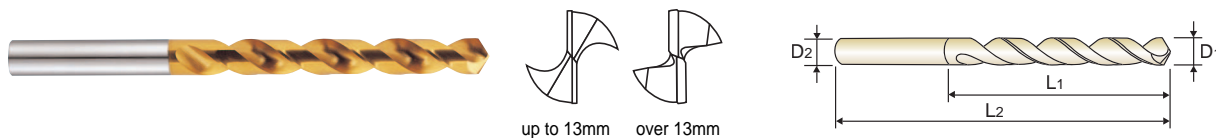
SPADE DRILLS

TECHNICAL DATA

**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.119

up to 4mm    over 4mm

D1=D2

Unit : mm

EDP No.	Diameter		Flute Length	Overall Length	EDP No.	Diameter		Flute Length	Overall Length
	Metric	Inch				Metric	Inch		
TiN	D1 = D2		L1	L2	TiN	D1 = D2		L1	L2
0201KCN	2.0	.0787	24	56	0451KCN	4.5	.1772	47	91
0211KCN	2.1	.0827	24	56	0461KCN	4.6	.1811	47	91
0221KCN	2.2	.0866	27	59	0471KCN	4.7	.1850	47	91
0231KCN	2.3	.0906	27	59	0481KCN	4.8	.1890	52	96
0241KCN	2.4	.0945	30	62	0491KCN	4.9	.1929	52	96
0251KCN	2.5	.0984	30	62	0501KCN	5.0	.1969	52	96
0261KCN	2.6	.1024	30	62	0511KCN	5.1	.2008	52	96
0271KCN	2.7	.1063	33	65	0521KCN	5.2	.2047	52	96
0281KCN	2.8	.1102	33	65	0531KCN	5.3	.2087	52	96
0291KCN	2.9	.1142	33	65	0541KCN	5.4	.2126	57	101
0301KCN	3.0	.1181	33	65	0551KCN	5.5	.2165	57	101
0311KCN	3.1	.1220	36	68	0561KCN	5.6	.2205	57	101
0321KCN	3.2	.1260	36	68	0571KCN	5.7	.2244	57	101
0331KCN	3.3	.1299	36	68	0581KCN	5.8	.2283	57	101
0341KCN	3.4	.1339	39	71	0591KCN	5.9	.2323	57	101
0351KCN	3.5	.1378	39	71	0601KCN	6.0	.2362	57	101
0361KCN	3.6	.1417	39	71	0611KCN	6.1	.2402	63	107
0371KCN	3.7	.1457	39	71	0621KCN	6.2	.2441	63	107
0381KCN	3.8	.1496	43	75	0631KCN	6.3	.2480	63	107
0391KCN	3.9	.1535	43	75	0641KCN	6.4	.2520	63	107
0401KCN	4.0	.1575	43	75	0651KCN	6.5	.2559	63	107
0411KCN	4.1	.1614	43	87	0661KCN	6.6	.2598	63	107
0421KCN	4.2	.1654	43	87	0671KCN	6.7	.2638	63	107
0431KCN	4.3	.1693	47	91	0681KCN	6.8	.2677	69	113
0441KCN	4.4	.1732	47	91	0691KCN	6.9	.2717	69	113

\* Individually packaged

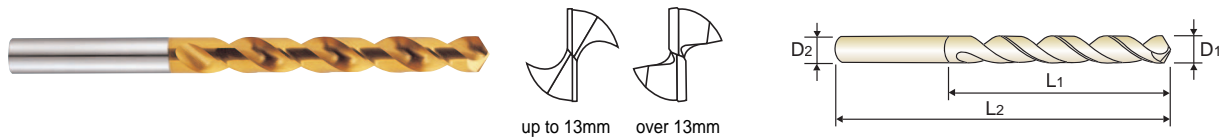
◎ : Excellent    ○ : Good

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



**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.119

up to 4mm over 4mm

 $D_1 = D_2$ 

Unit : mm

EDP No.	Diameter		Flute Length	Overall Length	EDP No.	Diameter		Flute Length	Overall Length
	Metric	Inch				Metric	Inch		
TiN	D <sub>1</sub> = D <sub>2</sub>		L <sub>1</sub>	L <sub>2</sub>	TiN	D <sub>1</sub> = D <sub>2</sub>		L <sub>1</sub>	L <sub>2</sub>
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

◎ : Excellent ○ : Good

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

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for HARDENED STEELS

STANDARD CARBIDE DRILLS

MULTI-1 DRILLS

HPD DRILLS

GOLD-P DRILLS

STRAIGHT SHANK DRILLS

AIRCRAFT DRILLS

SILVER &amp; DEMING DRILLS

TAPER SHANK DRILLS

NC SPOTTING DRILLS

CENTER DRILLS

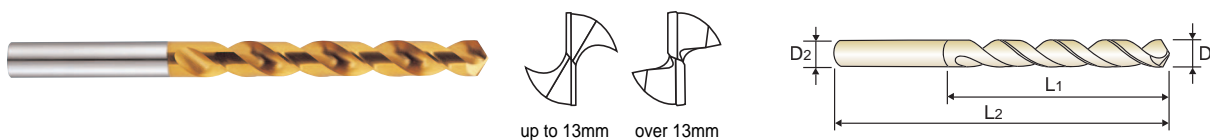
SPADE DRILLS

TECHNICAL DATA

**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.119

up to 4mm    over 4mm

D<sub>1</sub>=D<sub>2</sub>

Unit : mm

EDP No.	Diameter		Flute Length	Overall Length	EDP No.	Diameter		Flute Length	Overall Length
	Metric	Inch				Metric	Inch		
TiN	D <sub>1</sub> = D <sub>2</sub>		L <sub>1</sub>	L <sub>2</sub>	TiN	D <sub>1</sub> = D <sub>2</sub>		L <sub>1</sub>	L <sub>2</sub>
1201KCN	12.0	.4724	101	158	1501KCN	15.0	.5905	109	169
1211KCN	12.1	.4764	101	158	1551KCN	15.5	.6102	112	172
1221KCN	12.2	.4803	101	158	1561KCN	15.6	.6141	112	172
1231KCN	12.3	.4843	101	158	1601KCN	16.0	.6299	112	172
1241KCN	12.4	.4882	101	158	1651KCN	16.5	.6495	115	181
1251KCN	12.5	.4921	101	158	1701KCN	17.0	.6692	115	181
1261KCN	12.6	.4961	101	158	1751KCN	17.5	.6889	118	184
1271KCN	12.7	.5000	101	158	1761KCN	17.6	.6929	118	184
1281KCN	12.8	.5039	101	158	1801KCN	18.0	.7087	118	184
1291KCN	12.9	.5079	101	158	1851KCN	18.5	.7283	122	188
1301KCN	13.0	.5118	101	158	1901KCN	19.0	.7480	122	188
1351KCN	13.5	.5314	106	166	1951KCN	19.5	.7676	125	191
1401KCN	14.0	.5512	106	166	1961KCN	19.6	.7716	125	191
1411KCN	14.1	.5551	109	169	2001KCN	20.0	.7874	125	191
1451KCN	14.5	.5708	109	169					

\* Individually packaged

◎ : Excellent    ○ : Good

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

**HSS-EX, HPD-SUS TWIST DRILLS SPEED and FEED DATA**

**DJ543, DJ544 SERIE**

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

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

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

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA



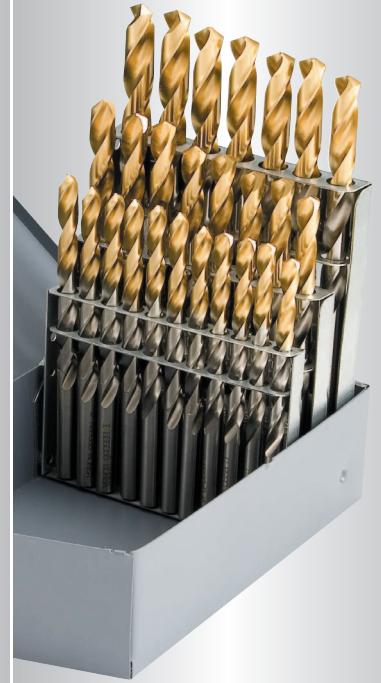
Global Cutting Tool Leader **YG-1**



**HSS**



Being the best through innovation














# **GOLD-P DRILLS**

- GOLD-P COATING

# SELECTION GUIDE

## GOLD-P DRILLS (GOLD-P COATED)

Competitive price and same performance as full TiN coating

ITEM	MODEL	DESCRIPTION	SIZE		PAGE	
			MIN	MAX		
<b>INCH</b>						
<b>D1GP182</b> <b>D8182</b>		HSS, STRAIGHT SHANK, GOLD-P COATED / Fractional sizes	JOBBER	D3/64	D3/4	<b>124</b>
<b>D1GP139</b>		HSS, STRAIGHT SHANK, GOLD-P COATED / Letter sizes	JOBBER	A	Z	<b>125</b>
<b>D1GP138</b>		HSS, STRAIGHT SHANK, GOLD-P COATED / Wire gauge sizes	JOBBER	#56	#1	<b>126</b>
<b>D2GP185</b>		HSSCo8, STRAIGHT SHANK, GOLD-P COATED / Fractional sizes	JOBBER	D3/64	D1/2	<b>127</b>
<b>D2GP186</b>		HSSCo8, STRAIGHT SHANK, GOLD-P COATED / Letter sizes	JOBBER	A	Z	<b>128</b>
<b>D2GP187</b>		HSSCo8, STRAIGHT SHANK, GOLD-P COATED / Wire gauge sizes	JOBBER	#56	#1	<b>129</b>
<b>DLGP511</b>		HSSCo5, STRAIGHT SHANK PARABOLIC FLUTE, GOLD-P COATED / Fractional sizes	JOBBER	D5/64	D1/2	<b>130</b>
<b>DLGP513</b>		HSSCo5, STRAIGHT SHANK PARABOLIC FLUTE, GOLD-P COATED / Letter sizes	JOBBER	A	Z	<b>131</b>
<b>DLGP512</b>		HSSCo5, STRAIGHT SHANK PARABOLIC FLUTE, GOLD-P COATED / Wire gauge sizes	JOBBER	#47	#1	<b>132</b>
<b>METRIC</b>						
<b>DLGP195</b>		HSSCo5, STRAIGHT SHANK DRILLS, GOLD-P COATED	JOBBER	D1.0	D13.0	<b>133</b>
<b>DLGP506</b>		HSSCo5 DH100 STRAIGHT SHANK DRILLS for DEEP HOLES, GOLD-P COATED	JOBBER	D2.0	D13.0	<b>135</b>
RECOMMENDED CUTTING CONDITIONS					<b>138</b>	

# HSS GOLD-P DRILLS

◎ : Excellent  
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
			HRC30~45	HRC45~55							
~HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							

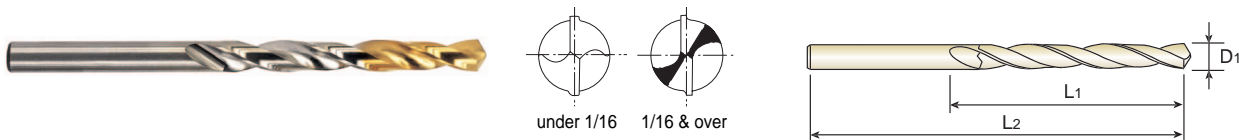
◎	◎					○	○	○	○		
◎	◎					○	○	○	○		
◎	◎					○	○	○	○		
◎	◎					○	○	○	○		
◎	◎					○	○	○	○		
◎	◎					○	○	○	○		
◎	◎				○	○			○		
◎	◎				○	○			○		
◎	◎				○	○			○		

◎	◎					○	○	○	○		
◎	◎				○	○			○		

**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.138

▶ **Fractional sizes**

Unit : Inch

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

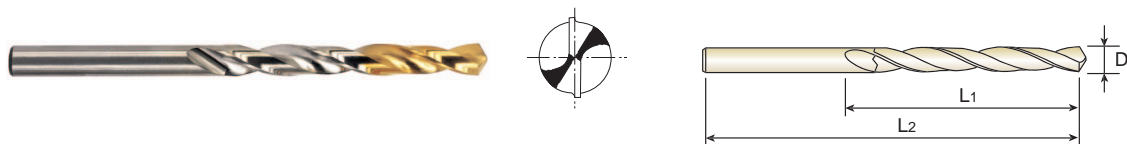
◎ : Excellent ○ : Good

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



**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


**▶ Letter sizes**

Unit : Inch

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

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

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for HARDENED STEELS

STANDARD CARBIDE DRILLS

MULTI-1 DRILLS

HPD DRILLS

GOLD-P DRILLS

STRAIGHT SHANK DRILLS

AIRCRAFT DRILLS

SILVER &amp; DEMING DRILLS

TAPER SHANK DRILLS

NC SPOTTING DRILLS

CENTER DRILLS

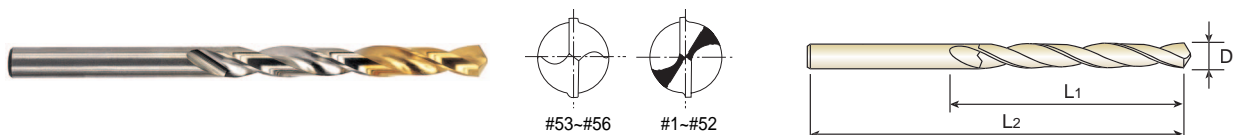
SPADE DRILLS

TECHNICAL DATA

**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



**▶ 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		
	D1		L1	L2		D1		L1	L2
* D1GP138256	1	.2280	2-5/8	3-7/8	* D1GP138228	29	.1360	1-3/4	2-7/8
* D1GP138255	2	.2210	2-5/8	3-7/8	* D1GP138227	30	.1285	1-5/8	2-3/4
* D1GP138254	3	.2130	2-1/2	3-3/4	* D1GP138226	31	.1200	1-5/8	2-3/4
* D1GP138253	4	.2090	2-1/2	3-3/4	* D1GP138225	32	.1160	1-5/8	2-3/4
* D1GP138252	5	.2055	2-1/2	3-3/4	* D1GP138224	33	.1130	1-1/2	2-5/8
* D1GP138251	6	.2040	2-1/2	3-3/4	* D1GP138223	34	.1110	1-1/2	2-5/8
* D1GP138250	7	.2010	2-7/16	3-5/8	* D1GP138222	35	.1100	1-1/2	2-5/8
* D1GP138249	8	.1990	2-7/16	3-5/8	* D1GP138221	36	.1065	1-7/16	2-1/2
* D1GP138248	9	.1960	2-7/16	3-5/8	* D1GP138220	37	.1040	1-7/16	2-1/2
* D1GP138247	10	.1935	2-7/16	3-5/8	* D1GP138219	38	.1015	1-7/16	2-1/2
* D1GP138246	11	.1910	2-5/16	3-1/2	* D1GP138218	39	.0995	1-3/8	2-3/8
* D1GP138245	12	.1890	2-5/16	3-1/2	* D1GP138217	40	.0980	1-3/8	2-3/8
* D1GP138244	13	.1850	2-5/16	3-1/2	* D1GP138216	41	.0960	1-3/8	2-3/8
* D1GP138243	14	.1820	2-3/16	3-3/8	* D1GP138215	42	.0935	1-1/4	2-1/4
* D1GP138242	15	.1800	2-3/16	3-3/8	* D1GP138214	43	.0890	1-1/4	2-1/4
* D1GP138241	16	.1770	2-3/16	3-3/8	* D1GP138213	44	.0860	1-1/8	2-1/8
* D1GP138240	17	.1730	2-3/16	3-3/8	* D1GP138212	45	.0820	1-1/8	2-1/8
* D1GP138239	18	.1695	2-1/8	3-1/4	* D1GP138211	46	.0810	1-1/8	2-1/8
* D1GP138238	19	.1660	2-1/8	3-1/4	* D1GP138210	47	.0785	1	2
* D1GP138237	20	.1610	2-1/8	3-1/4	* D1GP138209	48	.0760	1	2
* D1GP138236	21	.1590	2-1/8	3-1/4	* D1GP138208	49	.0730	1	2
* D1GP138235	22	.1570	2	3-1/8	* D1GP138207	50	.0700	1	2
* D1GP138234	23	.1540	2	3-1/8	* D1GP138206	51	.0670	1	2
* D1GP138233	24	.1520	2	3-1/8	* D1GP138205	52	.0635	7/8	1-7/8
* D1GP138232	25	.1495	1-7/8	3	* D1GP134204	53	.0595	7/8	1-7/8
* D1GP138231	26	.1470	1-7/8	3	* D1GP134203	54	.0550	7/8	1-7/8
* D1GP138230	27	.1440	1-7/8	3	* D1GP134202	55	.0520	7/8	1-7/8
* D1GP138229	28	.1405	1-3/4	2-7/8	* D1GP134201	56	.0465	3/4	1-3/4

▶ **Tolerance** : See page 124

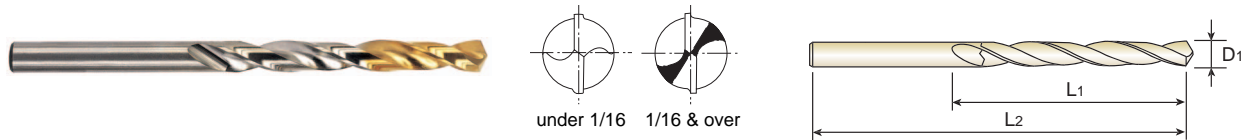
\* 10per package

◎ : Excellent ○ : Good

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

**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


**▶ Fractional sizes**

Unit : Inch

EDP No.	Diameter		Flute Length L1	Overall Length L2	EDP No.	Diameter		Flute Length L1	Overall Length L2
	Fractional D1	Decimal				Fractional D1	Decimal		
* D2GP185003	3/64	.0469	3/4	1-3/4	* D2GP185018	9/32	.2813	2-15/16	4-1/4
* D2GP185004	1/16	.0625	7/8	1-7/8	* D2GP185019	19/64	.2969	3-1/16	4-3/8
* D2GP185005	5/64	.0781	1	2	* D2GP185020	5/16	.3125	3-3/16	4-1/2
* D2GP185006	3/32	.0938	1-1/4	2-1/4	** D2GP185021	21/64	.3281	3-5/16	4-5/8
* D2GP185007	7/64	.1094	1-1/2	2-5/8	** D2GP185022	11/32	.3438	3-7/16	4-3/4
* D2GP185008	1/8	.1250	1-5/8	2-3/4	** D2GP185023	23/64	.3594	3-1/2	4-7/8
* D2GP185009	9/64	.1406	1-3/4	2-7/8	** D2GP185024	3/8	.3750	3-5/8	5
* D2GP185010	5/32	.1563	2	3-1/8	** D2GP185025	25/64	.3906	3-3/4	5-1/8
* D2GP185011	11/64	.1719	2-1/8	3-1/4	** D2GP185026	13/32	.4063	3-7/8	5-1/4
* D2GP185012	3/16	.1875	2-5/16	3-1/2	** D2GP185027	27/64	.4219	3-15/16	5-3/8
* D2GP185013	13/64	.2031	2-7/16	3-5/8	** D2GP185028	7/16	.4375	4-1/16	5-1/2
* D2GP185014	7/32	.2188	2-1/2	3-3/4	** D2GP185029	29/64	.4531	4-3/16	5-5/8
* D2GP185015	15/64	.2344	2-5/8	3-7/8	** D2GP185030	15/32	.4688	4-5/16	5-3/4
* D2GP185016	1/4	.2500	2-3/4	4	** D2GP185031	31/64	.4844	4-3/8	5-7/8
* D2GP185017	17/64	.2656	2-7/8	4-1/8	** 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

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

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for HARDENED STEELS

STANDARD CARBIDE DRILLS

MULTI-1 DRILLS

HPD DRILLS

GOLD-P DRILLS

STRAIGHT SHANK DRILLS

AIRCRAFT DRILLS

SILVER &amp; DEMING DRILLS

TAPER SHANK DRILLS

NC SPOTTING DRILLS

CENTER DRILLS

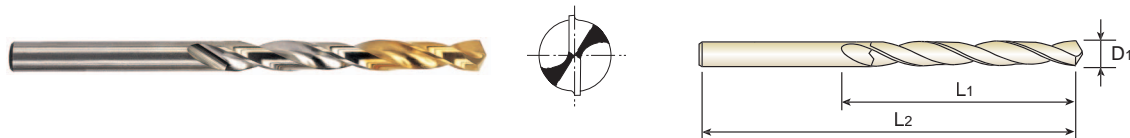
SPADE DRILLS

TECHNICAL DATA

**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.138

▶ **Letter sizes**

Unit : Inch

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

\* 10per package  
\*\* 5per package

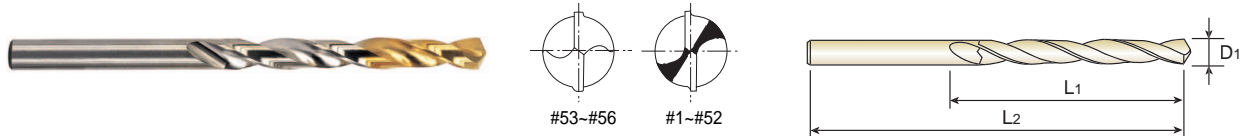
Tolerance Diameter (Inch)	
up to 1/8(.1250)	0 ~ -.0005
over 1/8(.1250) up to 1/4(.2500)	0 ~ -.0007
over 1/4(.2500) up to 1/2(.5000)	0 ~ -.0010

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
~HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							
◎	◎					○	○	○	○		

◎ : Excellent ○ : Good

**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


**▶ Wire gauge sizes**

Unit : Inch

EDP No.	Diameter		Flute Length L1	Overall Length L2	EDP No.	Diameter		Flute Length L1	Overall Length L2
	Wire gauge	Decimal				Wire gauge	Decimal		
	D1					D1			
* D2GP187256	1	.2280	2-5/8	3-7/8	* D2GP187228	29	.1360	1-3/4	2-7/8
* D2GP187255	2	.2210	2-5/8	3-7/8	* D2GP187227	30	.1285	1-5/8	2-3/4
* D2GP187254	3	.2130	2-1/2	3-3/4	* D2GP187226	31	.1200	1-5/8	2-3/4
* D2GP187253	4	.2090	2-1/2	3-3/4	* D2GP187225	32	.1160	1-5/8	2-3/4
* D2GP187252	5	.2055	2-1/2	3-3/4	* D2GP187224	33	.1130	1-1/2	2-5/8
* D2GP187251	6	.2040	2-1/2	3-3/4	* D2GP187223	34	.1110	1-1/2	2-5/8
* D2GP187250	7	.2010	2-7/16	3-5/8	* D2GP187222	35	.1100	1-1/2	2-5/8
* D2GP187249	8	.1990	2-7/16	3-5/8	* D2GP187221	36	.1065	1-7/16	2-1/2
* D2GP187248	9	.1960	2-7/16	3-5/8	* D2GP187220	37	.1040	1-7/16	2-1/2
* D2GP187247	10	.1935	2-7/16	3-5/8	* D2GP187219	38	.1015	1-7/16	2-1/2
* D2GP187246	11	.1910	2-5/16	3-1/2	* D2GP187218	39	.0995	1-3/8	2-3/8
* D2GP187245	12	.1890	2-5/16	3-1/2	* D2GP187217	40	.0980	1-3/8	2-3/8
* D2GP187244	13	.1850	2-5/16	3-1/2	* D2GP187216	41	.0960	1-3/8	2-3/8
* D2GP187243	14	.1820	2-3/16	3-3/8	* D2GP187215	42	.0935	1-1/4	2-1/4
* D2GP187242	15	.1800	2-3/16	3-3/8	* D2GP187214	43	.0890	1-1/4	2-1/4
* D2GP187241	16	.1770	2-3/16	3-3/8	* D2GP187213	44	.0860	1-1/8	2-1/8
* D2GP187240	17	.1730	2-3/16	3-3/8	* D2GP187212	45	.0820	1-1/8	2-1/8
* D2GP187239	18	.1695	2-1/8	3-1/4	* D2GP187211	46	.0810	1-1/8	2-1/8
* D2GP187238	19	.1660	2-1/8	3-1/4	* D2GP187210	47	.0785	1	2
* D2GP187237	20	.1610	2-1/8	3-1/4	* D2GP187209	48	.0760	1	2
* D2GP187236	21	.1590	2-1/8	3-1/4	* D2GP187208	49	.0730	1	2
* D2GP187235	22	.1570	2	3-1/8	* D2GP187207	50	.0700	1	2
* D2GP187234	23	.1540	2	3-1/8	* D2GP187206	51	.0670	1	2
* D2GP187233	24	.1520	2	3-1/8	* D2GP187205	52	.0635	7/8	1-7/8
* D2GP187232	25	.1495	1-7/8	3	* D2GP187204	53	.0595	7/8	1-7/8
* D2GP187231	26	.1470	1-7/8	3	* D2GP187203	54	.0550	7/8	1-7/8
* D2GP187230	27	.1440	1-7/8	3	* D2GP187202	55	.0520	7/8	1-7/8
* D2GP187229	28	.1405	1-3/4	2-7/8	* D2GP187201	56	.0465	3/4	1-3/4

▶ Tolerance : See page 124

\* 10per package

◎ : Excellent ○ : Good

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

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for HARDENED STEELS

STANDARD CARBIDE DRILLS

MULTI-1 DRILLS

HPD DRILLS

GOLD-P DRILLS

STRAIGHT SHANK DRILLS

AIRCRAFT DRILLS

SILVER &amp; DEMING DRILLS

TAPER SHANK DRILLS

NC SPOTTING DRILLS

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA

**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.139

▶ **Fractional sizes**

Unit : Inch

EDP No.	Diameter		Flute Length L1	Overall Length L2	EDP No.	Diameter		Flute Length L1	Overall Length L2
	Fractional D1	Decimal				Fractional D1	Decimal		
* DLGP511005	5/64	.0781	1	2	* DLGP511019	19/64	.2969	3-1/16	4-3/8
* DLGP511006	3/32	.0938	1-1/4	2-1/4	* DLGP511020	5/16	.3125	3-3/16	4-1/2
* DLGP511007	7/64	.1094	1-1/2	2-5/8	** DLGP511021	21/64	.3281	3-5/16	4-5/8
* DLGP511008	1/8	.1250	1-5/8	2-3/4	** DLGP511022	11/32	.3438	3-7/16	4-3/4
* DLGP511009	9/64	.1406	1-3/4	2-7/8	** DLGP511023	23/64	.3594	3-1/2	4-7/8
* DLGP511010	5/32	.1563	2	3-1/8	** DLGP511024	3/8	.3750	3-5/8	5
* DLGP511011	11/64	.1719	2-1/8	3-1/4	** DLGP511025	25/64	.3906	3-3/4	5-1/8
* DLGP511012	3/16	.1875	2-5/16	3-1/2	** DLGP511026	13/32	.4063	3-7/8	5-1/4
* DLGP511013	13/64	.2031	2-7/16	3-5/8	** DLGP511027	27/64	.4219	3-15/16	5-3/8
* DLGP511014	7/32	.2188	2-1/2	3-3/4	** DLGP511028	7/16	.4375	4-1/16	5-1/2
* DLGP511015	15/64	.2344	2-5/8	3-7/8	** DLGP511029	29/64	.4531	4-3/16	5-5/8
* DLGP511016	1/4	.2500	2-3/4	4	** DLGP511030	15/32	.4688	4-5/16	5-3/4
* DLGP511017	17/64	.2656	2-7/8	4-1/8	** DLGP511031	31/64	.4844	4-3/8	5-7/8
* DLGP511018	9/32	.2813	2-15/16	4-1/4	** DLGP511032	1/2	.5000	4-1/2	6

\* 10per package  
\*\* 5per package

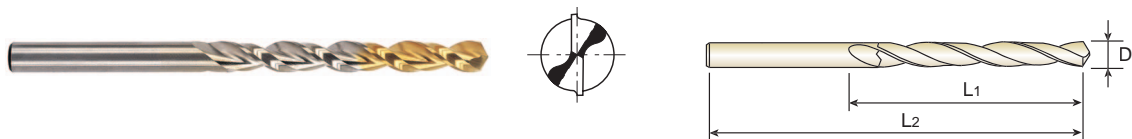
Tolerance Diameter (Inch)	
up to 1/8(.1250)	0 ~ -.0005
over 1/8(.1250) up to 1/4(.2500)	0 ~ -.0007
over 1/4(.2500) up to 1/2(.5000)	0 ~ -.0010

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

◎ : Excellent ○ : Good

**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.


**▶ Letter sizes**

Unit : Inch

EDP No.	Diameter		Flute Length	Overall Length	EDP No.	Diameter		Flute Length	Overall Length
	Letter	Decimal				Letter	Decimal		
		D1	L1	L2			D1	L1	L2
* DLGP513101	A	.2340	2-5/8	3-7/8	* DLGP513114	N	.3020	3-1/16	4-3/8
* DLGP513102	B	.2380	2-3/4	4	* DLGP513115	O	.3160	3-3/16	4-1/2
* DLGP513103	C	.2420	2-3/4	4	* DLGP513116	P	.3230	3-5/16	4-5/8
* DLGP513104	D	.2460	2-3/4	4	** DLGP513117	Q	.3320	3-7/16	4-3/4
* DLGP511105	E	.2500	2-3/4	4	** DLGP513118	R	.3390	3-7/16	4-3/4
* DLGP513106	F	.2570	2-7/8	4-1/8	** DLGP513119	S	.3480	3-1/2	4-7/8
* DLGP513107	G	.2610	2-7/8	4-1/8	** DLGP513120	T	.3580	3-1/2	4-7/8
* DLGP513108	H	.2660	2-7/8	4-1/8	** DLGP513121	U	.3680	3-5/8	5
* DLGP513109	I	.2720	2-7/8	4-1/8	** DLGP513122	V	.3770	3-5/8	5
* DLGP513110	J	.2770	2-7/8	4-1/8	** DLGP513123	W	.3860	3-3/4	5-1/8
* DLGP513111	K	.2810	2-15/16	4-1/4	** DLGP513124	X	.3970	3-3/4	5-1/8
* DLGP513112	L	.2900	2-15/16	4-1/4	** DLGP513125	Y	.4040	3-7/8	5-1/4
* DLGP513113	M	.2950	3-1/16	4-3/8	** 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

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

◎ : Excellent ○ : Good

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for HARDENED STEELS

STANDARD CARBIDE DRILLS

MULTI-1 DRILLS

HPD DRILLS

GOLD-P DRILLS

STRAIGHT SHANK DRILLS

AIRCRAFT DRILLS

SILVER &amp; DEMING DRILLS

TAPER SHANK DRILLS

NC SPOTTING DRILLS

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA

**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.139

▶ **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		
	D1		L1	L2		D1		L1	L2
* DLGP512247	1	.2280	2-5/8	3-7/8	* DLGP512223	25	.1495	1-7/8	3
* DLGP512246	2	.2210	2-5/8	3-7/8	* DLGP512222	26	.1470	1-7/8	3
* DLGP512245	3	.2130	2-1/2	3-3/4	* DLGP512221	27	.1440	1-7/8	3
* DLGP512244	4	.2090	2-1/2	3-3/4	* DLGP512220	28	.1405	1-3/4	2-7/8
* DLGP512243	5	.2055	2-1/2	3-3/4	* DLGP512219	29	.1360	1-3/4	2-7/8
* DLGP512242	6	.2040	2-1/2	3-3/4	* DLGP512218	30	.1285	1-5/8	2-3/4
* DLGP512241	7	.2010	2-7/16	3-5/8	* DLGP512217	31	.1200	1-5/8	2-3/4
* DLGP512240	8	.1990	2-7/16	3-5/8	* DLGP512216	32	.1160	1-5/8	2-3/4
* DLGP512239	9	.1960	2-7/16	3-5/8	* DLGP512215	33	.1130	1-1/2	2-5/8
* DLGP512238	10	.1935	2-7/16	3-5/8	* DLGP512214	34	.1110	1-1/2	2-5/8
* DLGP512237	11	.1910	2-5/16	3-1/2	* DLGP512213	35	.1100	1-1/2	2-5/8
* DLGP512236	12	.1890	2-5/16	3-1/2	* DLGP512212	36	.1065	1-7/16	2-1/2
* DLGP512235	13	.1850	2-5/16	3-1/2	* DLGP512211	37	.1040	1-7/16	2-1/2
* DLGP512234	14	.1820	2-3/16	3-3/8	* DLGP512210	38	.1015	1-7/16	2-1/2
* DLGP512233	15	.1800	2-3/16	3-3/8	* DLGP512209	39	.0995	1-3/8	2-3/8
* DLGP512232	16	.1770	2-3/16	3-3/8	* DLGP512208	40	.0980	1-3/8	2-3/8
* DLGP512231	17	.1730	2-3/16	3-3/8	* DLGP512207	41	.0960	1-3/8	2-3/8
* DLGP512230	18	.1695	2-1/8	3-1/4	* DLGP512206	42	.0935	1-1/4	2-1/4
* DLGP512229	19	.1660	2-1/8	3-1/4	* DLGP512205	43	.0890	1-1/4	2-1/4
* DLGP512228	20	.1610	2-1/8	3-1/4	* DLGP512204	44	.0860	1-1/8	2-1/8
* DLGP512227	21	.1590	2-1/8	3-1/4	* DLGP512203	45	.0820	1-1/8	2-1/8
* DLGP512226	22	.1570	2	3-1/8	* DLGP512202	46	.0810	1-1/8	2-1/8
* DLGP512225	23	.1540	2	3-1/8	* DLGP512201	47	.0785	1	2
* DLGP512224	24	.1520	2	3-1/8					

▶ **Tolerance** : See page 124

\* 10per package

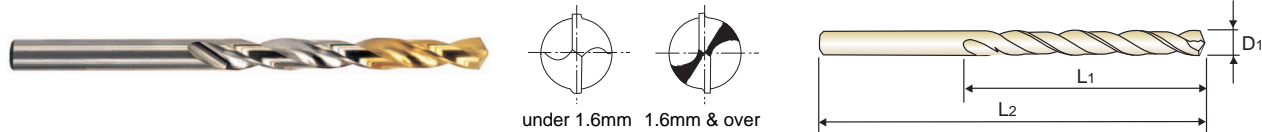
◎ : Excellent ○ : Good

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



**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.138

EDP No.	Diameter		Flute Length	Overall Length	EDP No.	Diameter		Flute Length	Overall Length
	Metric	Inch				Metric	Inch		
	D1		L1	L2		D1		L1	L2
* DLGP195010	1.0	.0394	12	34	* DLGP195041	4.1	.1614	43	75
* DLGP195011	1.1	.0433	14	36	* DLGP195042	4.2	.1654	43	75
* DLGP195012	1.2	.0472	16	38	* DLGP195043	4.3	.1693	47	80
* DLGP195013	1.3	.0512	16	38	* DLGP195044	4.4	.1732	47	80
* DLGP195014	1.4	.0551	18	40	* DLGP195045	4.5	.1772	47	80
* DLGP195015	1.5	.0591	18	40	* DLGP195046	4.6	.1811	47	80
* DLGP195016	1.6	.0630	20	43	* DLGP195047	4.7	.1850	47	80
* DLGP195017	1.7	.0669	20	43	* DLGP195048	4.8	.1890	52	86
* DLGP195018	1.8	.0709	22	46	* DLGP195049	4.9	.1929	52	86
* DLGP195019	1.9	.0748	22	46	* DLGP195050	5.0	.1969	52	86
* DLGP195020	2.0	.0787	24	49	* DLGP195051	5.1	.2008	52	86
* DLGP195021	2.1	.0827	24	49	* DLGP195052	5.2	.2047	52	86
* DLGP195022	2.2	.0866	27	53	* DLGP195053	5.3	.2087	52	86
* DLGP195023	2.3	.0906	27	53	* DLGP195054	5.4	.2126	57	93
* DLGP195024	2.4	.0945	30	57	* DLGP195055	5.5	.2165	57	93
* DLGP195025	2.5	.0984	30	57	* DLGP195056	5.6	.2205	57	93
* DLGP195026	2.6	.1024	30	57	* DLGP195057	5.7	.2244	57	93
* DLGP195027	2.7	.1063	33	61	* DLGP195058	5.8	.2283	57	93
* DLGP195028	2.8	.1102	33	61	* DLGP195059	5.9	.2323	57	93
* DLGP195029	2.9	.1142	33	61	* DLGP195060	6.0	.2362	57	93
* DLGP195030	3.0	.1181	33	61	* DLGP195061	6.1	.2402	63	101
* DLGP195031	3.1	.1220	36	65	* DLGP195062	6.2	.2441	63	101
* DLGP195032	3.2	.1260	36	65	* DLGP195063	6.3	.2480	63	101
* DLGP195033	3.3	.1299	36	65	* DLGP195064	6.4	.2520	63	101
* DLGP195034	3.4	.1339	39	70	* DLGP195065	6.5	.2559	63	101
* DLGP195035	3.5	.1378	39	70	* DLGP195066	6.6	.2598	63	101
* DLGP195036	3.6	.1417	39	70	* DLGP195067	6.7	.2638	63	101
* DLGP195037	3.7	.1457	39	70	* DLGP195068	6.8	.2677	69	109
* DLGP195038	3.8	.1496	43	75	* DLGP195069	6.9	.2717	69	109
* DLGP195039	3.9	.1535	43	75	* DLGP195070	7.0	.2756	69	109
* DLGP195040	4.0	.1575	43	75	* DLGP195071	7.1	.2795	69	109

\* 10per package ◎ : Excellent ○ : Good

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

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for HARDENED STEELS

STANDARD CARBIDE DRILLS

MULTI-1 DRILLS

HPD DRILLS

GOLD-P DRILLS

STRAIGHT SHANK DRILLS

AIRCRAFT DRILLS

SILVER &amp; DEMING DRILLS

TAPER SHANK DRILLS

NC SPOTTING DRILLS

CENTER DRILLS

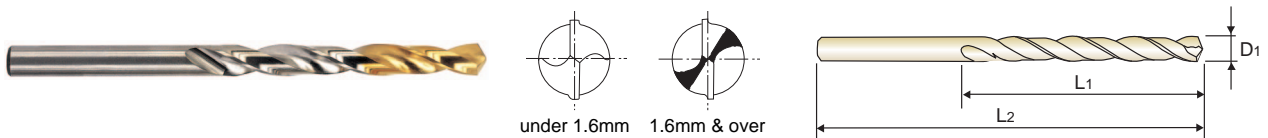
SPADE DRILLS

TECHNICAL DATA

**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.138

Unit : mm

EDP No.	Diameter		Flute Length L1	Overall Length L2	EDP No.	Diameter		Flute Length L1	Overall Length L2
	Metric	Inch				Metric	Inch		
* DLGP195072	7.2	.2835	69	109	** DLGP195102	10.2	.4016	87	133
* DLGP195073	7.3	.2874	69	109	** DLGP195103	10.3	.4055	87	133
* DLGP195074	7.4	.2913	69	109	** DLGP195104	10.4	.4094	87	133
* DLGP195075	7.5	.2953	69	109	** DLGP195105	10.5	.4134	87	133
* DLGP195076	7.6	.2992	75	117	** DLGP195106	10.6	.4173	87	133
* DLGP195077	7.7	.3031	75	117	** DLGP195107	10.7	.4212	94	142
* DLGP195078	7.8	.3071	75	117	** DLGP195108	10.8	.4252	94	142
* DLGP195079	7.9	.3110	75	117	** DLGP195109	10.9	.4291	94	142
* DLGP195080	8.0	.3150	75	117	** DLGP195110	11.0	.4330	94	142
* DLGP195081	8.1	.3189	75	117	** DLGP195111	11.1	.4370	94	142
* DLGP195082	8.2	.3228	75	117	** DLGP195112	11.2	.4409	94	142
* DLGP195083	8.3	.3268	75	117	** DLGP195113	11.3	.4448	94	142
** DLGP195084	8.4	.3307	75	117	** DLGP195114	11.4	.4488	94	142
** DLGP195085	8.5	.3346	75	117	** DLGP195115	11.5	.4527	94	142
** DLGP195086	8.6	.3386	81	125	** DLGP195116	11.6	.4566	94	142
** DLGP195087	8.7	.3425	81	125	** DLGP195117	11.7	.4606	94	142
** DLGP195088	8.8	.3465	81	125	** DLGP195118	11.8	.4645	94	142
** DLGP195089	8.9	.3504	81	125	** DLGP195119	11.9	.4685	101	151
** DLGP195090	9.0	.3543	81	125	** DLGP195120	12.0	.4724	101	151
** DLGP195091	9.1	.3583	81	125	** DLGP195121	12.1	.4764	101	151
** DLGP195092	9.2	.3622	81	125	** DLGP195122	12.2	.4803	101	151
** DLGP195093	9.3	.3661	81	125	** DLGP195123	12.3	.4843	101	151
** DLGP195094	9.4	.3701	81	125	** DLGP195124	12.4	.4882	101	151
** DLGP195095	9.5	.3740	81	125	** DLGP195125	12.5	.4921	101	151
** DLGP195096	9.6	.3780	87	133	** DLGP195126	12.6	.4921	101	151
** DLGP195097	9.7	.3819	87	133	** DLGP195127	12.7	.5000	101	151
** DLGP195098	9.8	.3858	87	133	** DLGP195128	12.8	.5039	101	151
** DLGP195099	9.9	.3898	87	133	** DLGP195129	12.9	.5079	101	151
** DLGP195100	10.0	.3937	87	133	** DLGP195130	13.0	.5118	101	151
** DLGP195101	10.1	.3976	87	133					

\* 10per package  
 \*\* 5per package

◎ : Excellent ○ : Good

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

**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.139

Unit : mm

EDP No.	Diameter		Flute Length	Overall Length	EDP No.	Diameter		Flute Length	Overall Length
	Metric	Inch				Metric	Inch		
	D1		L1	L2		D1		L1	L2
* DLGP506020	2.0	.0787	24	49	* DLGP506048	4.8	.1890	52	86
* DLGP506021	2.1	.0827	24	49	* DLGP506049	4.9	.1929	52	86
* DLGP506022	2.2	.0866	27	53	* DLGP506050	5.0	.1969	52	86
* DLGP506023	2.3	.0906	27	53	* DLGP506051	5.1	.2008	52	86
* DLGP506024	2.4	.0945	30	57	* DLGP506052	5.2	.2047	52	86
* DLGP506025	2.5	.0984	30	57	* DLGP506053	5.3	.2087	52	86
* DLGP506026	2.6	.1024	30	57	* DLGP506054	5.4	.2126	57	93
* DLGP506027	2.7	.1063	33	61	* DLGP506055	5.5	.2165	57	93
* DLGP506028	2.8	.1102	33	61	* DLGP506056	5.6	.2205	57	93
* DLGP506029	2.9	.1142	33	61	* DLGP506057	5.7	.2244	57	93
* DLGP506030	3.0	.1181	33	61	* DLGP506058	5.8	.2283	57	93
* DLGP506031	3.1	.1220	36	65	* DLGP506059	5.9	.2323	57	93
* DLGP506032	3.2	.1260	36	65	* DLGP506060	6.0	.2362	57	93
* DLGP506033	3.3	.1299	36	65	* DLGP506061	6.1	.2402	63	101
* DLGP506034	3.4	.1339	39	70	* DLGP506062	6.2	.2441	63	101
* DLGP506035	3.5	.1378	39	70	* DLGP506063	6.3	.2480	63	101
* DLGP506036	3.6	.1417	39	70	* DLGP506064	6.4	.2520	63	101
* DLGP506037	3.7	.1457	39	70	* DLGP506065	6.5	.2559	63	101
* DLGP506038	3.8	.1496	43	75	* DLGP506066	6.6	.2598	63	101
* DLGP506039	3.9	.1535	43	75	* DLGP506067	6.7	.2638	63	101
* DLGP506040	4.0	.1575	43	75	* DLGP506068	6.8	.2677	69	109
* DLGP506041	4.1	.1614	43	75	* DLGP506069	6.9	.2717	69	109
* DLGP506042	4.2	.1654	43	75	* DLGP506070	7.0	.2756	69	109
* DLGP506043	4.3	.1693	47	80	* DLGP506071	7.1	.2795	69	109
* DLGP506044	4.4	.1732	47	80	* DLGP506072	7.2	.2835	69	109
* DLGP506045	4.5	.1772	47	80	* DLGP506073	7.3	.2874	69	109
* DLGP506046	4.6	.1811	47	80	* DLGP506074	7.4	.2913	69	109
* DLGP506047	4.7	.1850	47	80	* DLGP506075	7.5	.2953	69	109

\* 10per package

◎ : Excellent ○ : Good

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

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for HARDENED STEELS

STANDARD CARBIDE DRILLS

MULTI-1 DRILLS

HPD DRILLS

GOLD-P DRILLS

STRAIGHT SHANK DRILLS

AIRCRAFT DRILLS

SILVER &amp; DEMING DRILLS

TAPER SHANK DRILLS

NC SPOTTING DRILLS

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA

**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.139

Unit : mm

EDP No.	Diameter		Flute Length L1	Overall Length L2	EDP No.	Diameter		Flute Length L1	Overall Length L2
	Metric	Inch				Metric	Inch		
* DLGP506076	7.6	.2992	75	117	** DLGP506104	10.4	.4094	87	133
* DLGP506077	7.7	.3031	75	117	** DLGP506105	10.5	.4134	87	133
* DLGP506078	7.8	.3071	75	117	** DLGP506106	10.6	.4173	87	133
* DLGP506079	7.9	.3110	75	117	** DLGP506107	10.7	.4212	94	142
* DLGP506080	8.0	.3150	75	117	** DLGP506108	10.8	.4252	94	142
* DLGP506081	8.1	.3189	75	117	** DLGP506109	10.9	.4291	94	142
* DLGP506082	8.2	.3228	75	117	** DLGP506110	11.0	.4330	94	142
* DLGP506083	8.3	.3268	75	117	** DLGP506111	11.1	.4370	94	142
** DLGP506084	8.4	.3307	75	117	** DLGP506112	11.2	.4409	94	142
** DLGP506085	8.5	.3346	75	117	** DLGP506113	11.3	.4448	94	142
** DLGP506086	8.6	.3386	81	125	** DLGP506114	11.4	.4488	94	142
** DLGP506087	8.7	.3425	81	125	** DLGP506115	11.5	.4527	94	142
** DLGP506088	8.8	.3465	81	125	** DLGP506116	11.6	.4566	94	142
** DLGP506089	8.9	.3504	81	125	** DLGP506117	11.7	.4606	94	142
** DLGP506090	9.0	.3543	81	125	** DLGP506118	11.8	.4645	94	142
** DLGP506091	9.1	.3583	81	125	** DLGP506119	11.9	.4685	101	151
** DLGP506092	9.2	.3622	81	125	** DLGP506120	12.0	.4724	101	151
** DLGP506093	9.3	.3661	81	125	** DLGP506121	12.1	.4764	101	151
** DLGP506094	9.4	.3701	81	125	** DLGP506122	12.2	.4803	101	151
** DLGP506095	9.5	.3740	81	125	** DLGP506123	12.3	.4843	101	151
** DLGP506096	9.6	.3780	87	133	** DLGP506124	12.4	.4882	101	151
** DLGP506097	9.7	.3819	87	133	** DLGP506125	12.5	.4921	101	151
** DLGP506098	9.8	.3858	87	133	** DLGP506126	12.6	.4961	101	151
** DLGP506099	9.9	.3898	87	133	** DLGP506127	12.7	.5000	101	151
** DLGP506100	10.0	.3937	87	133	** DLGP506128	12.8	.5039	101	151
** DLGP506101	10.1	.3976	87	133	** DLGP506129	12.9	.5079	101	151
** DLGP506102	10.2	.4016	87	133	** DLGP506130	13.0	.5118	101	151
** DLGP506103	10.3	.4055	87	133					

\* 10per package  
\*\* 5per package

◎ : Excellent ○ : Good

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



## 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	Ø 1/16~Ø 1/2(Fracitional)	29 pcs
D2GP185 SET	D2GP SET927	HSSCo8 Straight Shank, Split Point	Ø 1/16~Ø 1/2(Fracitional)	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	Ø 5/64~Ø 1/2(Fracitional)	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

i-DREAM  
DRILLSDREAM  
DRILLSDREAM  
DRILLS  
-INOXDREAM  
DRILLS  
-ALUDREAM  
DRILLS  
-MQL TYPEDREAM  
DRILLS  
for HARDENED  
STEELSSTANDARD  
CARBIDE  
DRILLSMULTI-1  
DRILLS

HPD DRILLS

GOLD-P  
DRILLSSTRAIGHT  
SHANK  
DRILLSAIRCRAFT  
DRILLSSILVER &  
DEMING  
DRILLSTAPER  
SHANK  
DRILLSNC SPOTTING  
DRILLSCENTER  
DRILLSSPADE  
DRILLSTECHNICAL  
DATA



i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA

**HSS & HSSCo5, STRAIGHT SHANK, GOLD-P COATED**

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

WORK MATERIAL			CARBON STEELS		CARBON STEELS		ALLOY STEELS		STAINLESS STEELS	
HARDNESS					~ HRC23		HRC23 ~ 34		~ HRC23	
STRENGTH			~ 570N/mm <sup>2</sup>		~ 830N/mm <sup>2</sup>		830~1110N/mm <sup>2</sup>		~ 830N/mm <sup>2</sup>	
DIAMETER			N	S	N	S	N	S	N	S
Fractional	Decimal	Metric								
3/64	.0469	1.0	14000	0.0008	12500	0.0008	7700	0.0008	7000	0.0008
#47	.0785	2.0	7000	0.0023	6100	0.0024	3850	0.0024	3500	0.0024
#32	.1160	3.0	4650	0.0038	4100	0.0031	2550	0.0031	2350	0.0031
#22	.1570	4.0	3500	0.0044	3050	0.0043	1950	0.0039	1750	0.0039
#9	.1960	5.0	2800	0.0049	2450	0.0043	1550	0.0039	1400	0.0039
B	.2380	6.0	2350	0.0056	2050	0.0051	1300	0.0047	1150	0.0047
J	.2770	7.0	2000	0.0064	1750	0.0059	1100	0.0055	1000	0.0055
O	.3160	8.0	1750	0.0072	1550	0.0071	960	0.0059	875	0.0059
T	.3580	9.0	1550	0.0077	1350	0.0087	855	0.0071	780	0.0071
X	.3970	10.0	1400	0.0084	1250	0.0087	770	0.0071	700	0.0071
7/16	.4375	11.0	1250	0.0087	1100	0.0087	700	0.0071	650	0.0071
15/32	.4688	12.0	1150	0.0090	1000	0.0087	650	0.0079	585	0.0079
1/2	.5000	13.0	1050	0.0090	950	0.0087	595	0.0079	540	0.0079

WORK MATERIAL			TITANIUM ALLOYS		ALUMINUM ALLOYS, ZINC ALLOYS		MAGNESIUM ALLOYS	
HARDNESS								
STRENGTH			~410N/mm <sup>2</sup>					
DIAMETER			N	S	N	S	N	S
Fractional	Decimal	Metric						
3/64	.0469	1.0	8050	0.0008	30000	0.0008	11500	0.0012
#47	.0785	2.0	4050	0.0024	15000	0.0023	5800	0.0035
#32	.1160	3.0	2700	0.0031	9900	0.0038	3850	0.0051
#22	.1570	4.0	2000	0.0035	7450	0.0044	2900	0.0059
#9	.1960	5.0	1600	0.0039	5950	0.0049	2300	0.0067
B	.2380	6.0	1350	0.0047	4950	0.0056	1950	0.0075
J	.2770	7.0	1150	0.0055	4250	0.0064	1650	0.0087
O	.3160	8.0	1000	0.0059	3700	0.0072	1450	0.0094
T	.3580	9.0	895	0.0067	3300	0.0079	1280	0.0106
X	.3970	10.0	805	0.0071	3000	0.0090	1150	0.0114
7/16	.4375	11.0	730	0.0071	2700	0.0090	1050	0.0118
15/32	.4688	12.0	670	0.0079	2480	0.0090	960	0.0122
1/2	.5000	13.0	620	0.0079	2300	0.0090	890	0.0122

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			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 <sup>2</sup>		800~1200N/mm <sup>2</sup>					
DIAMETER			N	S	N	S	N	S	N	S
Fractional	Decimal	Metric								
3/64	.0469	1.0	8750	0.0008	6300	0.0008	16000	0.0008	9800	0.0008
#47	.0785	2.0	4400	0.0022	3150	0.0022	7900	0.0027	4900	0.0027
#32	.1160	3.0	2900	0.0032	2100	0.0032	5250	0.0043	3250	0.0043
#22	.1570	4.0	2200	0.0036	1600	0.0036	3950	0.0054	2450	0.0054
#9	.1960	5.0	1750	0.0041	1250	0.0041	3150	0.0054	1950	0.0054
B	.2380	6.0	1450	0.0047	1050	0.0047	2650	0.0069	1650	0.0069
J	.2770	7.0	1250	0.0054	900	0.0054	2250	0.0078	1400	0.0078
O	.3160	8.0	1100	0.0060	790	0.0060	1950	0.0087	1250	0.0087
T	.3580	9.0	975	0.0066	700	0.0066	1750	0.0095	1100	0.0095
X	.3970	10.0	875	0.0071	630	0.0071	1600	0.0108	980	0.0108
7/16	.4375	11.0	800	0.0077	575	0.0077	1450	0.0108	890	0.0108
15/32	.4688	12.0	730	0.0077	525	0.0077	1300	0.0108	815	0.0108
1/2	.5000	13.0	675	0.0077	485	0.0077	1200	0.0108	755	0.0108

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

i-DREAM  
DRILLS

DREAM  
DRILLS

DREAM  
DRILLS  
-INOX

DREAM  
DRILLS  
-ALU

DREAM  
DRILLS  
-MQL TYPE

DREAM  
DRILLS  
for 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

CENTER  
DRILLS

SPADE  
DRILLS

TECHNICAL  
DATA



Global Cutting Tool Leader **YG-1**





**HSS**



Being the best through innovation














# STRAIGHT SHANK DRILLS

- General Purpose

# SELECTION GUIDE

## STRAIGHT SHANK TWIST DRILLS

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

ITEM	MODEL	DESCRIPTION	SIZE		PAGE	
			MIN	MAX		
<b>INCH</b>						
<b>D1118</b>		HSS, STRAIGHT SHANK SCREW MACHINE / Fractional sizes	D3/64	D1/2	<b>144</b>	
<b>D1115</b>		HSS, STRAIGHT SHANK SCREW MACHINE / Letter sizes	A	Z	<b>145</b>	
<b>D1119</b>		HSS, STRAIGHT SHANK SCREW MACHINE / Wire gauge sizes	#60	#1	<b>146</b>	
<b>D2146</b> <b>D4146</b>		HSSCo8, STRAIGHT SHANK SCREW MACHINE / Fractional sizes	D3/64	D1/2	<b>147</b>	
<b>D2147</b> <b>D4147</b>		HSSCo8, STRAIGHT SHANK SCREW MACHINE / Letter sizes	A	Z	<b>148</b>	
<b>D2148</b> <b>D4148</b>		HSSCo8, STRAIGHT SHANK SCREW MACHINE / Wire gauge sizes	#60	#1	<b>149</b>	
<b>DN514</b>		HSSCo5, STRAIGHT SHANK PARABOLIC FLUTE SCREW MACHINE, TiN COATED / Fractional sizes	D3/32	D1/2	<b>151</b>	
<b>DN516</b>		HSSCo5, STRAIGHT SHANK PARABOLIC FLUTE SCREW MACHINE, TiN COATED / Letter sizes	A	Z	<b>152</b>	
<b>DN515</b>		HSSCo5, STRAIGHT SHANK PARABOLIC FLUTE SCREW MACHINE, TiN COATED / Wire gauge sizes	#47	#1	<b>153</b>	
<b>DX517</b> <b>DL517</b>		HSSCo5, TAPER LENGTH STRAIGHT SHANK DRILL / Fractional sizes	D5/64	D1/2	<b>154</b>	
<b>METRIC</b>						
<b>D4107</b>		HSSCo5, STRAIGHT SHANK DRILLS, GOLD-P COATED	<i>STUB</i>	D1.0	D31.0	<b>155</b>
RECOMMENDED CUTTING CONDITIONS					<b>158</b>	

# HSS STRAIGHT SHANK DRILLS

◎ : Excellent  
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
			HRC30~45	HRC45~55							
~HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							

◎	◎				○	○	○	○	○		
◎	◎				○	○	○	○	○		
◎	◎				○	○	○	○	○		
◎	◎					○	○	○	○		
◎	◎					○	○	○	○		
◎	◎					○	○	○	○		
◎	◎				○	○			○		
◎	◎				○	○			○		
◎	◎				○	○			○		
◎	◎				○	○			○		

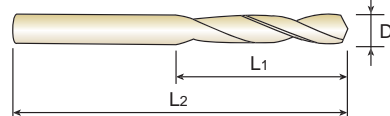
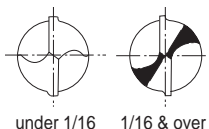
◎	◎				○	○	○	○	○		
---	---	--	--	--	---	---	---	---	---	--	--

# YG 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



#### ▶ Fractional sizes

Unit : Inch

EDP No.	Diameter		Flute Length L1	Overall Length L2	EDP No.	Diameter		Flute Length L1	Overall Length L2
	Fractional D1	Decimal				Fractional D1	Decimal		
* D1118003	3/64	.0469	1/2	1-3/8	* D1118018	9/32	.2813	1-1/2	2-11/16
* D1118004	1/16	.0625	5/8	1-5/8	* D1118019	19/64	.2969	1-9/16	2-3/4
* D1118005	5/64	.0781	11/16	1-11/16	* D1118020	5/16	.3125	1-5/8	2-13/16
* D1118006	3/32	.0938	3/4	1-3/4	* D1118021	21/64	.3281	1-11/16	2-15/16
* D1118007	7/64	.1094	13/16	1-13/16	** D1118022	11/32	.3438	1-11/16	3
* D1118008	1/8	.1250	7/8	1-7/8	** D1118023	23/64	.3594	1-3/4	3-1/16
* D1118009	9/64	.1406	15/16	1-15/16	** D1118024	3/8	.3750	1-13/16	3-1/8
* D1118010	5/32	.1563	1	2-1/16	** D1118025	25/64	.3906	1-7/8	3-1/4
* D1118011	11/64	.1719	1-1/16	2-1/8	** D1118026	13/32	.4063	1-15/16	3-5/16
* D1118012	3/16	.1875	1-1/8	2-3/16	** D1118027	27/64	.4219	2	3-3/8
* D1118013	13/64	.2031	1-3/16	2-1/4	** D1118028	7/16	.4375	2-1/16	3-7/16
* D1118014	7/32	.2188	1-1/4	2-3/8	** D1118029	29/64	.4531	2-1/8	3-9/16
* D1118015	15/64	.2344	1-5/16	2-7/16	** D1118030	15/32	.4688	2-1/8	3-5/8
* D1118016	1/4	.2500	1-3/8	2-1/2	** D1118031	31/64	.4844	2-3/16	3-11/16
* D1118017	17/64	.2656	1-7/16	2-5/8	** 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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
~HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							
◎	◎				○	○	○	○	○		

◎ : Excellent ○ : Good

# YG 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.158

#### ▶ Letter sizes

EDP No.	Diameter		Flute Length L1	Overall Length L2	EDP No.	Diameter		Flute Length L1	Overall Length L2
	Letter	Decimal				Letter	Decimal		
	D1					D1			
* D1115201	A	.2340	1-5/16	2-7/16	* D1115214	N	.3020	1-5/8	2-13/16
* D1115202	B	.2380	1-3/8	2-1/2	* D1115215	O	.3160	1-11/16	2-15/16
* D1115203	C	.2420	1-3/8	2-1/2	* D1115216	P	.3230	1-11/16	2-15/16
* D1115204	D	.2460	1-3/8	2-1/2	** D1115217	Q	.3320	1-11/16	3
* D1115205	E	.2500	1-3/8	2-1/2	** D1115218	R	.3390	1-11/16	3
* D1115206	F	.2570	1-7/16	2-5/8	** D1115219	S	.3480	1-3/4	3-1/16
* D1115207	G	.2610	1-7/16	2-5/8	** D1115220	T	.3580	1-3/4	3-1/16
* D1115208	H	.2660	1-1/2	2-11/16	** D1115221	U	.3680	1-13/16	3-1/8
* D1115209	I	.2720	1-1/2	2-11/16	** D1115222	V	.3770	1-7/8	3-1/4
* D1115210	J	.2770	1-1/2	2-11/16	** D1115223	W	.3860	1-7/8	3-1/4
* D1115211	K	.2810	1-1/2	2-11/16	** D1115224	X	.3970	1-15/16	3-5/16
* D1115212	L	.2900	1-9/16	2-3/4	** D1115225	Y	.4040	1-15/16	3-5/16
* D1115213	M	.2950	1-9/16	2-3/4	** D1115226	Z	.4130	2	3-3/8

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

\* 10per package  
\*\* 5per package

◎ : Excellent ○ : Good

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

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

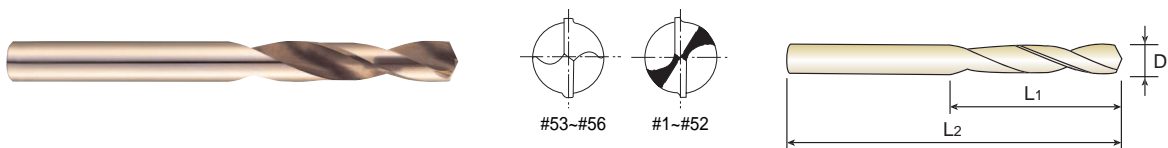
TECHNICAL DATA

# 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



#### ▶ Wire gauge sizes

Unit : Inch

EDP No.	Diameter		Flute Length L1	Overall Length L2	EDP No.	Diameter		Flute Length L1	Overall Length L2
	Wire gauge	Decimal				Wire gauge	Decimal		
		D1					D1		
* D1119201	1	.2280	1-5/16	2-7/16	* D1119231	31	.1200	7/8	1-7/8
* D1119202	2	.2210	1-5/16	2-7/16	* D1119232	32	.1160	7/8	1-7/8
* D1119203	3	.2130	1-1/4	2-3/8	* D1119233	33	.1130	7/8	1-7/8
* D1119204	4	.2090	1-1/4	2-3/8	* D1119234	34	.1110	7/8	1-7/8
* D1119205	5	.2055	1-1/4	2-3/8	* D1119235	35	.1100	7/8	1-7/8
* D1119206	6	.2040	1-1/4	2-3/8	* D1119236	36	.1065	13/16	1-13/16
* D1119207	7	.2010	1-3/16	2-1/4	* D1119237	37	.1040	13/16	1-13/16
* D1119208	8	.1990	1-3/16	2-1/4	* D1119238	38	.1015	13/16	1-13/16
* D1119209	9	.1960	1-3/16	2-1/4	* D1119239	39	.0995	13/16	1-13/16
* D1119210	10	.1935	1-3/16	2-1/4	* D1119240	40	.0980	13/16	1-13/16
* D1119211	11	.1910	1-3/16	2-1/4	* D1119241	41	.0960	13/16	1-13/16
* D1119212	12	.1890	1-3/16	2-1/4	* D1119242	42	.0935	3/4	1-3/4
* D1119213	13	.1850	1-1/8	2-3/16	* D1119243	43	.0890	3/4	1-3/4
* D1119214	14	.1820	1-1/8	2-3/16	* D1119244	44	.0860	3/4	1-3/4
* D1119215	15	.1800	1-1/8	2-3/16	* D1119245	45	.0820	3/4	1-3/4
* D1119216	16	.1770	1-1/8	2-3/16	* D1119246	46	.0810	3/4	1-3/4
* D1119217	17	.1730	1-1/8	2-3/16	* D1119247	47	.0785	11/16	1-11/16
* D1119218	18	.1695	1-1/16	2-1/8	* D1119248	48	.0760	11/16	1-11/16
* D1119219	19	.1660	1-1/16	2-1/8	* D1119249	49	.0730	11/16	1-11/16
* D1119220	20	.1610	1-1/16	2-1/8	* D1119250	50	.0700	11/16	1-11/16
* D1119221	21	.1590	1-1/16	2-1/8	* D1119251	51	.0670	11/16	1-11/16
* D1119222	22	.1570	1-1/16	2-1/8	* D1119252	52	.0635	11/16	1-11/16
* D1119223	23	.1540	1	2-1/16	* D1119253	53	.0595	5/8	1-5/8
* D1119224	24	.1520	1	2-1/16	* D1119254	54	.0550	5/8	1-5/8
* D1119225	25	.1495	1	2-1/16	* D1119255	55	.0520	5/8	1-5/8
* D1119226	26	.1470	1	2-1/16	* D1119256	56	.0465	1/2	1-3/8
* D1119227	27	.1440	1	2-1/16	* D1119257	57	.0430	1/2	1-3/8
* D1119228	28	.1405	15/16	1-15/16	* D1119258	58	.0420	1/2	1-3/8
* D1119229	29	.1360	15/16	1-15/16	* D1119259	59	.0410	1/2	1-3/8
* D1119230	30	.1285	15/16	1-15/16	* D1119260	60	.0400	1/2	1-3/8

▶ **Tolerance** : See page 144 / \* 10per package

◎ : Excellent ○ : Good

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

# STRAIGHT SHANK DRILLS

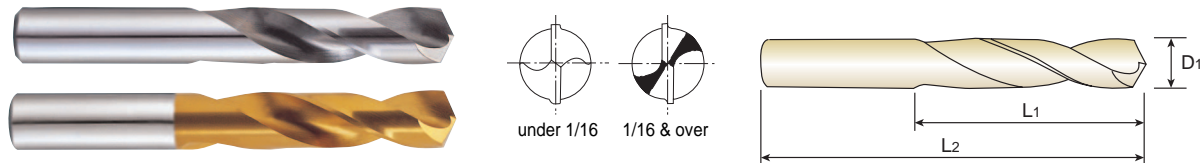
**D2146** SERIES UN-COATED  
**D4146** SERIES TIN-COATED

CARBIDE

HSS

## 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.158

### ▶ Fractional sizes

Unit : Inch

EDP No.		Diameter		Flute Length	Overall Length
UN-COATED	TIN-COATED	Fractional	Decimal		
		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 144 / \* 10per package, \*\* 5per package

◎ : Excellent ○ : Good

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

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

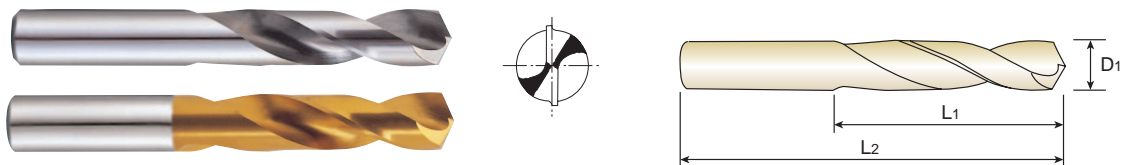
TECHNICAL DATA

# YG 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 20~30° ANSI 135° P.158

### ▶ 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 144

\*\* 5per package

◎ : Excellent ○ : Good

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



# STRAIGHT SHANK DRILLS

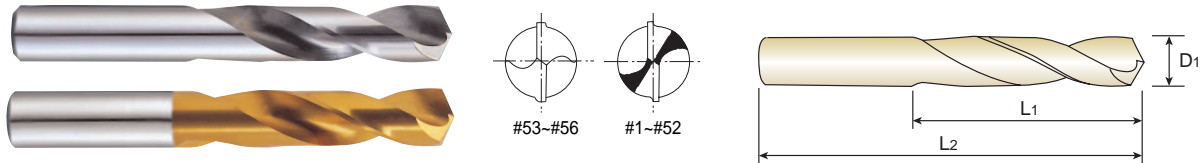
**D2148** SERIES UN-COATED  
**D4148** SERIES TIN-COATED

CARBIDE

HSS

## 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



### ▶ Wire gauge sizes

Unit : Inch

EDP No.		Diameter		Flute Length	Overall Length
UN-COATED	TIN-COATED	Wire gauge	Decimal		
		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 144 / \* 10per package

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
-HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							
◎	◎					○	○	○	○		

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA



# STRAIGHT SHANK DRILLS

**D2148** SERIES

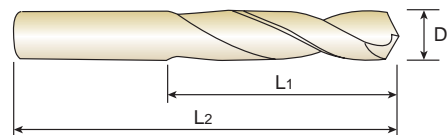
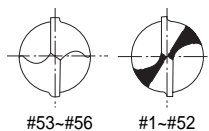
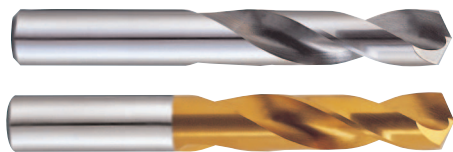
UN-COATED

**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.158

### ▶ 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 144 / \* 10per package, \*\* 5per package

◎ : Excellent ○ : Good

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

# YG STRAIGHT SHANK DRILLS

**DN514** SERIES

CARBIDE

HSS

## 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.



### ▶ Fractional sizes

Unit : Inch

EDP No.	Diameter		Flute Length	Overall Length	EDP No.	Diameter		Flute Length	Overall Length
	Fractional	Decimal				Fractional	Decimal		
TiN	D1		L1	L2	TiN	D1		L1	L2
* DN514006	3/32	.0938	3/4	1-3/4	** DN514020	5/16	.3125	1-5/8	2-13/16
** DN514007	7/64	.1094	13/16	1-13/16	** DN514021	21/64	.3281	1-11/16	2-15/16
** DN514008	1/8	.1250	7/8	1-7/8	** DN514022	11/32	.3438	1-11/16	3
** DN514009	9/64	.1406	15/16	1-15/16	** DN514023	23/64	.3594	1-3/4	3-1/16
** DN514010	5/32	.1563	1	2-1/16	** DN514024	3/8	.3750	1-13/16	3-1/8
** DN514011	11/64	.1719	1-1/16	2-1/8	** DN514025	25/64	.3906	1-7/8	3-1/4
** DN514012	3/16	.1875	1-1/8	2-3/16	** DN514026	13/32	.4063	1-15/16	3-5/16
** DN514013	13/64	.2031	1-3/16	2-1/4	** DN514027	27/64	.4219	2	3-3/8
** DN514014	7/32	.2188	1-1/4	2-3/8	** DN514028	7/16	.4375	2-1/16	3-7/16
** DN514015	15/64	.2344	1-5/16	2-7/16	** DN514029	29/64	.4531	2-1/8	3-9/16
** DN514016	1/4	.2500	1-3/8	2-1/2	** DN514030	15/32	.4688	2-1/8	3-5/8
** DN514017	17/64	.2656	1-7/16	2-5/8	** DN514031	31/64	.4844	2-3/16	3-11/16
** DN514018	9/32	.2813	1-1/2	2-11/16	** DN514032	1/2	.5000	2-1/4	3-3/4
** DN514019	19/64	.2969	1-9/16	2-3/4					

\* 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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
-HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							
◎	◎				○	○			○		

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

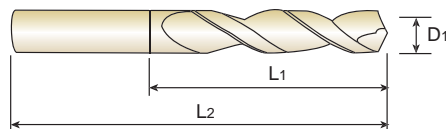
TECHNICAL DATA

# YG 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.159

### ▶ Letter sizes

Unit : Inch

EDP No.	Diameter		Flute Length	Overall Length	EDP No.	Diameter		Flute Length	Overall Length
	Letter	Decimal				Letter	Decimal		
TiN	D1		L1	L2	TiN	D1		L1	L2
** DN516101	A	.2340	1-5/16	2-7/16	** DN516114	N	.3020	1-5/8	2-13/16
** DN516102	B	.2380	1-3/8	2-1/2	** DN516115	O	.3160	1-11/16	2-15/16
** DN516103	C	.2420	1-3/8	2-1/2	** DN516116	P	.3230	1-11/16	2-15/16
** DN516104	D	.2460	1-3/8	2-1/2	** DN516117	Q	.3320	1-11/16	3
** DN516105	E	.2500	1-3/8	2-1/2	** DN516118	R	.3390	1-11/16	3
** DN516106	F	.2570	1-7/16	2-5/8	** DN516119	S	.3480	1-3/4	3-1/16
** DN516107	G	.2610	1-7/16	2-5/8	** DN516120	T	.3580	1-3/4	3-1/16
** DN516108	H	.2660	1-1/2	2-11/16	** DN516121	U	.3680	1-13/16	3-1/8
** DN516109	I	.2720	1-1/2	2-11/16	** DN516122	V	.3770	1-7/8	3-1/4
** DN516110	J	.2770	1-1/2	2-11/16	** DN516123	W	.3860	1-7/8	3-1/4
** DN516111	K	.2810	1-1/2	2-11/16	** DN516124	X	.3970	1-15/16	3-5/16
** DN516112	L	.2900	1-9/16	2-3/4	** DN516125	Y	.4040	1-15/16	3-5/16
** DN516113	M	.2950	1-9/16	2-3/4	** 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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
~HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							
◎	◎				○	○			○		

◎ : Excellent ○ : Good

# YG STRAIGHT SHANK DRILLS

**DN515** SERIES

CARBIDE

HSS

## 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.



### ▶ 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		
TiN	D1		L1	L2	TiN	D1		L1	L2
** DN515201	1	.2280	1-5/16	2-7/16	** DN515225	25	.1495	1	2-1/16
** DN515202	2	.2210	1-5/16	2-7/16	** DN515226	26	.1470	1	2-1/16
** DN515203	3	.2130	1-1/4	2-3/8	** DN515227	27	.1440	1	2-1/16
** DN515204	4	.2090	1-1/4	2-3/8	** DN515228	28	.1405	15/16	1-15/16
** DN515205	5	.2055	1-1/4	2-3/8	** DN515229	29	.1360	15/16	1-15/16
** DN515206	6	.2040	1-1/4	2-3/8	** DN515230	30	.1285	15/16	1-15/16
** DN515207	7	.2010	1-3/16	2-1/4	** DN515231	31	.1200	7/8	1-7/8
** DN515208	8	.1990	1-3/16	2-1/4	** DN515232	32	.1160	7/8	1-7/8
** DN515209	9	.1960	1-3/16	2-1/4	** DN515233	33	.1130	7/8	1-7/8
** DN515210	10	.1935	1-3/16	2-1/4	** DN515234	34	.1110	7/8	1-7/8
** DN515211	11	.1910	1-3/16	2-1/4	** DN515235	35	.1100	7/8	1-7/8
** DN515212	12	.1890	1-3/16	2-1/4	** DN515236	36	.1065	13/16	1-13/16
** DN515213	13	.1850	1-1/8	2-3/16	* DN515237	37	.1040	13/16	1-13/16
** DN515214	14	.1820	1-1/8	2-3/16	* DN515238	38	.1015	13/16	1-13/16
** DN515215	15	.1800	1-1/8	2-3/16	* DN515239	39	.0995	13/16	1-13/16
** DN515216	16	.1770	1-1/8	2-3/16	* DN515240	40	.0980	13/16	1-13/16
** DN515217	17	.1730	1-1/8	2-3/16	* DN515241	41	.0960	13/16	1-13/16
** DN515218	18	.1695	1-1/16	2-1/8	* DN515242	42	.0935	3/4	1-3/4
** DN515219	19	.1660	1-1/16	2-1/8	* DN515243	43	.0890	3/4	1-3/4
** DN515220	20	.1610	1-1/16	2-1/8	* DN515244	44	.0860	3/4	1-3/4
** DN515221	21	.1590	1-1/16	2-1/8	* DN515245	45	.0820	3/4	1-3/4
** DN515222	22	.1570	1-1/16	2-1/8	* DN515246	46	.0810	3/4	1-3/4
** DN515223	23	.1540	1	2-1/16	* DN515247	47	.0785	11/16	1-11/16
** DN515224	24	.1520	1	2-1/16					

\* 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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
-HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							
◎	◎				○	○			○		

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA



# STRAIGHT SHANK DRILLS

**DL517** SERIES

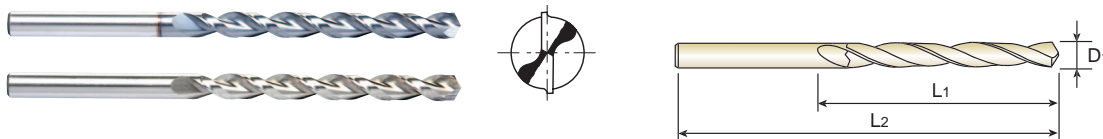
UN-COATED

**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.



### ▶ 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 153

\* 10per package  
\*\* 5per package

◎ : Excellent ○ : Good

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

# YG STRAIGHT SHANK DRILLS

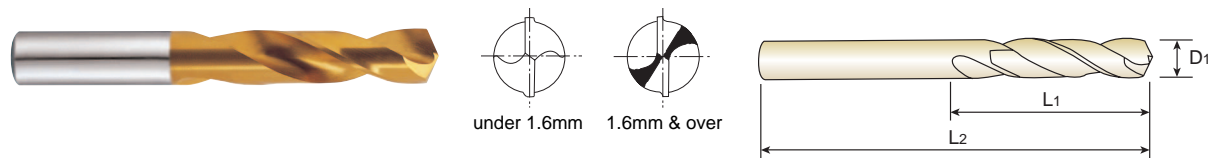
**D4107** SERIES

CARBIDE

HSS

## 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.161

EDP No.	Diameter		Flute Length	Overall Length	EDP No.	Diameter		Flute Length	Overall Length
	Metric	Inch				Metric	Inch		
	D1		L1	L2		D1		L1	L2
	TiN					TiN			
* D4107010	1.0	.0394	6	26	** D4107034	3.4	.1339	20	52
* D4107011	1.1	.0433	7	28	** D4107035	3.5	.1378	20	52
* D4107012	1.2	.0472	8	30	** D4107036	3.6	.1417	20	52
* D4107912	1.25	.0492	8	30	** D4107037	3.7	.1457	20	52
* D4107013	1.3	.0512	8	30	** D4107937	3.75	.1476	20	52
* D4107014	1.4	.0551	9	32	** D4107038	3.8	.1496	22	55
* D4107015	1.5	.0591	9	32	** D4107039	3.9	.1535	22	55
* D4107016	1.6	.0630	10	34	** D4107040	4.0	.1575	22	55
* D4107017	1.7	.0669	10	34	** D4107041	4.1	.1614	22	55
* D4107917	1.75	.0689	11	36	** D4107042	4.2	.1654	22	55
* D4107018	1.8	.0709	11	36	** D4107942	4.25	.1673	22	55
* D4107019	1.9	.0748	11	36	** D4107043	4.3	.1693	24	58
* D4107020	2.0	.0787	12	38	** D4107044	4.4	.1732	24	58
* D4107021	2.1	.0827	12	38	** D4107045	4.5	.1772	24	58
* D4107022	2.2	.0866	13	40	** D4107046	4.6	.1811	24	58
* D4107925	2.25	.0886	13	40	** D4107946	4.65	.1831	24	58
* D4107023	2.3	.0906	13	40	** D4107047	4.7	.1850	24	58
* D4107024	2.4	.0945	14	43	** D4107947	4.75	.1870	24	58
* D4107025	2.5	.0984	14	43	** D4107048	4.8	.1890	26	62
* D4107026	2.6	.1024	14	43	** D4107049	4.9	.1929	26	62
** D4107027	2.7	.1063	16	46	** D4107050	5.0	.1969	26	62
** D4107927	2.75	.1083	16	46	** D4107051	5.1	.2008	26	62
** D4107028	2.8	.1102	16	46	** D4107052	5.2	.2047	26	62
** D4107029	2.9	.1142	16	46	** D4107952	5.25	.2067	26	62
** D4107030	3.0	.1181	16	46	** D4107053	5.3	.2087	26	62
** D4107031	3.1	.1220	18	49	** D4107054	5.4	.2126	28	66
** D4107032	3.2	.1260	18	49	** D4107055	5.5	.2165	28	66
** D4107932	3.25	.1280	18	49	** D4107955	5.55	.2185	28	66
** D4107033	3.3	.1299	18	49	** D4107056	5.6	.2205	28	66

▶ The HSSCo5(DL107) is available when you need. \* 10per package, \*\* 5per package  
 The TiN(D4107), TiCN(D7107) and TiAlN(DQ107) are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
~HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							
◎	◎				○	○	○	○	○		

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA



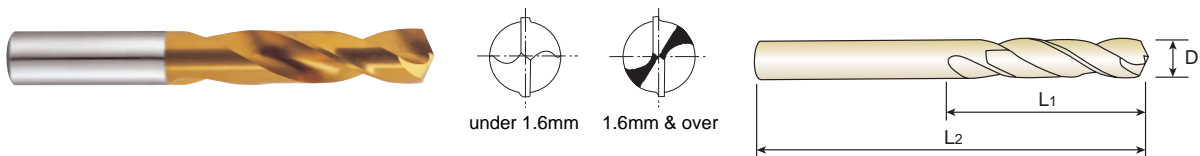
# STRAIGHT SHANK DRILLS

**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.161

Unit : mm

EDP No.	Diameter		Flute Length	Overall Length	EDP No.	Diameter		Flute Length	Overall Length
	Metric	Inch				Metric	Inch		
TiN	D1		L1	L2	TiN	D1		L1	L2
** D4107057	5.7	.2244	28	66	** D4107080	8.0	.3150	37	79
** D4107957	5.75	.2264	28	66	** D4107081	8.1	.3189	37	79
** D4107058	5.8	.2283	28	66	** D4107082	8.2	.3228	37	79
** D4107059	5.9	.2323	28	66	** D4107982	8.25	.3248	37	79
** D4107060	6.0	.2362	28	66	** D4107083	8.3	.3268	37	79
** D4107061	6.1	.2402	31	70	** D4107084	8.4	.3307	37	79
** D4107062	6.2	.2441	31	70	** D4107085	8.5	.3346	37	79
** D4107962	6.25	.2461	31	70	** D4107086	8.6	.3386	40	84
** D4107063	6.3	.2480	31	70	** D4107087	8.7	.3425	40	84
** D4107064	6.4	.2520	31	70	** D4107987	8.75	.3445	40	84
** D4107065	6.5	.2559	31	70	** D4107088	8.8	.3465	40	84
** D4107066	6.6	.2598	31	70	** D4107089	8.9	.3504	40	84
** D4107067	6.7	.2638	31	70	** D4107090	9.0	.3543	40	84
** D4107967	6.75	.2657	34	74	** D4107091	9.1	.3583	40	84
** D4107068	6.8	.2677	34	74	** D4107092	9.2	.3622	40	84
** D4107069	6.9	.2717	34	74	** D4107992	9.25	.3642	40	84
** D4107070	7.0	.2756	34	74	** D4107093	9.3	.3661	40	84
** D4107071	7.1	.2795	34	74	** D4107993	9.35	.3681	40	84
** D4107072	7.2	.2835	34	74	** D4107094	9.4	.3701	40	84
** D4107972	7.25	.2854	34	74	** D4107095	9.5	.3740	40	84
** D4107073	7.3	.2874	34	74	** D4107096	9.6	.3780	43	89
** D4107074	7.4	.2913	34	74	** D4107097	9.7	.3819	43	89
** D4107974	7.45	.2933	34	74	** D4107997	9.75	.3839	43	89
** D4107075	7.5	.2953	34	74	** D4107098	9.8	.3858	43	89
** D4107076	7.6	.2992	37	79	** D4107099	9.9	.3898	43	89
** D4107077	7.7	.3031	37	79	** D4107100	10.0	.3937	43	89
** D4107977	7.75	.3051	37	79	** D4107102	10.2	.4016	43	89
** D4107078	7.8	.3071	37	79	** D4107802	10.25	.4035	43	89
** D4107079	7.9	.3110	37	79	** D4107105	10.5	.4134	43	89

▶ 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

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



# YG STRAIGHT SHANK DRILLS

**D4107** SERIES

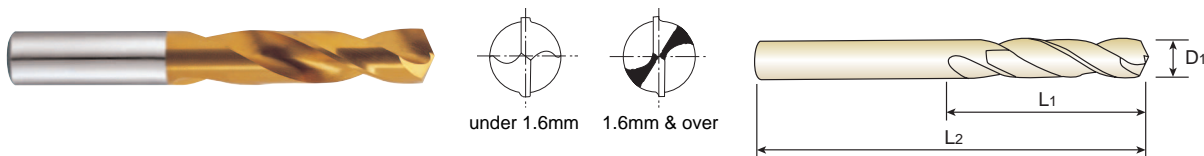
CARBIDE

HSS

## 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.161

EDP No.	Diameter		Flute Length	Overall Length	EDP No.	Diameter		Flute Length	Overall Length
	Metric	Inch				Metric	Inch		
TiN	D1		L1	L2	TiN	D1		L1	L2
** D4107807	10.75	.4232	47	95	- D4107872	17.25	.6791	62	123
** D4107110	11.0	.4330	47	95	- D4107175	17.5	.6889	62	123
** D4107812	11.25	.4429	47	95	- D4107877	17.75	.6907	62	123
** D4107115	11.5	.4527	47	95	- D4107180	18.0	.7087	62	123
** D4107817	11.75	.4626	47	95	- D4107882	18.25	.7185	64	127
** D4107118	11.8	.4645	47	95	- D4107185	18.5	.7283	64	127
** D4107120	12.0	.4724	51	102	- D4107887	18.75	.7382	64	127
** D4107822	12.25	.4823	51	102	- D4107190	19.0	.7480	64	127
** D4107125	12.5	.4921	51	102	- D4107892	19.25	.7579	66	131
** D4107827	12.75	.5020	51	102	- D4107195	19.5	.7676	66	131
** D4107130	13.0	.5118	51	102	- D4107897	19.75	.7776	66	131
- D4107832	13.25	.5217	54	107	- D4107200	20.0	.7874	66	131
- D4107135	13.5	.5314	54	107	- D4107205	20.5	.8071	68	136
- D4107837	13.75	.5413	54	107	- D4107210	21.0	.8268	68	136
- D4107138	13.8	.5433	54	107	- D4107215	21.5	.8465	70	141
- D4107140	14.0	.5512	54	107	- D4107220	22.0	.8661	70	141
- D4107842	14.25	.5610	56	111	- D4107225	22.5	.8858	72	146
- D4107145	14.5	.5708	56	111	- D4107230	23.0	.9055	72	146
- D4107847	14.75	.5807	56	111	- D4107235	23.5	.9252	72	146
- D4107150	15.0	.5905	56	111	- D4107240	24.0	.9449	75	151
- D4107852	15.25	.6004	58	115	- D4107245	24.5	.9646	75	151
- D4107155	15.5	.6102	58	115	- D4107250	25.0	.9843	75	151
- D4107857	15.75	.6201	58	115	- D4107260	26.0	1.0236	78	156
- D4107160	16.0	.6299	58	115	- D4107270	27.0	1.0630	81	162
- D4107862	16.25	.6398	60	119	- D4107280	28.0	1.1024	81	162
- D4107165	16.5	.6495	60	119	- D4107290	29.0	1.1417	84	168
- D4107867	16.75	.6594	60	119	- D4107300	30.0	1.1811	84	168
- D4107170	17.0	.6692	60	119	- 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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
-HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							
◎	◎				○	○	○	○	○		

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA



# STRAIGHT SHANK DRILLS

## RECOMMENDED CUTTING CONDITIONS

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA

### HSS & HSSCo8, STRAIGHT SHANK SCREW MACHINE DRILLS

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

WORK MATERIAL	CARBON STEELS		CARBON STEELS		CARBON STEELS		ALLOY STEELS		ALLOY STEELS		
	HARDNESS		~ HRc23		~ HRc23 ~ 28		HRc23 ~ 34		HRc34 ~ 38		
STRENGTH		~ 570 N/mm <sup>2</sup>		~ 830 N/mm <sup>2</sup>		830 ~ 950 N/mm <sup>2</sup>		830 ~ 1110 N/mm <sup>2</sup>		1110 ~ 1260 N/mm <sup>2</sup>	
DIAMETER	N	S	N	S	N	S	N	S	N	S	
	0 ~ 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	STAINLESS STEELS		TITANIUM ALLOYS		TOOL STEELS		CAST IRON		ALUMINUM ALLOYS		
	HARDNESS		HRc23				~ HRc21				
STRENGTH		830 N/mm <sup>2</sup>		410 N/mm <sup>2</sup>		~ 270 N/mm <sup>2</sup>		~ 800 N/mm <sup>2</sup>			
DIAMETER	N	S	N	S	N	S	N	S	N	S	
	0 ~ 3/32	2550	.0010	1400	.0008	3180	.0016	2250	.0010	6400	.0015
3/32 ~ 5/32	2000	.0020	1100	.0010	2500	.0020	2000	.0020	5000	.0025	
11/64 ~ 1/4	1280	.0025	700	.0015	1590	.0025	1280	.0025	3200	.0030	
17/64 ~ 23/64	780	.0051	430	.0030	970	.0051	780	.0051	2000	.0070	
3/8 ~ 37/64	560	.0060	430	.0030	700	.0070	560	.0060	1400	.0078	
19/32 ~ 1	330	.0090	180	.0051	440	.0090	330	.0090	820	.0118	
1 ~	195	.0110	107	.0070	240	.1180	195	.0110	490	.0150	

WORK MATERIAL	MAGNESIUM ALLOYS		ZINC ALLOYS		PLASTIC		
	HARDNESS						
STRENGTH							
DIAMETER	N	S	N	S	N	S	
	0 ~ 3/32	8600	.0015	6400	.0015	3380	.0010
3/32 ~ 5/32	6800	.0025	5000	.0025	2700	.0020	
11/64 ~ 1/4	4300	.0030	3200	.0030	1700	.0025	
17/64 ~ 23/64	2600	.0070	2000	.0070	1050	.0051	
3/8 ~ 37/64	1900	.0078	1400	.0078	750	.0060	
19/32 ~ 1	1100	.0118	820	.0118	440	.0090	
1 ~	660	.0150	490	.0150	260	.0110	

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



**RECOMMENDED CUTTING CONDITIONS**

**CARBIDE**

**HSS**

**HSSCo5, STRAIGHT SHANK PARABOLIC FLUTE SCREW MACHINE, TiN COATED**

**DN514, DN516, DN515 SERIES**

WORK MATERIAL	CARBON STEELS ALLOY STEELS		TOOL STEELS HARDENED STEELS		SOFT GREY CAST IRON		HARD GREY CAST IRON	
	HRc15 ~ 30		HRc20 ~ 40					
HARDNESS	700 ~ 1000 N/mm <sup>2</sup>		800 ~ 1200 N/mm <sup>2</sup>					
STRENGTH								
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.)

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA



i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA

**HSSCo5, TAPER LENGTH STRAIGHT SHANK DRILL, TiCN COATED**

**DX517 SERIES**

WORK MATERIAL	CARBON STEELS ALLOY STEELS		TOOL STEELS HARDENED STEELS		SOFT GREY CAST IRON		HARD GREY CAST IRON		
	HARDNESS		HRC20 ~ 40						
STRENGTH		700 ~ 1000 N/mm <sup>2</sup>		800 ~ 1200 N/mm <sup>2</sup>					
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	CARBON STEELS ALLOY STEELS		TOOL STEELS HARDENED STEELS		SOFT GREY CAST IRON		HARD GREY CAST IRON		
	HARDNESS		HRC20 ~ 40						
STRENGTH		700 ~ 1000 N/mm <sup>2</sup>		800 ~ 1200 N/mm <sup>2</sup>					
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	CARBON STEELS		CARBON STEELS		CARBON STEELS		ALLOY STEELS		ALLOY STEELS		STAINLESS STEELS		TITANIUM ALLOYS	
HARDNESS			~ HRC23		~ HRC23 ~ 28		HRC23 ~ 34		HRC34 ~ 38		HRC23			
STRENGTH	~ 570 N/mm <sup>2</sup>		~ 830 N/mm <sup>2</sup>		830 ~ 950 N/mm <sup>2</sup>		830 ~ 1110 N/mm <sup>2</sup>		1110 ~ 1260 N/mm <sup>2</sup>		830 N/mm <sup>2</sup>		410 N/mm <sup>2</sup>	
DIAMETER	N	S	N	S	N	S	N	S	N	S	N	S	N	S
2.5	4225	0.025	3200	0.025	2500	0.015	2980	0.020	1750	0.015	3200	0.025	1750	0.020
3.0	3375	0.050	2500	0.050	2000	0.025	2350	0.050	1375	0.020	2500	0.050	1375	0.025
5.0	2125	0.063	1600	0.063	1280	0.038	1500	0.063	875	0.025	1600	0.063	875	0.038
8.0	1310	0.130	975	0.130	785	0.076	910	0.130	535	0.038	975	0.130	535	0.076
11.0	935	0.150	700	0.150	565	0.076	650	0.180	385	0.050	700	0.150	535	0.076
19.0	550	0.230	410	0.230	340	0.130	375	0.230	225	0.050	410	0.230	225	0.130
31.0	325	0.280	244	0.280	193	0.180	225	0.180	134	0.076	244	0.280	134	0.180

WORK MATERIAL	TOOL STEELS		CAST IRON		ALUMINUM ALLOYS		MAGNESIUM ALLOYS		ZINC ALLOYS		PLASTIC	
HARDNESS			~ HRC21									
STRENGTH	~ 270 N/mm <sup>2</sup>		~ 800 N/mm <sup>2</sup>									
DIAMETER	N	S	N	S	N	S	N	S	N	S	N	S
2.5	3975	0.042	2800	0.025	7950	0.038	10700	0.038	7950	0.038	4225	0.025
3.0	3125	0.050	2500	0.050	6200	0.063	8450	0.063	6200	0.063	3350	0.050
5.0	2000	0.063	1600	0.063	3950	0.076	5350	0.076	3950	0.076	2125	0.063
8.0	1210	0.130	975	0.130	2490	0.180	3240	0.180	2490	0.180	1310	0.130
11.0	875	0.180	700	0.150	1740	0.200	2365	0.200	1740	0.200	935	0.150
19.0	550	0.230	410	0.230	1020	0.300	1370	0.300	1020	0.300	550	0.230
31.0	300	0.300	244	0.280	610	0.380	820	0.380	610	0.380	325	0.280

N = R.P.M

S = Feed per Revolution (mm/rev.)

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for HARDENED STEELS

STANDARD CARBIDE DRILLS

MULTI-1 DRILLS

HPD DRILLS

GOLD-P DRILLS

STRAIGHT SHANK DRILLS

AIRCRAFT DRILLS

SILVER &amp; DEMING DRILLS

TAPER SHANK DRILLS

NC SPOTTING DRILLS

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA



Global Cutting Tool Leader **YG-1**



**HSS**



Being the best through innovation









# AIRCRAFT DRILLS

- 6 and 12 inch Length Drills

# SELECTION GUIDE

## AIRCRAFT DRILLS 6 and 12 inch Length Drills

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
<b>INCH</b>					
<b>DL601</b> <b>DL604</b>		HSSCo5, AIRCRAFT EXTENSION DRILL 135° SPLIT POINT COLORING / Fractional sizes	D5/64	D1/2	<b>166</b>
<b>DL602</b> <b>DL605</b>		HSSCo5, AIRCRAFT EXTENSION DRILL 135° SPLIT POINT COLORING / Letter sizes	A	Z	<b>167</b>
<b>DL603</b> <b>DL606</b>		HSSCo5, AIRCRAFT EXTENSION DRILL 135° SPLIT POINT COLORING / Wire gauge sizes	#43	#1	<b>168</b>
<b>D1631</b> <b>D1634</b>		HSS, AIRCRAFT EXTENSION DRILL 135° SPLIT POINT STEAM OXIDE / Fractional sizes	D5/64	D1/2	<b>169</b>
<b>D1632</b> <b>D1635</b>		HSS, AIRCRAFT EXTENSION DRILL 135° SPLIT POINT STEAM OXIDE / Letter sizes	A	Z	<b>170</b>
<b>D1633</b> <b>D1636</b>		HSS, AIRCRAFT EXTENSION DRILL 135° SPLIT POINT STEAM OXIDE / Wire gauge sizes	#43	#1	<b>171</b>
RECOMMENDED CUTTING CONDITIONS					<b>172</b>



# HSS AIRCRAFT DRILLS

◎ : Excellent  
○ : Good

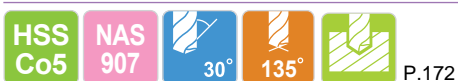
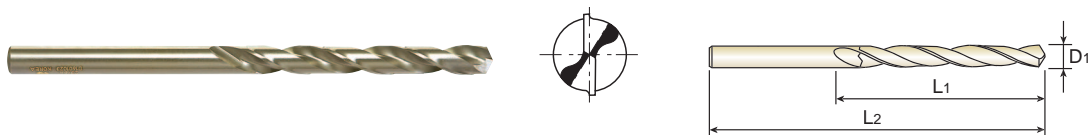
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
			HRC30~45	HRC45~55							

◎	○				○	○	○		○	○	○
◎	○				○	○	○		○	○	○
◎	○				○	○	○		○	○	○
◎	◎	○			○	○	○	○	○	○	○
◎	◎	○			○	○	○	○	○	○	○
◎	◎	○			○	○	○	○	○	○	○



# 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.



## ▶ Fractional sizes

Unit : Inch

EDP No.	Diameter		Flute Length L1	Overall Length L2	EDP No.	Diameter		Flute Length L1	Overall Length L2
	Fractional D1	Decimal				Fractional D1	Decimal		
* DL601005	5/64	.0781	1	6	** DL601029	29/64	.4531	4-3/16	6
* DL601006	3/32	.0938	1-1/4	6	** DL601030	15/32	.4688	4-5/16	6
* DL601007	7/64	.1094	1-1/4	6	** DL601031	31/64	.4844	4-3/8	6
* DL601008	1/8	.1250	1-5/8	6	** DL601032	1/2	.5000	4-1/2	6
* DL601009	9/64	.1406	1-3/4	6	* DL604014	7/32	.2188	2-1/2	12
* DL601010	5/32	.1563	2	6	* DL604015	15/64	.2344	2-5/8	12
* DL601011	11/64	.1719	2-1/8	6	** DL604016	1/4	.2500	2-3/4	12
* DL601012	3/16	.1875	2-5/16	6	** DL604017	17/64	.2656	2-7/8	12
* DL601013	13/64	.2031	2-7/16	6	** DL604018	9/32	.2813	2-15/16	12
* DL601014	7/32	.2188	2-1/2	6	** DL604019	19/64	.2969	3-1/16	12
* DL601015	15/64	.2344	2-5/8	6	** DL604020	5/16	.3125	3-3/16	12
** DL601016	1/4	.2500	2-3/4	6	** DL604021	21/64	.3281	3-5/16	12
** DL601017	17/64	.2656	2-7/8	6	** DL604022	11/32	.3438	3-7/16	12
** DL601018	9/32	.2813	2-15/16	6	** DL604023	23/64	.3594	3-1/2	12
** DL601019	19/64	.2969	3-1/16	6	** DL604024	3/8	.3750	3-5/8	12
** DL601020	5/16	.3125	3-3/16	6	** DL604025	25/64	.3906	3-3/4	12
** DL601021	21/64	.3281	3-5/16	6	** DL604026	13/32	.4063	3-7/8	12
** DL601022	11/32	.3438	3-7/16	6	** DL604027	27/64	.4219	3-15/16	12
** DL601023	23/64	.3594	3-1/2	6	** DL604028	7/16	.4375	4-1/16	12
** DL601024	3/8	.3750	3-5/8	6	** DL604029	29/64	.4531	4-3/16	12
** DL601025	25/64	.3906	3-3/4	6	** DL604030	15/32	.4688	4-5/16	12
** DL601026	13/32	.4063	3-7/8	6	** DL604031	31/64	.4844	4-3/8	12
** DL601027	27/64	.4219	3-15/16	6	** DL604032	1/2	.5000	4-1/2	12
** DL601028	7/16	.4375	4-1/16	6					

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

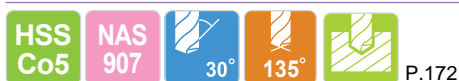
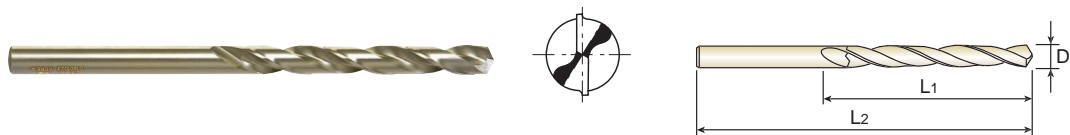
\* 10per package  
\*\* 5per package

◎ : Excellent ○ : Good

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

## 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.



### ▶ Letter sizes

Unit : Inch

EDP No.	Diameter		Flute Length	Overall Length	EDP No.	Diameter		Flute Length	Overall Length
	Letter	Decimal				Letter	Decimal		
					D1				
			L1	L2				L1	L2
* DL602101	A	.2340	2-5/8	6	* DL605101	A	.2340	2-5/8	12
** DL602102	B	.2380	2-3/4	6	** DL605102	B	.2380	2-3/4	12
** DL602103	C	.2420	2-3/4	6	** DL605103	C	.2420	2-3/4	12
** DL602104	D	.2460	2-3/4	6	** DL605104	D	.2460	2-3/4	12
** DL602105	E	.2500	2-3/4	6	** DL605105	E	.2500	2-3/4	12
** DL602106	F	.2570	2-7/8	6	** DL605106	F	.2570	2-7/8	12
** DL602107	G	.2610	2-7/8	6	** DL605107	G	.2610	2-7/8	12
** DL602108	H	.2660	2-7/8	6	** DL605108	H	.2660	2-7/8	12
** DL602109	I	.2720	2-7/8	6	** DL605109	I	.2720	2-7/8	12
** DL602110	J	.2770	2-7/8	6	** DL605110	J	.2770	2-7/8	12
** DL602111	K	.2810	2-15/16	6	** DL605111	K	.2810	2-15/16	12
** DL602112	L	.2900	2-15/16	6	** DL605112	L	.2900	2-15/16	12
** DL602113	M	.2950	3-1/16	6	** DL605113	M	.2950	3-1/16	12
** DL602114	N	.3020	3-1/16	6	** DL605114	N	.3020	3-1/16	12
** DL602115	O	.3160	3-3/16	6	** DL605115	O	.3160	3-3/16	12
** DL602116	P	.3230	3-5/16	6	** DL605116	P	.3230	3-5/16	12
** DL602117	Q	.3320	3-7/16	6	** DL605117	Q	.3320	3-7/16	12
** DL602118	R	.3390	3-7/16	6	** DL605118	R	.3390	3-7/16	12
** DL602119	S	.3480	3-1/2	6	** DL605119	S	.3480	3-1/2	12
** DL602120	T	.3580	3-1/2	6	** DL605120	T	.3580	3-1/2	12
** DL602121	U	.3680	3-5/8	6	** DL605121	U	.3680	3-5/8	12
** DL602122	V	.3770	3-5/8	6	** DL605122	V	.3770	3-5/8	12
** DL602123	W	.3860	3-3/4	6	** DL605123	W	.3860	3-3/4	12
** DL602124	X	.3970	3-3/4	6	** DL605124	X	.3970	3-3/4	12
** DL602125	Y	.4040	3-7/8	6	** DL605125	Y	.4040	3-7/8	12
** DL602126	Z	.4130	3-7/8	6	** DL605126	Z	.4130	3-7/8	12

▶ **Tolerance** : See page 166

\* 10per package  
\*\* 5per package

◎ : Excellent ○ : Good

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

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

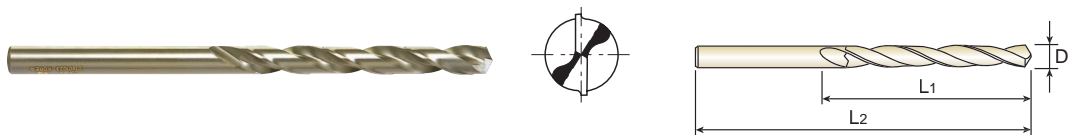
SPADE DRILLS

TECHNICAL DATA



**HSSCo5, AIRCRAFT EXTENSION DRILL 135° SPLIT POINT COLORING**

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



HSS Co5
NAS 907
30°
135°
P.172

▶ **Wire gauge sizes**

Unit : Inch

EDP No.	Diameter		Flute Length L1	Overall Length L2	EDP No.	Diameter		Flute Length L1	Overall Length L2
	Wire gauge	Decimal				Wire gauge	Decimal		
		D1					D1		
* DL603256	1	.2280	2-5/8	6	* DL603233	24	.1520	2	6
* DL603255	2	.2210	2-5/8	6	* DL603232	25	.1495	1-7/8	6
* DL603254	3	.2130	2-1/2	6	* DL603231	26	.1470	1-7/8	6
* DL603253	4	.2090	2-1/2	6	* DL603230	27	.1440	1-7/8	6
* DL603252	5	.2055	2-1/2	6	* DL603229	28	.1405	1-3/4	6
* DL603251	6	.2040	2-1/2	6	* DL603228	29	.1360	1-3/4	6
* DL603250	7	.2010	2-7/16	6	* DL603227	30	.1280	1-5/8	6
* DL603249	8	.1990	2-7/16	6	* DL603226	31	.1200	1-5/8	6
* DL603248	9	.1960	2-7/16	6	* DL603225	32	.1160	1-5/8	6
* DL603247	10	.1935	2-7/16	6	* DL603224	33	.1130	1-1/2	6
* DL603246	11	.1910	2-5/16	6	* DL603223	34	.1110	1-1/2	6
* DL603245	12	.1890	2-5/16	6	* DL603222	35	.1100	1-1/2	6
* DL603244	13	.1850	2-5/16	6	* DL603221	36	.1065	1-7/16	6
* DL603243	14	.1820	2-3/16	6	* DL603220	37	.1040	1-7/16	6
* DL603242	15	.1800	2-3/16	6	* DL603219	38	.1015	1-7/16	6
* DL603241	16	.1770	2-3/16	6	* DL603218	39	.0995	1-3/8	6
* DL603240	17	.1730	2-3/16	6	* DL603217	40	.0980	1-3/8	6
* DL603239	18	.1695	2-1/8	6	* DL603216	41	.0960	1-3/8	6
* DL603238	19	.1660	2-1/8	6	* DL603215	42	.0935	1-1/4	6
* DL603237	20	.1610	2-1/8	6	* DL603214	43	.0890	1-1/4	6
* DL603236	21	.1590	2-1/8	6	* DL606256	1	.2280	2-5/8	12
* DL603235	22	.1570	2	6	* DL606254	3	.2130	2-1/2	12
* DL603234	23	.1540	2	6					

\* 10per package

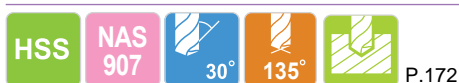
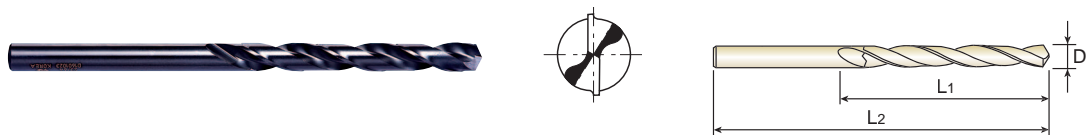
Tolerance Diameter (Inch)	
up to 1/8(.1250)	0 ~ -.0005
over 1/8(.1250) up to 1/4(.2500)	0 ~ -.0007
over 1/4(.2500) up to 1/2(.5000)	0 ~ -.0010

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
~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.



### ▶ Fractional sizes

Unit : Inch

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

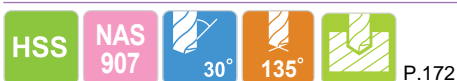
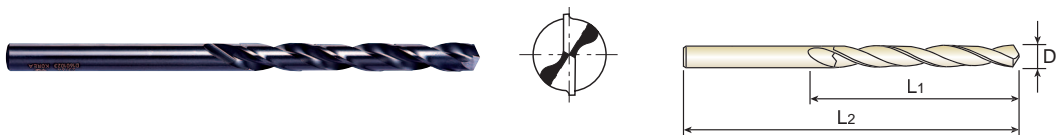
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
-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.



▶ **Letter sizes**

Unit : Inch

EDP No.	Diameter		Flute Length	Overall Length	EDP No.	Diameter		Flute Length	Overall Length
	Letter	Decimal				Letter	Decimal		
		D1	L1	L2			D1	L1	L2
* D1632101	A	.2340	2-5/8	6	* D1635101	A	.2340	2-5/8	12
** D1632102	B	.2380	2-3/4	6	** D1635102	B	.2380	2-3/4	12
** D1632103	C	.2420	2-3/4	6	** D1635103	C	.2420	2-3/4	12
** D1632104	D	.2460	2-3/4	6	** D1635104	D	.2460	2-3/4	12
** D1632105	E	.2500	2-3/4	6	** D1635105	E	.2500	2-3/4	12
** D1632106	F	.2570	2-7/8	6	** D1635106	F	.2570	2-7/8	12
** D1632107	G	.2610	2-7/8	6	** D1635107	G	.2610	2-7/8	12
** D1632108	H	.2660	2-7/8	6	** D1635108	H	.2660	2-7/8	12
** D1632109	I	.2720	2-7/8	6	** D1635109	I	.2720	2-7/8	12
** D1632110	J	.2770	2-7/8	6	** D1635110	J	.2770	2-7/8	12
** D1632111	K	.2810	2-15/16	6	** D1635111	K	.2810	2-15/16	12
** D1632112	L	.2900	2-15/16	6	** D1635112	L	.2900	2-15/16	12
** D1632113	M	.2950	3-1/16	6	** D1635113	M	.2950	3-1/16	12
** D1632114	N	.3020	3-1/16	6	** D1635114	N	.3020	3-1/16	12
** D1632115	O	.3160	3-3/16	6	** D1635115	O	.3160	3-3/16	12
** D1632116	P	.3230	3-5/16	6	** D1635116	P	.3230	3-5/16	12
** D1632117	Q	.3320	3-7/16	6	** D1635117	Q	.3320	3-7/16	12
** D1632118	R	.3390	3-7/16	6	** D1635118	R	.3390	3-7/16	12
** D1632119	S	.3480	3-1/2	6	** D1635119	S	.3480	3-1/2	12
** D1632120	T	.3580	3-1/2	6	** D1635120	T	.3580	3-1/2	12
** D1632121	U	.3680	3-5/8	6	** D1635121	U	.3680	3-5/8	12
** D1632122	V	.3770	3-5/8	6	** D1635122	V	.3770	3-5/8	12
** D1632123	W	.3860	3-3/4	6	** D1635123	W	.3860	3-3/4	12
** D1632124	X	.3970	3-3/4	6	** D1635124	X	.3970	3-3/4	12
** D1632125	Y	.4040	3-7/8	6	** D1635125	Y	.4040	3-7/8	12
** D1632126	Z	.4130	3-7/8	6	** D1635126	Z	.4130	3-7/8	12

▶ **Tolerance** : See page 166

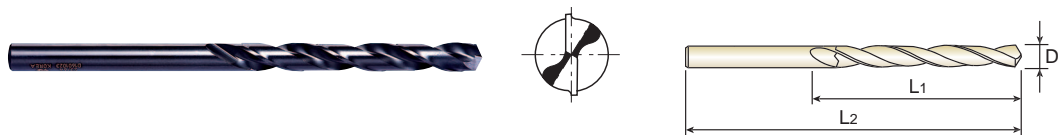
\* 10per package  
\*\* 5per package

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
~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
30°
135°
P.172

## ▶ Wire gauge sizes

EDP No.	Diameter		Flute Length L1	Overall Length L2	EDP No.	Diameter		Flute Length L1	Overall Length L2
	Wire gauge	Decimal				Wire gauge	Decimal		
	D1					D1			
* D1633256	1	.2280	2-5/8	6	* D1633233	24	.1520	2	6
* D1633255	2	.2210	2-5/8	6	* D1633232	25	.1495	1-7/8	6
* D1633254	3	.2130	2-1/2	6	* D1633231	26	.1470	1-7/8	6
* D1633253	4	.2090	2-1/2	6	* D1633230	27	.1440	1-7/8	6
* D1633252	5	.2055	2-1/2	6	* D1633229	28	.1405	1-3/4	6
* D1633251	6	.2040	2-1/2	6	* D1633228	29	.1360	1-3/4	6
* D1633250	7	.2010	2-7/16	6	* D1633227	30	.1280	1-5/8	6
* D1633249	8	.1990	2-7/16	6	* D1633226	31	.1200	1-5/8	6
* D1633248	9	.1960	2-7/16	6	* D1633225	32	.1160	1-5/8	6
* D1633247	10	.1935	2-7/16	6	* D1633224	33	.1130	1-1/2	6
* D1633246	11	.1910	2-5/16	6	* D1633223	34	.1110	1-1/2	6
* D1633245	12	.1890	2-5/16	6	* D1633222	35	.1100	1-1/2	6
* D1633244	13	.1850	2-5/16	6	* D1633221	36	.1065	1-7/16	6
* D1633243	14	.1820	2-3/16	6	* D1633220	37	.1040	1-7/16	6
* D1633242	15	.1800	2-3/16	6	* D1633219	38	.1015	1-7/16	6
* D1633241	16	.1770	2-3/16	6	* D1633218	39	.0995	1-3/8	6
* D1633240	17	.1730	2-3/16	6	* D1633217	40	.0980	1-3/8	6
* D1633239	18	.1695	2-1/8	6	* D1633216	41	.0960	1-3/8	6
* D1633238	19	.1660	2-1/8	6	* D1633215	42	.0935	1-1/4	6
* D1633237	20	.1610	2-1/8	6	* D1633214	43	.0890	1-1/4	6
* D1633236	21	.1590	2-1/8	6	* D1636256	1	.2280	2-5/8	12
* D1633235	22	.1570	2	6	* D1636254	3	.2130	2-1/2	12
* D1633234	23	.1540	2	6					

\* 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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
~HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							
◎	◎	○			○	○	○	○	○	○	○

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA



i-DREAM  
DRILLS

DREAM  
DRILLS

DREAM  
DRILLS  
-INOX

DREAM  
DRILLS  
-ALU

DREAM  
DRILLS  
-MQL TYPE

DREAM  
DRILLS  
for 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

CENTER  
DRILLS

SPADE  
DRILLS

TECHNICAL  
DATA

**HSS & HSSCo5, AIRCRAFT EXTENSION DRILL 135° SPLIT POINT**

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

WORK MATERIAL	CARBON STEELS		CARBON STEELS		CARBON STEELS		ALLOY STEELS		ALLOY STEELS	
	HARDNESS		~ HRc23		~ HRc23 ~ 28		HRc23 ~ 34		HRc34 ~ 38	
STRENGTH	~ 570 N/mm <sup>2</sup>		~ 830 N/mm <sup>2</sup>		830 ~ 950 N/mm <sup>2</sup>		830 ~ 1110 N/mm <sup>2</sup>		1110 ~ 1260 N/mm <sup>2</sup>	
DIAMETER	N	S	N	S	N	S	N	S	N	S
0 ~ 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	STAINLESS STEELS		TITANIUM ALLOYS		TOOL STEELS		CAST IRON		ALUMINUM ALLOYS	
	HARDNESS		HRc23				~ HRc21			
STRENGTH	830 N/mm <sup>2</sup>		410 N/mm <sup>2</sup>		~ 270 N/mm <sup>2</sup>		~ 800 N/mm <sup>2</sup>			
DIAMETER	N	S	N	S	N	S	N	S	N	S
0 ~ 3/32	2550	.0010	1400	.0008	3180	.0016	2250	.0010	6400	.0015
3/32 ~ 5/32	2000	.0020	1100	.0010	2500	.0020	2000	.0020	5000	.0025
11/64 ~ 1/4	1280	.0025	700	.0015	1590	.0025	1280	.0025	3200	.0030
17/64 ~ 23/64	780	.0051	430	.0030	970	.0051	780	.0051	2000	.0070
3/8 ~ 37/64	560	.0060	430	.0030	700	.0070	560	.0060	1400	.0078
19/32 ~ 1	330	.0090	180	.0051	440	.0090	330	.0090	820	.0118
1 ~	195	.0110	107	.0070	240	.1180	195	.0110	490	.0150

WORK MATERIAL	MAGNESIUM ALLOYS		ZINC ALLOYS		PLASTIC	
	HARDNESS					
STRENGTH						
DIAMETER	N	S	N	S	N	S
0 ~ 3/32	8600	.0015	6400	.0015	3380	.0010
3/32 ~ 5/32	6800	.0025	5000	.0025	2700	.0020
11/64 ~ 1/4	4300	.0030	3200	.0030	1700	.0025
17/64 ~ 23/64	2600	.0070	2000	.0070	1050	.0051
3/8 ~ 37/64	1900	.0078	1400	.0078	750	.0060
19/32 ~ 1	1100	.0118	820	.0118	440	.0090
1 ~	660	.0150	490	.0150	260	.0110

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

# SELECTION GUIDE

## HSS SILVER & DEMING DRILLS

118° Split Point  
3 Flat Black and Gold

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
<b>INCH</b>					
<b>D1191</b>		HSS(M2), 118° SPLIT POINT 3FLAT BLACK&GOLD SILVER & DEMING DRILLS	D1/2	D1-1/2	<b>176</b>
RECOMMENDED CUTTING CONDITIONS					<b>177</b>

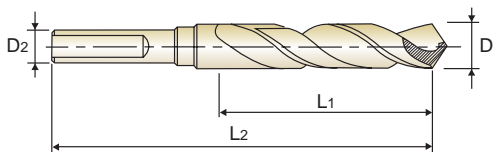
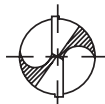
# HSS SILVER & DEMING DRILLS

◎ : Excellent  
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
~HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							
◎	◎				○	○	○		○		



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



Unit : Inch

EDP No.	Diameter		Shank Diameter		Flute Length		Overall Length		
	D1	D2	L1	L2	D1	D2	L1	L2	
D1191032	1/2	1/2	3	6	D1191061	61/64	1/2	3	6
D1191033	33/64	1/2	3	6	D1191062	31/32	1/2	3	6
D1191034	17/32	1/2	3	6	D1191063	63/64	1/2	3	6
D1191035	35/64	1/2	3	6	D1191064	1	1/2	3	6
D1191036	9/16	1/2	3	6	D1191101	1-1/64	1/2	3	6
D1191037	37/64	1/2	3	6	D1191102	1-1/32	1/2	3	6
D1191038	19/32	1/2	3	6	D1191103	1-3/64	1/2	3	6
D1191039	39/64	1/2	3	6	D1191104	1-1/16	1/2	3	6
D1191040	5/8	1/2	3	6	D1191105	1-5/64	1/2	3	6
D1191041	41/64	1/2	3	6	D1191106	1-3/32	1/2	3	6
D1191042	21/32	1/2	3	6	D1191107	1-7/64	1/2	3	6
D1191043	43/64	1/2	3	6	D1191108	1-1/8	1/2	3	6
D1191044	11/16	1/2	3	6	D1191109	1-9/64	1/2	3	6
D1191045	45/64	1/2	3	6	D1191110	1-5/32	1/2	3	6
D1191046	23/32	1/2	3	6	D1191111	1-11/64	1/2	3	6
D1191047	47/64	1/2	3	6	D1191112	1-3/16	1/2	3	6
D1191048	3/4	1/2	3	6	D1191113	1-13/64	1/2	3	6
D1191049	49/64	1/2	3	6	D1191114	1-7/32	1/2	3	6
D1191050	25/32	1/2	3	6	D1191115	1-15/64	1/2	3	6
D1191051	51/64	1/2	3	6	D1191116	1-1/4	1/2	3	6
D1191052	13/16	1/2	3	6	D1191118	1-9/32	1/2	3	6
D1191053	53/64	1/2	3	6	D1191120	1-5/16	1/2	3	6
D1191054	27/32	1/2	3	6	D1191122	1-11/32	1/2	3	6
D1191055	55/64	1/2	3	6	D1191124	1-3/8	1/2	3	6
D1191056	7/8	1/2	3	6	D1191126	1-13/32	1/2	3	6
D1191057	57/64	1/2	3	6	D1191128	1-7/16	1/2	3	6
D1191058	29/32	1/2	3	6	D1191130	1-15/32	1/2	3	6
D1191059	59/64	1/2	3	6	D1191132	1-1/2	1/2	3	6
D1191060	15/16	1/2	3	6					

\* Individually packaged

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
~HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							
◎	◎				○	○	○		○		

**HSS(M2), 118° SPLIT POINT 3FLAT BLACK&GOLD SILVER & DEMING DRILLS**
**D1191 SERIES**

WORK MATERIAL	CARBON STEELS		CARBON STEELS		CARBON STEELS		ALLOY STEELS		ALLOY STEELS		STAINLESS STEELS	
HARDNESS			~ HRc23		~ HRc23 ~ 28		HRc23 ~ 34		HRc34 ~ 38		HRc23	
STRENGTH	~ 570 N/mm <sup>2</sup>		~ 830 N/mm <sup>2</sup>		830 ~ 950 N/mm <sup>2</sup>		830 ~ 1110 N/mm <sup>2</sup>		1110 ~ 1260 N/mm <sup>2</sup>		830 N/mm <sup>2</sup>	
DIAMETER	N	S	N	S	N	S	N	S	N	S	N	S
<b>3/32</b>	3380	.0010	2550	.0010	1900	.0006	2380	.0008	1400	.0006	2550	.0010
<b>1/8</b>	2700	.0020	2000	.0020	1500	.0010	1880	.0020	1100	.0008	2000	.0020
<b>13/64</b>	1700	.0025	1280	.0025	960	.0015	1190	.0025	700	.0010	1280	.0025
<b>5/16</b>	1050	.0051	780	.0051	590	.0030	730	.0051	430	.0015	780	.0051
<b>7/16</b>	750	.0059	560	.0059	425	.0030	520	.0071	310	.0020	560	.0059
<b>3/4</b>	440	.0091	330	.0091	255	.0051	300	.0091	180	.0020	330	.0091
<b>1-17/64</b>	260	.0110	195	.0110	145	.0071	180	.0071	107	.0030	195	.0110
<b>1-31/32</b>	165	.0130	125	.0130	93	.0079	115	.0079	68	.0030	125	.0130

WORK MATERIAL	TOOL STEELS		CAST IRON		ALUMINUM ALLOYS		MAGNESIUM ALLOYS		ZINC ALLOYS		PLASTIC	
HARDNESS			~ HRc21									
STRENGTH	~ 270 N/mm <sup>2</sup>		~ 800 N/mm <sup>2</sup>									
DIAMETER	N	S	N	S	N	S	N	S	N	S	N	S
<b>3/32</b>	3180	.0017	2250	.0010	6400	.0015	8600	.0015	6400	.0015	3380	.0010
<b>1/8</b>	2500	.0020	2000	.0020	5000	.0025	6800	.0025	5000	.0025	2700	.0020
<b>13/64</b>	1590	.0025	1280	.0025	3200	.0030	4300	.0030	3200	.0030	1700	.0025
<b>5/16</b>	970	.0051	780	.0051	2000	.0071	2600	.0071	2000	.0071	1050	.0051
<b>7/16</b>	700	.0071	560	.0059	1400	.0079	1900	.0079	1400	.0079	750	.0059
<b>3/4</b>	440	.0091	330	.0091	820	.0118	1100	.0118	820	.0118	440	.0091
<b>1-17/64</b>	240	.0118	195	.0110	490	.0150	660	.0150	490	.0150	260	.0110
<b>1-31/32</b>	150	.0169	125	.0130	310	.0181	415	.0181	310	.0181	165	.0130

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

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for HARDENED STEELS

STANDARD CARBIDE DRILLS

MULTI-1 DRILLS

HPD DRILLS

GOLD-P DRILLS

STRAIGHT SHANK DRILLS

AIRCRAFT DRILLS

SILVER &amp; DEMING DRILLS

TAPER SHANK DRILLS

NC SPOTTING DRILLS

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA



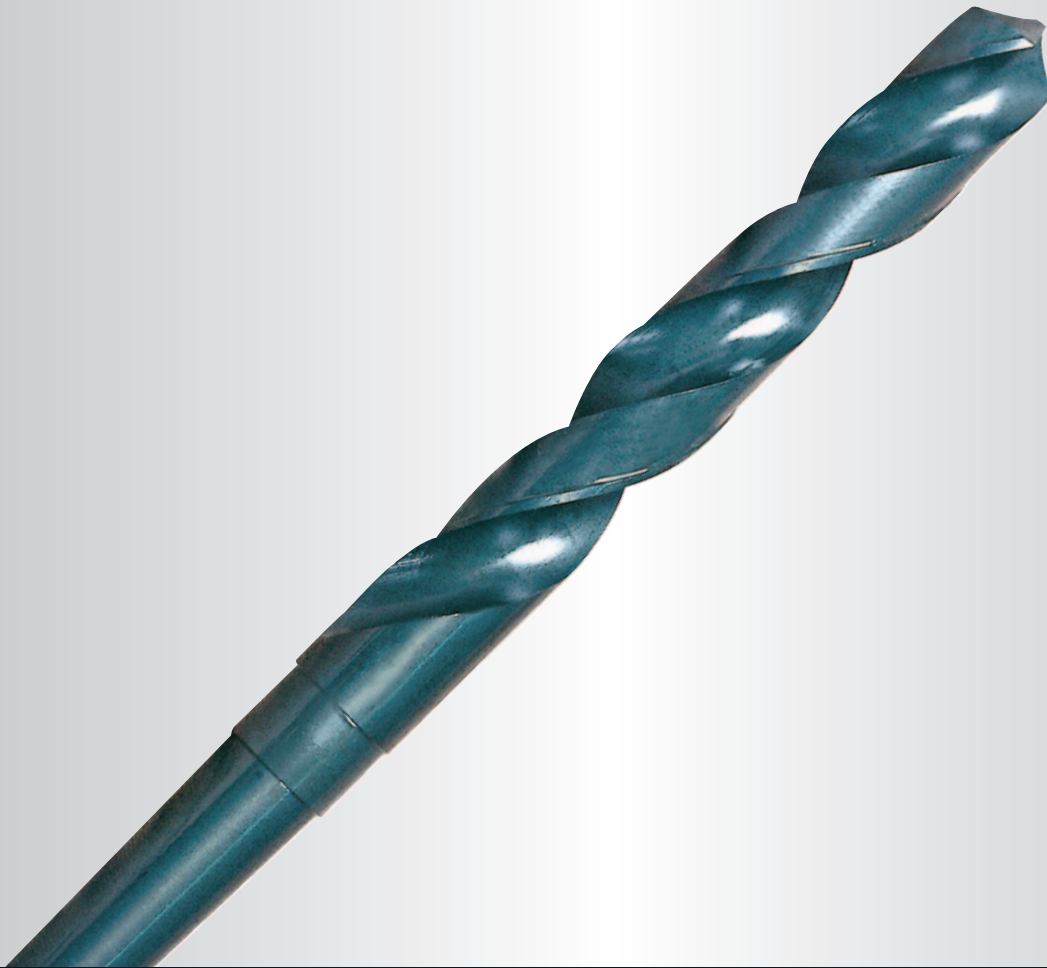
Global Cutting Tool Leader **YG-1**



**HSS**



Being the best through innovation




# **MORSE TAPER SHANK DRILLS**

- General Purpose  
Standard Length

# SELECTION GUIDE

## HSS MORSE TAPER SHANK DRILLS

General Purpose  
Standard Length

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
<b>INCH</b>					
<b>D1211</b>		HSS(M2), MORSE TAPER SHANK TWIST DRILL	D1/2	D2-1/2	<b>182</b>
		RECOMMENDED CUTTING CONDITIONS			<b>184</b>



# HSS MORSE TAPER SHANK DRILLS

◎ : Excellent  
○ : Good

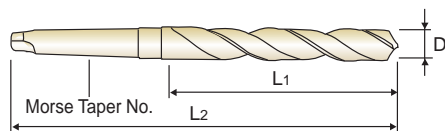
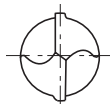
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
~HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							
◎	◎	○			○	○	○		○		



**MORSE TAPER SHANK DRILLS**

**D1211 SERIES**

**HSS(M2) MORSE TAPER SHANK TWIST DRILL**



ANSI HSS 30~35° 2~5 h8 118° P.184

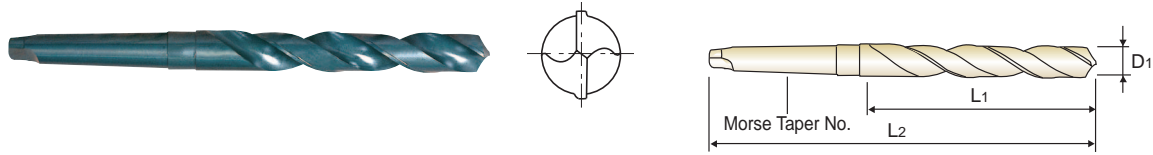
Unit : Inch

EDP No.	Diameter	Flute Length	Overall Length	Morse Taper No.	EDP No.	Diameter	Flute Length	Overall Length	Morse Taper No.
	D1	L1	L2			D1	L1	L2	
D1211032	1/2	4-3/8	8-1/4	2	D1211061	61/64	6-3/8	11	3
D1211033	33/64	4-5/8	8-1/2	2	D1211062	31/32	6-3/8	11	3
D1211034	17/32	4-5/8	8-1/2	2	D1211063	63/64	6-3/8	11	3
D1211035	35/64	4-7/8	8-3/4	2	D1211100	1	6-3/8	11	3
D1211036	9/16	4-7/8	8-3/4	2	D1211101	1-1/64	6-1/2	11-1/8	3
D1211037	37/64	4-7/8	8-3/4	2	D1211102	1-1/32	6-1/2	11-1/8	3
D1211038	19/32	4-7/8	8-3/4	2	D1211103	1-3/64	6-5/8	11-1/4	3
D1211039	39/64	4-7/8	8-3/4	2	D1211104	1-1/16	6-5/8	11-1/4	3
D1211040	5/8	4-7/8	8-3/4	2	D1211105	1-5/64	6-7/8	12-1/2	4
D1211041	41/64	5-1/8	9	2	D1211106	1-3/32	6-7/8	12-1/2	4
D1211042	21/32	5-1/8	9	2	D1211107	1-7/64	7-1/8	12-3/4	4
D1211043	43/64	5-3/8	9-1/4	2	D1211108	1-1/8	7-1/8	12-3/4	4
D1211044	11/16	5-3/8	9-1/4	2	D1211109	1-9/64	7-1/4	12-7/8	4
D1211045	45/64	5-5/8	9-1/2	2	D1211110	1-5/32	7-1/4	12-7/8	4
D1211046	23/32	5-5/8	9-1/2	2	D1211111	1-11/64	7-3/8	13	4
D1211047	47/64	5-7/8	9-3/4	2	D1211112	1-3/16	7-3/8	13	4
D1211048	3/4	5-7/8	9-3/4	2	D1211113	1-13/64	7-1/2	13-1/8	4
D1211049	49/64	6	9-7/8	2	D1211114	1-7/32	7-1/2	13-1/8	4
D1211050	25/32	6	9-7/8	2	D1211115	1-15/64	7-7/8	13-1/2	4
D1211051	51/64	6-1/8	10-3/4	3	D1211116	1-1/4	7-7/8	13-1/2	4
D1211052	13/16	6-1/8	10-3/4	3	D1211117	1-17/64	8-1/2	14-1/8	4
D1211053	53/64	6-1/8	10-3/4	3	D1211118	1-9/32	8-1/2	14-1/8	4
D1211054	27/32	6-1/8	10-3/4	3	D1211119	1-19/64	8-5/8	14-1/4	4
D1211055	55/64	6-1/8	10-3/4	3	D1211120	1-5/16	8-5/8	14-1/4	4
D1211056	7/8	6-1/8	10-3/4	3	D1211121	1-21/64	8-3/4	14-3/8	4
D1211057	57/64	6-1/8	10-3/4	3	D1211122	1-11/32	8-3/4	14-3/8	4
D1211058	29/32	6-1/8	10-3/4	3	D1211123	1-23/64	8-7/8	14-1/2	4
D1211059	59/64	6-1/8	10-3/4	3	D1211124	1-3/8	8-7/8	14-1/2	4
D1211060	15/16	6-1/8	10-3/4	3	D1211126	1-13/32	9	14-5/8	4

◎ : Excellent ○ : Good

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

### **HSS(M2) MORSE TAPER SHANK TWIST DRILL**



ANSI HSS 30~35° 2~5 h8 118° P.184

Unit : Inch

EDP No.	Diameter	Flute Length L1	Overall Length L2	Morse Taper No.	EDP No.	Diameter	Flute Length L1	Overall Length L2	Morse Taper No.
	D1					D1			
D1211128	1-7/16	9-1/8	14-3/4	4	D1211160	1-15/16	10-3/8	17-3/8	5
D1211130	1-15/32	9-1/4	14-7/8	4	D1211162	1-31/32	10-3/8	17-3/8	5
D1211132	1-1/2	9-3/8	15	4	D1211200	2	10-3/8	17-3/8	5
D1211133	1-33/64	9-3/8	16-3/8	4	D1211202	2-1/32	10-3/8	17-3/8	5
D1211134	1-17/32	9-3/8	16-3/8	5	D1211204	2-1/16	10-1/4	17-3/8	5
D1211136	1-9/16	9-5/8	16-5/8	5	D1211206	2-3/32	10-1/4	17-3/8	5
D1211138	1-19/32	9-7/8	16-7/8	5	D1211208	2-1/8	10-1/4	17-3/8	5
D1211140	1-5/8	10	17	5	D1211210	2-5/32	10-1/4	17-3/8	5
D1211142	1-21/32	10-1/8	17-1/8	5	D1211212	2-3/16	10-1/4	17-3/8	5
D1211144	1-11/16	10-1/8	17-1/8	5	D1211214	2-7/32	10-1/8	17-3/8	5
D1211146	1-23/32	10-1/8	17-1/8	5	D1211216	2-1/4	10-1/8	17-3/8	5
D1211148	1-3/4	10-1/8	17-1/8	5	D1211220	2-5/16	10-1/8	17-3/8	5
D1211152	1-13/16	10-1/8	17-1/8	5	D1211224	2-3/8	10-1/8	17-3/8	5
D1211154	1-27/32	10-1/8	17-1/8	5	D1211228	2-7/16	11-1/4	18-3/4	5
D1211156	1-7/8	10-3/8	17-3/8	5	D1211232	2-1/2	11-1/4	18-3/4	5

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
~HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							
◎	◎	○			○	○	○		○		

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA



**MORSE TAPER SHANK DRILLS**

**RECOMMENDED CUTTING CONDITIONS**

**HSS(M2) MORSE TAPER SHANK TWIST DRILL**

**D1211 SERIES**

WORK MATERIAL	CARBON STEELS		CARBON STEELS		CARBON STEELS		ALLOY STEELS		ALLOY STEELS		STAINLESS STEELS	
HARDNESS			~ HRc23		~ HRc23 ~ 28		HRc23 ~ 34		HRc34 ~ 38		HRc23	
STRENGTH	~ 570 N/mm <sup>2</sup>		~ 830 N/mm <sup>2</sup>		830 ~ 950 N/mm <sup>2</sup>		830 ~ 1110 N/mm <sup>2</sup>		1110 ~ 1260 N/mm <sup>2</sup>		830 N/mm <sup>2</sup>	
DIAMETER	N	S	N	S	N	S	N	S	N	S	N	S
<b>3/32</b>	3380	.0010	2550	.0010	1900	.0006	2380	.0008	1400	.0006	2550	.0010
<b>1/8</b>	2700	.0020	2000	.0020	1500	.0010	1880	.0020	1100	.0008	2000	.0020
<b>13/64</b>	1700	.0025	1280	.0025	960	.0015	1190	.0025	700	.0010	1280	.0025
<b>5/16</b>	1050	.0051	780	.0051	590	.0030	730	.0051	430	.0015	780	.0051
<b>7/16</b>	750	.0059	560	.0059	425	.0030	520	.0071	310	.0020	560	.0059
<b>3/4</b>	440	.0091	330	.0091	255	.0051	300	.0091	180	.0020	330	.0091
<b>1-17/64</b>	260	.0110	195	.0110	145	.0071	180	.0071	107	.0030	195	.0110
<b>1-31/32</b>	165	.0130	125	.0130	93	.0079	115	.0079	68	.0030	125	.0130

WORK MATERIAL	TOOL STEELS		CAST IRON		ALUMINUM ALLOYS		MAGNESIUM ALLOYS		ZINC ALLOYS		PLASTIC	
HARDNESS			~ HRc21									
STRENGTH	~ 270 N/mm <sup>2</sup>		~ 800 N/mm <sup>2</sup>									
DIAMETER	N	S	N	S	N	S	N	S	N	S	N	S
<b>3/32</b>	3180	.0017	2250	.0010	6400	.0015	8600	.0015	6400	.0015	3380	.0010
<b>1/8</b>	2500	.0020	2000	.0020	5000	.0025	6800	.0025	5000	.0025	2700	.0020
<b>13/64</b>	1590	.0025	1280	.0025	3200	.0030	4300	.0030	3200	.0030	1700	.0025
<b>5/16</b>	970	.0051	780	.0051	2000	.0071	2600	.0071	2000	.0071	1050	.0051
<b>7/16</b>	700	.0071	560	.0059	1400	.0079	1900	.0079	1400	.0079	750	.0059
<b>3/4</b>	440	.0091	330	.0091	820	.0118	1100	.0118	820	.0118	440	.0091
<b>1-17/64</b>	240	.0118	195	.0110	490	.0150	660	.0150	490	.0150	260	.0110
<b>1-31/32</b>	150	.0169	125	.0130	310	.0181	415	.0181	310	.0181	165	.0130

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

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA

**HSS**



Being the best through innovation





# NC-SPOTTING DRILLS

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

# SELECTION GUIDE

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

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
<b>INCH</b>					
<b>D2N90</b>		HSSCo8, NC-SPOTTING DRILLS 90°	D1/8	D1	<b>188</b>
		HSSCo8, NC-SPOTTING DRILLS 120°	D1/8	D1	<b>188</b>
RECOMMENDED CUTTING CONDITIONS					<b>189</b>

# HSS NC-SPOTTING DRILLS

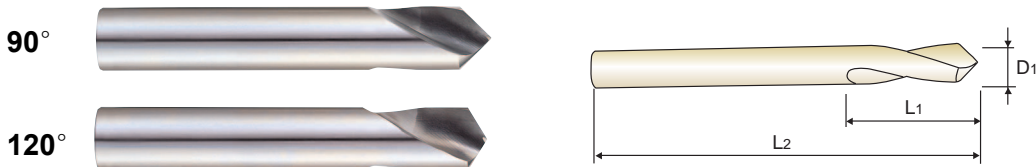
◎ : Excellent  
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
~HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							

◎	◎					○	○		○		○
◎	◎					○	○		○		○

**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.

**NC-Spotting drills 90°**

**NC-Spotting drills 120°**

Unit : Inch

EDP No.	Diameter	Flute Length	Overall Length
	D1	L1	L2
0081L	1/8	0.472	1.93
0121L	3/16	0.590	2.44
0161L	1/4	0.669	2.76
0201L	5/16	0.984	3.11
0241L	3/8	0.827	3.50
0321L	1/2	0.984	4.02
0401L	5/8	1.575	4.53
0481L	3/4	1.968	5.16
0641L	1	1.968	6.14

EDP No.	Diameter	Flute Length	Overall Length
	D1	L1	L2
2081L	1/8	0.472	1.93
2121L	3/16	0.590	2.44
2161L	1/4	0.669	2.76
2201L	5/16	0.984	3.11
2241L	3/8	0.827	3.50
2321L	1/2	0.984	4.02
2401L	5/8	1.575	4.53
2481L	3/4	1.968	5.16
2641L	1	1.968	6.14

\* Individually packaged

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

◎ : Excellent ○ : Good



**HSSCo8, NC-SPOTTING DRILLS**

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

N = R.P.M

S = Inch per Revolution(inch/rev.)

i-DREAM  
DRILLSDREAM  
DRILLSDREAM  
DRILLS  
-INOXDREAM  
DRILLS  
-ALUDREAM  
DRILLS  
-MQL TYPEDREAM  
DRILLS  
for HARDENED  
STEELSSTANDARD  
CARBIDE  
DRILLSMULTI-1  
DRILLS

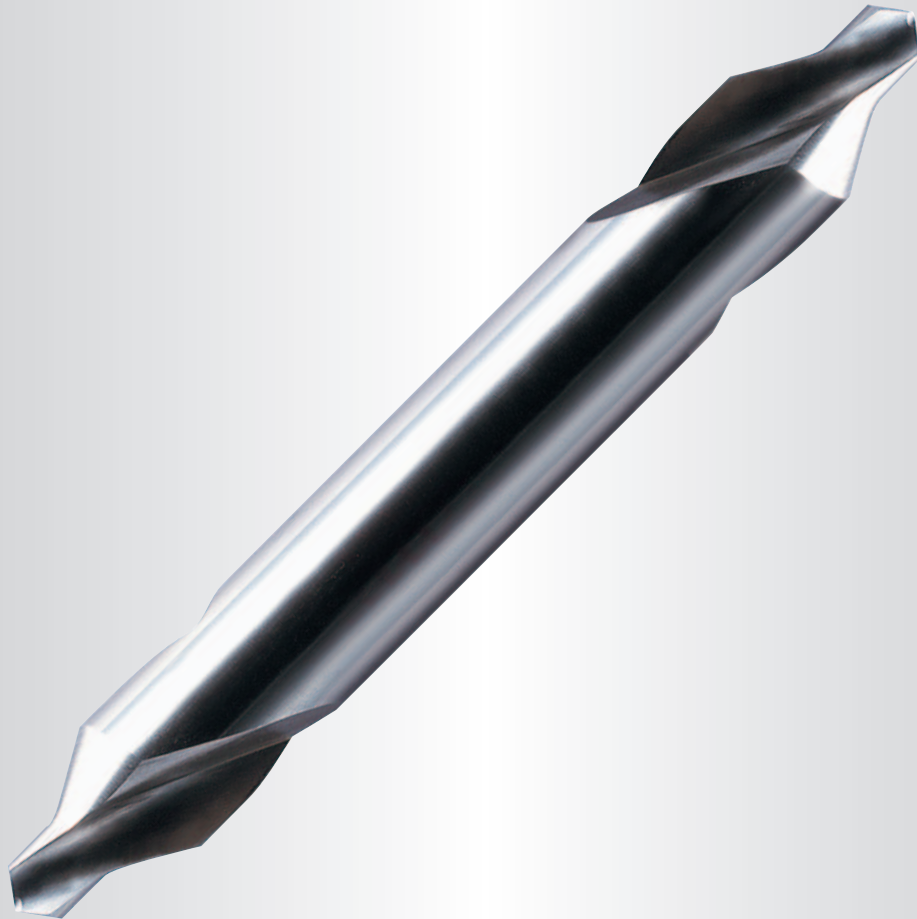
HPD DRILLS

GOLD-P  
DRILLSSTRAIGHT  
SHANK  
DRILLSAIRCRAFT  
DRILLSSILVER &  
DEMING  
DRILLSTAPER  
SHANK  
DRILLSNC SPOTTING  
DRILLSCENTER  
DRILLSSPADE  
DRILLSTECHNICAL  
DATA

**HSS**



Being the best through innovation




# **CENTER DRILLS**

- Regular and Long Length

# SELECTION GUIDE

## HSS CENTER DRILLS

Regular and Long Length

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
<b>INCH</b>					
<b>D1C90</b>		HSS(M2), CENTER DRILL	D3/64	D7/32	<b>194</b>
RECOMMENDED CUTTING CONDITIONS					

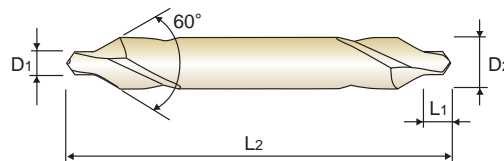
# HSS CENTER DRILLS

◎ : Excellent  
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		Cast Iron	Aluminum	Stainless Steels	Titanium	Mild Steels	Copper	Bronze
~HB225	HB225~325	HRC30~45	HRC45~55	HRC55~							
◎	◎				○	○	○	○	○	○	○



HSS(M2), CENTER DRILLS



i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA

60°

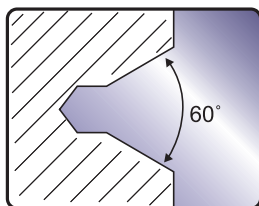
EDP No.	Size	Diameter	Shank Diameter	Drill Length	Overall Length
		D1	D2	L1	L2
* D1C90079	1	3/64	1/8	1/16	1-1/2
* D1C90080	2	1/16	3/16	5/64	1-3/4
* D1C90081	3	3/32	1/4	1/8	2
* D1C90082	4	1/8	5/16	5/32	2-1/4
* D1C90083	5	3/6	7/16	1/4	2-1/2
★ D1C90084	6	7/32	1/2	7/32	3

\* 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

\* 10per package

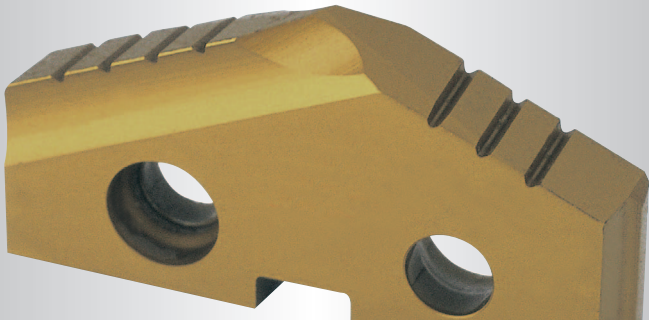
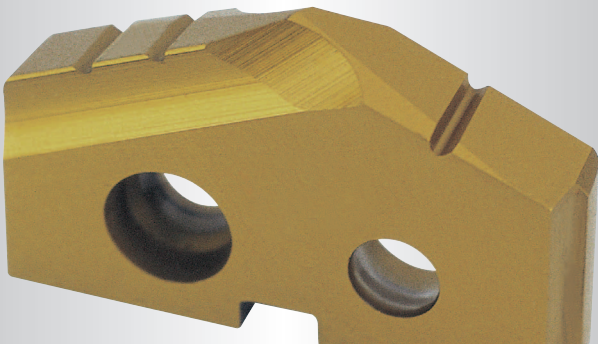
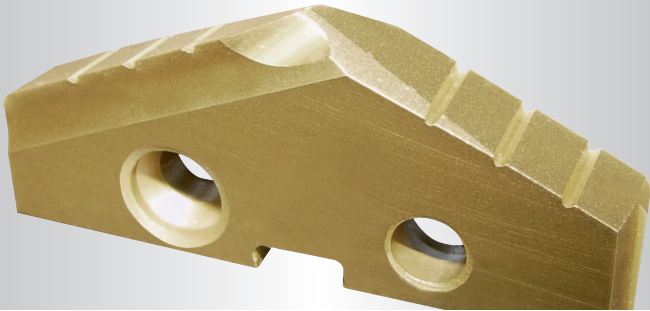
◎ : Excellent ○ : Good

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



Being the best through innovation

## INSERTS & HOLDERS












# SPADE DRILLS

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

# SELECTION GUIDE

## SPADE DRILL INSERTS

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
<b>SERIES 1~8</b>		SPADE DRILL INSERTS - HSS M4	.7031 (#1)	4.5000 (#8)	<b>198</b>
<b>SERIES Y,Z,0,1~8</b>		SPADE DRILL INSERTS - SUPER HSS T15	.3740 (#Y)	4.5000 (#8)	<b>202</b>
<b>SERIES Y,Z,0,1,2</b>		SPADE DRILL INSERTS - PREMIUM HSS M48	.3740 (#Y)	1.3780 (#2)	<b>209</b>
<b>SERIES Y,Z,0,1~3</b>		CARBIDE BLADE INSERTS-C2(K20)	.3740 (#Y)	1.8750 (#3)	<b>212</b>
<b>SERIES Y,Z,0,1~3</b>		CARBIDE BLADE INSERTS-C5(P40)	.3740 (#Y)	1.8750 (#3)	<b>212</b>
<b>SERIES Y,Z,0,1~2</b>		CARBIDE BLADE INSERTS-C3(K10)	.3740 (#Y)	1.3780 (#2)	<b>212</b>
<b>SERIES Y,Z,0,1~8</b>		SM-POINT SPADE DRILL INSERTS - SUPER COBALT(T15)	.3740 (#Y)	4.5000 (#8)	<b>218</b>
<b>SERIES Y,Z,0,1~3</b>		SM-POINT SPADE DRILL INSERTS - CARBIDE(C5)	.3740 (#Y)	1.8750 (#3)	<b>222</b>
<b>SERIES Y,Z,0,1,2</b>		SPADE DRILL FLAT BOTTOM INSERTS - SUPER COBALT T15	.3750 (#Y)	1.3750 (#2)	<b>224</b>

# SPADE DRILLS

⊙ : Excellent  
○ : Good

Non-alloy 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 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.231

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA

Series Min. to Max. (inch/mm)	Diameter			Thick Metric (inch/mm)	EDP No. HSS (M4)		
	Fractional (inch)	Metric (mm)	Decimal (inch)		TiN	TiAIN	Hardslick
<b>1</b>  .690 (17.53) to .960 (24.38)	45/64	17.86	.7031	5/32 (4.0)	SO1101	SO3101	SO4101
		18.00	.7087		SO1102	SO3102	SO4102
	23/32	18.26	.7188		SO1103	SO3103	SO4103
		18.50	.7283		SO1104	SO3104	SO4104
	47/64	18.65	.7344		SO1105	SO3105	SO4105
		19.00	.7480		SO1106	SO3106	SO4106
	3/4	19.05	.7500		SO1107	SO3107	SO4107
	49/64	19.45	.7656		SO1108	SO3108	SO4108
		19.50	.7677		SO1109	SO3109	SO4109
	25/32	19.84	.7813		SO1110	SO3110	SO4110
		20.00	.7874		SO1111	SO3111	SO4111
	51/64	20.24	.7969		SO1160	SO3160	SO4160
		20.50	.8071		SO1112	SO3112	SO4112
	13/16	20.64	.8125		SO1113	SO3113	SO4113
		21.00	.8268		SO1114	SO3114	SO4114
	27/32	21.43	.8438		SO1115	SO3115	SO4115
	55/64	21.83	.8594		SO1161	SO3161	SO4161
		22.00	.8661		SO1116	SO3116	SO4116
	7/8	22.23	.8750		SO1117	SO3117	SO4117
	57/64	22.62	.8906		SO1162	SO3162	SO4162
	23.00	.9055	SO1118	SO3118	SO4118		
29/32	23.02	.9063	SO1119	SO3119	SO4119		
59/64	23.42	.9219	SO1120	SO3120	SO4120		
15/16	23.81	.9375	SO1121	SO3121	SO4121		
	24.00	.9449	SO1122	SO3122	SO4122		
<b>2</b>  .961 (24.41) to 1.380 (35.05)	31/32	24.61	.9688	3/16 (4.8)	SO1201	SO3201	SO4201
	63/64	25.00	.9843		SO1202	SO3202	SO4202
	1	25.40	1.0000		SO1203	SO3203	SO4203
	1-1/64	25.80	1.0156		SO1204	SO3204	SO4204
		26.00	1.0236		SO1205	SO3205	SO4205
	1-1/32	26.19	1.0313		SO1206	SO3206	SO4206
	1-3/64	26.59	1.0469		SO1260	SO3260	SO4260
	1-1/16	26.99	1.0625		SO1207	SO3207	SO4207
		27.00	1.0630		SO1208	SO3208	SO4208

◎ : Excellent ○ : Good

Non-alloy 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)
○	○	○	○		○		○	○			◎	◎	○	◎	◎

### 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.231

Series Min. to Max. (inch/mm)	Diameter			Thick Metric (inch/mm)	EDP No.		
	Fractional (inch)	Metric (mm)	Decimal (inch)		TiN	TiAlN	Hardslick
<b>2</b>  .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		
<b>3</b>  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

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 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
○	○	○	○		○		○	○			◎	◎	○	◎	◎

i-DREAM  
DRILLS

DREAM  
DRILLS

DREAM  
DRILLS  
-INOX

DREAM  
DRILLS  
-ALU

DREAM  
DRILLS  
-MQL TYPE

DREAM  
DRILLS  
for 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

CENTER  
DRILLS

SPADE  
DRILLS

TECHNICAL  
DATA

**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.231

Series Min. to Max. (inch/mm)	Diameter			Thick Metric (inch/mm)	EDP No. HSS (M4)		
	Fractional (inch)	Metric (mm)	Decimal (inch)		TiN	TiAIN	Hardslick
<b>3</b>  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	
<b>4</b>  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

Non- alloy 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 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.231

Series Min. to Max. (inch/mm)	Diameter			Thick Metric (inch/mm)	EDP No.		
	Fractional (inch)	Metric (mm)	Decimal (inch)		HSS (M4)		
					TiN	TiAlN	Hardslick
<b>4</b>	2-17/32	64.29	2.5313	5/16 (7.9)	SO1438	SO3438	SO4438
	2-9/16	65.09	2.5625		SO1440	SO3440	SO4440
<b>5</b>  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	
<b>6</b>  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
<b>7</b>  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
<b>8</b>  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

Non-alloy 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
○	○	○	○	○	○	○	○	○	○	○	◎	◎	○	◎	◎

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA

**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.231

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA

Series Min. to Max. (inch/mm)	Diameter			Thick Metric (inch/mm)	EDP No. SUPER COBALT(T15)		
	Fractional (inch)	Metric (mm)	Decimal (inch)		TiN	TiAIN	Hardslick
<b>Y</b>  .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
<b>Z</b>  .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		
<b>0</b>  .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

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)
◎	◎	◎	◎	○	○	○	◎	◎	○	○	○	○	◎	○	○

## 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.231

Series Min. to Max. (inch/mm)	Diameter			Thick Metric (inch/mm)	EDP No. SUPER COBALT(T15)		
	Fractional (inch)	Metric (mm)	Decimal (inch)		TiN	TiAlN	Hardslick
<b>0</b>  .511 (12.98) to .695 (17.65)	41/64	16.00	.6299	1/8 (3.2)	* S06013	* S08013	* S09013
		16.27	.6406		* S06062	* S08062	* S09062
	21/32	16.50	.6496		* S06014	* S08014	* S09014
		16.67	.6563		* S06015	* S08015	* S09015
	43/64	17.00	.6693		* S06016	* S08016	* S09016
		17.07	.6719		* S06063	* S08063	* S09063
	11/16	17.46	.6875		* S06017	* S08017	* S09017
		17.50	.6890		* S06018	* S08018	* S09018
<b>1</b>  .690 (17.53) to .960 (24.38)	45/64	17.86	.7031	5/32 (4.0)	S06101	S08101	S09101
		18.00	.7087		S06102	S08102	S09102
	23/32	18.26	.7188		S06103	S08103	S09103
		18.50	.7283		S06104	S08104	S09104
	47/64	18.65	.7344		S06105	S08105	S09105
		19.00	.7480		S06106	S08106	S09106
	3/4	19.05	.7500		S06107	S08107	S09107
		49/64	19.45		.7656	S06108	S08108
		19.50	.7677		S06109	S08109	S09109
	25/32	19.84	.7813		S06110	S08110	S09110
		20.00	.7874		S06111	S08111	S09111
	51/64	20.24	.7969		S06160	S08160	S09160
		20.50	.8071		S06112	S08112	S09112
	13/16	20.64	.8125		S06113	S08113	S09113
		21.00	.8268		S06114	S08114	S09114
	27/32	21.43	.8438		S06115	S08115	S09115
		55/64	21.83		.8594	S06161	S08161
		22.00	.8661		S06116	S08116	S09116
	7/8	22.23	.8750		S06117	S08117	S09117
		57/64	22.62		.8906	S06162	S08162
	23.00	.9055	S06118	S08118	S09118		
29/32	23.02	.9063	S06119	S08119	S09119		
	59/64	23.42	.9219	S06120	S08120	S09120	
15/16	23.81	.9375	S06121	S08121	S09121		
	24.00	.9449	S06122	S08122	S09122		

\* 2pcs per package

◎ : Excellent ○ : Good

Non- alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
	~HRc24 (~HB250)	~HRc28 HRc28~ (~HB275)	~HRc28 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
◎	◎	◎	◎	○	○	○	◎	◎	○	○	○	○	◎	○	○

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA



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.231

Series Min. to Max. (inch/mm)	Diameter			Thick Metric (inch/mm)	EDP No.		
	Fractional (inch)	Metric (mm)	Decimal (inch)		SUPER COBALT(T15)		
					TiN	TiAIN	Hardslick
<b>2</b>  .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		
<b>3</b>	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

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 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.231

Series Min. to Max. (inch/mm)	Diameter			Thick Metric (inch/mm)	EDP No. SUPER COBALT(T15)				
	Fractional (inch)	Metric (mm)	Decimal (inch)		TiN	TiAlN	Hardslick		
<b>3</b>  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		
	1-23/32	43.66	1.7188		S06318	S08318	S09318		
		44.00	1.7323		S06319	S08319	S09319		
	1-3/4	44.45	1.7500		S06320	S08320	S09320		
		45.00	1.7717		S06321	S08321	S09321		
	<b>4</b>  1.850 (46.99) to 2.570 (65.28)	1-25/32	45.24		1.7813	5/16 (7.9)	S06322	S08322	S09322
			46.00		1.8110		S06323	S08323	S09323
1-13/16		46.04	1.8125	S06324	S08324		S09324		
1-27/32		46.83	1.8438	S06325	S08325		S09325		
		47.00	1.8504	S06326	S08326		S09326		
1-7/8		47.63	1.8750	S06327	S08327		S09327		
1-29/32		48.42	1.9062	S06328	S08328		S09328		
1-15/16		49.21	1.9375	S06402	S08402		S09402		
1-31/32		50.01	1.9688	S06404	S08404		S09404		
2		50.80	2.0000	S06406	S08406		S09406		
2-1/32		51.59	2.0312	S06407	S08407		S09407		
2-3/64		52.00	2.0472	S06409	S08409		S09409		
2-1/16		52.39	2.0625	S06410	S08410		S09410		
2-3/32		53.18	2.0938	S06411	S08411		S09411		
2-1/8	53.98	2.1250	S06413	S08413	S09413				
2-5/32	54.77	2.1562	S06414	S08414	S09414				
			S06416	S08416	S09416				

◎ : Excellent ○ : Good

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

- i-DREAM DRILLS
- DREAM DRILLS
- DREAM DRILLS -INOX
- DREAM DRILLS -ALU
- DREAM DRILLS -MQL TYPE
- DREAM DRILLS for 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
- CENTER DRILLS
- SPADE DRILLS
- TECHNICAL DATA



**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.231

Series Min. to Max. (inch/mm)	Diameter			Thick Metric (inch/mm)	EDP No.		
	Fractional (inch)	Metric (mm)	Decimal (inch)		SUPER COBALT(T15)		
					TiN	TiAIN	Hardslick
<b>4</b>  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		
<b>5</b>  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

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 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.231

Series Min. to Max. (inch/mm)	Diameter			Thick Metric (inch/mm)	EDP No. SUPER COBALT(T15)		
	Fractional (inch)	Metric (mm)	Decimal (inch)		TiN	TiAlN	Hardslick
<b>5</b>	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
<b>6</b> 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		
<b>7</b> 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

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 HRc28~ (~HB275)	~HRc28 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
◎	◎	◎	◎	○	○	○	◎	◎	○	○	○	○	◎	○	○

i-DREAM  
DRILLS

DREAM  
DRILLS

DREAM  
DRILLS  
-INOX

DREAM  
DRILLS  
-ALU

DREAM  
DRILLS  
-MQL TYPE

DREAM  
DRILLS  
for 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

CENTER  
DRILLS

SPADE  
DRILLS

TECHNICAL  
DATA

**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.231

- i-DREAM DRILLS
- DREAM DRILLS
- DREAM DRILLS -INOX
- DREAM DRILLS -ALU
- DREAM DRILLS -MQL TYPE
- DREAM DRILLS for 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
- CENTER DRILLS
- SPADE DRILLS

Series Min. to Max. (inch/mm)	Diameter			Thick Metric (inch/mm)	EDP No.		
	Fractional (inch)	Metric (mm)	Decimal (inch)		SUPER COBALT(T15)		
					TiN	TiAIN	Hardslick
<b>7</b>  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
<b>8</b>  4.001 (101.63) to 4.507 (114.48)	3-15/16	100.01	3.9375	7/16 (11.1)	—	—	S09720
	3-31/32	100.81	3.9688		—	—	S09721
	4	101.60	4.0000		—	—	S09722
	4-1/64	102.00	4.0156		—	—	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

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)
◎	◎	◎	◎	○	○	○	◎	◎	○	○	○	○	◎	○	○

# 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.231

Series Min. to Max. (inch/mm)	Diameter			Thick Metric (inch/mm)	EDP No. PREMIUM COBALT(M48)		
	Fractional (inch)	Metric (mm)	Decimal (inch)		TiN	TiAlN	Hardslick
<b>Y</b>  .374 (9.50) to .436 (11.07)	3/8	9.50	.3740	3/32 (2.4)	* S11Y01	* S13Y01	* S14Y01
		9.53	.3750		* S11Y02	* S13Y02	* S14Y02
	25/64	9.80	.3860		* S11Y03	* S13Y03	* S14Y03
		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
<b>Z</b>  .437 (11.11) to .510 (12.95)	7/16	11.11	.4375	3/32 (2.4)	* S11Z01	* S13Z01	* S14Z01
	29/64	11.50	.4528		* S11Z02	* S13Z02	* S14Z02
		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
<b>0</b>  .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
	35/64	13.50	.5315		* S11004	* S13004	* S14004
			.5469		* S11060	* S13060	* S14060
	9/16	14.00	.5512		* S11005	* S13005	* S14005
			.5625		* S11006	* S13006	* S14006
	37/64	14.50	.5709		* S11007	* S13007	* S14007
			.5781		* S11008	* S13008	* S14008
	19/32	15.00	.5906		* S11009	* S13009	* S14009
			.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

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 HRc28~ (~HB275)	~HRc28 HRc28~ (~HB275)	~HRc28 HRc28~ (~HB275)	~HRc37 (~HB350)	HRc37~ (~HB350)	~HRc24 (~HB250)	HRc24~ (~HB250)	~HRc13 (~HB200)	HRc13~ (~HB200)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (~HB220)	~HRc8 (~HB180)	~HB110
◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	◎	○	○

 i-DREAM  
DRILLS

 DREAM  
DRILLS

 DREAM  
DRILLS  
-INOX

 DREAM  
DRILLS  
-ALU

 DREAM  
DRILLS  
-MQL TYPE

 DREAM  
DRILLS  
for 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

 CENTER  
DRILLS

 SPADE  
DRILLS

 TECHNICAL  
DATA

**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.231

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

\* 2pcs per package

◎ : Excellent ○ : Good

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

## 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.231

Series Min. to Max. (inch/mm)	Diameter			Thick Metric (inch/mm)	EDP No.		
	Fractional (inch)	Metric (mm)	Decimal (inch)		PREMIUM COBALT(M48)		
					TiN	TiAlN	Hardslick
<b>2</b>  . <b>.961</b> <b>(24.41)</b> to <b>1.380</b> <b>(35.05)</b>	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

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)
◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	◎	○	○

i-DREAM  
DRILLS

DREAM  
DRILLS

DREAM  
DRILLS  
-INOX

DREAM  
DRILLS  
-ALU

DREAM  
DRILLS  
-MQL TYPE

DREAM  
DRILLS  
for 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

CENTER  
DRILLS

SPADE  
DRILLS

TECHNICAL  
DATA

**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.232

Series Min. to Max. (inch/mm)	Diameter			Thick Metric (inch/mm)	EDP No.					
	Fractional (inch)	Metric (mm)	Decimal (inch)		Multi purpose Geometry				Cast Iron Geometry	
					C2(K20)		C5(P40)		C3(K10)	
				TiN	TiAlN	TiN	TiAlN	TiN	TiAlN	
<b>Y</b>  . <b>.374</b> ( <b>9.50</b> ) to <b>.436</b> ( <b>11.07</b> )		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
<b>Z</b>  . <b>.437</b> ( <b>11.11</b> ) to <b>.510</b> ( <b>12.95</b> )	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

	Non-alloy 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													◎	◎		

## 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.232

Series Min. to Max. (inch/mm)	Diameter			Thick Metric (inch/mm)	EDP No.					
	Fractional (inch)	Metric (mm)	Decimal (inch)		Multi purpose Geometry				Cast Iron Geometry	
					C2(K20)		C5(P40)		C3(K10)	
				TiN	TiAlN	TiN	TiAlN	TiN	TiAlN	
<b>0</b> .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		
	17.46	.6875	* S21017	* S23017	* S26017	* S28017	* S16017	* S18017		
	17.50	.6890	* S21018	* S23018	* S26018	* S28018	* S16018	* S18018		

\* 2pcs per package

◎ : Excellent ○ : Good

	Non-alloyed Steels, Free Machining Steels	Carbon Steels		Alloy Steels		High Alloyed steels		Structural Steels		Tool Steels		Stainless Steels	Cast Iron		Aluminum	Copper Alloys
	~HRc24 (~HB250)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc28 (~HB275)	HRc28~ (HB275~)	~HRc37 (~HB350)	HRc37~ (HB350~)	~HRc24 (~HB250)	HRc24~ (HB250~)	~HRc13 (~HB200)	HRc13~ (HB200~)	~HRc28 (~HB275)	~HRc19 (~HB220)	HRc19~ (HB220~)	~HRc8 (~HB180)	~HB110
C2	○	○	○	○	○	◎	◎	○	○	○	○	◎	○	○	◎	◎
C5	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○
C3													◎	◎		



**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.232

Series Min. to Max. (inch/mm)	Diameter			Thick Metric (inch/mm)	EDP No.					
	Fractional (inch)	Metric (mm)	Decimal (inch)		Multi purpose Geometry				Cast Iron Geometry	
					C2(K20)		C5(P40)		C3(K10)	
				TiN	TiAIN	TiN	TiAIN	TiN	TiAIN	
<b>1</b> <b>.690 (17.53) to .960 (24.38)</b>	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

	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													◎	◎		

# 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.232

Series Min. to Max. (inch/mm)	Diameter			Thick Metric (inch/mm)	EDP No.					
	Fractional (inch)	Metric (mm)	Decimal (inch)		Multi purpose Geometry				Cast Iron Geometry	
					C2(K20)		C5(P40)		C3(K10)	
				TiN	TiAlN	TiN	TiAlN	TiN	TiAlN	
<b>2</b>  .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

	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													◎	◎		

**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.232

Series Min. to Max. (inch/mm)	Diameter			Thick Metric (inch/mm)	EDP No.								
	Fractional (inch)	Metric (mm)	Decimal (inch)		Multi purpose Geometry				Cast Iron Geometry				
					C2(K20)		C5(P40)		C3(K10)				
				TiN	TiAlN	TiN	TiAlN	TiN	TiAlN	TiN	TiAlN		
<b>3</b> 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

	Non-alloy 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.

**Radius back face**

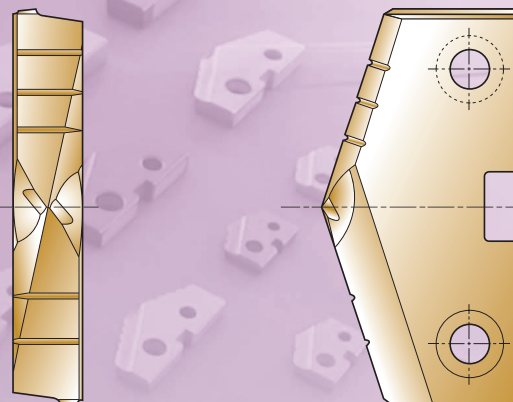
- ▶ Wide chip space

**Multiple web thinning with the cutting edge of small web thinning.**

- ▶ Good self-centering
- ▶ Less tool lead off
- ▶ Reduction in bell mousing, thrust
- ▶ Increased stability

**Four-facet point**

- ▶ Self-centering
- ▶ Less thrust force



# Y/G 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.231

- i-DREAM DRILLS
- DREAM DRILLS
- DREAM DRILLS -INOX
- DREAM DRILLS -ALU
- DREAM DRILLS -MQL TYPE
- DREAM DRILLS for 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
- CENTER DRILLS
- SPADE DRILLS
- TECHNICAL DATA

Series Min. to Max. (inch/mm)	Diameter			EDP No. TiAIN
	Fractional (inch)	Metric (mm)	Decimal (inch)	
<b>Y</b> .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
<b>Z</b> .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
<b>0</b> .511 (12.98) to .695 (17.65) Thick 1/8 (3.2)		12.30	.4844	* SM08Z06
		12.50	.4921	* SM08Z07
	1/2	12.70	.5000	* SM08Z08
		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			EDP No. TiAIN
	Fractional (inch)	Metric (mm)	Decimal (inch)	
<b>0</b> .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
		18.00	.7031	SM08101
		18.00	.7087	SM08102
		18.26	.7188	SM08103
<b>1</b> .690 (17.53) to .960 (24.38) Thick 5/32 (4.0)		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

Non-alloy 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.231

Series Min. to Max. (inch/mm)	Diameter			EDP No.
	Fractional (inch)	Metric (mm)	Decimal (inch)	TiAlN
<b>2</b> .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
<b>3</b> 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

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)
◎	◎	◎	◎	○	○	○	◎	◎	○	○	○	○	◎	○	○

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA

**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.231

Series Min. to Max. (inch/mm)	Diameter			EDP No.
	Fractional (inch)	Metric (mm)	Decimal (inch)	
<b>4</b> 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			EDP No.
	Fractional (inch)	Metric (mm)	Decimal (inch)	
<b>4</b> 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
		63.50	2.5000	SM08501
		64.00	2.5197	SM08502
<b>5</b> 2.456 (62.38) to 3.000 (76.20)  Thick 7/16 (11.1)	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

Non-alloy 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 : 144 degree**



cutting conditions : p.231

Series Min. to Max. (inch/mm)	Diameter			EDP No.
	Fractional (inch)	Metric (mm)	Decimal (inch)	TiAIN
<b>6</b> 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
	<b>7</b> 3.455 (87.76) to 4.000 (101.60)  Thick 7/16 (11.1)	3-13/32	86.52	3.4063
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
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			EDP No.
	Fractional (inch)	Metric (mm)	Decimal (inch)	TiAIN
<b>7</b> 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
	3-15/16	100.01	3.9375	SM08719
	3-31/32	100.81	3.9688	SM08721
<b>8</b> 4.001 (101.63) to 4.507 (114.48)  Thick 7/16 (11.1)	4	101.60	4.0000	SM08722
	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

Non-alloy 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
◎	◎	◎	◎	○	○	○	◎	◎	○	○	○	○	○	◎	○	○

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA



**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.232

- i-DREAM DRILLS
- DREAM DRILLS
- DREAM DRILLS -INOX
- DREAM DRILLS -ALU
- DREAM DRILLS -MQL TYPE
- DREAM DRILLS for 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
- CENTER DRILLS
- SPADE DRILLS
- TECHNICAL DATA

Series Min. to Max. (inch/mm)	Diameter			EDP No. TiAIN
	Fractional (inch)	Metric (mm)	Decimal (inch)	
<b>Y</b> .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
<b>Z</b> .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
<b>0</b> .511 (12.98) to .695 (17.65) Thick 1/8 (3.2)		12.50	.4921	* SM28Z07
	1/2	12.70	.5000	* SM28Z08
		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			EDP No. TiAIN
	Fractional (inch)	Metric (mm)	Decimal (inch)	
<b>0</b> .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
		18.00	.7087	SM28102
	23/32	18.26	.7188	SM28103
		18.50	.7283	SM28104
<b>1</b> .690 (17.53) to .960 (24.38) Thick 5/32 (4.0)	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

Non-alloy 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 - 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.232

Series Min. to Max. (inch/mm)	Diameter			EDP No.
	Fractional (inch)	Metric (mm)	Decimal (inch)	TiAlN
<b>2</b> .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
<b>3</b> 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

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)
◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for HARDENED STEELS

STANDARD CARBIDE DRILLS

MULTI-1 DRILLS

HPD DRILLS

GOLD-P DRILLS

STRAIGHT SHANK DRILLS

AIRCRAFT DRILLS

SILVER &amp; DEMING DRILLS

TAPER SHANK DRILLS

NC SPOTTING DRILLS

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA

**SPADE DRILL FLAT BOTTOM INSERTS - SUPER COBALT T15**

POINT ANGLE : 180 degree



cutting conditions : p.233

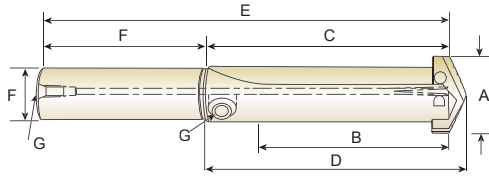
Series	Diameter		EDP No.	
	Fractional (inch)	Decimal (inch)	TiN	TiAlN
<b>Y</b>	3/8	.3750	* SF05024	* SF15024
	13/32	.4063	* SF05026	* SF15026
<b>Z</b>	7/16	.4375	* SF05028	* SF15028
	15/32	.4688	* SF05030	* SF15030
<b>0</b>	1/2	.5000	* SF05032	* SF15032
	17/32	.5313	* SF05034	* SF15034
	9/16	.5625	* SF05036	* SF15036
	19/32	.5938	* SF05038	* SF15038
	5/8	.6250	* SF05040	* SF15040
	21/32	.6563	* SF05042	* SF15042
<b>1</b>	11/16	.6875	* SF05044	* SF15044
	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
<b>2</b>	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

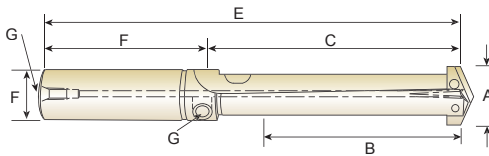
◎ : Excellent ○ : Good

Non-alloy 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**

**SHORT LENGTH**

Unit : Inch

Series	EDP No.	Drill Insert Range A	Max. Drill Depth B	Flute Length C	Ref. Length D	Overall Length E	Shank		Pipe Tap G
							Dia. F	Length	
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 A	Max. Drill Depth B	Flute Length C	Overall Length E	Shank		Pipe Tap G
						Dia. F	Length	
1	P14102	45/64 – 15/16	4-5/8	5-7/8	8-7/8	1	3	1/8
1.5	P14152	55/64 – 15/16	4-5/8	5-7/8	8-7/8	1	3	1/8
2	P14203	31/32 – 1-3/8	5-3/8	6-1/2	10	1-1/4	3-1/2	1/8
2.5	P14253	1-3/16 – 1-3/8	5-3/8	6-1/2	10	1-1/4	3-1/2	1/8
3	P14304	1-13/32 – 1-7/8	6-1/2	7-3/4	11-3/4	1-1/2	4	1/4

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for HARDENED STEELS

STANDARD CARBIDE DRILLS

MULTI-1 DRILLS

HPD DRILLS

GOLD-P DRILLS

STRAIGHT SHANK DRILLS

AIRCRAFT DRILLS

SILVER &amp; DEMING DRILLS

TAPER SHANK DRILLS

NC SPOTTING DRILLS

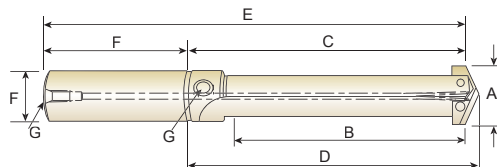
CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA



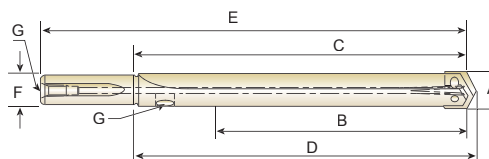
STRAIGHT SHANK HOLDER, STRAIGHT FLUTE



STANDARD LENGTH

Unit : Inch

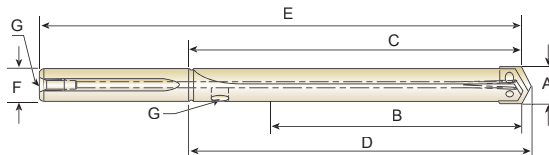
Series	EDP No.	Drill Insert Range A	Max. Drill Depth B	Flute Length C	Ref. Length D	Overall Length E	Shank		Pipe Tap G
							Dia. F	Length	
Y	P15Y01	3/8 - 27/64	2-3/8	3-5/32	3-1/4	5-17/32	3/4	2-3/8	1/8
Z	P15Z01	7/16 - 1/2	2-3/8	3-5/32	3-1/4	5-17/32	3/4	2-3/8	1/8
O	P15001	33/64 - 11/16	2-1/2	3-5/16	3-27/64	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



EXTENDED LENGTH

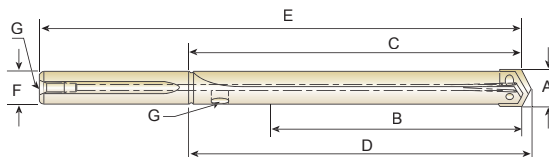
Unit : Inch

Series	EDP No.	Drill Insert Range A	Max. Drill Depth B	Flute Length C	Ref. Length D	Overall Length E	Shank		Pipe Tap G
							Dia. F	Length	
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
O	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	P16506	2-1/2 - 3-1/2	18-1/4	20	20-1/4	24	2	4	1/2
7	P16708	3-17/32 - 4-1/2	21-7/8	24	24-1/4	29	3	5	1/2

**STRAIGHT SHANK HOLDER, STRAIGHT FLUTE**

**LONG LENGTH**

Unit : Inch

Series	EDP No.	Drill Insert Range A	Max. Drill Depth B	Flute Length C	Ref. Length D	Overall Length E	Shank		Pipe Tap G
							Dia. F	Length	
<b>0</b>	<b>P17001</b>	33/64 – 11/16	7	7-13/16	7-59/64	10-3/16	3/4	2-3/8	1/8
<b>0.5</b>	<b>P17051</b>	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 A	Max. Drill Depth B	Flute Length C	Ref. Length D	Overall Length E	Shank		Pipe Tap G
							Dia. F	Length	
<b>1</b>	<b>P17101</b>	45/64 – 15/16	18	19-1/4	19-25/64	22-1/4	1	3	1/8
<b>2</b>	<b>P17202</b>	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
<b>3</b>	<b>P17303</b>	1-13/32 – 1-7/8	22	23-1/4	23-7/16	27-1/4	1-1/2	4	1/4
<b>4</b>	<b>P17404</b>	1-29/32 – 2-9/16	24-5/8	26	26-3/16	30	1-1/2	4	1/4
<b>5</b>	<b>P17506</b>	2-1/2 – 3-1/2	26	27-3/4	28	31-3/4	2	4	1/2
<b>7</b>	<b>P17708</b>	3-17/32 – 4-1/2	27	29-1/8	29-3/8	34-1/8	3	5	1/2

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for HARDENED STEELS

STANDARD CARBIDE DRILLS

MULTI-1 DRILLS

HPD DRILLS

GOLD-P DRILLS

STRAIGHT SHANK DRILLS

AIRCRAFT DRILLS

SILVER &amp; DEMING DRILLS

TAPER SHANK DRILLS

NC SPOTTING DRILLS

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA

**TAPER SHANK HOLDER, STRAIGHT FLUTE / HELICAL FLUTE**

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for HARDENED STEELS

STANDARD CARBIDE DRILLS

MULTI-1 DRILLS

HPD DRILLS

GOLD-P DRILLS

STRAIGHT SHANK DRILLS

AIRCRAFT DRILLS

SILVER & DEMING DRILLS

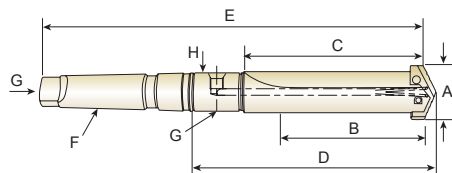
TAPER SHANK DRILLS

NC SPOTTING DRILLS

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA

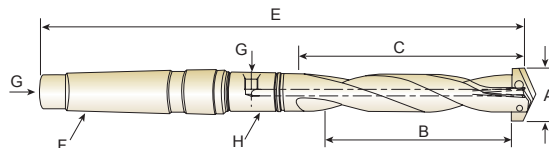


**SHORT LENGTH**

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
O	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(Rotary Coolant Inducer) for internal cooling. (See page 230)

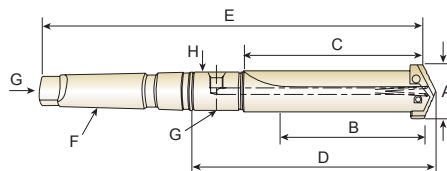


**INTERMEDIATE LENGTH**

Unit : Inch

Series	EDP No.	Drill Insert Range	Max. Drill Depth	Flute Length	Overall Length	MT	Pipe Tap	RCI
		A	B	C	E	F	G	H
1	P08103	45/64 - 15/16	4-3/4	5-7/8	11-5/32	#3	1/8	PR1031
1.5	P08153	55/64 - 15/16	4-3/4	5-7/8	11-5/32	#3	1/8	PR1031
2	P08204	31/32 - 1-3/8	5-3/8	6-1/2	12-25/32	#4	1/8	PR1031
2.5	P08254	1-3/16 - 1-3/8	5-3/8	6-1/2	13-1/16	#4	1/4	PR1042

► You can also apply RCI(Rotary Coolant Inducer) for internal cooling. (See page 230)

**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(Rotary Coolant Inducer) for internal cooling. (See page 230)

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for HARDENED STEELS

STANDARD CARBIDE DRILLS

MULTI-1 DRILLS

HPD DRILLS

GOLD-P DRILLS

STRAIGHT SHANK DRILLS

AIRCRAFT DRILLS

SILVER &amp; DEMING DRILLS

TAPER SHANK DRILLS

NC SPOTTING DRILLS

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA



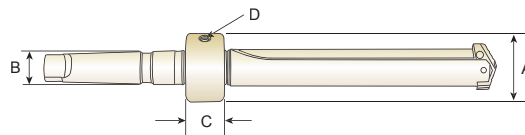


**HOLDER ACCESSORIES**

**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	Metric	
						inch	mm	
<b>Y</b>	2XT7	J7Y001	2XT7N	J7Y006	J5Y007	3/8 - 27/64	9.5 - 11.0	5.5
<b>Z</b>	2LXT7	J7Z011	2LXT7N	J7Z016	J5Y007	7/16 - 1/2	11.5 - 12.5	5.5
<b>0</b>	2.5XT8	J80021	2.5XT8N	J80026	J50008	33/64 - 11/16	13.0 - 17.5	11.0
<b>0.5</b>	2.5LXT8	J80531	2.5LXT8N	J80536	J50008	39/64 - 11/16	15.5 - 17.5	11.0
<b>1</b>	3XT9	J91041	3XT9N	J91046	J51009	45/64 - 15/16	18.0 - 24.0	20.0
<b>1.5</b>	3LXT9	J91551	3LXT9N	J91556	J51009	55/64 - 15/16	22.0 - 24.0	20.0
<b>2</b>	4XT15	JB2061	4XT15N	JB2066	J52015	31/32 - 1-3/8	25.0 - 35.0	45.0
<b>2.5</b>	4XT15	JB2061	4XT15N	JB2066	J52015	31/32 - 1-3/8	30.0 - 35.0	45.0
<b>3-4</b>	5XT20	JC3081	5XT20N	JC3086	J53020	1-13/32 - 2-9/16	36.0 - 65.0	90.0
<b>5-8</b>	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)



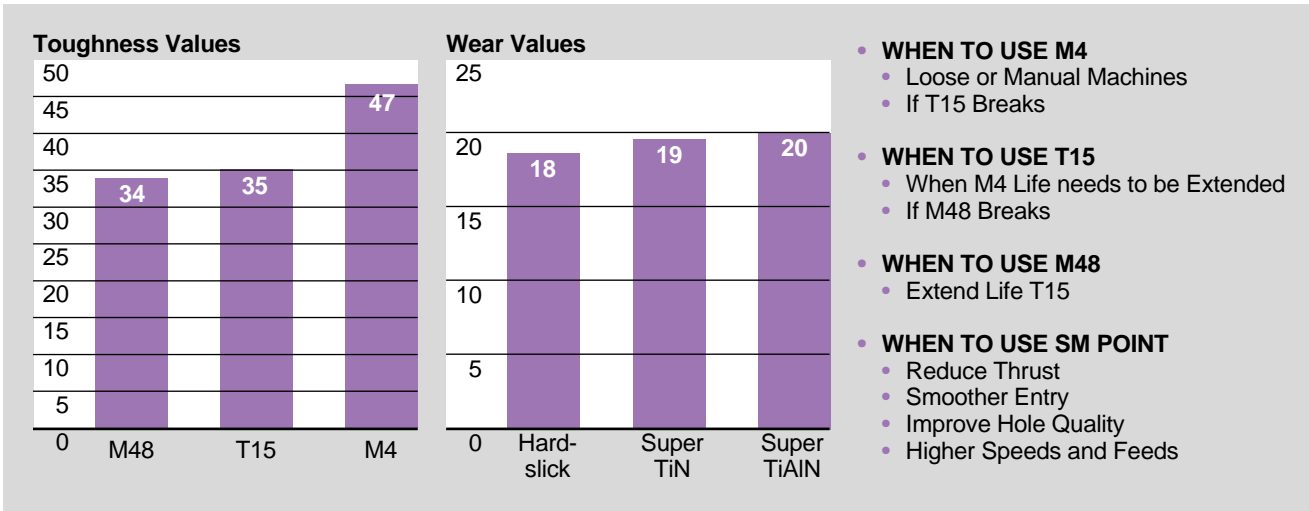
**ROTARY COOLANT INDUCER (RCI) AND ACCESSORIES**



Complete with O'Rings, Flat Washers and Locking Clips.

EDP No.	I.D.	Pipe O.D.	Length	Tap	Thread for Driving Rod
	A	B	C	D	
<b>PR1030</b>	3/4	1-3/4	7/8	1/8	5/16 - NC
<b>PR1031</b>	1	2-1/8	1-1/8	1/8	5/16 - NC
<b>PR1042</b>	1-1/4	2-1/2	1-3/8	1/4	3/8 - NC
<b>PR1043</b>	1-3/4	3	1-3/8	1/4	3/8 - NC
<b>PR1054</b>	2-1/4	3-3/4	1-3/4	1/2	1/2 - NC

**SPADE BLADE INSERTS SELECTION & APPLICATIONS HSS**



**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	.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	.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 Steel 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.

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA



i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

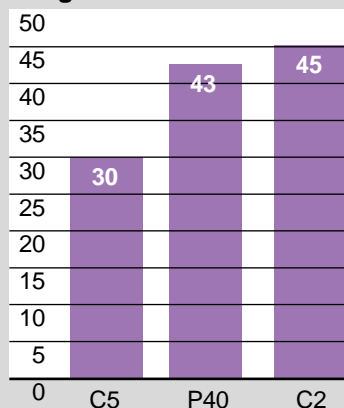
CENTER DRILLS

SPADE DRILLS

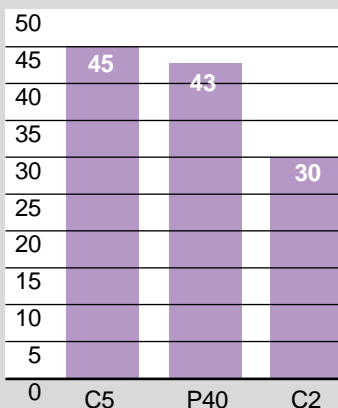
TECHNICAL DATA

**SPADE BLADE INSERTS SELECTION & APPLICATIONS CARBIDE**

**Toughness Values**



**Wear Values**



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 TiAlN

**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.

**If C5 chips try C2 at 10% – 20% lower S.F.M. than C5 rating**

**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	.009	.013	.012	.016	.016	-
	225 - 275	270	315	.004	.006	.007	.009	.008	.013	.012	.016	.015	-
Alloy Steel 4140, 5140, 8640	275 - 325	230	270	.004	.005	.006	.008	.006	.012	.010	.015	.014	-
	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	-
High Strength Alloy Steel 4340, 4330V, 300M	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	-
	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	-
Structural Steel A36, A285, A516	350 - 400	160	190	.003	.004	.005	.007	.006	.009	.008	.011	.010	-
	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	-
High Temp, Alloy Hastelloy B, Inconel 600	250 - 350	230	270	.004	.005	.007	.009	.008	.012	.009	.013	.013	-
	140 - 220	80	125	.003	.004	.006	.007	.007	.009	.009	.011	.011	-
Stainless Steel 303, 416, 420, 17-4 PH	220 - 310	60	100	.003	.004	.005	.006	.006	.008	.008	.010	.010	-
	135 - 185	210	245	.006	.007	.008	.009	.009	.012	.011	.014	.013	-
Tool Steel H-13, H021, A04, O-2, S-3	185 - 275	160	190	.005	.006	.007	.008	.008	.011	.010	.012	.011	-
	150 - 200	220	260	.003	.004	.005	.007	.007	.010	.009	.012	.011	-
Aluminum	200 - 250	170	200	.003	.004	.005	.007	.007	.010	.009	.012	.011	-
	30	1500	-	.008	-	.013	-	.016	-	.020	-	.022	-
Cast Iron Gray, Ductile, Nodular	180	1000	-	.007	-	.011	-	.014	-	.018	-	.020	-
	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.

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	165	220	0.005	0.007	0.010	0.013
	150 - 200	150	215	0.005	0.007	0.010	0.013
	200 - 250	135	190	0.004	0.007	0.010	0.012
Low Carbon Steel 1015, 1020, 1140, 1025	85 - 125	140	195	0.005	0.007	0.009	0.012
	125 - 175	135	190	0.005	0.007	0.009	0.012
	175 - 225	125	180	0.004	0.006	0.008	0.011
	225 - 275	115	175	0.004	0.006	0.008	0.011
Medium Carbon Steel 1035, 1050, 1045 1055, 1140	125 - 175	135	195	0.004	0.007	0.009	0.011
	175 - 225	125	180	0.004	0.006	0.007	0.011
	225 - 275	115	165	0.004	0.006	0.007	0.011
	275 - 325	105	150	0.003	0.005	0.007	0.009
Structural Steel A36, A516, A182	100 - 150	115	165	0.004	0.007	0.009	0.011
	150 - 250	100	140	0.004	0.007	0.008	0.009
	250 - 350	80	115	0.003	0.006	0.007	0.008
Cast Iron / S,G Iron A48-76 GR30/GR45 A536-72 60-40-18 A220-76 GR40010	120 - 150	145	215	0.005	0.010	0.014	0.016
	150 - 200	130	190	0.005	0.008	0.011	0.016
	200 - 220	110	165	0.005	0.008	0.010	0.014
	220 - 260	95	150	0.004	0.006	0.008	0.010
	260 - 320	80	120	0.004	0.005	0.006	0.008
Alloy Steel 8620, 4130, 4137 4140, 6150	125 - 175	125	165	0.005	0.006	0.008	0.011
	175 - 225	115	150	0.004	0.006	0.008	0.011
	225 - 275	105	145	0.004	0.005	0.007	0.011
	275 - 325	100	140	0.003	0.005	0.007	0.009
	325 - 375	90	120	0.003	0.005	0.007	0.009
Tool Steel H13, H21, A2, S1	150 - 200	65	90	0.003	0.005	0.006	0.008
	200 - 250	45	75	0.003	0.005	0.006	0.008
High Temp. Alloy Hastelloy B, Inconel	140 - 220	20	30	0.003	0.005	0.006	0.008
	220 - 310	15	25	0.003	0.004	0.006	0.006
	225 - 300	65	90	0.004	0.006	0.007	0.008
High Strength Alloy 9840, 4340, 4330V	300 - 350	45	70	0.003	0.006	0.007	0.008
	350 - 400	40	60	0.003	0.005	0.006	0.007
Aluminium 2014, 6061, 7075	30	520	700	0.007	0.011	0.014	0.017
	180	255	390	0.007	0.011	0.014	0.016
Stainless Steel 310, 316, 410, 330	135 - 185	60	90	0.005	0.007	0.008	0.009
	185 - 275	50	80	0.004	0.006	0.007	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 :

$$\text{SFM} = (\text{RPM}) \cdot (.262) \cdot (\text{DIA.})$$

$$\text{IPM} = (\text{RPM}) \cdot (\text{IPR})$$

$$\text{RPM} = \frac{(\text{SFM}) \cdot (3.82)}{(\text{DIA.})}$$

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.



i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for 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

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA

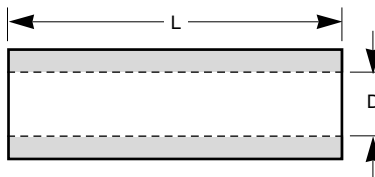
**SPADE BLADE INSERTS HORSEPOWER CONSUMPTION RATE**

**Metal Removal Rates (MRR)**

Example: 1.50 Dia. Drill @ 6.412 I.P.M.

**Volume of Cylinder Method:  $D^2 \times .785 \times L$**

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.

$458 \text{ R.P.M.} \times .014 = 6.412 \text{ I.P.M. (L)}$

$D^2 (1.5)^2 \times .785 \times L (6.412) = 11.3 \text{ C.U.In./ Min (MRR)}$

**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 <sup>3</sup> /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

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for HARDENED STEELS

STANDARD CARBIDE DRILLS

MULTI-1 DRILLS

HPD DRILLS

GOLD-P DRILLS

STRAIGHT SHANK DRILLS

AIRCRAFT DRILLS

SILVER &amp; DEMING DRILLS

TAPER SHANK DRILLS

NC SPOTTING DRILLS

CENTER DRILLS

SPADE DRILLS

TECHNICAL DATA



Global Cutting Tool Leader **YG-1**



# DRILLS



Being the best through innovation

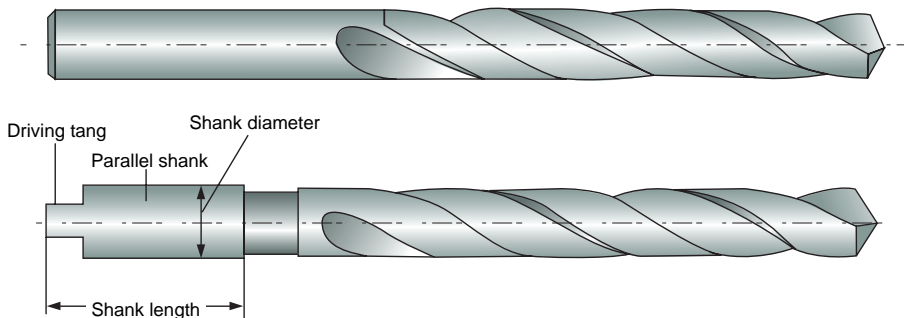


# TECHNICAL DATA

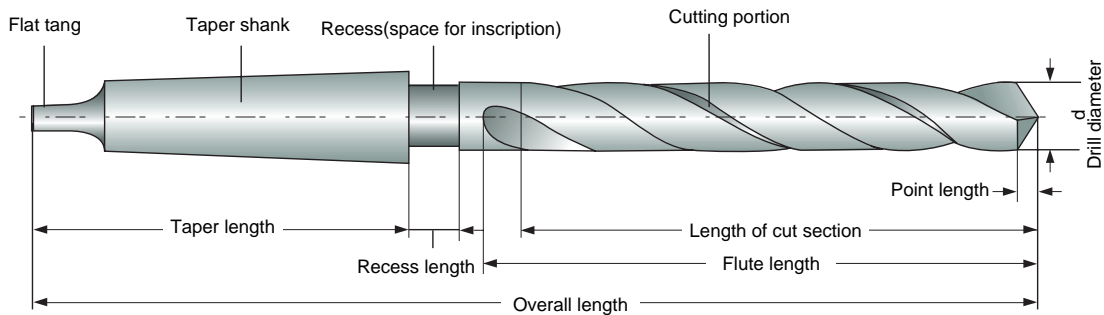




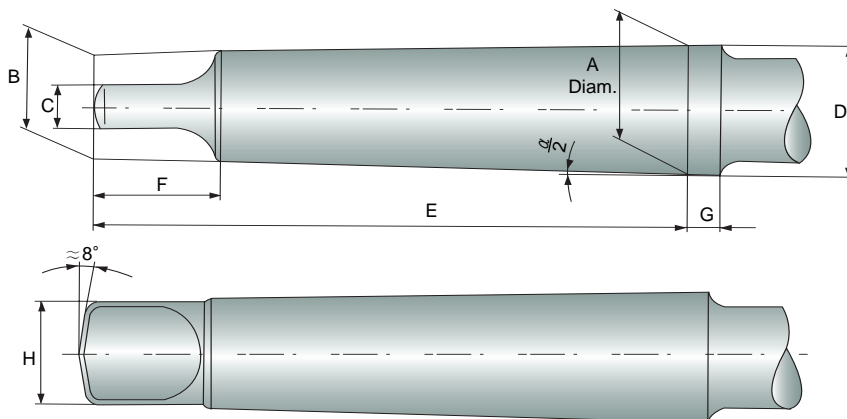
**Twist Drill with parallel shank**



**Twist Drill with taper shank**



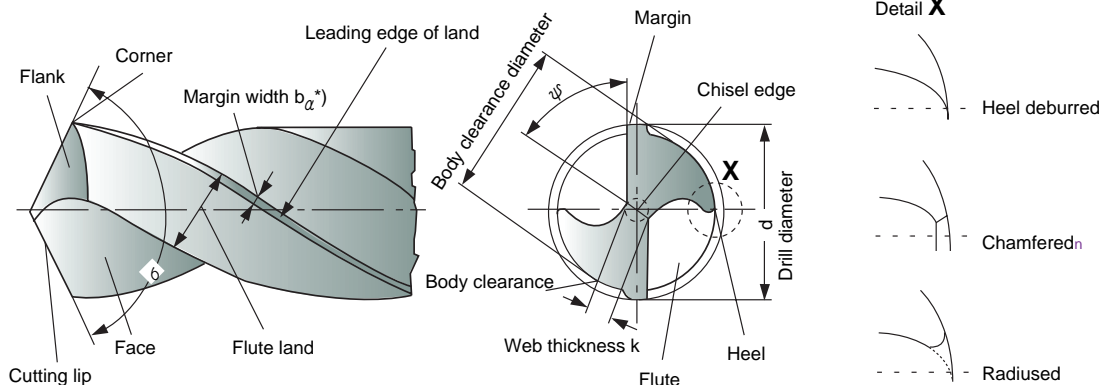
**General dimensions of morse taper shanks**



Morse Taper Shank	A mm	B mm	C(h13) mm	D mm	E mm	F(max.) mm	G mm	H(max.) mm	$\alpha/2$
<b>No.1</b>	12.065	9	5.2	12.2	62	13.5	3.5	8.7	1°25'43"
<b>No.2</b>	17.780	14	6.3	18.0	75	16	5	13.5	1°25'50"
<b>No.3</b>	23.825	19.1	7.9	24.1	94	20	5	18.5	1°26'16"
<b>No.4</b>	31.267	25.2	11.9	31.6	117.5	24	6.5	24.5	1°29'15"
<b>No.5</b>	44.399	36.5	15.9	44.7	149.5	29	6.5	35.7	1°30'26"
<b>No.6</b>	63.348	52.4	19	63.8	210	40	8	51	1°29'36"



## Cutting portion



$\sigma$  = Point angle (sigma)

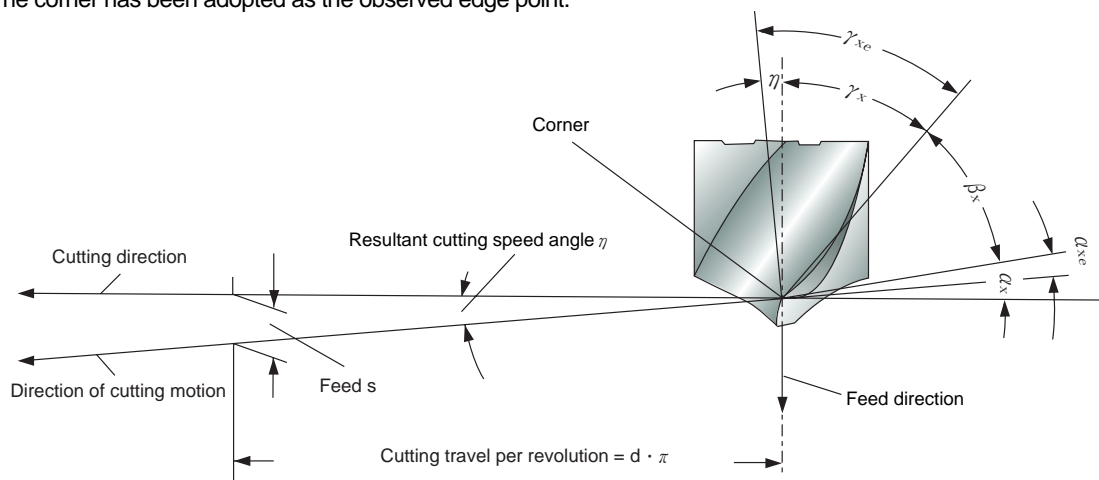
$\psi$  = Chisel edge angle (psi)

\* In the context of cutting technology, land width  $b_\alpha$  is the body clearance land width which is to be by  $b_{\alpha n}$ , see DIN 6581.



## Angle at the cutting edges

The corner has been adopted as the observed edge point.



$\alpha_x$  = Side clearance angle (alpha)

$\alpha_{xe}$  = Effective side clearance angle

$\beta_x$  = Side wedge angle (beta)

$\gamma_x$  = Front rake angle (gamma)

$\gamma_{xe}$  = Working front rake angle

$\eta$  = Resultant cutting speed angle (eta)

Clearance angle  $\alpha$ , wedge angle  $\beta$  and rake angle  $\gamma$  are measured in the tool orthogonal plane. For details, see DIN 6581, definitions of metal-cutting technology; geometry at the tool edge.

 i-DREAM  
DRILLS

 DREAM  
DRILLS

 DREAM  
DRILLS  
-INOX

 DREAM  
DRILLS  
-ALU

 DREAM  
DRILLS  
-MQL TYPE

 DREAM  
DRILLS  
for 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

 CENTER  
DRILLS

 SPADE  
DRILLS

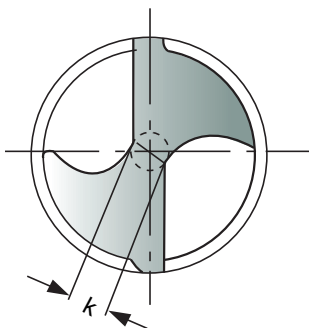
**6**

**Web thickness  $k$**

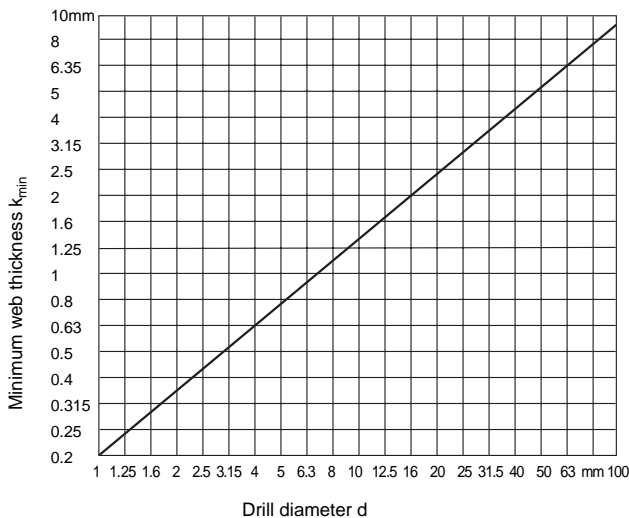
**Test values :** The web thickness according to Fig. 1 shall not be less than the minimum value  $k_{min}$  indicated in Fig. 2.

**Test point :** At the point of the drill.

**Testing equipment :** Slide gauge with measuring points.



**Figure 1. Web thickness  $k$**



**Figure 2. Web thickness  $k_{min}$**

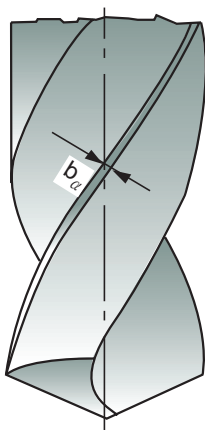
**7**

**Margin width  $b_\alpha$**

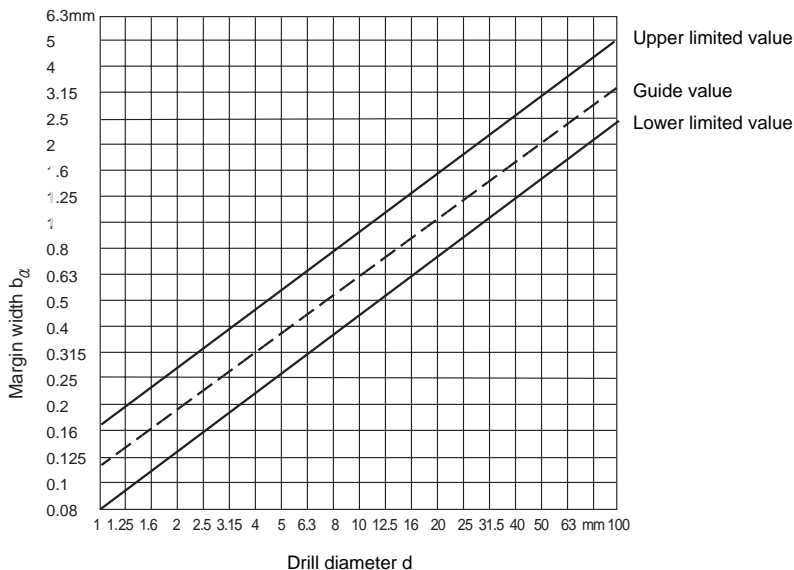
**Test values :** The land width as in Fig. 3 shall lie within the limited values indicated in Fig. 4.

**Test point :** 5mm behind the corner

**Testing equipment :** Slide gauge



**Figure 3. Margin width  $b_\alpha$**



**Figure 4. Margin width  $b_\alpha$**



## Angle on Twist Drills

### (1) Side rake angle $\gamma_f$ (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  $b_\alpha$

**Note :** The side rake angle  $\gamma_f$  is measured in place of the orthogonal rake angle  $\gamma_o$  found in the wedge measuring plane (see DIN 6581), as this changes along the cutting edge (becoming smaller towards the point of the drill).

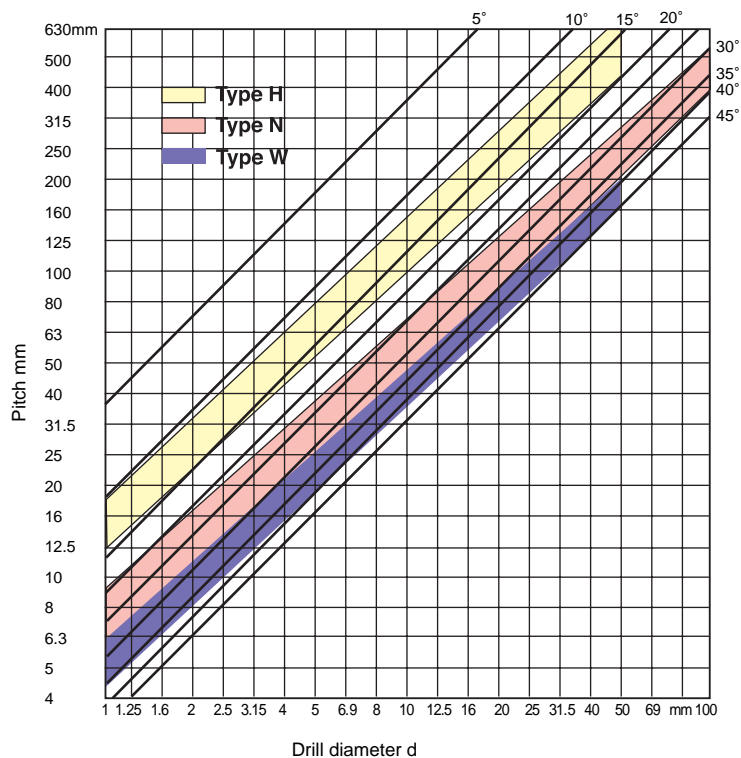


Figure 6. Side rake angle  $\gamma_f$

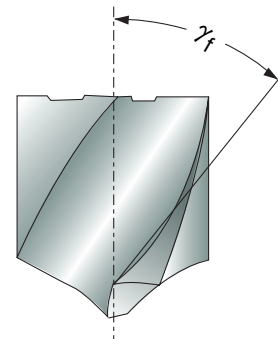


Figure 5. Side rake angle  $\gamma_f$

### (2) Point angle $\sigma$

**Test value :** Usual executin for tool types N and H :  $\sigma=118^\circ$  ,  
for tool type W :  $\sigma=130^\circ$

**Test point :** At the cutting , see Fig. 7.

**Testing equipment :** According to VDI Guideline 3331 Part 1,  
Section Margin width  $b_\alpha$ .

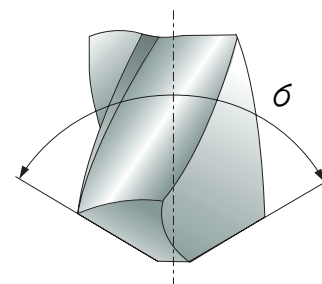


Figure 7. Point angle  $\sigma$



## Resharpener Twist Drills

(1) Drills are worn off irregularly. It should be sharpened prior to developing into excessive wear.

### (2) Resharpener

- 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)

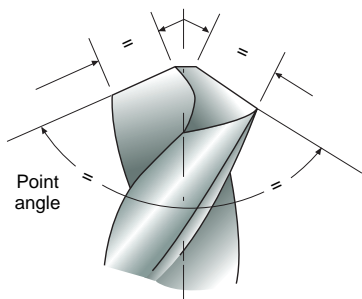


Figure 8

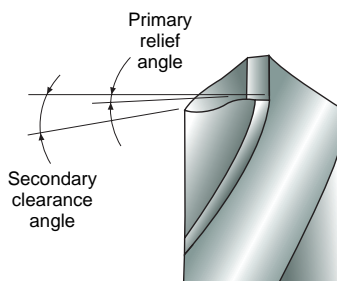


Figure 9

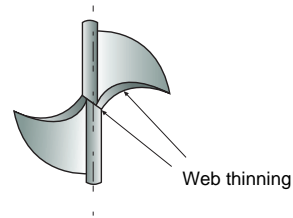


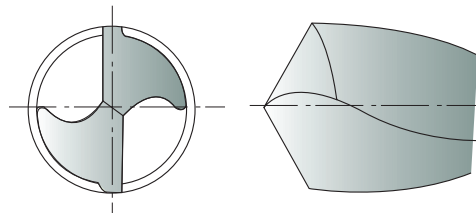
Figure 10



## Web thinning

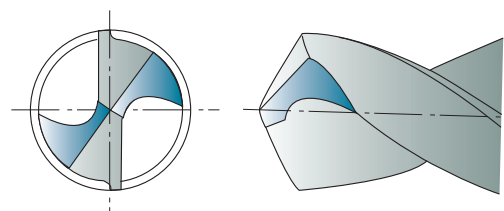
### (1) Without thinning

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.



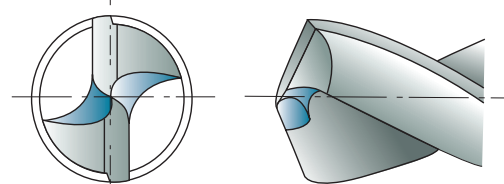
### (2) Type C thinning (DIN1412 FORM C, SPLIT POINT)

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, inconoroy inconel, nimonic, etc.



### (3) Type R thinning (HELICAL THINNING)

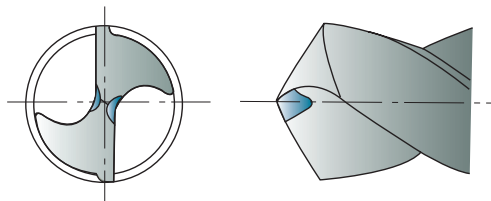
Helical thinning ensures to frequent chip breaking and removal.  
The different direction force of cutting edges and helical thinning parts enable that chips curl, break and remove through the flutes.  
In addition, helical thinning makes the chip room up to center, remove the chisel and enables good centering



**(4) Type A thinning (DIN1412 FORM A)**

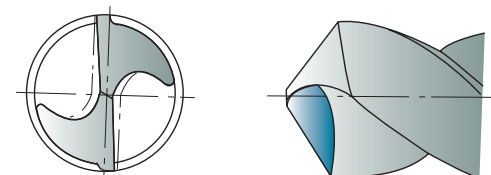
A type thinning makes thin chisel, good chip removal and favorable centering.

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)**

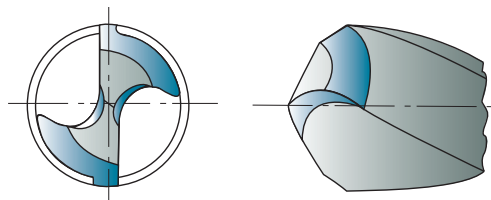
In case of work materials with low cutting resistance and good chip removal, i.e., cast iron, aluminum, plastic etc., B type thinning is suitable.

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)**

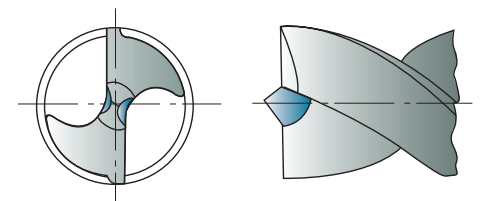
Grey cast iron thinning; bevelling of external edges strengthens the cutting edge.

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 burrs 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 $\mu$ m 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.

 i-DREAM  
DRILLS

 DREAM  
DRILLS

 DREAM  
DRILLS  
-INOX

 DREAM  
DRILLS  
-ALU

 DREAM  
DRILLS  
-MQL TYPE

 DREAM  
DRILLS  
for 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

 CENTER  
DRILLS

 SPADE  
DRILLS

 TECHNICAL  
DATA



## 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.

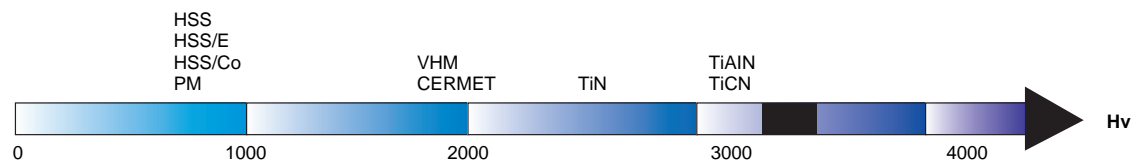
### (3) TiAlN (Titanium Aluminum Nitride) coating

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( $\mu\text{m}$ )	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/mm <sup>2</sup>	TiCN, TiAlN	TiCN, TiAlN
Steels > 1000 N/mm <sup>2</sup>	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
		<b>M3</b>	2.5	<b>M11</b>	9.5	<b>M30</b>	26.5
<b>M1</b>	0.75	<b>M3.5</b>	2.9	<b>M12</b>	10.2	<b>M33</b>	29.5
<b>M1.2</b>	0.95	<b>M4</b>	3.3	<b>M14</b>	12.0	<b>M36</b>	32.0
<b>M1.4</b>	1.1	<b>M5</b>	4.2	<b>M16</b>	14.0	<b>M39</b>	35.0
<b>M1.6</b>	1.25	<b>M6</b>	5.0	<b>M18</b>	15.5	<b>M42</b>	37.5
<b>M1.8</b>	1.45	<b>M7</b>	6.0	<b>M20</b>	17.5	<b>M45</b>	40.5
<b>M2</b>	1.6	<b>M8</b>	6.8	<b>M22</b>	19.5	<b>M48</b>	43.0
<b>M2.2</b>	1.75	<b>M9</b>	7.8	<b>M24</b>	21.0	<b>M52</b>	47.0
<b>M2.5</b>	2.05	<b>M10</b>	8.5	<b>M27</b>	24.0	<b>M56</b>	50.5

### (2) Metric ISO threads fine pitch

Nominal diameter	Tap Pitch	Drill diameter	Nominal diameter	Tap Pitch	Drill diameter	Nominal diameter	Tap Pitch	Drill diameter
<b>2.5</b>	0.35	2.15	<b>17</b>	1.5	15.5	<b>33</b>	1.5	31.5
<b>3</b>	0.35	2.65	<b>18</b>	1	17	<b>33</b>	2	31
<b>3.5</b>	0.35	3.15	<b>18</b>	1.5	16.5	<b>33</b>	3	30
<b>4</b>	0.5	3.5	<b>18</b>	2	16	<b>35</b>	1.5	33.5
<b>4.5</b>	0.5	4	<b>20</b>	1	19	<b>36</b>	1.5	34.5
<b>5</b>	0.5	4.5	<b>20</b>	1.5	18.5	<b>36</b>	2	34
<b>5.5</b>	0.5	5	<b>20</b>	2	18	<b>36</b>	3	33
<b>6</b>	0.75	5.2	<b>22</b>	1	21	<b>38</b>	1.5	36.5
<b>7</b>	0.75	6.2	<b>22</b>	1.5	20.5	<b>39</b>	1.5	37.5
<b>8</b>	0.75	7.2	<b>22</b>	2	20	<b>39</b>	2	37
<b>8</b>	1	7	<b>24</b>	1	23	<b>39</b>	3	36
<b>9</b>	0.75	8.2	<b>24</b>	1.5	22.5	<b>40</b>	1.5	38.5
<b>9</b>	1	8	<b>24</b>	2	22	<b>40</b>	2	38
<b>10</b>	0.75	9.2	<b>25</b>	1	24	<b>40</b>	3	37
<b>10</b>	1	9	<b>25</b>	1.5	23.5	<b>42</b>	1.5	40.5
<b>10</b>	1.25	8.8	<b>25</b>	2	23	<b>42</b>	2	40
<b>11</b>	0.75	10.2	<b>26</b>	1.5	24.5	<b>42</b>	3	39
<b>11</b>	1	10	<b>27</b>	1	26	<b>45</b>	1.5	43.5
<b>12</b>	1	11	<b>27</b>	1.5	25.5	<b>45</b>	2	43
<b>12</b>	1.25	10.8	<b>27</b>	2	25	<b>45</b>	3	42
<b>12</b>	1.5	10.5	<b>28</b>	1	27	<b>48</b>	1.5	46.5
<b>14</b>	1	13	<b>28</b>	1.5	26.5	<b>48</b>	2	46
<b>14</b>	1.25	12.8	<b>28</b>	2	26	<b>48</b>	3	45
<b>14</b>	1.5	12.5	<b>30</b>	1	29	<b>50</b>	1.5	48.5
<b>15</b>	1	14	<b>30</b>	1.5	28.5	<b>50</b>	2	48
<b>15</b>	1.5	13.5	<b>30</b>	2	28	<b>50</b>	3	47
<b>16</b>	1	15	<b>30</b>	3	27	<b>52</b>	1.5	50.5
<b>16</b>	1.5	14.5	<b>32</b>	1.5	30.5	<b>52</b>	2	50
<b>17</b>	1	16	<b>32</b>	2	30	<b>52</b>	3	49

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for HARDENED STEELS

STANDARD CARBIDE DRILLS

MULTI-1 DRILLS

HPD DRILLS

GOLD-P DRILLS

STRAIGHT SHANK DRILLS

AIRCRAFT DRILLS

SILVER &amp; DEMING DRILLS

TAPER SHANK DRILLS

NC SPOTTING DRILLS

CENTER DRILLS

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
G1 1/8	35.5	G3	85.0

**(4) American unified coarse threads**

UNC	Drill diameter		UNC	Drill diameter	
	inches	mm		inches	mm
<b>No. 1</b>	53	1.51	<b>7/16</b>	U	9.35
<b>No. 2</b>	50	1.78	<b>1/2</b>	27/64	10.71
<b>No. 3</b>	47	1.99	<b>9/16</b>	31/64	12.30
<b>No. 4</b>	43	2.26	<b>5/8</b>	17/32	13.49
<b>No. 5</b>	38	2.58	<b>3/4</b>	21/32	16.67
<b>No. 6</b>	36	2.71	<b>7/8</b>	49/64	19.44
<b>No. 8</b>	29	3.45	<b>1</b>	7/8	22.22
<b>No. 10</b>	25	3.8	<b>1 * 1/8</b>	63/64	25.00
<b>No. 12</b>	16	4.5	<b>1 * 1/4</b>	1 * 7/64	28.18
<b>1/4</b>	7	5.11	<b>1 * 3/8</b>	1 * 7/32	30.95
<b>5/16</b>	F	6.53	<b>1 * 1/2</b>	1 * 11/32	34.13
<b>3/8</b>	5/16	7.94			

**(5) American unified fine threads**

NF	Drill diameter		NF	Drill diameter	
	inches	mm		inches	mm
<b>No. 0</b>	3/64	1.19	<b>3/8</b>	Q	8.43
<b>No. 1</b>	53	1.51	<b>7/16</b>	25/64	9.92
<b>No. 2</b>	50	1.78	<b>1/2</b>	29/64	11.51
<b>No. 3</b>	45	2.08	<b>9/16</b>	33/64	13.10
<b>No. 4</b>	42	2.37	<b>5/8</b>	37/64	14.86
<b>No. 5</b>	37	2.64	<b>3/4</b>	11/16	17.46
<b>No. 6</b>	33	2.87	<b>7/8</b>	13/16	20.64
<b>No. 8</b>	29	3.45	<b>1</b>	59/64	23.42
<b>No. 10</b>	21	4.04	<b>1 * 1/8</b>	1 * 3/64	26.59
<b>No. 12</b>	14	4.62	<b>1 * 1/4</b>	1 * 11/32	29.76
<b>1/4</b>	3	5.41	<b>1 * 3/8</b>	1 * 19/32	32.94
<b>5/16</b>	1	6.91	<b>1 * 1/2</b>	1 * 27/64	36.11

## 14 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
<b>h6</b>	0 -.00024	0 -.00032	0 -.00036	0 -.00044	0 -.00052
<b>h7</b>	0 -.0004	0 -.00048	0 -.00059	0 -.00071	0 -.00083
<b>h8</b>	0 -.00056	0 -.00071	0 -.00087	0 -.00107	0 -.00130
<b>m7</b>	+0.00048 +.00007	+0.00063 +.00015	+0.00083 +.00023	+0.00099 +.00027	+0.00114 +.00031

## 15 Trouble Shooting in Drilling

Occurrence of trouble	Cause of trouble	Countermeasures
<b>Drill will not enter work</b>	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.
<b>Margin chipping</b>	1. Oversized jig bushing.	1. Choose the suitable jig bushing for drill diameter
<b>Cutting lip breaks</b>	1. Lip relief too much. 2. Feed too heavy.	1. Grind lip relief sufficiently. 2. Decrease feed rate.
<b>Tang breaks Bruch der</b>	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.
<b>Drill breaks in brass</b>	1. Unsuitable drill 2. Flutes clogged with chips	1. Choose the suitable drill for work material.
<b>Chipping of drill center</b>	1. Lip relief too much. 2. Feed too heavy.	1. Grind lip relief sufficiently. 2. Decrease feed rate.
<b>Hole oversize</b>	1. Unequal angle or length of cutting edges. 2. Loosen spindle.	1. Resharpener point, choose correct drills. 2. Tighten spindle sufficiently.
<b>Outer corners broken down</b>	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. Resharpener early before too wear.
<b>Large chip of one flute and small chip of other flute</b>	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.
<b>Hole rough</b>	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.

## 16 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

i-DREAM DRILLS

DREAM DRILLS

DREAM DRILLS -INOX

DREAM DRILLS -ALU

DREAM DRILLS -MQL TYPE

DREAM DRILLS for HARDENED STEELS

STANDARD CARBIDE DRILLS

MULTI-1 DRILLS

HPD DRILLS

GOLD-P DRILLS

STRAIGHT SHANK DRILLS

AIRCRAFT DRILLS

SILVER &amp; DEMING DRILLS

TAPER SHANK DRILLS

NC SPOTTING DRILLS

CENTER DRILLS

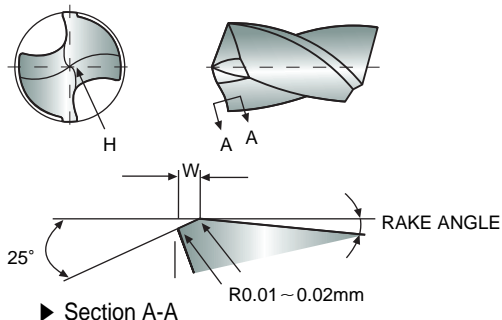
SPADE DRILLS

TECHNICAL DATA



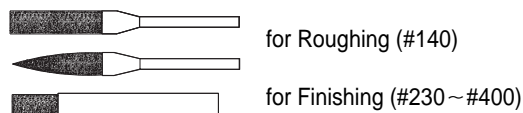
## 17 Honing Guide of DREAM DRILLS

### Dimension of Honing



▶ Section A-A

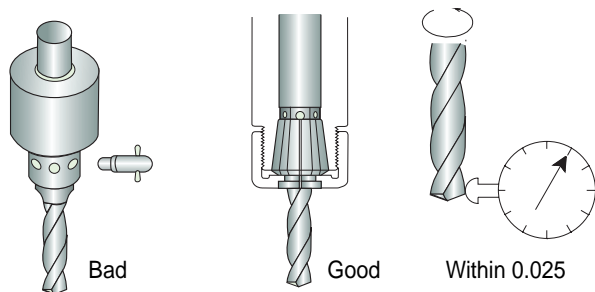
### Scraper



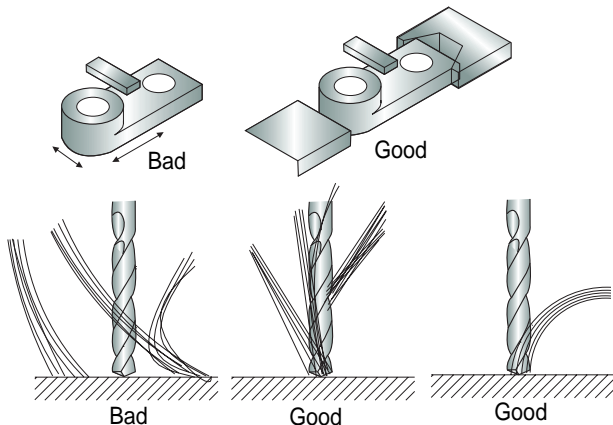
Work Material	Alloy Steels	Mild Steels	Cast Iron
W(mm)	0.15~0.2	0.1~0.15	0.03

▶ The dimension W of stocked products is 0.1~0.15.

## 18 Use of DREAM DRILLS

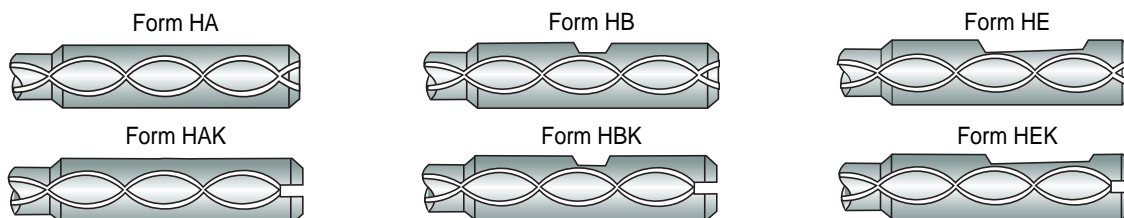


- ▶ Chucking with spring collet correctly.
- ▶ Radial run out at cutting lip must not exceed 0.025 mm.
- ▶ Tighten clamp of work piece.



- ▶ 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

HSS COMBO TAPS (Spiral Point & Spiral Flute)

HSS SPIRAL FLUTE TAPS

HSS SPIRAL POINT TAPS

HSS TAPER PIPE TAPS

HSS FORMING TAPS

HSS STANDARD TAPS

HSS HAND TAPS

TECHNICAL DATA

# Contents

## THREADING TOOLS

HSS TAPS

TECHNICAL DATA

# Contents / THREADING TOOLS

## HSS COMBO TAPS (Spiral Point & Spiral Flute)

Multi Purpose tapping, YG-1's Patent, HSS-EX. for Prevention of Oversize Threads

COMBO  
TAPS

## HSS SPIRAL FLUTE TAPS

Tapping Blind Holes, HSS-E & HSS-PM

SPIRAL  
FLUTE TAPS

## HSS SPIRAL POINT TAPS

Tapping Through Holes, HSS-E & HSS-PM

SPIRAL  
POINT TAPS

## HSS TAPER PIPE TAPS

Tapping NPT and NPTF Pipe threads

TAPER PIPE  
TAPS

## HSS FORMING TAPS

Tapping by Forming Soft Materials, HSS-E & HSS-PM

FORMING  
TAPS

## HSS STANDARD TAPS

Spiral Point and Spiral Flute Taps

STANDARD  
TAPS

## HSS HAND TAPS

HAND TAPS

## TECHNICAL DATA

TECHNICAL  
DATA







# THREADING TOOLS APPLICATION TABLE

## COMBO TAPS

INCH

● SPIRAL POINT TAP ● SPIRAL FLUTE TAP

EDP No.	MODEL	Tool Material	Standard	Dimensions	Tolerance	Chamfer	Surface Treatment	Page
● <b>T2 / T2-C</b>		HSS-EX	UNC/UNF	ANSI	H2 ~ H6	2P ~ 3P	Bright TiCN	<b>263</b>
● <b>T5 / T5-C</b>		HSS-EX	M	ANSI	D3 ~ D8	2P ~ 3P	Bright TiCN	<b>265</b>
● <b>T4 / T4-C</b>		HSS-EX	UNC/UNF	ANSI	H2 ~ H6	4P ~ 5P	Bright TiCN	<b>266</b>
● <b>T3 / T3-C</b>		HSS-EX	M	ANSI	D3 ~ D8	4P ~ 5P	Bright TiCN	<b>268</b>

## SPIRAL FLUTE TAPS

INCH

EDP No.	MODEL	Tool Material	Standard	Dimensions	Tolerance	Chamfer	Surface Treatment	Page
<b>BB/BI/BF/BK</b>		Super HSS	UNC/UNF	ANSI DIN Length ANSI Shank	H2~H6	2P ~ 3P	Steam Oxide Hardslick	<b>271</b>
<b>H6/H7/H8</b>		P-HSS	UNC/UNF	ANSI	H2~H5	2P ~ 3P	Bright / TiCN Hardslick	<b>272</b>
<b>B3/H9/B5/D6</b>		P-HSS	UNC/UNF	ANSI	H2~H5	2P ~ 3P	Steam Oxide TiCN / TiN Hardslick	<b>273</b>
<b>B1/B0/B2/D2</b>		HSSE-V3	UNC/UNF	ANSI	H2~H6	2P ~ 3P	Bright Steam Oxide TiN / Hardslick	<b>275</b>
<b>G7/G8/G9/H0</b>		P-HSS	UNC/UNF	ANSI Shank	H2~H3	4P ~ 5P	TiN Hardslick	<b>277</b>
<b>H1/H2/H3/H4</b>		P-HSS	UNC/UNF	ANSI Shank	H3	4P ~ 5P	TiN Hardslick	<b>278</b>
<b>D4/D3/E0</b>		HSSE-V3	UNC/UNF	ANSI	H2~H5	2P ~ 3P	Bright Steam Oxide Hardslick	<b>279</b>
<b>C0/D8</b>		HSSE-V3	UNC/UNF	ANSI	H2~H5	2P ~ 3P	Bright Hardslick	<b>281</b>
<b>F4/F8/F6</b>		HSS-V	UNC/UNF	ANSI	H2~H6	1.5P ~ 2P	Steam Oxide TiN / Hardslick	<b>282</b>
<b>G0/G1/G2</b>		HSS-V	UNC/UNF	DIN Length ANSI Shank	H2~H6	2P ~ 3P	Bright TiN / Hardslick	<b>284</b>
<b>ST/SI</b>		HSSE-V3	UNC/UNF	ANSI	2B	1.5P ~ 2P	Hardslick	<b>286</b>

⊙ : Excellent ○ : Good

Low carbon / Free machining carbon steel		Medium to high carbon steel		Steel castings & forgings / Heat-treatable alloy steels		Alloyed tool steels / Mold steels		Free machining stainless steel		Heat and corrosion-resistant stainless steel / Valve stainless steel		Stainless steel castings / Precipitation hardening stainless steel		Pure aluminium / Aluminium alloys		Aluminium alloy castings		Grey cast iron		Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron		71 / &625 INCO / Waspalloy / Hastelloy / Invar / Monel / Incoloy		718 Inconel / A286		Titanium		Pure and alloyed copper		Free machining brass / Alloyed brass		Bronze		Zinc		Magnesium	
Steel				Stainless steel				Aluminium				Cast iron				Nickel Alloy				Titanium		Copper		Brass		Bronze		Zinc		Magnesium							
<15	<23	>24 ≤38	<38 ≤44	<23	>24 ≤38	>38 ≤44																														Hardness (HRC)	
<180	<240	>250 ≤350	>350 ≤420	<240	>250 ≤350	>350 ≤420																													Hardness (BHN)		
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙			
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙		
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙		
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙		






○	⊙			⊙				○																													
		○	⊙		○	⊙																															
○	⊙			⊙				○																													
○	⊙			⊙				○																													
○	⊙			⊙				○																													
	⊙	⊙		○	○																																
								⊙	⊙																												
⊙	⊙	○		○	○			○																													
⊙	⊙	○		○	○			○																													
⊙	⊙	○		○	○			○																													



# THREADING TOOLS **APPLICATION TABLE**

## SPIRAL FLUTE TAPS

### METRIC

EDP No.	MODEL	Tool Material	Standard	Dimensions	Tolerance	Chamfer	Surface Treatment	Page
<b>BH/BM BD/BO</b>		Super HSS	M/MF	ANSI DIN Length ANSI Shank	D3~D7	2P~3P	Steam Oxide Hardslick	<b>287</b>
<b>BS/BT E6/E8/E9</b>		HSSE-V3	M/MF	ANSI DIN Length ANSI Shank	D3~D7	2P~3P	Steam Oxide TiCN / Hardslick	<b>288</b>
<b>BU/BV E2/E4/E5</b>		HSSE-V3	M/MF	ANSI DIN Length ANSI Shank	D3~D7	2P~3P	Steam Oxide TiCN / Hardslick	<b>289</b>
<b>BW/BX F1/F3</b>		HSSE-V3	M/MF	ANSI DIN Length ANSI Shank	D3~D6	2P~3P	Bright Hardslick	<b>290</b>
<b>G4/G5/G6</b>		HSS-V	M/MF	ANSI	D3~D6	1.5P~2P	Bright TiCN / Hardslick	<b>291</b>

## SPIRAL POINT TAPS

### INCH

EDP No.	MODEL	Tool Material	Standard	Dimensions	Tolerance	Chamfer	Surface Treatment	Page
<b>M9/O1 N4/O5</b>		Super HSS	UNC/UNF	ANSI DIN Length ANSI Shank	H2~H6	4P~5P	Steam Oxide Hardslick	<b>295</b>
<b>M5/M6/M7</b>		P-HSS	UNC/UNF	ANSI	H2~H5	4P~5P	Bright / TiCN Hardslick	<b>296</b>
<b>I3/M8/I5/J6</b>		P-HSS	UNC/UNF	ANSI	H2~H5	4P~5P	Steam Oxide TiCN / TiN Hardslick	<b>297</b>
<b>I0/I2/J2</b>		HSSE-V3	UNC/UNF	ANSI	H2~H6	4P~5P	Steam Oxide TiN / Hardslick	<b>299</b>
<b>M0/M1/M2/M3</b>		P-HSS	UNC/UNF	ANSI Long Shank	H2~H3	4P~5P	TiN Hardslick	<b>301</b>
<b>J4/J8/J3</b>		HSSE-V3	UNC/UNF	ANSI	H2~H5	4P~5P	Bright Steam Oxide Hardslick	<b>302</b>
<b>K9/L0/L1</b>		HSS-V	UNC/UNF	ANSI	H2~H6	4P~5P	Bright TiN / Hardslick	<b>304</b>
<b>L3/L4/L5</b>		HSS-V	UNC/UNF	DIN Length ANSI Shank	H2~H6	4P~5P	Bright TiN / Hardslick	<b>306</b>
<b>ST/SI</b>		HSSE-V3	UNC/UNF	ANSI	2B	4.5P~5P	Hardslick	<b>307</b>





Low carbon / Free machining carbon steel		Medium to high carbon steel		Steel castings & forgings / Heat-treatable alloy steels		Alloyed tool steels / Mold steels		Free machining stainless steel		Heat and corrosion-resistant stainless steel / Valve stainless steel		Stainless steel castings / Precipitation hardening stainless steel		Pure aluminium / Aluminium alloys		Aluminium alloy castings		Grey cast iron		Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron		71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy		718 Inconel / A286		Titanium		Pure and alloyed copper		Free machining brass / Alloyed brass		Bronze		Zinc		Magnesium	
Steel				Stainless steel				Aluminium				Cast iron				Nickel Alloy				Titanium		Copper		Brass		Bronze		Zinc		Magnesium							
<15	<23	>24 ≤38	<38 ≤44	<23	>24 ≤38	>38 ≤44																													Hardness (HRC)		
<180	<240	>250 ≤350	>350 ≤420	<240	>250 ≤350	>350 ≤420																												Hardness (BHN)			
○	●			●				○																	○	○			○	○							
○	●			●				○																	○	○			○	○							
	●	●		○	○															○																	
								●	●																												
●	●	○		○	○									○																							

○	●			●				○																	○	○			○	○						
		○	●		○	●														○	○	○					●									
																				○	○	○														
○	●			●				○																	○	○			○	○						
○	●			●				○																	○	○			○	○						
	●	●		○	○															○																
●	●	○		○	○									○																						
●	●	○		○	○									○																						
●	●	○		○	○									○																						

# THREADING TOOLS **APPLICATION TABLE**





## SPIRAL POINT TAPS

### METRIC

EDP No.	MODEL	Tool Material	Standard	Dimensions	Tolerance	Chamfer	Surface Treatment	Page
<b>N7/N8 N3/O3</b>		Super HSS	M/MF	ANSI DIN Length ANSI Shank	D3~D7	4P~5P	Steam Oxide Hardslick	<b>308</b>
<b>O9/IA K3/K5/K6</b>		HSSE-V3	M/MF	ANSI DIN Length ANSI Shank	D3~D7	4P~5P	Steam Oxide TiCN / Hardslick	<b>309</b>
<b>IB/IC J9/K7/K2</b>		HSSE-V3	M/MF	ANSI DIN Length ANSI Shank	D3~D7	4P~5P	Steam Oxide TiCN / Hardslick	<b>310</b>
<b>L7/L8/L9</b>		HSS-V	M/MF	ANSI	D3~D6	4P~5P	Bright TiCN / Hardslick	<b>311</b>



## TAPER PIPE TAPS

### INCH

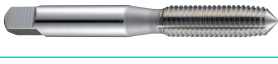
EDP No.	MODEL	Tool Material	Standard	Dimensions	Tolerance	Chamfer	Surface Treatment	Page
<b>Q0/Q1/Q6</b>		HSSE-V3	NPT/F	ANSI		2P~3P	Bright Steam Oxide Hardslick	<b>315</b>
<b>Q9/R0/R1</b>		HSSE-V3	NPT/F	ANSI		2P~3P	Bright / TiN Hardslick	<b>316</b>
<b>R7/R8/R9/S0</b>		HSSE-V3	NPT/F	ANSI		2P~3P	Bright / TiN Hardslick Nitrided-Steam Oxide	<b>317</b>
<b>S1/S2</b>		HSSE-V3	NPTF	ANSI		2P~3P	Bright / TiCN	<b>318</b>

## FORMING TAPS

### INCH

EDP No.	MODEL	Tool Material	Standard	Dimensions	Tolerance	Chamfer	Surface Treatment	Page
<b>Z0/Z1/Z2/Z3</b>		HSSE-V3	UNC/UNF	ANSI	H3~H8	4P~5P 1.5P~2P	Bright / TiN	<b>321</b>
<b>Z4/Z5/Z6/Z7</b>		HSSE-V3	UNC/UNF	ANSI	H3~H8	4P~5P 1.5P~2P	Bright / TiN	<b>322</b>

### METRIC

EDP No.	MODEL	Tool Material	Standard	Dimensions	Tolerance	Chamfer	Surface Treatment	Page
<b>Z8/ZA/ZC</b>		HSSE-V3	M/MF	ANSI	D5~D11	4P~5P 1.5P~2P	Bright TiN / TiCN	<b>323</b>

⊙ : Excellent ○ : Good

Low carbon / Free machining carbon steel		Medium to high carbon steel		Steel castings & forgings / Heat-treatable alloy steels		Alloyed tool steels / Mold steels		Free machining stainless steel		Heat and corrosion-resistant stainless steel / Valve stainless steel		Stainless steel castings / Precipitation hardening stainless steel		Pure aluminium / Aluminium alloys		Aluminium alloy castings		Grey cast iron		Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron		71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy		718 Inconel / A286		Titanium		Pure and alloyed copper		Free machining brass / Alloyed brass		Bronze		Zinc		Magnesium	
Steel				Stainless steel				Aluminium				Cast iron				Nickel Alloy				Titanium		Copper		Brass		Bronze		Zinc		Magnesium							
<15	<23	>24 ≤38	<38 ≤44	<23	>24 ≤38	>38 ≤44																														Hardness (HRC)	
<180	<240	>250 ≤350	>350 ≤420	<240	>250 ≤350	>350 ≤420																												Hardness (BHN)			
○	⊙			⊙				○																													
	⊙	○		⊙	○					○																											
	⊙	⊙		○	○																○																
⊙	⊙	○		○	○																○																

○	⊙	○		⊙	○				○																											
⊙	⊙	○																			⊙	⊙														
⊙	⊙	○																			⊙	⊙														
⊙	⊙	○																			⊙	⊙														



⊙	⊙			⊙				⊙	⊙																											
⊙	⊙			⊙				⊙	⊙												⊙	⊙														

⊙	⊙			⊙				⊙	⊙																											
---	---	--	--	---	--	--	--	---	---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

# THREADING TOOLS **APPLICATION TABLE**


## STANDARD TAPS

### INCH


EDP No.	MODEL	Tool Material	Standard	Dimensions	Tolerance	Chamfer	Surface Treatment	Page
<b>C2/C3/C4/D9</b>		HSSE-V3	UNC/UNF	ANSI	H2~H6	1.5P~2P	Steam Oxide Bright / TiN Hardslick	<b>327</b>
<b>I9/J0/J1/J7</b>		HSSE-V3	UNC/UNF	ANSI	H2~H6	4P~5P	Steam Oxide Bright / TiN Hardslick	<b>328</b>

## HAND TAPS

### INCH

EDP No.	MODEL	Tool Material	Standard	Dimensions	Tolerance	Chamfer	Surface Treatment	Page
<b>A3/A5/A7</b>		HSS-V	UNC/UNF	ANSI	H2~H4	9/4/1.5P	Bright	<b>331</b>

### METRIC

EDP No.	MODEL	Tool Material	Standard	Dimensions	Tolerance	Chamfer	Surface Treatment	Page
<b>A6/A9</b>		HSS-V	M	ANSI	D3~D9	4/1.5P	Bright	<b>332</b>

● : Excellent ○ : Good

Low carbon / Free machining carbon steel		Medium to high carbon steel		Steel castings & forgings / Heat-treatable alloy steels		Alloyed tool steels / Mold steels		Free machining stainless steel		Heat and corrosion-resistant stainless steel / Valve stainless steel		Stainless steel castings / Precipitation hardening stainless steel		Pure aluminium / Aluminium alloys		Aluminium alloy castings		Grey cast iron		Nodular cast iron / Chilled cast iron / Meehanite iron / Ductile iron		71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy		718 Inconel / A286		Titanium		Pure and alloyed copper		Free machining brass / Alloyed brass		Bronze		Zinc		Magnesium				
Steel				Stainless steel				Aluminium				Cast iron				Nickel Alloy				Titanium		Copper		Brass		Bronze		Zinc		Magnesium										
<15	<23	>24 ≤38	<38 ≤44	<23	>24 ≤38	>38 ≤44																																		
<180	<240	>250 ≤350	>350 ≤420	<240	>250 ≤350	>350 ≤420												≤220	≥250	≤350	>350 ≤420	≤38	<38 ≤44	≤38																
○	○	○		○	○			○						○						○																				
○	○	○		○	○			○						○						○																				
○	○			○				○	○					○	○													○	○				○	○						
○	○	○		○	○									○						○																				

# HARD slick

## 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

TAP SUBSTRATE -  
67Rc .8 Coefficient of Friction

TIALN - 90Rc

WC/C - .2 Coefficient of Friction



**HSS**



Being the best through innovation



# COMBO TAPS

**Spiral Point and Spiral Flute Taps**  
Multi Purpose tapping, YG-1's Patent, HSS-EX  
for Prevention of Oversize Threads







# SELECTION GUIDE

## Spiral Point and Spiral Flute Taps

Multi Purpose tapping, YG-1's Patent, HSS-EX  
for Prevention of Oversize Threads

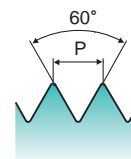
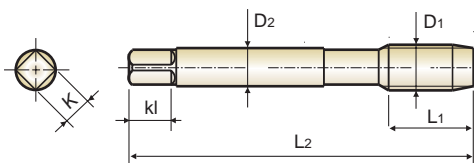
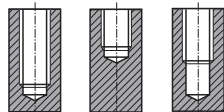
### INCH

● SPIRAL POINT TAP ● SPIRAL FLUTE TAP

EDP No.	MODEL	Tool Material	Standard	Dimensions	Tolerance	Chamfer	Surface Treatment	Page
● <b>T2 / T2-C</b>		HSS-EX	UNC/UNF	ANSI	H2 ~ H6	2P ~ 3P	Bright TiCN	<b>263</b>
● <b>T5 / T5-C</b>		HSS-EX	M	ANSI	D3 ~ D8	2P ~ 3P	Bright TiCN	<b>265</b>
● <b>T4 / T4-C</b>		HSS-EX	UNC/UNF	ANSI	H2 ~ H6	4P ~ 5P	Bright TiCN	<b>266</b>
● <b>T3 / T3-C</b>		HSS-EX	M	ANSI	D3 ~ D8	4P ~ 5P	Bright TiCN	<b>268</b>

## SPIRAL FLUTE TAPS for Multi-Purpose

- ▶ Reduces Tap breakage, ensures accurate thread depth
- ▶ Eliminates loose threads due to Tap Overfeeding
- ▶ Improves Thread quality & chip evacuation
- ▶ Allows Tapping of many metals including Stainless Steel & Steels
- ▶ Eliminates "Bird Nests" around tap shank


**ANSI**

**Hole type**


HSS-EX

UNC UNF

H2~H6

60°

2P~3P

Bright

TiCN

R40

Unit : Inch

EDP No.		SIZE	TPI	Limit	Thread Length	Overall Length	Shank Diameter	Square Size	Square Length	No. of Flute
Bright Finish	TiCN Coated	D1	L1		L2	D2	K	kl		
<b>T2162</b>	<b>T2162C</b>	#4 - 40 UNC	<b>H2</b>	.236	1.88	.141	.110	.188	2	
<b>T2182</b>	<b>T2182C</b>	#4 - 48 UNF	<b>H2</b>	.236	1.88	.141	.110	.188	2	
<b>T2202</b>	<b>T2202C</b>	#5 - 40 UNC	<b>H2</b>	.236	1.94	.141	.110	.188	3	
<b>T2222</b>	<b>T2222C</b>	#5 - 44 UNF	<b>H2</b>	.236	1.94	.141	.110	.188	3	
<b>T2243</b>	<b>T2243C</b>	#6 - 32 UNC	<b>H3</b>	.276	2.00	.141	.110	.188	3	
<b>T2262</b>	<b>T2262C</b>	#6 - 40 UNF	<b>H2</b>	.276	2.00	.141	.110	.188	3	
<b>T2283</b>	<b>T2283C</b>	#8 - 32 UNC	<b>H3</b>	.276	2.13	.168	.131	.250	3	
<b>T2302</b>	<b>T2302C</b>	#8 - 36 UNF	<b>H2</b>	.276	2.13	.168	.131	.250	3	
<b>T2323</b>	<b>T2323C</b>	#10 - 24 UNC	<b>H3</b>	.354	2.38	.194	.152	.250	3	
<b>T2343</b>	<b>T2343C</b>	#10 - 32 UNF	<b>H3</b>	.276	2.38	.194	.152	.250	3	
<b>T2363</b>	<b>T2363C</b>	#12 - 24 UNC	<b>H3</b>	.354	2.38	.220	.165	.281	3	
<b>T2383</b>	<b>T2383C</b>	#12 - 28 UNF	<b>H3</b>	.276	2.38	.220	.165	.281	3	
<b>T2403</b>	<b>T2403C</b>	1/4 - 20 UNC	<b>H3</b>	.433	2.50	.255	.191	.312	3	
<b>T2405</b>	<b>T2405C</b>	1/4 - 20 UNF	<b>H5</b>	.433	2.50	.255	.191	.312	3	
<b>T2423</b>	<b>T2423C</b>	1/4 - 28 UNF	<b>H3</b>	.354	2.50	.255	.191	.312	3	
<b>T2424</b>	<b>T2424C</b>	1/4 - 28 UNF	<b>H4</b>	.354	2.50	.255	.191	.312	3	
<b>T2443</b>	<b>T2443C</b>	5/16 - 18 UNC	<b>H3</b>	.472	2.72	.318	.238	.375	3	
<b>T2445</b>	<b>T2445C</b>	5/16 - 18 UNF	<b>H5</b>	.472	2.72	.318	.238	.375	3	
<b>T2463</b>	<b>T2463C</b>	5/16 - 24 UNF	<b>H3</b>	.394	2.72	.318	.238	.375	3	
<b>T2465</b>	<b>T2465C</b>	5/16 - 24 UNF	<b>H5</b>	.394	2.72	.318	.238	.375	3	

▶ Bold H Limits denote most popular limits.

▶ 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

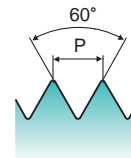
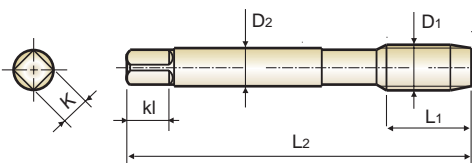
Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
◎	◎	◎	◎	◎	◎	◎	◎			
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
◎	◎	◎	○	○	○	◎	◎	◎	◎	◎

**SPIRAL FLUTE TAPS for Multi-Purpose**

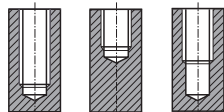
- ▶ Reduces Tap breakage, ensures accurate thread depth
- ▶ Eliminates loose threads due to Tap Overfeeding
- ▶ Improves Thread quality & chip evacuation
- ▶ Allows Tapping of many metals including Stainless Steel & Steels
- ▶ Eliminates "Bird Nests" around tap shank



ANSI



**Hole type**



HSS-EX
UNC UNF
H2~H6
60°
2P~3P
Bright
TiCN
R40

Unit : Inch

EDP No.		SIZE	TPI	Limit	Thread Length	Overall Length	Shank Diameter	Square Size	Square Length	No. of Flute
Bright Finish	TiCN Coated	D1			L1	L2	D2	K	kl	
<b>T2483</b>	<b>T2483C</b>	3/8	- 16 UNC	<b>H3</b>	.551	2.94	.381	.286	.438	3
<b>T2485</b>	<b>T2485C</b>	3/8	- 16 UNC	H5	.551	2.94	.381	.286	.438	3
<b>T2503</b>	<b>T2503C</b>	3/8	- 24 UNF	<b>H3</b>	.394	2.94	.381	.286	.438	3
<b>T2504</b>	<b>T2504C</b>	3/8	- 24 UNF	H4	.394	2.94	.381	.286	.438	3
<b>T2523</b>	<b>T2523C</b>	7/16	- 14 UNC	<b>H3</b>	.591	3.16	.323	.242	.406	3
<b>T2525</b>	<b>T2525C</b>	7/16	- 14 UNC	H5	.591	3.16	.323	.242	.406	3
<b>T2543</b>	<b>T2543C</b>	7/16	- 20 UNF	<b>H3</b>	.472	3.16	.323	.242	.406	3
<b>T2545</b>	<b>T2545C</b>	7/16	- 20 UNF	H5	.472	3.16	.323	.242	.406	3
<b>T2565</b>	<b>T2565C</b>	1/2	- 13 UNC	H5	.630	3.38	.367	.275	.438	3
<b>T2585</b>	<b>T2585C</b>	1/2	- 20 UNF	H5	.472	3.38	.367	.275	.438	3
<b>T2605</b>	<b>T2605C</b>	9/16	- 12 UNC	<b>H5</b>	.709	3.59	.429	.322	.500	3
<b>T2625</b>	<b>T2625C</b>	9/16	- 18 UNF	<b>H5</b>	.512	3.59	.429	.322	.500	3
<b>T2645</b>	<b>T2645C</b>	5/8	- 11 UNC	H5	.748	3.81	.480	.360	.562	4
<b>T2665</b>	<b>T2665C</b>	5/8	- 18 UNF	H5	.512	3.81	.480	.360	.562	4
<b>T2705</b>	<b>T2705C</b>	3/4	- 10 UNC	H5	.827	4.25	.590	.442	.688	4
<b>T2725</b>	<b>T2725C</b>	3/4	- 16 UNF	H5	.591	4.25	.590	.442	.688	4
<b>T2746</b>	<b>T2746C</b>	7/8	- 9 UNC	H6	.827	4.69	.697	.523	.750	4
<b>T2766</b>	<b>T2766C</b>	7/8	- 14 UNF	H6	.709	4.69	.697	.523	.750	4
<b>T2786</b>	<b>T2786C</b>	1"	- 8 UNC	H6	.984	5.13	.800	.600	.812	4
<b>T2806</b>	<b>T2806C</b>	1"	- 12 UNF	H6	.709	5.13	.800	.600	.812	4

▶ Bold H Limits denote most popular limits.

▶ Coating(TiN, TiAlN or Hardslick) or Surface Treatment(Steam Oxide) is available on your request.

▶ Coating Codes for Combo Tap

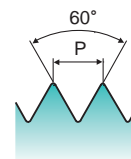
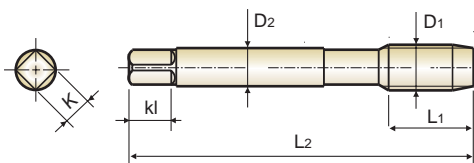
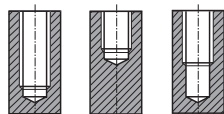
Bright Finish No. + N(Tin), F(TiAlN), H(Hardslick), S(Steam Oxide)

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminum / Aluminium alloys			
◎	◎	◎	◎	◎	◎	◎	◎			
Alluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
◎	◎	◎	○	○	○	◎	◎	◎	◎	◎

## SPIRAL FLUTE TAPS for Multi-Purpose

- ▶ Reduces Tap breakage, ensures accurate thread depth
- ▶ Eliminates loose threads due to Tap Overfeeding
- ▶ Improves Thread quality & chip evacuation
- ▶ Allows Tapping of many metals including Stainless Steel & Steels
- ▶ Eliminates "Bird Nests" around tap shank


**Hole type**


HSS-EX

M

D3~D8

60°

2P~3P

Bright

TiCN

R40

Unit : Inch

EDP No.		SIZE	TPI	Limit	Thread Length	Overall Length	Shank Diameter	Square Size	Square Length	No. of Flute
Bright Finish	TiCN Coated	D1			L1	L2	D2	K	kl	
<b>T5203</b>	<b>T5203C</b>	M3 x 0.5	D3	.197	1.94	.141	.110	.188	3	
<b>T5224</b>	<b>T5224C</b>	M3.5 x 0.6	D4	.276	2.00	.141	.110	.188	3	
<b>T5244</b>	<b>T5244C</b>	M4 x 0.7	D4	.276	2.13	.168	.131	.250	3	
<b>T5284</b>	<b>T5284C</b>	M5 x 0.8	D4	.354	2.38	.194	.152	.250	3	
<b>T5315</b>	<b>T5315C</b>	M6 x 1.0	D5	.433	2.50	.255	.191	.312	3	
<b>T5345</b>	<b>T5345C</b>	M7 x 1.0	D5	.433	2.72	.318	.238	.375	3	
<b>T5365</b>	<b>T5365C</b>	M8 x 1.25	D5	.472	2.72	.318	.238	.375	3	
<b>T5375</b>	<b>T5375C</b>	M8 x 1.0	D5	.433	2.72	.318	.238	.375	3	
<b>T5426</b>	<b>T5426C</b>	M10 x 1.5	D6	.512	2.94	.381	.286	.438	3	
<b>T5435</b>	<b>T5435C</b>	M10 x 1.25	D5	.472	2.94	.381	.286	.438	3	
<b>T5506</b>	<b>T5506C</b>	M12 x 1.75	D6	.591	3.38	.367	.275	.438	3	
<b>T5525</b>	<b>T5525C</b>	M12 x 1.25	D5	.551	3.38	.367	.275	.438	3	
<b>T5547</b>	<b>T5547C</b>	M14 x 2.0	D7	.709	3.59	.429	.322	.500	3	
<b>T5556</b>	<b>T5556C</b>	M14 x 1.5	D6	.551	3.59	.429	.322	.500	3	
<b>T5607</b>	<b>T5607C</b>	M16 x 2.0	D7	.709	3.81	.480	.360	.562	3	
<b>T5616</b>	<b>T5616C</b>	M16 x 1.5	D6	.551	3.81	.480	.360	.562	3	
<b>T5657</b>	<b>T5657C</b>	M18 x 2.5	D7	.787	4.03	.542	.406	.625	4	
<b>T5676</b>	<b>T5676C</b>	M18 x 1.5	D6	.551	4.03	.542	.406	.625	4	
<b>T5707</b>	<b>T5707C</b>	M20 x 2.5	D7	.787	4.47	.652	.489	.688	4	
<b>T5726</b>	<b>T5726C</b>	M20 x 1.5	D6	.551	4.47	.652	.489	.688	4	
<b>T5747</b>	<b>T5747C</b>	M22 x 2.5	D7	.787	4.69	.697	.523	.750	4	
<b>T5766</b>	<b>T5766C</b>	M22 x 1.5	D6	.551	4.69	.697	.523	.750	4	
<b>T5788</b>	<b>T5788C</b>	M24 x 3.0	D8	.945	4.91	.760	.570	.750	4	

- ▶ 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

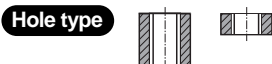
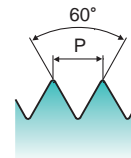
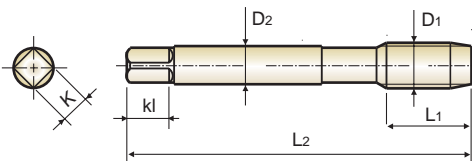
Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
◎	◎	◎	◎	◎	◎	◎	◎			
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
◎	◎	◎	○	○	○	◎	◎	◎	◎	◎

**SPIRAL POINT TAPS for Multi-Purpose**

- ▶ Reduces Tap breakage, ensures accurate thread depth
- ▶ Eliminates loose threads due to Tap Overfeeding
- ▶ Improves Thread quality & chip evacuation
- ▶ Allows Tapping of many metals including Stainless Steel & Steels
- ▶ Eliminates "Bird Nests" around tap shank



ANSI



HSS-EX
UNC UNF
H2~H6
60°
4P~5P
Bright
TiCN

Unit : Inch

EDP No.		SIZE	TPI	Limit	Thread Length	Overall Length	Shank Diameter	Square Size	Square Length	No. of Flute
Bright Finish	TiCN Coated	D1			L1	L2	D2	K	kl	
T4162	T4162C	#4	- 40 UNC	<b>H2</b>	.335	1.88	.141	.110	.188	2
T4182	T4182C	#4	- 48 UNF	<b>H2</b>	.335	1.88	.141	.110	.188	2
T4202	T4202C	#5	- 40 UNC	<b>H2</b>	.374	1.94	.141	.110	.188	3
T4222	T4222C	#5	- 44 UNF	<b>H2</b>	.374	1.94	.141	.110	.188	3
T4243	T4243C	#6	- 32 UNC	<b>H3</b>	.413	2.00	.141	.110	.188	3
T4262	T4262C	#6	- 40 UNF	<b>H2</b>	.413	2.00	.141	.110	.188	3
T4283	T4283C	#8	- 32 UNC	<b>H3</b>	.453	2.13	.168	.131	.250	3
T4302	T4302C	#8	- 36 UNF	<b>H2</b>	.453	2.13	.168	.131	.250	3
T4323	T4323C	#10	- 24 UNC	<b>H3</b>	.531	2.38	.194	.152	.250	3
T4343	T4343C	#10	- 32 UNF	<b>H3</b>	.531	2.38	.194	.152	.250	3
T4363	T4363C	#12	- 24 UNC	<b>H3</b>	.571	2.38	.220	.165	.281	3
T4383	T4383C	#12	- 28 UNF	<b>H3</b>	.571	2.38	.220	.165	.281	3
T4403	T4403C	1/4	- 20 UNC	<b>H3</b>	.591	2.50	.255	.191	.312	3
T4405	T4405C	1/4	- 20 UNC	H5	.591	2.50	.255	.191	.312	3
T4423	T4423C	1/4	- 28 UNF	<b>H3</b>	.591	2.50	.255	.191	.312	3
T4424	T4424C	1/4	- 28 UNF	H4	.591	2.50	.255	.191	.312	3
T4443	T4443C	5/16	- 18 UNC	<b>H3</b>	.669	2.72	.318	.238	.375	3
T4445	T4445C	5/16	- 18 UNC	H5	.669	2.72	.318	.238	.375	3
T4463	T4463C	5/16	- 24 UNF	<b>H3</b>	.669	2.72	.318	.238	.375	3
T4465	T4465C	5/16	- 24 UNF	H5	.669	2.72	.318	.238	.375	3

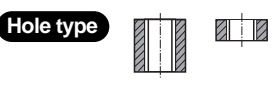
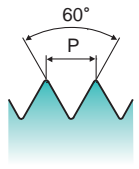
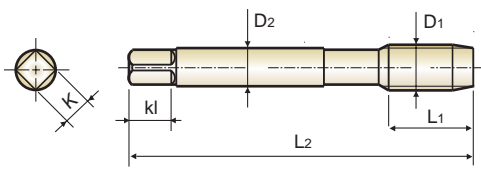
- ▶ Bold H Limits denote most popular limits.
- ▶ Coating(TiN, TiAlN or Hardslick) or Surface Treatment(Steam Oxide) is available on your request.
- ▶ Coating Codes for Combo Tap  
Bright Finish No. + N(Tin), F(TiAlN), H(Hardslick), S(Steam Oxide)

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
◎	◎	◎	◎	◎	◎	◎	◎			
Alluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
◎	◎	◎	○	○	○	◎	◎	◎	◎	◎

# SPIRAL POINT TAPS for Multi-Purpose

- ▶ Reduces Tap breakage, ensures accurate thread depth
- ▶ Eliminates loose threads due to Tap Overfeeding
- ▶ Improves Thread quality & chip evacuation
- ▶ Allows Tapping of many metals including Stainless Steel & Steels
- ▶ Eliminates "Bird Nests" around tap shank



HSS-EX
UNC UNF
H2~H6
60°
4P~5P
Bright
TiCN

Unit : Inch

EDP No.		SIZE	TPI	Limit	Thread Length	Overall Length	Shank Diameter	Square Size	Square Length	No. of Flute
Bright Finish	TiCN Coated	D1	L1		L2	D2	K	kl		
<b>T4483</b>	<b>T4483C</b>	3/8 - 16 UNC	<b>H3</b>	.748	2.94	.381	.286	.438	3	
<b>T4485</b>	<b>T4485C</b>	3/8 - 16 UNC	H5	.748	2.94	.381	.286	.438	3	
<b>T4503</b>	<b>T4503C</b>	3/8 - 24 UNF	<b>H3</b>	.748	2.94	.381	.286	.438	3	
<b>T4504</b>	<b>T4504C</b>	3/8 - 24 UNF	H4	.748	2.94	.381	.286	.438	3	
<b>T4523</b>	<b>T4523C</b>	7/16 - 14 UNC	<b>H3</b>	.866	3.16	.323	.242	.406	3	
<b>T4525</b>	<b>T4525C</b>	7/16 - 14 UNC	H5	.866	3.16	.323	.242	.406	3	
<b>T4543</b>	<b>T4543C</b>	7/16 - 20 UNF	<b>H3</b>	.866	3.16	.323	.242	.406	3	
<b>T4545</b>	<b>T4545C</b>	7/16 - 20 UNF	H5	.866	3.16	.323	.242	.406	3	
<b>T4565</b>	<b>T4565C</b>	1/2 - 13 UNC	H5	.984	3.38	.367	.275	.438	3	
<b>T4585</b>	<b>T4585C</b>	1/2 - 20 UNF	H5	.984	3.38	.367	.275	.438	3	
<b>T4605</b>	<b>T4605C</b>	9/16 - 12 UNC	<b>H5</b>	.984	3.59	.429	.322	.500	3	
<b>T4625</b>	<b>T4625C</b>	9/16 - 18 UNF	<b>H5</b>	.984	3.59	.429	.322	.500	3	
<b>T4645</b>	<b>T4645C</b>	5/8 - 11 UNC	H5	1.083	3.81	.480	.360	.562	3	
<b>T4665</b>	<b>T4665C</b>	5/8 - 18 UNF	H5	1.083	3.81	.480	.360	.562	3	
<b>T4705</b>	<b>T4705C</b>	3/4 - 10 UNC	H5	1.201	4.25	.590	.442	.688	3	
<b>T4725</b>	<b>T4725C</b>	3/4 - 16 UNF	H5	1.201	4.25	.590	.442	.688	3	
<b>T4746</b>	<b>T4746C</b>	7/8 - 9 UNC	H6	1.339	4.69	.697	.523	.750	3	
<b>T4766</b>	<b>T4766C</b>	7/8 - 14 UNF	H6	1.339	4.69	.697	.523	.750	3	
<b>T4786</b>	<b>T4786C</b>	1" - 8 UNC	H6	1.496	5.13	.800	.600	.812	3	
<b>T4806</b>	<b>T4806C</b>	1" - 12 UNF	H6	1.496	5.13	.800	.600	.812	3	

- ▶ Bold H Limits denote most popular limits.
- ▶ 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

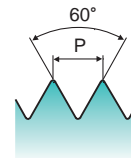
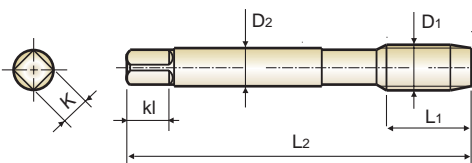
Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
◎	◎	◎	◎	◎	◎	◎	◎			
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
◎	◎	◎	○	○	○	◎	◎	◎	◎	◎

**SPIRAL POINT TAPS for Multi-Purpose**

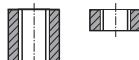
- ▶ Reduces Tap breakage, ensures accurate thread depth
- ▶ Eliminates loose threads due to Tap Overfeeding
- ▶ Improves Thread quality & chip evacuation
- ▶ Allows Tapping of many metals including Stainless Steel & Steels
- ▶ Eliminates "Bird Nests" around tap shank



ANSI



Hole type



HSS-EX
M
D3~D8
60°
4P~5P
Bright
TiCN

Unit : Inch

EDP No.		SIZE	TPI	Limit	Thread Length	Overall Length	Shank Diameter	Square Size	Square Length	No. of Flute
Bright Finish	TiCN Coated	D1			L1	L2	D2	K	kl	
T3203	T3203C	M3	x 0.5	D3	.374	1.94	.141	.110	.188	3
T3224	T3224C	M3.5	x 0.6	D4	.413	2.00	.141	.110	.188	3
T3244	T3244C	M4	x 0.7	D4	.453	2.13	.168	.131	.250	3
T3284	T3284C	M5	x 0.8	D4	.531	2.38	.194	.152	.250	3
T3315	T3315C	M6	x 1.0	D5	.591	2.50	.255	.191	.312	3
T3345	T3345C	M7	x 1.0	D5	.669	2.72	.318	.238	.375	3
T3365	T3365C	M8	x 1.25	D5	.669	2.72	.318	.238	.375	3
T3375	T3375C	M8	x 1.0	D5	.669	2.72	.318	.238	.375	3
T3426	T3426C	M10	x 1.5	D6	.748	2.94	.381	.286	.438	3
T3435	T3435C	M10	x 1.25	D5	.748	2.94	.381	.286	.438	3
T3506	T3506C	M12	x 1.75	D6	.984	3.38	.367	.275	.438	3
T3525	T3525C	M12	x 1.25	D5	.984	3.38	.367	.275	.438	3
T3547	T3547C	M14	x 2.0	D7	.984	3.59	.429	.322	.500	3
T3556	T3556C	M14	x 1.5	D6	.984	3.59	.429	.322	.500	3
T3607	T3607C	M16	x 2.0	D7	1.083	3.81	.480	.360	.562	3
T3616	T3616C	M16	x 1.5	D6	1.083	3.81	.480	.360	.562	3
T3657	T3657C	M18	x 2.5	D7	1.083	4.03	.542	.406	.625	3
T3676	T3676C	M18	x 1.5	D6	1.083	4.03	.542	.406	.625	3
T3707	T3707C	M20	x 2.5	D7	1.201	4.47	.652	.489	.688	3
T3726	T3726C	M20	x 1.5	D6	1.201	4.47	.652	.489	.688	3
T3747	T3747C	M22	x 2.5	D7	1.339	4.69	.697	.523	.750	3
T3766	T3766C	M22	x 1.5	D6	1.339	4.69	.697	.523	.750	3
T3788	T3788C	M24	x 3.0	D8	1.339	4.91	.760	.570	.750	3

- ▶ 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

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminum / Aluminium alloys			
◎	◎	◎	◎	◎	◎	◎	◎			
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
◎	◎	◎	○	○	○	◎	◎	◎	◎	◎

**HSS**



Being the best through innovation



# **SPIRAL FLUTE TAPS**

Tapping Blind Holes, HSS-E & HSS-PM








# SELECTION GUIDE

## SPIRAL FLUTE TAPS

### INCH

EDP No.	MODEL	Tool Material	Standard	Dimensions	Tolerance	Chamfer	Surface Treatment	Page
<b>BB/BI/BF/BK</b>		Super HSS	UNC/UNF	ANSI DIN Length ANSI Shank	H2~H6	2P ~ 3P	Steam Oxide Hardslick	<b>271</b>
<b>H6/H7/H8</b>		P-HSS	UNC/UNF	ANSI	H2~H5	2P ~ 3P	Bright / TiCN Hardslick	<b>272</b>
<b>B3/H9/B5/D6</b>		P-HSS	UNC/UNF	ANSI	H2~H5	2P ~ 3P	Steam Oxide TiCN / TiN Hardslick	<b>273</b>
<b>B1/B0/B2/D2</b>		HSSE-V3	UNC/UNF	ANSI	H2~H6	2P ~ 3P	Bright Steam Oxide TiN / Hardslick	<b>275</b>
<b>G7/G8/G9/H0</b>		P-HSS	UNC/UNF	ANSI Shank	H2~H3	4P ~ 5P	TiN Hardslick	<b>277</b>
<b>H1/H2/H3/H4</b>		P-HSS	UNC/UNF	ANSI Shank	H3	4P ~ 5P	TiN Hardslick	<b>278</b>
<b>D4/D3/E0</b>		HSSE-V3	UNC/UNF	ANSI	H2~H5	2P ~ 3P	Bright Steam Oxide Hardslick	<b>279</b>
<b>C0/D8</b>		HSSE-V3	UNC/UNF	ANSI	H2~H5	2P ~ 3P	Bright Hardslick	<b>281</b>
<b>F4/F8/F6</b>		HSS-V	UNC/UNF	ANSI	H2~H6	1.5P ~ 2P	Steam Oxide TiN / Hardslick	<b>282</b>
<b>G0/G1/G2</b>		HSS-V	UNC/UNF	DIN Length ANSI Shank	H2~H6	2P ~ 3P	Bright TiN / Hardslick	<b>284</b>
<b>ST/SI</b>		HSSE-V3	UNC/UNF	ANSI	2B	1.5P ~ 2P	Hardslick	<b>286</b>

### METRIC

EDP No.	MODEL	Tool Material	Standard	Dimensions	Tolerance	Chamfer	Surface Treatment	Page
<b>BH/BM BD/BO</b>		Super HSS	M/MF	ANSI DIN Length ANSI Shank	D3~D7	2P~3P	Steam Oxide Hardslick	<b>287</b>
<b>BS/BT E6/E8/E9</b>		HSSE-V3	M/MF	ANSI DIN Length ANSI Shank	D3~D7	2P~3P	Steam Oxide TiCN / Hardslick	<b>288</b>
<b>BU/BV E2/E4/E5</b>		HSSE-V3	M/MF	ANSI DIN Length ANSI Shank	D3~D7	2P~3P	Steam Oxide TiCN / Hardslick	<b>289</b>
<b>BW/BX F1/F3</b>		HSSE-V3	M/MF	ANSI DIN Length ANSI Shank	D3~D6	2P~3P	Bright Hardslick	<b>290</b>
<b>G4/G5/G6</b>		HSS-V	M/MF	ANSI	D3~D6	1.5P~2P	Bright TiCN / Hardslick	<b>291</b>

# SPIRAL FLUTE TAPS

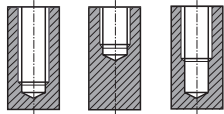
**BB/BI** SERIES  
**BF/BK** SERIES

HSS

CARBIDE

## SPIRAL FLUTED TAPS MODIFIED BOTTOMING STYLE for Steels & Stainless Steels up to 35HRc

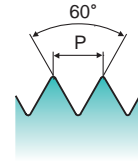
Hole type



BB/BI : ANSI



BF/BK : DIN Length ANSI Shank



Super HSS
UNC UNF
H2~H6
60°
2P~3P
Steam Oxide
Hardslick
R40

Unit : Inch

EDP No.				SIZE	Thread Per Inch		Limit	No. of Flute
Steam Oxide	Hardslick Coated	Steam Oxide	Hardslick Coated		UNC	UNF		
BB082	BI082	BF082	BK082	2	56		H2	2
BB162	BI162	BF162	BK162	4	40		H2	2
BB202	BI202	BF202	BK202	5	40		H2	3
BB243	BI243	BF243	BK243	6	32		H3	3
BB283	BI283	BF283	BK283	8	32		H3	3
BB323	BI323	BF323	BK323	10	24		H3	3
BB343	BI343	BF343	BK343			32	H3	3
BB403	BI403	BF403	BK403	1/4	20		H3	3
BB405	BI405	BF405	BK405				H5	3
BB423	BI423	BF423	BK423			28	H3	3
BB424	BI424	BF424	BK424				H4	3
BB445	BI445	BF445	BK445	5/16	18		H5	3
BB464	BI464	BF464	BK464			24	H4	3
BB485	BI485	BF485	BK485	3/8	16		H5	3
BB504	BI504	BF504	BK504			24	H4	3
BB525	BI525	BF525	BK525	7/16	14		H5	3
BB545	BI545	BF545	BK545			20	H5	3
BB565	BI565	BF565	BK565	1/2	13		H5	3
BB585	BI585	BF585	BK585			20	H5	3
BB605	BI605	BF605	BK605	9/16	12		H5	3
BB625	BI625	BF625	BK625			18	H5	3
BB645	BI645	BF645	BK645	5/8	11		H5	4
BB665	BI665	BF665	BK665			18	H5	4
BB705	BI705	BF705	BK705	3/4	10		H5	4
BB725	BI725	BF725	BK725			16	H5	4
BB746	BI746	BF746	BK746	7/8	9		H6	4
BB766	BI766	BF766	BK766			14	H6	4
BB786	BI786	BF786	BK786	1	8		H6	4
BB806	BI806	BF806	BK806			12	H6	4
BB836	BI836	BF836	BK836	1-1/8	8		H6	4
BB876	BI876	BF876	BK876	1-1/4	8		H6	4
BB916	BI916	BF916	BK916	1-3/8	8		H6	4
BB956	BI956	BF956	BK956	1-1/2	8		H6	4

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 338.  
▶ For tapping depth on DIN / ANSI Shank Taps, refer to DIN Table on page 336 & 337.

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
○	◎			◎			○			
Alluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
						○	○		○	○

COMBO TAPS

SPIRAL FLUTE TAPS

SPIRAL POINT TAPS

TAPER PIPE TAPS

FORMING TAPS

STANDARD TAPS

HAND TAPS

TECHNICAL DATA

# YG SPIRAL FLUTE TAPS

## H6/H7/H8 SERIES

### SPIRAL FLUTED TAPS MODIFIED BOTTOMING STYLE Steels up to 45HRc

COMBO TAPS

SPIRAL FLUTE TAPS

SPIRAL POINT TAPS

TAPER PIPE TAPS

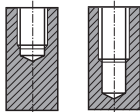
FORMING TAPS

STANDARD TAPS

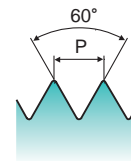
HAND TAPS

TECHNICAL DATA

Hole type



ANSI



P-HSS
UNC UNF
H2~H5
60°
2P~3P
Bright
TiCN
Hardslick
R15

Unit : Inch

Bright Finish	EDP No.		SIZE	Thread Per Inch		Limit	No. of Flute
	TiCN Coated	Hardslick Coated		UNC	UNF		
H6082	H7082	H8082	2	56		H2	3
H6162	H7162	H8162	4	40		H2	3
H6202	H7202	H8202	5	40		H2	3
H6243	H7243	H8243	6	32		H3	3
H6283	H7283	H8283	8	32		H3	3
H6323	H7323	H8323	10	24		H3	3
H6343	H7343	H8343			32	H3	3
H6405	H7405	H8405	1/4	20		H5	3
H6424	H7424	H8424			28	H4	3
H6445	H7445	H8445	5/16	18		H5	3
H6464	H7464	H8464			24	H4	3
H6485	H7485	H8485	3/8	16		H5	3
H6504	H7504	H8504			24	H4	3
H6525	H7525	H8525	7/16	14		H5	3
H6545	H7545	H8545			20	H5	3
H6565	H7565	H8565	1/2	13		H5	3
H6585	H7585	H8585			20	H5	3
H6645	H7645	H8645	5/8	11		H5	4
H6665	H7665	H8665			18	H5	4
H6705	H7705	H8705	3/4	10		H5	4
H6725	H7725	H8725			16	H5	4

► For tapping depth on ANSI Length Taps, refer to MCT1 302 on page 338.

◎ : Excellent ○ : Good

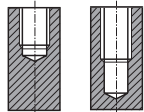
Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
		○	◎		○	◎				
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
			○	○	○			◎		

# SPIRAL FLUTE TAPS

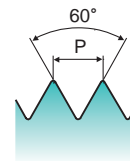
**B3/H9/B5/D6** SERIES

## SPIRAL FLUTED TAPS MODIFIED BOTTOMING STYLE for Titanium Alloys & Nickel Base Alloys up to 44HRc

Hole type



ANSI



P-HSS
UNC UNF
H2~H5
60°
2P~3P
Steam Oxide
TiN
TiCN
Hardslick

Unit : Inch

EDP No.				SIZE	Thread Per Inch		Limit	No. of Flute
Steam Oxide	TiN Coated	TiCN Coated	Hardslick Coated		UNC	UNF		
B3082	H9082	B5082	D6082	2	56		H2	3
B3162	H9162	B5162	D6162	4	40		H2	3
B3202	H9202	B5202	D6202	5	40		H2	3
B3243	H9243	B5243	D6243	6	32		H3	3
B3283	H9283	B5283	D6283	8	32		H3	3
B3323	H9323	B5323	D6323	10	24		H3	3
B3343	H9343	B5343	D6343			32	H3	3
B3403	H9403	B5403	D6403	1/4	20		H3	3
B3405	H9405	B5405	D6405				H5	3
B3423	H9423	B5423	D6423			28	H3	3
B3424	H9424	B5424	D6424				H4	3
B3443	H9443	B5443	D6443	5/16	18		H3	3
B3445	H9445	B5445	D6445				H5	3
B3463	H9463	B5463	D6463			24	H3	3
B3483	H9483	B5483	D6483	3/8	16		H3	3
B3485	H9485	B5485	D6485				H5	3
B3503	H9503	B5503	D6503			24	H3	3
B3504	H9504	B5504	D6504				H4	3
B3523	H9523	B5523	D6523	7/16	14		H3	3
B3525	H9525	B5525	D6525				H5	3
B3543	H9543	B5543	D6543			20	H3	3
B3545	H9545	B5545	D6545				H5	3
B3563	H9563	B5563	D6563	1/2	13		H3	3
B3565	H9565	B5565	D6565				H5	3
B3583	H9583	B5583	D6583			20	H3	3
B3585	H9585	B5585	D6585				H5	3

► For tapping depth on ANSI Length Taps, refer to MCT1 302 on page 338.

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
			◎	◎	◎					

HSS

CARBIDE

COMBO TAPS

SPIRAL FLUTE TAPS

SPIRAL POINT TAPS

TAPER PIPE TAPS

FORMING TAPS

STANDARD TAPS

HAND TAPS

TECHNICAL DATA

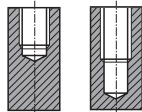


# SPIRAL FLUTE TAPS

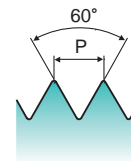
**B3/H9/B5/D6** SERIES

## SPIRAL FLUTED TAPS MODIFIED BOTTOMING STYLE for Titanium Alloys & Nickel Base Alloys up to 44HRc

Hole type



ANSI



P-HSS
UNC UNF
H2~H5
60°
2P~3P
Steam Oxide
TiN
TiCN
Hardslick
R15

EDP No.				SIZE	Thread Per Inch		Limit	No. of Flute
Steam Oxide	TiN Coated	TiCN Coated	Hardslick Coated		UNC	UNF		
<b>B3603</b>	<b>H9603</b>	<b>B5603</b>	<b>D6603</b>	9/16	12		H3	3
<b>B3605</b>	<b>H9605</b>	<b>B5605</b>	<b>D6605</b>			H5	3	
<b>B3623</b>	<b>H9623</b>	<b>B5623</b>	<b>D6623</b>	5/8	11	18	H3	3
<b>B3625</b>	<b>H9625</b>	<b>B5625</b>	<b>D6625</b>			H5	3	
<b>B3643</b>	<b>H9643</b>	<b>B5643</b>	<b>D6643</b>	3/4	10		H3	4
<b>B3645</b>	<b>H9645</b>	<b>B5645</b>	<b>D6645</b>			H5	4	
<b>B3663</b>	<b>H9663</b>	<b>B5663</b>	<b>D6663</b>			18	H3	4
<b>B3665</b>	<b>H9665</b>	<b>B5665</b>	<b>D6665</b>			H5	4	
<b>B3703</b>	<b>H9703</b>	<b>B5703</b>	<b>D6703</b>				H3	4
<b>B3705</b>	<b>H9705</b>	<b>B5705</b>	<b>D6705</b>			H5	4	
<b>B3723</b>	<b>H9723</b>	<b>B5723</b>	<b>D6723</b>			16	H3	4
<b>B3725</b>	<b>H9725</b>	<b>B5725</b>	<b>D6725</b>			H5	4	

Unit : Inch

► For tapping depth on ANSI Length Taps, refer to MCT1 302 on page 338.

◎ : Excellent ○ : Good

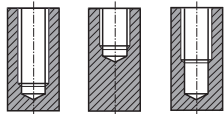
Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
			◎	◎	◎					

# SPIRAL FLUTE TAPS

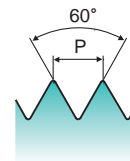
**B1/B0/B2/D2** SERIES

## SPIRAL FLUTED TAPS MODIFIED BOTTOMING STYLE for Stainless Steels up to 28HRc

Hole type



ANSI



HSSE-V3
UNC UNF
H2~H6
60°
2P~3P
Bright
Steam Oxide
TiN
Hardslick
R45

Unit : Inch

EDP No.				SIZE	Thread Per Inch		Limit	No. of Flute
Bright Finish	Steam Oxide	TiN Coated	Hardslick Coated		UNC	UNF		
B1082	B0082	B2082	D2082	2	56		H2	2
B1162	B0162	B2162	D2162	4	40		H2	2
B1202	B0202	B2202	D2202	5	40		H2	3
B1203	B0203	B2203	D2203				H3	3
B1243	B0243	B2243	D2243	6	32		H3	3
B1283	B0283	B2283	D2283	8	32		H3	3
B1323	B0323	B2323	D2323	10	24		H3	3
B1343	B0343	B2343	D2343			32	H3	3
B1403	B0403	B2403	D2403	1/4	20		H3	3
B1405	B0405	B2405	D2405				H5	3
B1423	B0423	B2423	D2423			28	H3	3
B1443	B0443	B2443	D2443	5/16	18		H3	3
B1445	B0445	B2445	D2445				H5	3
B1463	B0463	B2463	D2463			24	H3	3
B1483	B0483	B2483	D2483	3/8	16		H3	3
B1485	B0485	B2485	D2485				H5	3
B1503	B0503	B2503	D2503			24	H3	3
B1523	B0523	B2523	D2523	7/16	14		H3	3
B1525	B0525	B2525	D2525				H5	3
B1543	B0543	B2543	D2543			20	H3	3
B1545	B0545	B2545	D2545				H5	3
B1563	B0563	B2563	D2563	1/2	13		H3	3
B1565	B0565	B2565	D2565				H5	3
B1583	B0583	B2583	D2583			20	H3	3
B1603	B0603	B2603	D2603	9/16	12		H3	3
B1623	B0623	B2623	D2623			18	H3	3

► For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 338.

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
○	◎			◎			○			
Alluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
						○	○		○	○



# SPIRAL FLUTE TAPS

**B1/B0/B2/D2** SERIES

## SPIRAL FLUTED TAPS MODIFIED BOTTOMING STYLE for Stainless Steels up to 28HRc

COMBO TAPS

SPIRAL FLUTE TAPS

SPIRAL POINT TAPS

TAPER PIPE TAPS

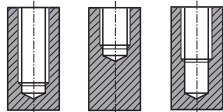
FORMING TAPS

STANDARD TAPS

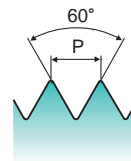
HAND TAPS

TECHNICAL DATA

Hole type



ANSI



HSSE-V3

UNC UNF

H2~H6



Bright

Steam Oxide

TiN

Hardslick

R45

EDP No.				SIZE	Thread Per Inch		Limit	No. of Flute
Bright Finish	Steam Oxide	TiN Coated	Hardslick Coated		UNC	UNF		
B1625	B0625	B2625	D2625	5/8	11		H5	3
B1643	B0643	B2643	D2643				H3	4
B1645	B0645	B2645	D2645			18	H5	4
B1663	B0663	B2663	D2663				H3	4
B1665	B0665	B2665	D2665				H5	4
B1703	B0703	B2703	D2703				3/4	10
B1705	B0705	B2705	D2705				H5	4
B1723	B0723	B2723	D2723				H3	4
B1725	B0725	B2725	D2725				H5	4
B1744	B0744	B2744	D2744				7/8	9
B1746	B0746	B2746	D2746				H6	4
B1764	B0764	B2764	D2764				H4	4
B1766	B0766	B2766	D2766				H6	4
B1784	B0784	B2784	D2784				1	8
B1786	B0786	B2786	D2786				H6	4
B1804	B0804	B2804	D2804				H4	4
B1806	B0806	B2806	D2806				H6	4
B1824	B0824	B2824	D2824				1-1/8	7
B1864	B0864	B2864	D2864	1-1/4	7	H4	4	
B1904	B0904	B2904	D2904	1-3/8	6	H4	4	
B1944	B0944	B2944	D2944	1-1/2	6	H4	4	

Unit : Inch

► For tapping depth on ANSI Length Taps, refer to MCT1 302 on page 338.

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
○	◎			◎			○			
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
						○	○		○	○

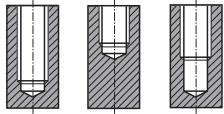
# SPIRAL FLUTE TAPS

**G7/G8/G9/H0** SERIES

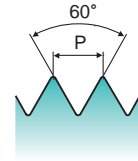
## SPIRAL FLUTED TAPS MODIFIED BOTTOMING STYLE for Stainless Steels up to 28HRc

Maximum Tapping Depth is 50% Deeper than Standard ANSI Taps.

**Hole type**



ANSI Long Shank



P-HSS
UNC UNF
H2~H3
60°
4P~5P
TiN
Hardslick
R45

Unit : Inch

EDP No.				SIZE	Thread Per Inch		Limit	No. of Flute
TiN Coated 4" OAL	TiN Coated 6" OAL	Hardslick Coated 4" OAL	Hardslick Coated 6" OAL		UNC	UNF		
G7162	—	G9162	—	4	40		H2	3
G7243	G8243	G9243	H0243	6	32		H3	3
G7283	G8283	G9283	H0283	8	32		H3	3
G7323	G8323	G9323	H0323	10	24		H3	3
G7343	G8343	G9343	H0343			32	H3	3
G7403	G8403	G9403	H0403	1/4	20		H3	3
—	G8423	—	H0423			28	H3	3
—	G8443	—	H0443	5/16	18		H3	3
—	G8463	—	H0463			24	H3	3
—	G8483	—	H0483	3/8	16		H3	3
—	G8503	—	H0503			24	H3	3
—	G8523	—	H0523	7/16	14		H3	3
—	G8543	—	H0543			20	H3	3
—	G8563	—	H0563	1/2	13		H3	3
—	G8583	—	H0583			20	H3	3
—	G8643	—	H0643	5/8	11		H3	4

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
○	◎			◎			○			
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
						○	○		○	○

- HSS
- CARBIDE
- COMBO TAPS
- SPIRAL FLUTE TAPS
- SPIRAL POINT TAPS
- TAPER PIPE TAPS
- FORMING TAPS
- STANDARD TAPS
- HAND TAPS
- TECHNICAL DATA





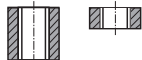
# SPIRAL FLUTE TAPS

**H1/H2/H3/H4** SERIES

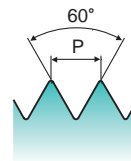
## SPIRAL FLUTED TAPS MODIFIED BOTTOMING STYLE Machining Center Tap

Left hand spiral, right hand cut Reduces chip packing in deep holes Maximum Tapping Depth is 50% Deeper than Standard ANSI Taps.

**Hole type**



ANSI Long Shank



P-HSS
UNC UNF
H3
60°
4P~5P
TiN
Hardslick
L15

COMBO TAPS

SPIRAL FLUTE TAPS

SPIRAL POINT TAPS

TAPER PIPE TAPS

FORMING TAPS

STANDARD TAPS

HAND TAPS

TECHNICAL DATA

EDP No.				SIZE	Thread Per Inch		Limit	No. of Flute
TiN Coated 4" OAL	TiN Coated 6" OAL	Hardslick Coated 4" OAL	Hardslick Coated 6" OAL		UNC	UNF		
<b>H1403</b>	<b>H2403</b>	<b>H3403</b>	<b>H4403</b>	1/4	20		H3	2
—	<b>H2423</b>	—	<b>H4423</b>			28	H3	3
—	<b>H2443</b>	—	<b>H4443</b>	5/16	18		H3	3
—	<b>H2483</b>	—	<b>H4483</b>	3/8	16		H3	3
—	<b>H2523</b>	—	<b>H4523</b>	7/16	14		H3	3
—	<b>H2563</b>	—	<b>H4563</b>	1/2	13		H3	3
—	<b>H2643</b>	—	<b>H4643</b>	5/8	11		H3	3

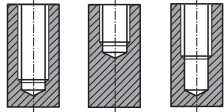
Unit : Inch

◎ : Excellent ○ : Good

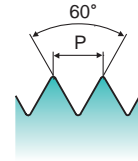
Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
○	◎			◎			○			
Alluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
						○	○		○	○

**SPIRAL FLUTED TAPS MODIFIED BOTTOMING STYLE**  
 Steels up to 38HRc

Hole type



ANSI



HSSE-V3

UNC  
UNF

H2~H5

60°

2P~3P

Bright

Steam  
Oxide

Hardslick

R45

Unit : Inch

Bright Finish	EDP No.		SIZE	Thread Per Inch		Limit	No. of Flute
	Steam Oxide	Hardslick Coated		UNC	UNF		
D4082	D3082	E0082	2	56		H2	2
D4162	D3162	E0162	4	40		H2	2
D4202	D3202	E0202	5	40		H2	3
D4243	D3243	E0243	6	32		H3	3
D4283	D3283	E0283	8	32		H3	3
D4323	D3323	E0323	10	24		H3	3
D4343	D3343	E0343	10		32	H3	3
D4403	D3403	E0403	1/4	20		H3	3
D4405	D3405	E0405	1/4	20		H5	3
D4423	D3423	E0423	1/4		28	H3	3
D4425	D3425	E0425	1/4		28	H5	3
D4443	D3443	E0443	5/16	18		H3	3
D4445	D3445	E0445	5/16	18		H5	3
D4463	D3463	E0463	5/16		24	H3	3
D4465	D3465	E0465	5/16		24	H5	3
D4483	D3483	E0483	3/8	16		H3	3
D4485	D3485	E0485	3/8	16		H5	3
D4503	D3503	E0503	3/8		24	H3	3
D4505	D3505	E0505	3/8		24	H5	3
D4523	D3523	E0523	7/16	14		H3	3
D4525	D3525	E0525	7/16	14		H5	3
D4543	D3543	E0543	7/16		20	H3	3
D4545	D3545	E0545	7/16		20	H5	3
D4563	D3563	E0563	1/2	13		H3	3
D4565	D3565	E0565	1/2	13		H5	3
D4583	D3583	E0583	1/2		20	H3	3
D4585	D3585	E0585	1/2		20	H5	3

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 338.

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
	◎	◎		○	○					
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
			○							



# SPIRAL FLUTE TAPS

**D4/D3/E0** SERIES

## SPIRAL FLUTED TAPS MODIFIED BOTTOMING STYLE Steels up to 38HRc

COMBO TAPS

SPIRAL FLUTE TAPS

SPIRAL POINT TAPS

TAPER PIPE TAPS

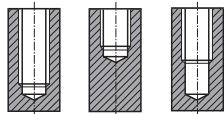
FORMING TAPS

STANDARD TAPS

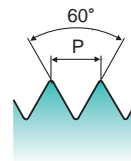
HAND TAPS

TECHNICAL DATA

Hole type



ANSI



HSSE-V3

UNC UNF

H2~H5



Bright

Steam Oxide

Hardslick



Unit : Inch

Bright Finish	EDP No.		SIZE	Thread Per Inch		Limit	No. of Flute
	Steam Oxide	Hardslick Coated		UNC	UNF		
D4605	D3605	E0605	9/16	12		H5	3
D4625	D3625	E0625	9/16		18	H5	3
D4643	D3643	E0643	5/8	11		H3	4
D4645	D3645	E0645	5/8	11		H5	4
D4663	D3663	E0663	5/8		18	H3	4
D4665	D3665	E0665	5/8		18	H5	4
D4703	D3703	E0703	3/4	10		H3	4
D4705	D3705	E0705	3/4	10		H5	4
D4723	D3723	E0723	3/4		16	H3	4
D4725	D3725	E0725	3/4		16	H5	4
D4784	D3784	E0784	1	8		H4	4
D4786	D3786	E0786	1	8		H6	4
D4804	D3804	E0804	1		12	H4	4
D4806	D3806	E0806	1		12	H6	4
D4824	D3824	E0824	1-1/8	7		H4	4
D4864	D3864	E0864	1-1/4	7		H4	4
D4904	D3904	E0904	1-3/8	6		H4	4
D4944	D3944	E0944	1-1/2	6		H4	4

► For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 338.

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
	◎	◎		○	○					
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
			○							

# SPIRAL FLUTE TAPS

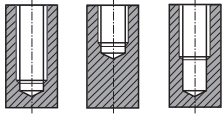
**C0/D8** SERIES

**HSS**

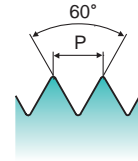
**CARBIDE**

## SPIRAL FLUTED TAPS MODIFIED BOTTOMING STYLE for Aluminum Alloys or Die Cast Aluminium

Hole type



ANSI



HSSE-V3
UNC UNF
H2~H5
60°
2P~3P
Bright
Hardslick
R50

Unit : Inch

EDP No.		SIZE	Thread Per Inch		Limit	No. of Flute
Bright Finish	Hardslick Coated		UNC	UNF		
C0162	D8162	4	40		H2	2
C0242	D8242	6	32		H2	2
C0243	D8243				H3	2
C0283	D8283	8	32		H3	2
C0323	D8323	10	24		H3	2
C0343	D8343			32	H3	2
C0403	D8403	1/4	20		H3	2
C0405	D8405				H5	2
C0423	D8423			28	H3	2
C0443	D8443	5/16	18		H3	2
C0445	D8445				H5	2
C0463	D8463			24	H3	2
C0465	D8465				H5	2
C0483	D8483	3/8	16		H3	2
C0485	D8485				H5	2
C0503	D8503			24	H3	2
C0505	D8505				H5	2

► For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 338.

COMBO TAPS

SPIRAL FLUTE TAPS

SPIRAL POINT TAPS

TAPER PIPE TAPS

FORMING TAPS

STANDARD TAPS

HAND TAPS

TECHNICAL DATA

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
							◎			
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
◎										

# Y/G SPIRAL FLUTE TAPS

**F4/F8/F6** SERIES

## SPIRAL FLUTED TAPS BOTTOMING STYLE for Multi Purpose

COMBO TAPS

SPIRAL FLUTE TAPS

SPIRAL POINT TAPS

TAPER PIPE TAPS

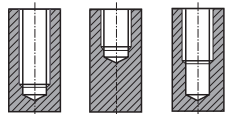
FORMING TAPS

STANDARD TAPS

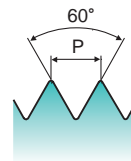
HAND TAPS

TECHNICAL DATA

Hole type



ANSI



HSS-V
UNC UNF
H2~H6
60°
1.5P~2P
Steam Oxide
TiN
Hardslick
R45

Unit : Inch

Steam Oxide	EDP No.		SIZE	Thread Per Inch		Limit	No. of Flute
	TiN Coated	Hardslick Coated		UNC	UNF		
F4082	F8082	F6082	2	56		H2	2
F4162	F8162	F6162	4	40		H2	2
F4202	F8202	F6202	5	40		H2	2
F4243	F8243	F6243	6	32		H3	2
F4283	F8283	F6283	8	32		H3	3
F4323	F8323	F6323	10	24		H3	3
F4343	F8343	F6343			32	H3	3
F4403	F8403	F6403	1/4	20		H3	3
F4405	F8405	F6405				H5	3
F4423	F8423	F6423			28	H3	3
F4443	F8443	F6443	5/16	18		H3	3
F4445	F8445	F6445				H5	3
F4463	F8463	F6463			24	H3	3
F4483	F8483	F6483	3/8	16		H3	3
F4485	F8485	F6485				H5	3
F4503	F8503	F6503			24	H3	3
F4523	F8523	F6523	7/16	14		H3	3
F4525	F8525	F6525				H5	3
F4543	F8543	F6543			20	H3	3
F4545	F8545	F6545				H5	3
F4563	F8563	F6563	1/2	13		H3	3
F4565	F8565	F6565				H5	3
F4583	F8583	F6583			20	H3	3
F4585	F8585	F6585				H5	3
F4603	F8603	F6603	9/16	12		H3	3
F4605	F8605	F6605				H5	3
F4623	F8623	F6623			18	H3	3

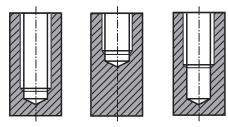
► For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 338.

◎ : Excellent ○ : Good

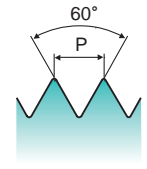
Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminum / Aluminum alloys			
◎	◎	○		○	○					
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
○		○								

### SPIRAL FLUTED TAPS BOTTOMING STYLE for Multi Purpose

Hole type



ANSI



HSS-V
UNC UNF
H2~H6
60°
1.5P~2P
Steam Oxide
TiN
Hardslick

EDP No.			SIZE	Thread Per Inch		Limit	No. of Flute
Steam Oxide	TiN Coated	Hardslick Coated		UNC	UNF		
F4625	F8625	F6625	5/8	11		H5	3
F4643	F8643	F6643				H3	4
F4645	F8645	F6645				H5	4
F4663	F8663	F6663	3/4	10	18	H3	4
F4665	F8665	F6665				H5	4
F4703	F8703	F6703				H3	4
F4705	F8705	F6705	7/8	9		H5	4
F4723	F8723	F6723				H3	4
F4725	F8725	F6725				H5	4
F4744	F8744	F6744	1	8		H4	4
F4746	F8746	F6746				H6	4
F4764	F8764	F6764				H4	4
F4766	F8766	F6766				H6	4
F4784	F8784	F6784				H4	4
F4786	F8786	F6786				H6	4
F4806	F8806	F6806		12		H6	4

► For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 338.

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
◎	◎	○		○	○					
Alluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
○										

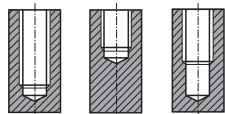


# SPIRAL FLUTE TAPS

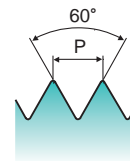
**G0/G1/G2** SERIES

## SPIRAL FLUTED TAPS MODIFIED BOTTOMING STYLE for Multi Purpose

Hole type



DIN Length ANSI Shank



HSS-V
UNC UNF
H2~H6
60°
2P~3P
Bright
TiN
Hardslick

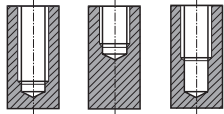
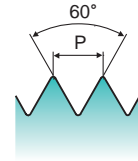
Unit : Inch

Bright Finish	EDP No.		SIZE	Thread Per Inch		Limit	No. of Flute
	TiN Coated	Hardslick Coated		UNC	UNF		
G0082	G1082	G2082	2	56		H2	2
G0162	G1162	G2162	4	40		H2	2
G0202	G1202	G2202	5	40		H2	3
G0243	G1243	G2243	6	32		H3	3
G0283	G1283	G2283	8	32		H3	3
G0323	G1323	G2323	10	24		H3	3
G0343	G1343	G2343			32	H3	3
G0403	G1403	G2403	1/4	20		H3	3
G0405	G1405	G2405				H5	3
G0423	G1423	G2423			28	H3	3
G0443	G1443	G2443	5/16	18		H3	3
G0445	G1445	G2445				H5	3
G0463	G1463	G2463			24	H3	3
G0483	G1483	G2483	3/8	16		H3	3
G0485	G1485	G2485				H5	3
G0503	G1503	G2503			24	H3	3
G0523	G1523	G2523	7/16	14		H3	3
G0525	G1525	G2525				H5	3
G0543	G1543	G2543			20	H3	3
G0545	G1545	G2545				H5	3
G0563	G1563	G2563	1/2	13		H3	3
G0565	G1565	G2565				H5	3
G0583	G1583	G2583			20	H3	3
G0585	G1585	G2585				H5	3
G0603	G1603	G2603	9/16	12		H3	3
G0605	G1605	G2605				H5	3
G0623	G1623	G2623			18	H3	3

► For tapping depth on DIN Length ANSI Length Taps, refer to DIN table on page 338.

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
◎	◎	○		○	○					
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
○		○								

**SPIRAL FLUTED TAPS MODIFIED BOTTOMING STYLE**  
**for Multi Purpose**
**Hole type**

**DIN Length ANSI Shank**


HSS-V

UNC  
UNF

H2~H6

60°

2P~3P

Bright

TiN

Hardslick

Unit : Inch

EDP No.			SIZE	Thread Per Inch		Limit	No. of Flute
Bright Finish	TiN Coated	Hardslick Coated		UNC	UNF		
G0625	G1625	G2625				H5	3
G0643	G1643	G2643	5/8	11		H3	4
G0645	G1645	G2645				H5	4
G0663	G1663	G2663			18	H3	4
G0665	G1665	G2665				H5	4
G0703	G1703	G2703	3/4	10		H3	4
G0705	G1705	G2705				H5	4
G0723	G1723	G2723			16	H3	4
G0725	G1725	G2725				H5	4
G0746	G1746	G2746	7/8	9		H6	4
G0764	G1764	G2764			14	H4	4
G0766	G1766	G2766				H6	4
G0786	G1786	G2786	1	8		H6	4
G0804	G1804	G2804			12	H4	4
G0806	G1806	G2806				H6	4

▶ For tapping depth on DIN Length ANSI Length Taps, refer to DIN table on page 338.

- COMBO TAPS
- SPIRAL FLUTE TAPS
- SPIRAL POINT TAPS
- TAPER PIPE TAPS
- FORMING TAPS
- STANDARD TAPS
- HAND TAPS
- TECHNICAL DATA

◎ : Excellent    ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
◎	◎	○		○		○				
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
○		○								



**YG SPIRAL FLUTE TAPS**

**ST/SI SERIES**

**SCREW THREAD INSERT TAP**

COMBO TAPS

SPIRAL FLUTE TAPS

SPIRAL POINT TAPS

TAPER PIPE TAPS

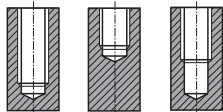
FORMING TAPS

STANDARD TAPS

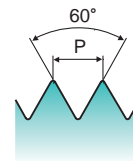
HAND TAPS

TECHNICAL DATA

Hole type



ANSI



HSSE-V3
UNC UNF
2B
60°
1.5P~2P
Hardslick

Unit : Inch

SIZE	EDP No.	Thread Per Inch	EDP No.	Thread Per Inch	Limit	No. of Flute
	Hardslick Coated	UNC	Hardslick Coated	UNF		
#4	ST162	40	SI182	48	2B	3
#5	ST202	40	SI222	48	2B	3
#6	ST242	32	SI262	40	2B	3
#8	ST282	32	SI302	36	2B	3
#10	ST322	24	SI342	32	2B	3
#12	ST362	24	SI382	32	2B	3
1/4	ST402	20	SI422	28	2B	3
5/16	ST442	18	SI462	24	2B	3
3/8	ST482	16	SI502	24	2B	3
7/16	ST522	14	SI542	20	2B	3
1/2	ST562	13	SI582	20	2B	3
9/16	ST602	12	SI622	18	2B	4
5/8	ST642	11	SI662	18	2B	4
3/4	ST702	10	SI722	16	2B	4

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
◎	◎	○		○	○					
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
○		○								

# SPIRAL FLUTE TAPS

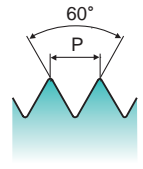
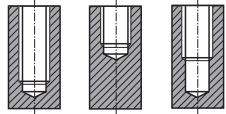
**BH/BM** SERIES  
**BD/BO** SERIES

**HSS**

**CARBIDE**

## METRIC SPIRAL FLUTED TAPS MODIFIED BOTTOMING STYLE for Steels & Stainless Steels up to 35HRc

Hole type



Super HSS
M MF
D3~D7
60°
2P~3P
Steam Oxide
Hardslick
R40

Unit : mm

EDP No.				SIZE	Pitch	Limit	No. of Flute
Steam Oxide	Hardslick Coated	Steam Oxide	Hardslick Coated				
BH203	BM203	BD203	B0203	M3	0.5	D3	3
BH224	BM224	BD224	B0224	M3.5	0.6	D4	3
BH244	BM244	BD244	B0244	M4	0.7	D4	3
BH284	BM284	BD284	B0284	M5	0.8	D4	3
BH315	BM315	BD315	B0315	M6	1.0	D5	3
BH345	BM345	BD345	B0345	M7	1.0	D5	3
BH365	BM365	BD365	B0365	M8	1.25	D5	3
BH375	BM375	BD375	B0375	M8	1.0	D5	3
BH426	BM426	BD426	B0426	M10	1.5	D6	3
BH435	BM435	BD435	B0435	M10	1.25	D5	3
BH506	BM506	BD506	B0506	M12	1.75	D6	3
BH525	BM525	BD525	B0525	M12	1.25	D5	3
BH547	BM547	BD547	B0547	M14	2.0	D7	3
BH556	BM556	BD556	B0556	M14	1.5	D6	3
BH607	BM607	BD607	B0607	M16	2.0	D7	3
BH616	BM616	BD616	B0616	M16	1.5	D6	3
BH657	BM657	BD657	B0657	M18	2.5	D7	4
BH676	BM676	BD676	B0676	M18	1.5	D6	4

▶ For tapping depth on ANSI Length Taps, refer to MCT1 302 on page 338.  
▶ For tapping depth on DIN / ANSI Shank Taps, refer to DIN Table on page 336 & 337.

COMBO TAPS

SPIRAL FLUTE TAPS

SPIRAL POINT TAPS

TAPER PIPE TAPS

FORMING TAPS

STANDARD TAPS

HAND TAPS

TECHNICAL DATA

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
○	◎			◎			○			
Alluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
						○	○		○	○



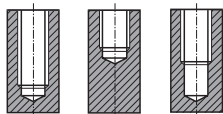
**SPIRAL FLUTE TAPS**

**BS/BT** SERIES

**E6/E8/E9** SERIES

**METRIC SPIRAL FLUTED TAPS MODIFIED BOTTOMING STYLE**  
for Stainless Steels up to 28HRc

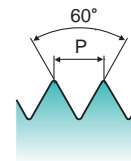
Hole type



**BS/BT : ANSI**



**E6/E8/E9 : DIN Length ANSI Shank**



HSSE-V3
M MF
D3~D7
60°
2P~3P
Steam Oxide
TiCN
Hardslick
R45

Unit : mm

EDP No.					SIZE	Pitch	Limit	No. of Flute
Steam Oxide	Hardslick Coated	Steam Oxide	TiCN Coated	Hardslick Coated				
BS203	BT203	E6203	E8203	E9203	M3	0.5	D3	3
BS224	BT224	E6224	E8224	E9224	M3.5	0.6	D4	3
BS244	BT244	E6244	E8244	E9244	M4	0.7	D4	3
BS284	BT284	E6284	E8284	E9284	M5	0.8	D4	3
BS315	BT315	E6315	E8315	E9315	M6	1.0	D5	3
BS345	BT345	E6345	E8345	E9345	M7	1.0	D5	3
BS365	BT365	E6365	E8365	E9365	M8	1.25	D5	3
BS375	BT375	E6375	E8375	E9375	M8	1.0	D5	3
BS426	BT426	E6426	E8426	E9426	M10	1.5	D6	3
BS435	BT435	E6435	E8435	E9435	M10	1.25	D5	3
BS506	BT506	E6506	E8506	E9506	M12	1.75	D6	3
BS525	BT525	E6525	E8525	E9525	M12	1.25	D5	3
BS547	BT547	E6547	E8547	E9547	M14	2.0	D7	3
BS556	BT556	E6556	E8556	E9556	M14	1.5	D6	3
BS607	BT607	E6607	E8607	E9607	M16	2.0	D7	3
BS616	BT616	E6616	E8616	E9616	M16	1.5	D6	3
BS657	BT657	E6657	E8657	E9657	M18	2.5	D7	4
BS676	BT676	E6676	E8676	E9676	M18	1.5	D6	4

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 338.  
▶ For tapping depth on DIN / ANSI Shank Taps, refer to DIN Table on page 336 & 337.

▶ Tapping depth for DIN and ANSI style are the same, refer to MCTI table 302

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
○	◎			◎			○			
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
						○	○		○	○

# SPIRAL FLUTE TAPS

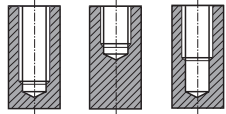
**BU/BV SERIES**  
**E2/E4/E5 SERIES**

**HSS**

**CARBIDE**

## METRIC SPIRAL FLUTED TAPS MODIFIED BOTTOMING STYLE Steels up to 38HRc

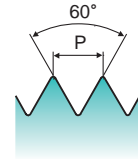
Hole type



**BU/BV : ANSI**



**E2/E4/E5 : DIN Length ANSI Shank**



HSSE-V3
M MF
D3~D7
60°
2P~3P
Steam Oxide
TiCN
Hardslick
R45

Unit : mm

EDP No.					SIZE	Pitch	Limit	No. of Flute
Steam Oxide	Hardslick Coated	Steam Oxide	TiCN Coated	Hardslick Coated				
BU203	BV203	E2203	E4203	E5203	M3	0.5	D3	3
BU224	BV224	E2224	E4224	E5224	M3.5	0.6	D4	3
BU244	BV244	E2244	E4244	E5244	M4	0.7	D4	3
BU284	BV284	E2284	E4284	E5284	M5	0.8	D4	3
BU315	BV315	E2315	E4315	E5315	M6	1.0	D5	3
BU345	BV345	E2345	E4345	E5345	M7	1.0	D5	3
BU365	BV365	E2365	E4365	E5365	M8	1.25	D5	3
BU375	BV375	E2375	E4375	E5375	M8	1.0	D5	3
BU426	BV426	E2426	E4426	E5426	M10	1.5	D6	3
BU435	BV435	E2435	E4435	E5435	M10	1.25	D5	3
BU506	BV506	E2506	E4506	E5506	M12	1.75	D6	3
BU525	BV525	E2525	E4525	E5525	M12	1.25	D5	3
BU547	BV547	E2547	E4547	E5547	M14	2.0	D7	3
BU556	BV556	E2556	E4556	E5556	M14	1.5	D6	3
BU607	BV607	E2607	E4607	E5607	M16	2.0	D7	3
BU616	BV616	E2616	E4616	E5616	M16	1.5	D6	3
BU657	BV657	E2657	E4657	E5657	M18	2.5	D7	4
BU676	BV676	E2676	E4676	E5676	M18	1.5	D6	4

- ▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 338.
- ▶ For tapping depth on DIN / ANSI Shank Taps, refer to DIN Table on page 336 & 337.

COMBO TAPS

SPIRAL FLUTE TAPS

SPIRAL POINT TAPS

TAPER PIPE TAPS

FORMING TAPS

STANDARD TAPS

HAND TAPS

TECHNICAL DATA

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
	◎	◎		○	○					
Alluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
			○							



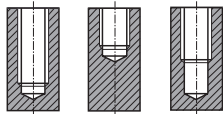
**SPIRAL FLUTE TAPS**

**BW/BX** SERIES

**F1/F3** SERIES

**METRIC SPIRAL FLUTED TAPS MODIFIED BOTTOMING STYLE**  
for Aluminum Alloys or Die Cast Aluminum

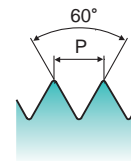
Hole type



**BW/BX : ANSI**



**F1/F3 : DIN Length ANSI Shank**



HSSE-V3

M MF

D3~D6



Bright

Hardslick



Unit : mm

EDP No.				SIZE	Pitch	Limit	No. of Flute
Bright Finish	Hardslick Coated	Bright Finish	Hardslick Coated				
<b>BW203</b>	<b>BX203</b>	<b>F1203</b>	<b>F3203</b>	M3	0.5	D3	2
<b>BW244</b>	<b>BX244</b>	<b>F1244</b>	<b>F3244</b>	M4	0.7	D4	2
<b>BW285</b>	<b>BX285</b>	<b>F1285</b>	<b>F3285</b>	M5	0.8	D5	2
<b>BW315</b>	<b>BX315</b>	<b>F1315</b>	<b>F3315</b>	M6	1.0	D5	2
<b>BW365</b>	<b>BX365</b>	<b>F1365</b>	<b>F3365</b>	M8	1.25	D5	2
<b>BW426</b>	<b>BX426</b>	<b>F1426</b>	<b>F3426</b>	M10	1.5	D6	2
<b>BW435</b>	<b>BX435</b>	<b>F1435</b>	<b>F3435</b>	M10	1.25	D5	2

- ▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 338.
- ▶ For tapping depth on DIN / ANSI Shank Taps, refer to DIN Table on page 336 & 337.

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
							◎			
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
◎										

# **YG** SPIRAL FLUTE TAPS

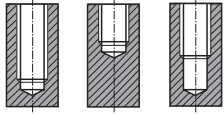
**G4/G5/G6** SERIES

**HSS**

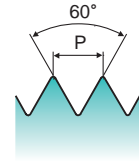
**CARBIDE**

## METRIC SPIRAL FLUTED TAPS BOTTOMING STYLE for Multi Purpose

Hole type



ANSI



HSS-V
M MF
D3~D6
60°
1.5P~2P
Bright
TiCN
Hardslick
R50

Unit : mm

Bright Finish	EDP No. TiCN Coated	Hardslick Coated	SIZE	Pitch	Limit	No. of Flute
G4203	G5203	G6203	M3	0.5	D3	2
G4224	G5224	G6224	M3.5	0.6	D4	2
G4244	G5244	G6244	M4	0.7	D4	3
G4284	G5284	G6284	M5	0.8	D4	3
G4315	G5315	G6315	M6	1.0	D5	3
G4345	G5345	G6345	M7	1.0	D5	3
G4365	G5365	G6365	M8	1.25	D5	3
G4375	G5375	G6375	M8	1.0	D5	3
G4426	G5426	G6426	M10	1.5	D6	3
G4435	G5435	G6435	M10	1.25	D5	3
G4506	G5506	G6506	M12	1.75	D6	3
G4525	G5525	G6525	M12	1.25	D5	3

► For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 338.

COMBO TAPS

SPIRAL FLUTE TAPS

SPIRAL POINT TAPS

TAPER PIPE TAPS

FORMING TAPS

STANDARD TAPS

HAND TAPS

TECHNICAL DATA

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
◎	◎	○		○	○					
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
○		○								



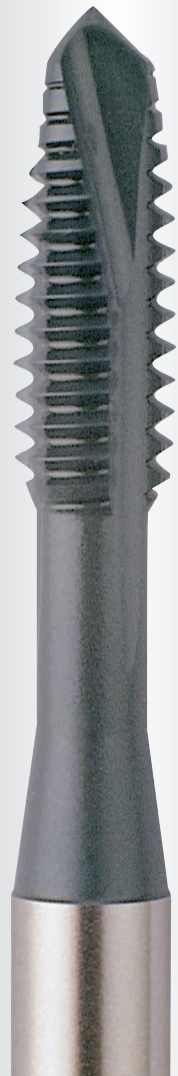
Global Cutting Tool Leader **YG-1**



**HSS**



Being the best through innovation



# **SPIRAL POINT TAPS**

- Tapping NPT and NPTF Pipe threads



# SELECTION GUIDE





## SPIRAL POINT TAPS

Tapping NPT and NPTF Pipe threads

### INCH

EDP No.	MODEL	Tool Material	Standard	Dimensions	Tolerance	Chamfer	Surface Treatment	Page
<b>M9/O1 N4/O5</b>		Super HSS	UNC/UNF	ANSI DIN Length ANSI Shank	H2~H6	4P~5P	Steam Oxide Hardslick	<b>295</b>
<b>M5/M6/M7</b>		P-HSS	UNC/UNF	ANSI	H2~H5	4P~5P	Bright / TiCN Hardslick	<b>296</b>
<b>I3/M8/15/J6</b>		P-HSS	UNC/UNF	ANSI	H2~H5	4P~5P	Steam Oxide TiCN / TiN Hardslick	<b>297</b>
<b>I0/I2/J2</b>		HSSE-V3	UNC/UNF	ANSI	H2~H6	4P~5P	Steam Oxide TiN / Hardslick	<b>299</b>
<b>M0/M1/M2/M3</b>		P-HSS	UNC/UNF	ANSI Long Shank	H2~H3	4P~5P	TiN Hardslick	<b>301</b>
<b>J4/J8/J3</b>		HSSE-V3	UNC/UNF	ANSI	H2~H5	4P~5P	Bright Steam Oxide Hardslick	<b>302</b>
<b>K9/L0/L1</b>		HSS-V	UNC/UNF	ANSI	H2~H6	4P~5P	Bright TiN / Hardslick	<b>304</b>
<b>L3/L4/L5</b>		HSS-V	UNC/UNF	DIN Length ANSI Shank	H2~H6	4P~5P	Bright TiN / Hardslick	<b>306</b>
<b>ST/SI</b>		HSSE-V3	UNC/UNF	ANSI	2B	4.5P~5P	Hardslick	<b>307</b>

### METRIC

EDP No.	MODEL	Tool Material	Standard	Dimensions	Tolerance	Chamfer	Surface Treatment	Page
<b>N7/N8 N3/O3</b>		Super HSS	M/MF	ANSI DIN Length ANSI Shank	D3~D7	4P~5P	Steam Oxide Hardslick	<b>308</b>
<b>O9/IA K3/K5/K6</b>		HSSE-V3	M/MF	ANSI DIN Length ANSI Shank	D3~D7	4P~5P	Steam Oxide TiCN / Hardslick	<b>309</b>
<b>IB/IC J9/K7/K2</b>		HSSE-V3	M/MF	ANSI DIN Length ANSI Shank	D3~D7	4P~5P	Steam Oxide TiCN / Hardslick	<b>310</b>
<b>L7/L8/L9</b>		HSS-V	M/MF	ANSI	D3~D6	4P~5P	Bright TiCN / Hardslick	<b>311</b>

# SPIRAL POINT TAPS

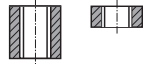
**M9/O1** SERIES  
**N4/O5** SERIES

**HSS**

**CARBIDE**

## SPIRAL POINTED TAPS PLUG STYLE for Steels & Stainless Steels up to 35HRc

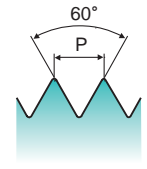
Hole type



**M9/O1 : ANSI**



**N4/O5 : DIN Length ANSI Shank**



Super HSS
UNC UNF
H2~H6
60°
4P~5P
Steam Oxide
Hardslick

Unit : Inch

EDP No.				SIZE	Thread Per Inch		Limit	No. of Flute
Steam Oxide	Hardslick Coated	Steam Oxide	Hardslick Coated		UNC	UNF		
M9082	01082	N4082	05082	2	56		H2	2
M9162	01162	N4162	05162	4	40		H2	2
M9202	01202	N4202	05202	5	40		H2	3
M9243	01243	N4243	05243	6	32		H3	3
M9283	01283	N4283	05283	8	32		H3	3
M9323	01323	N4323	05323	10	24		H3	3
M9343	01343	N4343	05343			32	H3	3
M9403	01403	N4403	05403	1/4	20		H3	3
M9405	01405	N4405	05405				H5	3
M9423	01423	N4423	05423			28	H3	3
M9445	01445	N4445	05445	5/16	18		H5	3
M9464	01464	N4464	05464			24	H4	3
M9485	01485	N4485	05485	3/8	16		H5	3
M9504	01504	N4504	05504			24	H4	3
M9525	01525	N4525	05525	7/16	14		H5	3
M9545	01545	N4545	05545			20	H5	3
M9565	01565	N4565	05565	1/2	13		H5	3
M9585	01585	N4585	05585			20	H5	3
M9605	01605	N4605	05605	9/16	12		H5	3
M9625	01625	N4625	05625			18	H5	3
M9645	01645	N4645	05645	5/8	11		H5	3
M9665	01665	N4665	05665			18	H5	3
M9705	01705	N4705	05705	3/4	10		H5	3
M9725	01725	N4725	05725			16	H5	3
M9746	01746	N4746	05746	7/8	9		H6	3
M9766	01766	N4766	05766			14	H6	3
M9786	01786	N4786	05786	1	8		H6	3
M9806	01806	N4806	05806			12	H6	3
M9836	01836	N4836	05836	1-1/8	8		H6	4
M9876	01876	N4876	05876	1-1/4	8		H6	4
M9916	01916	N4916	05916	1-3/8	8		H6	4
M9956	01956	N4956	05956	1-1/2	8		H6	4

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 338.  
▶ For tapping depth on DIN / ANSI Shank Taps, refer to DIN Table on page 336 & 337.

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
○	◎			◎			○			
Alluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
						○	○		○	○

COMBO TAPS

SPIRAL FLUTE TAPS

SPIRAL POINT TAPS

TAPER PIPE TAPS

FORMING TAPS

STANDARD TAPS

HAND TAPS

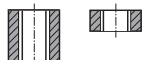
TECHNICAL DATA

# Y/G SPIRAL POINT TAPS

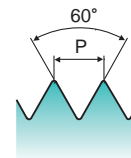
## M5/M6/M7 SERIES

### SPIRAL POINTED TAPS PLUG STYLE Steels up to 45HRc

Hole type



ANSI



P-HSS
UNC UNF
H2~H5
60°
4P~5P
Bright
TiCN
Hardslick

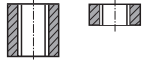
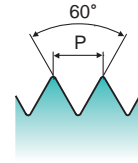
Unit : Inch

Bright Finish	EDP No.		SIZE	Thread Per Inch		Limit	No. of Flute
	TiCN Coated	Hardslick Coated		UNC	UNF		
M5082	M6082	M7082	2	56		H2	2
M5162	M6162	M7162	4	40		H2	2
M5202	M6202	M7202	5	40		H2	3
M5243	M6243	M7243	6	32		H3	3
M5283	M6283	M7283	8	32		H3	3
M5323	M6323	M7323	10	24		H3	3
M5343	M6343	M7343			32	H3	3
M5405	M6405	M7405	1/4	20		H5	3
M5424	M6424	M7424			28	H4	3
M5445	M6445	M7445	5/16	18		H5	3
M5464	M6464	M7464			24	H4	3
M5485	M6485	M7485	3/8	16		H5	3
M5504	M6504	M7504			24	H4	3
M5525	M6525	M7525	7/16	14		H5	3
M5545	M6545	M7545			20	H5	3
M5565	M6565	M7565	1/2	13		H5	3
M5585	M6585	M7585			20	H5	3
M5605	M6605	M7605	9/16	12		H5	3
M5625	M6625	M7625			18	H5	3
M5645	M6645	M7645	5/8	11		H5	3
M5665	M6665	M7665				H5	3
M5705	M6705	M7705	3/4	10		H5	3
M5725	M6725	M7725			16	H5	3

► For tapping depth on ANSI Length Taps, refer to MCT1 302 on page 338.

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
		○	◎		○	◎				
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
			○	○	○			◎		

**SPIRAL POINTED TAPS PLUG STYLE**  
**for Titanium Alloys & Nickel Base Alloys up to 44HRc**
**Hole type**

**ANSI**


P-HSS

UNC  
UNF

H2~H5

60°

4P~5P

Steam  
Oxide

TiN

TiCN

Hardslick

EDP No.				SIZE	Thread Per Inch		Limit	No. of Flute
Steam Oxide	TiN Coated	TiCN Coated	Hardslick Coated		UNC	UNF		
I3082	M8082	I5082	J6082	2	56		H2	2
I3162	M8162	I5162	J6162	4	40		H2	2
I3202	M8202	I5202	J6202	5	40		H2	3
I3243	M8243	I5243	J6243	6	32		H3	3
I3283	M8283	I5283	J6283	8	32		H3	3
I3323	M8323	I5323	J6323	10	24		H3	3
I3343	M8343	I5343	J6343			32	H3	3
I3403	M8403	I5403	J6403	1/4	20		H3	3
I3405	M8405	I5405	J6405				H5	3
I3423	M8423	I5423	J6423			28	H3	3
I3424	M8424	I5424	J6424				H4	3
I3443	M8443	I5443	J6443	5/16	18		H3	3
I3445	M8445	I5445	J6445				H5	3
I3463	M8463	I5463	J6463			24	H3	3
I3483	M8483	I5483	J6483	3/8	16		H3	3
I3485	M8485	I5485	J6485				H5	3
I3503	M8503	I5503	J6503			24	H3	3
I3504	M8504	I5504	J6504				H4	3
I3523	M8523	I5523	J6523	7/16	14		H3	3
I3525	M8525	I5525	J6525				H5	3
I3543	M8543	I5543	J6543			20	H3	3
I3545	M8545	I5545	J6545				H5	3
I3563	M8563	I5563	J6563	1/2	13		H3	3
I3565	M8565	I5565	J6565				H5	3
I3583	M8583	I5583	J6583			20	H3	3
I3585	M8585	I5585	J6585				H5	3

▶ For tapping depth on ANSI Length Taps, refer to MCT1 302 on page 338.

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
Alluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
			◎	◎	◎					

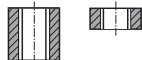


# SPIRAL POINT TAPS

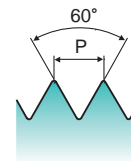
**13/M8/I5/J6** SERIES

## SPIRAL POINTED TAPS PLUG STYLE for Titanium Alloys & Nickel Base Alloys up to 44HRc

Hole type



ANSI



P-HSS
UNC UNF
H2~H5
60°
4P~5P
Steam Oxide
TiN
TiCN
Hardslick

EDP No.				SIZE	Thread Per Inch		Limit	No. of Flute
Steam Oxide	TiN Coated	TiCN Coated	Hardslick Coated		UNC	UNF		
<b>I3603</b>	<b>M8603</b>	<b>I5603</b>	<b>J6603</b>	9/16	12		H3	3
<b>I3605</b>	<b>M8605</b>	<b>I5605</b>	<b>J6605</b>				H5	3
<b>I3623</b>	<b>M8623</b>	<b>I5623</b>	<b>J6623</b>	5/8	11		H3	3
<b>I3625</b>	<b>M8625</b>	<b>I5625</b>	<b>J6625</b>				H5	3
<b>I3643</b>	<b>M8643</b>	<b>I5643</b>	<b>J6643</b>	3/4	10		H3	3
<b>I3645</b>	<b>M8645</b>	<b>I5645</b>	<b>J6645</b>				H5	3
<b>I3663</b>	<b>M8663</b>	<b>I5663</b>	<b>J6663</b>			18	H3	3
<b>I3665</b>	<b>M8665</b>	<b>I5665</b>	<b>J6665</b>				H5	3
<b>I3703</b>	<b>M8703</b>	<b>I5703</b>	<b>J6703</b>				H3	3
<b>I3705</b>	<b>M8705</b>	<b>I5705</b>	<b>J6705</b>				H5	3
<b>I3723</b>	<b>M8723</b>	<b>I5723</b>	<b>J6723</b>			16	H3	3
<b>I3725</b>	<b>M8725</b>	<b>I5725</b>	<b>J6725</b>				H5	3

Unit : Inch

► For tapping depth on ANSI Length Taps, refer to MCT1 302 on page 338.

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
			◎	◎	◎					

# SPIRAL POINT TAPS

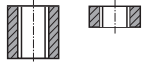
**10/12/J2** SERIES

HSS

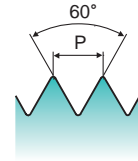
CARBIDE

## SPIRAL POINTED TAPS PLUG STYLE for Stainless Steels up to 28HRc

Hole type



ANSI



HSSE-V3
UNC UNF
H2~H6
60°
4P~5P
Steam Oxide
TiN
Hardslick

Unit : Inch

EDP No.			SIZE	Thread Per Inch		Limit	No. of Flute
Steam Oxide	TiN Coated	Hardslick Coated		UNC	UNF		
I0082	I2082	J2082	2	56		H2	2
I0162	I2162	J2162	4	40		H2	2
I0202	I2202	J2202	5	40		H2	3
I0203	I2203	J2203				H3	3
I0243	I2243	J2243	6	32		H3	3
I0283	I2283	J2283	8	32		H3	3
I0323	I2323	J2323	10	24		H3	3
I0343	I2343	J2343			32	H3	3
I0403	I2403	J2403	1/4	20		H3	3
I0405	I2405	J2405				H5	3
I0423	I2423	J2423			28	H3	3
I0443	I2443	J2443	5/16	18		H3	3
I0445	I2445	J2445				H5	3
I0463	I2463	J2463			24	H3	3
I0483	I2483	J2483	3/8	16		H3	3
I0485	I2485	J2485				H5	3
I0503	I2503	J2503			24	H3	3
I0523	I2523	J2523	7/16	14		H3	3
I0525	I2525	J2525				H5	3
I0543	I2543	J2543			20	H3	3
I0545	I2545	J2545				H5	3
I0563	I2563	J2563	1/2	13		H3	3
I0565	I2565	J2565				H5	3
I0583	I2583	J2583			20	H3	3
I0603	I2603	J2603	9/16	12		H3	3
I0623	I2623	J2623			18	H3	3

► For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 338.

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
○	◎			◎			○			
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
						○	○		○	○

COMBO TAPS

SPIRAL FLUTE TAPS

SPIRAL POINT TAPS

TAPER PIPE TAPS

FORMING TAPS

STANDARD TAPS

HAND TAPS

TECHNICAL DATA

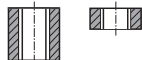


# SPIRAL POINT TAPS

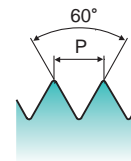
10/12/J2 SERIES

## SPIRAL POINTED TAPS PLUG STYLE for Stainless Steels up to 28HRc

Hole type



ANSI



HSSE-V3
UNC UNF
H2~H6
60°
4P~5P
Steam Oxide
TiN
Hardslick

Unit : Inch

Steam Oxide	EDP No.		SIZE	Thread Per Inch		Limit	No. of Flute
	TiN Coated	Hardslick Coated		UNC	UNF		
I0643	I2643	J2643	5/8	11		H3	3
I0645	I2645	J2645				H5	3
I0665	I2665	J2665			18	H5	3
I0703	I2703	J2703	3/4	10		H3	3
I0705	I2705	J2705				H5	3
I0723	I2723	J2723	3/4		16	H3	3
I0725	I2725	J2725	3/4		16	H5	3
I0744	I2744	J2744	7/8	9		H4	3
I0746	I2746	J2746				H6	3
I0766	I2766	J2766			14	H6	3
I0784	I2784	J2784	1	8		H4	3
I0786	I2786	J2786				H6	3
I0806	I2806	J2806			12	H6	3

► For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 338.

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
○	◎			◎			○			
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
						○	○		○	○

# SPIRAL POINT TAPS

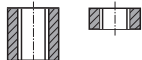
**M0/M1/M2/M3** SERIES

HSS

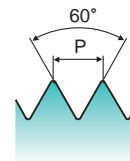
CARBIDE

## SPIRAL POINTED TAPS PLUG STYLE for Stainless Steels up to 28HRc

Hole type



ANSI Long Shank



P-HSS
UNC UNF
H2~H3
60°
4P~5P
TiN
Hardslick

Unit : Inch

EDP No.				SIZE	Thread Per Inch		Limit	No. of Flute	Maximum Tapping Depth
TiN Coated 4" OAL	TiN Coated 6" OAL	Hardslick Coated 4" OAL	Hardslick Coated 6" OAL		UNC	UNF			
M0162	—	M2162	—	4	40		H2	2	0.844
M0243	M1243	M2243	M3243	6	32		H3	2	1.031
M0283	M1283	M2283	M3283	8	32		H3	3	1.125
M0323	M1323	M2323	M3323	10	24		H3	3	1.312
M0343	M1343	M2343	M3343			32	H3	3	1.312
M0403	M1403	M2403	M3403	1/4	20		H3	3	1.500
—	M1423	—	M3423			28	H3	3	1.500
—	M1443	—	M3443	5/16	18		H3	3	1.688
—	M1463	—	M3463			24	H3	3	1.688
—	M1483	—	M3483	3/8	16		H3	3	1.875
—	M1503	—	M3503			24	H3	3	
—	M1523	—	M3523	7/16	14		H3	3	
—	M1543	—	M3543			20	H3	3	
—	M1563	—	M3563	1/2	13		H3	3	
—	M1583	—	M3583			20	H3	3	
—	M1603	—	M3603	9/16	12		H3	3	
—	M1623	—	M3623			18	H3	3	
—	M1643	—	M3643	5/8	11		H3	3	

► For tapping depth on ANSI Length Taps, refer to MCT1 302 on page 338.

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
○	◎			◎			○			
Alluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
						○	○		○	○

COMBO TAPS

SPIRAL FLUTE TAPS

SPIRAL POINT TAPS

TAPER PIPE TAPS

FORMING TAPS

STANDARD TAPS

HAND TAPS

TECHNICAL DATA



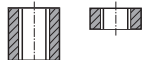


# SPIRAL POINT TAPS

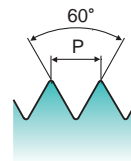
**J4/J3/J8** SERIES

## SPIRAL POINTED TAPS PLUG STYLE Steels up to 38HRC

Hole type



ANSI



HSSE-V3
UNC UNF
H2~H5
60°
4P~5P
Bright
Steam Oxide
Hardslick

Unit : Inch

Bright Finish	EDP No.		SIZE	Thread Per Inch		Limit	No. of Flute
	Steam Oxide	Hardslick Coated		UNC	UNF		
J4082	J3082	J8082	2	56		H2	2
J4162	J3162	J8162	4	40		H2	2
J4202	J3202	J8202	5	40		H2	3
J4243	J3243	J8243	6	32		H3	3
J4283	J3283	J8283	8	32		H3	3
J4323	J3323	J8323	10	24		H3	3
J4343	J3343	J8343	10		32	H3	3
J4403	J3403	J8403	1/4	20		H3	3
J4405	J3405	J8405	1/4	20		H5	3
J4423	J3423	J8423	1/4		28	H3	3
J4425	J3425	J8425	1/4		28	H5	3
J4443	J3443	J8443	5/16	18		H3	3
J4445	J3445	J8445	5/16	18		H5	3
J4463	J3463	J8463	5/16		24	H3	3
J4465	J3465	J8465	5/16		24	H5	3
J4483	J3483	J8483	3/8	16		H3	3
J4485	J3485	J8485	3/8	16		H5	3
J4503	J3503	J8503	3/8		24	H3	3
J4505	J3505	J8505	3/8		24	H5	3
J4523	J3523	J8523	7/16	14		H3	3
J4525	J3525	J8525	7/16	14		H5	3
J4543	J3543	J8543	7/16		20	H3	3
J4545	J3545	J8545	7/16		20	H5	3
J4563	J3563	J8563	1/2	13		H3	3
J4565	J3565	J8565	1/2	13		H5	3
J4583	J3583	J8583	1/2		20	H3	3
J4585	J3585	J8585	1/2		20	H5	3

► For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 338.

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
	◎	◎		○	○					
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
			○							

# SPIRAL POINT TAPS

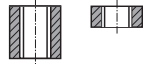
**J4/J3/J8** SERIES

**HSS**

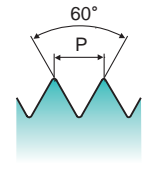
**CARBIDE**

## SPIRAL POINTED TAPS PLUG STYLE Steels up to 38HRc

**Hole type**



**ANSI**



HSSE-V3
UNC UNF
H2~H5
60°
4P~5P
Bright
Steam Oxide
Hardslick

Unit : Inch

Bright Finish	EDP No.		SIZE	Thread Per Inch		Limit	No. of Flute
	Steam Oxide	Hardslick Coated		UNC	UNF		
J4605	J3605	J8605	9/16	12		H5	3
J4625	J3625	J8625	9/16		18	H5	3
J4643	J3643	J8643	5/8	11		H3	3
J4645	J3645	J8645	5/8	11		H5	3
J4663	J3663	J8663	5/8		18	H3	3
J4665	J3665	J8665	5/8		18	H5	3
J4703	J3703	J8703	3/4	10		H3	3
J4705	J3705	J8705	3/4	10		H5	3
J4723	J3723	J8723	3/4		16	H3	3
J4725	J3725	J8725	3/4		16	H5	3
J4784	J3784	J8784	1	8		H4	3
J4786	J3786	J8786	1	8		H6	3
J4804	J3804	J8804	1		12	H4	3
J4806	J3806	J8806	1		12	H6	3
J4824	J3824	J8824	1-1/8	7		H4	4
J4864	J3864	J8864	1-1/4	7		H4	4
J4904	J3904	J8904	1-3/8	6		H4	4
J4944	J3944	J8944	1-1/2	6		H4	4

► For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 338.

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
	◎	◎		○	○					
Alluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
			○							

COMBO TAPS

SPIRAL FLUTE TAPS

SPIRAL POINT TAPS

TAPER PIPE TAPS

FORMING TAPS

STANDARD TAPS

HAND TAPS

TECHNICAL DATA

**Y/G SPIRAL POINT TAPS**

**K9/L0/L1 SERIES**

**SPIRAL POINTED TAPS PLUG STYLE for Multi Purpose**

COMBO TAPS

SPIRAL FLUTE TAPS

SPIRAL POINT TAPS

TAPER PIPE TAPS

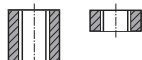
FORMING TAPS

STANDARD TAPS

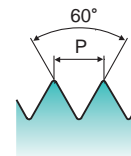
HAND TAPS

TECHNICAL DATA

Hole type



ANSI



HSS-V
UNC UNF
H2~H6
60°
4P~5P
Bright
TiN
Hardslick

Unit : Inch

Bright Finish	EDP No.		SIZE	Thread Per Inch		Limit	No. of Flute
	TiN Coated	Hardslick Coated		UNC	UNF		
K9082	L0082	L1082	2	56		H2	2
K9162	L0162	L1162	4	40		H2	2
K9202	L0202	L1202	5	40		H2	2
K9243	L0243	L1243	6	32		H3	2
K9283	L0283	L1283	8	32		H3	2
K9323	L0323	L1323	10	24		H3	2
K9343	L0343	L1343			32	H3	2
K9403	L0403	L1403	1/4	20		H3	2
K9405	L0405	L1405				H5	2
K9423	L0423	L1423			28	H3	3
K9443	L0443	L1443	5/16	18		H3	2
K9445	L0445	L1445				H5	3
K9463	L0463	L1463			24	H3	3
K9483	L0483	L1483	3/8	16		H3	3
K9485	L0485	L1485				H5	3
K9503	L0503	L1503			24	H3	3
K9523	L0523	L1523	7/16	14		H3	3
K9525	L0525	L1525				H5	3
K9543	L0543	L1543			20	H3	3
K9545	L0545	L1545				H5	3
K9563	L0563	L1563	1/2	13		H3	3
K9565	L0565	L1565				H5	3
K9583	L0583	L1583			20	H3	3
K9585	L0585	L1585				H5	3
K9603	L0603	L1603	9/16	12		H3	3
K9623	L0623	L1623			18	H3	3
K9625	L0625	L1625				H5	3

► For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 338.

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
◎	◎	○		○	○					
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
○		○	○							

# SPIRAL POINT TAPS

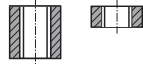
**K9/L0/L1** SERIES

**HSS**

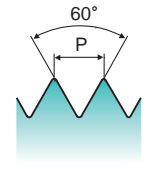
**CARBIDE**

## SPIRAL POINTED TAPS PLUG STYLE for Multi Purpose

**Hole type**



**ANSI**



HSS-V
UNC UNF
H2~H6
60°
4P~5P
Bright
TiN
Hardslick

Unit : Inch

Bright Finish	EDP No.		SIZE	Thread Per Inch		Limit	No. of Flute
	TiN Coated	Hardslick Coated		UNC	UNF		
K9643	L0643	L1643	5/8	11		H3	3
K9645	L0645	L1645					H5
K9663	L0663	L1663	3/4	10	18	H3	3
K9665	L0665	L1665				H5	3
K9703	L0703	L1703	7/8	9		H3	3
K9705	L0705	L1705				H5	3
K9723	L0723	L1723	1	8		H3	3
K9725	L0725	L1725				H5	3
K9746	L0746	L1746	1	8		H6	3
K9764	L0764	L1764				H4	3
K9766	L0766	L1766	1	8		H6	3
K9786	L0786	L1786				H6	3
K9806	L0806	L1806			12	H6	3

► For tapping depth on ANSI Length Taps, refer to MCT1 302 on page 338.

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
◎	◎	○		○	○					
Alluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
○		○	○							

COMBO TAPS

SPIRAL FLUTE TAPS

SPIRAL POINT TAPS

TAPER PIPE TAPS

FORMING TAPS

STANDARD TAPS

HAND TAPS

TECHNICAL DATA

# Y/G SPIRAL POINT TAPS

## L3/L4/L5 SERIES

### SPIRAL POINTED TAPS PLUG STYLE for Multi Purpose

COMBO TAPS

SPIRAL FLUTE TAPS

SPIRAL POINT TAPS

TAPER PIPE TAPS

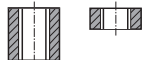
FORMING TAPS

STANDARD TAPS

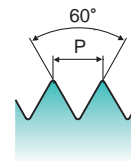
HAND TAPS

TECHNICAL DATA

Hole type



DIN Length ANSI Shank



HSS-V
UNC UNF
H2~H6
60°
4P~5P
Bright
TiN
Hardslick

Unit : Inch

Bright Finish	EDP No.		SIZE	Thread Per Inch		Limit	No. of Flute
	TiN Coated	Hardslick Coated		UNC	UNF		
L3082	L4082	L5082	2	56		H2	2
L3162	L4162	L5162	4	40		H2	2
L3202	L4202	L5202	5	40		H2	3
L3243	L4243	L5243	6	32		H3	3
L3283	L4283	L5283	8	32		H3	3
L3323	L4323	L5323	10	24		H3	3
L3343	L4343	L5343			32	H3	3
L3403	L4403	L5403	1/4	20		H3	3
L3405	L4405	L5405				H5	3
L3423	L4423	L5423			28	H3	3
L3443	L4443	L5443	5/16	18		H3	3
L3445	L4445	L5445				H5	3
L3463	L4463	L5463			24	H3	3
L3483	L4483	L5483	3/8	16		H3	3
L3485	L4485	L5485				H5	3
L3503	L4503	L5503			24	H3	3
L3523	L4523	L5523	7/16	14		H3	3
L3525	L4525	L5525				H5	3
L3543	L4543	L5543			20	H3	3
L3545	L4545	L5545				H5	3
L3563	L4563	L5563	1/2	13		H3	3
L3565	L4565	L5565				H5	3
L3583	L4583	L5583			20	H3	3
L3585	L4585	L5585				H5	3
L3605	L4605	L5605	9/16	12		H5	3
L3625	L4625	L5625			18	H5	3
L3643	L4643	L5643	5/8	11		H3	3
L3645	L4645	L5645				H5	3
L3703	L4703	L5703	3/4	10		H3	3
L3705	L4705	L5705				H5	3
L3725	L4725	L5725	3/4		16	H5	3
L3746	L4746	L5746	7/8	9		H6	3
L3766	L4766	L5766			14	H6	3
L3786	L4786	L5786	1	8		H6	3
L3806	L4806	L5806			12	H6	3

► For tapping depth on DIN / ANSI shank Taps, refer to DIN Table on page 336 & 337.

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
◎	◎	○		○	○					
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
○		○								

# **Y/G SPIRAL POINT TAPS**

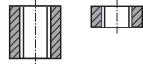
**ST/SI SERIES**

**HSS**

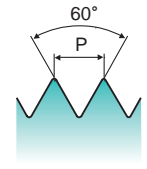
**CARBIDE**

## SCREW THREAD INSERT TAP

**Hole type**



**ANSI**



**HSSE-V3**

**UNC UNF**

**2B**



**Hardslick**

Unit : Inch

SIZE	EDP No.	Thread Per Inch	EDP No.	Thread Per Inch	Limit	No. of Flute
	Hardslick Coated	UNC	Hardslick Coated	UNF		
#4	SI162	40	ST182	48	2B	3
#6	SI242	32	ST262	40	2B	3
#8	SI282	32	ST302	36	2B	3
#10	SI322	24	ST342	32	2B	3
1/4	SI402	20	ST422	28	2B	3
5/16	SI442	18	ST462	24	2B	3
3/8	SI482	16	ST502	24	2B	3
7/16	SI522	14	ST542	20	2B	3
1/2	SI562	13	ST582	20	2B	3
9/16	SI602	12	ST622	18	2B	3
5/8	SI642	11	ST662	18	2B	3
3/4	SI702	10	ST722	16	2B	3

COMBO TAPS

SPIRAL FLUTE TAPS

SPIRAL POINT TAPS

TAPER PIPE TAPS

FORMING TAPS

STANDARD TAPS

HAND TAPS

TECHNICAL DATA

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
◎	◎	○		○	○					
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
○		○								



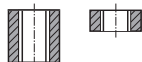
# SPIRAL POINT TAPS

**N7/N8** SERIES

**N3/O3** SERIES

## METRIC SPIRAL POINTED TAPS PLUG STYLE for Steels & Stainless Steels up to 35HRc

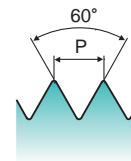
Hole type



**N7/N8 : ANSI**



**N3/O3 : DIN Length ANSI Shank**



Super HSS
M MF
D3~D7
60°
4P~5P
Steam Oxide
Hardslick

Unit : mm

EDP No.				SIZE	Pitch	Limit	No. of Flute
Steam Oxide	Hardslick Coated	Steam Oxide	Hardslick Coated				
N7203	N8203	N3203	O3203	M3	0.5	D3	3
N7224	N8224	N3224	O3224	M3.5	0.6	D4	3
N7244	N8244	N3244	O3244	M4	0.7	D4	3
N7284	N8284	N3284	O3284	M5	0.8	D4	3
N7315	N8315	N3315	O3315	M6	1.0	D5	3
N7345	N8345	N3345	O3345	M7	1.0	D5	3
N7365	N8365	N3365	O3365	M8	1.25	D5	3
N7375	N8375	N3375	O3375	M8	1.0	D5	3
N7426	N8426	N3426	O3426	M10	1.5	D6	3
N7435	N8435	N3435	O3435	M10	1.25	D5	3
N7506	N8506	N3506	O3506	M12	1.75	D6	3
N7525	N8525	N3525	O3525	M12	1.25	D5	3
N7547	N8547	N3547	O3547	M14	2.0	D7	3
N7556	N8556	N3556	O3556	M14	1.5	D6	3
N7607	N8607	N3607	O3607	M16	2.0	D7	3
N7616	N8616	N3616	O3616	M16	1.5	D6	3
N7657	N8657	N3657	O3657	M18	2.5	D7	3
N7676	N8676	N3676	O3676	M18	1.5	D6	3

- ▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 338.
- ▶ For tapping depth on DIN / ANSI Shank Taps, refer to DIN Table on page 336 & 337.

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
○	◎			◎			○			
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
						○	○		○	○

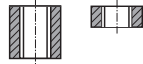
# SPIRAL POINT TAPS

**09/IA** SERIES  
**K3/K5/K6** SERIES

**HSS**  
**CARBIDE**

## METRIC SPIRAL FLUTED TAPS PLUG STYLE Steels up to 35HRc

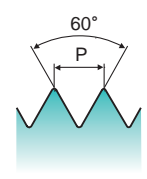
Hole type



**09/IA : ANSI**



**K3/K5/K6 : DIN Length ANSI Shank**



HSSE-V3
M MF
D3~D7
60°
4P~5P
Steam Oxide
TiCN
Hardslick

Unit : mm

EDP No.					SIZE	Pitch	Limit	No. of Flute
Steam Oxide	Hardslick Coated	Steam Oxide	TiCN Coated	Hardslick Coated				
09203	IA203	K3203	K5203	K6203	M3	0.5	D3	3
09224	IA224	K3224	K5224	K6224	M3.5	0.6	D4	3
09244	IA244	K3244	K5244	K6244	M4	0.7	D4	3
09284	IA284	K3284	K5284	K6284	M5	0.8	D4	3
09315	IA315	K3315	K5315	K6315	M6	1.0	D5	3
09345	IA345	K3345	K5345	K6345	M7	1.0	D5	3
09365	IA365	K3365	K5365	K6365	M8	1.25	D5	3
09375	IA375	K3375	K5375	K6375	M8	1.0	D5	3
09426	IA426	K3426	K5426	K6426	M10	1.5	D6	3
09435	IA435	K3435	K5435	K6435	M10	1.25	D5	3
09506	IA506	K3506	K5506	K6506	M12	1.75	D6	3
09525	IA525	K3525	K5525	K6525	M12	1.25	D5	3
09547	IA547	K3547	K5547	K6547	M14	2.0	D7	3
09556	IA556	K3556	K5556	K6556	M14	1.5	D6	3
09607	IA607	K3607	K5607	K6607	M16	2.0	D7	3
09616	IA616	K3616	K5616	K6616	M16	1.5	D6	3
09657	IA657	K3657	K5657	K6657	M18	2.5	D7	3
09676	IA676	K3676	K5676	K6676	M18	1.5	D6	3

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 338.  
▶ For tapping depth on DIN / ANSI Shank Taps, refer to DIN Table on page 336 & 337.

COMBO TAPS  
SPIRAL FLUTE TAPS  
SPIRAL POINT TAPS  
TAPER PIPE TAPS  
FORMING TAPS  
STANDARD TAPS  
HAND TAPS  
TECHNICAL DATA

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
	◎	○		◎	○					
Alluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
○										





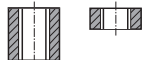
**SPIRAL POINT TAPS**

**IB/IC** SERIES

**J9/K7/K2** SERIES

**METRIC SPIRAL POINTED TAPS PLUG STYLE**  
Steels up to 35HRc

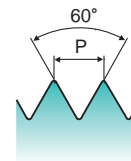
Hole type



**IB/IC : ANSI**



**J9/K7/K2 : DIN Length ANSI Shank**



HSSE-V3
M MF
D3~D7
60°
4P~5P
Steam Oxide
TiCN
Hardslick

Unit : mm

EDP No.					SIZE	Pitch	Limit	No. of Flute
Steam Oxide	Hardslick Coated	Steam Oxide	TiCN Coated	Hardslick Coated				
IB203	IC203	J9203	K7203	K2203	M3	0.5	D3	3
IB224	IC224	J9224	K7224	K2224	M3.5	0.6	D4	3
IB244	IC244	J9244	K7244	K2244	M4	0.7	D4	3
IB284	IC284	J9284	K7284	K2284	M5	0.8	D4	3
IB315	IC315	J9315	K7315	K2315	M6	1.0	D5	3
IB345	IC345	J9345	K7345	K2345	M7	1.0	D5	3
IB365	IC365	J9365	K7365	K2365	M8	1.25	D5	3
IB375	IC375	J9375	K7375	K2375	M8	1.0	D5	3
IB426	IC426	J9426	K7426	K2426	M10	1.5	D6	3
IB435	IC435	J9435	K7435	K2435	M10	1.25	D5	3
IB506	IC506	J9506	K7506	K2506	M12	1.75	D6	3
IB525	IC525	J9525	K7525	K2525	M12	1.25	D5	3
IB547	IC547	J9547	K7547	K2547	M14	2.0	D7	3
IB556	IC556	J9556	K7556	K2556	M14	1.5	D6	3
IB607	IC607	J9607	K7607	K2607	M16	2.0	D7	3
IB616	IC616	J9616	K7616	K2616	M16	1.5	D6	3
IB657	IC657	J9657	K7657	K2657	M18	2.5	D7	4
IB676	IC676	J9676	K7676	K2676	M18	1.5	D6	4

- ▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 338.
- ▶ For tapping depth on DIN / ANSI Shank Taps, refer to DIN Table on page 336 & 337.

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
	◎	◎		○	○					
Alluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
			○							

# SPIRAL POINT TAPS

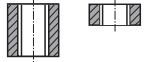
**L7/L8/L9** SERIES

**HSS**

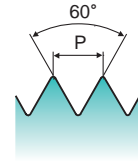
**CARBIDE**

## METRIC SPIRAL POINTED TAPS PLUG STYLE for Multi Purpose

Hole type



ANSI



HSS-V
M MF
D3~D6
60°
4P~5P
Bright
TiCN
Hardslick

Unit : mm

EDP No.			SIZE	Pitch	Limit	No. of Flute
Bright Finish	TiCN Coated	Hardslick Coated				
L7203	L8203	L9203	M3	0.5	D3	2
L7224	L8224	L9224	M3.5	0.6	D4	2
L7244	L8244	L9244	M4	0.7	D4	2
L7284	L8284	L9284	M5	0.8	D4	2
L7315	L8315	L9315	M6	1.0	D5	3
L7345	L8345	L9345	M7	1.0	D5	3
L7365	L8365	L9365	M8	1.25	D5	3
L7375	L8375	L9375	M8	1.0	D5	3
L7426	L8426	L9426	M10	1.5	D6	3
L7435	L8435	L9435	M10	1.25	D5	3
L7506	L8506	L9506	M12	1.75	D6	3
L7525	L8525	L9525	M12	1.25	D5	3

► For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 338.

COMBO TAPS

SPIRAL FLUTE TAPS

SPIRAL POINT TAPS

TAPER PIPE TAPS

FORMING TAPS

STANDARD TAPS

HAND TAPS

TECHNICAL DATA

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
◎	◎	○		○	○					
Alluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
○		○								



Global Cutting Tool Leader **YG-1**



**HSS**



Being the best through innovation



# TAPER PIPE TAPS





- Tapping NPT & NPTF threads

# SELECTION GUIDE

## TAPER PIPE TAPS

Tapping NPT & NPTF threads

### INCH

EDP No.	MODEL	Tool Material	Standard	Dimensions	Tolerance	Chamfer	Surface Treatment	Page
<b>Q1/Q0/Q6</b>		HSSE-V3	NPT/F	ANSI		2P~3P	Bright Steam Oxide Hardslick	<b>315</b>
<b>Q9/R0/R1</b>		HSSE-V3	NPT/F	ANSI		2P~3P	Bright / TiN Hardslick	<b>316</b>
<b>R7/R8/R9/S0</b>		HSSE-V3	NPT/F	ANSI		2P~3P	Bright / TiN Hardslick Nitrided-Steam Oxide	<b>317</b>
<b>S1/S2</b>		HSSE-V3	NPTF	ANSI		2P~3P	Bright / TiCN	<b>318</b>

# **YG** TAPER PIPE TAPS

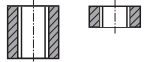
**Q1/Q0/Q6** SERIES

**HSS**

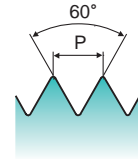
**CARBIDE**

## TAPER PIPE TAPS : SPIRAL FLUTED for Steels & Stainless Steels

Hole type



ANSI



HSSE-V3
NPT/F
60°
2P~3P
Bright
Steam Oxide
Hardslick
R15

Unit : Inch

Bright Finish	EDP No.		SIZE	Thread Per Inch	No. of Flute
	Steam Oxide	Hardslick Coated			
<b>Q1020</b>	<b>Q0020</b>	<b>Q6020</b>	1/16	27	4
<b>Q1200</b>	<b>Q0200</b>	<b>Q6200</b>	1/8(Lg)	27	4
<b>Q1210</b>	<b>Q0210</b>	<b>Q6210</b>	1/8(Sm)	27	4
<b>Q1400</b>	<b>Q0400</b>	<b>Q6400</b>	1/4	18	4
<b>Q1480</b>	<b>Q0480</b>	<b>Q6480</b>	3/8	18	4
<b>Q1560</b>	<b>Q0560</b>	<b>Q6560</b>	1/2	14	4
<b>Q1700</b>	<b>Q0700</b>	<b>Q6700</b>	3/4	14	4
<b>Q1780</b>	<b>Q0780</b>	<b>Q6780</b>	1	11-1/2	4
<b>Q1860</b>	<b>Q0860</b>	<b>Q6860</b>	1-1/4	11-1/2	5
<b>Q1960</b>	<b>Q0960</b>	<b>Q6960</b>	1-1/2	11-1/2	7
<b>Q1D20</b>	<b>Q0D20</b>	<b>Q6D20</b>	2	11-1/2	7

► These Taps meet both NPT and NPTF Standards.

COMBO TAPS

SPIRAL FLUTE TAPS

SPIRAL POINT TAPS

TAPER PIPE TAPS

FORMING TAPS

STANDARD TAPS

HAND TAPS

TECHNICAL DATA

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
○	◎	○		◎	○					
Alluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
○		○								

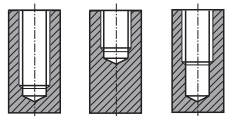


# TAPER PIPE TAPS

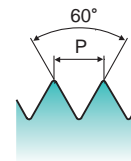
**Q9/R0/R1** SERIES

## TAPER PIPE TAPS : SPIRAL FLUTED for Cast Irons & Steels

Hole type



ANSI



HSSE-V3

NPT/F



Bright

TiN

Hardslick



Unit : Inch

Bright Finish	EDP No.		SIZE	Thread Per Inch	No. of Flute
	TiN Coated	Hardslick Coated			
<b>Q9020</b>	<b>R0020</b>	<b>R1020</b>	1/16	27	4
<b>Q9200</b>	<b>R0200</b>	<b>R1200</b>	1/8(Lg)	27	4
<b>Q9210</b>	<b>R0210</b>	<b>R1210</b>	1/8(Sm)	27	4
<b>Q9400</b>	<b>R0400</b>	<b>R1400</b>	1/4	18	4
<b>Q9480</b>	<b>R0480</b>	<b>R1480</b>	3/8	18	4
<b>Q9560</b>	<b>R0560</b>	<b>R1560</b>	1/2	14	4
<b>Q9700</b>	<b>R0700</b>	<b>R1700</b>	3/4	14	4
<b>Q9780</b>	<b>R0780</b>	<b>R1780</b>	1	11-1/2	4
<b>Q9860</b>	<b>R0860</b>	<b>R1860</b>	1-1/4	11-1/2	5
<b>Q9960</b>	<b>R0960</b>	<b>R1960</b>	1-1/2	11-1/2	7
<b>Q9D20</b>	<b>R0D20</b>	<b>R1D20</b>	2	11-1/2	7

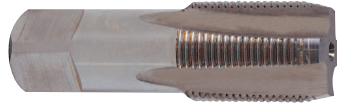
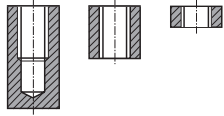
► These Taps meet both NPT and NPTF Standards.

◎ : Excellent ○ : Good

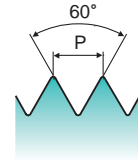
Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
◎	◎	○								
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
	◎	◎								

### TAPER PIPE TAPS : STRAIGHT FLUTED for Cast Irons & Steels

Hole type



**ANSI**



HSSE-V3
NPT/F
60°
2P~3P
Bright
TiN
Hardslick
NiNitrided Steam Oxide

Unit : Inch

EDP No.				SIZE	Thread Per Inch	No. of Flute
Bright Finish	TiN Coated	Hardslick Coated	Nitrided Steam Oxide			
R7020	R8020	R9020	S0020	1/16	27	4
R7200	R8200	R9200	S0200	1/8(Lg)	27	4
R7210	R8210	R9210	S0210	1/8(Sm)	27	4
R7400	R8400	R9400	S0400	1/4	18	4
R7480	R8480	R9480	S0480	3/8	18	4
R7560	R8560	R9560	S0560	1/2	14	4
R7700	R8700	R9700	S0700	3/4	14	5
R7780	R8780	R9780	S0780	1	11-1/2	5
R7860	R8860	R9860	S0860	1-1/4	11-1/2	5
R7960	R8960	R9960	S0960	1-1/2	11-1/2	7
R7D20	R8D20	R9D20	S0D20	2	11-1/2	7

► These Taps meet both NPT and NPTF Standards.

COMBO TAPS

SPIRAL FLUTE TAPS

SPIRAL POINT TAPS

TAPER PIPE TAPS

FORMING TAPS

STANDARD TAPS

HAND TAPS

TECHNICAL DATA

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
◎	◎	○								
Alluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
	◎	◎								



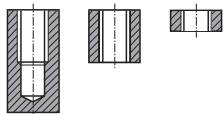


**TAPER PIPE TAPS**

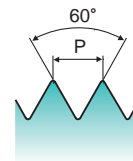
**S1/S2** SERIES

**TAPER PIPE TAPS : INTERRUPTED THREAD**  
for Cast Irons & Steels

Hole type



ANSI



HSSE-V3
NPTF
60°
2P~3P
Bright
TiCN

Unit : Inch

EDP No.		SIZE	Thread Per Inch	No. of Flute
Bright Finish	TiCN Coated			
S1020	S2020	1/16	27	5
S1200	S2200	1/8(Lg)	27	5
S1210	S2210	1/8(Sm)	27	5
S1400	S2400	1/4	18	5
S1480	S2480	3/8	18	5
S1560	S2560	1/2	14	5
S1700	S2700	3/4	14	5
S1780	S2780	1	11-1/2	5

► These Taps meet and NPTF Standards.

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
◎	◎	○								
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
	◎	◎								

**HSS**



Being the best through innovation



# FORMING TAPS



- Tapping by Forming Soft Materials

# SELECTION GUIDE


## FORMING TAPS

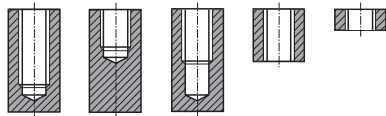
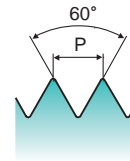
Tapping by Forming Soft Materials

### INCH

EDP No.	MODEL	Tool Material	Standard	Dimensions	Tolerance	Chamfer	Surface Treatment	Page
<b>Z0/Z1/Z2/Z3</b>		HSSE-V3	UNC/UNF	ANSI	H3~H8	4P~5P 1.5P~2P	Bright / TiN	<b>321</b>
<b>Z4/Z5/Z6/Z7</b>		HSSE-V3	UNC/UNF	ANSI	H3~H8	4P~5P 1.5P~2P	Bright / TiN	<b>322</b>

### METRIC

EDP No.	MODEL	Tool Material	Standard	Dimensions	Tolerance	Chamfer	Surface Treatment	Page
<b>Z8/ZA/ZC</b>		HSSE-V3	M/MF	ANSI	D5~D11	4P~5P 1.5P~2P	Bright TiN / TiCN	<b>323</b>

**FORMING TAPS PLUG & BOTTOMING STYLE**  
**for Multi Purpose**
**Hole type**

**ANSI**


HSSE-V3

UNC  
UNF

H3~H8

60°

4P~5P  
Plug

1.5P~2P  
Bottoming

Bright

TiN

Unit : Inch

EDP No.				SIZE	Thread Per Inch		Limit	No. of Flute
Bright Finish Plug	TiN Coated Plug	Bright Finish Bottoming	TiN Coated Bottoming		UNC	UNF		
Z0163	Z1163	Z2163	Z3163	4	40		H3	4
Z0165	Z1165	Z2165	Z3165				H5	4
Z0185	Z1185	Z2185	Z3185			48	H5	4
Z0203	Z1203	Z2203	Z3203	5	40		H3	4
Z0205	Z1205	Z2205	Z3205				H5	4
Z0225	Z1225	Z2225	Z3225			44	H5	4
Z0243	Z1243	Z2243	Z3243	6	32		H3	4
Z0245	Z1245	Z2245	Z3245				H5	4
Z0265	Z1265	Z2265	Z3265			40	H5	4
Z0283	Z1283	Z2283	Z3283	8	32		H3	4
Z0285	Z1285	Z2285	Z3285				H5	4
Z0305	Z1305	Z2305	Z3305			36	H5	4
Z0324	Z1324	Z2324	Z3324	10	24		H4	4
Z0326	Z1326	Z2326	Z3326				H6	4
Z0344	Z1344	Z2344	Z3344			32	H4	4
Z0346	Z1346	Z2346	Z3346				H6	4
Z0404	Z1404	Z2404	Z3404	1/4	20		H4	4
Z0406	Z1406	Z2406	Z3406				H6	4
Z0424	Z1424	Z2424	Z3424			28	H4	4
Z0426	Z1426	Z2426	Z3426				H6	4
Z0445	Z1445	Z2445	Z3445	5/16	18		H5	4
Z0447	Z1447	Z2447	Z3447				H7	4
Z0465	Z1465	Z2465	Z3465			24	H5	4
Z0467	Z1467	Z2467	Z3467				H7	4
Z0485	Z1485	Z2485	Z3485	3/8	16		H5	4
Z0487	Z1487	Z2487	Z3487				H7	4
Z0505	Z1505	Z2505	Z3505			24	H5	4
Z0507	Z1507	Z2507	Z3507				H7	4
Z0528	Z1528	Z2528	Z3528	7/16	14		H8	4
Z0548	Z1548	Z2548	Z3548			20	H8	4
Z0568	Z1568	Z2568	Z3568	1/2	13		H8	4
Z0588	Z1588	Z2588	Z3588			20	H8	4

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 338.

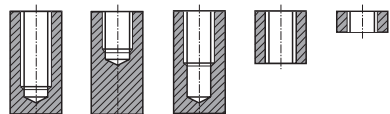
▶ Hardsick coating is available on your request (Bright Finish EDP No + H)

◎ : Excellent ○ : Good

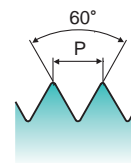
Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
◎	◎			◎			◎			
Alluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
◎						◎	◎		◎	◎

**FORMING TAPS WITH OIL GROOVE PLUG & BOTTOMING STYLE for Multi Purpose**

Hole type



ANSI



HSSE-V3
UNC UNF
H3~H8
60°
4P~5P Plug
1.5P~2P Bottoming
Bright
TiN

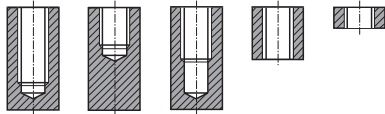
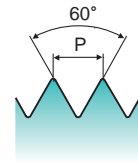
Unit : Inch

EDP No.				SIZE	Thread Per Inch		Limit	No. of Flute
Bright Finish Plug	TiN Coated Plug	Bright Finish Bottoming	TiN Coated Bottoming		UNC	UNF		
Z4163	Z5163	Z6163	Z7163	4	40		H3	4
Z4165	Z5165	Z6165	Z7165				H5	4
Z4185	Z5185	Z6185	Z7185			48	H5	4
Z4203	Z5203	Z6203	Z7203	5	40		H3	4
Z4205	Z5205	Z6205	Z7205				H5	4
Z4225	Z5225	Z6225	Z7225			44	H5	4
Z4243	Z5243	Z6243	Z7243	6	32		H3	4
Z4245	Z5245	Z6245	Z7245				H5	4
Z4265	Z5265	Z6265	Z7265			40	H5	4
Z4283	Z5283	Z6283	Z7283	8	32		H3	4
Z4285	Z5285	Z6285	Z7285				H5	4
Z4305	Z5305	Z6305	Z7305			36	H5	4
Z4324	Z5324	Z6324	Z7324	10	24		H4	4
Z4326	Z5326	Z6326	Z7326				H6	4
Z4344	Z5344	Z6344	Z7344			32	H4	4
Z4346	Z5346	Z6346	Z7346				H6	4
Z4404	Z5404	Z6404	Z7404	1/4	20		H4	4
Z4406	Z5406	Z6406	Z7406				H6	4
Z4424	Z5424	Z6424	Z7424			28	H4	4
Z4426	Z5426	Z6426	Z7426				H6	4
Z4445	Z5445	Z6445	Z7445	5/16	18		H5	4
Z4447	Z5447	Z6447	Z7447				H7	4
Z4465	Z5465	Z6465	Z7465			24	H5	4
Z4467	Z5467	Z6467	Z7467				H7	4
Z4485	Z5485	Z6485	Z7485	3/8	16		H5	4
Z4487	Z5487	Z6487	Z7487				H7	4
Z4505	Z5505	Z6505	Z7505			24	H5	4
Z4507	Z5507	Z6507	Z7507				H7	4
Z4528	Z5528	Z6528	Z7528	7/16	14		H8	4
Z4548	Z5548	Z6548	Z7548			20	H8	4
Z4568	Z5568	Z6568	Z7568	1/2	13		H8	4
Z4588	Z5588	Z6588	Z7588			20	H8	4

► For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 338.  
 ► Hardslick coating is available on your request (Bright Finish EDP No + H)

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
◎	◎			◎			◎			
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
◎						◎	◎		◎	◎

**FORMING TAPS WITH OIL GROOVE PLUG & BOTTOMING STYLE for Multi Purpose**
**Hole type**

**ANSI**


HSSE-V3

M MF

D5~D11

60°

4P~5P Plug

1.5P~2P Bottoming

Bright

TiN

TiCN

EDP No.						SIZE	Pitch	Limit	No. of Flute
Bright Finish Plug	Bright Finish Bottoming	TiN Coated Plug	TiN Coated Bottoming	TiCN Coated Plug	TiCN Coated Bottoming				
Z8205	Z9205	ZA205	ZB205	ZC205	ZD205	M3	0.5	D5	4
Z8246	Z9246	ZA246	ZB246	ZC246	ZD246	M4	0.7	D6	4
Z8287	Z9287	ZA287	ZB287	ZC287	ZD287	M5	0.8	D7	4
Z8318	Z9318	ZA318	ZB318	ZC318	ZD318	M6	1.0	D8	4
Z8369	Z9369	ZA369	ZB369	ZC369	ZD369	M8	1.25	D9	4
Z8420	Z9420	ZA420	ZB420	ZC420	ZD420	M10	1.5	D10	4
Z850A	Z950A	ZA50A	ZB50A	ZC50A	ZD50A	M12	1.75	D11	4

Unit : mm

- ▶ For tapping depth on ANSI length taps, refer to MCTI 302 on page338
- ▶ Hardslck coating is available on your request (Bright Finish EDP No + H)

COMBO TAPS

SPIRAL FLUTE TAPS

SPIRAL POINT TAPS

TAPER PIPE TAPS

FORMING TAPS

STANDARD TAPS

HAND TAPS

TECHNICAL DATA

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
◎	◎			◎			◎			
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
◎						◎	◎		◎	◎



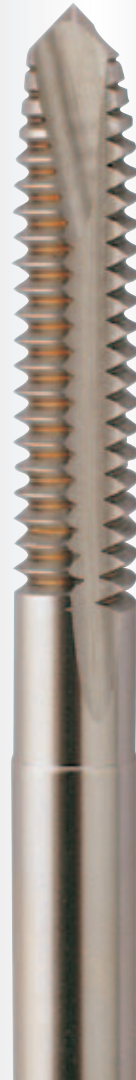
Global Cutting Tool Leader **YG-1**



**HSS**



Being the best through innovation



# STANDARD TAPS

\_ Spiral Point and Spiral Flute Taps





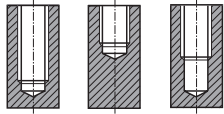
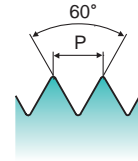
# SELECTION GUIDE

## STANDARD TAPS

Spiral Point and Spiral Flute Taps

### INCH

EDP No.	MODEL	Tool Material	Standard	Dimensions	Tolerance	Chamfer	Surface Treatment	Page
<b>C2/C3/C4/D9</b>		HSSE-V3	UNC/UNF	ANSI	H2~H6	1.5P~2P	Steam Oxide Bright / TiN Hardslick	<b>327</b>
<b>I9/J0/J1/J7</b>		HSSE-V3	UNC/UNF	ANSI	H2~H6	4P~5P	Steam Oxide Bright / TiN Hardslick	<b>328</b>

**STANDARD TAPS : SPIRAL FLUTED BOTTOMING STYLE**  
**for Multi Purpose**
**Hole type**

**ANSI**


HSSE-V3

UNC  
UNF

H2~H6

60°

1.5P~2P

Steam  
Oxide

Bright

TiN

Hardslick

R45

EDP No.				SIZE	Thread Per Inch		Limit	No. of Flute
Steam Oxide	Bright Finish	TiN Coated	Hardslick Coated		UNC	UNF		
C2162	C3162	C4162	D9162	4	40		H2	3
C2202	C3202	C4202	D9202	5	40		H2	3
C2243	C3243	C4243	D9243	6	32		H3	3
C2283	C3283	C4283	D9283	8	32		H3	3
C2323	C3323	C4323	D9323	10	24		H3	3
C2343	C3343	C4343	D9343			32	H3	3
C2403	C3403	C4403	D9403	1/4	20		H3	3
C2405	C3405	C4405	D9405				H5	3
C2423	C3423	C4423	D9423			28	H3	3
C2443	C3443	C4443	D9443	5/16	18		H3	3
C2445	C3445	C4445	D9445				H5	3
C2463	C3463	C4463	D9463			24	H3	3
C2483	C3483	C4483	D9483	3/8	16		H3	3
C2485	C3485	C4485	D9485				H5	3
C2503	C3503	C4503	D9503			24	H3	3
C2523	C3523	C4523	D9523	7/16	14		H3	3
C2525	C3525	C4525	D9525				H5	3
C2543	C3543	C4543	D9543			20	H3	3
C2545	C3545	C4545	D9545				H5	3
C2563	C3563	C4563	D9563	1/2	13		H3	3
C2565	C3565	C4565	D9565				H5	3
C2583	C3583	C4583	D9583			20	H3	3
C2585	C3585	C4585	D9585				H5	3
C2605	C3605	C4605	D9605	9/16	12		H5	3
C2625	C3625	C4625	D9625			18	H5	3
C2643	C3643	C4643	D9643	5/8	11		H3	4
C2645	C3645	C4645	D9645				H5	4
C2663	C3663	C4663	D9663			18	H3	4
C2703	C3703	C4703	D9703	3/4	10		H3	4
C2705	C3705	C4705	D9705				H5	4
C2723	C3723	C4723	D9723			16	H3	4
C2744	C3744	C4744	D9744	7/8	9		H4	4
C2766	C3766	C4766	D9766			14	H6	4
C2784	C3784	C4784	D9784	1	8		H4	4

▶ For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 338.

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
◎	◎	○		○	○					
Alluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
○		○								

COMBO TAPS

SPIRAL FLUTE TAPS

SPIRAL POINT TAPS

TAPER PIPE TAPS

FORMING TAPS

STANDARD TAPS

HAND TAPS

TECHNICAL DATA

**STANDARD TAPS : SPIRAL POINTED PLUG STYLE for Multi Purpose**

COMBO TAPS

SPIRAL FLUTE TAPS

SPIRAL POINT TAPS

TAPER PIPE TAPS

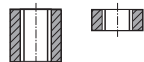
FORMING TAPS

STANDARD TAPS

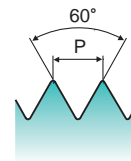
HAND TAPS

TECHNICAL DATA

Hole type



ANSI



HSSE-V3
UNC UNF
H2~H6
60°
4P~5P
Steam Oxide
Bright
TiN
Hardslick

Unit : Inch

EDP No.				SIZE	Thread Per Inch		Limit	No. of Flute
Steam Oxide	Bright Finish	TiN Coated	Hardslick Coated		UNC	UNF		
19082	J0082	J1082	J7082	2	56		H2	2
19162	J0162	J1162	J7162	4	40		H2	2
19202	J0202	J1202	J7202	5	40		H2	2
19243	J0243	J1243	J7243	6	32		H3	2
19283	J0283	J1283	J7283	8	32		H3	2
19323	J0323	J1323	J7323	10	24		H3	2
19343	J0343	J1343	J7343			32	H3	2
19403	J0403	J1403	J7403	1/4	20		H3	2
19405	J0405	J1405	J7405				H5	2
19423	J0423	J1423	J7423			28	H3	2
19443	J0443	J1443	J7443	5/16	18		H3	2
19445	J0445	J1445	J7445				H5	2
19463	J0463	J1463	J7463			24	H3	2
19483	J0483	J1483	J7483	3/8	16		H3	3
19485	J0485	J1485	J7485				H5	3
19503	J0503	J1503	J7503			24	H3	3
19523	J0523	J1523	J7523	7/16	14		H3	3
19525	J0525	J1525	J7525				H5	3
19543	J0543	J1543	J7543			20	H3	3
19545	J0545	J1545	J7545				H5	3
19563	J0563	J1563	J7563	1/2	13		H3	3
19565	J0565	J1565	J7565				H5	3
19583	J0583	J1583	J7583			20	H3	3
19585	J0585	J1585	J7585				H5	3
19603	J0603	J1603	J7603	9/16	12		H3	3
19625	J0625	J1625	J7625			18	H5	3
19643	J0643	J1643	J7643	5/8	11		H3	3
19645	J0645	J1645	J7645				H5	3
19665	J0665	J1665	J7665			18	H5	3
19703	J0703	J1703	J7703	3/4	10		H3	3
19705	J0705	J1705	J7705				H5	3
19725	J0725	J1725	J7725			16	H5	3
19744	J0744	J1744	J7744	7/8	9		H4	3
19766	J0766	J1766	J7766			14	H6	3
19784	J0784	J1784	J7784	1	8		H4	3

► For tapping depth on ANSI Length Taps, refer to MCT1 302 on page 338.

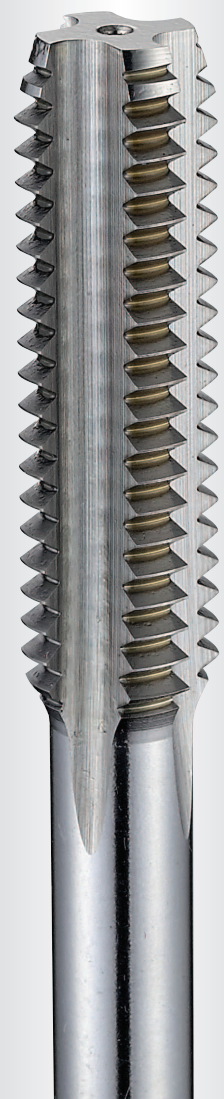
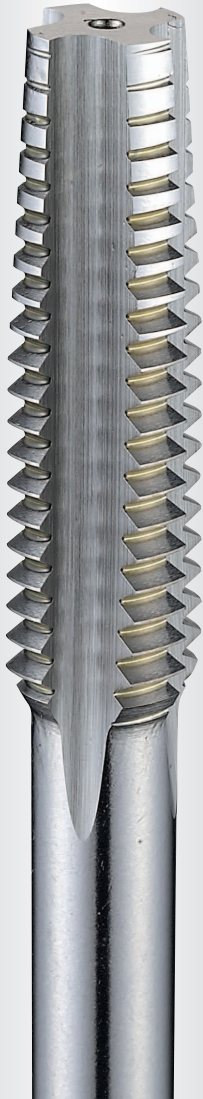
◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
◎	◎	○		○	○					
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
○		○								

**HSS**



Being the best through innovation




**HAND TAPS**

# SELECTION GUIDE

## HAND TAPS

### INCH

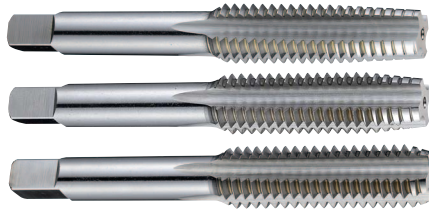
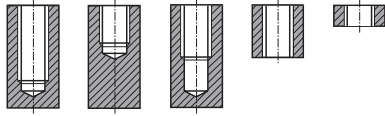
EDP No.	MODEL	Tool Material	Standard	Dimensions	Tolerance	Chamfer	Surface Treatment	Page
<b>A3/A5/A7</b>		HSS-V	UNC/UNF	ANSI	H2~H4	9/4/1.5P	Bright	<b>331</b>

### METRIC

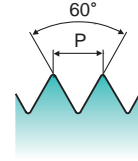
EDP No.	MODEL	Tool Material	Standard	Dimensions	Tolerance	Chamfer	Surface Treatment	Page
<b>A6/A9</b>		HSS-V	M	ANSI	D3~D9	4/1.5P	Bright	<b>332</b>

### HAND TAPS TAPER, PLUG & BOTTOMING STYLE for Multi Purpose

Hole type



ANSI



HSS-V
UNC UNF
H2~H4
60°
9.0P/4.0P/1.5P
Bright

EDP No.			SIZE	Thread Per Inch		Limit	No. of Flute
Bright Finish Taper	Bright Finish Plug	Bright Finish Bottoming		UNC	UNF		
A3082	A5082	A7082	2	56		H2	3
A3162	A5162	A7162	4	40		H2	3
A3202	A5202	A7202	5	40		H2	3
A3243	A5243	A7243	6	32		H3	3
A3262	A5262	A7262			40	H2	3
A3283	A5283	A7283	8	32		H3	4
A3323	A5323	A7323	10	24		H3	4
A3343	A5343	A7343			32	H3	4
A3403	A5403	A7403	1/4	20		H3	4
A3423	A5423	A7423			28	H3	4
A3443	A5443	A7443	5/16	18		H3	4
A3463	A5463	A7463			24	H3	4
A3483	A5483	A7483	3/8	16		H3	4
A3503	A5503	A7503			24	H3	4
A3523	A5523	A7523	7/16	14		H3	4
A3543	A5543	A7543			20	H3	4
A3563	A5563	A7563	1/2	13		H3	4
A3583	A5583	A7583			20	H3	4
A3603	A5603	A7603	9/16	12		H3	4
A3623	A5623	A7623			18	H3	4
A3643	A5643	A7643	5/8	11		H3	4
A3663	A5663	A7663			18	H3	4
A3703	A5703	A7703	3/4	10		H3	4
A3723	A5723	A7723			16	H3	4
A3744	A5744	A7744	7/8	9		H4	4
A3764	A5764	A7764			14	H4	4
A3784	A5784	A7784	1	8		H4	4
A3804	A5804	A7804			12	H4	4

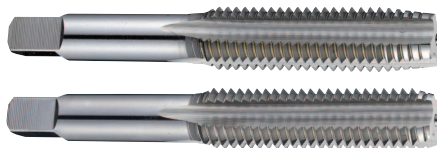
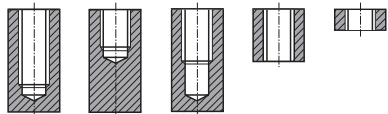
► For tapping depth on ANSI Length Taps, refer to MCTI 302 on page 338.

◎ : Excellent ○ : Good

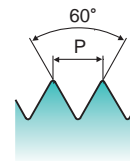
Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
◎	◎			◎			◎			
Alluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
◎						◎	◎		◎	◎

**HAND TAPS PLUG & BOTTOMING STYLE**  
for Multi Purpose

Hole type



ANSI



HSS-V
M
D3~D9
60°
4.0P/1.5P
Bright

Unit : mm

EDP No.		SIZE	Pitch	Limit	No. of Flute
Bright Finish Plug	Bright Finish Bottoming				
A6097	A9098	M1.6	0.35	D3	3
A6137	A9138	M2	0.4	D3	3
A6177	A9178	M2.5	0.45	D3	3
A6207	A9208	M3	0.5	D3	3
A6227	A9228	M3.5	0.6	D4	3
A6247	A9248	M4	0.7	D4	3
A6267	A9268	M4.5	0.75	D4	4
A6287	A9288	M5	0.8	D4	4
A6317	A9318	M6	1	D5	4
A6347	A9348	M7	1	D5	4
A6367	A9368	M8	1.25	D5	4
A6427	A9428	M10	1.5	D6	4
A6507	A9508	M12	1.75	D6	4
A6547	A9548	M14	2	D7	4
A6607	A9608	M16	2	D7	4
A6657	A9658	M18	2.5	D7	4
A6707	A9708	M20	2.5	D7	4
A6787	A9788	M24	3	D8	4
A6947	A9948	M30	3.5	D9	4
A6B37	A9B38	M36	4	D9	4

► For tapping depth on ANSI Length Taps, refer to MCT1 302 on page 338.

◎ : Excellent ○ : Good

Low carbon / Free machining carbon steel	Medium to high carbon steel	Steel castings & forgings / Heat-treatable alloy steels	Alloyed tool steels / Mold steels	Free machining stainless steel	Heat and corrosion-resistant stainless steel / Valve stainless steel	Stainless steel castings / Precipitation hardening stainless steel	Pure aluminium / Aluminium alloys			
◎	◎	○		○	○					
Aluminium alloy castings	Grey cast iron	Nodular cast Iron / Chilled cast Iron / Meehanite Iron / Ductile Iron	71 / &625 INCO / Waspaloy / Hastelloy / Invar / Monel / Incoloy	718 Inconel / A286	Titanium	Pure and alloyed copper	Free machining brass / Alloyed brass	Bronze	Zinc	Magnesium
○		○								

# TAPS



Being the best through innovation



# TECHNICAL DATA



**HIGH PERFORMANCE TAPS (HSSE-V3)  
GENERAL DIMENSIONS**

Size	Metric Size	Overall Length	Thread Length				Square Length	Shank Diameter	Size of Square
			SP	SF	M-SP	M-SF			
4	—	1-7/8	.335	.236	—	—	3/16	.141	.110
5	M3	1-15/16	.374	.236	.374	.197	3/16	.141	.110
6	M3.5	2	.413	.276	.413	.276	3/16	.141	.110
8	M4	2-1/8	.453	.276	.453	.276	1/4	.168	.131
10-24	M5	2-3/8	.531	.354	.531	.354	1/4	.194	.152
10-32	—	2-3/8	.531	.276	—	—	1/4	.194	.152
12-24	—	2-3/8	.571	.354	—	—	9/32	.220	.165
12-28	—	2-3/8	.571	.276	—	—	9/32	.220	.165
1/4-20	M6	2-1/2	.591	.433	.591	.433	5/16	.255	.191
1/4-28	—	2-1/2	.591	.354	—	—	5/16	.255	.191
5/16-18	M7	2-23/32	.669	.472	.669	.433	3/8	.318	.238
5/16-24	M8	2-23/32	.669	.394	.669	.472	3/8	.318	.238
3/8-16	M10×1.5	2-15/16	.748	.551	.748	.512	7/16	.381	.286
3/8-24	M10×1.25	2-15/16	.748	.394	.748	.472	7/16	.381	.286
7/16-14	—	3-5/32	.866	.591	—	—	13/32	.323	.242
7/16-20	—	3-5/32	.866	.472	—	—	13/32	.323	.242
1/2-13	M12×1.75	3-3/8	.984	.630	.984	.591	7/16	.367	.275
1/2-20	M12×1.25	3-3/8	.984	.472	.984	.551	7/16	.367	.275
9/16-12	M14×2.0	3-19/32	.984	.709	.984	.709	1/2	.429	.322
9/16-18	M14×1.5	3-19/32	.984	.512	.984	.551	1/2	.429	.322
5/8-11	M16×2.0	3-13/16	1.083	.748	1.083	.709	9/16	.480	.360
5/8-18	M16×1.5	3-13/16	1.083	.512	1.083	.551	9/16	.480	.360
—	M18×2.5	4-1/32	—	—	1.083	.787	5/8	.542	.406
—	M18×1.5	4-1/32	—	—	1.083	.551	5/8	.542	.406
3/4-10	—	4-1/4	1.201	.827	—	—	11/16	.590	.442
3/4-16	—	4-1/4	1.201	.591	—	—	11/16	.590	.442
7/8-9	—	4-11/16	1.339	.827	—	—	3/4	.697	.523
7/8-14	—	4-11/16	1.339	.709	—	—	3/4	.697	.523
1-8	—	5-1/8	1.496	.984	—	—	13/16	.800	.600
1-12	—	5-1/8	1.496	.709	—	—	13/16	.800	.600

\* **SP** : Spiral Pointed Taps\* **SF** : Spiral Fluted Taps\* **M-SP** : Metric Spiral Pointed Taps\* **M-SF** : Metric Spiral Fluted Taps


**HIGH PERFORMANCE TAPS (HSS-V)  
GENERAL DIMENSIONS**

Size	Metric Size	Overall Length	Thread Length				Square Length	Shank Diameter	Size of Square
			SP	SF	M-SP	M-SF			
4	—	1-7/8	5/16	5/16	—	—	3/16	.141	.110
5	M3	1-15/16	5/16	5/16	5/16	5/16	3/16	.141	.110
6	M3.5	2	3/8	3/8	3/8	3/8	3/16	.141	.110
8	M4	2-1/8	3/8	3/8	3/8	3/8	1/4	.168	.131
10-24	M5	2-3/8	1/2	1/2	1/2	1/2	1/4	.194	.152
10-32	—	2-3/8	1/2	1/2	—	—	1/4	.194	.152
12-24	—	2-3/8	1/2	1/2	—	—	9/32	.220	.165
12-28	—	2-3/8	1/2	1/2	—	—	9/32	.220	.165
1/4-20	M6	2-1/2	5/8	5/8	5/8	5/8	5/16	.255	.191
1/4-28	—	2-1/2	5/8	5/8	—	—	5/16	.255	.191
5/16-18	M7	2-23/32	11/16	11/16	11/16	11/16	3/8	.318	.238
5/16-24	M8	2-23/32	11/16	11/16	11/16	11/16	3/8	.318	.238
3/8-16	M10×1.5	2-15/16	3/4	3/4	3/4	3/4	7/16	.381	.286
3/8-24	M10×1.25	2-15/16	3/4	3/4	3/4	3/4	7/16	.381	.286
7/16-14	—	3-5/32	7/8	7/8	—	—	13/32	.323	.242
7/16-20	—	3-5/32	7/8	7/8	—	—	13/32	.323	.242
1/2-13	M12×1.75	3-3/8	15/16	15/16	15/16	15/16	7/16	.367	.275
1/2-20	M12×1.25	3-3/8	15/16	15/16	15/16	15/16	7/16	.367	.275
9/16-12	M14×2.0	3-19/32	1	1	1	1	1/2	.429	.322
9/16-18	M14×1.5	3-19/32	1	1	1	1	1/2	.429	.322
5/8-11	M16×2.0	3-13/16	1-3/32	1-3/32	1-3/32	1-3/32	9/16	.480	.360
5/8-18	M16×1.5	3-13/16	1-3/32	1-3/32	1-3/32	1-3/32	9/16	.480	.360
—	M18×2.5	4-1/32	—	—	1-3/32	1-3/32	5/8	.542	.406
—	M18×1.5	4-1/32	—	—	1-3/32	1-3/32	5/8	.542	.406
3/4-10	—	4-1/4	1-7/32	1-7/32	—	—	11/16	.590	.442
3/4-16	—	4-1/4	1-7/32	1-7/32	—	—	11/16	.590	.442
7/8-9	—	4-11/16	1-11/32	1-11/32	—	—	3/4	.697	.523
7/8-14	—	4-11/16	1-11/32	1-11/32	—	—	3/4	.697	.523
1-8	—	5-1/8	1-1/2	1-1/2	—	—	13/16	.800	.600
1-12	—	5-1/8	1-1/2	1-1/2	—	—	13/16	.800	.600

\* **SP** : Spiral Pointed Taps

\* **SF** : Spiral Fluted Taps

\* **M-SP** : Metric Spiral Pointed Taps

\* **M-SF** : Metric Spiral Fluted Taps

 COMBO  
TAPS

 SPIRAL  
FLUTE TAPS

 SPIRAL  
POINT TAPS

 TAPER PIPE  
TAPS

 FORMING  
TAPS

 STANDARD  
TAPS

HAND TAPS

 TECHNICAL  
DATA

**HIGH PERFORMANCE DIN LENGTH  
ANSI SHANK TAPS (HSSE-V3) DIMENSIONS**

Size	Metric Size	Overall Length	Thread Length				Square Length	Shank Diameter	Size of Square
			SP	SF	M-SP	M-SF			
4	—	2.205	.335	.236	—	—	3/16	.141	.110
5	M3	2.205	.374	.236	.374	.197	3/16	.141	.110
6	M3.5	2.205	.413	.276	.413	.276	3/16	.141	.110
8	M4	2.480	.453	.276	.453	.276	1/4	.168	.131
10-24	M5	2.756	.531	.354	.531	.354	1/4	.194	.152
10-32	—	2.756	.531	.276	—	—	1/4	.194	.152
12-24	—	3.150	.571	.354	—	—	9/32	.220	.165
12-28	—	3.150	.571	.276	—	—	9/32	.220	.165
1/4-20	M6	3.150	.591	.433	.591	.433	5/16	.255	.191
1/4-28	—	3.150	.591	.354	—	—	5/16	.255	.191
5/16-18	—	3.543	.669	.472	—	—	3/8	.318	.238
5/16-24	M8	3.543	.669	.394	.669	.472	3/8	.318	.238
3/8-16	M10×1.5	3.937	.748	.551	.748	.512	7/16	.381	.286
3/8-24	M10×1.25	3.937	.748	.394	.748	.472	7/16	.381	.286
7/16-14	—	3.937	.866	.591	—	—	13/32	.323	.242
7/16-20	—	3.937	.866	.472	—	—	13/32	.323	.242
1/2-13	M12×1.75	4.331	.984	.630	.984	.591	7/16	.367	.275
1/2-20	M12×1.25	3.937	.984	.472	.984	.551	7/16	.367	.275
9/16-12	M14×2.0	4.331	.984	.709	.984	.709	1/2	.429	.322
9/16-18	M14×1.5	3.937	.984	.512	.984	.551	1/2	.429	.322
5/8-11	M16×2.0	4.331	1.083	.748	1.083	.709	9/16	.480	.360
5/8-18	M16×1.5	3.937	1.083	.512	1.083	.551	9/16	.480	.360
—	M18×2.5	4.921	—	—	1.083	.787	5/8	.542	.406
—	M18×1.5	4.331	—	—	1.083	.551	5/8	.542	.406
3/4-10	—	4.921	1.201	.827	—	—	11/16	.590	.442
3/4-16	—	4.331	1.201	.591	—	—	11/16	.590	.442
7/8-9	—	5.512	1.339	.827	—	—	3/4	.697	.523
7/8-14	—	4.921	1.339	.709	—	—	3/4	.697	.523
1-8	—	6.299	1.496	.984	—	—	13/16	.800	.600
1-12	—	5.512	1.496	.709	—	—	13/16	.800	.600

\* **SP** : Spiral Pointed Taps\* **SF** : Spiral Fluted Taps\* **M-SP** : Metric Spiral Pointed Taps\* **M-SF** : Metric Spiral Fluted Taps


**HIGH PERFORMANCE DIN LENGTH  
ANSI SHANK TAPS (HSS-V) DIMENSIONS**

Size	Metric Size	Overall Length	Thread Length				Square Length	Shank Diameter	Size of Square
			SP	SF	M-SP	M-SF			
4	—	2.205	5/16	5/16	—	—	3/16	.141	.110
5	M3	2.205	5/16	5/16	5/16	5/16	3/16	.141	.110
6	M3.5	2.205	3/8	3/8	3/8	3/8	3/16	.141	.110
8	M4	2.480	3/8	3/8	3/8	3/8	1/4	.168	.131
10-24	M5	2.756	1/2	1/2	1/2	1/2	1/4	.194	.152
10-32	—	2.756	1/2	1/2	—	—	1/4	.194	.152
12-24	—	3.150	1/2	1/2	—	—	9/32	.220	.165
12-28	—	3.150	1/2	1/2	—	—	9/32	.220	.165
1/4-20	M6	3.150	5/8	5/8	5/8	5/8	5/16	.255	.191
1/4-28	—	3.150	5/8	5/8	—	—	5/16	.255	.191
5/16-18	—	3.543	11/16	11/16	—	—	3/8	.318	.238
5/16-24	M8	3.543	11/16	11/16	11/16	11/16	3/8	.318	.238
3/8-16	M10×1.5	3.937	3/4	3/4	3/4	3/4	7/16	.381	.286
3/8-24	M10×1.25	3.937	3/4	3/4	3/4	3/4	7/16	.381	.286
7/16-14	—	3.937	7/8	7/8	—	—	13/32	.323	.242
7/16-20	—	3.937	7/8	7/8	—	—	13/32	.323	.242
1/2-13	M12×1.75	4.331	15/16	15/16	15/16	15/16	7/16	.367	.275
1/2-20	M12×1.25	3.937	15/16	15/16	15/16	15/16	7/16	.367	.275
9/16-12	M14×2.0	4.331	1	1	1	1	1/2	.429	.322
9/16-18	M14×1.5	3.937	1	1	1	1	1/2	.429	.322
5/8-11	M16×2.0	4.331	1-3/32	1-3/32	1-3/32	1-3/32	9/16	.480	.360
5/8-18	M16×1.5	3.937	1-3/32	1-3/32	1-3/32	1-3/32	9/16	.480	.360
—	M18×2.5	4.921	—	—	1-3/32	1-3/32	5/8	.542	.406
—	M18×1.5	4.331	—	—	1-3/32	1-3/32	5/8	.542	.406
3/4-10	—	4.921	1-7/32	1-7/32	—	—	11/16	.590	.442
3/4-16	—	4.331	1-7/32	1-7/32	—	—	11/16	.590	.442
7/8-9	—	5.512	1-11/32	1-11/32	—	—	3/4	.697	.523
7/8-14	—	4.921	1-11/32	1-11/32	—	—	3/4	.697	.523
1-8	—	6.299	1-1/2	1-1/2	—	—	13/16	.800	.600
1-12	—	5.512	1-1/2	1-1/2	—	—	13/16	.800	.600

\* Maximum tapping depth = Thread length unless shank diameter is smaller than minor diameter

- \* **SP** : Spiral Pointed Taps
- \* **SF** : Spiral Fluted Taps
- \* **M-SP** : Metric Spiral Pointed Taps
- \* **M-SF** : Metric Spiral Fluted Taps

COMBO TAPS

SPIRAL FLUTE TAPS

SPIRAL POINT TAPS

TAPER PIPE TAPS

FORMING TAPS

STANDARD TAPS

HAND TAPS

**TECHNICAL DATA**


**MCTI TABLE 302  
GENERAL DIMENSIONS**

Size	Metric Size	Overall Length	Thread Length	Square Length	Shank Diameter	Size of Square
4	—	1-7/8	9/16	3/16	.141	.110
5	M3	1-15/16	5/8	3/16	.141	.110
6	M3.5	2	11/16	3/16	.141	.110
8	M4	2-1/8	3/4	1/4	.168	.131
10	M5	2-3/8	7/8	1/4	.194	.152
12	—	2-3/8	15/16	9/32	.220	.165
1/4	M6	2-1/2	1	5/16	.255	.191
5/16	M7	2-23/32	1-1/8	3/8	.318	.238
3/8	M10	2-15/16	1-1/4	7/16	.381	.286
7/16	—	3-5/32	1-7/16	13/32	.323	.242
1/2	M12	3-3/8	1-21/32	7/16	.367	.275
9/16	M14	3-19/32	1-21/32	1/2	.429	.322
5/8	M16	3-13/16	1-13/16	9/16	.480	.360
11/16	M18	4-1/32	1-13/16	5/8	.542	.406
3/4	—	4-1/4	2	11/16	.590	.442
13/16	M20	4-15/32	2	11/16	.652	.489
7/8	M22	4-11/16	2-7/32	3/4	.697	.523
15/16	M24	4-29/32	2-7/32	3/4	.760	.570
1	M25	5-1/8	2-1/2	13/16	.800	.600
1-1/16	M27	5-1/8	2-1/2	7/8	.896	.672
1-1/8	—	5-7/16	2-9/16	7/8	.896	.672
1-3/16	M30	5-7/16	2-9/16	1	1.021	.766
1-1/4	—	5-3/4	2-9/16	1	1.021	.766
1-5/16	M33	5-3/4	2-9/16	1-1/16	1.108	.831
1-3/8	—	6-1/16	3	1-1/16	1.108	.831
1-7/16	M36	6-1/16	3	1-1/8	1.233	.925
1-1/2	—	6-3/8	3	1-1/8	1.233	.925


**TAPER PIPE TAPS  
GENERAL DIMENSIONS**

Size	Overall Length	Thread Length	Square Length	Shank Diameter	Size of Square
1/16	2-1/8	11/16	3/8	.3125	.234
1/8(sm)	2-1/8	3/4	3/8	.3125	.234
1/8(Lg)	2-1/8	3/4	3/8	.4375	.328
1/4	2-7/16	1-1/16	7/16	.5625	.421
3/8	2-9/16	1-1/16	1/2	.7000	.531
1/2	3-1/8	1-3/8	5/8	.6875	.515
3/4	3-1/4	1-3/8	11/16	.9063	.679
1	3-3/4	1-3/4	13/16	1.1250	.843
1-1/4	4	1-3/4	15/16	1.3125	.984
1-1/2	4-1/4	1-3/4	1	1.5000	1.125
2	4-1/2	1-3/4	1-1/8	1.8750	1.406



## TAP RECOMMENDATIONS

### Unified Thread, Machine Screw Size

Size	Threads per Inch		Recommended Tap for Class of Thread				Pitch Diameter Limits for Class of Thread				
	UNC	UNF	Class 2	Class 3	Class 2B	Class 3B	Min. All Class(Basic)	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	72	GH1	GH1	GH2	GH1	.0629	.0648	.0643	.0655	.0648
			GH1	GH1	GH2	GH1	.0640	.0658	.0653	.0665	.0659
2	56	64	GH1	GH1	GH2	GH1	.0744	.0764	.0759	.0772	.0765
			GH1	GH1	GH2	GH1	.0759	.0778	.0773	.0786	.0779
3	48	56	GH1	GH1	GH2	GH1	.0855	.0877	.0871	.0885	.0877
			GH1	GH1	GH2	GH1	.0874	.0894	.8890	.0902	.0895
4	40	48	GH2	GH1	GH2	GH2	.0958	.0982	.0975	.0991	.0982
			GH1	GH1	GH2	GH1	.0985	.1007	.1001	.1016	.1008
5	40	44	GH2	GH1	GH2	GH2	.1088	.1112	.1105	.1121	.1113
			GH1	GH1	GH2	GH1	.1102	.1125	.1118	.1134	.1126
6	32	40	GH2	GH1	GH3	GH2	.1177	.1204	.1196	.1214	.1204
			GH2	GH1	GH2	GH2	.1218	.1242	.1235	.1252	.1243
8	32	36	GH2	GH1	GH3	GH2	.1437	.1464	.1456	.1475	.1465
			GH2	GH1	GH2	GH2	.1460	.1485	.1478	.1496	.1487
10	24	32	GH3	GH1	GH3	GH3	.1629	.1662	.1653	.1672	.1661
			GH2	GH1	GH3	GH2	.1697	.1724	.1716	.1736	.1726
12	24	28	GH3	GH1	GH3	GH3	.1889	.1922	.1913	.1933	.1922
			GH3	GH1	GH3	GH3	.1928	.1959	.1950	.1970	.1959

### Unified Thread, Fractional Size

Size	Threads per Inch		Recommended Tap for Class of Thread				Pitch Diameter Limits for Class of Thread				
	UNC	UNF	Class 2	Class 3	Class 2B	Class 3B	Min. All Class(Basic)	Max Class 2	Max Class 3	Max Class 2B	Max Class 3B
1/4	20	28	GH3	GH2	GH5	GH3	.2175	.2211	.2201	.2223	.2211
			GH3	GH1	GH4	GH3	.2268	.2299	.2290	.2311	.2300
5/16	18	24	GH3	GH2	GH5	GH3	.2764	.2805	.2794	.2817	.2803
			GH3	GH1	GH4	GH3	.2854	.2887	.2878	.2902	.2890
3/8	16	24	GH3	GH2	GH5	GH3	.3344	.3389	.3376	.3401	.3387
			GH3	GH1	GH4	GH3	.3479	.3512	.3503	.3528	.3516
7/16	14	20	GH5	GH3	GH5	GH3	.3911	.3960	.3947	.3972	.3957
			GH3	GH1	GH5	GH3	.4050	.4086	.4076	.4104	.4091
1/2	13	20	GH5	GH3	GH5	GH3	.4500	.4552	.4537	.4565	.4548
			GH3	GH1	GH5	GH3	.4675	.4711	.4701	.4731	.4717
9/16	12	18	GH5	GH3	GH5	GH3	.5084	.5140	.5124	.5152	.5135
			GH3	GH2	GH5	GH3	.5264	.5305	.5294	.5323	.5308
5/8	11	18	GH5	GH3	GH5	GH3	.5660	.5719	.5702	.5732	.5714
			GH3	GH2	GH5	GH3	.5889	.5930	.5919	.5949	.5934
3/4	10	16	GH5	GH3	GH5	GH3	.6850	.6914	.6895	.6927	.6907
			GH3	GH2	GH5	GH3	.7094	.7139	.7126	.7159	.7143
7/8	9	14	GH6	GH4	GH6	GH4	.8028	.8098	.8077	.8110	.8089
			GH4	GH2	GH6	GH4	.8286	.8335	.8322	.8356	.8339
1	8	12	GH6	GH4	GH6	GH4	.9188	.9264	.9242	.9276	.9254
			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.



## 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	—	—	—	—
5	—	48	—	.1120	.1130	.1140	.0985	.0985	.0990	.0990	.0995	—	—	—	—
	40	—	—	.1250	.1265	.1275	.1088	.1088	.1093	.1093	.1098	—	—	—	—
6	—	44	—	.1250	.1260	.1270	.1102	—	—	.1107	.1112	—	—	—	—
	32	—	—	.1380	.1400	.1410	.1177	.1177	.1182	.1182	.1187	.1187	.1192	.1207	.1212
8	—	40	—	.1380	.1395	.1405	.1218	.1218	.1223	.1223	.1228	—	—	—	—
	32	—	—	.1640	.1660	.1670	.1437	.1437	.1442	.1442	.1447	.1447	.1452	.1467	.1472
10	—	36	—	.1640	.1655	.1665	.1460	—	—	.1465	.1470	—	—	—	—
	24	—	—	.1900	.1930	.1940	.1629	.1629	.1634	.1634	.1639	.1639	.1644	.1659	.1664
12	—	32	—	.1900	.1920	.1930	.1697	.1697	.1702	.1702	.1707	.1707	.1712	.1727	.1732
	24	—	—	.2160	.2190	.2200	.1889	—	—	—	—	.1899	.1904	—	—
12	—	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, Fractional 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	—	—	—	—	.6479	.6484	—	—	—	—	—	—
3/4	10	—	—	.7500	.7525	.7590	.6850	.6850	.6855	.6855	.6860	.6860	.6865	—	—	.6870	.6875	—	—
	—	16	—	.7500	.7550	.7560	.7094	.7094	.7099	.7099	.7104	.7104	.7109	—	—	.7114	.7119	—	—
7/8	9	—	—	.8750	.8835	.8850	.8028	—	—	—	—	—	—	.8043	.8048	—	—	.8053	.8058
	—	14	—	.8750	.8810	.8820	.8286	—	—	.8291	.8296	—	—	.8301	.8306	—	—	.8311	.8318
1"	8	—	—	1.0000	1.0095	1.0110	.9188	—	—	.9193	.9198	—	—	.9203	.9208	—	—	.9213	.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.	25' Plus or Minus
10 to 28 Incl.	30' Plus or Minus




**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.	30' Plus or Minus
Over 2.5 to 4.0 Incl.	25' Plus or Minus

**Metric Thread - Ground Thread**

Size	Pitch		Major Diameter(Inches)			Pitch Diameter Limits(Inches)								
	Coarse	Fine	Basic	Min.	Max.	Basic Pitch Dia.	D6 Limit		D7 Limit		D8 Limit		D9 Limit	
							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	—	—



## TAP DRILL SIZES - UNIFIED THREAD

Size	Threads Per Inch		Drills for Cutting Taps				Drill for Forming Taps
	UNC	UNF	Tap Drill	Inch Equiv.	Probable Hole Size (Inch)	Probable Percent of Thread	Drill for 65%
0		80	3/64	.0469	.0484	71	54 or 1.4mm
1	64	72	53	.0595	.0610	59	51 or 1.7mm
2	56	64	50	.0700	.0717	62	51 or 1.75mm
3	48	56	47	.0785	.0804	69	47 or 2.0mm
4	40	48	43	.0890	.0910	65	2.0mm
5	40	44	38	.1015	.1038	65	2.3mm
6	32	40	36	.1065	.1088	63	2.3mm
8	32	36	29	.1360	.1389	61	39
10	24	32	25	.1495	.1527	65	37
12	24	28	16	.1770	.1805	69	33 or 2.9mm
1/4	20	28	14	.1820	.1855	63	33 or 2.9mm
5/16	18	24	7	.2010	.2048	72	3.1mm
3/8	16	24	3	.2130	.2168	69	1/8 or 3.2mm
7/16	14	20	F	.2570	.2608	62	25 or 3.8mm
1/2	13	20	1	.2720	.2761	70	24
9/16	12	18	5/16	.3125	.3169	69	11/64
5/8	11	18	Q	.3320	.3364	68	16 or .176
3/4	10	16	U	.3680	.3726	66	9 or 5.0mm
7/8	9	14	25/64	.3906	.3952	66	7 or 5.1mm
1	8	12	27/64	.4219	.4266	70	5.75mm
1-1/8	7	12	29/64	.4531	.4578	72	A
1-1/4	7	12	31/64	.4844	.4892	67	7.25mm
1-3/8	6	16	33/64	.5156	.5204	67	.293
1-1/2	6	12	17/32	.5312	.5362	71	S or 11/32mm
			37/64	.5781	.5831	71	9.0mm
			21/32	.6562	.6613	70	Y
			11/16	.6875	.6925	65	Z or 10.5mm
			49/64	.7656	.7708	73	.463
			13/16	.8125	.8177	65	.476
			7/8	.8750	.8809	68	.521
			59/64	.9219	.9279	58	.536
			63/64	.9844	.9911	75	37/64
			1-3/64	1.0469	1.0541	58	.598
			1-7/64	1.1094	—	68	45/64
			1-11/64	1.1719	—	71	23/32
			1-7/32	1.2187	—	72	.823
			1-19/64	1.2969	—	62	27/32
			1-11/32	1.3437	—	73	15/16
			1-27/64	1.4219	—	67	.963

**10 TAP DRILL SIZES - METRIC THREAD**

COMBO TAPS

SPIRAL FLUTE TAPS

SPIRAL POINT TAPS

TAPER PIPE TAPS

FORMING TAPS

STANDARD TAPS

HAND TAPS

TECHNICAL DATA

Size	Pitch	Recommended Metric Drill				Closest Recommended Inch Drill				Drill for Forming Taps
		Tap Drill (mm)	Inch Equiv.	Probable Hole Size (Inch)	Probable Percent of Thread	Tap Drill	Inch Equiv.	Probable Hole Size (Inch)	Probable Percent of Thread	6H Recommended
M1.6	0.35	1.25	.0492	.0507	69	—	—	—	—	1.45
M1.8	0.35	1.45	.0571	.0586	69	—	—	—	—	1.65
M2	0.40	1.6	.0630	.0647	69	52	.0635	.0652	66	1.85
M2.2	0.45	1.75	.0689	.0706	70	—	—	—	—	2.0
M2.5	0.45	2.05	.0807	.0826	69	46	.0810	.0829	67	2.3
M3	0.50	2.5	.0984	.1007	68	40	.0980	.1003	70	#35
M3.5	0.60	2.9	.1142	.1168	68	33	.1130	.1156	72	#30
M4	0.70	3.3	.1299	.1328	69	30	.1285	.1314	73	3.7
M4.5	0.75	3.7	.1457	.1486	74	26	.1470	.1502	70	4.16
M5	0.80	4.2	.1654	.1686	69	19	.1660	.1692	68	#14
M6	1.00	5.0	.1968	.2006	70	9	.1960	.1998	71	5.5
M7	1.00	6.0	.2362	.2400	70	15/64	.2344	.2382	73	6.5
M8	1.25	6.7	.2638	.2679	74	17/64	.2656	.2697	71	7.4
	1.00	7.0	.2756	.2797	69	J	.2770	.2811	66	7.55
M10	1.50	8.5	.3346	.3390	71	Q	.3320	.3364	75	9.3
	1.25	8.7	.3425	.3471	73	11/32	.3438	.3483	71	9.4
M12	1.75	10.2	.4016	.4063	74	Y	.4040	.4087	71	7/16
	1.25	10.8	.4252	.4299	67	27/64	.4219	.4266	72	11.3
M14	2.00	12.0	.4724	.4772	72	15/32	.4688	.4736	76	—
	1.50	12.5	.4921	.4969	71	—	—	—	—	—
M16	2.00	14.0	.5512	.5561	72	35/64	.5469	.5518	76	—
	1.50	14.5	.5709	.5758	71	—	—	—	—	—
M18	2.50	15.5	.6102	.6152	73	39/64	.6094	.6144	74	—
	1.50	16.5	.6496	.6546	70	—	—	—	—	—
M20	2.50	17.5	.6890	.6942	73	11/16	.6875	.6925	74	—
	1.50	18.5	.7283	.7335	70	—	—	—	—	—
M22	2.50	19.5	.7677	.7729	73	49/64	.7656	.7708	75	—
	1.50	20.5	.8071	.8123	70	—	—	—	—	—
M24	3.00	21.0	.8268	.8327	73	53/64	.8281	.8340	72	—
	2.00	22.0	.8661	.8720	71	—	—	—	—	—
M27	3.00	24.0	.9449	.9511	73	15/16	.9375	.9435	78	—
	2.00	25.0	.9843	.9913	70	63/64	.9844	.9914	70	—
M30	3.00	26.5	1.0433							
	2.00	28.0	1.1024							
M33	3.50	29.5	1.1614							
	2.00	31.0	1.2205							
M36	4.00	32.0	1.2598							
	3.00	33.0	1.2992							
M39	4.00	35.0	1.3780							
	3.00	36.0	1.4173							

**Reaming Recommended to the Drill Size Shown**



## 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

**12 TROUBLE SHOOTING GUIDE**

Specific Problem	Cause	Solution
<b>Dimensional Accuracy</b>		
<b>Oversize Pitch Diameter</b>	Incorrect Tap	<ol style="list-style-type: none"> <li>1. Use proper limits of taps</li> <li>2. Use longer chamfered taps</li> </ol>
	Chip Packing	<ol style="list-style-type: none"> <li>1. Use spiral point or spiral fluted taps</li> <li>2. Reduce number of flutes to provide extra chip room</li> <li>3. Use larger hole size</li> <li>4. If tapping a hole, allow deeper hole where applicable or shorten the thread length of the parts</li> <li>5. Use proper lubricant</li> </ol>
	Galling	<ol style="list-style-type: none"> <li>1. Apply proper surface treatment such as Hardslick or chrome</li> <li>2. Use proper cutting lubricant</li> <li>3. Reduce tapping speed</li> <li>4. Use proper cutting angle in accordance with material being tapped</li> <li>5. Use large hole size</li> </ol>
	Operating Conditions	<ol style="list-style-type: none"> <li>1. Apply proper tapping speed</li> <li>2. Correct alignment of tap and drill hole</li> <li>3. Free cutting either tap or workpiece</li> <li>4. Use proper tapping speed to avoid torn or rough threads</li> <li>5. Use lead screw tapper</li> <li>6. Use proper tapping machine with suitable power</li> <li>7. Avoid misalignment of the tap and drill hole from loose spindle or worn holder</li> </ol>
	Tool Condition	<ol style="list-style-type: none"> <li>1. Obtain proper indexing angle for the flutes at the cutting edge</li> <li>2. Grind proper cutting angle and chamfer angle</li> <li>3. Avoid too narrow a land width</li> <li>4. Remove burrs from regrinding</li> </ol>
<b>Oversize Internal Diameter</b>	Hole Size	<ol style="list-style-type: none"> <li>1. Use minimum hole size</li> <li>2. Avoid tapered hole</li> <li>3. Use proper chamfered taps</li> </ol>
	Galling	<ol style="list-style-type: none"> <li>1. Galling solutions 1 through 4 above can be applied to this specific problem</li> </ol>
<b>Undersize Pitch Diameter</b>	Incorrect Tap	<ol style="list-style-type: none"> <li>1. Use oversize taps</li> <li>2. Apply proper chamfer angle</li> <li>3. Increase cutting angle</li> </ol>
	Damaged Thread	<ol style="list-style-type: none"> <li>1. Use proper reversing speed to avoid damaging tapped thread on the way out of the hole</li> </ol>
	Left-over Chips	<ol style="list-style-type: none"> <li>1. Increase cutting performance to avoid any left over chips in the hole</li> <li>2. Remove left over chips from the hole for gage checking</li> </ol>
<b>Undersize Internal Diameter</b>	Hole Size	<ol style="list-style-type: none"> <li>1. Use maximum drill size</li> </ol>



Specific Problem	Cause	Solution
<b>Tool Life</b>		
<b>Breakage</b>	Incorrect Tap Selection	<ol style="list-style-type: none"> <li>1. Avoid chip packing in the flutes or the bottom of the hole. Use spiral pointed or spiral fluted taps or fluteless taps.</li> <li>2. Apply correct surface treatment such as Hardslick or bright</li> </ol>
	Excessive Tapping Torque	<ol style="list-style-type: none"> <li>1. Use larger drill size</li> <li>2. Try to shorten thread length</li> <li>3. Increase cutting angle</li> <li>4. Apply a tap with more thread relief and reduced land width</li> <li>5. Apply correct surface treatment such as Hardslick</li> </ol>
	Operating Conditions	<ol style="list-style-type: none"> <li>1. Reduce tapping speed</li> <li>2. Avoid misalignment between tap and the hole and tapered hole</li> <li>3. Use floating type of tapping holder</li> <li>4. Use tapping holder with torque adjustment</li> <li>5. Avoid hitting bottom of the hole with tap</li> </ol>
	Tool Condition	<ol style="list-style-type: none"> <li>1. Do not grind the bottom of the flute</li> <li>2. Avoid too narrow a land width</li> <li>3. Remove all worn sections when regrinding the flutes</li> <li>4. Regrind tool more frequently</li> </ol>
<b>Chipping</b>	Incorrect Tap Selection	<ol style="list-style-type: none"> <li>1. Reduce cutting angle</li> <li>2. Use a different kind of high-speed steel tap</li> <li>3. Reduce hardness of the tap</li> <li>4. Increase chamfer length</li> <li>5. Avoid chip packing in the flutes or in the bottom of the hole by using spiral fluted or spiral pointed taps</li> </ol>
	Operating Conditions	<ol style="list-style-type: none"> <li>1. Reduce tapping speed</li> <li>2. Avoid misalignment between tap and hole</li> <li>3. Avoid sudden return of reverse in blind hole tapping</li> <li>4. Avoid galling</li> <li>5. Use larger hole size</li> </ol>
<b>Wear</b>	Incorrect Tap Selection	<ol style="list-style-type: none"> <li>1. Apply specially designed tap for tapping heat treated material</li> <li>2. Change to a type of high-speed steel tap that contains vanadium</li> <li>3. Apply special surface treatment such as TiCN or Hardslick</li> <li>4. Increase chamfer length</li> </ol>
	Operating Conditions	<ol style="list-style-type: none"> <li>1. Reduce tapping speed</li> <li>2. Apply proper cutting lubricants</li> <li>3. Avoid work hardened hole</li> <li>4. Use larger hole size</li> </ol>
	Tool Condition	<ol style="list-style-type: none"> <li>1. Grind proper cutting angle</li> <li>2. Avoid hardness reduction from grinding process</li> </ol>

Specific Problem	Cause	Solution
<b>Surface Finish</b>		
<b>Torn or Rough Thread</b>	Chamfer Too Short	1. Increase chamfer length
	Wrong Cutting Angle	1. Apply proper cutting angle
	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
<b>Chattering on Tapped Thread</b>	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




**TOLERANCE CHART - METRIC COARSE / FINE**

Metric Coarse Thread	Pitch	Tap Tolerance		Metric Fine Thread	Tap Tolerance	
		4H Tap	6H Tap		4H Tap	6H Tap
M1.6	0.35	D2	D2/D3	M3x0.35	D2	D3
M1.8	0.35	D2	D2/D3	M4x0.50	D2	D3
M2.0	0.40	D2	D3	M6x0.50	D2/D3	D3/D4
M2.2	0.45	D2	D3	M6x0.75	D2/D3	D4
M2.5	0.45	D2	D3	M8x0.75	D2/D3	D4
M3.0	0.50	D2	D3	M8x1.00	D3	D4/D5
M3.5	0.60	D2	D3/D4	M12x1.00	D3	D4/D5
M4.0	0.70	D2/D3	D3/D4	M10x1.25	D3	D4/D5
M4.5	0.75	D2/D3	D3/D4	M14x1.25	D3	D4/D5
M5.0	0.80	D2/D3	D3/D4	M12x1.50	D3/D4	D5/D6
M6.0	1.00	D2/D3	D4/D5	M20x1.50	D3/D4	D5/D6
M7.0	1.00	D2/D3	D4/D5	M24x1.50	D3/D4	D5/D6
M8.0	1.25	D3	D4/D5	M42x1.50	D3/D4	D5/D6
M10.0	1.50	D3	D4/D5	M18x2.00	D3/D4	D6/D7
M12.0	1.75	D3/D4	D5/D6	M24x2.00	D4	D6/D7
M14.0	2.00	D3/D4	D5/D6	M42x2.00	D4	D6/D7
M16.0	2.00	D3/D4	D5/D6	M36x3.00	D4/D5	D7/D8
M18.0	2.50	D4	D6/D7	M42x3.00	D4/D5	D7/D8
M20.0	2.50	D4	D6/D7	M52x3.00	D4/D5	D7/D8
M22.0	2.50	D4	D6/D7			
M24.0	3.00	D4/D5	D7/D8			
M27.0	3.00	D4/D5	D7/D8			
M30.0	3.50	D4/D5	D7/D8			
M33.0	3.50	D4/D5	D8/D9			
M36.0	4.00	D5	D8/D9			
M39.0	4.00	D5	D8/D9			
M42.0	4.50	D5	D8/D9			
M45.0	4.50	D5	D8/D9			
M48.0	5.00	D5/D6	D9/D10			
M52.0	5.00	D5/D6	D9/D10			

# MILLING TOOLS

CBN END MILLS

i-Xmills, CARBIDE INSERT END MILLS

X5070 NANO SOLID CARBIDE END MILLS

X-SPEED ROUGHER SOLID CARBIDE END MILLS

X-POWER SOLID CARBIDE END MILLS

JET-POWER SOLID CARBIDE & HSS-PM END MILLS

V7 Mill STEEL SOLID CARBIDE END MILLS

V7 Mill INOX SOLID CARBIDE END MILLS

ALU-POWER SOLID CARBIDE & HSS-PM END MILLS

D-POWER DIAMOND COATED SOLID CARBIDE END MILLS

STANDARD SOLID CARBIDE END MILLS

TANK-POWER HSS-PM END MILLS

COBALT & HSS END MILLS

TECHNICAL DATA

# Contents

## MILLING TOOLS

CBN END MILLS

CARBIDE INSERT END MILLS

SOLID CARBIDE END MILLS

HSS END MILLS

TECHNICAL DATA

# Contents / MILLING TOOLS

## CBN END MILLS

Machining High Hardened Steels up to HRc70, Mirror Finish

CBN  
END MILL

## i-Xmills, CARBIDE INSERT END MILLS

Available for General Steels and for Hardened Steels up to HRc65

i-Xmill  
END MILL

## X5070 NANO SOLID CARBIDE END MILLS

High Hardened Steels HRc45 to HRc70, High Speed Machining, Dry Cutting

X5070  
END MILLS

## X-SPEED ROUGHER SOLID CARBIDE END MILLS

Carbide Roughing End Mills for High-Feed Machining with reduced vibrations

X-SPEED  
ROUGHER  
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

## V7 Mill STEEL SOLID CARBIDE END MILLS

Steels in Heavy and Silent Cutting Materials up to HRc40. Designed as Unequal Leads.

V7 Mill STEEL  
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 DIAMOND COATED SOLID CARBIDE END MILLS

Diamond Coated Carbide End Mills for Graphite

D-POWER  
END MILLS

## STANDARD SOLID CARBIDE END MILLS

General Purpose, Non-coated, Any Coating Available

STANDARD  
CARBIDE  
END MILLS

## TANK-POWER HSS-PM END MILLS

Next Generation of Powered Metal End Mills. Higher Edge Strength & Feed Rates

TANK-POWER  
END MILLS

## COBALT & HSS END MILLS




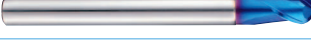

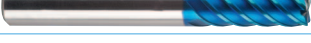
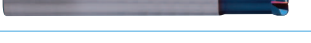
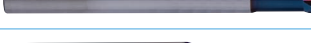
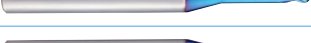

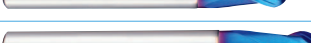
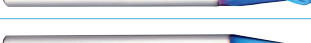
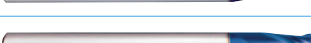

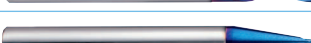













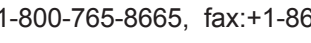
General Purpose, Non-coated, Any Coating Available

STANDARD  
COBALT  
& HSS  
END MILLS

## TECHNICAL DATA

TECHNICAL  
DATA








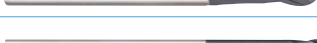



# MILLING TOOLS APPLICATION TABLE

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
CBN	ESB94		2Flute	30°	Metric	Ball	R0.2	R1.5	<b>378</b>
	ESD02		2Flute	0°	Metric	Radius	D0.5	D2.0	<b>379</b>
X5070	G826		4Flute	0°	Inch	Radius	D1/8	D1/2	<b>400</b>
	G8A43		2Flute	30°	Inch	Ball	R1/64	R1/4	<b>401</b>
	G850		4Flute	30°	Inch	Radius	D1/16	D3/4	<b>402</b>
	G851		6&8Flute	45°	Inch	Radius	D1/4	D1	<b>403</b>
	G859		4Flute	0°	Metric	Radius	D2.0	D16.0	<b>404</b>
	G854		4Flute	0°	Metric	Radius	D2.0	D16.0	<b>405</b>
	G8A46		2Flute	30°	Metric	Ball for Rib	R0.05	R2.0	<b>406</b>
	G8A54		2Flute	30°	Metric	Ball for Rib	R0.25	R1.0	<b>410</b>
	G8A28		2Flute	30°	Metric	Ball	R0.05	R6.0	<b>411</b>
	G8A38		2Flute	30°	Metric	Stub Ball with Extended Neck	R0.5	R12.5	<b>412</b>
	G8A53		2Flute	30°	Metric	Miniature Ball	R0.2	R1.0	<b>413</b>
	G8A59		3Flute	30°	Metric	Ball	R1.5	R10.0	<b>414</b>
	G8A36		2Flute	30°	Metric	Stub Radius with Extended Neck	D0.3	D20.0	<b>415</b>
	G8A50		2Flute	30°	Metric	Miniature Radius	D0.3	D2.0	<b>417</b>
	G8A47		4Flute	30°	Metric	Radius	D3.0	D12.0	<b>418</b>
	G8A37		4Flute	30°	Metric	Stub Radius with Extended Neck	D1.0	D20.0	<b>419</b>
	G8A39		6Flute	45°	Metric	Radius	D6.0	D20.0	<b>420</b>
X-SPEED ROUGHER	G907 G928		4&5Flute	Multiple	Inch	Stub Roughing Radius	D1/4	D1	<b>434</b>
	G908 G929		4&5Flute	Multiple	Inch	Regular Roughing Radius	D1/4	D1	<b>435</b>
	G909 G930		4&5Flute	Multiple	Inch	Extended Reach Roughing Radius	D1/4	D3/4	<b>436</b>
	G9D75		4&5Flute	Multiple	Metric	Short Radius	D6.0	D20.0	<b>437</b>
	G9D76		4&5Flute	Multiple	Metric	Long Radius	D6.0	D20.0	<b>438</b>
	G9D77		4&5Flute	Multiple	Metric	Long Reach Radius	D6.0	D20.0	<b>439</b>
X-POWER	EM154		2Flute	30°	Inch	Regular	D1/16	D1	<b>450</b>
	EM206		2Flute	30°	Inch	Long	D1/8	D1	<b>450</b>
	EM959		2Flute	30°	Inch	Miniature	D.016	D.062	<b>451</b>
	EM153		4Flute	30°	Inch	Regular	D1/16	D1	<b>452</b>

⊙ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			~HRc20	HRc20~30								
				○	○							
				○	○							
		○	○	○	○							
		○	○	○	○							
		○	○	○	○							
		○	○	○	○							
		○	○	○	○							
		○	○	○	○							
		○	○	○	○							
		○	○	○	○							
		○	○	○	○							
		○	○	○	○							
		○	○	○	○							
		○	○	○	○							
		○	○	○	○							
		○	○	○	○							
		○	○	○	○							
		○	○	○	○							
		○	○	○	○							
		○	○	○	○							
		○	○	○	○							
		○	○	○	○							
		○	○	○	○							
		○	○	○	○							
		○	○	○	○							
		○	○	○	○							
		○	○	○	○							
⊙	⊙	⊙	○			○		○		○		
⊙	⊙	⊙	○			○		○		○		
⊙	⊙	⊙	○			○		○		○		
⊙	⊙	⊙	○			○		○		○		
⊙	⊙	⊙	○			○		○		○		
⊙	⊙	⊙	○			○		○		○		
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○		○		

# MILLING TOOLS APPLICATION TABLE

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
X-POWER	EM207		4Flute	30°	Inch	Long	D1/8	D1	<b>452</b>
	EM636		2Flute	30°	Inch	Short Radius	D1/16	D1/2	<b>453</b>
	EM639		4Flute	30°	Inch	Short Radius	D1/16	D1/2	<b>453</b>
	EM637		2Flute	30°	Inch	Regular Radius	D1/16	D1/2	<b>454</b>
	EM649		4Flute	30°	Inch	Regular Radius	D1/16	D1/2	<b>454</b>
	EM211		2Flute	30°	Inch	Long Radius	D1/4	D1/2	<b>455</b>
	EM212		4Flute	30°	Inch	Long Radius	D1/4	D1/2	<b>455</b>
	EM102		4Flute	45°	Inch	Long	D3/8	D7/8	<b>456</b>
	EM103		4Flute	45°	Inch	Long Reach Radius	D3/8	D7/8	<b>457</b>
	EM965		4Flute	55°	Inch	Stub Radius	D1/4	D1/2	<b>458</b>
	EM208		6&8Flute	45°	Inch	Long	D1/4	D1	<b>459</b>
	EM218		6&8Flute	45°	Inch	Extra Long	D1/4	D1	<b>459</b>
	EM668		6&8Flute	45°	Inch	Long Radius	D1/4	D3/4	<b>460</b>
	EM209		2Flute	30°	Inch	Long Ball	R1/64	R1/2	<b>461</b>
	EM210		4Flute	30°	Inch	Long Ball	R1/16	R1/2	<b>461</b>
	EM961		2Flute	30°	Inch	Medium Ball	R1/16	R1/2	<b>462</b>
	EM962		2Flute	30°	Inch	Long Reach Ball	R3/64	R3/8	<b>463</b>
	EM960		2Flute	30°	Inch	Miniature Ball	R.012	R.031	<b>464</b>
	EM109		2Flute	15°	Inch	Stub Ball	R1/64	R1/4	<b>465</b>
	EM963		2Flute	30°	Inch	Ball with Taper Neck	R1/32	R1/4	<b>466</b>
	EM979		2Flute	30°	Inch	Ball with Pencil Neck	R3/32	R1/4	<b>467</b>
	EM084		2Flute	30°	Inch	Long Ball	R1/16	R5/16	<b>469</b>
	EM093		4Flute	30°	Inch	Long Ball	R1/16	R5/16	<b>470</b>
	EM096		2Flute	30°	Inch	Long Ball	R1/16	R5/16	<b>471</b>
	EM097		4Flute	30°	Inch	Long Ball	R1/16	R5/16	<b>472</b>
	EM666		3~5Flute	20°	Inch	Stub Roughing	D1/4	D1	<b>473</b>
	EM156		3~5Flute	20°	Inch	Long Roughing	D1/4	D1	<b>473</b>
	EM662		3~5Flute	20°	Inch	Long Roughing Ball	R1/8	R1/2	<b>474</b>
	EM966		2Flute	30°	Inch	Rib	D1/32	D1/8	<b>475</b>






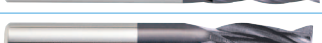
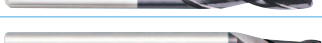



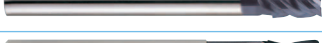
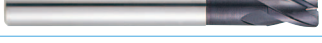













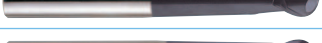


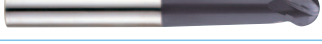
# SOLID

⊙ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○								
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○								
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○								
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○		○		
○	⊙	⊙	⊙	○	○			○		○		
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				































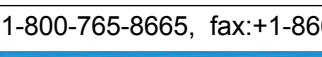
# MILLING TOOLS APPLICATION TABLE

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
X-POWER	EM967		2Flute	30°	Inch	Ball for Rib	R1/64	R1/16	<b>476</b>
	EM810		2Flute	30°	Metric	Short	D1.0	D25.0	<b>477</b>
	EM816		2Flute	30°	Metric	Long	D2.0	D25.0	<b>478</b>
	EM811		4Flute	30°	Metric	Short	D2.0	D25.0	<b>479</b>
	EM817		4Flute	30°	Metric	Long	D2.0	D25.0	<b>480</b>
	EM895		3Flute	38°	Metric	Short	D1.0	D20.0	<b>481</b>
	EM810		2Flute	30°	Metric	Miniature	D0.4	D1.5	<b>482</b>
	EM818		2Flute	30°	Metric	Long Radius	D3.0	D20.0	<b>483</b>
	EM819		4Flute	30°	Metric	Long Radius	D3.0	D20.0	<b>483</b>
	EM905		4Flute	45°	Metric	Short Radius	D10.0	D22.0	<b>484</b>
	EM839		4Flute	30°	Metric	Stub Radius	D2.0	D16.0	<b>485</b>
	EM812		6&8Flute	45°	Metric	Long	D6.0	D25.0	<b>486</b>
	EM834		6&8Flute	45°	Metric	Extra Long	D6.0	D25.0	<b>486</b>
	EM835		6Flute	45°	Metric	Long Radius	D6.0	D20.0	<b>487</b>
	EM897		6Flute	45°	Metric	Stub Radius	D6.0	D12.0	<b>488</b>
	EM876		2Flute	30°	Metric	Long Ball	R0.5	R12.5	<b>489</b>
	EM813 EM823		2Flute	30°	Metric	Long Ball	R0.5	R12.5	<b>490</b>
	EM815 EM825		4Flute	30°	Metric	Long Ball	R0.5	R12.5	<b>490</b>
	EM899		2Flute	30°	Metric	Medium Ball	R1.5	R12.5	<b>491</b>
	EM838		2Flute	30°	Metric	Long Reach Ball	R1.0	R10.0	<b>492</b>
	EM865		2Flute	30°	Metric	Miniature Ball	R0.3	R0.75	<b>493</b>
	EM868		2Flute	15°	Metric	Stub Ball	R0.5	R12.5	<b>494</b>
	EM902		2Flute	30°	Metric	Ball with Taper Neck	R0.5	R6.0	<b>495</b>
	EM669		2Flute	30°	Metric	Long Ball	R1.5	R8.0	<b>496</b>
	EM673		4Flute	30°	Metric	Long Ball	R2.5	R8.0	<b>497</b>
	EM863		2Flute	30°	Metric	Long Ball	R1.5	R8.0	<b>498</b>
	EM864		4Flute	30°	Metric	Long Ball	R2.5	R8.0	<b>499</b>
	EM832		3~5Flute	20°	Metric	Short Roughing	D6.0	D25.0	<b>500</b>
	EM814		3~5Flute	20°	Metric	Long Roughing	D6.0	D25.0	<b>501</b>

⊙ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	○	⊙	⊙	○								
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○		○		

# MILLING TOOLS APPLICATION TABLE

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE	
							MIN	MAX		
X-POWER	EM833		3&4Flute	20°	Metric	Long Roughing Ball	R3.0	R10.0	<b>502</b>	
	EM837		2Flute	30°	Metric	Taper	D2.0	D8.0	<b>503</b>	
	EM883		2Flute	30°	Metric	Rib	D0.8	D3.0	<b>504</b>	
	EM886		2Flute	30°	Metric	Ball for Rib	R0.3	R2.0	<b>505</b>	
JET-POWER	EH108		3&4Flute	50°	Inch	Regular	D1/8	D1	<b>532</b>	
	EE882		6Flute	35°	Inch	Regular	D3/4	D1-1/2	<b>533</b>	
	E5075 E5105		3Flute	35°	Inch	Stub Radius	D1/8	D1	<b>534</b>	
	E5074 E5104		3Flute	35°	Inch	Regular Radius	D1/8	D1	<b>535</b>	
	EH094		3~5Flute	30°	Inch	Stub Roughing	D1/4	D1	<b>536</b>	
	EH095		3~5Flute	30°	Inch	Long Roughing	D1/4	D1	<b>537</b>	
	EH969		3~6Flute	45°	Inch	Long Roughing	D3/16	D1	<b>538</b>	
	EH970		4~6Flute	45°	Inch	Long Reach Roughing	D1/4	D3/4	<b>539</b>	
	EH830		3&4Flute	50°	Metric	Long Square	D6.0	D25.0	<b>540</b>	
	EE515		4&6Flute	30°	Metric	Short Square	D3.0	D25.0	<b>541</b>	
	EH852		3&5Flute	30°	Metric	Short Roughing	D6.0	D25.0	<b>542</b>	
	EH831		3&5Flute	30°	Metric	Long Roughing	D6.0	D25.0	<b>543</b>	
	EH917		4&6Flute	45°	Metric	Short Roughing	D6.0	D20.0	<b>544</b>	
	EH919		3&6Flute	45°	Metric	Long Roughing	D4.0	D25.0	<b>545</b>	
	EH921		4&6Flute	45°	Metric	Long Reach Roughing	D6.0	D20.0	<b>546</b>	
V7 Mill STEEL	EMD56 EMD57		4Flute	Multiple	Inch	Stub Square	D1/8	D1	<b>554</b>	
	EMD58 EMD59		4Flute	Multiple	Inch	Stub Radius	D1/8	D1	<b>555</b>	
	EMD46 EMD47		4Flute	Multiple	Inch	Regular Square	D1/8	D1	<b>556</b>	
	EMD48 EMD49		4Flute	Multiple	Inch	Regular Radius	D1/8	D1	<b>557</b>	
	EMD42 EMD43		4Flute	Multiple	Metric	Short Square	D3.0	D20.0	<b>558</b>	
	EMD44 EMD45		4Flute	Multiple	Metric	Short Radius	D3.0	D20.0	<b>559</b>	
	EMD38 EMD39		4Flute	Multiple	Metric	Regular Square	D3.0	D25.0	<b>560</b>	
	EMD40 EMD41		4Flute	Multiple	Metric	Regular Radius	D3.0	D25.0	<b>561</b>	
	V7 Mill INOX	EMC75 EMD60		4Flute	Sinusoidal	Inch	Stub Square	D1/8	D1	<b>566</b>
		EMC76 EMD61		4Flute	Sinusoidal	Inch	Stub Radius	D1/8	D1	<b>567</b>

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			~HRc20	HRc20~30								
○	◎	◎	◎	○				○		○		
○	◎	◎	◎	○				○				
○	◎	◎	◎	○				○				
○	◎	◎	◎	○				○				
○	◎	◎	○					○		◎	○	○
○	◎	◎	○							◎	◎	○
○	◎	○						○		◎		
○	◎	○						○		◎		
○	◎	◎	○							◎	◎	○
○	◎	◎	○							◎	◎	○
○	◎	◎	○							◎	◎	○
○	◎	◎	○							◎	◎	○
○	◎	◎	○							◎	◎	○
○	◎	◎	○							◎	◎	○
○	◎	◎	○							◎	◎	○
○	◎	◎	○							◎	◎	○
○	◎	◎	○							◎	◎	○
○	◎	◎	○							◎	◎	○
○	◎	◎	○							◎	◎	○
○	◎	◎	○							◎	◎	○
○	◎	◎	○							◎	◎	○
○	◎	◎	○							◎	◎	○
○	◎	◎	○							◎	◎	○
○	◎	◎	○							◎	◎	○
○	◎	◎	○							◎	◎	○
○	◎	◎	○							◎	◎	○
○	◎	◎	○							◎	◎	○
◎	◎	◎	○					○		○		
◎	◎	◎	○					○		○		
◎	◎	◎	○					○		○		
◎	◎	◎	○					○		○		
◎	◎	◎	○					○		○		
◎	◎	◎	○					○		○		
◎	◎	◎	○					○		○		
◎	◎	◎	○					○		○		
◎	◎	◎	○					○		○		
◎	◎	◎	○					○		○		
◎	○	○								◎	◎	○
◎	○	○								◎	◎	○

# MILLING TOOLS APPLICATION TABLE

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
V7 Mill INOX	EMB12 EMB37		4Flute	Sinusoidal	Inch	Regular Square	D1/8	D1	<b>568</b>
	EMB13 EMB38		4Flute	Sinusoidal	Inch	Regular Radius	D1/8	D1	<b>569</b>
	EMB20		4Flute	Sinusoidal	Inch	Extended Long Reach	D1/4	D1	<b>570</b>
	EMB78 EMB79		4Flute	Sinusoidal	Inch	Regular Ball	D1/8	D1	<b>571</b>
	EMB76 EMB77		5Flute	Sinusoidal	Inch	Regular Square	D1/4	D1	<b>572</b>
	EMB41 EMB42		4Flute	Sinusoidal	Metric	Short Square	D3.0	D20.0	<b>573</b>
	EMB43 EMB44		4Flute	Sinusoidal	Metric	Short Radius	D3.0	D20.0	<b>574</b>
	EMB14 EMB39		4Flute	Sinusoidal	Metric	Regular Square	D3.0	D25.0	<b>575</b>
	EMB15 EMB40		4Flute	Sinusoidal	Metric	Regular Radius	D3.0	D25.0	<b>576</b>
	EMB74 EMB75		4Flute	Sinusoidal	Metric	Regular Ball	D3.0	D25.0	<b>577</b>
	EMB72 EMB73		5Flute	Sinusoidal	Metric	Regular Square	D6.0	D25.0	<b>578</b>
ALU-POWER	E5253		2Flute	42°	Inch	Regular	D1/4	D1	<b>586</b>
	E5254		2Flute	42°	Inch	Regular	D1/16	D1	<b>587</b>
	E5976		2Flute	37°	Inch	with Extended Neck	D1/4	D1	<b>588</b>
	E5980		3Flute	45°	Inch	Stub Square	D1/8	D1	<b>589</b>
	E5981		3Flute	45°	Inch	Regular Square	D1/8	D1	<b>590</b>
	E5983		3Flute	45°	Inch	Regular Radius	D1/2	D1	<b>591</b>
	E5982		3Flute	45°	Inch	Long Square	D1/4	D1	<b>592</b>
	E5984		3Flute	45°	Inch	Long Radius	D1/2	D1	<b>593</b>
	E5977		3Flute	37°	Inch	with Extended Neck	D1/4	D1	<b>594</b>
	E5985		3Flute	37°	Inch	Radius with Extended Neck	D1/2	D1	<b>595</b>
	E5973		2Flute	30°	Inch	Radius with Neck	D5/32	D3/4	<b>596</b>
	E5974		2Flute	50°	Inch	Stub Ball with Neck	D1/4	D3/4	<b>597</b>
	E5978		2Flute	37°	Inch	Long Reach Ball	D1/4	D1	<b>598</b>
	E5975		3Flute	40°	Inch	Long Ball with Neck	D3/32	D5/8	<b>599</b>
	E5522 EG522		2Flute	45°	Metric	Long Square	D3.0	D20.0	<b>600</b>
	EG930		2Flute	25°	Metric	Stub Radius	D2.0	D20.0	<b>601</b>
	EG909		2Flute	30°	Metric	Stub Radius with Extended Neck	D4.0	D20.0	<b>602</b>
EG910		2Flute	50°	Metric	Stub Ball with Extended Neck	D6.0	D20.0	<b>603</b>	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			~HRc20	HRc20~30	HRc30~40							
◎	○	○								◎	◎	○
◎	○	○								◎	◎	○
◎	○	○								◎	◎	○
◎	○	○								◎	◎	○
◎	○	○								◎	◎	○
◎	○	○								◎	◎	○
◎	○	○								◎	◎	○
◎	○	○								◎	◎	○
◎	○	○								◎	◎	○
◎	○	○								◎	◎	○
◎	○	○								◎	◎	○
									◎			
									◎			
									◎			
									◎			
									◎			
									◎			
									◎			
									◎			
									◎			
									◎			
									◎			
									◎			
									◎			
									◎			
									◎			
									◎			
									◎			
									◎			
									◎			
									◎			

# MILLING TOOLS APPLICATION TABLE

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
ALU-POWER	EG908		3Flute	40°	Metric	Stub Ball with Extended Neck	D6.0	D16.0	<b>604</b>
	EK191		3Flute	42°	Inch	Regular Roughing	D1/2	D2	<b>605</b>
	EK191		3Flute	42°	Inch	Regular Radius Roughing	D3/4	D1-1/4	<b>605</b>
	EK226		3Flute	42°	Inch	Medium Roughing	D3/4	D2	<b>606</b>
	EK226		3Flute	42°	Inch	Medium Radius Roughing	D3/4	D1-1/4	<b>606</b>
	EK192		3Flute	42°	Inch	Long Roughing	D1/2	D2	<b>607</b>
	EK192		3Flute	42°	Inch	Long Radius Roughing	D3/4	D1-1/4	<b>608</b>
	EK196		3Flute	42°	Inch	Regular Ball Roughing	R1/4	R5/8	<b>609</b>
	EK193		3Flute	42°	Inch	Regular, Medium & Long Radius	D1/2	D1-1/2	<b>610</b>
	EP922		3Flute	42°	Metric	Short Roughing	D12.0	D32.0	<b>612</b>
	EP924		3Flute	42°	Metric	Long Roughing	D12.0	D32.0	<b>613</b>
D-POWER	EI107		4Flute	30°	Inch	Regular Square	D1/64	D1/2	<b>628</b>
	EI099		2Flute	30°	Inch	Regular Ball	R.0391	R1/4	<b>629</b>
	EI106		4Flute	30°	Inch	Regular Ball	R.0391	R1/4	<b>629</b>
	EI971		2Flute	30°	Inch	Long Ball	R.0391	R1/4	<b>630</b>
	EI972		2Flute	30°	Inch	Long Reach Ball	R.0391	R5/32	<b>631</b>
	EIB07		4Flute	30°	Inch	Regular Ball with Extended Neck	R.0156	R.0625	<b>632</b>
	EIB05		4Flute	30°	Inch	Regular Radius	D1/16	D1/2	<b>633</b>
	EIB06		4Flute	30°	Inch	Regular Radius with Extended Neck	D1/32	D1/8	<b>634</b>
	EI880		2Flute	30°	Metric	Short Ball	R1.0	R6.0	<b>635</b>
	EI881		3Flute	30°	Metric	Short Ball	R1.0	R6.0	<b>635</b>
	EI451		2Flute	30°	Metric	Long Ball	R1.0	R6.0	<b>636</b>
	EI450		2Flute	30°	Metric	Long Reach Ball	R1.0	R4.0	<b>637</b>
	CARBIDE	E5020		2Flute	30°	Inch	Regular Square	D1/32	D1
E5021			4Flute	30°	Inch	Regular Square	D1/16	D1	<b>647</b>
E5244			2Flute	30°	Inch	Stub Square	D1/16	D3/4	<b>648</b>
E5245			4Flute	30°	Inch	Stub Square	D1/16	D3/4	<b>649</b>
E5011			2Flute	30°	Inch	Long Square	D1/8	D1	<b>650</b>
E5012			4Flute	30°	Inch	Long Square	D1/8	D1	<b>650</b>

# SOLID

⊙ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
									○			
									○			
									○			
									○			
									○			
									○			
									○			
									○			
									○			
									○			
									○			
									○			
									○			
									○			
									○			
									○			
									○			
									○			
									○			
									○			
									○			
									○			
									○			
									○			
									○			
									○			
									○			
									○			
									○			
									○			
○	○	○							○	○		
○	○	○							○	○		
○	○	○							○	○		
○	○	○							○	○		
○	○	○							○	○		
○	○	○							○	○		
○	○	○							○	○		





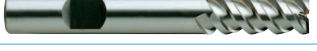






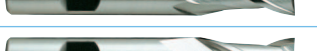
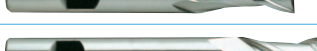







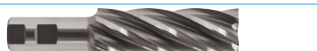







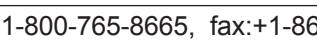


# MILLING TOOLS APPLICATION TABLE

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
CARBIDE	E5026		2Flute	30°	Inch	Extra Long Square	D1/8	D1	<b>651</b>
	E5065		4Flute	30°	Inch	Extra Long Square	D1/8	D1	<b>652</b>
	E5022		2Flute	30°	Inch	Stub Double	D1/32	D1/2	<b>653</b>
	E5023		4Flute	30°	Inch	Stub Double	D1/16	D1/2	<b>654</b>
	E5025		2Flute	30°	Inch	Regular Double	D1/8	D1/2	<b>655</b>
	E5024		4Flute	30°	Inch	Regular Double	D1/8	D1/2	<b>655</b>
	E5249		2Flute	30°	Inch	Regular Ball	R1/16	R1/2	<b>656</b>
	E5250		4Flute	30°	Inch	Regular Ball	R1/16	R1/2	<b>656</b>
	E5014		2Flute	30°	Inch	Long Ball	R1/16	R1/2	<b>657</b>
	E5060		4Flute	30°	Inch	Long Ball	R1/16	R1/2	<b>657</b>
	E5018		2Flute	30°	Inch	Extra Long Ball	R1/16	R1/2	<b>658</b>
	E5062		4Flute	30°	Inch	Extra Long Ball	R1/16	R1/2	<b>659</b>
	E5251 E5252		2&4Flute	30°	Inch	Stub Ball Double	R7/64	R1/4	<b>660</b>
	E5216		4Flute	30°	Inch	Regular Radius	D1/8	D1	<b>661</b>
	E5069		5Flute	45°	Inch	Regular Radius	D1/4	D1	<b>663</b>
	E5243		3Flute	45°	Inch	Regular	D1/8	D1	<b>664</b>
	E5059		3Flute	50°	Inch	Stub	D1/4	D3/4	<b>665</b>
	E5246		3Flute	60°	Inch	Regular	D1/8	D1	<b>666</b>
	E5066		5Flute	45°	Inch	Stub	D1/8	D1	<b>667</b>
	E5067		5Flute	45°	Inch	Regular	D1/8	D1	<b>668</b>
	E5068		5Flute	45°	Inch	Long Square	D1/4	D1	<b>669</b>
	E5073		5Flute	45°	Inch	Extra Long Square	D5/16	D1	<b>670</b>
	E5058		6Flute	40°	Inch	Regular Square	D3/16	D3/4	<b>671</b>
	E5056 E5057		5Flute	45°	Inch	Stub & Regular Roughing	D3/8	D1	<b>672</b>
	E5077		3Flute	30°	Inch	Taper	D3/32	D1/4	<b>673</b>
	E5078		3Flute	30°	Inch	Taper Ball	R.047	R.125	<b>674</b>
	EH527		2Flute	30°	Metric	Long	D3.5	D20.0	<b>675</b>
	EH540		4Flute	30°	Metric	Long	D3.5	D20.0	<b>676</b>
	EH882		3Flute	35°	Metric	Radius	D3.0	D20.0	<b>677</b>



# MILLING TOOLS APPLICATION TABLE

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
TANK-POWER	E9983		2Flute	30°	Inch	Regular Square	D1/8	D1	<b>688</b>
	E9984		2Flute	30°	Inch	Regular Double Square	D1/8	D1	<b>689</b>
	E9985		4Flute	30°	Inch	Regular Square	D1/8	D1	<b>690</b>
	E9986		4Flute	30°	Inch	Regular Double Square	D1/8	D1	<b>691</b>
	E9988		3&4Flute	60°	Inch	Regular Square	D1/4	D1	<b>692</b>
	E9992		2Flute	30°	Inch	Regular Ball	D1/8	D1	<b>693</b>
	E9990		3~6Flute	30°	Inch	Regular Roughing	D1/4	D1-1/4	<b>694</b>
	E9991		3~6Flute	30°	Inch	Regular Roughing	D1/4	D1-1/4	<b>695</b>
	E9A86		3~6Flute	30°	Inch	Long Roughing	D5/16	D1-1/4	<b>696</b>
	E9A87		3~6Flute	30°	Inch	Long Roughing	D5/16	D1-1/4	<b>697</b>
	E9921		5~6Flute	35°	Inch	Long Roughing with Neck	D1/2	D1-1/4	<b>698</b>
COBALT & HSS	E2030 E1030		2Flute	30°	Inch	Regular Square	D1/8	D2	<b>711</b>
	E2080 E1080		2Flute	30°	Inch	Long Square	D1/4	D2	<b>713</b>
	E2033 E1033		2Flute	30°	Inch	Extended Square	D1/8	D1-1/4	<b>714</b>
	E2050 E1050		2Flute	30°	Inch	Regular Double Square	D1/8	D1	<b>715</b>
	E2110 E1110		2Flute	30°	Inch	Regular Ball	R1/16	R1	<b>717</b>
	E2111 E1111		2Flute	30°	Inch	Extended Ball	R1/16	R1/2	<b>718</b>
	E2112 E1112		2Flute	30°	Inch	Regular Ball Double	R1/16	R1/2	<b>719</b>
	E2031 E1031		4Flute	30°	Inch	Regular Square	D1/8	D1	<b>720</b>
	E2032 E1032		6Flute	30°	Inch	Regular Square	D5/8	D2	<b>722</b>
	E2034 E1034		4Flute	30°	Inch	Long Square	D1/4	D1	<b>723</b>
	E2035 E1035		6Flute	30°	Inch	Long Square	D1-1/8	D2	<b>723</b>
	E2036 E1036		4Flute	30°	Inch	Extra Long Square	D1/4	D1	<b>724</b>
	E2037 E1037		6Flute	30°	Inch	Extra Long Square	D1-1/4	D2	<b>724</b>
	E2051 E1051		4Flute	30°	Inch	Regular Double Square	D1/8	D1	<b>725</b>
	E2031 E1031		4Flute	30°	Inch	Regular Square	D3/4	D1	<b>727</b>
	E2032 E1032		6&8Flute	30°	Inch	Regular Square	D1-1/8	D2	<b>727</b>
	E2020		4Flute	30°	Inch	Regular Ball	R1/16	R1	<b>728</b>
	E2021		4Flute	30°	Inch	Long Ball	R1/8	R1/2	<b>729</b>

⊙ : Excellent ○ : Good

Carbon Steels ~HRc20	Alloy Steels HRc20~30	Prehardened Steels HRc30~40	Hardened Steels		High Hardened Steels HRc55~70	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRc40~45	HRc45~55								
○	○	○				○		○		○		
○	○	○				○		○		○		
○	○	○				○		○		○		
○	○	○				○		○		○		
○	○	○				○		○		○		
○	○	○				○		○		○		
○	○	○				○		○		○		
○	○	○				○		○		○		
○	○	○				○		○		○		
○	○	○				○		○		○		
○	○	○				○		○		○		
○	○	○				○		○		○		
○	○	○				○		○		○		
○	○	○				○		○		○		
○	○	○				○		○		○		
○	○	○				○		○		○		
○	○	○				○		○		○		
○	○	○				○		○		○		
○	○	○				○		○		○		
○	○	○				○		○		○		
○	○	○				○		○		○		
○	○	○				○		○		○		
○	○	○				○		○		○		
○	○	○				○		○		○		
○	○	○				○		○		○		
○	○	○				○		○		○		
○	○	○				○		○		○		
○	○	○				○		○		○		
○	○	○				○		○		○		

# MILLING TOOLS APPLICATION TABLE

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
COBALT & HSS	E2069		4Flute	30°	Inch	Regular Ball Double	R1/16	R1/2	<b>730</b>
	E2039 E1039		4Flute	30°	Inch	Regular Square	D1/8	D1-1/2	<b>731</b>
	E2042 E1042		6Flute	30°	Inch	Regular Square	D1/2	D2	<b>733</b>
	E2039 E2042		4~8Flute	30°	Inch	Medium Square	D1	D2	<b>734</b>
	E2040 E1040		4Flute	30°	Inch	Long Square	D1/4	D1-1/2	<b>735</b>
	E2162 E1162		6Flute	30°	Inch	Long Square	D1/2	D2	<b>735</b>
	E2041 E1041		4Flute	30°	Inch	Extra Long Square	D1/4	D1-1/4	<b>736</b>
	E2175 E1175		6Flute	30°	Inch	Extra Long Square	D1/2	D2	<b>736</b>
	E2053 E1053		4Flute	30°	Inch	Regular Double Square	D1/8	D1	<b>737</b>
	E2100 E1100		6Flute	30°	Inch	Regular with Combination	D2	D2	<b>739</b>
	E2001 E1001		2Flute	30° & 39°	Inch	Miniature Stub Double	D1/32	D3/16	<b>740</b>
	E2003 E1003		2Flute	30° & 39°	Inch	Miniature Regular Double	D1/32	D3/16	<b>741</b>
	E2005 E1005		2Flute	30° & 39°	Inch	Miniature Long Double	D1/16	D3/16	<b>742</b>
	E2002 E1002		4Flute	30° & 39°	Inch	Miniature Stub Double	D1/16	D3/16	<b>743</b>
	E2004 E1004		4Flute	30° & 39°	Inch	Miniature Regular Double	D1/16	D3/16	<b>744</b>
	E2006 E1006		4Flute	30° & 39°	Inch	Miniature Long Double	D1/16	D3/16	<b>745</b>
	E2008 E1008		2Flute	30° & 39°	Inch	Miniature Stub Ball Double	R1/32	R3/32	<b>746</b>
	E2013 E1013		2Flute	30° & 39°	Inch	Miniature Regular Ball Double	R1/64	R3/32	<b>747</b>
	E2015 E1015		2Flute	30° & 39°	Inch	Miniature Long Ball Double	R1/32	R3/32	<b>748</b>
	E1070		2Flute	42°	Inch	Regular & Medium Square	D1/4	D2	<b>749</b>
	E1071		2Flute	42°	Inch	Long Square	D1/4	D2	<b>750</b>
	E1072		2Flute	42°	Inch	Extra Long Square	D1/4	D1-1/2	<b>750</b>
	E2086		4~5Flute	30°	Inch	Stub Roughing	D1/4	D1	<b>751</b>
	E2085		3~5Flute	30°	Inch	Regular Roughing	D1/4	D1	<b>752</b>
	E2079		3~6Flute	30°	Inch	Regular Roughing	D1/4	D2	<b>753</b>
	E2077		4~6Flute	30°	Inch	Long Roughing	D1/2	D2	<b>754</b>
	E2086		3Flute	30°	Inch	Stub Roughing	D1/4	D1	<b>755</b>
E2170		3~8Flute	30°	Inch	Regular Roughing	D1/4	D2	<b>756</b>	
E2171		5~8Flute	30°	Inch	Medium Roughing	D1	D2	<b>757</b>	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			~HRc20	HRc20~30	HRc30~40							
◎	◎	○				○			○			
◎	◎	○				○			○			
◎	◎	○				○						
◎	◎	○				○			○			
◎	◎	○				○			○			
◎	◎	○				○						
◎	◎	○				○			○			
◎	◎	○				○						
◎	◎	○				○			○			
◎	◎	○				○						
◎	◎	○				○			○			
◎	◎	○				○						
◎	◎	○				○			○			
◎	◎	○				○						
◎	◎	○				○			○			
◎	◎	○				○						
◎	◎	○				○			○			
◎	◎	○				○						
◎	◎	○				○			○			
○									◎			
○									◎			
○									◎			
◎	◎	○				○			○			
◎	◎	○				○			○			
◎	◎	○				○			○			
◎	◎	○				○			○			
◎	◎	○				○			○			
◎	◎	○				○			○			
◎	◎	○				○			○			
◎	◎	○				○			○			
◎	◎	○				○			○			

# MILLING TOOLS APPLICATION TABLE

	ITEM	MODEL	FLUTES	HELIX	INCH / METRIC	TYPE	SIZE RANGE		PAGE
							MIN	MAX	
COBALT & HSS	E2172		4~8Flute	30°	Inch	Long Roughing	D1/2	D2	<b>758</b>
	E2241		3Flute	30°	Inch	Stub Roughing	D1/4	D1	<b>759</b>
	E2195		4~6Flute	30°	Inch	Regular Roughing	D1/2	D1-1/2	<b>760</b>
	E2197		4~6Flute	30°	Inch	Long Roughing	D1/2	D1-1/2	<b>760</b>
	E2193 E2125		3~6Flute	30°	Inch	Regular & Long Roughing	R1/8	R3/4	<b>761</b>
	E2248		4~8Flute	30°	Inch	Regular Roughing&Finishing	D1/4	D2	<b>762</b>
	E2191		3Flute	37°	Inch	Regular Roughing	D1/4	D1-1/2	<b>763</b>
	E2226 E2192		3Flute	37°	Inch	Medium & Long Roughing	D1/2	D1-1/2	<b>764</b>
	E2163 E1163		2Flute	15°	Inch	Keyway	D1/8	D1	<b>765</b>
	E2120 E2121		3&4Flute	60°	Inch	Regular Square	D1/4 D7/8	D3/4 D2	<b>766</b>
	E2160		3Flute	30°	Inch	Short Square	D1/16	D1/4	<b>767</b>
	E2161		3Flute	30°	Inch	Long Square	D1/16	D1/4	<b>767</b>
	E2237 E1237		4Flute	0°	Inch	Corner Rounding	D1/4	D5/8	<b>768</b>
	E2482 E1482		2Flute	30°	Metric	Regular Square	D2.0 (.0787)	D45.0 (1.772)	<b>769</b>
	E2483 E1483		4Flute	30°	Metric	Regular Square	D2.0 (.0787)	D45.0 (1.772)	<b>770</b>

SERIES	MODEL	DESCRIPTION	INCH / METRIC	PAGE
<b>XB1A XB1N</b>		i-Xmill BALL INSERT FOR GENERAL PURPOSE	Inch Metric	<b>384</b> <b>389</b>
		i-Xmill BALL INSERT FOR HARDENED STEEL	Inch Metric	<b>384</b> <b>389</b>
<b>XR1A XRAA</b>		i-Xmill CORNER RADIUS INSERTS FOR GENERAL PURPOSE	Inch Metric	<b>387</b> <b>392</b>
		i-Xmill CORNER RADIUS INSERTS FOR HARDENED STEEL	Inch Metric	<b>387</b> <b>392</b>

# SOLID

◎ : Excellent ○ : Good

Carbon Steels ~HRc20	Alloy Steels HRc20~30	Prehardened Steels HRc30~40	Hardened Steels		High Hardened Steels HRc55~70	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRc40~45	HRc45~55								
◎	◎	○				○			○			
◎	◎	○				○			○			
◎	◎	○				○			○			
◎	◎	○				○			○			
◎	◎	○				○			○			
◎	◎	○				○			○			
◎	◎	○				○			◎			
◎	◎	○				○			◎			
◎	◎	○				○			○			
◎	◎	○				○			○			
◎	◎	○				○			○			
◎	◎	○				○			○			
◎	◎	○				○			○			
◎	◎	○				○			○			
◎	◎	○				○			○			
◎	◎	○				○			○			
◎	◎	○				○			○			

# INSERT

◎ : Excellent ○ : Good

Carbon Steels		Alloy Steels		Tool Steels		Cast Iron ~HRc35	Hardened Steels HRc50~	Stainless Steels ~HRc28	Aluminum ~HRc8
~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~				
◎	○	◎	○	◎	○	○		○	○
○	◎	○	◎	○	◎	◎	◎		
◎	○	◎	○	◎	○	○		○	○
○	◎	○	◎	○	◎	◎	◎		





## CUTTING TOOLS







Being the best through innovation



# **CBN** (Cubic Boron Nitride)

- Cubic Boron Nitride, Machining High Hardened Steels up to HRc70,  
Mirror Finish

# SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
<b>ESB94</b>		CBN, 2 FLUTE BALL NOSE	R0.2	R1.5	<b>378</b>
<b>ESD02</b>		CBN, 2 FLUTE CORNER RADIUS	D0.5	D2.0	<b>379</b>
RECOMMENDED CUTTING CONDITIONS					<b>380</b>

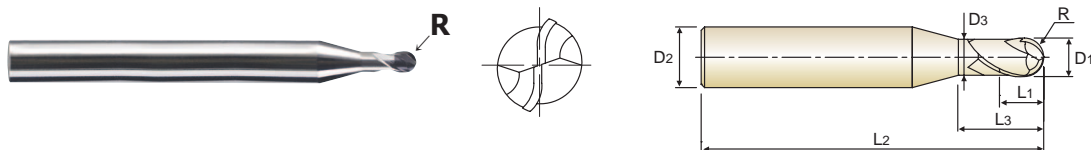
◎ : Excellent  
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRc40~45	HRc45~55	HRc55~70							
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
				○	◎							
				○	◎							



### CBN, 2 FLUTE BALL NOSE

- ▶ Higher accuracy, better finishes, longer tool life.
- ▶ Special geometry improves tool rigidity at high Speed.
- ▶ Tighter radius tolerance ( $\pm 0.005$ mm) assures higher accuracy.



Unit : mm

EDP No.	Radius of Ball Nose R ( $\pm 0.005$ )	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric	Inch					
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

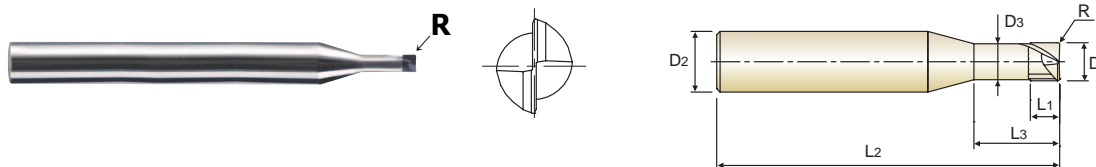
Radius Tolerance(mm)	Shank Dia. Tolerance
$\pm 0.005$	h5

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
				⊙	⊙							

⊙ : Excellent ○ : Good

## CBN, 2 FLUTE CORNER RADIUS

- ▶ Higher accuracy, better finishes, longer tool life.
- ▶ Special geometry improves tool rigidity at high Speed.
- ▶ Tighter radius tolerance ( $\pm 0.005\text{mm}$ ) assures higher accuracy.



Unit : mm

EDP No.	Corner Radius R ( $\pm 0.005$ )	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
ESD02005052	RO.05	0.5	.0197	4	0.3	2	50	0.46
ESD02005053	RO.05	0.5	.0197	4	0.3	3	50	0.46
ESD02010053	RO.05	1.0	.0394	4	0.7	3	50	0.95
ESD02010055	RO.05	1.0	.0394	4	0.7	5	50	0.95
ESD02010103	RO.1	1.0	.0394	4	0.7	3	50	0.95
ESD02010105	RO.1	1.0	.0394	4	0.7	5	50	0.95
ESD02015105	RO.1	1.5	.0591	4	1.0	5	50	1.45
ESD02015108	RO.1	1.5	.0591	4	1.0	8	50	1.45
ESD02015205	RO.2	1.5	.0591	4	1.0	5	50	1.45
ESD02015208	RO.2	1.5	.0591	4	1.0	8	50	1.45
ESD02020106	RO.1	2.0	.0787	4	1.2	6	50	1.95
ESD02020100	RO.1	2.0	.0787	4	1.2	10	50	1.95
ESD02020206	RO.2	2.0	.0787	4	1.2	6	50	1.95
ESD02020200	RO.2	2.0	.0787	4	1.2	10	50	1.95

Corner Radius Tolerance(mm)	Shank Dia. Tolerance
$\pm 0.005$	h5

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
				◎	◎							

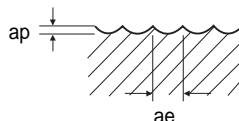


## CBN, 2 FLUTE BALL NOSE

### ESB94 SERIES

MATERIAL	HARDENED STEELS		HIGH HARDENED STEELS	
HARDNESS	HRc50 ~ HRc60		HRc60 ~ HRc70	
DIAMETER	RPM	FEED	RPM	FEED
R0.2 × 0.4	50,000	47.24	50,000	47.24
R0.25 × 0.5	50,000	59.06	50,000	59.06
R0.3 × 0.6	50,000	78.74	50,000	78.74
R0.4 × 0.8	50,000	78.74	50,000	78.74
R0.5 × 1.0	50,000	118.11	50,000	118.11
R0.6 × 1.2	50,000	118.11	50,000	118.11
R0.75 × 1.5	50,000	118.11	50,000	118.11
R1.0 × 2.0	40,000	125.98	32,000	98.43
R1.5 × 3.0	26,500	82.68	21,500	66.93

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

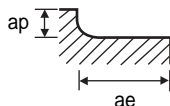


RPM = rev./min.  
 FEED = inch/min.

## CBN, 2 FLUTE CORNER RADIUS

### ESD02 SERIES

MATERIAL	HARDENED STEELS				HIGH HARDENED STEELS			
HARDNESS	HRc50 ~ HRc60				HRc60 ~ HRc70			
DIAMETER	RPM	FEED	DEPTH OF CUT		RPM	FEED	DEPTH OF CUT	
			ae[mm]	ap[mm]			ae[mm]	ap[mm]
0.5	50,000	27.56	0.10	0.01	50,000	21.65	0.06	0.005
1.0	43,000	39.37	0.20	0.01	30,000	27.56	0.10	0.10
1.5	30,000	39.37	0.40	0.02	19,000	27.56	0.20	0.20
2.0	22,000	35.43	0.60	0.03	14,000	31.50	0.30	0.30

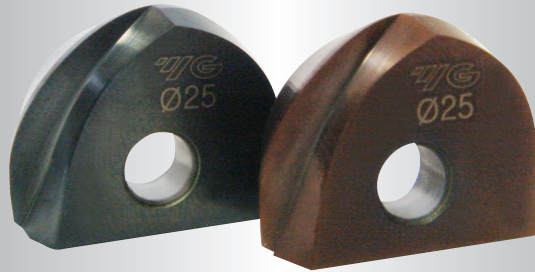


RPM = rev./min.  
 FEED = inch/min.



# CARBIDE INSERT & HOLDER

Being the best through innovation



# *i*-Xmill

- Available for General Steels and for Hardened Steels up to HRc65



# SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	PAGE
<b>INCH</b>			
<b>XB1A</b>		i-Xmill BALL INSERT FOR GENERAL PURPOSE	<b>384</b>
<b>XB2C</b>		i-Xmill BALL INSERT FOR HARDENED STEEL	<b>384</b>
<b>ZBT / ZBS</b>		i-Xmill BALL HOLDERS - STEEL	<b>385</b>
<b>ZBC</b>		i-Xmill BALL HOLDERS - CARBIDE	<b>386</b>
<b>XR1A</b>		i-Xmill CORNER RADIUS INSERTS FOR GENERAL PURPOSE	<b>387</b>
<b>XR2A</b>		i-Xmill CORNER RADIUS INSERTS FOR HARDENED STEEL	<b>387</b>
<b>ZRT / ZRS</b>		i-Xmill CORNER RADIUS HOLDERS - STEEL	<b>388</b>
<b>METRIC</b>			
<b>XB1N</b>		i-Xmill BALL INSERT FOR GENERAL PURPOSE	<b>389</b>
<b>XB2N</b>		i-Xmill BALL INSERT FOR HARDENED STEEL	<b>389</b>
<b>ZBT / ZBS</b>		i-Xmill BALL HOLDERS - STEEL	<b>390</b>
<b>ZBC</b>		i-Xmill BALL HOLDERS - CARBIDE	<b>391</b>
<b>XRAA</b>		i-Xmill CORNER RADIUS INSERTS FOR GENERAL PURPOSE	<b>392</b>
<b>XRBA</b>		i-Xmill CORNER RADIUS INSERTS FOR HARDENED STEEL	<b>392</b>
<b>ZRT / ZRS</b>		i-Xmill CORNER RADIUS HOLDERS - STEEL	<b>394</b>
		ASSEMBLY RECOMMENDATIONS	<b>395</b>
		RECOMMENDED CUTTING CONDITIONS	<b>96</b>

◎ : Excellent, ○ : Good

Carbon Steels		Alloy Steels		Tool Steels		Cast Iron	Hardened Steels	Stainless Steels	Aluminum
~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc50~	~HRc28	~HRc8

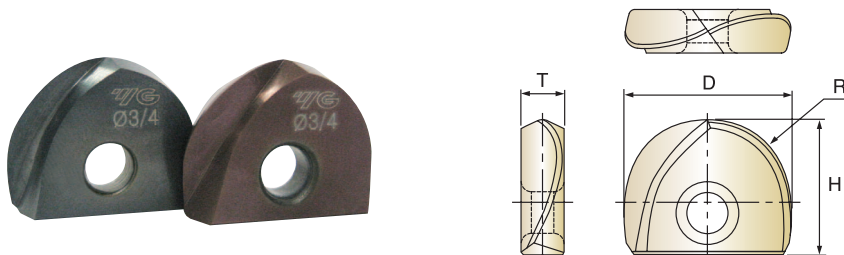
◎	○	◎	○	◎	○	○		○	○
○	◎	○	◎	○	◎	◎	◎		
◎	○	◎	○	◎	○	○		○	○
○	◎	○	◎	○	◎	◎	◎		

◎	○	◎	○	◎	○	○		○	○
○	◎	○	◎	○	◎	◎	◎		
◎	○	◎	○	◎	○	○		○	○
○	◎	○	◎	○	◎	◎	◎		



**i-Xmill BALL INSERTS**

- ▶ Indexable Ball End Mill for economic use
- ▶ Two Types of Inserts are available - For General Purpose (~HRc50) & For Hardened Material (HRc40~HRc65)
- ▶ Special Geometry and Coating for Excellent Performance



cutting conditions : p.396

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Height	Thickness
For General Material	For Hardened Material	R	D	H	T
<b>XB1A020</b>	<b>XB2C020</b>	R5/32	<b>5/16</b>	5/16	.094
<b>XB1A024</b>	<b>XB2C024</b>	R3/16	<b>3/8</b>	3/8	.106
<b>XB1A032</b>	<b>XB2C032</b>	R1/4	<b>1/2</b>	7/16	.126
<b>XB1A040</b>	<b>XB2C040</b>	R5/16	<b>5/8</b>	1/2	.165
<b>XB1A048</b>	<b>XB2C048</b>	R3/8	<b>3/4</b>	5/8	.205
<b>XB1A100</b>	<b>XB2C100</b>	R1/2	<b>1</b>	3/4	.244
<b>XB1A116</b>	<b>XB2C116</b>	R5/8	<b>1-1/4</b>	31/32	.283

- The ball radius tolerance is ±.0004" and the set-up accuracy is ±.0008"

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

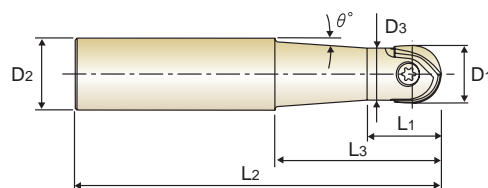
TECHNICAL  
DATA

◎ : Excellent ○ : Good

	Carbon Steels		Alloy Steels		Tool Steels		Cast Iron	Hardened Steels	Stainless Steels	Aluminum
	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc50~	~HRc28	~HRc8
XB1A	◎	○	◎	○	◎	○	○		○	○
XB2C	○	◎	○	◎	○	◎	◎	◎		

## i-Xmill BALL HOLDERS - STEEL

- ▶ Premium alloy steel with excellent strength.
- ▶ Precise shank, Tolerance (h6).
- ▶ Nickel plated, to prevent corrosion and improve lubricity.

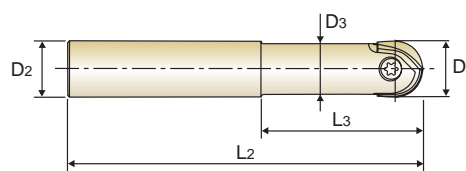


### Taper neck Type

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	$\theta^\circ$			
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 40)



### Straight neck Type

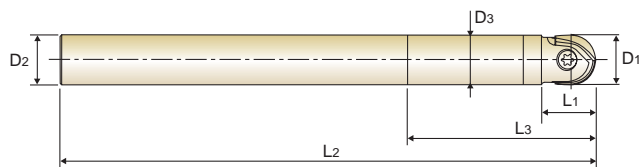
Unit : Inch

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 40)

**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	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Length Type	Wrench No.	Screw No.
	D1	D2	L1	L3	L2	D3			
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					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 40)

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

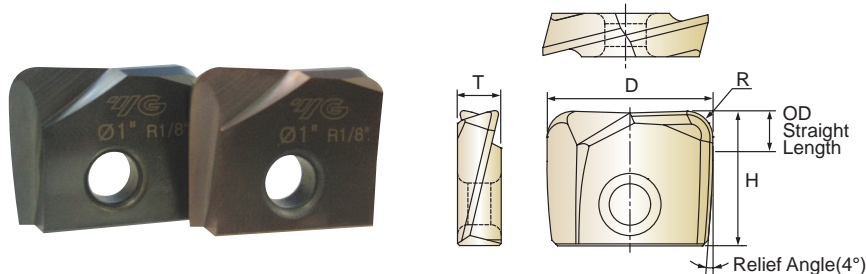
TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

## 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.
- ▶ Two Types of Inserts are available - For General Purpose (~HRc50) & For Hardened Material (HRc40~HRc65)



cutting conditions : p.396

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Height	Thickness	OD Straight Length
For General Material	For Hardened Material	R	D	H	T	
XR1A020 01	XR2A020 01	R1/64	5/16	5/16	.094	2
XR1A020 02	XR2A020 02	R1/32				
XR1A024 01	XR2A024 01	R1/64	3/8	3/8	.106	3
XR1A024 02	XR2A024 02	R1/32				
XR1A024 04	XR2A024 04	R1/16	1/2	7/16	.126	3
XR1A032 01	XR2A032 01	R1/64				
XR1A032 02	XR2A032 02	R1/32				
XR1A032 04	XR2A032 04	R1/16				
XR1A040 01	XR2A040 01	R1/64	5/8	1/2	.165	4
XR1A040 02	XR2A040 02	R1/32				
XR1A040 04	XR2A040 04	R1/16				
XR1A040 08	XR2A040 08	R1/8				
XR1A048 01	XR2A048 01	R1/64	3/4	5/8	.205	4
XR1A048 02	XR2A048 02	R1/32				
XR1A048 04	XR2A048 04	R1/16				
XR1A048 08	XR2A048 08	R1/8				
XR1A100 01	XR2A100 01	R1/64	1	3/4	.244	4
XR1A100 02	XR2A100 02	R1/32				
XR1A100 04	XR2A100 04	R1/16				
XR1A100 08	XR2A100 08	R1/8				
XR1A116 01	XR2A116 01	R1/64	1-1/4	29/32	.283	4
XR1A116 02	XR2A116 02	R1/32				
XR1A116 04	XR2A116 04	R1/16				
XR1A116 08	XR2A116 08	R1/8				

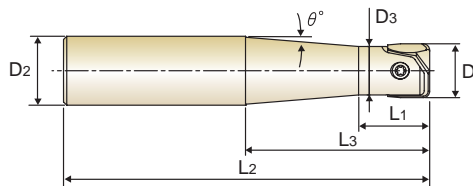
- The other corner radius values are available on request.
- The corner radius tolerance is ±.0006" and the set-up accuracy is ±.0008"

◎ : Excellent ○ : Good

	Carbon Steels		Alloy Steels		Tool Steels		Cast Iron	Hardened Steels	Stainless Steels	Aluminum
	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~				
XR1A	◎	○	◎	○	◎	○	○		○	○
XR2A	○	◎	○	◎	○	◎	◎	◎		

**i-Xmill CORNER RADIUS HOLDERS - STEEL**

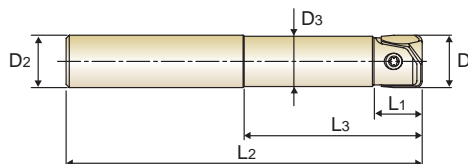
- ▶ Premium alloy steel with excellent strength.
- ▶ Precise shank, Tolerance (h6).
- ▶ Nickel plated, to prevent corrosion and improve lubricity.



**Taper neck Type**

Unit : Inch

EDP No.	Mill Diameter	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	$\theta^\circ$			
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**

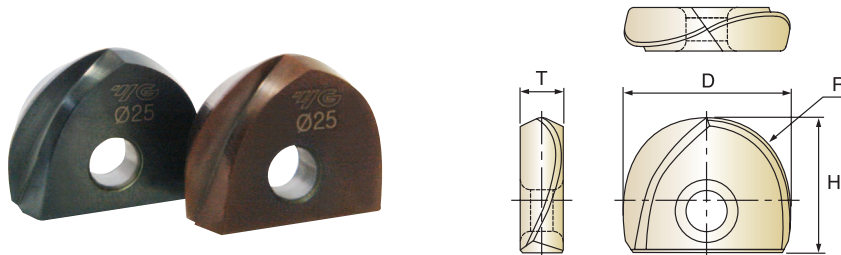
Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Length Type	Wrench No.	Screw No.
	D1	D2	L1	L3	L2	D3			
ZRS1032	1/2	1/2	17/32	1-3/16	4-3/8	7/16	Regular	TWF10	TX1210
ZRS1040				2	5-1/8	Regular			
ZRS2040	5/8	5/8	5/8	2-9/16	6-1/2	19/32	Intermediate	TWF15	TX1615
ZRS1048				2-3/8	5-1/2	Regular			
ZRS2048	3/4	3/4	23/32	3-1/8	7-1/8	23/32	Intermediate	TWB20	TX2020
ZRS1100				2-3/4	5-15/16	Regular			
ZRS2100	1	1	29/32	3-9/16	8	31/32	Intermediate	TWB25	TX2525
ZRS1116				3-1/8	6-5/16	Regular			
ZRS2116	1-1/4	1-1/4	1-1/8	4	8-11/16	1-7/32	Intermediate	TWB30	TX3030

● Need to use T Handle : TWH600 (See page 40)

### i-Xmill BALL INSERTS

- ▶ Indexable Ball End Mill for economic use
- ▶ Two Types of Inserts are available - For General Purpose (~HRc50) & For Hardened Material (HRc40~HRc65)
- ▶ Special Geometry and Coating for Excellent Performance



cutting conditions : p.396

Unit : mm

EDP No.		Radius of Ball Nose	Mill Diameter	Height	Thickness
For General Material	For Hardened Material	R	D	H	T
<b>XB1N080</b>	<b>XB2N080</b>	R4.0	<b>8.0</b>	8	2.4
<b>XB1N100</b>	<b>XB2N100</b>	R5.0	<b>10.0</b>	9.5	2.7
<b>XB1N120</b>	<b>XB2N120</b>	R6.0	<b>12.0</b>	11	3.2
<b>XB1N160</b>	<b>XB2N160</b>	R8.0	<b>16.0</b>	13	4.2
<b>XB1N200</b>	<b>XB2N200</b>	R10.0	<b>20.0</b>	16	5.2
<b>XB1N250</b>	<b>XB2N250</b>	R12.5	<b>25.0</b>	19.5	6.2
<b>XB1N300</b>	<b>XB2N300</b>	R15.0	<b>30.0</b>	23.5	7.2
<b>XB1N320</b>	<b>XB2N320</b>	R16.0	<b>32.0</b>	24.5	7.2

• The ball radius tolerance is ±0.01mm and the set-up accuracy is ±0.02mm

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

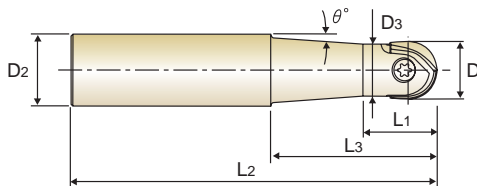
◎ : Excellent ○ : Good

	Carbon Steels		Alloy Steels		Tool Steels		Cast Iron	Hardened Steels	Stainless Steels	Aluminum
	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~				
XB1A	◎	○	◎	○	◎	○	○		○	○
XB2N	○	◎	○	◎	○	◎	◎	◎		



**i-Xmill BALL HOLDERS - STEEL**

- ▶ Premium alloy steel with excellent strength.
- ▶ Precise shank, Tolerance (h6).
- ▶ Nickel plated, to prevent corrosion and improve lubricity.

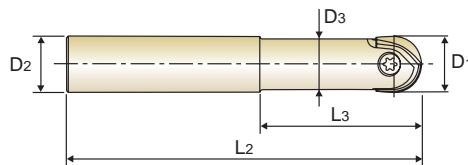


**Taper neck Type**

Unit : mm

EDP No.	Mill Diameter	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	$\theta^\circ$			
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 40)



**Straight neck Type**

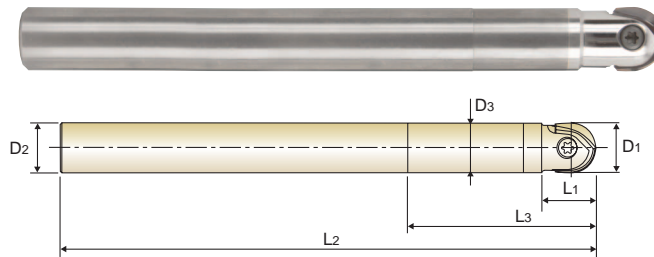
Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length Below Shank	Overall Length	Neck Diameter	Length Type	Wrench No.	Screw No.
	D1	D2	L3	L2	D3			
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 32.0	32	55	140	27	Short	● TWB30	TX3030
ZBS3002			110	195		Regular		

● Need to use T Handle : TWH600 (See page 40)

## 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 40)

 CBN  
END MILL

 i-Xmill  
END MILL

 X5070  
END MILLS

 X-SPEED  
ROUGHER  
END MILLS

 X-POWER  
END MILLS

 JET-POWER  
END MILLS

 V7 Mill STEEL  
END MILLS

 V7 Mill INOX  
END MILLS

 ALU-POWER  
END MILLS

 D-POWER  
END MILLS

 STANDARD  
CARBIDE  
END MILLS

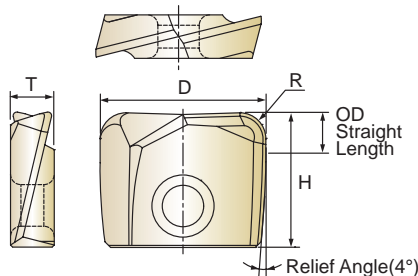
 TANK-POWER  
END MILLS

 STANDARD  
COBALT  
& HSS  
END MILLS

 TECHNICAL  
DATA

**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.
- ▶ Two Types of Inserts are available - For General Purpose (~HRc50) & For Hardened Material (HRc40~HRc65)



cutting conditions : p.396

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Height	Thickness	OD Straight Length
For General Material	For Hardened Material	R	D	H	T	
XRAA080 03	XRBA080 03	R0.3	8.0	8	2.4	2
XRAA080 05	XRBA080 05	R0.5				
XRAA080 10	XRBA080 10	R1.0				
XRAA100 05	XRBA100 05	R0.5	10.0	9.5	2.7	3
XRAA100 10	XRBA100 10	R1.0				
XRAA100 20	XRBA100 20	R2.0				
XRAA120 05	XRBA120 05	R0.5	12.0	11	3.2	3
XRAA120 10	XRBA120 10	R1.0				
XRAA120 20	XRBA120 20	R2.0				
XRAA130 05	XRBA130 05	R0.5	13.0	11.2	3.2	3
XRAA130 10	XRBA130 10	R1.0				
XRAA130 20	XRBA130 20	R2.0				
XRAA160 05	XRBA160 05	R0.5	16.0	13	4.2	4
XRAA160 10	XRBA160 10	R1.0				
XRAA160 20	XRBA160 20	R2.0				
XRAA170 05	XRBA170 05	R0.5	17.0	13	4.2	4
XRAA170 10	XRBA170 10	R1.0				
XRAA170 20	XRBA170 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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

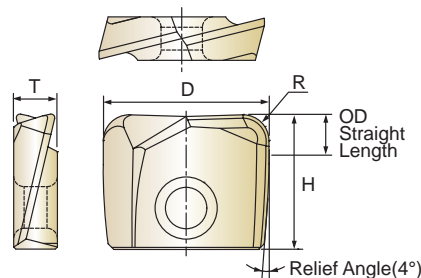
TECHNICAL DATA

◎ : Excellent ○ : Good

	Carbon Steels		Alloy Steels		Tool Steels		Cast Iron	Hardened Steels	Stainless Steels	Aluminum
	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc50~	~HRc28	~HRc8
XRAA	◎	○	◎	○	◎	○	○		○	○
XRBA	○	◎	○	◎	○	◎	◎	◎		

## 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.
- ▶ Two Types of Inserts are available - For General Purpose (~HRc50) & For Hardened Material (HRc40~HRc65)



cutting conditions : p.396

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Height	Thickness	OD Straight Length
For General Material	For Hardened Material	R	D	H	T	
XRAA200 05	XRBA200 05	R0.5	20.0	16	5.2	4
XRAA200 10	XRBA200 10	R1.0				
XRAA200 20	XRBA200 20	R2.0				
XRAA210 05	XRBA210 05	R0.5	21.0	16	5.2	4
XRAA210 10	XRBA210 10	R1.0				
XRAA210 20	XRBA210 20	R2.0				
XRAA250 05	XRBA250 05	R0.5	25.0	19.5	6.2	4
XRAA250 10	XRBA250 10	R1.0				
XRAA250 20	XRBA250 20	R2.0				
XRAA260 05	XRBA260 05	R0.5	26.0	19.5	6.2	4
XRAA260 10	XRBA260 10	R1.0				
XRAA260 20	XRBA260 20	R2.0				
XRAA300 05	XRBA300 05	R0.5	30.0	23.5	7.2	4
XRAA300 10	XRBA300 10	R1.0				
XRAA300 20	XRBA300 20	R2.0				
XRAA320 05	XRBA320 05	R0.5	32.0	23.5	7.2	4
XRAA320 10	XRBA320 10	R1.0				
XRAA320 20	XRBA320 20	R2.0				

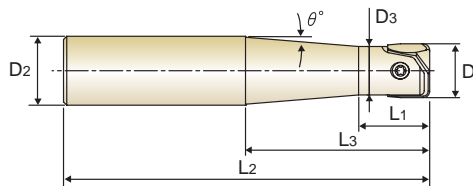
- The other corner radius values are available on request.
- The corner radius tolerance is ±0.015mm and the set-up accuracy is ±0.02mm

◎ : Excellent ○ : Good

	Carbon Steels		Alloy Steels		Tool Steels		Cast Iron	Hardened Steels	Stainless Steels	Aluminum
	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc50~	~HRc28	~HRc8
XRAA	◎	○	◎	○	◎	○	○		○	○
XRBA	○	◎	○	◎	○	◎	◎	◎		

**i-Xmill CORNER RADIUS HOLDERS - STEEL**

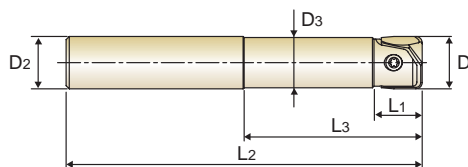
- ▶ Premium alloy steel with excellent strength.
- ▶ Precise shank, Tolerance (h6).
- ▶ Nickel plated, to prevent corrosion and improve lubricity.



**Taper neck Type**

Unit : mm

EDP No.	Mill Diameter	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	$\theta^\circ$			
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

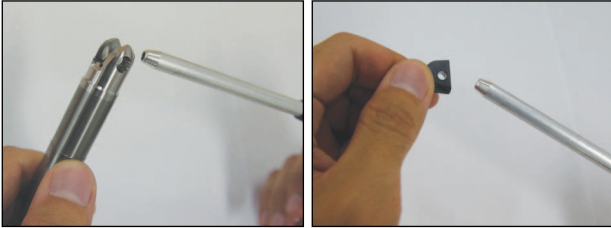


**Straight neck Type**

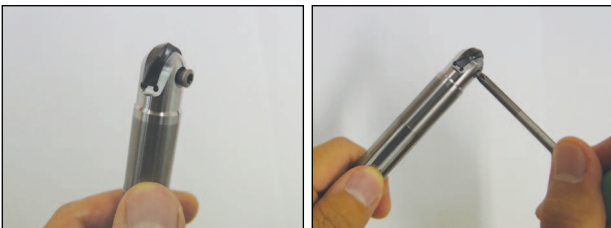
Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Length Type	Wrench No.	Screw No.
	D1	D2	L1	L3	L2	D3			
ZRS1120	12.0 13.0	12	13	30	110	11	Regular	TWF10	TX1210
ZRS1160	16.0 17.0	16	15	50	130	15	Regular	TWF15	TX1615
ZRS2160				65	165		Intermediate		
ZRS1200	20.0 21.0	20	18	60	140	19	Regular	TWB20	TX2020
ZRS2200				80	180		Intermediate		
ZRS1250	25.0 26.0	25	23	70	150	24	Regular	TWB25	TX2525
ZRS2250				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 40)

**ASSEMBLY OF *i-Xmill***


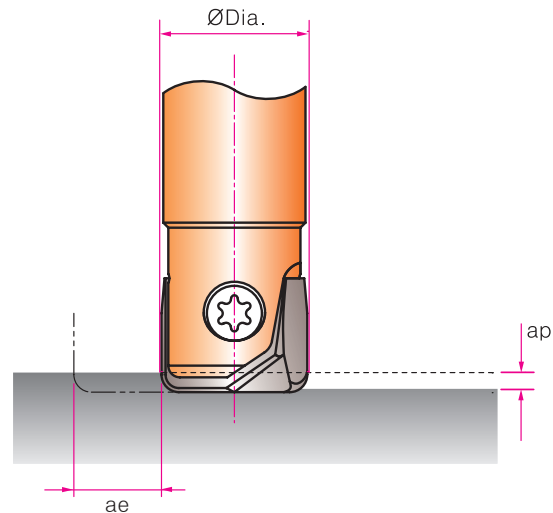
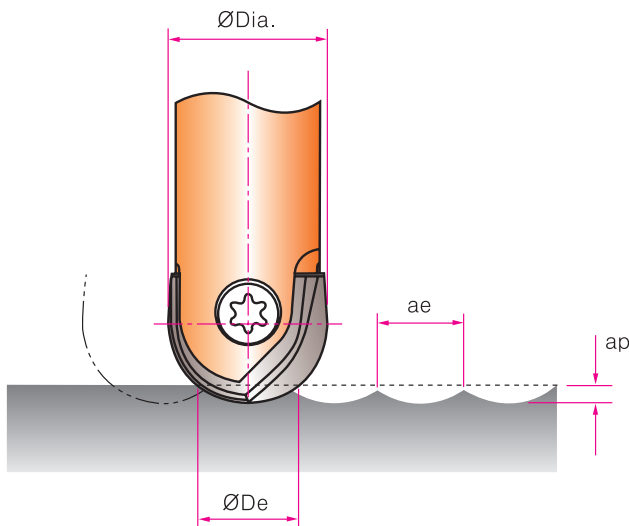
◀ Make sure to clean the insert and insert seat.



◀ Slide the insert into the slot of the holder.  
Tighten the screw using anti-seize compound.

SIZE	CLAMPING TORQUE
ØD	[ 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)

$$\text{SFM [ft/min]} = \frac{(\text{RPM}) \cdot (\pi) \cdot (\text{Dia.})}{12}$$

$$\text{IPM [inch/min]} = (\text{RPM}) \cdot (\text{IPR})$$

$$\text{RPM [rev/min]} = \frac{(\text{SFM}) \cdot (12)}{(\pi) \cdot (\text{Dia.})}$$

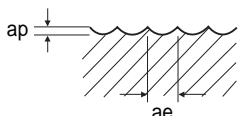
$$\text{De [inch]} = 2 \sqrt{(\text{ap}) \cdot (\text{Dia.} - \text{ap})}$$



**i-Xmill BALL INSERTS**

**XB1A, XB2C, XB1N, XB2N SERIES**

WORK MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		DIE TOOL STEELS PRE-HARDENED		HARDENED STEELS	
HARDNESS	HB	~280		280~380		380~480		480~740	
	HRc	~30		30~40		40~50		50~65	
STRENGTH	N/mm <sup>2</sup>	~1000		1000~1250		1250~1500		1500~	
i-Xmill TYPE		XB1A, XB1N		XB1A, XB1N		XB1A, XB1N XB2C, XB2N		XB2C, XB2N	
CUTTING CONDITION		RPM	Feed (IPM)	RPM	Feed (IPM)	RPM	Feed (IPM)	RPM	Feed (IPM)
Roughing~Finishing		[rev/min]	[inch/min]	[rev/min]	[inch/min]	[rev/min]	[inch/min]	[rev/min]	[inch/min]
Ø5/16(Ø8)		6370~12730	100~200	4770~11140	80~180	3980~8750	50~140	3180~7160	30~110
Ø3/8(Ø10)		5090~11460	80~180	3820~9550	60~150	3180~8280	40~130	2550~6370	20~100
Ø1/2(Ø12, Ø13)		4240~10080	70~160	3180~9280	50~150	2650~7430	30~120	2120~5840	20~90
Ø5/8(Ø16, Ø17)		3180~9550	60~230	2390~7560	50~180	1990~6960	30~160	1590~5170	20~120
Ø3/4(Ø20, Ø21)		2550~9230	50~290	1910~6680	40~210	1590~6370	30~200	1270~5090	20~160
Ø1(Ø25, Ø26)		2040~7640	40~300	1530~6110	30~240	1270~5730	20~230	1020~4580	10~180
Ø1-1/4(Ø30, Ø32)		1700~7430	30~350	1270~5840	30~280	1060~5310	20~250	850~4240	10~200



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

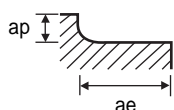
► Recommend to reduce the feed rate to 70 ~ 85% when you use long (long & intermediate Type Holder)

RPM = rev./min.  
 FEED = inch/min.

**i-Xmill CORNER RADIUS INSERTS**

**XR1A, XR2A, XRAA, XRBA SERIES**

WORK MATERIAL		NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		DIE TOOL STEELS PRE-HARDENED		HARDENED STEELS	
HARDNESS	HB	~280		280~380		380~480		480~740	
	HRc	~30		30~40		40~50		50~65	
STRENGTH	N/mm <sup>2</sup>	~1000		1000~1250		1250~1500		1500~	
i-Xmill TYPE		XR1A, XRAA		XR1A, XRAA		XR1A, XRAA XR2A, XRBA		XR2A, XRBA	
CUTTING CONDITION		RPM	Feed (IPM)	RPM	Feed (IPM)	RPM	Feed (IPM)	RPM	Feed (IPM)
Roughing~Finishing		[rev/min]	[inch/min]	[rev/min]	[inch/min]	[rev/min]	[inch/min]	[rev/min]	[inch/min]
Ø5/16(Ø8)		6370~11940	100~140	4770~11140	80~130	3980~11140	40~52	3180~7160	25~34
Ø3/8(Ø10)		5090~9550	80~110	3820~8910	60~110	3180~8910	30~42	2550~6370	20~28
Ø1/2(Ø12, Ø13)		4240~7960	70~90	3180~7430	50~90	2650~7430	25~35	2120~5840	18~24
Ø5/8(Ø16, Ø17)		3180~5970	60~90	2390~5570	50~90	1990~5570	24~34	1590~5170	18~22
Ø3/4(Ø20, Ø21)		2550~4770	50~80	1910~4460	40~70	1590~4460	20~26	1270~5090	15~18
Ø1(Ø25, Ø26)		2040~3820	40~60	1530~3570	30~60	1270~3570	15~20	1020~4580	12~14
Ø1-1/4(Ø30, Ø32)		1700~3180	30~50	1270~2970	30~50	1060~2970	14~18	850~4240	10~12



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

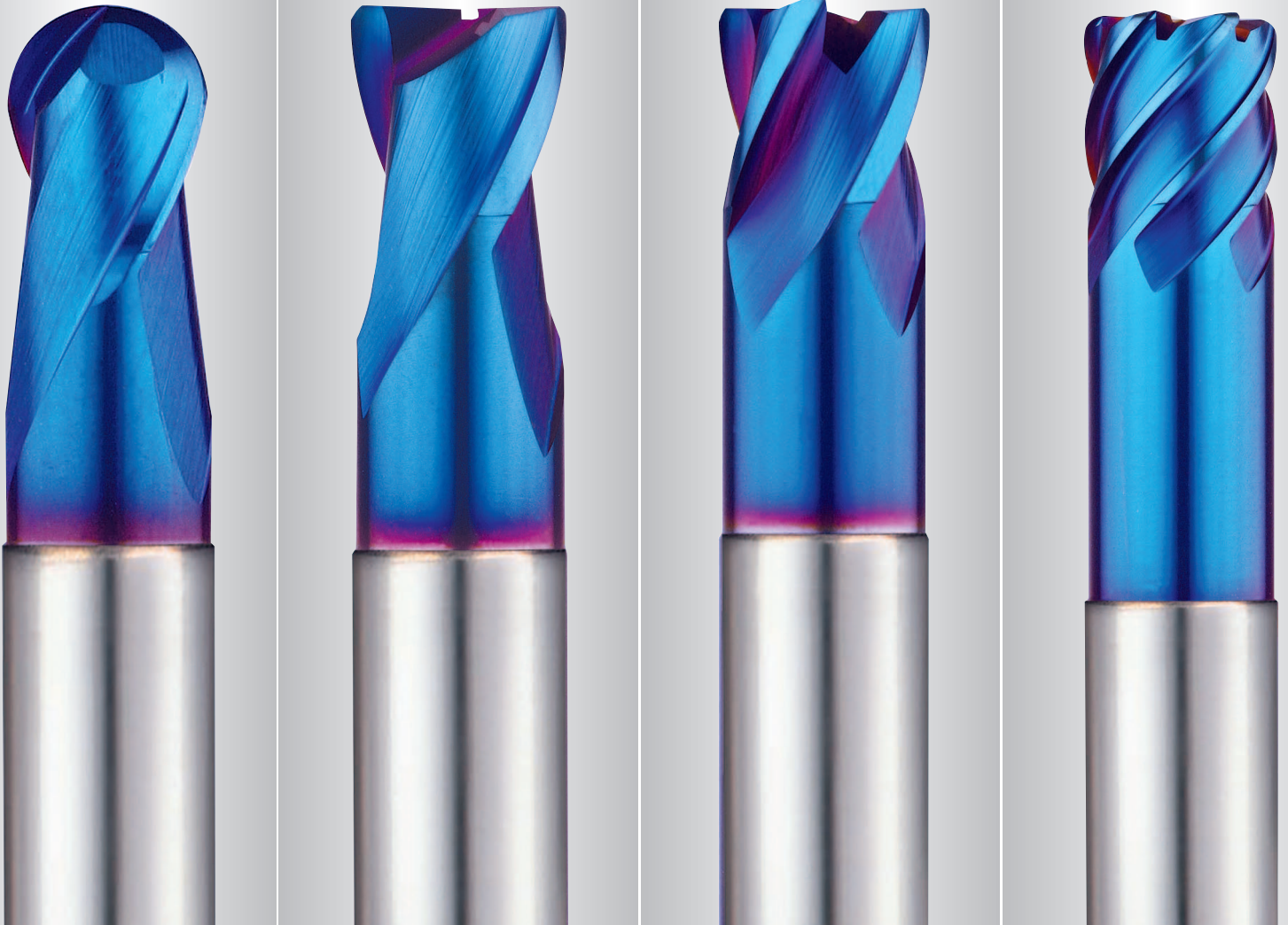
► Recommend to reduce the feed rate to 70 ~ 85% when you use long (long & intermediate Type Holder)

RPM = rev./min.  
 FEED = inch/min.



Being the best through innovation

# CARBIDE








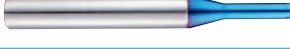
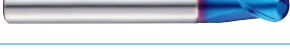

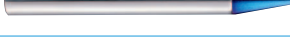

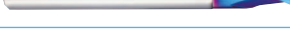
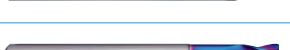





# X5070

- High Hardened Steels HRc45 to HRc70, High Speed Machining, Dry Cutting



# SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
<b>INCH</b>					
<b>G826</b>		CARBIDE, 4FLUTE STUB LENGTH CORNER RADIUS HIGH FEED	D1/8	D1/2	<b>400</b>
<b>G8A43</b>		CARBIDE, 2 FLUTE STUB LENGTH BALL NOSE with EXTENDED NECK	R1/64	R1/4	<b>401</b>
<b>G850</b>		CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS with EXTENDED NECK	D1/16	D3/4	<b>402</b>
<b>G851</b>		CARBIDE, 6&8 FLUTE 45° HELIX CORNER RADIUS	D1/4	D1	<b>403</b>
<b>METRIC</b>					
<b>G859</b>		CARBIDE, 4FLUTE STUB LENGTH CORNER RADIUS HIGH FEED	D2.0	D12.0	<b>404</b>
<b>G854</b>		CARBIDE, 4FLUTE STUB LENGTH CORNER RADIUS HIGH FEED	D2.0	D16.0	<b>405</b>
<b>G8A46</b>		CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING	R0.05	R2.0	<b>406</b>
<b>G8A54</b>		CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING	R0.25	R1.0	<b>410</b>
<b>G8A28</b>		CARBIDE, 2 FLUTE BALL NOSE	R0.05	R6.0	<b>411</b>
<b>G8A38</b>		CARBIDE, 2 FLUTE STUB LENGTH BALL NOSE with EXTENDED NECK	R0.5	R12.5	<b>412</b>
<b>G8A53</b>		CARBIDE, 2 FLUTE MINIATURE BALL NOSE	R0.2	R1.0	<b>413</b>
<b>G8A59</b>		CARBIDE, 3 FLUTE BALL NOSE	R1.5	R10.0	<b>414</b>
<b>G8A36</b>		CARBIDE, 2 FLUTE STUB LENGTH CORNER RADIUS with EXTENDED NECK	D0.3	D20.0	<b>415</b>
<b>G8A50</b>		CARBIDE, 2 FLUTE MINIATURE CORNER RADIUS	D0.3	D2.0	<b>417</b>
<b>G8A47</b>		CARBIDE, 4 FLUTE CORNER RADIUS with EXTENDED NECK	D3.0	D12.0	<b>418</b>
<b>G8A37</b>		CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS with EXTENDED NECK	D1.0	D20.0	<b>419</b>
<b>G8A39</b>		CARBIDE, 6 FLUTE 45° HELIX CORNER RADIUS with EXTENDED NECK	D6.0	D20.0	<b>420</b>
RECOMMENDED CUTTING CONDITIONS					<b>421</b>

# X5070 END MILLS

◎ : Excellent  
○ : Good

Carbon Steels	Alloy Steels	Prehardened	Hardened Steels		High Hardened	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRc40~4	HRc45~5								
~HRc20	HRc20~3	HRc30~4	HRc40~4	HRc45~5	HRc55~70							
		○	○	◎	◎							
		○	○	◎	◎							
		○	○	◎	◎							
		○	○	◎	◎							
		○	○	◎	◎							
		○	○	◎	◎							
		○	○	◎	◎							
		○	○	◎	◎							
		○	○	◎	◎							
		○	○	◎	◎							
		○	○	◎	◎							
		○	○	◎	◎							
		○	○	◎	◎							
		○	○	◎	◎							
		○	○	◎	◎							
		○	○	◎	◎							
		○	○	◎	◎							
		○	○	◎	◎							
		○	○	◎	◎							



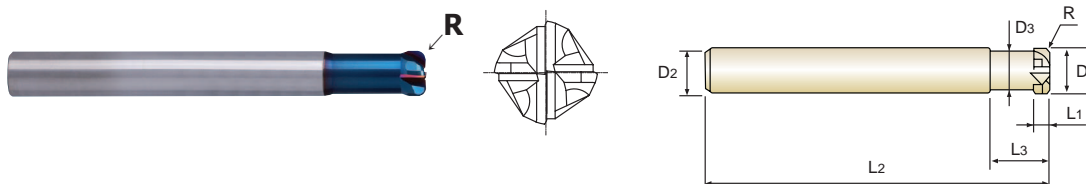
**X5070  
END MILLS**

**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
±.0002
R
P.421

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
<b>G826082</b>	R1/32	1/8	1/4	.050	3/8	2-1/4	.110
<b>G826124</b>	R1/16	3/16	1/4	.075	3/8	2-1/4	.180
<b>G826164</b>	R1/16	1/4	1/4	.100	1/2	2-1/2	.220
<b>G826206</b>	R3/32	5/16	5/16	.130	5/8	2-1/2	.280
<b>G826246</b>	R3/32	3/8	3/8	.150	3/4	2-3/4	.330
<b>G826328</b>	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

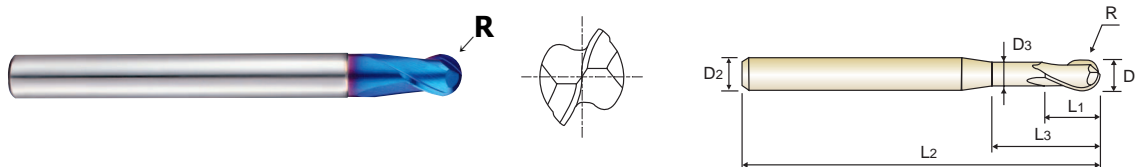
Mill Dia. Tolerance (inch)	Corner Radius Tolerance (inch)	Shank Dia. Tolerance
0--.0008	±.0002	h6

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
		○	○	◎	◎							

◎ : Excellent ○ : Good

**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 P.422

R1/64-R1/8 R5/32-R1/4

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
<b>G8A43002</b>	R1/64	<b>1/32</b>	1/4	1/32	1/16	2	.029
<b>G8A43004</b>	R1/32	<b>1/16</b>	1/4	1/16	1/8	2	.059
<b>G8A43006</b>	R3/64	<b>3/32</b>	1/4	3/32	3/16	2	.090
<b>G8A43008</b>	R1/16	<b>1/8</b>	1/4	1/8	1/4	2-1/2	.121
<b>G8A43012</b>	R3/32	<b>3/16</b>	1/4	3/16	3/8	3	.184
<b>G8A43016</b>	R1/8	<b>1/4</b>	1/4	1/4	1/2	3-1/2	.246
<b>G8A43020</b>	R5/32	<b>5/16</b>	5/16	5/16	5/8	4	.309
<b>G8A43024</b>	R3/16	<b>3/8</b>	3/8	3/8	3/4	4	.371
<b>G8A43032</b>	R1/4	<b>1/2</b>	1/2	1/2	1	4-1/2	.496

The original bright blue color may discolor during use, however, the permance 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	

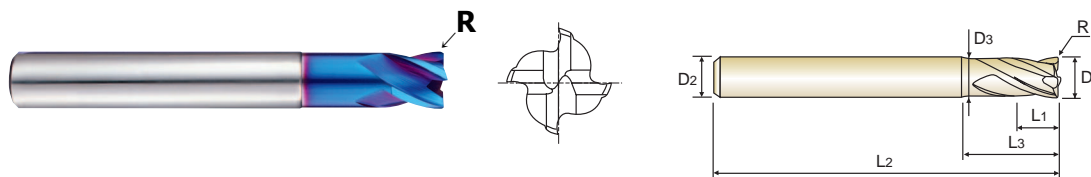
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
		○	○	◎	◎							



**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°
±.0002
PLAIN
P.423

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
<b>G85004</b>	R.004	<b>1/16</b>	1/8	3/32	-	1-1/2	-
<b>G85008</b>	R.004	<b>1/8</b>	1/4	5/32	1/4	2	.119
<b>G85012</b>	R.004	<b>3/16</b>	1/4	1/4	3/8	2	.181
<b>G85016</b>	R.008	<b>1/4</b>	1/4	5/16	9/16	2	.238
<b>G85020</b>	R.008	<b>5/16</b>	5/16	3/8	3/4	2-1	.301
<b>G85024</b>	R.008	<b>3/8</b>	3/8	1/2	1	3	.363
<b>G85032</b>	R.012	<b>1/2</b>	1/2	5/16	1-3/16	3	.488
<b>G85040</b>	R.012	<b>5/8</b>	5/8	3/4	1-1/2	3-1	.613
<b>G85048</b>	R.012	<b>3/4</b>	3/4	1	1-3/4	4	.738

The original bright blue color may discolor during use, however, the permance will not be negatively affected

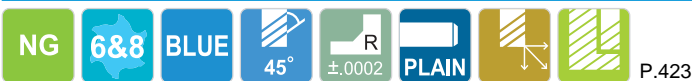
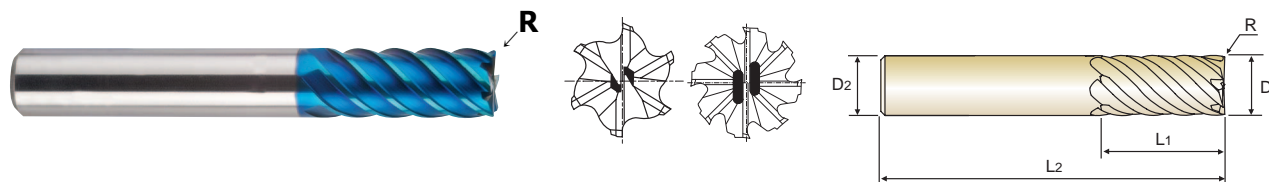
Size	Corner Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø 1/4	± .0002	0~- .0005	h6
over Ø 1/4	± .0004	0~- .0006	

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
		○	○	◎	◎							

◎ : Excellent ○ : Good

**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.



Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
	R	D1	D2	L1	L2	
<b>G85116</b>	R.02	<b>1/4</b>	1/4	1/2	2-1/4	6
<b>G85120</b>	R.02	<b>5/16</b>	5/16	3/4	2-1/2	6
<b>G85125</b>	R.03	<b>3/8</b>	3/8	7/8	2-7/8	6
<b>G85133</b>	R.03	<b>1/2</b>	1/2	1	3-1/4	6
<b>G85140</b>	R.03	<b>5/8</b>	5/8	1-1/4	3-5/8	6
<b>G85141</b>	R.06	<b>5/8</b>	5/8	1-1/4	3-5/8	6
<b>G85148</b>	R.03	<b>3/4</b>	3/4	1-1/2	4-1/8	8
<b>G85149</b>	R.06	<b>3/4</b>	3/4	1-1/2	4-1/8	8
<b>G85164</b>	R.03	<b>1</b>	1	1-3/4	4-1/4	8
<b>G85165</b>	R.06	<b>1</b>	1	1-3/4	4-1/4	8
<b>G85167</b>	R.03	<b>1</b>	1	4-1/8	7	8
<b>G85168</b>	R.06	<b>1</b>	1	4-1/8	7	8

The original bright blue color may discolor during use, however, the permance will not be negatively affected

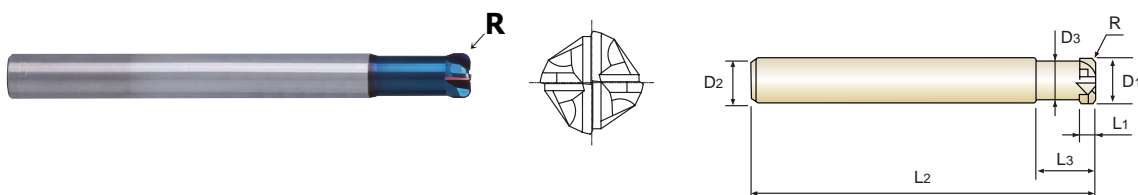
Size	Corner Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	±.0002	0~- .0005	h6
over Ø1/4	±.0004	0~- .0006	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
		○	○	◎	◎							

**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
±0.005
R
P.424

Unit : mm

EDP No.	Corner Radius R	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
<b>G859020</b>	R0.5	<b>2.0</b>	<b>.0787</b>	6	1	6	50	1.8
<b>G859030</b>	R0.5	<b>3.0</b>	<b>.1181</b>	6	1.2	8	50	2.8
<b>G859040</b>	R0.5	<b>4.0</b>	<b>.1575</b>	6	1.5	10	50	3.8
<b>G859060</b>	R0.5	<b>6.0</b>	<b>.2362</b>	6	2.5	12	60	5.4
<b>G859061</b>	R1.0	<b>6.0</b>	<b>.2362</b>	6	2.5	12	60	5.4
<b>G859081</b>	R1.0	<b>8.0</b>	<b>.3150</b>	8	3.5	16	60	7.2
<b>G859082</b>	R2.0	<b>8.0</b>	<b>.3150</b>	8	3.5	16	60	7.2
<b>G859101</b>	R1.0	<b>10.0</b>	<b>.3937</b>	10	4	20	70	9
<b>G859102</b>	R2.0	<b>10.0</b>	<b>.3937</b>	10	4	20	70	9
<b>G859122</b>	R2.0	<b>12.0</b>	<b>.4724</b>	12	5	25	80	11
<b>G859123</b>	R3.0	<b>12.0</b>	<b>.4724</b>	12	5	25	80	11
<b>G859163</b>	R3.0	<b>16.0</b>	<b>.6299</b>	16	6.5	30	90	15

The original bright blue color may discolor during use, however, the permannence will not be negatively affected

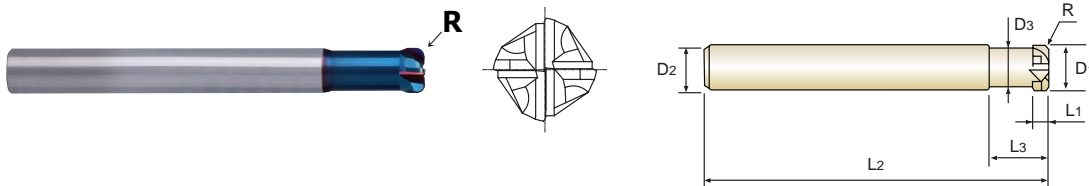
Mill Dia. Tolerance (inch)	Corner Radius Tolerance (inch)	Shank Dia. Tolerance
0 ~ -.0008	±.0002	h6

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
		○	○	◎	◎							

◎ : Excellent ○ : Good

# 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.



Unit : mm

EDP No.	Corner Radius R	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
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 permance will not be negatively affected

Mill Dia. Tolerance (inch)	Corner Radius Tolerance (inch)	Shank Dia. Tolerance
0 ~ -.0008	±.0002	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
		○	○	◎	◎							

CBN END MILL

i-Xmill END MILL

**X5070 END MILLS**

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

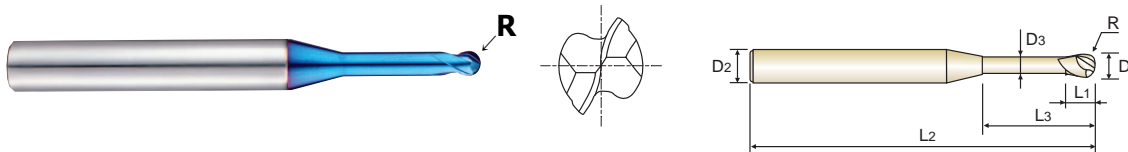
STANDARD COBALT &amp; HSS END MILLS

TECHNICAL DATA



**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.



Unit : mm

EDP No.	Radius of Ball Nose R (±0.005)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric	Inch					
G8A46805	RO.05	0.1	0.0039	4	0.1	0.3	45	0.085
G8A46806	RO.05	0.1	0.0039	4	0.1	0.5	45	0.085
G8A46002	RO.1	0.2	0.0079	4	0.2	0.5	45	0.17
G8A46977	RO.1	0.2	0.0079	4	0.2	1	45	0.17
G8A46958	RO.1	0.2	0.0079	4	0.2	1.5	45	0.17
G8A46003	RO.15	0.3	0.0118	4	0.3	1	45	0.27
G8A46959	RO.15	0.3	0.0118	4	0.3	2	45	0.27
G8A46986	RO.15	0.3	0.0118	4	0.3	3	45	0.27
G8A46004	RO.2	0.4	0.0157	4	0.4	1	45	0.37
G8A46960	RO.2	0.4	0.0157	4	0.4	2	45	0.37
G8A46961	RO.2	0.4	0.0157	4	0.4	3	45	0.37
G8A46981	RO.2	0.4	0.0157	4	0.4	4	45	0.37
G8A46987	RO.2	0.4	0.0157	4	0.4	5	45	0.37
G8A46005	RO.25	0.5	0.0197	4	0.4	2	45	0.45
G8A46804	RO.25	0.5	0.0197	4	0.4	2.5	45	0.45
G8A46962	RO.25	0.5	0.0197	4	0.4	4	45	0.45
G8A46963	RO.25	0.5	0.0197	4	0.4	6	45	0.45
G8A46964	RO.25	0.5	0.0197	4	0.4	8	45	0.45
G8A46957	RO.3	0.6	0.0236	4	0.5	2	45	0.55
G8A46988	RO.3	0.6	0.0236	4	0.5	3	45	0.55
G8A46915	RO.3	0.6	0.0236	4	0.5	4	45	0.55
G8A46989	RO.3	0.6	0.0236	4	0.5	5	45	0.55

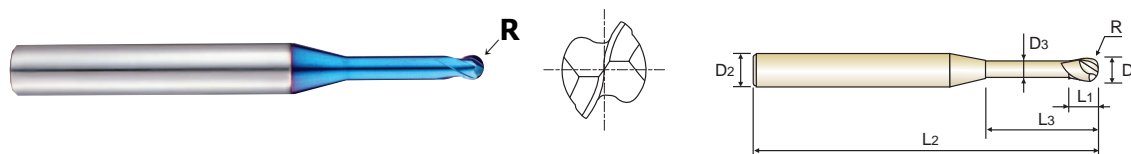
The original bright blue color may discolor during use, however, the performance will not be negatively affected

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
		○	○	◎	◎							

# 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.425

Unit : mm

EDP No.	Radius of Ball Nose R (±0.005)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
G8A46916	RO.3	0.6	0.0236	4	0.5	6	45	0.55
G8A46917	RO.3	0.6	0.0236	4	0.5	8	45	0.55
G8A46990	RO.3	0.6	0.0236	4	0.5	10	45	0.55
G8A46918	RO.4	0.8	0.0315	4	0.6	2	45	0.75
G8A46919	RO.4	0.8	0.0315	4	0.6	4	45	0.75
G8A46008	RO.4	0.8	0.0315	4	0.6	6	45	0.75
G8A46901	RO.4	0.8	0.0315	4	0.6	8	45	0.75
G8A46965	RO.4	0.8	0.0315	4	0.6	10	45	0.75
G8A46920	RO.5	1.0	0.0394	4	0.8	3	45	0.95
G8A46921	RO.5	1.0	0.0394	4	0.8	4	45	0.95
G8A46923	RO.5	1.0	0.0394	4	0.8	5	45	0.95
G8A46010	RO.5	1.0	0.0394	4	0.8	6	45	0.95
G8A46924	RO.5	1.0	0.0394	4	0.8	7	45	0.95
G8A46902	RO.5	1.0	0.0394	4	0.8	8	45	0.95
G8A46925	RO.5	1.0	0.0394	4	0.8	9	45	0.95
G8A46903	RO.5	1.0	0.0394	4	0.8	10	45	0.95
G8A46904	RO.5	1.0	0.0394	4	0.8	12	45	0.95
G8A46926	RO.5	1.0	0.0394	4	0.8	14	50	0.95
G8A46927	RO.5	1.0	0.0394	4	0.8	16	50	0.95
G8A46966	RO.5	1.0	0.0394	4	0.8	20	55	0.95
G8A46982	RO.6	1.2	0.0472	4	1.0	6	45	1.15
G8A46012	RO.6	1.2	0.0472	4	1.0	8	45	1.15

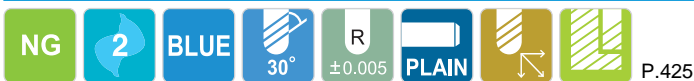
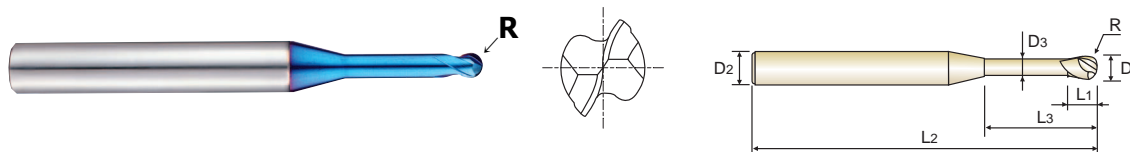
The original bright blue color may discolor during use, however, the permance will not be negatively affected

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
		○	○	◎	◎							

**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.



Unit : mm

EDP No.	Radius of Ball Nose R (±0.005)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric	Inch					
G8A46983	RO.6	1.2	0.0472	4	1.0	10	45	1.15
G8A46905	RO.6	1.2	0.0472	4	1.0	12	45	1.15
G8A46930	RO.75	1.5	0.0472	4	1.2	6	45	1.45
G8A46015	RO.75	1.5	0.0472	4	1.2	8	45	1.45
G8A46931	RO.75	1.5	0.0472	4	1.2	10	45	1.45
G8A46906	RO.75	1.5	0.0472	4	1.2	12	45	1.45
G8A46992	RO.75	1.5	0.0472	4	1.2	14	50	1.45
G8A46907	RO.75	1.5	0.0472	4	1.2	16	50	1.45
G8A46932	RO.75	1.5	0.0472	4	1.2	20	55	1.45
G8A46939	R1.0	2.0	0.0787	4	1.6	4	45	1.95
G8A46940	R1.0	2.0	0.0787	4	1.6	6	45	1.95
G8A46020	R1.0	2.0	0.0787	4	1.6	8	45	1.95
G8A46941	R1.0	2.0	0.0787	4	1.6	10	45	1.95
G8A46942	R1.0	2.0	0.0787	4	1.6	12	50	1.95
G8A46943	R1.0	2.0	0.0787	4	1.6	14	50	1.95
G8A46909	R1.0	2.0	0.0787	4	1.6	16	50	1.95
G8A46993	R1.0	2.0	0.0787	4	1.6	18	55	1.95
G8A46910	R1.0	2.0	0.0787	4	1.6	20	55	1.95
G8A46944	R1.0	2.0	0.0787	4	1.6	22	60	1.95
G8A46945	R1.0	2.0	0.0787	4	1.6	25	60	1.95
G8A46967	R1.0	2.0	0.0787	4	1.6	30	70	1.95
G8A46948	R1.5	3.0	0.1181	6	2.4	12	50	2.85

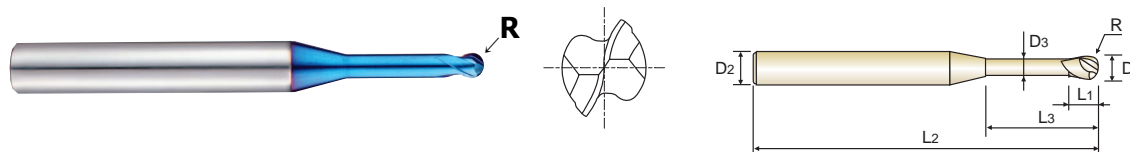
The original bright blue color may discolor during use, however, the permannence will not be negatively affected

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
		○	○	◎	◎							

# 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.425

Unit : mm

EDP No.	Radius of Ball Nose R (±0.005)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
G8A46984	R1.5	3.0	0.1181	6	2.4	14	55	2.85
G8A46030	R1.5	3.0	0.1181	6	2.4	16	55	2.85
G8A46985	R1.5	3.0	0.1181	6	2.4	18	60	2.85
G8A46911	R1.5	3.0	0.1181	6	2.4	20	60	2.85
G8A46968	R1.5	3.0	0.1181	6	2.4	25	65	2.85
G8A46969	R1.5	3.0	0.1181	6	2.4	30	70	2.85
G8A46970	R1.5	3.0	0.1181	6	2.4	35	80	2.85
G8A46950	R2.0	4.0	0.1575	6	3.2	12	60	3.85
G8A46040	R2.0	4.0	0.1575	6	3.2	16	60	3.85
G8A46912	R2.0	4.0	0.1575	6	3.2	20	65	3.85
G8A46913	R2.0	4.0	0.1575	6	3.2	25	70	3.85
G8A46971	R2.0	4.0	0.1575	6	3.2	30	70	3.85
G8A46972	R2.0	4.0	0.1575	6	3.2	35	80	3.85
G8A46973	R2.0	4.0	0.1575	6	3.2	40	90	3.85
G8A46974	R2.0	4.0	0.1575	6	3.2	45	90	3.85
G8A46975	R2.0	4.0	0.1575	6	3.2	50	100	3.85

↙ The original bright blue color may discolor during use, however, the permance will not be negatively affected

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.012	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
		○	○	◎	◎							

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

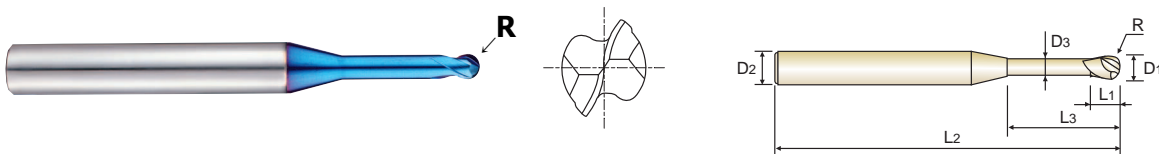
TANK-POWER END MILLS

STANDARD COBALT &amp; HSS END MILLS

TECHNICAL DATA

**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.



Unit : mm

EDP No.	Radius of Ball Nose R (±0.005)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric	Inch					
G8A54005	RO.25	0.5	0.0197	6	0.5	1.5	50	0.45
G8A54901	RO.25	0.5	0.0197	6	0.5	3.3	50	0.45
G8A54006	RO.3	0.6	0.0236	6	0.6	2	50	0.55
G8A54902	RO.3	0.6	0.0236	6	0.6	4	50	0.55
G8A54008	RO.4	0.8	0.0315	6	0.8	2.5	50	0.75
G8A54903	RO.4	0.8	0.0315	6	0.8	5.5	50	0.75
G8A54010	RO.5	1.0	0.0394	6	1	3.3	50	0.95
G8A54904	RO.5	1.0	0.0394	6	1	6.7	50	0.95
G8A54905	RO.5	1.0	0.0394	6	1	12	50	0.95
G8A54012	RO.6	1.2	0.0472	6	1.2	4.4	50	1.15
G8A54906	RO.6	1.2	0.0472	6	1.2	8	50	1.15
G8A54015	RO.75	1.5	0.0591	6	1.5	5	50	1.45
G8A54907	RO.75	1.5	0.0591	6	1.5	9.7	50	1.45
G8A54908	RO.75	1.5	0.0591	6	1.5	15	50	1.45
G8A54020	R1.0	2.0	0.0787	6	2	6	50	1.95
G8A54909	R1.0	2.0	0.0787	6	2	13	50	1.95
G8A54910	R1.0	2.0	0.0787	6	2	20	60	1.95

The original bright blue color may discolor during use, however, the permannence will not be negatively affected

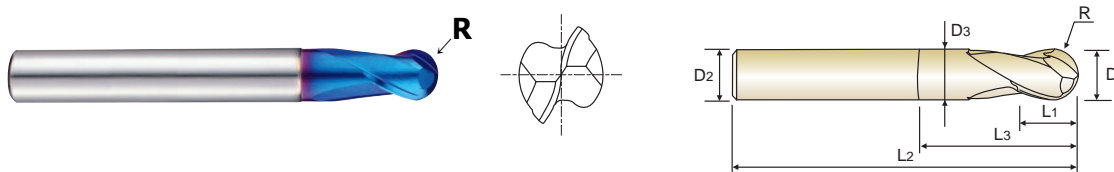
Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.012	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
		○	○	◎	◎							

# 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 R ±0.010 PLAIN P.428  
 R0.5-R3 R3.5-R6

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
G8A28001	R0.05	0.1	0.0039	4	0.2	-	40	-
G8A28002	R0.1	0.2	0.0079	4	0.3	-	40	-
G8A28003	R0.15	0.3	0.0118	4	0.5	-	40	-
G8A28004	R0.2	0.4	0.0157	4	0.6	-	40	-
G8A28005	R0.25	0.5	0.0197	4	0.7	-	40	-
G8A28006	R0.3	0.6	0.0236	4	0.9	-	40	-
G8A28007	R0.35	0.7	0.0276	4	1.1	-	40	-
G8A28008	R0.4	0.8	0.0315	4	1.2	-	40	-
G8A28009	R0.45	0.9	0.0354	4	1.4	-	40	-
G8A28010	R0.5	1.0	0.0394	6	1.5	3	50	0.95
G8A28015	R0.75	1.5	0.0591	6	2	4	50	1.45
G8A28020	R1.0	2.0	0.0787	6	2.5	5	50	1.95
G8A28025	R1.25	2.5	0.0984	6	3	7	50	2.4
G8A28030	R1.5	3.0	0.1181	6	4	10	60	2.85
G8A28035	R1.75	3.5	0.1378	6	4.5	10	60	3.35
G8A28040	R2.0	4.0	0.1575	6	5	10	60	3.85
G8A28045	R2.25	4.5	0.1772	6	5.5	10	60	4.35
G8A28050	R2.5	5.0	0.1969	6	6	12	60	4.85
G8A28055	R2.75	5.5	0.2165	6	6.5	12	60	5.35
G8A28060	R3.0	6.0	0.2362	6	7	15	60	5.85
G8A28903	R3.0	6.0	0.2362	6	9	30	90	5.85
G8A28901	R4.0	8.0	0.3150	8	9	15	60	7.7
G8A28080	R4.0	8.0	0.3150	8	9	15	80	7.7
G8A28904	R4.0	8.0	0.3150	8	12	30	100	7.7
G8A28902	R5.0	10.0	0.3937	10	11	25	60	9.7
G8A28100	R5.0	10.0	0.3937	10	11	25	80	9.7
G8A28905	R5.0	10.0	0.3937	10	15	30	100	9.7
G8A28120	R6.0	12.0	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 permance will not be negatively affected

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
		○	○	◎	◎							

CBN END MILL

i-Mill END MILL

**X5070 END MILLS**

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

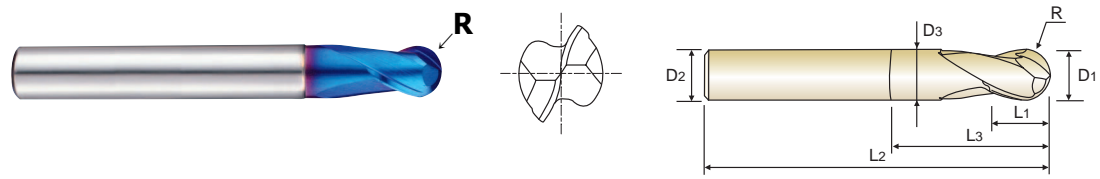
STANDARD COBALT &amp; HSS END MILLS

TECHNICAL DATA



**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 R ±0.010 PLAIN P.428  
 R0.5-R3 R3.5-R12.5

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 permannence will not be negatively affected

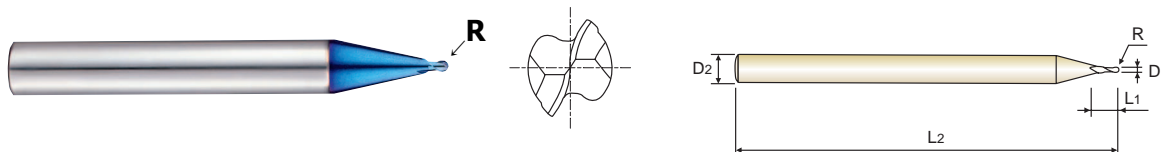
Size	Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to R3	±0.005	0~-0.012	h6
over R3	±0.010	0~-0.015	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRC20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
		○	○	◎	◎							

**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.428

Unit : mm

EDP No.	Radius of Ball Nose R (±0.005)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Overall Length L2
		Metric D1	Inch			
G8A53004	RO.2	0.4	0.0157	6	0.4	50
G8A53005	RO.25	0.5	0.0197	6	0.5	50
G8A53006	RO.3	0.6	0.0236	6	0.6	50
G8A53008	RO.4	0.8	0.0315	6	0.8	50
G8A53010	RO.5	1.0	0.0394	6	1.0	50
G8A53012	RO.6	1.2	0.0472	6	1.2	50
G8A53015	RO.75	1.5	0.0591	6	1.5	50
G8A53020	R1.0	2.0	0.0787	6	2.0	50

↙ The original bright blue color may discolor during use, however, the permance will not be negatively affected

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.012	h6

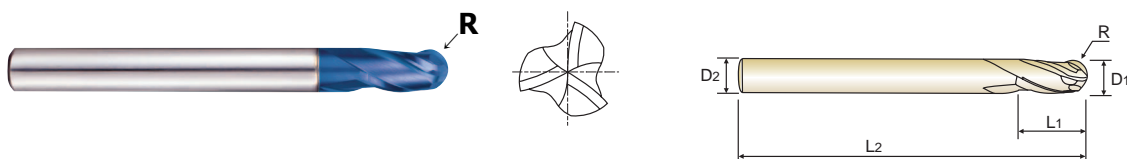
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
		○	○	◎	◎							



**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
R ±0.010
PLAIN
P.425

R1.5-R3 R4-R10

Unit : mm

EDP No.	Radius of Ball Nose R	Mill Diameter		Shank Diameter D2	Length of Cut L1	Overall Length L2
		Metric D1	Inch			
<b>G8A59030</b>	R1.5	<b>3.0</b>	<b>0.1181</b>	6	8	60
<b>G8A59040</b>	R2.0	<b>4.0</b>	<b>0.1575</b>	6	8	70
<b>G8A59050</b>	R2.5	<b>5.0</b>	<b>0.1969</b>	6	10	80
<b>G8A59060</b>	R3.0	<b>6.0</b>	<b>0.2362</b>	6	12	90
<b>G8A59080</b>	R4.0	<b>8.0</b>	<b>0.3150</b>	8	14	100
<b>G8A59100</b>	R5.0	<b>10.0</b>	<b>0.3937</b>	10	18	100
<b>G8A59120</b>	R6.0	<b>12.0</b>	<b>0.4724</b>	12	22	110
<b>G8A59160</b>	R8.0	<b>16.0</b>	<b>0.6299</b>	16	30	140
<b>G8A59200</b>	R10.0	<b>20.0</b>	<b>0.7874</b>	20	38	160

The original bright blue color may discolor during use, however, the permance will not be negatively affected

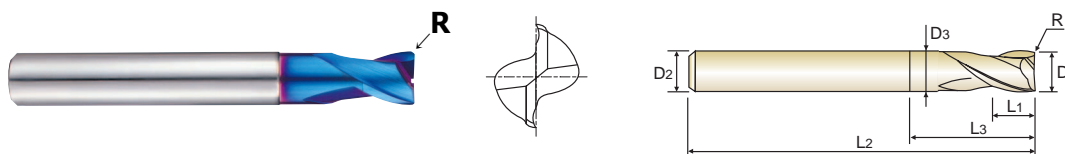
Size	Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to R3	±0.005	0~-0.012	h6
over R3	±0.010	0~-0.015	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
		○	○	◎	◎							

## 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 R ±0.015 PLAIN P.426, 427  
 Ø0.3-Ø6 Ø8-Ø20

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
G8A36003	-	0.3	.0118	3	0.45	-	40	-
G8A36004	-	0.4	.0157	3	0.6	-	40	-
G8A36005	RO.05	0.5	.0197	3	0.7	-	40	-
G8A36907	RO.05	0.5	.0197	4	1	-	40	-
G8A36006	RO.05	0.6	.0236	3	0.9	-	40	-
G8A36908	RO.05	0.6	.0236	4	1.2	-	40	-
G8A36909	RO.05	0.7	.0276	4	1.4	-	40	-
G8A36008	RO.05	0.8	.0315	3	1.2	-	40	-
G8A36910	RO.05	0.8	.0315	4	1.6	-	40	-
G8A36911	RO.05	0.9	.0354	4	2	-	40	-
G8A36010	RO.1	1.0	.0394	3	1.5	-	40	-
G8A36901	RO.1	1.0	.0394	4	1.5	-	40	-
G8A36903	RO.1	1.0	.0394	6	1.5	-	40	-
G8A36015	RO.1	1.5	.0591	3	2.2	-	40	-
G8A36904	RO.1	1.5	.0591	6	2.2	-	40	-
G8A36020	RO.1	2.0	.0787	3	3	6	40	1.95
G8A36902	RO.1	2.0	.0787	4	3	6	40	1.95
G8A36905	RO.1	2.0	.0787	6	3	6	40	1.95
G8A36025	RO.1	2.5	.0984	3	4	6	40	2.4
G8A36906	RO.1	2.5	.0984	6	4	6	40	2.4

The original bright blue color may discolor during use, however, the permance will not be negatively affected

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
		○	○	◎	◎							

CBN END MILL

i-Mill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

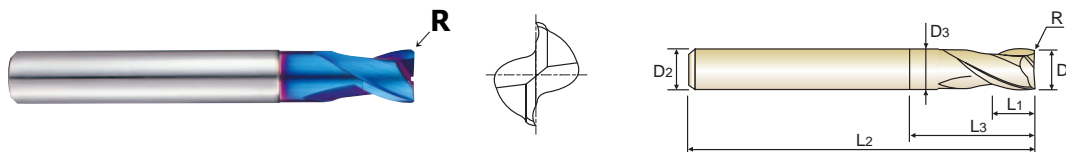
TANK-POWER END MILLS

STANDARD COBALT &amp; HSS END MILLS

TECHNICAL DATA

**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 R ±0.015 PLAIN P.426, 427  
 Ø0.3-Ø6 Ø8-Ø20

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
<b>G8A36030</b>	RO.1	<b>3.0</b>	<b>.1181</b>	6	4	7	45	2.85
<b>G8A36035</b>	RO.1	<b>3.5</b>	<b>.1378</b>	6	5	9	45	3.35
<b>G8A36040</b>	RO.1	<b>4.0</b>	<b>.1575</b>	6	5	9	45	3.85
<b>G8A36045</b>	RO.1	<b>4.5</b>	<b>.1772</b>	6	6	10	45	4.35
<b>G8A36050</b>	RO.2	<b>5.0</b>	<b>.1969</b>	6	6	11	50	4.85
<b>G8A36060</b>	RO.2	<b>6.0</b>	<b>.2362</b>	6	7	14	50	5.85
<b>G8A36080</b>	RO.2	<b>8.0</b>	<b>.3150</b>	8	9	18	60	7.7
<b>G8A36100</b>	RO.2	<b>10.0</b>	<b>.3937</b>	10	12	25	75	9.7
<b>G8A36120</b>	RO.3	<b>12.0</b>	<b>.4724</b>	12	15	30	75	11.7
<b>G8A36160</b>	RO.3	<b>16.0</b>	<b>.6299</b>	16	18	38	90	15.7
<b>G8A36200</b>	RO.3	<b>20.0</b>	<b>.7874</b>	20	24	45	100	19.7

The original bright blue color may discolor during use, however, the permance will not be negatively affected

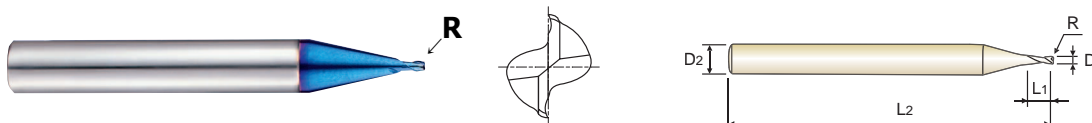
Size	Corner Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	±0.010	0~-0.012	h6
over Ø6	±0.015	0~-0.015	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
		○	○	◎	◎							

## 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.



Unit : mm

EDP No.	Corner Radius R (±0.010)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Overall Length L2
		Metric D1	Inch			
G8A50003	-	0.3	0.0118	6	0.45	50
G8A50004	-	0.4	0.0157	6	0.6	50
G8A50005	RO.05	0.5	0.0197	6	0.7	50
G8A50006	RO.05	0.6	0.0236	6	0.9	50
G8A50008	RO.05	0.8	0.0315	6	1.2	50
G8A50010	RO.1	1.0	0.0394	6	1.5	50
G8A50012	RO.1	1.2	0.0472	6	1.8	50
G8A50015	RO.15	1.5	0.0591	6	2.2	50
G8A50020	RO.15	2.0	0.0787	6	2.2	50

The original bright blue color may discolor during use, however, the permance will not be negatively affected

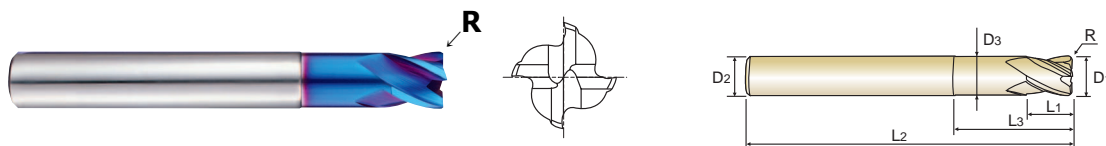
Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.012	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
		○	○	◎	◎							

**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
R ±0.015
PLAIN
P.429

Ø1~Ø6    Ø8~Ø12

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	RO.3	3.0	0.1181	6	4	12	55	2.85
G8A47917	RO.3	3.0	0.1181	6	4	16	55	2.85
G8A47918	RO.3	3.0	0.1181	6	4	20	55	2.85
G8A47030	RO.5	3.0	0.1181	6	4	10	55	2.85
G8A47901	RO.5	3.0	0.1181	6	4	16	55	2.85
G8A47902	RO.5	3.0	0.1181	6	4	20	55	2.85
G8A47919	RO.3	4.0	0.1575	6	5	12	55	3.85
G8A47920	RO.3	4.0	0.1575	6	5	16	55	3.85
G8A47921	RO.3	4.0	0.1575	6	5	20	55	3.85
G8A47040	RO.5	4.0	0.1575	6	5	12	55	3.85
G8A47903	RO.5	4.0	0.1575	6	5	16	55	3.85
G8A47904	RO.5	4.0	0.1575	6	5	20	55	3.85
G8A47922	R1.0	4.0	0.1575	6	5	12	55	3.85
G8A47060	RO.5	6.0	0.2362	6	7	20	60	5.85
G8A47905	R1.0	6.0	0.2362	6	7	20	60	5.85
G8A47906	R1.5	6.0	0.2362	6	7	20	60	5.85
G8A47910	RO.5	8.0	0.3150	8	9	25	60	7.7
G8A47080	R1.0	8.0	0.3150	8	9	25	60	7.7
G8A47907	R1.5	8.0	0.3150	8	9	25	60	7.7
G8A47913	R2.0	8.0	0.3150	8	9	25	60	7.7
G8A47911	RO.5	10.0	0.3937	10	11	32	70	9.7
G8A47100	R1.0	10.0	0.3937	10	11	32	70	9.7
G8A47908	R1.5	10.0	0.3937	10	11	32	70	9.7
G8A47914	R2.0	10.0	0.3937	10	11	32	70	9.7
G8A47912	RO.5	12.0	0.4724	12	12	38	80	11.7
G8A47120	R1.0	12.0	0.4724	12	12	38	80	11.7
G8A47909	R1.5	12.0	0.4724	12	12	38	80	11.7
G8A47915	R2.0	12.0	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	

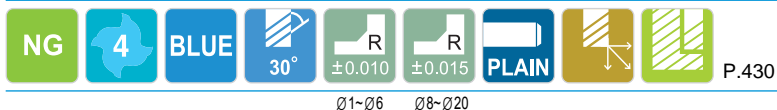
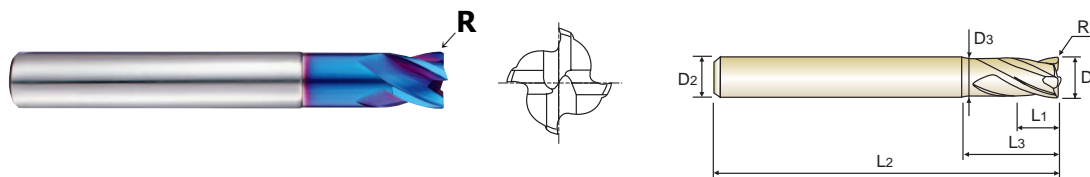
↙ The original bright blue color may discolor during use, however, the permance will not be negatively affected

◎ : Excellent    ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
		○	○	◎	◎							

**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.



Unit : mm

EDP No.	Corner Radius R	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
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 permance will not be negatively affected

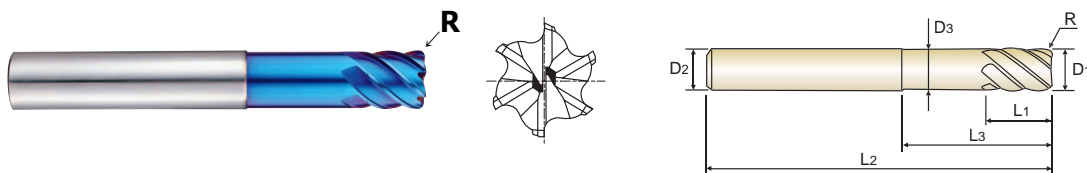
Size	Corner Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	±0.010	0~-0.012	h6
over Ø6	±0.015	0~-0.015	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
		○	○	◎	◎							

**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
R ±0.015
PLAIN
P.430

Ø6    Ø8-Ø20

Unit : mm

EDP No.	Corner Radius R	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
G8A39916	RO.25	6.0	.2362	6	6	14	50	5.85
G8A39060	RO.5	6.0	.2362	6	6	14	50	5.85
G8A39901	RO.5	6.0	.2362	6	13	-	70	-
G8A39910	RO.5	6.0	.2362	* 6	26	-	70	-
G8A39080	RO.5	8.0	.3150	8	8	24	60	7.7
G8A39902	RO.5	8.0	.3150	8	19	-	90	-
G8A39911	RO.5	8.0	.3150	* 8	36	-	90	-
G8A39903	RO.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	RO.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 permance will not be negatively affected

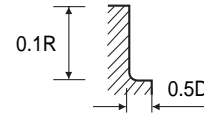
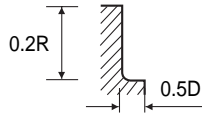
Size	Corner Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	±0.010	0~-0.02	h6
over Ø6	±0.015	(* Extra Long Type : 0~-0.03)	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
		○	○	◎	◎							

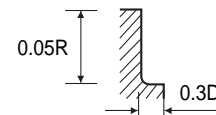
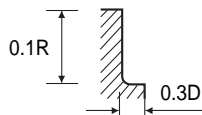
**CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS HIGH FEED**
**G826 SERIES**
**■ NORMAL SPEED**

MATERIAL	HARDENED STEELS									
	~ HRC40		HRC40 ~ HRC50		HRC50 ~ HRC55		HRC55 ~ HRC60		HRC60 ~ HRC65	
HARDNESS 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	HARDENED STEELS									
	~ HRC40		HRC40 ~ HRC50		HRC50 ~ HRC55		HRC55 ~ HRC60		HRC60 ~ HRC65	
HARDNESS 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.

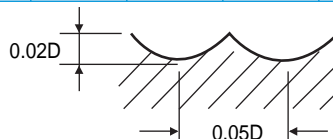




**CARBIDE, 2 FLUTE BALL NOSE with EXTENDED NECK**

**G8A43 SERIES**

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS									
	HRc 30 ~ HRc 40		HRc 40 ~ HRc 50		HRc 50 ~ HRc 55		HRc 55 ~ HRc 60		HRc 60 ~ HRc 65		HRc 65 ~ HRc 70	
	HARDNESS	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM
R1/64 × 1/32	50000	188.98	50000	165.35	45000	149.61	40000	118.11	35000	102.36	35000	90.55
R1/32 × 1/16	49700	224.41	47800	188.98	40000	157.48	35000	124.02	32000	110.24	28500	90.55
R3/64 × 3/32	49700	224.41	47800	188.98	40000	157.48	35000	124.02	32000	110.24	28500	90.55
R1/16 × 1/8	33100	236.22	31800	208.66	26500	157.48	23500	124.02	21000	110.24	19000	90.55
R3/32 × 3/16	18600	228.35	17800	192.91	15000	147.64	13500	120.08	11500	100.39	10500	82.68
R1/8 × 1/14	13900	190.94	13400	161.42	11000	122.05	10000	98.43	8800	84.65	8000	68.90
R5/32 × 5/16	11100	165.35	10700	137.80	9000	106.30	8000	84.65	7000	72.83	6500	61.02
R3/16 × 3/8	9300	145.67	8900	122.05	7500	94.49	6600	74.80	5800	64.96	5300	54.33
R1/4 × 1/2	6950	116.14	6680	98.43	5600	74.80	5000	61.02	4400	49.21	4000	41.34



※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.  
FEED = inch/min.

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

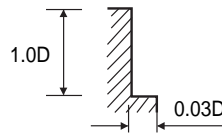
STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA

**CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS**

**G850 SERIES**

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS									
	HRc 30 ~ HRc 40		HRc 40 ~ HRc 50		HRc 50 ~ HRc 55		HRc 55 ~ HRc 60		HRc 60 ~ HRc 65		HRc 65 ~ HRc 70	
HARDNESS DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/16	41950	69.44	32750	49.59	22050	33.34	18250	20.61	13850	12.69	11950	9.11
1/8	20600	52.08	16350	37.21	10850	24.96	9000	15.52	7100	9.54	6050	6.85
3/16	16500	66.20	13100	49.51	8700	33.01	6700	19.12	5350	12.22	4650	8.89
1/4	12400	58.14	9800	41.75	6500	28.19	5000	16.64	3950	10.37	3500	7.75
5/16	9950	59.63	7850	42.79	5250	28.62	4050	16.58	3250	10.56	2800	7.56
3/8	8200	57.94	6450	41.62	4300	27.75	3350	15.83	2700	10.34	2300	7.24
1/2	6300	52.22	4950	37.42	3300	24.94	2500	14.26	2000	9.00	1750	6.52
5/8	4950	47.73	3950	35.09	2600	22.99	2000	13.23	1600	8.50	1400	6.30
3/4	4100	43.04	3250	32.03	2150	21.47	1700	12.72	1350	8.18	1150	5.93

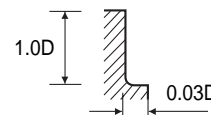
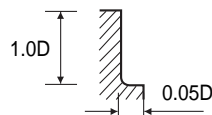


RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 6&8 FLUTE 45° HELIX CORNER RADIUS**

**G851 SERIES**

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS									
	HRc 30 ~ HRc 40		HRc 40 ~ HRc 50		HRc 50 ~ HRc 55		HRc 55 ~ HRc 60		HRc 60 ~ HRc 65		HRc 65 ~ HRc 70	
HARDNESS DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	23450	199.16	22200	182.24	15100	182.06	12750	122.70	9900	77.95	7550	53.88
5/16	20650	191.28	19600	174.78	13200	171.84	11150	115.33	8700	73.32	6600	51.16
3/8	17900	183.40	17000	167.31	11350	161.63	9500	107.96	7450	68.69	5700	48.45
1/2	12300	167.63	11800	152.38	7550	141.19	6250	93.21	5000	59.43	3800	43.01
5/8	10100	159.06	9800	147.17	6050	134.97	5050	91.46	4050	49.83	3000	34.25
3/4	8850	140.66	8600	133.29	5300	123.23	4400	82.68	3550	43.68	2650	30.00
1	6300	103.86	6150	105.54	3800	99.74	3150	65.11	2500	31.37	1900	21.51



※ 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**

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

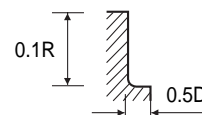
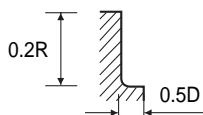
TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA

**■ NORMAL SPEED**

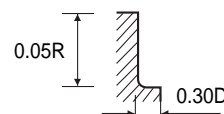
MATERIAL		HARDENED STEELS									
		~ HRC40		HRC40 ~ HRC50		HRC50 ~ HRC55		HRC55 ~ HRC60		HRC60 ~ HRC65	
DIAMETER		RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	× R0.5	13500	6500	9550	3800	5500	2200	3200	1000	2200	550
3.0	× R0.5	9550	6500	6900	4150	4550	2750	2850	1150	1900	610
4.0	× R0.5	7950	7000	5750	4600	4000	3200	2550	1350	1750	700
5.0	× R0.5	6500	7300	4800	4800	3400	3200	2200	1600	1500	700
6.0	× R0.5	5800	7650	4100	4900	2900	3500	1850	1850	1350	795
6.0	× R1.0	5800	7650	4100	4900	2900	3500	1850	1850	1350	795
8.0	× R1.0	4350	7650	3050	4900	2200	3500	1400	1850	995	795
8.0	× R2.0	4350	7650	3050	4900	2200	3500	1400	1850	995	795
10.0	× R1.0	3500	7650	2450	4900	1750	3500	1100	1850	795	795
10.0	× R2.0	3500	7650	2450	4900	1750	3500	1100	1850	795	795
12.0	× R2.0	2900	7650	2050	4900	1450	3500	925	1850	665	795
12.0	× R3.0	2900	7650	2050	4900	1450	3500	925	1850	665	795
16.0	× R3.0	2200	7650	1550	4900	1100	3500	700	1850	500	795



RPM = rev./min.  
FEED = inch/min.

**■ HIGH SPEED**

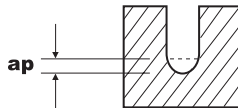
MATERIAL		HARDENED STEELS									
		~ HRC40		HRC40 ~ HRC50		HRC50 ~ HRC55		HRC55 ~ HRC60		HRC60 ~ HRC65	
DIAMETER		RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	× R0.5	29000	15000	22000	9800	15000	7850	11000	4450	8700	2450
3.0	× R0.5	22000	16000	17000	10000	12500	8000	9500	4600	6900	2500
4.0	× R0.5	17000	17500	13000	12000	11000	9200	8000	5500	5600	2900
5.0	× R0.5	15000	18000	11000	12500	10000	10000	7000	6000	4900	3100
6.0	× R0.5	13500	18500	10500	13800	9000	11000	6400	6400	4500	3600
6.0	× R1.0	13500	18500	10500	13800	9000	11000	6400	6400	4500	3600
8.0	× R1.0	10000	18500	8000	14000	6800	11000	4800	6700	3400	4100
8.0	× R2.0	10000	18500	8000	14000	6800	11000	4800	6700	3400	4100
10.0	× R1.0	8000	18500	6400	14000	5400	11000	3800	6800	2700	3800
10.0	× R2.0	8000	18500	6400	14000	5400	11000	3800	6800	2700	3800
12.0	× R2.0	6600	18500	5300	14000	4500	11000	3200	7000	2250	3600
12.0	× R3.0	6600	18500	5300	14000	4500	11000	3200	7000	2250	3600
16.0	× R3.0	5000	18500	3900	14000	3300	11000	2400	7000	1650	3300



RPM = rev./min.  
FEED = inch/min.

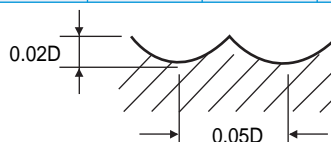
**CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING**
**G8A46, G8A54 SERIES**

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS						COPPER		
	HRc 30 ~ HRc 45			HRc 45 ~ HRc 55			HRc 55 ~ HRc 65					
	DIAMETER	RPM	FEED	ap (mm)	RPM	FEED	ap (mm)	RPM	FEED	ap (mm)	RPM	FEED
<b>RO.1</b> × 0.2	50000	300-350	0.006-0.016	50000	265-310	0.005-0.013	50000	225-265	0.005-0.012	50000	455-530	0.010-0.022
<b>RO.15</b> × 0.3	48000-50000	480-520	0.010-0.017	48000-50000	440-460	0.008-0.014	46000-50000	390-420	0.007-0.013	48000-50000	690-790	0.002-0.023
<b>RO.2</b> × 0.4	48000-50000	720-790	0.013-0.032	48000-50000	450-550	0.011-0.026	46000-50000	400-460	0.010-0.024	48000-50000	1000-1150	0.019-0.048
<b>RO.25</b> × 0.5	34100-49500	600-870	0.007-0.028	31900-35200	490-540	0.005-0.023	31900-35200	440-480	0.005-0.021	49000-50000	1100-1400	0.010-0.042
<b>RO.3</b> × 0.6	28600-40700	590-850	0.007-0.034	26400-29700	480-540	0.006-0.028	26400-29700	400-480	0.006-0.025	42000-50000	1100-1700	0.011-0.050
<b>RO.4</b> × 0.8	22000-30800	640-890	0.016-0.064	19800-22000	490-550	0.013-0.052	19800-22000	440-500	0.012-0.048	31000-50000	1100-2250	0.024-0.096
<b>RO.5</b> × 1.0	17600-24200	600-850	0.008-0.080	15400-17600	470-540	0.007-0.065	15400-17600	440-500	0.006-0.060	24000-49500	1100-2200	0.012-0.120
<b>RO.6</b> × 1.2	14300-18700	590-780	0.024-0.032	12000-14000	480-540	0.020-0.026	12000-14000	420-480	0.018-0.024	28500-38500	1480-1950	0.036-0.048
<b>RO.75</b> × 1.5	11000-14300	580-760	0.031-0.048	10000-11500	480-540	0.025-0.039	10000-11500	420-480	0.023-0.036	17000-28500	1100-1950	0.046-0.072
<b>R1.0</b> × 2.0	8500-11000	590-800	0.024-0.160	7900-8800	470-530	0.020-0.130	7900-8800	440-480	0.018-0.120	12600-24000	1100-2150	0.036-0.240
<b>R1.5</b> × 3.0	5700-8200	730-1000	0.064-0.240	5300-5800	590-850	0.052-0.195	5300-5800	550-820	0.048-0.120	11900-17000	1850-2700	0.096-0.360
<b>R2.0</b> × 4.0	4300-6200	680-990	0.080-0.320	3950-4400	550-620	0.065-0.026	3850-4400	530-570	0.060-0.240	6600-12500	1260-2500	0.120-0.480


 RPM = rev./min.  
 FEED = inch/min.

**CARBIDE, 3 FLUTE BALL NOSE**
**G8A59 SERIES**

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS							
	HRc 30 ~ HRc 45		HRc 45 ~ HRc 55		HRc 55 ~ HRc 60		HRc 60 ~ HRc 65		HRc 65 ~ HRc 70	
	DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM
<b>R1.5</b> × 3.0	32000	8600	26840	5800	19840	4280	18680	4040	12780	2760
<b>R2.0</b> × 4.0	24080	7700	20130	5430	14880	3880	14220	3650	9580	2500
<b>R2.5</b> × 5.0	20000	7250	16780	5430	12400	3690	11670	3470	8000	2370
<b>R3.0</b> × 6.0	18000	8570	15200	6220	12200	4500	11100	3830	7590	2460
<b>R4.0</b> × 8.0	13500	7350	11300	5250	9200	3980	8320	3350	5690	2130
<b>R5.0</b> × 10.0	10800	6530	9100	4590	7350	3450	6660	2870	4550	1960
<b>R6.0</b> × 12.0	9050	6100	7590	4260	6130	3190	5530	2400	3800	1640
<b>R8.0</b> × 16.0	6700	4600	5690	3250	4600	2480	4160	1800	2850	1230
<b>R10.0</b> × 20.0	5400	3600	4550	2620	3670	1980	3300	1440	2280	980


 RPM = rev./min.  
 FEED = inch/min.



**X5070  
END MILLS**

**RECOMMENDED CUTTING CONDITIONS**

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

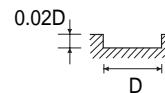
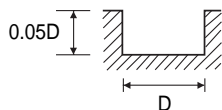
STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA

**CARBIDE, 2 FLUTE - SLOTTING**

**G8A36 SERIES**

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS									
	HRc 30 ~ HRc 40		HRc 40 ~ HRc 50		HRc 50 ~ HRc 55		HRc 55 ~ HRc 60		HRc 60 ~ HRc 65		HRc 65 ~ HRc 70	
HARDNESS	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
DIAMETER												
0.2	50000	130	45000	115	40000	95	33000	60	33000	45	26400	30
0.3	50000	190	45000	140	40000	115	33000	70	25000	50	20000	35
0.4	50000	235	45000	180	40000	140	33000	90	25000	55	20000	40
0.5	50000	370	45000	280	40000	220	33000	140	25000	85	20000	60
0.6	50000	470	45000	360	40000	285	30000	160	25000	105	20000	75
0.8	50000	600	40000	440	30000	295	25000	185	19000	110	15200	80
0.9	49000	655	39000	520	27800	330	22700	205	17500	125	14000	90
1.0	48000	750	38000	570	25500	360	20500	215	16000	135	12500	85
2.0	33300	850	26000	680	17500	420	14500	260	11000	160	9500	115
3.0	21800	850	17300	680	11500	420	9500	260	7500	160	6400	115
4.0	16700	880	13200	700	8800	440	7200	270	5600	170	4750	118
5.0	15700	1000	12500	805	8300	500	6400	285	5100	180	4450	132
6.0	13100	950	10350	770	6900	480	5300	280	4200	180	3700	130
8.0	9880	930	7800	720	5200	445	4000	255	3200	165	2800	120
10.0	7800	850	6150	680	4100	415	3200	240	2550	155	2200	112
12.0	6650	850	5250	680	3500	415	2650	240	2100	155	1860	112
16.0	4900	730	3900	580	2600	365	2000	210	1600	135	1400	95
20.0	3900	660	3100	525	2050	335	1600	195	1300	125	1100	85

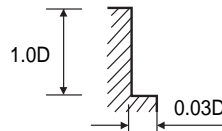


RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 2 FLUTE - SIDE CUTTING**

**G8A36 SERIES**

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS									
	HRc 30 ~ HRc 40		HRc 40 ~ HRc 50		HRc 50 ~ HRc 55		HRc 55 ~ HRc 60		HRc 60 ~ HRc 65		HRc 65 ~ HRc 70	
HARDNESS DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1.0	48000	1050	38000	820	25500	510	20500	310	16000	190	12500	125
2.0	33300	1200	26000	970	17500	600	14500	370	11000	230	9500	165
3.0	21800	1200	17300	970	11500	600	9500	370	7500	230	6400	165
4.0	16700	1250	13200	1000	8800	625	7200	385	5600	240	4750	170
5.0	15700	1450	12500	1150	8300	710	6400	410	5100	260	4450	190
6.0	13100	1350	10350	1100	6900	690	5300	400	4200	255	3700	185
8.0	9880	1320	7800	1030	5200	635	4000	365	3200	235	2800	170
10.0	7800	1200	6150	970	4100	590	3200	340	2550	220	2200	160
12.0	6650	1200	5250	970	3500	590	2650	340	2100	220	1860	160
16.0	4900	1050	3900	840	2600	520	2000	300	1600	190	1400	140
20.0	3900	950	3100	750	2050	475	1600	275	1300	175	1100	125



RPM = rev./min.  
FEED = inch/min.

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGH  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

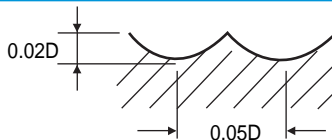
TECHNICAL  
DATA



**CARBIDE, 2 FLUTE BALL NOSE**

**G8A38, G8A28, G8A53 SERIES**

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS									
	HRc 30 ~ HRc 40		HRc 40 ~ HRc 50		HRc 50 ~ HRc 55		HRc 55 ~ HRc 60		HRc 60 ~ HRc 65		HRc 65 ~ HRc 70	
	HARDNESS	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM
R0.1 × 0.2	50000	1200	50000	1050	45000	960	40000	770	35000	674	31500	570
R0.15 × 0.3	50000	1500	50000	1350	45000	1200	40000	965	35000	840	31500	700
R0.2 × 0.4	50000	1900	50000	1700	45000	1500	40000	1200	35000	1050	31500	890
R0.25 × 0.5	50000	2400	50000	2100	45000	1900	40000	1500	35000	1300	31500	1100
R0.3 × 0.6	50000	2900	50000	2500	45000	2200	40000	1800	35000	1600	31500	1400
R0.4 × 0.8	50000	3900	50000	3300	45000	3000	40000	2400	35000	2100	31500	1800
R0.5 × 1.0	50000	4800	50000	4200	45000	3800	40000	3000	35000	2600	35000	2300
R0.6 × 1.2	50000	5100	48000	4300	43000	3850	38000	3000	34000	2700	30600	2300
R0.75 × 1.5	50000	5400	48000	4500	43000	4000	37000	3100	33000	2700	29700	2300
R1.0 × 2.0	49700	5700	47800	4800	40000	4000	35000	3150	32000	2800	28500	2300
R1.5 × 3.0	33100	6000	31800	5300	26500	4000	23500	3150	21000	2800	19000	2300
R2.0 × 4.0	24900	6000	23900	5300	20000	4000	17500	3150	16000	2800	14500	2300
R2.5 × 5.0	18600	5800	17800	4900	15000	3750	13500	3050	11500	2550	10500	2100
R3.0 × 6.0	13900	4850	13400	4100	11000	3100	10000	2500	8800	2150	8000	1750
R4.0 × 8.0	11100	4200	10700	3500	9000	2700	8000	2150	7000	1850	6500	1550
R5.0 × 10.0	9300	3700	8900	3100	7500	2400	6600	1900	5800	1650	5300	1380
R6.0 × 12.0	6950	2950	6680	2500	5600	1900	5000	1550	4400	1250	4000	1050
R8.0 × 16.0	5570	2650	5350	2200	4500	1700	4000	1350	3500	1000	3200	850
R10.0 × 20.0	4450	2350	4300	1950	3600	1500	3200	1200	2800	800	2550	660

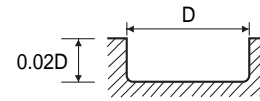
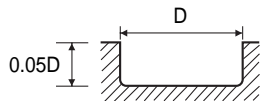


RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 2 FLUTE MINIATURE CORNER RADIUS - SLOTTING**

**G8A50 SERIES**

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS							
	HRc 30 ~ HRc 40		HRc 40 ~ HRc 50		HRc 50 ~ HRc 55		HRc 55 ~ HRc 60		HRc 60 ~ HRc 65	
HARDNESS	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
DIAMETER										
0.3	50000	190	45000	140	40000	115	33000	70	25000	40
0.4	50000	235	45000	180	40000	140	33000	90	25000	55
0.5	50000	370	45000	280	40000	220	33000	140	25000	85
0.6	50000	470	45000	360	40000	285	30000	160	25000	105
0.8	50000	600	40000	440	30000	295	25000	185	19000	110
1.0	48000	750	38000	570	25500	360	20500	215	16000	135
1.2	42000	790	34000	640	22500	380	20000	250	14500	145
1.5	37000	800	30500	670	21000	410	17000	250	13000	155
2.0	33300	850	26000	680	17500	420	14500	260	11000	160

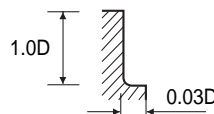


RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 4 FLUTE CORNER RADIUS**

**G8A47 SERIES**

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS									
	HRc 30 ~ HRc 40		HRc 40 ~ HRc 50		HRc 50 ~ HRc 55		HRc 55 ~ HRc 60		HRc 60 ~ HRc 65		HRc 65 ~ HRc 70	
HARDNESS	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
DIAMETER												
1.0	48000	1184	38000	840	25500	568	20500	344	16000	216	12500	140
2.0	33300	1400	26000	1000	17500	672	14500	416	11000	256	9500	184
3.0	21800	1400	17300	1000	11500	672	9500	416	7500	256	6400	184
4.0	16700	1440	13200	1040	8800	704	7200	432	5600	268	4750	192
5.0	15700	1600	12500	1200	8300	800	6400	464	5100	296	4450	216
6.0	13100	1560	10350	1120	6900	760	5300	448	4200	280	3700	208
8.0	9880	1504	7800	1080	5200	720	4000	416	3200	264	2800	192
10.0	7800	1400	6150	1008	4100	672	3200	384	2550	248	2200	176
12.0	6650	1400	5250	1008	3500	672	2650	384	2100	240	1860	176
16.0	4900	1200	3900	880	2600	584	2000	336	1600	216	1400	160
20.0	3900	1040	3100	776	2050	520	1600	304	1300	200	1100	144



RPM = rev./min.  
FEED = inch/min.





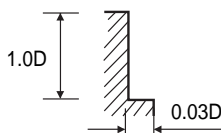
**X5070  
END MILLS**

**RECOMMENDED CUTTING CONDITIONS**

**CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS  
with EXTENDED NECK**

**G8A37 SERIES**

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS									
	HRC 30 ~ HRC 40		HRC 40 ~ HRC 50		HRC 50 ~ HRC 55		HRC 55 ~ HRC 60		HRC 60 ~ HRC 65		HRC 65 ~ HRC 70	
HARDNESS	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
DIAMETER												
1.0	48000	1480	38000	1050	25500	710	20500	430	16000	270	12500	175
2.0	33300	1750	26000	1250	17500	840	14500	520	11000	320	9500	230
3.0	21800	1750	17300	1250	11500	840	9500	520	7500	320	6400	230
4.0	16700	1800	13200	1300	8800	880	7200	540	5600	335	4750	240
5.0	15700	2000	12500	1500	8300	1000	6400	580	5100	370	4450	270
6.0	13100	1950	10350	1400	6900	950	5300	560	4200	350	3700	260
8.0	9880	1880	7800	1350	5200	900	4000	520	3200	330	2800	240
10.0	7800	1750	6150	1260	4100	840	3200	480	2550	310	2200	220
12.0	6650	1750	5250	1260	3500	840	2650	480	2100	300	1860	220
16.0	4900	1500	3900	1100	2600	730	2000	420	1600	270	1400	200
20.0	3900	1300	3100	970	2050	650	1600	380	1300	250	1100	180

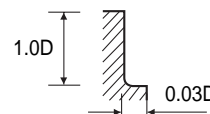
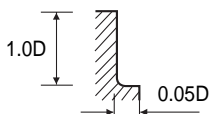


RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 6 FLUTE 45° HELIX CORNER RADIUS**

**G8A39 SERIES**

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS									
	HRC 30 ~ HRC 40		HRC 40 ~ HRC 50		HRC 50 ~ HRC 55		HRC 55 ~ HRC 60		HRC 60 ~ HRC 65		HRC 65 ~ HRC 70	
HARDNESS	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
DIAMETER												
6.0	24800	5350	23500	4900	16000	4900	13500	3300	10500	2100	8000	1450
8.0	20000	5500	19000	5000	12000	4600	10000	3100	8000	2000	6000	1400
10.0	16000	4900	15500	4500	9500	4100	8000	2900	6400	1800	4800	1300
12.0	13000	4500	12500	4100	8000	3800	6600	2500	5300	1600	4000	1150
16.0	10000	4000	9700	3700	6000	3400	5000	2300	4000	1250	3000	870
20.0	8000	3350	7800	3400	4800	3200	4000	2100	3200	1020	2400	690



※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.  
FEED = inch/min.



Being the best through innovation

**CARBIDE**



# **X-SPEED** ROUGHER

- Carbide Roughing End Mills for High-Feed Machining with reduced vibrations

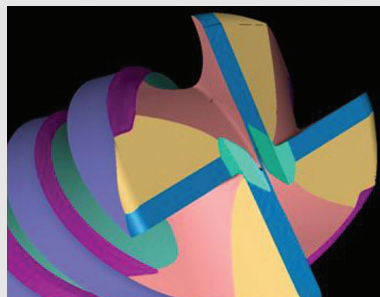
# SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
<b>INCH</b>					
<b>G907</b> <b>G928</b>		CARBIDE, 4&5 FLUTE STUB LENGTH ROUGHING CORNER RADIUS	D1/4	D1	<b>434</b>
<b>G908</b> <b>G929</b>		CARBIDE, 4&5 FLUTE REGULAR LENGTH ROUGHING CORNER RADIUS	D1/4	D1	<b>435</b>
<b>G909</b> <b>G930</b>		CARBIDE, 4&5 FLUTE EXTENDED REACH ROUGHING CORNER RADIUS	D1/4	D3/4	<b>436</b>
<b>METRIC</b>					
<b>G9D75</b>		CARBIDE, 4&5 FLUTE MULTIPLE HELIX SHORT LENGTH ROUGHING CORNER RADIUS	D6.0	D20.0	<b>437</b>
<b>G9D76</b>		CARBIDE, 4&5 FLUTE MULTIPLE HELIX LONG LENGTH ROUGHING CORNER RADIUS	D6.0	D20.0	<b>438</b>
<b>G9D77</b>		CARBIDE, 4&5 FLUTE MULTIPLE HELIX LONG REACH ROUGHING CORNER RADIUS	D6.0	D20.0	<b>439</b>
RECOMMENDED CUTTING CONDITIONS					<b>440</b>

## CHARACTERISTICS

- ▶ Unique flute design for excellent chip evacuation and vibration reduction.
- ▶ Optimal roughing tooth profile to reduce cutting forces.
- ▶ Special tool geometry for high feed rate and heavy cutting.
- ▶ Strong end tooth design for plunge and pocket milling.
- ▶ Custom engineered coating to allow long tool life and excellent chip evacuation.

▶ 4 FLUTE



▶ 5 FLUTE



# X-SPEED ROUGHER END MILLS

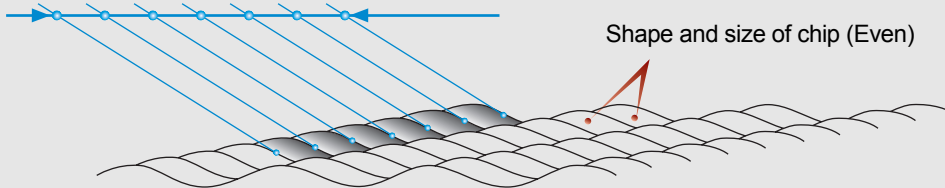
◎ : Excellent  
○ : Good

Carbon Steels ~HRc20	Alloy Steels HRc20~3	Prehardened HRc30~4	Hardened Steels HRc40~4 HRc45~5		High Hardened HRc55~70	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
◎	◎	◎	○			○		◎		○		
◎	◎	◎	○			○		◎		○		
◎	◎	◎	○			○		◎		○		
◎	◎	◎	○			○		◎		○		
◎	◎	◎	○			○		◎		○		
◎	◎	◎	○			○		◎		○		

## CHIP THICKNESS AND SHAPE

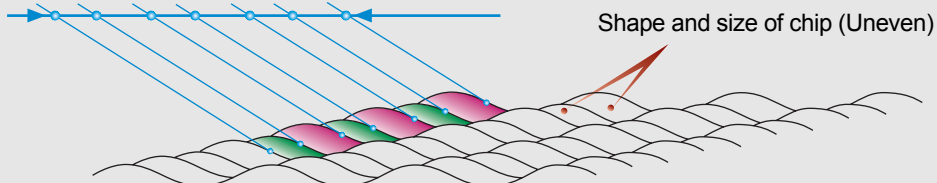
### ► Conventional Roughing End Mills

Even chip thickness and shape



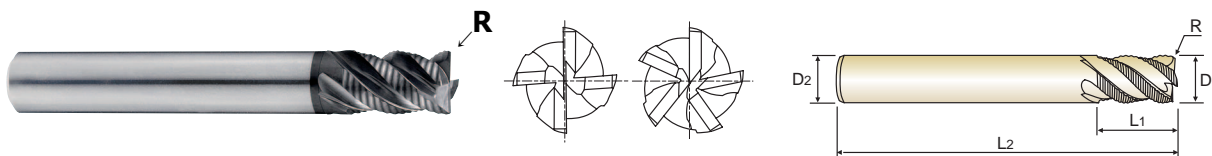
### ► X-SPEED Rougher

Uneven chip thickness and shape



**CARBIDE, MULTI 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.



Unit : Inch

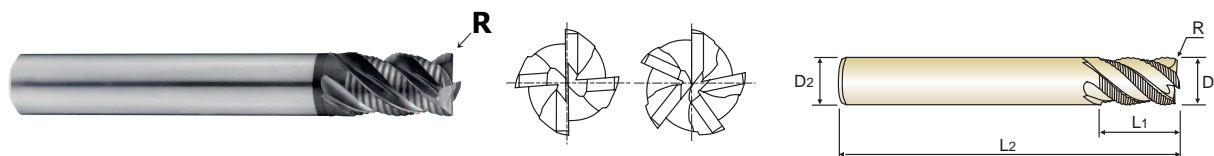
EDP No.	Corner Radius		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
	PLAIN	FLAT					
<b>G90716</b>	-	R.020	<b>1/4</b>	1/4	3/8	2	4
<b>G90720</b>	-	R.020	<b>5/16</b>	5/16	7/16	2	4
<b>G90724</b>	<b>G92824</b>	R.020	<b>3/8</b>	3/8	1/2	2-1/4	4
<b>G90732</b>	<b>G92832</b>	R.020	<b>1/2</b>	1/2	5/8	2-1/2	4
<b>G90740</b>	<b>G92840</b>	R.040	<b>5/8</b>	5/8	3/4	3	5
<b>G90748</b>	<b>G92848</b>	R.040	<b>3/4</b>	3/4	1	3-1/4	5
<b>G90764</b>	<b>G92864</b>	R.040	<b>1</b>	1	1-1/4	4	5

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~-.002	h6

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○			○		◎		○		

**CARBIDE, MULTI 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 allow long tool life and excellent chip evacuation.



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	
<b>G90816</b>	-	R.020	<b>1/4</b>	1/4	5/8	2-1/2	4
<b>G90820</b>	-	R.020	<b>5/16</b>	5/16	3/4	2-1/2	4
<b>G90824</b>	<b>G92924</b>	R.020	<b>3/8</b>	3/8	7/8	2-1/2	4
<b>G90832</b>	<b>G92932</b>	R.020	<b>1/2</b>	1/2	1	3	4
<b>G90840</b>	<b>G92940</b>	R.040	<b>5/8</b>	5/8	1-1/4	3-1/2	5
<b>G90848</b>	<b>G92948</b>	R.040	<b>3/4</b>	3/4	1-5/8	4	5
<b>G90864</b>	<b>G92964</b>	R.040	<b>1</b>	1	1-3/4	4-1/4	5

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~-.002	h6

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

**X-SPEED ROUGHER END MILLS**

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○			○		◎		○		



**X-SPEED ROUGHER END MILLS**

**G909 SERIES**

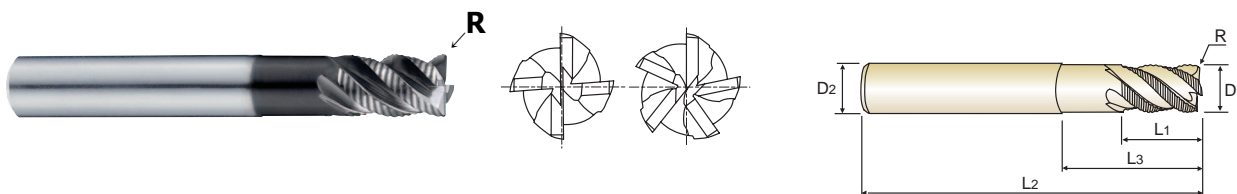
PLAIN SHANK

**G930 SERIES**

FLAT SHANK

**CARBIDE, MULTI FLUTE EXTENDED REACH 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.



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	
<b>G90916</b>	-	R.020	<b>1/4</b>	1/4	3/8	7/8	2-1/2	4
<b>G90920</b>	-	R.020	<b>5/16</b>	5/16	7/16	1	2-1/2	4
<b>G90924</b>	<b>G93024</b>	R.020	<b>3/8</b>	3/8	1/2	1	2-3/4	4
<b>G90932</b>	<b>G93032</b>	R.020	<b>1/2</b>	1/2	5/8	1-1/4	3-1/4	4
<b>G90940</b>	<b>G93040</b>	R.040	<b>5/8</b>	5/8	3/4	2	4	5
<b>G90948</b>	<b>G93048</b>	R.040	<b>3/4</b>	3/4	1	2-3/8	4-1/2	5

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~-.002	h6

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

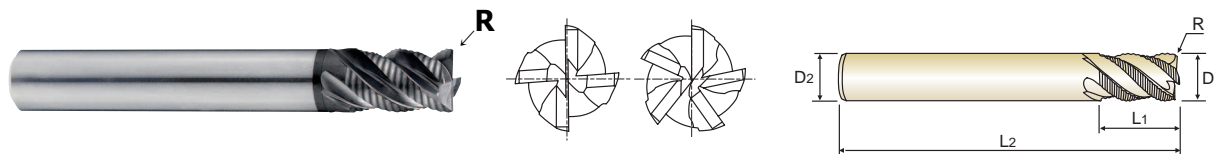
TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○			○		◎		○		

**CARBIDE, MULTI FLUTE SHORT 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.



Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1		Shank Diameter D2	Length of Cut L1	Overall Length L2	No. of Flute
		Metric	Inch				
G9D75060	RO.5	6.0	.2362	6	9	57	4
G9D75080	RO.5	8.0	.3150	8	12	63	4
G9D75100	RO.5	10.0	.3937	10	15	72	4
G9D75120	RO.5	12.0	.4724	12	18	83	4
G9D75160	R1.0	16.0	.6299	16	24	92	5
G9D75200	R1.0	20.0	.7874	20	30	104	5

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.05	h6

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

**X-SPEED ROUGHER END MILLS**

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

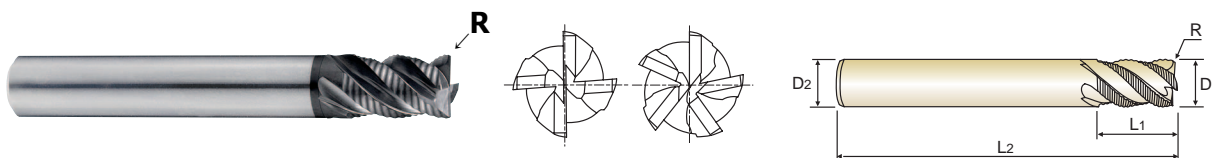
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○			○		◎		○		



**CARBIDE, MULTI FLUTE LONG 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.



Unit : mm

EDP No.	Corner Radius R	Mill Diameter		Shank Diameter D2	Length of Cut L1	Overall Length L2	No. of Flute
		Metric D1	Inch				
<b>G9D76060</b>	RO.5	<b>6.0</b>	<b>.2362</b>	6	12	57	4
<b>G9D76080</b>	RO.5	<b>8.0</b>	<b>.3150</b>	8	16	63	4
<b>G9D76100</b>	RO.5	<b>10.0</b>	<b>.3937</b>	10	20	72	4
<b>G9D76120</b>	RO.5	<b>12.0</b>	<b>.4724</b>	12	24	83	4
<b>G9D76160</b>	R1.0	<b>16.0</b>	<b>.6299</b>	16	32	92	5
<b>G9D76200</b>	R1.0	<b>20.0</b>	<b>.7874</b>	20	40	104	5

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.05	h6

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

**X-SPEED ROUGHER END MILLS**

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

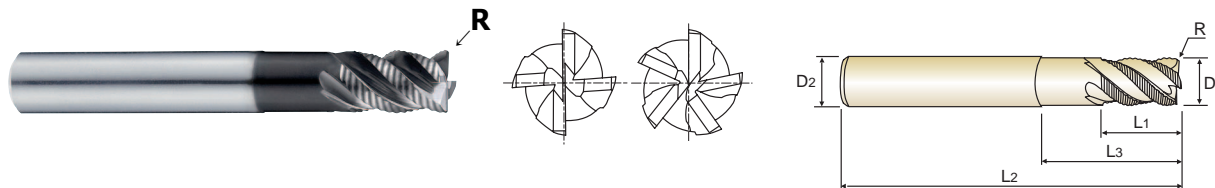
TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○			○		◎		○		

**CARBIDE, MULTI FLUTE LONG 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.



Unit : mm

EDP No.	Corner Radius R	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	No. of Flute
		Metric D1	Inch					
G9D77060	R0.5	6.0	.2362	6	9	18	57	4
G9D77080	R0.5	8.0	.3150	8	12	24	63	4
G9D77100	R0.5	10.0	.3937	10	15	30	72	4
G9D77120	R0.5	12.0	.4724	12	18	36	83	4
G9D77160	R1.0	16.0	.6299	16	24	48	100	5
G9D77200	R1.0	20.0	.7874	20	30	60	110	5

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.05	h6

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

**X-SPEED ROUGHER END MILLS**

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○			○		◎		○		



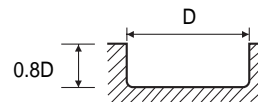
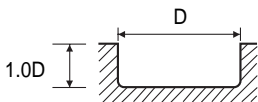
**X-SPEED ROUGHER END MILLS**

**RECOMMENDED CUTTING CONDITIONS**

**CARBIDE, 4&5 FLUTE MULTIPLE HELIX CORNER RADIUS - SLOTTING**

**G907, G928, G908, G929, G909, G930, G9D75, G9D76, G9D77 SERIES**

MATERIAL		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	61.02	10600	43.31
5/16	8.0	9000	64.96	8100	46.46
3/8	10.0	7200	64.96	6400	46.46
1/2	12.0	6000	60.63	5400	44.88
5/8	16.0	4500	59.06	4100	41.34
3/4	20.0	3600	52.36	3200	35.43
1	-	2900	46.40	2600	32.50

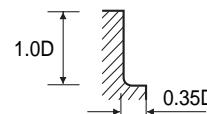
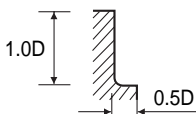


RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 4&5 FLUTE MULTIPLE HELIX CORNER RADIUS - SIDE CUTTING**

**G907, G928, G908, G929, G909, G930, G9D75, G9D76, G9D77 SERIES**

MATERIAL		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	101.18	14300	72.83
5/16	8.0	11900	106.30	10700	76.77
3/8	10.0	9500	106.30	8500	76.77
1/2	12.0	8000	101.18	7100	72.83
5/8	16.0	6000	96.46	5400	69.90
3/4	20.0	4800	84.25	4300	59.06
1	-	3800	75.25	3400	49.30



RPM = rev./min.  
FEED = inch/min.



Being the best through innovation

















# CARBIDE



# X-POWER

- Medium Steels to High Hardened Steels up to HRc70

# SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE	
			MIN	MAX		
<b>INCH</b>						
<b>EM154</b>		CARBIDE, 2 FLUTE REGULAR LENGTH	◆	D1/16	D1	<b>450</b>
<b>EM206</b>		CARBIDE, 2 FLUTE LONG LENGTH	◆	D1/8	D1	<b>450</b>
<b>EM959</b>		CARBIDE, 2 FLUTE MINIATURE	◆	D.016	D.062	<b>451</b>
<b>EM153</b>		CARBIDE, 4 FLUTE REGULAR LENGTH	◆	D1/16	D1	<b>452</b>
<b>EM207</b>		CARBIDE, 4 FLUTE LONG LENGTH	◆	D1/8	D1	<b>452</b>
<b>EM636</b>		CARBIDE, 2 FLUTE STUB LENGTH CORNER RADIUS	◆	D1/16	D1/2	<b>453</b>
<b>EM639</b>		CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS	◆	D1/16	D1/2	<b>453</b>
<b>EM637</b>		CARBIDE, 2 FLUTE REGULAR LENGTH CORNER RADIUS	◆	D1/16	D1/2	<b>454</b>
<b>EM649</b>		CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS	◆	D1/16	D1/2	<b>454</b>
<b>EM211</b>		CARBIDE, 2 FLUTE LONG LENGTH CORNER RADIUS	◆	D1/4	D1/2	<b>455</b>
<b>EM212</b>		CARBIDE, 4 FLUTE LONG LENGTH CORNER RADIUS	◆	D1/4	D1/2	<b>455</b>
<b>EM102</b>		CARBIDE, 4 FLUTE 45°HELIX LONG LENGTH	◆	D3/8	D7/8	<b>456</b>
<b>EM103</b>		CARBIDE, 4 FLUTE 45°HELIX LONG REACH CORNER RADIUS	◆	D3/8	D7/8	<b>457</b>
<b>EM965</b>		CARBIDE, 4 FLUTE 55° HELIX STUB LENGTH CORNER RADIUS	◆	D1/4	D1/2	<b>458</b>
<b>EM208</b>		CARBIDE, 6&8 FLUTE 45°HELIX LONG LENGTH	◆	D1/4	D1	<b>459</b>
<b>EM218</b>		CARBIDE, 6&8 FLUTE 45° HELIX EXTRA LONG LENGTH	◆	D1/4	D1	<b>459</b>
<b>EM668</b>		CARBIDE, 6&8 FLUTE 45°HELIX LONG LENGTH CORNER RADIUS	◆	D1/4	D3/4	<b>460</b>

◆ U.S.A Stock

# X-POWER END MILLS

◎ : Excellent  
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRc40~45	HRc45~55								
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○				○		○		
○	◎	◎	◎	○				○		○		
○	◎	◎	◎	○				○				
○	◎	◎	◎	○				○		○		
○	◎	◎	◎	○				○				
○	◎	◎	◎	○								
○	◎	◎	◎	○				○		○		
○	◎	◎	◎	○								
○	◎	◎	◎	○				○				
○	◎	◎	◎	○								
○	◎	◎	◎	○				○		○		
○	◎	◎	◎	○				○		○		
○	◎	◎	◎	○				○		○		
○	◎	◎	◎	○				○		○		
○	◎	◎	◎	○				○				
○	◎	◎	◎	○				○				
○	◎	◎	◎	○				○				
○	◎	◎	◎	○				○				

# SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE	
			MIN	MAX		
<b>INCH</b>						
<b>EM209</b>		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE	◆	R1/64	R1/2	<b>461</b>
<b>EM210</b>		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE	◆	R1/16	R1/2	<b>461</b>
<b>EM961</b>		CARBIDE, 2 FLUTE MEDIUM LENGTH BALL NOSE	◆	R1/16	R1/2	<b>462</b>
<b>EM962</b>		CARBIDE, 2 FLUTE LONG REACH BALL NOSE	◆	R3/64	R3/8	<b>463</b>
<b>EM960</b>		CARBIDE, 2 FLUTE MINIATURE BALL NOSE	◆	R.012	R.031	<b>464</b>
<b>EM109</b>		CARBIDE, 2 FLUTE 15° HELIX STUB CUT LENGTH BALL NOSE for OVER HRc55	◆	R1/64	R1/4	<b>465</b>
<b>EM963</b>		CARBIDE, 2 FLUTE BALL NOSE with TAPER NECK	◆	R1/32	R1/4	<b>466</b>
<b>EM979</b>		CARBIDE, 2 FLUTE BALL NOSE with PENCIL NECK	◆	R3/32	R1/4	<b>467</b>
<b>EM084</b>		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE (MMC-ECONOMY TYPE)	◆	R1/16	R5/16	<b>469</b>
<b>EM093</b>		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE (MMC-ECONOMY TYPE)	◆	R1/16	R5/16	<b>470</b>
<b>EM096</b>		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE (MMC-SPHERE TYPE)	◆	R1/16	R5/16	<b>471</b>
<b>EM097</b>		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE (MMC-SPHERE TYPE)	◆	R1/16	R5/16	<b>472</b>
<b>EM666</b>		CARBIDE, MULTI FLUTE 20° HELIX STUB LENGTH FINE PITCH ROUGHING	◆	D1/4	D1	<b>473</b>
<b>EM156</b>		CARBIDE, MULTI FLUTE 20° HELIX LONG LENGTH FINE PITCH ROUGHING	◆	D1/4	D1	<b>473</b>
<b>EM662</b>		CARBIDE, MULTI FLUTE 20° HELIX LONG LENGTH FINE PITCH ROUGHING BALL NOSE	◆	R1/8	R1/2	<b>474</b>
<b>EM966</b>		CARBIDE, 2 FLUTE for RIB PROCESSING	◆	D1/32	D1/8	<b>475</b>
<b>EM967</b>		CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING	◆	R1/64	R1/16	<b>476</b>

◆ U.S.A Stock




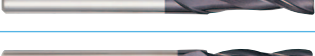






# X-POWER END MILLS

⊙ : Excellent  
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRC40~45	HRC45~55								
~HRC20	HRC20~30	HRC30~40	HRC40~45	HRC45~55	HRC55~70							
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○				○				
			○	⊙	⊙							
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				



# SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE	
			MIN	MAX		
<b>METRIC</b>						
<b>EM810</b>		CARBIDE, 2 FLUTE SHORT LENGTH	◇	D1.0	D25.0	<b>477</b>
<b>EM816</b>		CARBIDE, 2 FLUTE LONG LENGTH	◇	D2.0	D25.0	<b>478</b>
<b>EM811</b>		CARBIDE, 4 FLUTE SHORT LENGTH	◇	D2.0	D25.0	<b>479</b>
<b>EM817</b>		CARBIDE, 4 FLUTE LONG LENGTH	◇	D2.0	D25.0	<b>480</b>
<b>EM895</b>		CARBIDE, 3 FLUTE 38° HELIX SHORT LENGTH	◇	D1.0	D20.0	<b>481</b>
<b>EM810</b>		CARBIDE, 2 FLUTE MINIATURE	◇	D0.4	D1.5	<b>482</b>
<b>EM818</b>		CARBIDE, 2 FLUTE LONG LENGTH CORNER RADIUS	◇	D3.0	D20.0	<b>483</b>
<b>EM819</b>		CARBIDE, 4 FLUTE LONG LENGTH CORNER RADIUS	◇	D3.0	D20.0	<b>483</b>
<b>EM905</b>		CARBIDE, 4 FLUTE 45° HELIX SHORT LENGTH CORNER RADIUS	◇	D10.0	D22.0	<b>484</b>
<b>EM839</b>		CARBIDE, 4 FLUTE STUB CUT LENGTH CORNER RADIUS	◇	D2.0	D16.0	<b>485</b>
<b>EM812</b>		CARBIDE, 6&8 FLUTE 45° HELIX LONG LENGTH	◇	D6.0	D25.0	<b>486</b>
<b>EM834</b>		CARBIDE, 6&8 FLUTE 45° HELIX EXTRA LONG LENGTH	◇	D6.0	D25.0	<b>486</b>
<b>EM835</b>		CARBIDE, 6 FLUTE 45° HELIX LONG LENGTH CORNER RADIUS	◇	D6.0	D20.0	<b>487</b>
<b>EM897</b>		CARBIDE, 6 FLUTE 45° HELIX STUB CUT LENGTH CORNER RADIUS	◇	D6.0	D12.0	<b>488</b>
<b>EM876</b>		CARBIDE, 2 FLUTE SHORT LENGTH BALL NOSE	◇	R0.5	R12.5	<b>489</b>
<b>EM813</b> <b>EM823</b>		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE	◇	R0.5	R12.5	<b>490</b>
<b>EM815</b> <b>EM825</b>		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE	◇	R0.5	R12.5	<b>490</b>










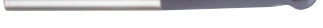





◇ Call for Availability

# X-POWER END MILLS

⊙ : Excellent  
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRc40~45	HRc45~55								
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				

# SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE	
			MIN	MAX		
<b>METRIC</b>						
<b>EM899</b>		CARBIDE, 2 FLUTE MEDIUM LENGTH BALL NOSE	◇	R1.5	R12.5	<b>491</b>
<b>EM838</b>		CARBIDE, 2 FLUTE LONG REACH BALL NOSE	◇	R1.0	R10.0	<b>492</b>
<b>EM865</b>		CARBIDE, 2 FLUTE MINIATURE BALL NOSE	◇	R0.3	R0.75	<b>493</b>
<b>EM868</b>		CARBIDE, 2 FLUTE 15° HELIX STUB CUT LENGTH BALL NOSE for OVER HRc55	◇	R0.5	R12.5	<b>494</b>
<b>EM902</b>		CARBIDE, 2 FLUTE BALL NOSE with TAPER NECK	◇	R0.5	R6.0	<b>495</b>
<b>EM669</b>		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE (MMC-ECONOMY TYPE)	◇	R1.5	R8.0	<b>496</b>
<b>EM673</b>		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE (MMC-ECONOMY TYPE)	◇	R2.5	R8.0	<b>497</b>
<b>EM863</b>		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE (MMC- SPHERE TYPE)	◇	R1.5	R8.0	<b>498</b>
<b>EM864</b>		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE (MMC- SPHERE TYPE)	◇	R2.5	R8.0	<b>499</b>
<b>EM832</b>		CARBIDE, MULTI FLUTE 20° HELIX SHORT LENGTH FINE PITCH ROUGHING	◇	D6.0	D25.0	<b>500</b>
<b>EM814</b>		CARBIDE, MULTI FLUTE 20° HELIX LONG LENGTH FINE PITCH ROUGHING	◇	D6.0	D25.0	<b>501</b>
<b>EM833</b>		CARBIDE, 3&4 FLUTE 20° HELIX LONG LENGTH FINE PITCH ROUGHING BALL NOSE	◇	R3.0	R10.0	<b>502</b>
<b>EM837</b>		CARBIDE, 2 FLUTE TAPER	◇	D2.0	D8.0	<b>503</b>
<b>EM883</b>		CARBIDE, 2 FLUTE for RIB PROCESSING	◇	D0.8	D3.0	<b>504</b>
<b>EM886</b>		CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING	◇	R0.3	R2.0	<b>505</b>
RECOMMENDED CUTTING CONDITIONS						<b>506</b>

◇ Call for Availability

# X-POWER END MILLS

⊙ : Excellent  
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRc40~45	HRc45~55								
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○	○			○				
○	○	⊙	⊙	○								
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○	○			○				
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○		○		
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				
○	⊙	⊙	⊙	○				○				



**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.



CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA



◆ 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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○				○		○		

# 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.508

◆ 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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

**X-POWER END MILLS**

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT &amp; HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRC20	HRC20~30	HRC30~40	HRC40~45	HRC45~55	HRC55~70							
○	◎	◎	◎	○				○				



**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.



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

MG 4 30° PLAIN P.507

◆ 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	Carbon Steels ~HRc20	Alloy Steels HRc20~30	Prehardened Steels HRc30~40	Hardened Steels HRc40~45 HRc45~55		High Hardened Steels HRc55~70	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
EM153	○	◎	◎	◎	○				○		○		
EM207	○	◎	◎	◎	○				○				

## 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° ±.001 PLAIN P.508, 509

◆ 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	Carbon Steels ~HRc20	Alloy Steels HRc20~30	Prehardened Steels HRc30~40	Hardened Steels HRc40~45 HRc45~55		High Hardened Steels HRc55~70	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
EM636	○	◎	◎	◎	○								
EM639	○	◎	◎	◎	○			○			○		





## 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.



P.508, 509

◆ 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

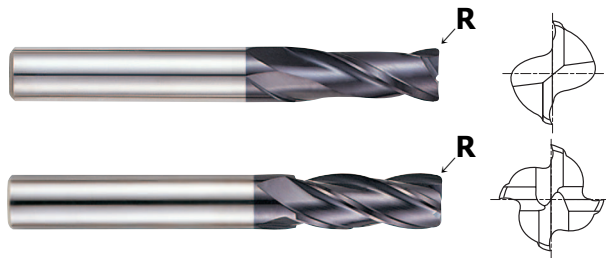
Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~-.0012	0~-.0003

◎ : Excellent ○ : Good

Series	Carbon Steels ~HRc20	Alloy Steels HRc20~30	Prehardened Steels HRc30~40	Hardened Steels HRc40~45 HRc45~55	High Hardened Steels HRc55~70	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
EM637	○	◎	◎	◎	○							
EM649	○	◎	◎	◎	○			○		○		

## 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.



P.508, 509

◆ 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	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
	~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
EM211	○	◎	◎	◎	○								
EM212	○	◎	◎	◎	○				○		○		



**CARBIDE, 4 FLUTE 45° 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.



CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

**X-POWER  
END MILLS**

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA

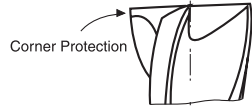
MG 4 45° PLAIN P.509

◆ 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

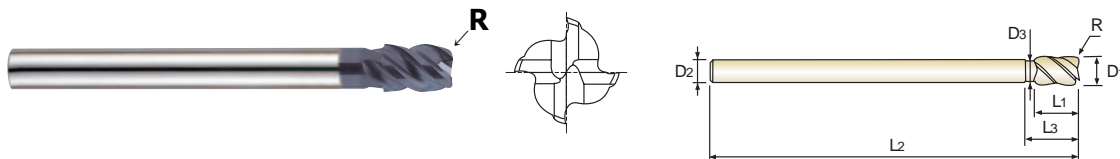


◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○				○		○		

**CARBIDE, 4 FLUTE 45° 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.


**◆ 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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○				○		○		

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT &amp; HSS END MILLS

TECHNICAL DATA



**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.



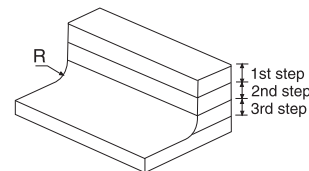
MG 4 55° ±.001 PLAIN P.511

◆ U.S.A Stock

Unit : Inch

EDP No.	Corner Radius R (±.001)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
<b>93544</b>	R.063	<b>1/4</b>	1/4	5/16	7/8	2-1/4	.230
<b>93545</b>	R.078	<b>5/16</b>	5/16	3/8	1	2-1/2	.289
<b>93546</b>	R.094	<b>3/8</b>	3/8	7/16	1-1/4	3	.344
<b>93596</b>	R.109	<b>7/16</b>	7/16	1/2	1-1/2	3-1/4	.395
<b>93547</b>	R.125	<b>1/2</b>	1/2	1/2	1-1/2	3-1/4	.461

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~-.0012	0~-.0003



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○				○		○		

**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.512, 513

◆ 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

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○				○				

CBN END MILL

i-Mill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



**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.



CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA



◆ U.S.A Stock

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
	R					
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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○				○				

◎ : Excellent ○ : Good

**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.



P.514, 515

◆ 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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○	○			○				

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

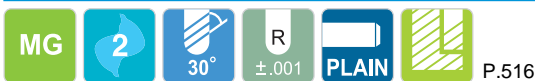
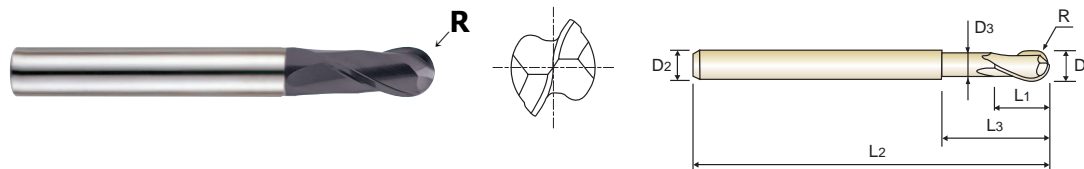
TECHNICAL DATA





**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.



◆ 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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○	○			○				

**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.517

◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R (±.001)				
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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○	○			○				

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



**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.



CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA

MG 2 30° R ±.0005 PLAIN P.523

◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R (±.0005)				
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

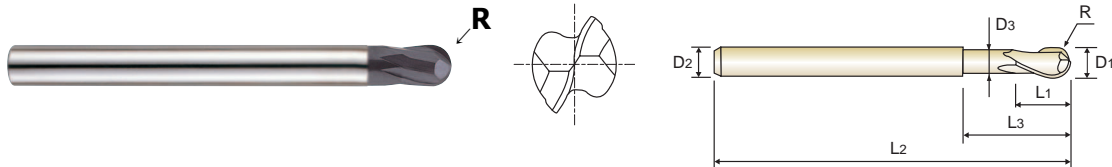
Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~- .0010	0~- .0003

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○				○				

◎ : Excellent ○ : Good

**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.518

**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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
			○	◎	◎							

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

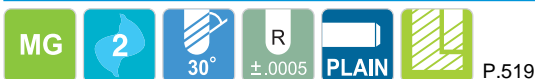
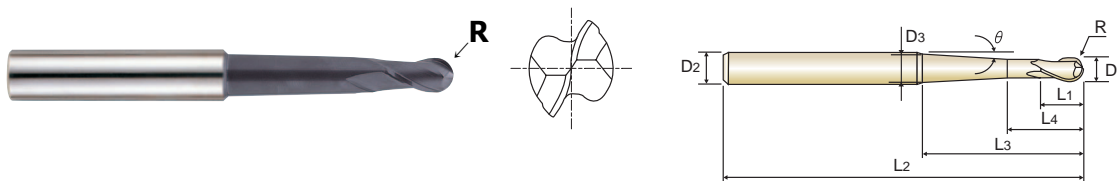
STANDARD COBALT &amp; HSS END MILLS

TECHNICAL DATA



**CARBIDE, 2 FLUTE BALL NOSE with TAPER NECK**

► High efficiency milling is possible in deep slotting with projection of the end mill being long.



◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose R (±.0005)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Under Neck Parallel Length L4	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Neck Taper Angle θ
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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

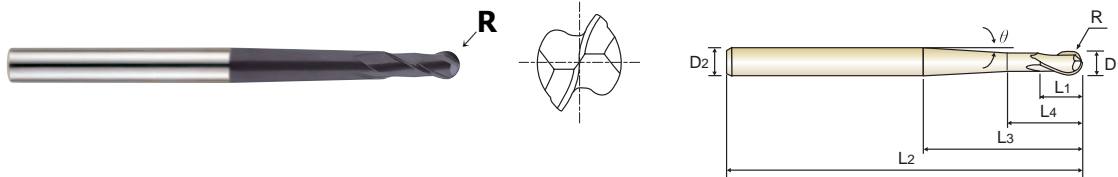
TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~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.

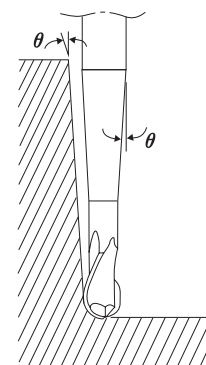


◆ U.S.A Stock

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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○	○			○				

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



**X-POWER BALL NOSE END MILLS - MMC**

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

**X-POWER  
END MILLS**

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA

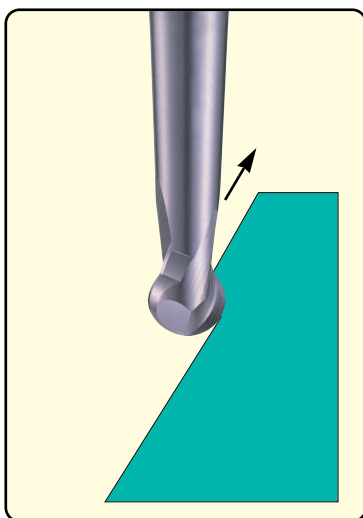
**Useful Field Area**

- 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.

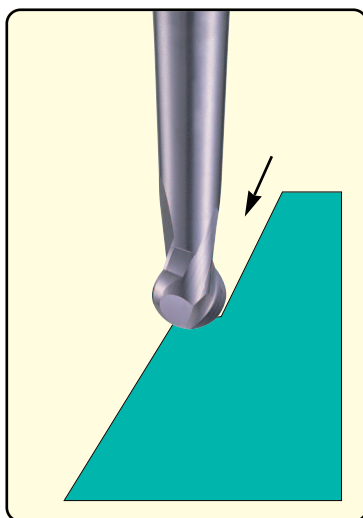
**Characteristics**

- 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.
- Outstanding tool geometry and sphere shape ball enables more increased tool life and higher speed and feed operation.

**Surpassing Milling Operation**

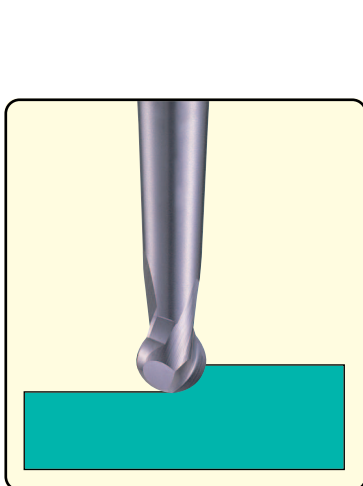


Favorable Back Milling

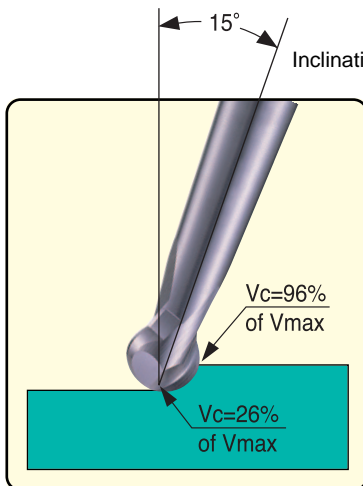


Unfavorable Drilling

- Operating angle  $14^\circ \sim 16^\circ$ , 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

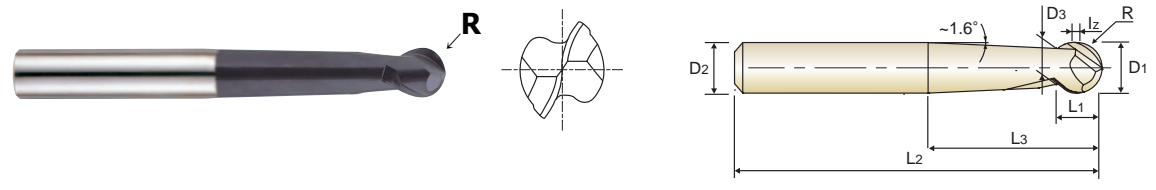


Favorable Profiling

- When  $15^\circ$  inclination milling operation, more productivity and higher speed and feed are possible.
- Decreased cutting force.
- Excellent surface roughness and brightness.

**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.521

◆ 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	Lz
	R (±.0005)	D1	D2	L1	L3	L2	D3	
<b>93288</b>	R1/16	<b>1/8</b>	1/4	5/32	1-1/4	3-1/4	.100	.060
<b>93289</b>	R3/32	<b>3/16</b>	1/4	7/32	1-1/4	3-1/4	.150	.080
<b>93290</b>	R1/8	<b>1/4</b>	1/4	9/32	1-1/4	4	.200	.080
<b>93291</b>	R5/32	<b>5/16</b>	5/16	3/8	1-1/2	4	.250	.120
<b>93292</b>	R3/16	<b>3/8</b>	3/8	13/32	1-3/4	4	.300	.120
<b>93293</b>	R1/4	<b>1/2</b>	1/2	17/32	2-1/4	4-1/4	.400	.120
<b>93294</b>	R5/16	<b>5/8</b>	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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○	○			○				

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

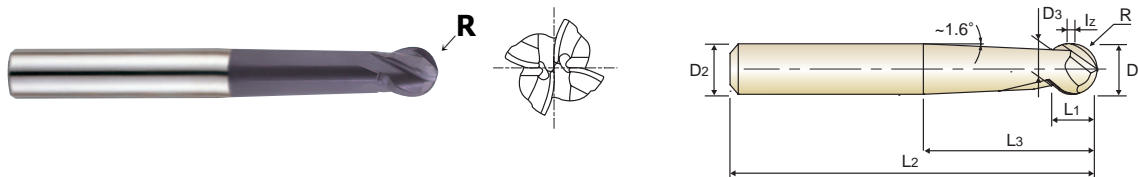
STANDARD COBALT &amp; HSS END MILLS

TECHNICAL DATA



**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° ±.0005 R PLAIN P.522

◆ U.S.A Stock

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

Unit : Inch

EDP No.	Radius of Ball Nose R (±.0005)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	lz
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

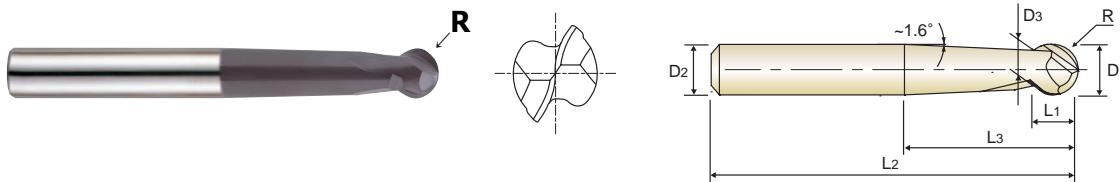
Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~- .0010	0~- .0003

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○	○			○				

◎ : Excellent ○ : Good

**CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE (MMC-SPHERE TYPE)**

- ▶ Designed for copy milling.
- ▶ Increased feed rates.
- ▶ 15° inclination.(see page 000)
- ▶ Sphere Angle : 250°



MG
2
30°
R ±.0005
PLAIN
P.521

◆ 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
<b>93410</b>	R1/16	<b>1/8</b>	1/4	.100	1-1/4	3-1/4	.100
<b>93411</b>	R3/32	<b>3/16</b>	1/4	.150	1-1/4	3-1/4	.150
<b>93412</b>	R1/8	<b>1/4</b>	1/4	.200	1-1/8	4	.200
<b>93413</b>	R5/32	<b>5/16</b>	5/16	.250	1-3/8	4	.250
<b>93414</b>	R3/16	<b>3/8</b>	3/8	.300	1-5/8	4	.300
<b>93415</b>	R1/4	<b>1/2</b>	1/2	.400	2-3/16	4-1/4	.400
<b>93416</b>	R5/16	<b>5/8</b>	5/8	.500	2-3/4	6-1/4	.500

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~-.0010	0~-.0003

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

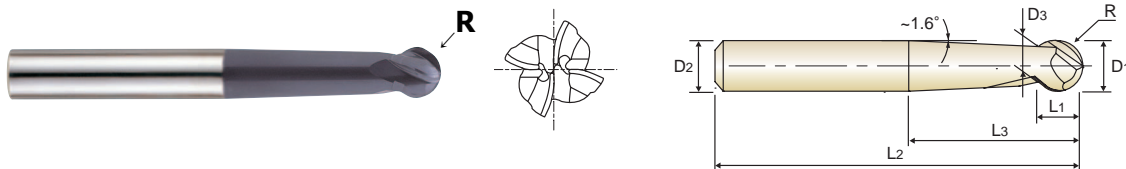
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○	○			○				



**EM097 SERIES** PLAIN SHANK

**CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE (MMC-SPHERE TYPE)**

- ▶ Designed for copy milling.
- ▶ Increased feed rates.
- ▶ 15° inclination.(see page 000)
- ▶ Sphere Angle : 250°



MG 4 30° ±.0005 PLAIN P.522

◆ 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
<b>93417</b>	R1/16	<b>1/8</b>	1/4	.100	1-1/4	3-1/4	.100
<b>93418</b>	R3/32	<b>3/16</b>	1/4	.150	1-1/4	3-1/4	.150
<b>93419</b>	R1/8	<b>1/4</b>	1/4	.200	1-1/8	4	.200
<b>93420</b>	R5/32	<b>5/16</b>	5/16	.250	1-3/8	4	.250
<b>93421</b>	R3/16	<b>3/8</b>	3/8	.300	1-5/8	4	.300
<b>93422</b>	R1/4	<b>1/2</b>	1/2	.400	2-3/16	4-1/4	.400
<b>93423</b>	R5/16	<b>5/8</b>	5/8	.500	2-3/4	6-1/4	.500

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~-.0010	0~-.0003

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○	○			○				



**CARBIDE**

**HSS**

**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.



◆ 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	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○				○		○		

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

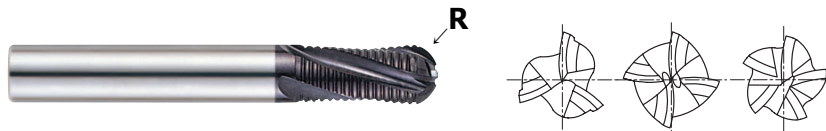
STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



**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.



CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA



◆ 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

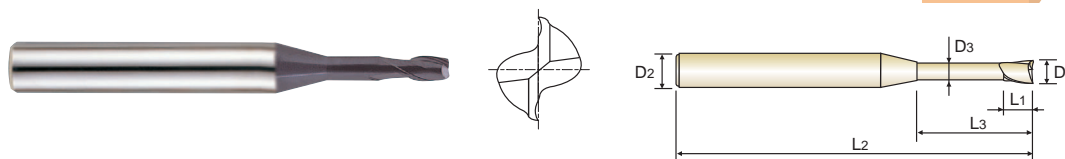
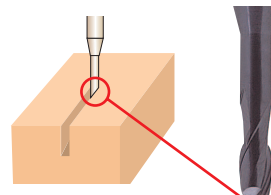
Mill Dia. (inch)	Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
1/4~3/8	0 ~ -.0022	0 ~ -.0003
1/2~5/8	0 ~ -.0027	
3/4~1	0 ~ -.0033	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○				○				

### 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.524

◆ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D1	D2	L1	L3	L2	D3
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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○				○				

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

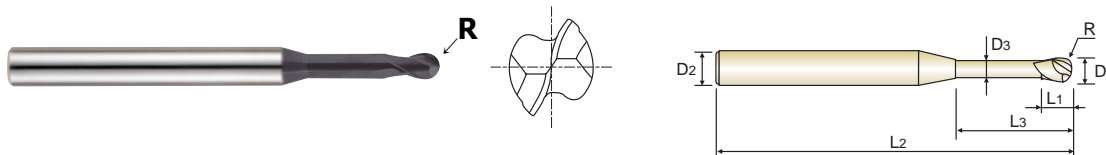
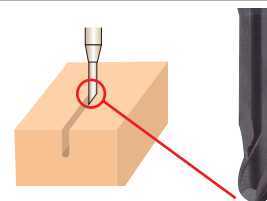
TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

**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° ±.0005 PLAIN P.525

◆ U.S.A Stock

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

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

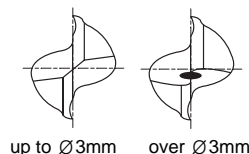
Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~-.0006	0~-.0003

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○				○				

**CARBIDE, 2 FLUTE SHORT LENGTH**

- ▶ Designed to machine tool steels, alloy steels, mold steels and other hardened materials.
- ▶ Superior workpiece finishes.
- ▶ Increased feed rates.



MG
2
30°
PLAIN
P.506

◇ 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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○				○		○		

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

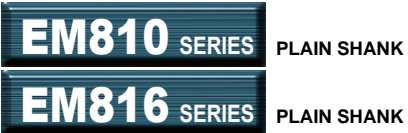
STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

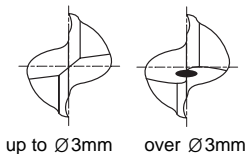
TECHNICAL DATA





**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.



CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA

MG 2 30° PLAIN P.506

◇ 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

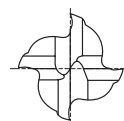
Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	h6

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○				○		○		

◎ : Excellent ○ : Good

**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.507

◇ 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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○				○		○		

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

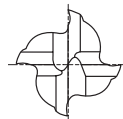
STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



**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.



CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA



◇ 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

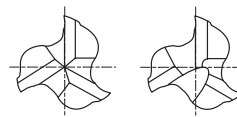
Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	h6

◎ : Excellent ○ : Good

Series	Carbon Steels ~HRc20	Alloy Steels HRc20~30	Prehardened Steels HRc30~40	Hardened Steels HRc40~45 HRc45~55		High Hardened Steels HRc55~70	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
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

◇ 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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○				○		○		

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT &amp; HSS END MILLS

TECHNICAL DATA



**CARBIDE, 2 FLUTE MINIATURE**

- ▶ High precision milling in medical, optical, electronics and aero space industries.
- ▶ Excellent performance on hardened steel



CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA



◇ 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

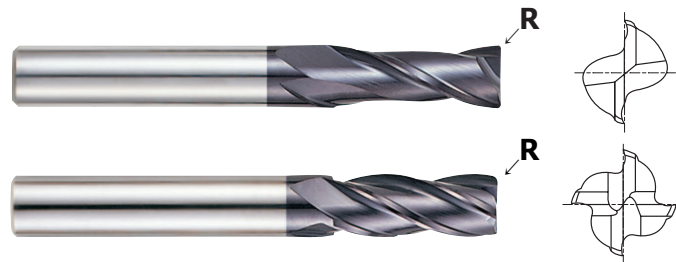
Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○				○				

# 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 2&4 30° PLAIN P.527

◇ Call for Availability

## EM818(2 FLUTE), EM819(4 FLUTE) Series

Unit : mm

EDP No.		Corner Radius R	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
2 FLUTE	4 FLUTE		Metric	Inch			
EM818030	EM819030	RO.3	3.0	.1181	6	12	50
EM818040	EM819040	RO.3	4.0	.1575	6	15	50
EM818911	EM819911	RO.5	4.0	.1575	6	15	50
EM818050	EM819050	RO.3	5.0	.1969	6	20	60
EM818912	EM819912	RO.5	5.0	.1969	6	20	60
EM818913	EM819913	RO.3	6.0	.2362	6	20	60
EM818060	EM819060	RO.5	6.0	.2362	6	20	60
EM818901	EM819901	R1.0	6.0	.2362	6	20	60
EM818914	EM819914	RO.3	8.0	.3150	8	25	70
EM818080	EM819080	RO.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	RO.3	10.0	.3937	10	30	90
EM818100	EM819100	RO.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	RO.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	RO.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	RO.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	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
	~HRC20	HRC20~30	HRC30~40	HRC40~45	HRC45~55	HRC55~70							
EM811	○	◎	◎	◎	○								
EM817	○	◎	◎	◎	○				○		○		

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

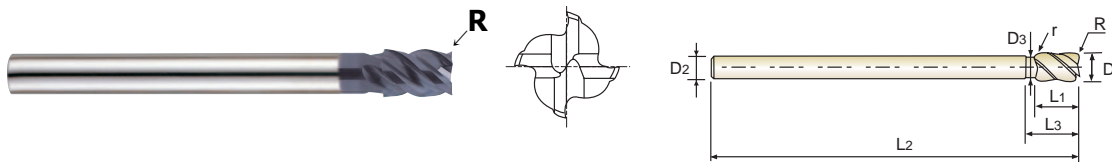
TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

**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



◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

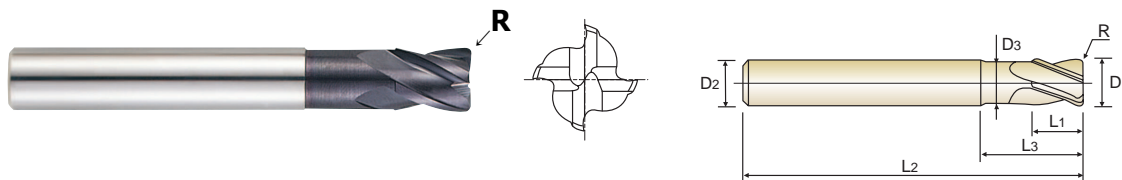
TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~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.



P.528

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
EM839020	RO.2	2.0	.0787	6	2.5	5	50	1.9
EM839025	RO.25	2.5	.0984	6	3	6	50	2.4
EM839030	RO.3	3.0	.1181	6	4	7	50	2.8
EM839035	RO.35	3.5	.1378	6	4.5	8	50	3.2
EM839040	RO.4	4.0	.1575	6	5	9	50	3.7
EM839050	RO.5	5.0	.1969	6	6	12	50	4.6
EM839060	RO.6	6.0	.2362	6	7	14	55	5.6
EM839080	RO.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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○	○			○				

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

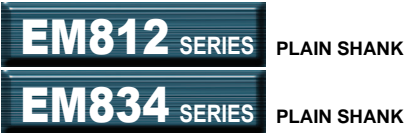
STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA





**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.



- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

P.512, 513

◇ Call for Availability

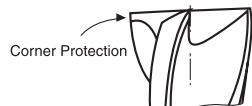
**EM812 Series ■ LONG LENGTH** Unit : mm

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



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○	○			○				

**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.



◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	R	Metric	Inch			
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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

**X-POWER END MILLS**

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT &amp; HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○				○				

**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 6 45° PLAIN P.528

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
EM897060	RO.5	6.0	.2362	6	6	14	50	5.7
EM897080	RO.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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○				○				

**CARBIDE, 2 FLUTE SHORT LENGTH BALL NOSE**

- ▶ Economic type with short overall length.
- ▶ Radius tolerance  $\pm 0.02\text{mm}$  & short length of cut.



MG
2
30°
R  $\pm 0.02$ 
PLAIN
P.514

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R ( $\pm 0.02$ )	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
		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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○	○			○				

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA



**X-POWER  
END MILLS**

**EM813 / EM815 SERIES**

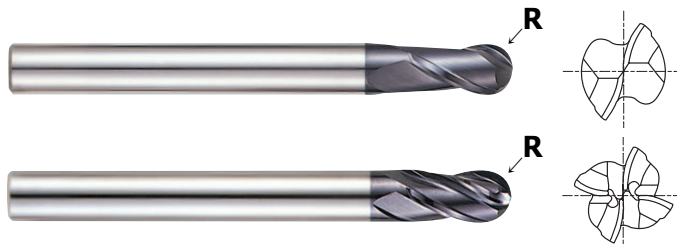
PLAIN SHANK

**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.



CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

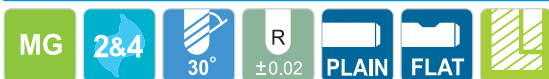
D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA



P.514, 515

◇ 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			Metric	Inch			
PLAIN	FLAT	PLAIN	FLAT	R (±0.02)					
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

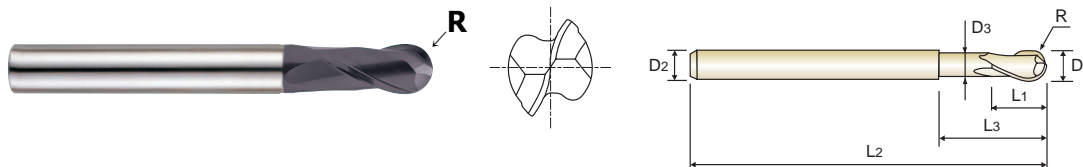
Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~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
2
30°
R ±0.01
PLAIN
P.516

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○	○			○				



**CARBIDE, 2 FLUTE LONG REACH BALL NOSE**

► Longer overall length than EM813 types and suitable for machining deeply located area.



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

**X-POWER END MILLS**

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

MG 2 30° ±0.02 PLAIN P.517

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.02)	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
		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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~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 condition.
- ▶ Excellent performance on hardened steel.



MG
2
30°
R ±0.01
PLAIN
P.523

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
		Metric	Inch			
93424	RO.30	0.6	.0236	3	1.1	40
93425	RO.35	0.7	.0276	3	1.5	40
93426	RO.40	0.8	.0315	3	2.0	40
93427	RO.45	0.9	.0354	3	2.2	40
93428	RO.50	1.0	.0394	3	2.5	40
93429	RO.55	1.1	.0433	3	3.0	40
93430	RO.60	1.2	.0472	3	3.0	40
93431	RO.65	1.3	.0512	3	3.5	40
93432	RO.70	1.4	.0551	3	3.5	40
93433	RO.75	1.5	.0591	3	4.0	40

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○				○				

CBN  
END MILL

i-Mill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA

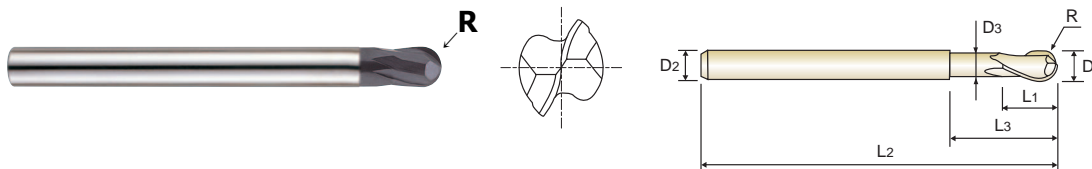




**CARBIDE, 2 FLUTE 15° HELIX STUB CUT LENGTH BALL NOSE  
for OVER HRC55**

**HRc55 ~ HRc70**

- ▶ Suitable for HRc55~HRc70 high hardened materials.
- ▶ Strong cutting edges and higher tool rigidity.



MG 2 15° ±0.01 PLAIN P.518

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
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

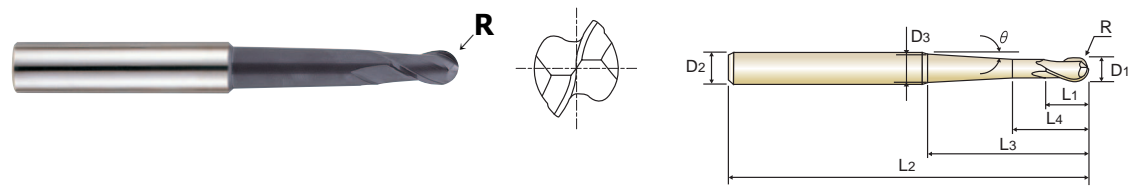
Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	h6

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○	○			○				

◎ : Excellent ○ : Good

# 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 ±0.01
PLAIN
P.519

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Under Neck Parallel Length L4	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Neck Taper Angle θ
		Metric D1	Inch							
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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	○	◎	◎	○								

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

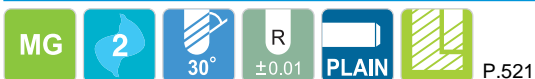
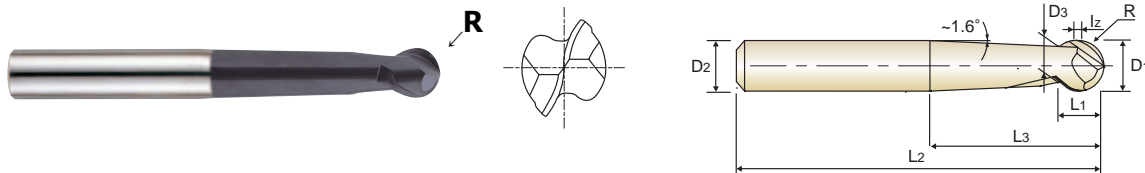
STANDARD COBALT &amp; HSS END MILLS

TECHNICAL DATA



**CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE (MMC-ECONOMY TYPE)**

- ▶ Designed for copy milling.
- ▶ Increased feed rates.
- ▶ 15° inclination.
- ▶ Easy to regrind.



◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Lz
		Metric D1	Inch						
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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

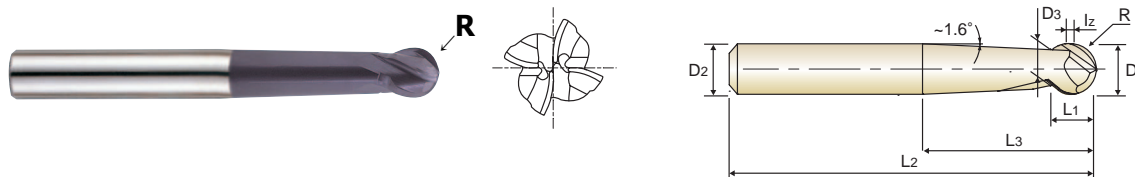
TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~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
4
30°
R ±0.01
PLAIN
P.522

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Lz
		Metric D1	Inch						
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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

**X-POWER END MILLS**

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT &amp; HSS END MILLS

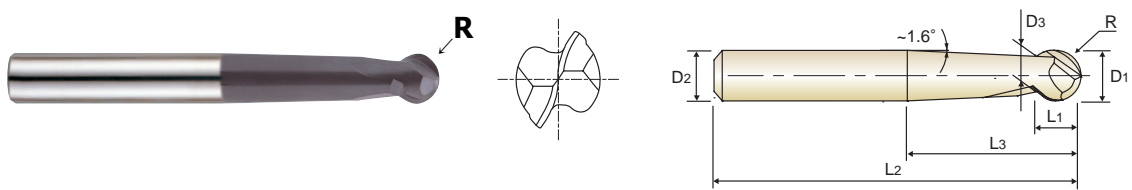
TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~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.(see page 000)
- ▶ Sphere Angle : 250°



MG 2 30° ±0.01 PLAIN P.521

◇ Call for Availability

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
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

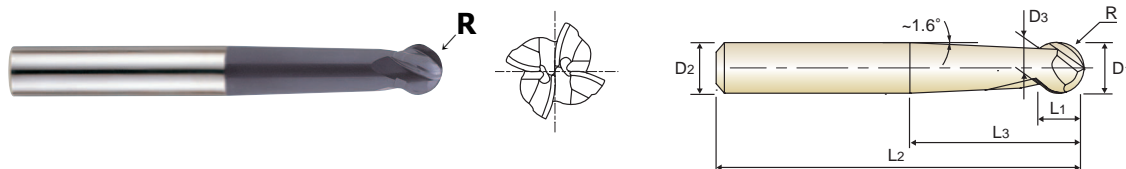
Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○	○			○				

# CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE (MMC-SPHERE TYPE)

- ▶ Designed for copy milling.
- ▶ Increased feed rates.
- ▶ 15° inclination.(see page 000)
- ▶ Sphere Angle : 250°



MG
4
30°
R ±0.01
PLAIN
P.522

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
<b>EM864050</b>	R2.5	<b>5.0</b>	<b>.1969</b>	6	3.9	38	80	4.1
<b>EM864060</b>	R3.0	<b>6.0</b>	<b>.2362</b>	6	4.9	28	100	4.7
<b>EM864080</b>	R4.0	<b>8.0</b>	<b>.3150</b>	8	6.3	33	100	6.5
<b>EM864100</b>	R5.0	<b>10.0</b>	<b>.3937</b>	10	7.9	40	100	8.2
<b>EM864120</b>	R6.0	<b>12.0</b>	<b>.4724</b>	12	9.5	49	100	9.8
<b>EM864160</b>	R8.0	<b>16.0</b>	<b>.6299</b>	16	12.4	59	150	13.4

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	h6

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○	○			○				



**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.



CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA



◇ 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**

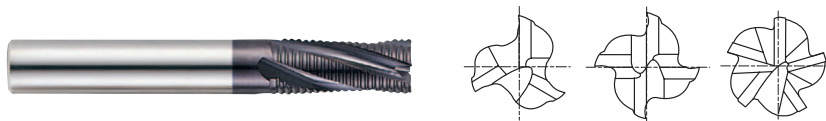
Tolerance range in µm					
Nominal-Diameter in mm					
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
<b>h10</b>	0 - 40	0 - 48	0 - 58	0 - 70	0 - 84
<b>h6</b>	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○				○		○		

**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.



◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flute
	Metric	Inch				
	h10		h6			
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 $\mu\text{m}$					
Nominal-Diameter in mm					
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
<b>h10</b>	0 - 40	0 - 48	0 - 58	0 - 70	0 - 84
<b>h6</b>	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRC20	HRC20~30	HRC30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○				○		○		



**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.



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

MG FINE 3&4 20° ±0.02 PLAIN P.524

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.02)	Mill Diameter		Shank Diameter h6	Length of Cut	Overall Length	No. of Flute
		Metric h10	Inch				
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
<b>h10</b>	0 - 40	0 - 48	0 - 58	0 - 70	0 - 84
<b>h6</b>	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○				○		○		

**CARBIDE, 2 FLUTE TAPER**

- ▶ Designed for milling die cavity.
- ▶ Suitable for machining tool steels, alloy steels, mold steels and other hardened materials.



MG
2
30°
PLAIN
P.525

◇ 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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○				○				

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

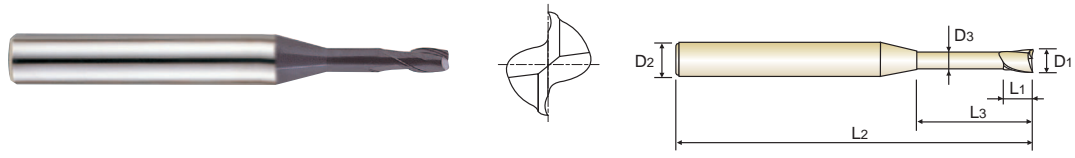
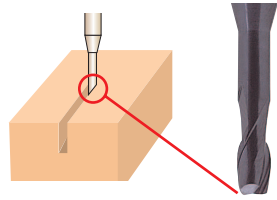
STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



**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.



◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	Metric	Inch					
	D1		D2	L1	L3	L2	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

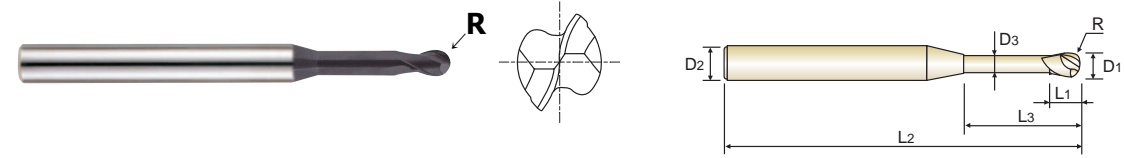
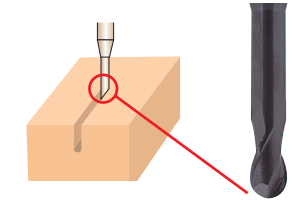
Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.015	h6

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○				○				

◎ : Excellent ○ : Good

# 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 ±0.01
PLAIN
P.525

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
EM886006	RO.3	0.6	.0236	3	0.9	6	35	0.55
EM886008	RO.4	0.8	.0315	4	1.2	6	45	0.75
EM886901	RO.4	0.8	.0315	4	1.2	8	45	0.75
EM886010	RO.5	1.0	.0394	4	1.5	6	45	0.97
EM886902	RO.5	1.0	.0394	4	1.5	8	45	0.95
EM886904	RO.5	1.0	.0394	4	1.5	12	45	0.93
EM886012	RO.6	1.2	.0472	4	1.8	8	45	1.15
EM886905	RO.6	1.2	.0472	4	1.8	12	45	1.13
EM886014	RO.7	1.4	.0551	4	2.1	12	45	1.33
EM886015	RO.75	1.5	.0591	4	2.3	8	45	1.45
EM886906	RO.75	1.5	.0591	4	2.3	12	45	1.43
EM886907	RO.75	1.5	.0591	4	2.3	16	50	1.41
EM886016	RO.8	1.6	.0630	4	2.4	16	50	1.51
EM886018	RO.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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	◎	○				○				

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

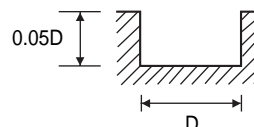
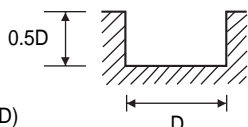
TECHNICAL DATA



**CARBIDE, 2 FLUTE FINISH - SLOTING**

**EM154, EM810 SERIES**

MATERIAL	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		STAINLESS STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45				HRC45 ~ HRC55		HRC55 ~ HRC65	
STRENGTH	~ 1000N/mm <sup>2</sup>		1000 ~ 1500N/mm <sup>2</sup>				1500 ~ 2000N/mm <sup>2</sup>		2000N/mm <sup>2</sup> ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/16	11560	7.50	7560	4.70	6300	3.55	5040	1.40		
1/8	8920	8.25	5560	5.50	4620	4.70	3360	1.55	1900	1.55
3/16	6300	12.60	3780	7.50	3160	6.30	2320	1.95	1260	1.55
1/4	5560	13.80	3360	8.65	2840	7.10	2000	2.15	1100	1.55
5/16	4200	14.95	2520	7.85	2100	7.10	1680	2.95	840	1.55
3/8	3260	13.00	2000	6.30	1680	6.30	1360	2.35	680	1.40
1/2	2740	11.00	1680	5.10	1360	5.10	1160	2.15	560	1.40
5/8	2200	8.65	1360	4.30	1060	4.30	900	1.55	440	0.80
3/4	1680	6.70	1060	3.15	840	3.15	680	1.20	320	0.80
1	1360	5.10	840	2.75	680	2.35	540	0.80	260	0.60

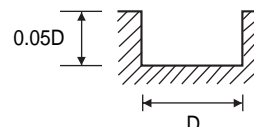
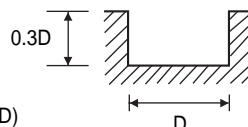


RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 2 FLUTE LONG LENGTH FINISH - SLOTING**

**EM206, EM816 SERIES**

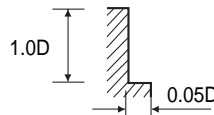
Material	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		STAINLESS STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45		HRC45 ~ HRC55	
STRENGTH	~ 1000N/mm <sup>2</sup>		1000 ~ 1500N/mm <sup>2</sup>		1500 ~ 2000N/mm <sup>2</sup>	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
1/8	4410	7.8	3570	2.4	2200	1.2
3/16	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



RPM = rev./min.  
FEED = inch/min.

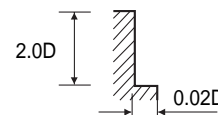
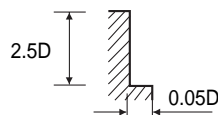
**CARBIDE, 4 FLUTE FINISH - SIDE CUTTING**
**EM153, EM811 SERIES**

MATERIAL	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		STAINLESS STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45				HRC45 ~ HRC55		HRC55 ~ HRC65	
STRENGTH	~ 1000N/mm <sup>2</sup>		1000 ~ 1500N/mm <sup>2</sup>				1500 ~ 2000N/mm <sup>2</sup>		2000N/mm <sup>2</sup> ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/16	11560	11.00	7560	6.70	6300	5.50	5040	1.95		
1/8	8920	12.60	5560	7.85	4620	6.70	3360	2.35	1900	2.35
3/16	6300	23.60	3780	14.15	3160	11.80	2320	2.75	1260	2.35
1/4	5560	26.00	3360	16.15	2840	13.00	2000	3.15	1100	2.35
5/16	4200	27.95	2520	14.95	2100	13.80	1680	4.30	840	2.35
3/8	3260	24.00	2000	11.80	1680	11.80	1360	3.55	680	1.95
1/2	2740	20.50	1680	9.85	1360	9.45	1160	3.15	560	1.95
5/8	2200	16.15	1360	7.85	1060	7.85	900	2.35	440	1.20
3/4	1680	12.60	1060	6.30	840	5.90	680	1.55	320	1.20
1	1360	9.85	840	5.10	680	4.70	540	1.20	260	0.80


 RPM = rev./min.  
 FEED = inch/min.

**CARBIDE, 4 FLUTE LONG LENGTH FINISH - SIDE CUTTING**
**EM207, EM817 SERIES**

MATERIAL	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 <sup>2</sup>		1000 ~ 1500N/mm <sup>2</sup>		1500 ~ 2000N/mm <sup>2</sup>		2000N/mm <sup>2</sup> ~	
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.

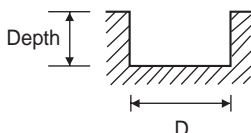


**CARBIDE, 2 FLUTE MINIATURE - SLOTTING**

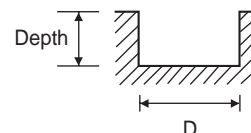
**EM959, EM810 SERIES**

MATERIAL	ALLOY STEELS TOOL STEELS		HARDENED STEELS	
HARDNESS	HRc30 ~ HRc45		HRc45 ~ HRc55	
STRENGTH	1000 ~ 1500N/mm <sup>2</sup>		1500 ~ 2000N/mm <sup>2</sup>	
DIAMETER	RPM	FEED	RPM	FEED
.016	30000	7.10	23000	3.90
.031	24000	11.80	18000	5.10
.040	20000	12.60	15000	5.90
.047	16000	12.60	12000	5.90
.062	12000	11.80	9000	5.50

D < .040  
Depth=0.15 × D  
D ≥ .040  
Depth=0.25 × D



D < .040  
Depth=0.02 × D  
D ≥ .040  
Depth=0.05 × D

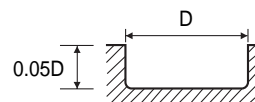
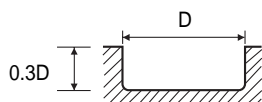


RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 2 FLUTE CORNER RADIUS - SLOTTING**

**EM636, EM637, EM211 SERIES**

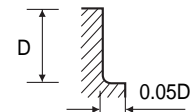
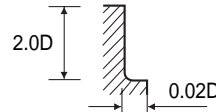
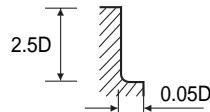
MATERIAL	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc65	
STRENGTH	~ 1000N/mm <sup>2</sup>		1000 ~ 1750N/mm <sup>2</sup>		1750 ~ 2000N/mm <sup>2</sup>		2000N/mm <sup>2</sup> ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	2630	4.90	2100	4.20	1370	2.00	1160	1.40
5/16	2000	5.30	1580	4.20	1050	2.00	840	1.40
3/8	1680	5.30	1370	4.20	840	2.00	670	1.40
1/2	1370	4.20	1160	3.80	700	1.50	550	1.00



RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 4 FLUTE CORNER RADIUS - SIDE CUTTING**
**EM639, EM649, EM212 SERIES**

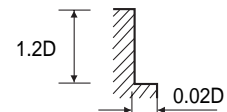
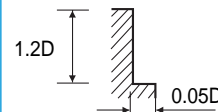
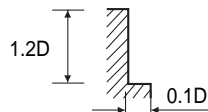
MATERIAL	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC50		HRC50 ~ HRC55		HRC55 ~ HRC65	
STRENGTH	~ 1000N/mm <sup>2</sup>		1000 ~ 1750N/mm <sup>2</sup>		1750 ~ 2000N/mm <sup>2</sup>		2000N/mm <sup>2</sup> ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	2630	8.50	2100	7.10	1370	3.30	1160	2.00
5/16	2000	9.00	1580	7.10	1050	3.30	840	2.00
3/8	1680	9.00	1370	7.10	840	3.30	670	2.00
1/2	1370	7.10	1160	6.30	700	2.80	550	1.50



RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 4 FLUTE 45° HELIX - SIDE CUTTING**
**EM102 SERIES**

MATERIAL	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		STAINLESS STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45				HRC45 ~ HRC55		HRC55 ~ HRC60	
STRENGTH	~ 1000N/mm <sup>2</sup>		1000 ~ 1500N/mm <sup>2</sup>				1500 ~ 2000N/mm <sup>2</sup>		2000N/mm <sup>2</sup> ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/8	3010	31.50	2610	14.30	1600	7.70	1400	5.30	1000	2.60
1/2	2260	27.00	1950	12.30	1200	6.30	1050	4.60	750	2.00
5/8	1800	22.60	1560	10.10	960	5.10	840	4.10	600	1.70
3/4	1500	19.00	1300	8.50	800	4.50	700	3.90	500	1.60
7/8	1290	16.10	1120	7.60	690	4.50	600	3.90	430	1.60



RPM = rev./min.  
FEED = inch/min.





**RECOMMENDED CUTTING CONDITIONS**

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

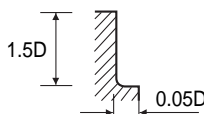
STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA

**CARBIDE, 4 FLUTE 45° HELIX CORNER RADIUS - SIDE CUTTING**

**EM103, EM905 SERIES**

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		STAINLESS STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45				HRC45 ~ HRC55		HRC55 ~ HRC65	
STRENGTH	~ 1000N/mm <sup>2</sup>		1000 ~ 1500N/mm <sup>2</sup>				1500 ~ 2000N/mm <sup>2</sup>		2000N/mm <sup>2</sup> ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/8	7690	79.00	7690	48.00	5680	36.00	5680	29.00	3840	19.00
1/2	5760	79.00	5760	48.00	4260	36.00	4260	29.00	2880	19.00
5/8	4600	71.00	4600	48.00	3410	36.00	3410	29.00	2300	19.00
3/4	3850	60.00	3850	48.00	2840	36.00	2840	29.00	1920	19.00
7/8	3300	51.00	3300	48.00	2430	36.00	2430	29.00	1650	19.00

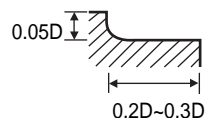
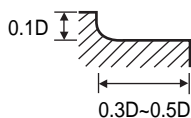


RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 4 FLUTE 45° HELIX CORNER RADIUS - CONTOURING**

**EM103, EM905 SERIES**

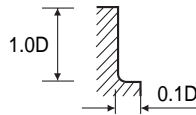
MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		STAINLESS STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45				HRC45 ~ HRC55		HRC55 ~ HRC65	
STRENGTH	~ 1000N/mm <sup>2</sup>		1000 ~ 1500N/mm <sup>2</sup>				1500 ~ 2000N/mm <sup>2</sup>		2000N/mm <sup>2</sup> ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/8	7690	45.00	5680	36.00	5680	31.00	5680	18.00	3840	11.00
1/2	5760	45.00	4260	36.00	4260	31.00	4260	18.00	2880	11.00
5/8	4600	45.00	3410	36.00	3410	31.00	3410	18.00	2300	11.00
3/4	4850	45.00	2840	36.00	2840	31.00	2840	18.00	1920	11.00
7/8	3300	45.00	2430	36.00	2430	31.00	2430	18.00	1650	11.00



RPM = rev./min.  
FEED = inch/min.

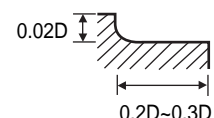
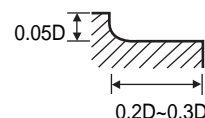
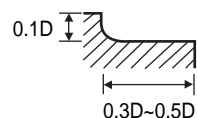
**CARBIDE, 4 FLUTE 55° HELIX CORNER RADIUS - SIDE CUTTING**
**EM965 SERIES**

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		STAINLESS STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	HRc30 ~ HRc40				HRc40 ~ HRc50		HRc50 ~ HRc65	
STRENGTH	1000 ~ 1250N/mm <sup>2</sup>				1250 ~ 1700N/mm <sup>2</sup>		1500N/mm <sup>2</sup> ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	21000	32.00	13000	21.00	13000	9.50	7300	9.50
3/16	18000	56.00	11000	33.00	11000	9.50	4800	9.50
1/4	13000	66.00	7500	40.00	7500	13.00	4200	9.50
5/16	9500	61.00	6500	39.00	6500	17.00	3200	9.50
3/8	7700	48.00	5700	39.00	5700	22.00	3850	12.00
1/2	5800	48.00	4260	39.00	4260	25.00	2900	15.00
5/8	4200	48.00	3100	39.00	3100	29.00	2100	19.00


 RPM = rev./min.  
 FEED = inch/min.

**CARBIDE, 4 FLUTE 55° HELIX CORNER RADIUS - CONTOURING**
**EM965 SERIES**

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		STAINLESS STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	HRc30 ~ HRc40				HRc40 ~ HRc50		HRc50 ~ HRc65	
STRENGTH	1000 ~ 1250N/mm <sup>2</sup>				1250 ~ 1700N/mm <sup>2</sup>		1500N/mm <sup>2</sup> ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	21000	24	13000	18	13000	6	7300	5.5
3/16	18000	42	11000	29	11000	6	4800	5.5
1/4	13000	50	7500	35	7500	8	4200	5.5
5/16	9500	46	6500	34	6500	10	3200	5.5
3/8	7700	36	5700	34	5700	12	3850	7.5
1/2	5800	36	4260	34	4260	15	2900	9.5
5/8	4200	36	3100	34	3100	18	2100	11.5


 RPM = rev./min.  
 FEED = inch/min.

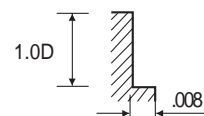
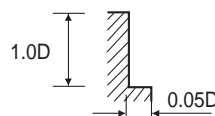
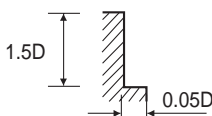
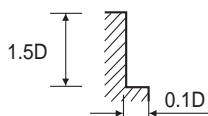


**CARBIDE, 6&8 FLUTE 45° HELIX LONG LENGTH - SIDE CUTTING**

**EM208, EM812 SERIES**

**■ NORMAL SPEED**

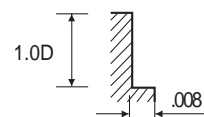
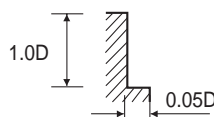
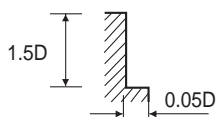
MATERIAL	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~HRc30		HRc30 ~ HRc50		HRc50 ~ HRc55		HRc60 ~ HRc65	
STRENGTH	~1000N/mm <sup>2</sup>		1000 ~ 1750N/mm <sup>2</sup>		1750 ~ 2080N/mm <sup>2</sup>		2080N/mm <sup>2</sup> ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	5560	79.00	3880	54.00	1580	8.25	1100	5.10
5/16	4200	79.00	2940	54.00	1160	8.25	840	5.10
3/8	3360	79.00	2320	54.00	1000	8.25	680	5.10
1/2	2840	66.00	2000	46.00	840	7.10	560	4.35
5/8	2100	50.00	1480	35.00	640	5.10	420	2.75
3/4	1680	40.00	1160	27.00	500	4.35	320	2.35
1	1260	25.00	870	17.50	375	3.00	240	1.54



RPM = rev./min.  
FEED = inch/min.

**■ HIGH SPEED**

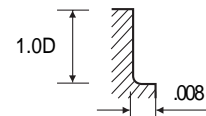
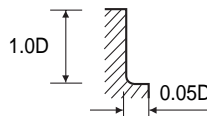
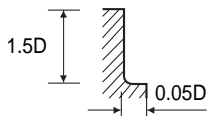
MATERIAL	CARBON STEELS TOOL STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~HRc50		HRc50 ~ HRc60		HRc60 ~	
STRENGTH	~1750N/mm <sup>2</sup>		1750N/mm <sup>2</sup>		1750N/mm <sup>2</sup> ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
1/4	16800	240.00	8400	120.00	4200	58.00
5/16	12600	240.00	6300	120.00	3160	58.00
3/8	9980	235.00	5040	120.00	2520	58.00
1/2	8400	199.00	4200	100.00	2100	50.00
5/8	6300	149.00	3160	75.00	1580	37.00
3/4	5040	120.00	2520	58.00	1260	30.00
1	3790	75.00	1890	38.00	950	19.00



RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 6&8 FLUTE 45° HELIX CORNER RADIUS - SIDE CUTTING**
**EM668, EM835 SERIES**
**■ HIGH SPEED**

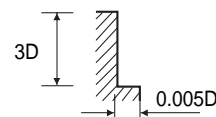
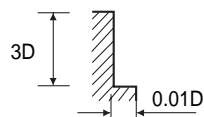
MATERIAL	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		HARDENED STEELS	
HARDNESS	~ HRC50		HRC50 ~ HRC60		HRC60 ~ HRC65	
STRENGTH	~ 1750N/mm <sup>2</sup>		1750 ~ 2080N/mm <sup>2</sup>		2080N/mm <sup>2</sup> ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
1/4	16800	240.00	8400	120.00	4200	58.00
5/16	12600	240.00	6300	120.00	3200	58.00
3/8	10000	235.00	5000	120.00	2500	58.00
1/2	8400	200.00	4200	100.00	2100	50.00
5/8	6300	150.00	3150	75.00	1600	37.00
3/4	5000	120.00	2500	58.00	1260	30.00



RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 6&8 FLUTE 45° HELIX EXTRA LONG LENGTH - SIDE CUTTING**
**EM218, EM812, EM834 SERIES**

MATERIAL	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 <sup>2</sup>		1250 ~ 1750N/mm <sup>2</sup>		1750 ~ 2080N/mm <sup>2</sup>		2080N/mm <sup>2</sup> ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	2230	19.00	1670	14.00	1390	10.00	1110	8.00
5/16	1670	18.00	1250	13.00	1050	9.50	840	7.00
3/8	1330	17.00	1000	12.00	840	9.00	680	6.30
1/2	1110	16.00	840	11.00	690	8.50	560	6.00
5/8	840	13.00	630	9.00	530	6.50	420	5.00
3/4	670	11.00	500	8.00	420	6.00	320	4.70
1	540	9.50	400	6.50	340	5.00	270	3.70



RPM = rev./min.  
FEED = inch/min.

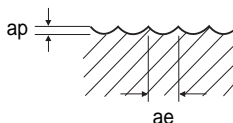
**CARBIDE, 2 FLUTE BALL NOSE**

**EM209, EM876, EM813, EM824 SERIES**

**■ NORMAL SPEED**

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC40		HRC45 ~ HRC65	
STRENGTH	~ 1000N/mm <sup>2</sup>		1000 ~ 1250N/mm <sup>2</sup>		1500N/mm <sup>2</sup> ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/64 × 1/32	15760	9.80	12720	7.80	5800	3.50
R1/32 × 1/16	15760	13.80	12140	10.60	5320	4.70
R3/64 × 3/32	14400	29.50	10700	19.30	4680	5.90
R1/16 × 1/8	13100	26.70	10000	18.10	4520	5.90
R3/32 × 3/16	9140	32.30	7300	22.80	3680	7.10
R1/8 × 1/4	7780	33.00	6300	24.80	3160	7.50
R5/32 × 5/16	5260	37.50	4420	26.00	2100	7.50
R3/16 × 3/8	4620	40.10	3780	28.00	1780	7.50
R1/4 × 1/2	3780	35.40	2940	26.00	1360	7.50
R5/16 × 5/8	2740	36.20	2320	26.00	1160	7.50
R3/8 × 3/4	2100	33.00	1900	25.00	840	7.50

ap: D1/32~D1/4 =.008"  
D5/16~D3/4=.012"  
ae: 0.2×D



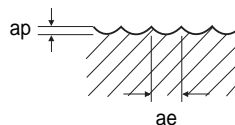
ap: D1/32~D1/4 =.008"  
D5/16~D3/4 =.012"  
ae: 0.1×D

RPM = rev./min.  
FEED = inch/min.

**■ HIGH SPEED**

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		HARDENED STEELS	
HARDNESS	~ HRC45		HRC45 ~ HRC65	
STRENGTH	~ 1500N/mm <sup>2</sup>		1500N/mm <sup>2</sup> ~	
DIAMETER	RPM	FEED	RPM	FEED
R1/64 × 1/32	25000	25.60	25000	15.70
R1/32 × 1/16	23000	27.50	23000	16.90
R3/64 × 3/32	21000	34.60	19000	19.30
R1/16 × 1/8	21000	39.40	17000	20.50
R3/32 × 3/16	21000	70.90	12000	23.60
R1/8 × 1/4	21000	90.90	10500	24.80
R5/32 × 5/16	15760	111.80	7880	29.10
R3/16 × 3/8	13660	120.00	6300	33.00
R1/4 × 1/2	10500	103.50	5260	33.00
R5/16 × 5/8	8200	103.50	3780	28.00
R3/8 × 3/4	6300	99.00	2940	20.80

ap: D1/32~D1/4 =.008"  
D5/16~D3/4=.012"  
ae: 0.05×D

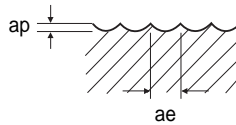


RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 4 FLUTE BALL NOSE**
**EM210, EM815, EM825 SERIES**
**■ NORMAL SPEED**

MATERIAL	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		HARDENED STEELS	
	~ HRC30		HRC30 ~ HRC40		HRC45 ~ HRC65	
STRENGTH	~ 1000N/mm <sup>2</sup>		1000 ~ 1250N/mm <sup>2</sup>		1500N/mm <sup>2</sup> ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	13100	40.10	10000	27.00	4520	8.85
R3/32 × 3/16	9140	48.50	7300	34.00	3680	10.50
R1/8 × 1/4	7780	49.50	6300	37.00	3160	11.25
R5/32 × 5/16	5260	56.00	4420	39.00	2100	11.25
R3/16 × 3/8	4620	60.00	3780	42.00	1780	11.25
R1/4 × 1/2	3780	53.00	2940	39.00	1360	11.25
R5/16 × 5/8	2740	54.50	2320	38.50	1160	11.25

ap: D1/8~D1/4 =.008"  
D5/16~D5/8=.012"  
ae: 0.2 × D



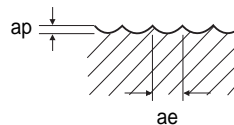
ap: D1/8~D1/4 =.008"  
D5/16~D5/8 =.012"  
ae: 0.1 × D

RPM = rev./min.  
FEED = inch/min.

**■ HIGH SPEED**

MATERIAL	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS	
	~ HRC45		HRC45 ~ HRC65	
STRENGTH	~ 1500N/mm <sup>2</sup>		1500N/mm <sup>2</sup> ~	
DIAMETER	RPM	FEED	RPM	FEED
R1/16 × 1/8	21000	59.00	17000	30.50
R3/32 × 3/16	21000	106.25	12000	35.50
R1/8 × 1/4	21000	136.50	10500	37.00
R5/32 × 5/16	15760	167.50	7880	43.50
R3/16 × 3/8	13660	180.00	6300	49.50
R1/4 × 1/2	10500	155.50	5260	49.50
R5/16 × 5/8	8200	155.50	3780	42.00

ap: D1/8~D1/4 =.008"  
D5/16~D5/8=.012"  
ae: 0.05 × D



RPM = rev./min.  
FEED = inch/min.



**CARBIDE, 2 FLUTE MEDIUM LENGTH BALL NOSE**

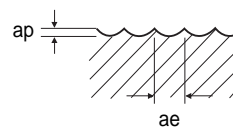
**EM961, EM899 SERIES**

**■ NORMAL SPEED**

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	HRc30 ~ HRc40		HRc45 ~ HRc50		HRc50 ~ HRc55	
STRENGTH	1000 ~ 1250N/mm <sup>2</sup>		1500 ~ 1750N/mm <sup>2</sup>		1750 ~ 2000N/mm <sup>2</sup>	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	10000	18.10	12700	43.30	12300	41.30
R3/32 × 3/16	7300	22.80	9400	43.30	9050	41.30
R1/8 × 1/4	6300	24.80	8600	45.30	8250	43.30
R5/32 × 5/16	4420	26.00	7000	41.30	6700	39.40
R3/16 × 3/8	3780	28.00	6050	39.40	5800	37.80
R1/4 × 1/2	2940	26.00	5450	39.40	5200	37.80
R5/16 × 5/8	2320	26.00	4350	34.30	4150	32.70
R3/8 × 3/4	1900	25.00	3500	27.20	3300	25.60
R1/2 × 1	1520	25.00	2800	27.20	2650	25.60

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



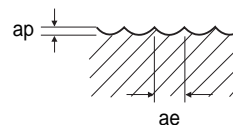
RPM = rev./min.  
FEED = inch/min.

**■ HIGH SPEED**

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRc45		HRc45 ~ HRc50		HRc50 ~ HRc55	
STRENGTH	1000 ~ 1250N/mm <sup>2</sup>		1500 ~ 1750N/mm <sup>2</sup>		1750 ~ 2000N/mm <sup>2</sup>	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	21000	39.40	12700	68.90	12300	65.70
R3/32 × 3/16	21000	70.90	9400	65.00	9050	61.80
R1/8 × 1/4	21000	90.90	8600	69.00	8250	65.70
R5/32 × 5/16	15760	111.80	7000	61.00	6700	57.50
R3/16 × 3/8	13660	120.10	6050	57.10	5800	53.50
R1/4 × 1/2	10500	103.50	5450	55.90	5200	52.40
R5/16 × 5/8	8200	103.50	4350	48.40	4150	44.50
R3/8 × 3/4	6300	99.20	3500	39.40	3300	35.40
R1/2 × 1	5040	99.20	2800	39.40	2650	35.40

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

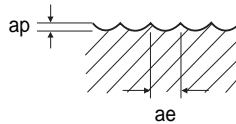


RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 2 FLUTE LONG REACH BALL NOSE**
**EM962, EM838 SERIES**
**■ NORMAL SPEED**

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
	~ HRc30		HRc30 ~ HRc40		HRc45 ~ HRc65	
HARDNESS						
STRENGTH	~ 1000N/mm <sup>2</sup>		1000 ~ 1250N/mm <sup>2</sup>		1500N/mm <sup>2</sup> ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R3/64 × 3/32	12600	16.50	9250	10.20	3870	3.50
R1/16 × 1/8	10500	21.30	8000	14.60	3620	4.70
R3/32 × 3/16	7310	26.00	5840	18.10	2940	5.50
R1/8 × 1/4	6220	26.40	5040	19.70	2530	5.90
R5/32 × 5/16	4210	29.90	3540	20.70	1680	5.90
R3/16 × 3/8	3700	32.30	3020	22.40	1420	5.90
R1/4 × 1/2	3020	28.30	2350	20.90	1090	5.90
R5/16 × 5/8	2190	29.10	1860	20.50	930	5.90
R3/8 × 3/4	1680	26.40	1520	19.70	670	5.90

ap: D3/32~D1/4 =.008"  
D5/16~D3/4=.012"  
ae: 0.2×D



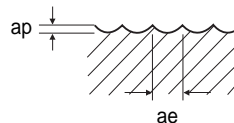
ap: D3/32~D1/4 =.008"  
D5/16~D3/4 =.012"  
ae: 0.1×D

RPM = rev./min.  
FEED = inch/min.

**■ HIGH SPEED**

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		HARDENED STEELS	
	~ HRc45		HRc45 ~ HRc65	
HARDNESS				
STRENGTH	~ 1500N/mm <sup>2</sup>		1500N/mm <sup>2</sup> ~	
DIAMETER	RPM	FEED	RPM	FEED
R3/64 × 3/32	16800	23.20	16800	15.00
R1/16 × 1/8	16800	31.50	13600	16.50
R3/32 × 3/16	16800	56.70	9600	18.90
R1/8 × 1/4	16800	72.80	8400	19.70
R5/32 × 5/16	12610	89.40	6300	23.20
R3/16 × 3/8	10930	96.10	5040	26.40
R1/4 × 1/2	8400	82.70	4210	26.40
R5/16 × 5/8	6560	82.70	3020	22.40
R3/8 × 3/4	5040	79.50	2350	16.50

ap: D3/32~D1/4 =.008"  
D5/16~D3/4=.012"  
ae: 0.05×D



RPM = rev./min.  
FEED = inch/min.





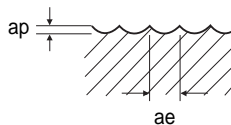
**CARBIDE, 2 FLUTE BALL NOSE for OVER HRc55**

**EM109, EM868 SERIES**

**■ NORMAL SPEED**

MATERIAL	HARDENED STEELS		HARDENED STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	HRc45 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc60		HRc60 ~ HRc70	
STRENGTH	1500 ~ 1750N/mm <sup>2</sup>		1750 ~ 2000N/mm <sup>2</sup>		2000 ~ 2080N/mm <sup>2</sup>		2080N/mm <sup>2</sup> ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	12700	43.30	12300	41.30	11800	39.40	8400	26.00
R3/32 × 3/16	9400	43.30	9050	41.30	8600	37.40	5600	26.80
R1/8 × 1/4	8600	45.30	8250	43.30	7850	37.40	4850	27.60
R5/32 × 5/16	7000	41.30	6700	39.40	6350	37.40	3800	25.60
R3/16 × 3/8	6050	39.40	5800	37.80	5450	35.40	3200	24.40
R1/4 × 1/2	5450	39.40	5200	37.80	4900	35.40	2750	24.00
R5/16 × 5/8	4350	34.30	4150	32.70	3900	32.30	2150	10.40
R3/8 × 3/4	3500	27.20	3300	25.60	3150	24.80	1700	8.70
R1/2 × 1	2800	27.20	2650	25.60	2520	24.80	1360	8.70

ap: D1/8 = .006"  
 D3/16 ~ D5/16 = .010"  
 D3/8 ~ D1 = .012"  
 ae: 0.1 × D

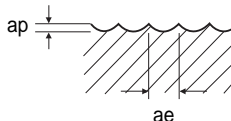


RPM = rev./min.  
 FEED = inch/min.

**■ HIGH SPEED**

MATERIAL	HARDENED STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	HRc45 ~ HRc50		HRc50 ~ HRc55		HRc55 ~ HRc70	
STRENGTH	1500 ~ 1750N/mm <sup>2</sup>		1750 ~ 2000N/mm <sup>2</sup>		2000 ~ 2080N/mm <sup>2</sup>	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	12700	68.90	12300	65.70	11800	33.90
R3/32 × 3/16	9400	65.00	9050	61.80	8600	29.50
R1/8 × 1/4	8600	68.90	8250	65.70	7850	27.60
R5/32 × 5/16	7000	61.00	6700	57.50	6350	25.60
R3/16 × 3/8	6050	57.10	5800	53.50	5450	24.40
R1/4 × 1/2	5450	55.90	5200	52.40	4900	24.00
R5/16 × 5/8	4350	48.40	4150	44.50	3900	10.40
R3/8 × 3/4	3500	39.40	3300	35.40	3150	8.70
R1/2 × 1	2800	39.40	2640	35.40	2520	8.70

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	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	HRc30 ~ HRc40		HRc45 ~ HRc50		HRc50 ~ HRc55	
STRENGTH	1000 ~ 1250N/mm <sup>2</sup>		1250 ~ 1750N/mm <sup>2</sup>		1750 ~ 2000N/mm <sup>2</sup>	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/32 × 1/16	97000	8.30	13800	19.90	13600	17.90
R1/16 × 1/8	8000	14.60	10200	34.60	9800	33.50
R3/32 × 3/16	5840	18.10	7500	34.60	7200	33.50
R1/8 × 1/4	5040	19.70	6900	36.20	6500	34.60
R5/32 × 5/16	3540	20.90	5600	33.10	5300	31.50
R3/16 × 3/8	3020	22.40	4850	31.50	4650	30.30
R1/4 × 1/2	2350	20.90	4350	31.50	4150	30.30

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	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRc45		HRc45 ~ HRc50		HRc50 ~ HRc55	
STRENGTH	1500N/mm <sup>2</sup>		1250 ~ 1750N/mm <sup>2</sup>		1750 ~ 2000N/mm <sup>2</sup>	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/32 × 1/16	18400	21.90	13800	28.90	13600	30.10
R1/16 × 1/8	16800	31.50	10200	55.10	9800	51.20
R3/32 × 3/16	16800	56.70	7500	52.00	7200	49.20
R1/8 × 1/4	16800	72.80	6900	55.10	6500	53.10
R5/32 × 5/16	12600	89.40	5600	49.20	5300	45.30
R3/16 × 3/8	10930	96.10	4850	45.30	4650	43.30
R1/4 × 1/2	8400	82.70	4350	44.50	4150	41.30

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.

 CBN  
 END MILL

 i-Xmill  
 END MILL

 X5070  
 END MILLS

 X-SPEED  
 ROUGHER  
 END MILLS

**X-POWER  
 END MILLS**

 JET-POWER  
 END MILLS

 V7 Mill STEEL  
 END MILLS

 V7 Mill INOX  
 END MILLS

 ALU-POWER  
 END MILLS

 D-POWER  
 END MILLS

 STANDARD  
 CARBIDE  
 END MILLS

 TANK-POWER  
 END MILLS

 STANDARD  
 COBALT  
 & HSS  
 END MILLS

 TECHNICAL  
 DATA

**CARBIDE, 2 FLUTE BALL NOSE with PENCIL NECK**

**EM979 SERIES**

**■ NORMAL SPEED**

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	HRc30 ~ HRc40		HRc45 ~ HRc50		HRc50 ~ HRc55	
STRENGTH	1000 ~ 1250N/mm <sup>2</sup>		1250 ~ 1750N/mm <sup>2</sup>		1750 ~ 2000N/mm <sup>2</sup>	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R3/32 × 3/16	4670	14.50	6000	27.70	5760	26.80
R1/8 × 1/4	4030	15.80	5520	29.00	5200	27.70
R5/32 × 5/16	2830	16.70	4480	26.50	4240	25.20
R3/16 × 3/8	2420	17.90	3880	25.20	3720	24.20
R1/4 × 1/2	1880	16.70	3480	25.20	3320	24.20

<p>ap: D3/16-D1/4 = .008" D5/16-D1/2 = .012" ae: 0.2 × D</p>	<p>ap: D3/16-D5/16 = .010" D3/8-D1/2 = .012" ae: 0.1 × D</p>	
--	--	--

RPM = rev./min.  
FEED = inch/min.

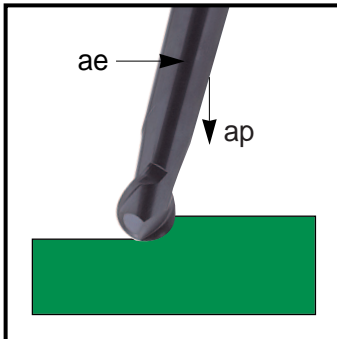
**■ HIGH SPEED**

MATERIAL	ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRc45		HRc45 ~ HRc50		HRc50 ~ HRc55	
STRENGTH	1500N/mm <sup>2</sup>		1250 ~ 1750N/mm <sup>2</sup>		1750 ~ 2000N/mm <sup>2</sup>	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R3/32 × 3/16	13440	45.40	6000	41.60	5760	39.40
R1/8 × 1/4	13440	58.20	5520	44.10	5200	42.50
R5/32 × 5/16	10080	71.50	4480	39.40	4240	36.20
R3/16 × 3/8	8740	76.90	3880	36.30	3720	34.60
R1/4 × 1/2	6720	66.20	3480	35.60	3320	33.00

<p>ap: D3/16-D1/4 = .008" D5/16-D1/2 = .012" ae: 0.05 × D</p>	<p>ap: D3/16-D5/16 = .010" D3/8-D1/2 = .012" ae: 0.05 × D</p>	
---	---	--

RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 2 FLUTE BALL NOSE - MMC**


# RECOMMENDED CUTTING CONDITIONS

- ▶  $ap=0.02 \times D1$
- ▶  $ae=0.05 \times D1$

## EM084, EM096, EM669, EM863 SERIES

### ■ NORMAL SPEED

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOYED STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
	~HRc30		HRc30 ~ HRc40		HRc45 ~ HRc65	
STRENGTH	~1000N/mm <sup>2</sup>		1000 ~ 1250N/mm <sup>2</sup>		1500N/mm <sup>2</sup>	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	35000	110.20	33000	102.40	12000	35.43
R5/64 × 5/32	26000	90.55	25000	86.61	9000	31.50
R3/32 × 3/16	21000	82.68	20000	78.74	7000	27.56
R1/8 × 1/4	17000	74.80	16000	70.87	6000	25.60
R5/32 × 5/16	13000	66.93	12000	62.99	4500	21.65
R3/16 × 3/8	10500	57.09	10000	55.12	3500	19.69
R1/4 × 1/2	9000	55.12	8000	51.18	3000	17.72
R5/16 × 5/8	6000	47.24	5500	43.31	2000	15.75

RPM = rev./min.  
FEED = inch/min.

### ■ NORMAL SPEED

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOYED STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
	~HRc30		HRc30 ~ HRc40		HRc45 ~ HRc65	
STRENGTH	~1000N/mm <sup>2</sup>		1000 ~ 1250N/mm <sup>2</sup>		1500N/mm <sup>2</sup>	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	47000	145.70	44000	137.80	17000	55.12
R5/64 × 5/32	35000	126.00	33000	118.10	13000	47.24
R3/32 × 3/16	28000	110.20	27000	102.40	10000	43.31
R1/8 × 1/4	23000	102.40	22000	94.49	8000	37.40
R5/32 × 5/16	18000	90.55	17000	82.68	6000	33.46
R3/16 × 3/8	14000	78.74	13000	74.80	5000	29.53
R1/4 × 1/2	12000	70.87	11000	70.87	4000	27.56
R5/16 × 5/8	9000	62.99	8000	59.06	3300	23.62

RPM = rev./min.  
FEED = inch/min.

 CBN  
END MILL

 i-Xmill  
END MILL

 X5070  
END MILLS

 X-SPEED  
ROUGHER  
END MILLS

 X-POWER  
END MILLS

 JET-POWER  
END MILLS

 V7 Mill STEEL  
END MILLS

 V7 Mill INOX  
END MILLS

 ALU-POWER  
END MILLS

 D-POWER  
END MILLS

 STANDARD  
CARBIDE  
END MILLS

 TANK-POWER  
END MILLS

 STANDARD  
COBALT  
& HSS  
END MILLS

 TECHNICAL  
DATA



**CARBIDE, 4 FLUTE BALL NOSE - MMC**

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

**X-POWER  
END MILLS**

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

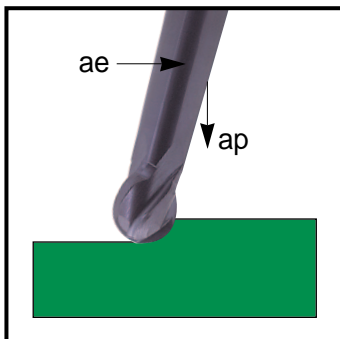
D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA



**RECOMMENDED  
CUTTING  
CONDITIONS**

- ▶  $ap=0.02 \times D1$
- ▶  $ae=0.05 \times D1$

**EM093, EM097, EM673, EM864 SERIES**

**■ NORMAL SPEED**

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOYED STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~HRC30		HRC30 ~ HRC40		HRC45 ~ HRC65	
STRENGTH	~1000N/mm <sup>2</sup>		1000 ~ 1250N/mm <sup>2</sup>		1500N/mm <sup>2</sup>	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R3/32 × 3/16	21000	157.50	20000	157.50	7000	55.12
R1/8 × 1/4	17000	157.50	16000	137.80	6000	51.18
R5/32 × 5/16	13000	137.80	12000	118.10	4500	43.31
R3/16 × 3/8	10500	118.10	10000	98.43	3500	39.37
R1/4 × 1/2	9000	110.20	8000	98.43	3000	37.40
R5/16 × 5/8	6000	110.20	5500	86.61	2000	31.50

RPM = rev./min.  
FEED = inch/min.

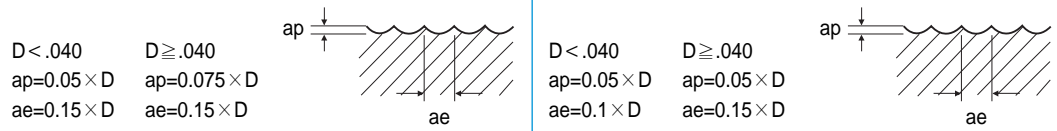
**■ NORMAL SPEED**

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOYED STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
HARDNESS	~HRC30		HRC30 ~ HRC40		HRC45 ~ HRC65	
STRENGTH	~1000N/mm <sup>2</sup>		1000 ~ 1250N/mm <sup>2</sup>		1500N/mm <sup>2</sup>	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
R3/32 × 3/16	28000	220.50	27000	208.70	11000	82.68
R1/8 × 1/4	23000	200.10	22000	192.90	9000	74.80
R5/32 × 5/16	18000	181.10	17000	169.30	7000	66.93
R3/16 × 3/8	14000	153.50	13000	145.70	5000	55.12
R1/4 × 1/2	12000	145.70	11000	137.80	4500	51.18
R5/16 × 5/8	9000	122.00	8000	118.10	3300	43.31

RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 2 FLUTE MINIATURE BALL NOSE**
**EM960, EM865 SERIES**

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		HARDENED STEELS	
HARDNESS	HRc30 ~ HRc45		HRc45 ~ HRc55	
STRENGTH	1000 ~ 1500N/mm <sup>2</sup>		1500 ~ 2000N/mm <sup>2</sup>	
DIAMETER	RPM	FEED	RPM	FEED
R.012 × .024	30000	23.60	30000	11.80
R.0155 × .031	27000	25.60	27000	15.00
R.020 × .040	25000	25.60	25000	15.70
R.0235 × .047	24000	26.40	24000	16.50
R.031 × .062	23000	27.60	23000	16.90


 RPM = rev./min.  
 FEED = inch/min.

**CARBIDE, MULTI FLUTE ROUGHING - SIDE CUTTING**
**EM666, EM156, EM832, EM814 SERIES**

MATERIAL	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 <sup>2</sup>		1000 ~ 1200N/mm <sup>2</sup>		1200 ~ 1400N/mm <sup>2</sup>		1400 ~ 2000N/mm <sup>2</sup>		2000N/mm <sup>2</sup> ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	15600	91.35	12400	33.10	8400	22.45	3400	10.25	2400	7.50
5/16	11600	91.35	9200	33.10	6300	22.45	2400	9.50	1800	7.10
3/8	9200	91.35	7600	33.10	5100	22.45	2000	11.40	1300	7.50
1/2	8000	94.50	6000	31.50	4200	22.45	1680	10.25	1200	7.50
5/8	6000	94.50	4800	29.90	3300	20.05	1200	6.30	800	4.35
3/4	5200	91.35	4400	28.35	2700	16.55	1100	5.90	700	3.95
1	4800	85.05	3600	22.05	2400	14.15	1000	5.90	660	3.95


 RPM = rev./min.  
 FEED = inch/min.

 CBN  
 END MILL

 i-Xmill  
 END MILL

 X5070  
 END MILLS

 X-SPEED  
 ROUGHER  
 END MILLS

**X-POWER**  
 END MILLS

 JET-POWER  
 END MILLS

 V7 Mill STEEL  
 END MILLS

 V7 Mill INOX  
 END MILLS

 ALU-POWER  
 END MILLS

 D-POWER  
 END MILLS

 STANDARD  
 CARBIDE  
 END MILLS

 TANK-POWER  
 END MILLS

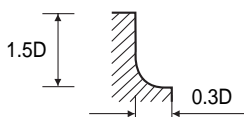
 STANDARD  
 COBALT  
 & HSS  
 END MILLS

 TECHNICAL  
 DATA

**CARBIDE, MULTI FLUTE ROUGHING BALL NOSE - SIDE CUTTING**

**EM662, EM833 SERIES**

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
	~ HRC30		HRC30 ~ HRC38		HRC38 ~ HRC45		HRC45 ~ HRC55		HRC55 ~ HRC65	
STRENGTH	~ 1000N/mm <sup>2</sup>		1000 ~ 1200N/mm <sup>2</sup>		1200 ~ 1400N/mm <sup>2</sup>		1400 ~ 2000N/mm <sup>2</sup>		2000N/mm <sup>2</sup> ~	
DIAMETER	RPM	RPM	RPM	RPM	RPM	RPM	RPM	RPM	RPM	RPM
R1/8 × 1/4	15600	91.30	12400	33.00	8400	22.40	3400	10.20	2400	7.50
R5/32 × 5/16	11600	91.30	9200	33.00	6300	22.40	2400	9.40	1800	7.10
R3/16 × 3/8	9200	91.30	7600	33.00	5100	22.40	2000	11.40	1300	7.50
R1/4 × 1/2	8000	94.50	6000	31.50	4200	22.40	1680	10.20	1200	7.50
R5/16 × 5/8	6000	94.50	4800	29.90	3300	20.10	1200	6.30	800	4.30
R3/8 × 3/4	4800	85.00	3600	22.00	2400	14.10	1000	5.90	660	3.90



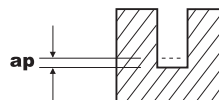
RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 2 FLUTE FINISH for RIB PROCESSING**

**EM966, EM883 SERIES**

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
	~ HRC30			HRC30 ~ HRC45			HRC45 ~ HRC55		
STRENGTH	~ 1000N/mm <sup>2</sup>			1000 ~ 1500N/mm <sup>2</sup>			1500 ~ 2000N/mm <sup>2</sup>		
DIAMETER	RPM	FEED	ap (mm)	RPM	FEED	ap (mm)	RPM	FEED	ap (mm)
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)

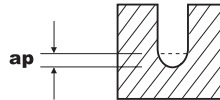


RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING**
**EM967, EM886 SERIES**

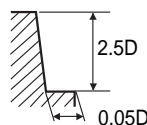
MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON			ALLOY STEELS HEAT RESISTANT STEELS			HARDENED STEELS		
HARDNESS	~ HRC30			HRC30 ~ HRC45			HRC45 ~ HRC55		
STRENGTH	~ 1000N/mm <sup>2</sup>			1000 ~ 1500N/mm <sup>2</sup>			1500 ~ 2000N/mm <sup>2</sup>		
DIAMETER	RPM	FEED	ap (mm)	RPM	FEED	ap (mm)	RPM	FEED	ap (mm)
R1/64 × 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 × 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 × 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 × 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 × 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 × 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	NON-ALLOYED STEELS ALLOY STEELS		ALLOY STEELS HEAT RESISTANT STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45	
STRENGTH	~ 1000N/mm <sup>2</sup>		1000 ~ 1500N/mm <sup>2</sup>	
DIAMETER	RPM	FEED	RPM	FEED
2.0	8400	6.69	6300	4.92
3.0	4410	4.72	3570	3.94
4.0	3570	5.51	2840	4.53
5.0	3050	7.09	2410	5.71
6.0	2630	8.27	2100	6.69
8.0	2000	9.84	1580	7.09


 RPM = rev./min.  
 FEED = inch/min.

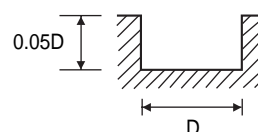
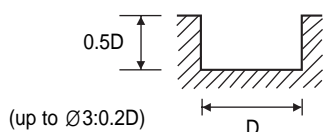




**CARBIDE, 3 FLUTE - SLOTTING**

**EM895 SERIES**

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		STAINLESS STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45				HRC45 ~ HRC55		HRC55 ~ HRC65	
STRENGTH	~ 1000N/mm <sup>2</sup>		1000 ~ 1500N/mm <sup>2</sup>				1500 ~ 2000N/mm <sup>2</sup>		2000N/mm <sup>2</sup> ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	11560	6.69	7560	4.33	6300	3.15	5040	1.18		
3.0	8920	7.48	5560	5.12	4620	4.33	3360	1.38	1900	1.57
4.0	7560	10.63	4620	6.30	3880	5.12	2940	1.38	1480	1.38
5.0	6300	11.02	3780	6.69	3160	5.51	2320	1.77	1260	1.38
6.0	5560	12.20	3360	7.87	2840	6.30	2000	1.97	1100	1.38
8.0	4200	13.39	2520	7.09	2100	6.30	1680	2.56	840	1.38
10.0	3260	11.81	2000	5.51	1680	5.71	1360	2.17	680	1.18
12.0	2740	9.84	1680	4.72	1360	4.72	1160	1.97	560	1.18
16.0	2200	7.87	1360	3.94	1060	3.94	900	1.38	440	0.79
18.0	1940	6.89	1210	3.35	950	3.35	790	1.18	380	0.79
20.0	1680	5.91	1060	2.76	840	2.76	680	0.98	320	0.79

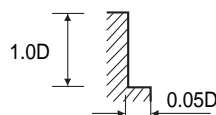


RPM = rev./min. FEED = inch/min.

**CARBIDE, 3 FLUTE - SIDE CUTTING**

**EM895 SERIES**

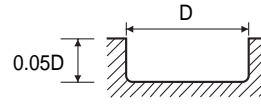
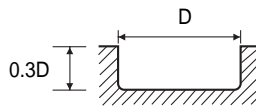
MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		STAINLESS STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45				HRC45 ~ HRC55		HRC55 ~ HRC65	
STRENGTH	~ 1000N/mm <sup>2</sup>		1000 ~ 1500N/mm <sup>2</sup>				1500 ~ 2000N/mm <sup>2</sup>		2000N/mm <sup>2</sup> ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	11560	8.27	7560	5.51	6300	4.53	5040	1.18		
3.0	8920	9.45	5560	5.91	4620	4.92	3360	1.57	1900	1.77
4.0	7560	16.93	4620	10.24	3880	8.27	2940	1.77	1480	1.77
5.0	6300	17.72	3780	10.63	3160	9.06	2320	2.17	1260	1.77
6.0	5560	19.69	3360	12.20	2840	9.84	2000	2.36	1100	1.77
8.0	4200	20.87	2520	11.42	2100	10.43	1680	3.15	840	1.77
10.0	3260	18.11	2000	9.06	1680	9.06	1360	2.76	680	1.38
12.0	2740	15.35	1680	7.48	1360	7.09	1160	2.36	560	1.38
16.0	2200	12.20	1360	5.91	1060	5.91	900	1.77	440	0.79
18.0	1940	11.02	1210	5.31	950	5.12	790	1.38	380	0.79
20.0	1680	9.45	1060	4.72	840	4.53	680	1.18	320	0.79



RPM = rev./min. FEED = inch/min.

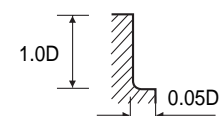
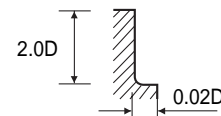
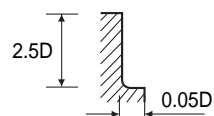
**CARBIDE, 2 FLUTE LONG CORNER RADIUS - SLOTTING**
**EM818** SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45		HRC45 ~ HRC55		HRC55 ~ HRC65	
STRENGTH	~ 1000N/mm <sup>2</sup>		1000 ~ 1500N/mm <sup>2</sup>		1500 ~ 2000N/mm <sup>2</sup>		2000N/mm <sup>2</sup> ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3.0	6620	5.51	4280	2.76	2640	1.38	1870	0.71
4.0	5360	6.69	3410	3.35	2150	1.57	1470	0.79
5.0	4580	8.27	2900	3.94	1900	1.97	1260	0.98
6.0	3950	9.84	2520	4.92	1640	2.36	1160	1.38
8.0	3000	10.63	1900	4.92	1260	2.36	840	1.38
10.0	2520	10.63	1640	4.92	1010	2.36	670	1.38
12.0	2060	8.27	1390	4.53	840	1.97	550	0.98
16.0	1740	7.48	1070	3.54	670	1.57	440	0.79
20.0	1260	5.51	820	2.36	500	1.18	340	0.59


 RPM = rev./min.  
 FEED = inch/min.

**CARBIDE, 4 FLUTE LONG CORNER RADIUS - SIDE CUTTING**
**EM819** SERIES

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRC30		HRC30 ~ HRC45		HRC45 ~ HRC55		HRC55 ~ HRC65	
STRENGTH	~ 1000N/mm <sup>2</sup>		1000 ~ 1500N/mm <sup>2</sup>		1500 ~ 2000N/mm <sup>2</sup>		2000N/mm <sup>2</sup> ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3.0	6620	6.69	4280	5.12	2640	2.56	1870	1.18
4.0	5360	8.27	3410	5.91	2150	2.76	1470	1.38
5.0	4580	8.46	2900	7.09	1900	3.35	1260	1.57
6.0	3950	8.46	2520	7.09	1640	3.35	1160	1.97
8.0	3000	9.06	1900	7.09	1260	3.35	840	1.97
10.0	2520	9.06	1640	7.09	1010	3.35	670	1.97
12.0	2060	7.09	1390	6.30	840	2.76	550	1.57
16.0	1740	6.30	1070	4.92	670	2.36	440	1.38
20.0	1260	4.53	820	3.54	500	1.77	340	0.98


 RPM = rev./min.  
 FEED = inch/min.

 CBN  
END MILL

 i-Xmill  
END MILL

 X5070  
END MILLS

 X-SPEED  
ROUGHER  
END MILLS

**X-POWER  
END MILLS**

 JET-POWER  
END MILLS

 V7 Mill STEEL  
END MILLS

 V7 Mill INOX  
END MILLS

 ALU-POWER  
END MILLS

 D-POWER  
END MILLS

 STANDARD  
CARBIDE  
END MILLS

 TANK-POWER  
END MILLS

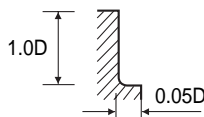
 STANDARD  
COBALT  
& HSS  
END MILLS

 TECHNICAL  
DATA

**CARBIDE, 4 FLUTE STUB CORNER RADIUS - SIDE CUTTING**

**EM839 SERIES**

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc65	
STRENGTH	~ 1000N/mm <sup>2</sup>		1000 ~ 1500N/mm <sup>2</sup>		1500 ~ 2000N/mm <sup>2</sup>		2000N/mm <sup>2</sup> ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	13870	13.39	9070	8.07	6050	2.36		
2.5	12290	14.17	7870	8.66	5040	2.56		
3.0	10700	15.16	6670	9.45	4030	2.76	2280	2.76
3.5	9890	21.06	6100	12.99	3780	2.76	2030	2.76
4.0	9070	26.97	5540	16.54	3530	2.76	1780	2.76
5.0	7560	28.35	4540	16.93	2780	3.35	1510	2.76
6.0	6670	31.10	4030	19.29	2400	3.74	1320	2.76
8.0	5040	33.46	3020	17.91	2020	5.12	1010	2.76
10.0	3910	28.74	2400	14.17	1630	4.33	820	2.36
12.0	3290	24.61	2020	11.81	1390	3.74	670	2.36
16.0	2640	19.29	1630	9.45	1080	2.76	530	1.38

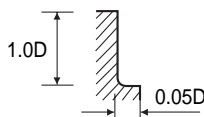


RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 6 FLUTE STUB CORNER RADIUS - SIDE CUTTING**

**EM897 SERIES**

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
HARDNESS	~ HRc30		HRc30 ~ HRc45		HRc45 ~ HRc55		HRc55 ~ HRc65	
STRENGTH	~ 1000N/mm <sup>2</sup>		1000 ~ 1500N/mm <sup>2</sup>		1500 ~ 2000N/mm <sup>2</sup>		2000N/mm <sup>2</sup> ~	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6.0	6670	31.10	4030	19.29	2400	3.74	1320	2.76
8.0	5040	33.46	3020	17.91	2020	5.12	1010	2.76
10.0	3910	28.74	2400	14.17	1630	4.33	820	2.36
12.0	3290	24.61	2020	11.81	1390	3.74	670	2.36



RPM = rev./min.  
FEED = inch/min.



Being the best through innovation
















# CARBIDE



# JET-POWER

- Exotic materials like Stainless Steels, Nickel alloys and Titanium

# SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE	
			MIN	MAX		
<b>INCH</b>						
<b>EH108</b>		CARBIDE, 3&4 FLUTE 50° HELIX REGULAR LENGTH	◆	D1/8	D1	<b>532</b>
<b>EE882</b>		YPM, 6 FLUTE 35° HELIX REGULAR LENGTH	◆	D3/4	D1-1/2	<b>533</b>
<b>E5075</b> <b>E5105</b>		CARBIDE, 3 FLUTE 35° HELIX STUB LENGTH CORNER RADIUS - "HOSS"	◆	D1/8	D1	<b>534</b>
<b>E5074</b> <b>E5104</b>		CARBIDE, 3 FLUTE 35° HELIX REGULAR LENGTH CORNER RADIUS - "HOSS"	◆	D1/8	D1	<b>535</b>
<b>EH094</b>		CARBIDE, MULTI FLUTE STUB LENGTH FINE PITCH ROUGHING	◆	D1/4	D1	<b>536</b>
<b>EH095</b>		CARBIDE, MULTI FLUTE LONG LENGTH FINE PITCH ROUGHING	◆	D1/4	D1	<b>537</b>
<b>EH969</b>		CARBIDE, MULTI FLUTE 45° HELIX LONG LENGTH FINE PITCH ROUGHING	◆	D3/16	D1	<b>538</b>
<b>EH970</b>		CARBIDE, MULTI FLUTE 45° HELIX LONG REACH FINE PITCH ROUGHING	◆	D1/4	D3/4	<b>539</b>
◆ U.S.A Stock						
<b>METRIC</b>						
<b>EH830</b>		CARBIDE, 3&4 FLUTE 50° HELIX LONG LENGTH	◇	D6.0	D25.0	<b>540</b>
<b>EE515</b>		PREMIUM HSS-PM, 4&6 FLUTE SHORT LENGTH	◇	D3.0	D25.0	<b>541</b>
<b>EH852</b>		CARBIDE, MULTI FLUTE SHORT FINE PITCH ROUGHING	◇	D6.0	D25.0	<b>542</b>
<b>EH831</b>		CARBIDE, MULTI FLUTE LONG LENGTH FINE PITCH ROUGHING	◇	D6.0	D25.0	<b>543</b>
<b>EH917</b>		CARBIDE, MULTI FLUTE 45° HELIX SHORT LENGTH FINE PITCH ROUGHING	◇	D6.0	D20.0	<b>544</b>
<b>EH919</b>		CARBIDE, MULTI FLUTE 45° HELIX LONG LENGTH FINE PITCH ROUGHING	◇	D4.0	D25.0	<b>545</b>
<b>EH921</b>		CARBIDE, MULTI FLUTE 45° HELIX LONG REACH FINE PITCH ROUGHING	◇	D6.0	D20.0	<b>546</b>
RECOMMENDED CUTTING CONDITIONS					<b>547</b>	

◇ Call for Availability

# JET-POWER END MILLS

⊙ : Excellent  
○ : Good

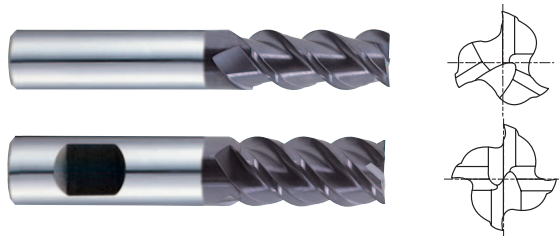
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRc40~45	HRc45~55								
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							

○	⊙	⊙	○					○		⊙	○	○
○	⊙	⊙	○							⊙	⊙	○
○	⊙	○						○		⊙		
○	⊙	○						○		⊙		
○	⊙	⊙	○							⊙	⊙	○
○	⊙	⊙	○							⊙	⊙	○
○	⊙	⊙	○							⊙	⊙	○
○	⊙	⊙	○							⊙	⊙	○

○	⊙	⊙	○							⊙	⊙	○
○	⊙	⊙	○							⊙	⊙	○
○	⊙	⊙	○							⊙	⊙	○
○	⊙	⊙	○							⊙	⊙	○
○	⊙	⊙	○							⊙	⊙	○
○	⊙	⊙	○							⊙	⊙	○
○	⊙	⊙	○							⊙	⊙	○

**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, nimonc, etc.
- ▶ Corner Protection against chipping.



MG 3&4 50° PLAIN FLAT P.547

◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
PLAIN	FLAT					
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



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~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.548

◇ 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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

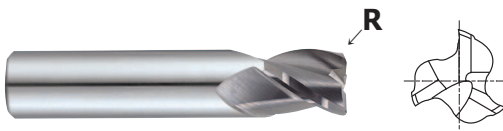
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	○							◎	◎	○



**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).



◆ U.S.A Stock

Ø1/8-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				
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

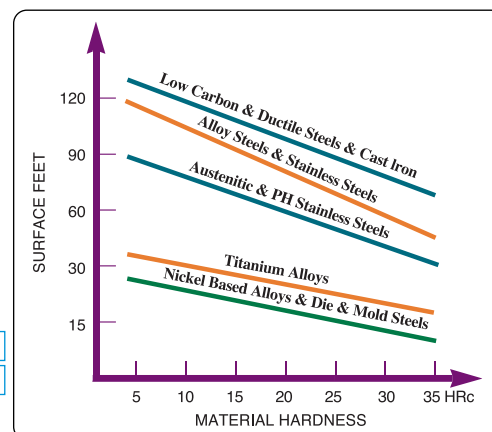
Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-0.0012	0~-0.0003

**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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRC20	HRC20~30	HRC30~40	HRC40~45	HRC45~55	HRC55~70							
○	◎	○						○		◎		

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

**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).



◆ U.S.A Stock

Ø1/8~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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	○						○		◎		

CBN END MILL

i-Mill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

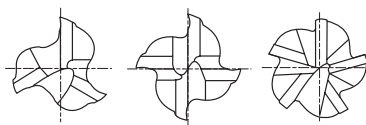
TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

**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.



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

**JET-POWER END MILLS**

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

MG FINE 3-5 30° PLAIN P.549

◆ 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

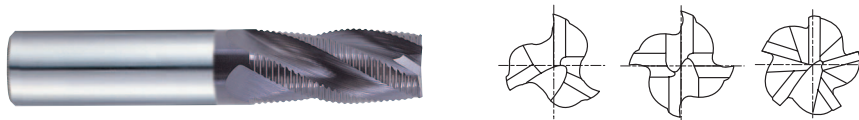
Mill Dia. (inch)	Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
1/4~3/8	0 ~ -.0022	0 ~ -.0003
1/2~5/8	0 ~ -.0027	
3/4~1	0 ~ -.0033	

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~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, nimonin, etc.
- ▶ High velocity milling operation.
- ▶ Fast chip ejection.



MG
FINE
3-5
30°
PLAIN
P.549

◆ 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	

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT &amp; HSS END MILLS

TECHNICAL DATA

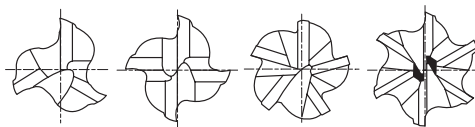
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	○							◎	◎	○



**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.



CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

**JET-POWER  
END MILLS**

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA

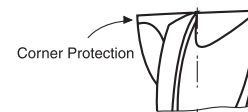
MG
FINE
3-6
45°
PLAIN
P.549

◆ 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	

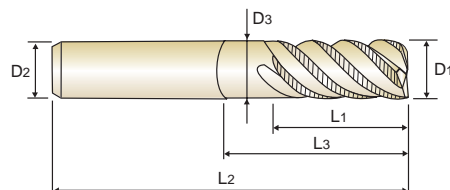
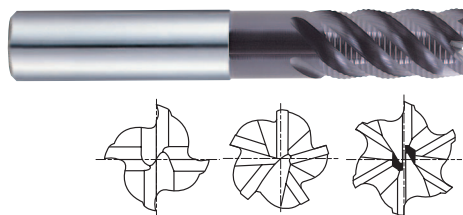


◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	○							◎	◎	○

**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, nimonin, etc.
- ▶ High chip removed and minimizing breakages of cutting edges.
- ▶ Corner Protection against chipping.



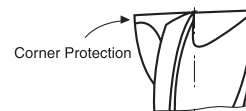
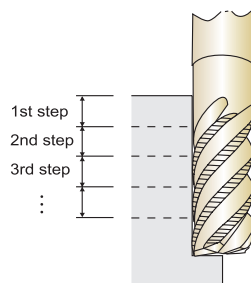
MG
FINE
4-6
45°
PLAIN
P.549

◆ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	No. of Flute
	D1	D2	L1	L3	L2	D3	
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	



JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

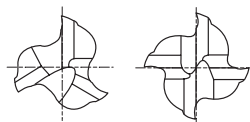
TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	○							◎	◎	○

**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



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



◇ 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

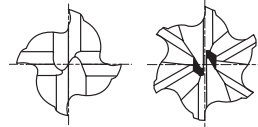


Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	○							◎	◎	○

◎ : Excellent ○ : Good

**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.548

◇ 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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

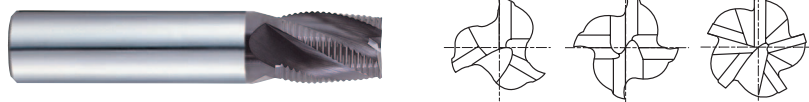
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	○							◎	◎	○



**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.



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

MG FINE 3-5 30° PLAIN P.549

◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flute
	Metric	Inch				
	h10		h6			
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**

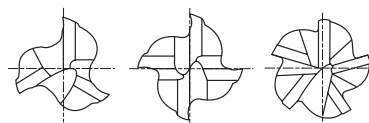
Tolerance range in μm					
Nominal-Diameter in mm					
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
<b>h10</b>	0 - 40	0 - 48	0 - 58	0 - 70	0 - 84
<b>h6</b>	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	○							◎	◎	○

# 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, nimonin.
- ▶ High velocity milling operation.
- ▶ Fast chip ejection.



MG
FINE
3-5
30°
PLAIN
P.549

◇ 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 $\mu\text{m}$					
Nominal-Diameter in mm					
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
<b>h10</b>	0 - 40	0 - 48	0 - 58	0 - 70	0 - 84
<b>h6</b>	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	○							◎	◎	○

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

**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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

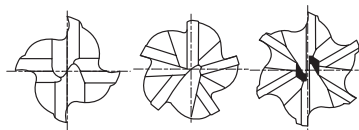
D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



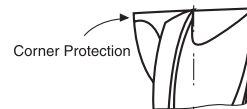
◇ Call for Availability

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 $\mu\text{m}$					
Nominal-Diameter in mm					
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
<b>h10</b>	0 - 40	0 - 48	0 - 58	0 - 70	0 - 84
<b>h6</b>	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13

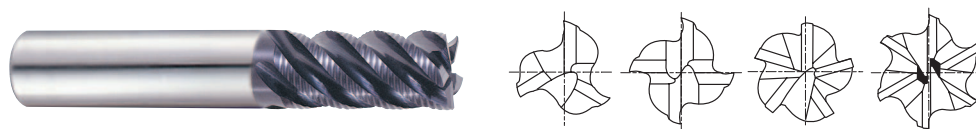


◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	○							◎	◎	○

**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, monimic, etc



MG FINE 3-6 45° PLAIN P.549

◇ 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
<b>h10</b>	0 - 40	0 - 48	0 - 58	0 - 70	0 - 84
<b>h6</b>	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	○							◎	◎	○

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

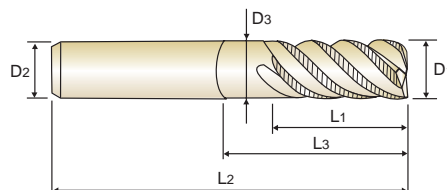
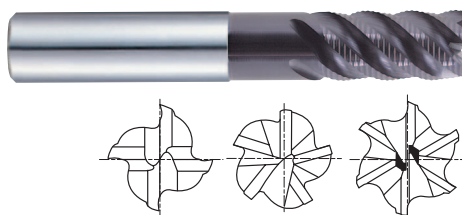
TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

**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.549

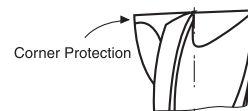
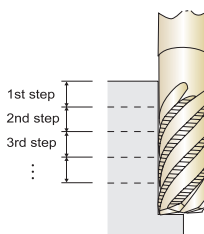
◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	No. of Flute
	Metric	Inch						
	D1		D2	L1	L3	L2	D3	
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
<b>h10</b>	0 - 40	0 - 48	0 - 58	0 - 70	0 - 84
<b>h6</b>	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

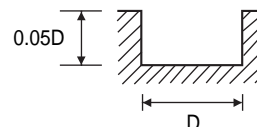
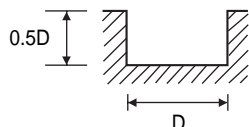
TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	○							◎	◎	○

**CARBIDE, 3&4 FLUTE FINISH - SLOTTING**
**EH108, EH830 SERIES**

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS		TITANIUM ALLOY		INCONEL	
HARDNESS	~HRc30		HRc30 ~ HRc45							
STRENGTH	~1000N/mm <sup>2</sup>		1000 ~ 1500N/mm <sup>2</sup>							
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	5560	12.20	3360	7.85	2840	6.30	1500	2.15	1160	1.60
5/16	4200	13.40	2520	7.10	2100	6.30	1090	2.15	840	1.60
3/8	3260	11.80	2000	5.50	1680	5.50	870	2.15	670	1.60
1/2	2740	9.80	1680	4.70	1370	4.70	730	1.75	560	1.20
5/8	2200	7.85	1360	3.90	1050	4.00	550	1.35	420	1.00
3/4	1750	6.90	1100	3.35	880	3.35	480	1.20	350	1.20
1	1360	4.50	840	2.35	670	2.35	350	0.80	270	0.60

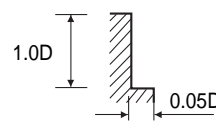
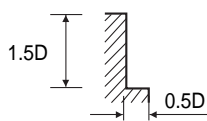


※ The Feed, in long &amp; extra long types, should be reduced by around 50%.

 RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 3&4 FLUTE FINISH - SIDE CUTTING**
**EH108, EH830 SERIES**

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS		TITANIUM ALLOY		INCONEL	
HARDNESS	~HRc30		HRc30 ~ HRc45							
STRENGTH	~1000N/mm <sup>2</sup>		1000 ~ 1500N/mm <sup>2</sup>							
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	5560	15.75	3360	9.85	2840	8.30	1360	2.95	1050	2.20
5/16	4200	16.50	2520	9.05	2100	8.70	1090	2.75	840	2.00
3/8	3260	14.55	2000	7.10	1680	8.70	880	2.75	680	2.00
1/2	2740	12.20	1680	5.90	1370	7.10	730	2.55	560	1.80
5/8	2200	9.85	1360	4.70	1050	5.30	550	1.95	420	1.40
3/4	1750	8.65	1100	4.35	880	5.40	480	1.55	350	1.20
1	1360	5.90	840	2.95	670	4.50	350	1.35	270	1.00



※ The Feed, in long &amp; extra long types, should be reduced by around 50%.

 RPM = rev./min.  
FEED = inch/min.

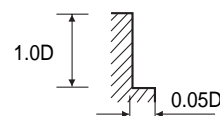
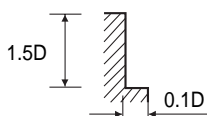


RECOMMENDED CUTTING CONDITIONS

YPM, 6 FLUTE - SIDE CUTTING

EE882 SERIES

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS		TITANIUM ALLOY		INCONEL	
HARDNESS	~HRC30		HRC30 ~ HRC45							
STRENGTH	~1000N/mm <sup>2</sup>		1000 ~ 1500N/mm <sup>2</sup>							
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/4	960	8.00	215	0.80	480	4.80	220	1.35	170	0.95
7/8	730	7.25	180	0.65	365	4.35	190	1.10	145	0.78
1	640	6.60	165	0.60	320	3.95	170	1.00	130	0.70
1-1/4	520	5.25	130	0.45	260	3.15	140	0.77	105	0.55
1-1/2	430	4.35	105	0.37	215	2.60	110	0.63	85	0.45



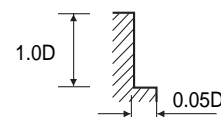
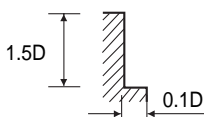
※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.  
FEED = inch/min.

PREMIUM HSS-PM, 4&6 FLUTE SHORT- SIDE CUTTING

EE515 SERIES

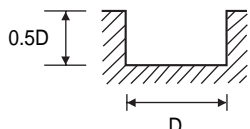
MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS TITANIUM ALLOY		INCONEL	
HARDNESS	~ HRC30		HRC30 ~ HRC45					
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3.0	4400	7.28	1100	0.91	2200	4.33	880	1.10
4.0	3600	8.27	900	1.22	1800	4.92	720	1.46
5.0	3000	8.86	750	1.18	1500	5.31	600	1.42
6.0	2600	9.25	600	1.14	1300	5.51	480	1.38
8.0	2000	9.84	500	1.10	1000	5.91	400	1.34
10.0	1600	11.22	410	1.18	800	6.69	330	1.42
12.0	1320	9.84	340	1.14	660	5.91	270	1.38
14.0	1160	9.25	290	1.06	580	5.51	230	1.26
16.0	1000	8.86	250	1.02	500	5.31	200	1.22
18.0	900	8.27	225	0.91	450	4.92	180	1.10
20.0	800	7.87	200	0.67	400	4.72	160	0.83
25.0	640	6.50	165	0.59	320	3.94	130	0.71



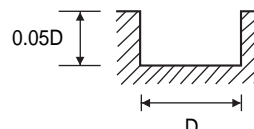
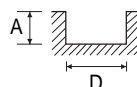
RPM = rev./min.  
FEED = inch/min.

**CARBIDE, MULTI FLUTE ROUGHING - SLOTTING**
**EH094, EH095, EH969, EH970, EH852, EH831, EH917, EH919, EH921 SERIES**

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS		TITANIUM ALLOY		INCONEL	
HARDNESS	~HRc30		HRc30 ~ HRc45							
STRENGTH	~1000N/mm <sup>2</sup>		1000 ~ 1500N/mm <sup>2</sup>							
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	15600	91.35	12400	33.10	8400	22.45	3150	10.60	2400	7.50
5/16	11600	91.35	9200	33.10	6300	22.45	2350	9.80	1800	7.10
3/8	9200	91.35	7600	33.10	5100	22.45	1700	10.20	1300	7.50
1/2	8000	94.50	6000	31.50	4200	22.45	1560	10.20	1200	7.50
5/8	6000	94.50	4800	29.90	3300	20.10	1040	5.80	800	4.30
3/4	5200	91.35	4400	28.35	2500	16.55	910	5.50	675	4.00
1	4300	84.65	3200	24.40	2160	16.15	780	5.10	600	4.30



A: D1/4-D3/8:0.25 × D  
 D1/2-D5/8:0.15 × D  
 D3/4-D1:0.10 × D

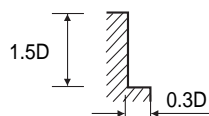


※ The Feed, in long & extra long types, should be reduced by around 50%.

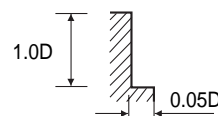
RPM = rev./min.  
 FEED = inch/min.

**CARBIDE, MULTI FLUTE ROUGHING - SIDE CUTTING**
**EH094, EH095, EH969, EH970, EH852, EH831, EH917, EH919, EH921 SERIES**

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		STAINLESS STEELS		TITANIUM ALLOY		INCONEL	
HARDNESS	~HRc30		HRc30 ~ HRc45							
STRENGTH	~1000N/mm <sup>2</sup>		1000 ~ 1500N/mm <sup>2</sup>							
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	15600	91.35	12400	33.10	8400	22.45	3150	10.60	2400	7.50
5/16	11600	91.35	9200	33.10	6300	22.45	2350	9.80	1800	7.10
3/8	9200	91.35	7600	33.10	5100	22.45	1700	10.20	1300	7.50
1/2	8000	94.50	6000	31.50	4200	22.45	1560	10.20	1200	7.50
5/8	6000	94.50	4800	29.90	3300	22.10	1040	5.90	800	4.30
3/4	5200	91.35	4400	28.35	2700	16.55	910	5.50	700	4.00
1	4300	84.65	3200	24.40	2160	16.15	780	5.10	600	4.30



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.





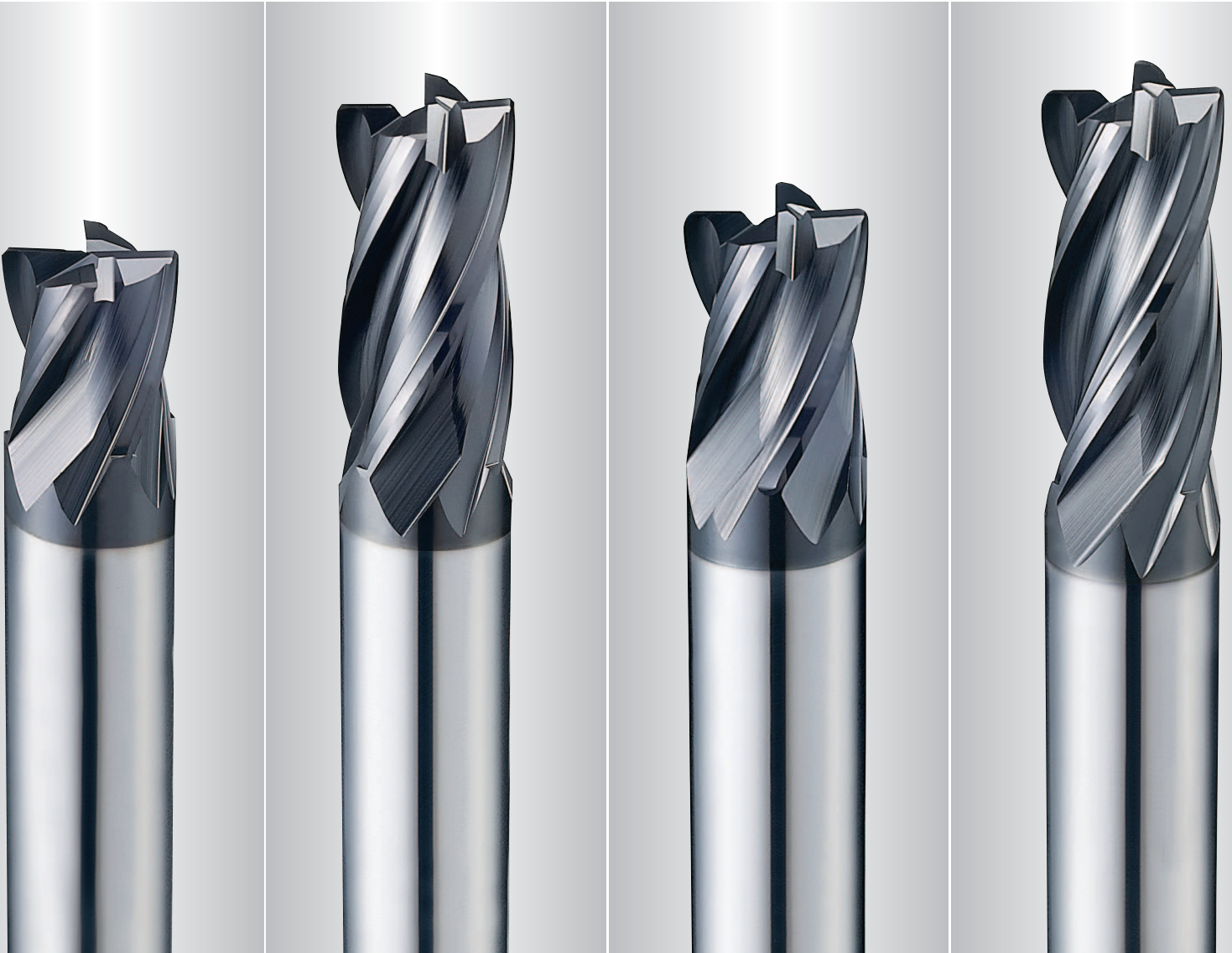
Global Cutting Tool Leader **YG-1**





Being the best through innovation









# CARBIDE



# V7 Mill STEEL

- Silent Cutting of Steels up to HRc40.  
Designed as Unequal Leads.

# SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE	
			MIN	MAX		
<b>INCH</b>						
<b>EMD56</b> <b>EMD57</b>		CARBIDE, 4 FLUTE MULTIPLE HELIX STUB LENGTH	◆	D1/8	D1	<b>554</b>
<b>EMD58</b> <b>EMD59</b>		CARBIDE, 4 FLUTE MULTIPLE HELIX STUB LENGTH CORNER RADIUS	◆	D1/8	D1	<b>555</b>
<b>EMD46</b> <b>EMD47</b>		CARBIDE, 4 FLUTE MULTIPLE HELIX REGULAR LENGTH	◆	D1/8	D1	<b>556</b>
<b>EMD48</b> <b>EMD49</b>		CARBIDE, 4 FLUTE MULTIPLE HELIX REGULAR LENGTH CORNER RADIUS	◆	D1/8	D1	<b>557</b>
◆ U.S.A Stock						
<b>METRIC</b>						
<b>EMD42</b> <b>EMD43</b>		CARBIDE, 4 FLUTE MULTIPLE HELIX SHORT LENGTH	◇	D3.0	D20.0	<b>558</b>
<b>EMD44</b> <b>EMD45</b>		CARBIDE, 4 FLUTE MULTIPLE HELIX SHORT LENGTH CORNER RADIUS	◇	D3.0	D20.0	<b>559</b>
<b>EMD38</b> <b>EMD39</b>		CARBIDE, 4 FLUTE MULTIPLE HELIX REGULAR LENGTH	◇	D3.0	D25.0	<b>560</b>
<b>EMD40</b> <b>EMD41</b>		CARBIDE, 4 FLUTE MULTIPLE HELIX REGULAR LENGTH CORNER RADIUS	◇	D3.0	D25.0	<b>561</b>
RECOMMENDED CUTTING CONDITIONS					<b>562</b>	

◇ Call for Availability

# V7 Mill STEEL END MILLS

⊙ : Excellent  
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRc40~45	HRc45~55								
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							

⊙	⊙	⊙	○					○		○		
⊙	⊙	⊙	○					○		○		
⊙	⊙	⊙	○					○		○		
⊙	⊙	⊙	○					○		○		

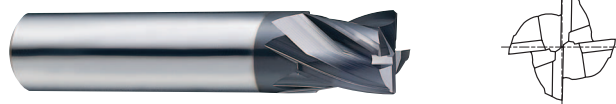
⊙	⊙	⊙	○					○		○		
⊙	⊙	⊙	○					○		○		
⊙	⊙	⊙	○					○		○		
⊙	⊙	⊙	○					○		○		

**YG V7 Mill STEEL END MILLS**

**EMD56 SERIES PLAIN SHANK**  
**EMD57 SERIES FLAT SHANK**

**CARBIDE, 4 FLUTE MULTIPLE HELIX STUB LENGTH**

- ▶ Special flute geometry and multiple helix eliminate vibrations
- ▶ Designed for machine mild steels, cast irons, tool steels, and low hardened steels up to HRc 40.
- ▶ Excellent work piece finishes.
- ▶ Higher speeds, deeper cuts and higher metal removal rates.



MG 4 PLAIN FLAT P.562

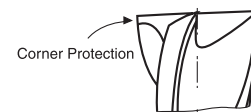
◆ U.S.A Stock

Unit : Inch

V7 Mill STEEL END MILLS	EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	PLAIN	FLAT				
	EMD56008	-	1/8	1/8	1/8	1-1/2
	EMD56010	-	5/32	3/16	3/16	2
V7 Mill INOX END MILLS	EMD56012	-	3/16	3/16	3/16	2
	EMD56014	-	7/32	1/4	1/4	2
	EMD56016	-	1/4	1/4	1/4	2
	EMD56020	-	5/16	5/16	5/16	2
ALU-POWER END MILLS	-	EMD57024	3/8	3/8	3/8	2
	-	EMD57028	7/16	7/16	7/16	2-1/2
	-	EMD57032	1/2	1/2	1/2	2-1/2
D-POWER END MILLS	-	EMD57040	5/8	5/8	5/8	3
	-	EMD57048	3/4	3/4	3/4	3
	-	EMD57064	1	1	1	4

▶ Shanks 3/8" and over come standard with Flats.

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

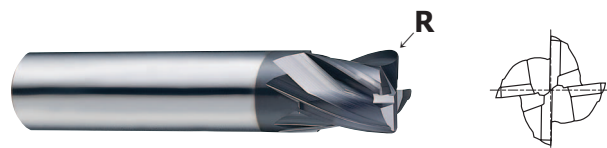
TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○					○		○		

**CARBIDE, 4 FLUTE MULTIPLE HELIX STUB LENGTH CORNER RADIUS**

- ▶ Special flute geometry and multiple helix eliminate vibrations
- ▶ Designed for machine mild steels, cast irons, tool steels, and low hardened steels up to HRc 40.
- ▶ Excellent work piece finishes.
- ▶ Higher speeds, deeper cuts and higher metal removal rates.



MG 4 PLAIN FLAT P.562

◆ U.S.A Stock

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R				
EMD58008	-	R.010	1/8	1/8	1/8	1-1/2
EMD58010	-	R.010	5/32	3/16	3/16	2
EMD58012	-	R.010	3/16	3/16	3/16	2
EMD58014	-	R.015	7/32	1/4	1/4	2
EMD58016	-	R.015	1/4	1/4	1/4	2
EMD58020	-	R.015	5/16	5/16	5/16	2
-	EMD59024	R.015	3/8	3/8	3/8	2
-	EMD59028	R.015	7/16	7/16	7/16	2-1/2
-	EMD59032	R.025	1/2	1/2	1/2	2-1/2
-	EMD59040	R.035	5/8	5/8	5/8	3
-	EMD59048	R.035	3/4	3/4	3/4	3
-	EMD59064	R.035	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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○					○		○		

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

**YG V7 Mill STEEL END MILLS**

**EMD46 SERIES PLAIN SHANK**  
**EMD47 SERIES FLAT SHANK**

**CARBIDE, 4 FLUTE MULTIPLE HELIX REGULAR LENGTH**

- ▶ Special flute geometry and multiple helix eliminate vibrations
- ▶ Designed for machine mild steels, cast irons, tool steels, and low hardened steels up to HRc 40.
- ▶ Excellent work piece finishes.
- ▶ Higher speeds, deeper cuts and higher metal removal rates.



MG **4** PLAIN FLAT P.562

◆ U.S.A Stock

Unit : Inch

V7 Mill STEEL END MILLS	EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	PLAIN	FLAT				
	EMD46008	-	1/8	1/8	3/8	1-1/2
	EMD46010	-	5/32	3/16	7/16	2
	EMD46012	-	3/16	3/16	7/16	2
	EMD46014	-	7/32	1/4	7/16	2-1/2
	EMD46016	-	1/4	1/4	1/2	2-1/2
	EMD46018	-	9/32	5/16	5/8	2-1/2
	EMD46020	-	5/16	5/16	13/16	2-1/2
	EMD46022	EMD47022	11/32	3/8	13/16	2-1/2
	EMD46024	EMD47024	3/8	3/8	7/8	2-1/2
	EMD46026	EMD47026	13/32	7/16	15/16	2-3/4
	EMD46028	EMD47028	7/16	7/16	1	2-3/4
	EMD46030	EMD47030	15/32	1/2	1	3
	EMD46032	EMD47032	1/2	1/2	1	3
	EMD46036	EMD47036	9/16	9/16	1-1/8	3-1/2
	EMD46040	EMD47040	5/8	5/8	1-1/4	3-1/2
	EMD46048	EMD47048	3/4	3/4	1-1/2	4
	EMD46064	EMD47064	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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○					○		○		

# **YG V7 Mill STEEL END MILLS**

**EMD48 SERIES** PLAIN SHANK  
**EMD49 SERIES** FLAT SHANK

**CARBIDE**

**HSS**

## **CARBIDE, 4 FLUTE MULTIPLE HELIX REGULAR LENGTH CORNER RADIUS**

- ▶ Special flute geometry and multiple helix eliminate vibrations
- ▶ Designed for machine mild steels, cast irons, tool steels, and low hardened steels up to HRc 40.
- ▶ Excellent work piece finishes.
- ▶ Higher speeds, deeper cuts and higher metal removal rates.



MG 4 PLAIN FLAT P.562

◆ U.S.A Stock

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R				
EMD48008	-	R.010	1/8	1/8	3/8	1-1/2
EMD48012	-	R.010	3/16	3/16	7/16	2
EMD48016	-	R.015	1/4	1/4	1/2	2-1/2
EMD48020	-	R.015	5/16	5/16	13/16	2-1/2
EMD48024	EMD49024	R.015	3/8	3/8	7/8	2-1/2
EMD48028	EMD49028	R.015	7/16	7/16	1	2-3/4
EMD48032	EMD49032	R.025	1/2	1/2	1	3
EMD48036	EMD49036	R.025	9/16	9/16	1-1/8	3-1/2
EMD48040	EMD49040	R.035	5/8	5/8	1-1/4	3-1/2
EMD48048	EMD49048	R.035	3/4	3/4	1-1/2	4
EMD48064	EMD49064	R.035	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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○					○		○		

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

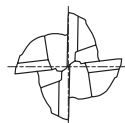


**YG V7 Mill STEEL END MILLS**

**EMD42 SERIES PLAIN SHANK**  
**EMD43 SERIES FLAT SHANK**

**CARBIDE, 4 FLUTE MULTIPLE HELIX SHORT LENGTH**

- ▶ Special flute geometry and multiple helix eliminate vibrations
- ▶ Designed for machine mild steels, cast irons, tool steels, and low hardened steels up to HRc 40.
- ▶ Excellent work piece finishes.
- ▶ Higher speeds, deeper cuts and higher metal removal rates.



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

MG DIN 6527 4 PLAIN FLAT P.562

◇ Call for Availability

Unit : mm

EDP No.		Mill Diameter		Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	Metric	Inch			
EMD42030	EMD43030	3.0	.1181	6	5	50
EMD42040	EMD43040	4.0	.1575	6	8	54
EMD42050	EMD43050	5.0	.1969	6	9	54
EMD42060	EMD43060	6.0	.2362	6	10	54
EMD42080	EMD43080	8.0	.3150	8	12	58
EMD42100	EMD43100	10.0	.3937	10	14	66
EMD42120	EMD43120	12.0	.4724	12	16	73
EMD42140	EMD43140	14.0	.5512	14	18	75
EMD42160	EMD43160	16.0	.6299	16	22	82
EMD42180	EMD43180	18.0	.7087	18	24	84
EMD42200	EMD43200	20.0	.7874	20	26	92

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6



Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○					○		○		

◎ : Excellent ○ : Good

# **YG V7 Mill STEEL END MILLS**

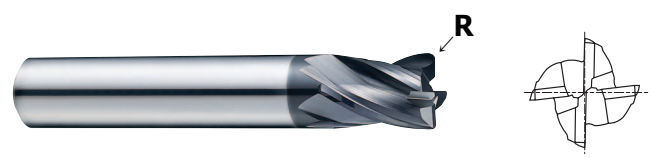
**EMD44 SERIES** PLAIN SHANK  
**EMD45 SERIES** FLAT SHANK

**CARBIDE**

**HSS**

## **CARBIDE, 4 FLUTE MULTIPLE HELIX SHORT LENGTH CORNER RADIUS**

- ▶ Special flute geometry and multiple helix eliminate vibrations
- ▶ Designed for machine mild steels, cast irons, tool steels, and low hardened steels up to HRc 40.
- ▶ Excellent work piece finishes.
- ▶ Higher speeds, deeper cuts and higher metal removal rates.



MG
DIN 6527
4
PLAIN
FLAT
P.562

◇ Call for Availability

Unit : mm

EDP No.		Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R	Metric	Inch			
EMD44030	EMD45030	RO.3	3.0	.1181	6	5	50
EMD44040	EMD45040	RO.3	4.0	.1575	6	8	54
EMD44050	EMD45050	RO.3	5.0	.1969	6	9	54
EMD44060	EMD45060	RO.4	6.0	.2362	6	10	54
EMD44080	EMD45080	RO.4	8.0	.3150	8	12	58
EMD44100	EMD45100	RO.4	10.0	.3937	10	14	66
EMD44120	EMD45120	RO.6	12.0	.4724	12	16	73
EMD44140	EMD45140	RO.6	14.0	.5512	14	18	75
EMD44160	EMD45160	RO.8	16.0	.6299	16	22	82
EMD44180	EMD45180	RO.8	18.0	.7087	18	24	84
EMD44200	EMD45200	RO.8	20.0	.7874	20	26	92

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

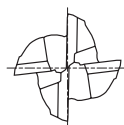
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○					○		○		

**YG V7 Mill STEEL END MILLS**

**EMD38 SERIES PLAIN SHANK**  
**EMD39 SERIES FLAT SHANK**

**CARBIDE, 4 FLUTE MULTIPLE HELIX REGULAR LENGTH**

- ▶ Special flute geometry and multiple helix eliminate vibrations
- ▶ Designed for machine mild steels, cast irons, tool steels, and low hardened steels up to HRc 40.
- ▶ Excellent work piece finishes.
- ▶ Higher speeds, deeper cuts and higher metal removal rates.



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

MG DIN 6527 4 PLAIN FLAT P.562

◇ Call for Availability

Unit : mm

EDP No.		Mill Diameter		Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	Metric	Inch			
EMD38030	EMD39030	3.0	.1181	6	8	57
EMD38040	EMD39040	4.0	.1575	6	11	57
EMD38050	EMD39050	5.0	.1969	6	13	57
EMD38060	EMD39060	6.0	.2362	6	13	57
EMD38080	EMD39080	8.0	.3150	8	19	63
EMD38100	EMD39100	10.0	.3937	10	22	72
EMD38120	EMD39120	12.0	.4724	12	26	83
EMD38140	EMD39140	14.0	.5512	14	26	83
EMD38160	EMD39160	16.0	.6299	16	32	92
EMD38180	EMD39180	18.0	.7087	18	32	92
EMD38200	EMD39200	20.0	.7874	20	38	104
EMD38250	EMD39250	25.0	.9800	25	38	104

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○					○		○		

# **YG V7 Mill STEEL END MILLS**

**EMD40** SERIES PLAIN SHANK  
**EMD41** SERIES FLAT SHANK

**CARBIDE**

**HSS**

## **CARBIDE, 4 FLUTE MULTIPLE HELIX REGULAR LENGTH CORNER RADIUS**

- ▶ Special flute geometry and multiple helix eliminate vibrations
- ▶ Designed for machine mild steels, cast irons, tool steels, and low hardened steels up to HRc 40.
- ▶ Excellent work piece finishes.
- ▶ Higher speeds, deeper cuts and higher metal removal rates.



**MG** **DIN 6527** **4** **PLAIN** **FLAT** P.562

◇ Call for Availability

Unit : mm

EDP No.		Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R	Metric	Inch			
EMD40030	EMD41030	RO.3	3.0	.1181	6	8	57
EMD40040	EMD41040	RO.3	4.0	.1575	6	11	57
EMD40050	EMD41050	RO.3	5.0	.1969	6	13	57
EMD40060	EMD41060	RO.4	6.0	.2362	6	13	57
EMD40080	EMD41080	RO.4	8.0	.3150	8	19	63
EMD40100	EMD41100	RO.4	10.0	.3937	10	22	72
EMD40120	EMD41120	RO.6	12.0	.4724	12	26	83
EMD40140	EMD41140	RO.6	14.0	.5512	14	26	83
EMD40160	EMD41160	RO.8	16.0	.6299	16	32	92
EMD40180	EMD41180	RO.8	18.0	.7087	18	32	92
EMD40200	EMD41200	RO.8	20.0	.7874	20	38	104
EMD40250	EMD41250	RO.8	25.0	.9800	25	38	104

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○					○		○		



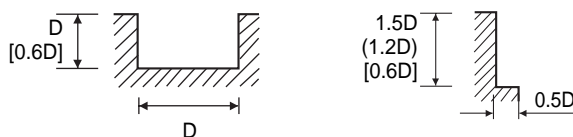
**V7 Mill STEEL  
END MILLS**

**RECOMMENDED CUTTING CONDITIONS**

**CARBIDE, 4 FLUTE**

**EMD56, EMD57, EMD58, EMD59, EMD46, EMD47, EMD48, EMD49 SERIES**

MATERIAL	ALLOY STEELS CAST IRON		ALLOY STEELS CAST IRON	
HARDNESS	~ HRc 30		HRc 30 ~ HRc 40	
STRENGTH	~ 1000N/mm <sup>2</sup>		1000 ~ 1300N/mm <sup>2</sup>	
DIAMETER	RPM	FEED	RPM	FEED
1/8	12735	10.23	8910	7.07
3/16	8490	10.91	5940	7.61
1/4	6370	11.46	4460	8.06
5/16	5100	12.95	3560	9.08
3/8	4245	18.35	2970	12.73
7/16	4010	24.45	2800	17.01
1/2	3500	25.85	2460	18.04
9/16	3110	26.01	2180	18.08
5/8	2800	26.11	1960	18.30
3/4	2340	23.96	1640	16.74
1	1755	17.44	1230	12.21



\* 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.

\* ( ) : Short length Type  
 \* [ ] : Stub length Type

RPM = rev./min.  
 FEED = inch/min.

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA



Being the best through innovation














# CARBIDE



# V7 Mill INOX

- Silent Cutting of Stainless Steels up to HRc40.  
Designed as Variable Leads, YG-1's Patent.

# SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE	
			MIN	MAX		
<b>INCH</b>						
<b>EMC75 EMD60</b>		CARBIDE, 4 FLUTE STUB LENGTH	◆	D1/8	D1	<b>566</b>
<b>EMC76 EMD61</b>		CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS	◆	D1/8	D1	<b>567</b>
<b>EMB12 EMB37</b>		CARBIDE, 4 FLUTE REGULAR LENGTH	◆	D1/8	D1	<b>568</b>
<b>EMB13 EMB38</b>		CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS	◆	D1/8	D1	<b>569</b>
<b>EMB20</b>		CARBIDE, 4 FLUTE EXTENDED LENGTH LONG REACH	◆	D1/4	D1	<b>570</b>
<b>EMB78 EMB79</b>		CARBIDE, 4 FLUTE REGULAR LENGTH BALL NOSE	◆	D1/8	D1	<b>571</b>
<b>EMB76 EMB77</b>		CARBIDE, 5 FLUTE REGULAR LENGTH	◆	D1/4	D1	<b>572</b>
◆ U.S.A Stock						
<b>METRIC</b>						
<b>EMB41 EMB42</b>		CARBIDE, 4 FLUTE SHORT LENGTH	◇	D3.0	D20.0	<b>573</b>
<b>EMB43 EMB44</b>		CARBIDE, 4 FLUTE SHORT LENGTH CORNER RADIUS	◇	D3.0	D20.0	<b>574</b>
<b>EMB14 EMB39</b>		CARBIDE, 4 FLUTE REGULAR LENGTH	◇	D3.0	D25.0	<b>575</b>
<b>EMB15 EMB40</b>		CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS	◇	D3.0	D25.0	<b>576</b>
<b>EMB74 EMB75</b>		CARBIDE, 4 FLUTE REGULAR LENGTH BALL NOSE	◇	D3.0	D25.0	<b>577</b>
<b>EMB72 EMB73</b>		CARBIDE, 5 FLUTE REGULAR LENGTH	◇	D6.0	D25.0	<b>578</b>
RECOMMENDED CUTTING CONDITIONS					<b>579</b>	

◇ Call for Availability

# V7 Mill INOX END MILLS

⊙ : Excellent  
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRc40~45	HRc45~55								
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							

⊙	○	○								⊙	⊙	○
⊙	○	○								⊙	⊙	○
⊙	○	○								⊙	⊙	○
⊙	○	○								⊙	⊙	○
⊙	○	○								⊙	⊙	○
⊙	○	○								⊙	⊙	○
⊙	○	○								⊙	⊙	○

⊙	○	○								⊙	⊙	○
⊙	○	○								⊙	⊙	○
⊙	○	○								⊙	⊙	○
⊙	○	○								⊙	⊙	○
⊙	○	○								⊙	⊙	○
⊙	○	○								⊙	⊙	○





**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



CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA



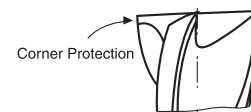
◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT				
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



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	○	○								◎	◎	○

## 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.579

◆ 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
±.0012	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	○	○								◎	◎	○

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

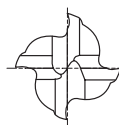
STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



**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



CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA



◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT				
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



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	○	○								◎	◎	○

## 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.579

◆ U.S.A Stock

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R				
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
±.0012	h6

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	○	○								◎	◎	○

**YG 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" AITiN coating



CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA



◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Reach Length	Overall Length
PLAIN	FLAT					
<b>EMB20160</b>	-	<b>1/4</b>	1/4	3/8	1-1/4	4
-	<b>EMB20240</b>	<b>3/8</b>	3/8	1/2	1-7/8	4
-	<b>EMB20320</b>	<b>1/2</b>	1/2	5/8	2-1/4	4
-	<b>EMB20400</b>	<b>5/8</b>	5/8	3/4	2-1/4	4-1/8
-	<b>EMB20401</b>	<b>5/8</b>	5/8	3/4	3-1/4	5
-	<b>EMB20480</b>	<b>3/4</b>	3/4	1	2-1/4	4-1/4
-	<b>EMB20481</b>	<b>3/4</b>	3/4	1	3-1/4	5-1/2
-	<b>EMB20640</b>	<b>1</b>	1	1-1/8	2-1/4	4-1/2
-	<b>EMB20641</b>	<b>1</b>	1	1-1/8	3-1/4	5-1/2
-	<b>EMB20642</b>	<b>1</b>	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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	○	○								◎	◎	○

**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.580

◆ 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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	○	○								◎	◎	○

CBN END MILL

i-Mill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

**CARBIDE****HSS****V7 Mill INOX  
END MILLS****EMB76 SERIES**

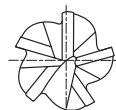
PLAIN SHANK

**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

◆ **U.S.A Stock**

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT				
<b>EMB76016</b>	-	<b>1/4</b>	1/4	1/2	2-1/2
<b>EMB76020</b>	-	<b>5/16</b>	5/16	13/16	2-1/2
<b>EMB76024</b>	<b>EMB77024</b>	<b>3/8</b>	3/8	7/8	2-1/2
-	<b>EMB77032</b>	<b>1/2</b>	1/2	1	3
-	<b>EMB77036</b>	<b>9/16</b>	9/16	1-1/8	3-1/2
-	<b>EMB77040</b>	<b>5/8</b>	5/8	1-1/4	3-1/2
-	<b>EMB77048</b>	<b>3/4</b>	3/4	1-1/2	4
-	<b>EMB77064</b>	<b>1</b>	1	1-1/2	4

- ▶ Shanks 3/8" and over come standard with Flats.

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6



Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	○	○								◎	◎	○

◎ : Excellent ○ : Good

# YG V7 Mill INOX END MILLS

**EMB41** SERIES PLAIN SHANK  
**EMB42** SERIES FLAT SHANK

**CARBIDE**

**HSS**

## 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.579

◇ 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 (inch)	Shank Dia. Tolerance
0~-.0012	h6



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	○	○								◎	◎	○





**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



CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA



◇ 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	RO.3	3.0	.1181	6	7	54
EMB43040	EMB44040	RO.3	4.0	.1575	6	8	54
EMB43050	EMB44050	RO.3	5.0	.1969	6	10	54
EMB43060	EMB44060	RO.5	6.0	.2362	6	10	54
EMB43080	EMB44080	RO.5	8.0	.3150	8	12	58
EMB43100	EMB44100	RO.5	10.0	.3937	10	14	66
EMB43120	EMB44120	RO.7	12.0	.4724	12	16	73
EMB43140	EMB44140	RO.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 (inch)	Shank Dia. Tolerance
±0.030	h6

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	○	○								◎	◎	○

◎ : Excellent ○ : Good

# 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







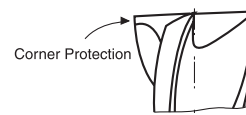

 P.579

◇ 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 (inch)	Shank Dia. Tolerance
0~-.0012	h6



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~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



◇ Call for Availability

Unit : mm

EDP No.		Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R	Metric	Inch			
<b>EMB15030</b>	-	R0.3	<b>3.0</b>	<b>.1181</b>	6	8	57
<b>EMB15040</b>	-	R0.3	<b>4.0</b>	<b>.1575</b>	6	11	57
<b>EMB15050</b>	-	R0.3	<b>5.0</b>	<b>.1969</b>	6	13	57
<b>EMB15060</b>	-	R0.5	<b>6.0</b>	<b>.2362</b>	6	13	57
<b>EMB15080</b>	-	R0.5	<b>8.0</b>	<b>.3150</b>	8	19	63
<b>EMB15100</b>	-	R0.5	<b>10.0</b>	<b>.3937</b>	10	22	72
-	<b>EMB40120</b>	R0.7	<b>12.0</b>	<b>.4724</b>	12	26	83
-	<b>EMB40140</b>	R0.7	<b>14.0</b>	<b>.5512</b>	14	26	83
-	<b>EMB40160</b>	R1.0	<b>16.0</b>	<b>.6299</b>	16	32	92
-	<b>EMB40180</b>	R1.0	<b>18.0</b>	<b>.7087</b>	18	32	92
-	<b>EMB40200</b>	R1.0	<b>20.0</b>	<b>.7874</b>	20	38	104
-	<b>EMB40250</b>	R1.0	<b>25.0</b>	<b>.9800</b>	25	38	104

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
±0.030	h6

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	○	○								◎	◎	○

◎ : Excellent ○ : Good

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

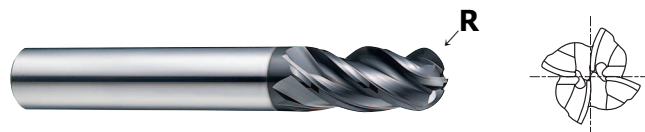
TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA

**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.580

◇ Call for Availability

Unit : mm

EDP No.		Radius of Ball Nose R (±0.01)	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT		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 (inch)	Shank Dia. Tolerance
0~-.0012	h6

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	○	○								◎	◎	○



**V7 Mill INOX  
END MILLS**

**EMB72 SERIES**

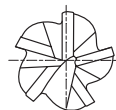
PLAIN SHANK

**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



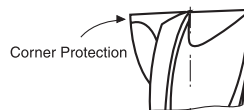
MG P.580

◇ 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 (inch)	Shank Dia. Tolerance
0~- .0012	h6



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

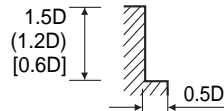
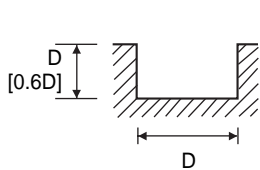
TECHNICAL DATA

◎ : Excellent ○ : Good

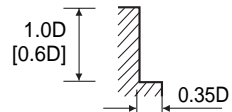
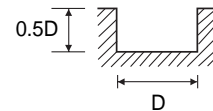
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	○	○								◎	◎	○

**CARBIDE, 4 FLUTE**
**EMC75, EMD60, EMC76, EMD61, EMB12, EMB37, EMB13, EMB38, EMB20 SERIES**

MATERIAL	ALLOY STEELS CAST IRON		STAINLESS STEELS 300SERIES		STAINLESS STEELS 400SERIES		TITANIUM		INCONEL	
HARDNESS	~HRc 20									
STRENGTH	~1000N/mm <sup>2</sup>									
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	12735	10.23	9625	7.25	13475	7.63	8320	7.63	2565	2.05
3/16	8490	10.91	6385	8.27	12000	8.43	5550	8.43	1685	1.82
1/4	6370	11.46	4810	9.60	6815	9.60	4160	9.61	1285	2.48
5/16	5100	12.95	3850	10.71	5390	10.71	3330	10.71	1025	2.83
3/8	4245	18.35	3210	15.38	4490	15.38	2770	15.38	855	4.13
7/16	4010	24.45	2750	20.90	3850	20.90	2380	20.73	735	5.49
1/2	3500	25.85	2400	21.02	3370	21.02	2080	21.02	640	5.58
9/16	3110	26.01	2140	21.16	2990	21.16	1850	21.16	570	5.73
5/8	2800	26.11	1925	21.20	2700	21.20	1660	21.20	510	5.58
3/4	2340	23.96	1600	19.43	2250	19.43	1390	19.43	425	5.17
1	1755	17.44	1200	14.73	1685	15.11	1040	15.11	315	4.26



\* ( ) : 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.

 CBN  
END MILL

 i-Xmill  
END MILL

 X5070  
END MILLS

 X-SPEED  
ROUGHER  
END MILLS

 X-POWER  
END MILLS

 JET-POWER  
END MILLS

 V7 Mill STEEL  
END MILLS

 V7 Mill INOX  
END MILLS

 ALU-POWER  
END MILLS

 D-POWER  
END MILLS

 STANDARD  
CARBIDE  
END MILLS

 TANK-POWER  
END MILLS

 STANDARD  
COBALT  
& HSS  
END MILLS

 TECHNICAL  
DATA



**RECOMMENDED CUTTING CONDITIONS**

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

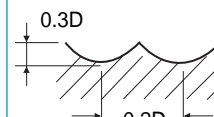
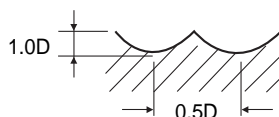
STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA

**CARBIDE, 4 FLUTE BALL NOSE**

**EMB78, EMB79 SERIES**

MATERIAL	ALLOY STEELS CAST IRON		STAINLESS STEELS 300SERIES		STAINLESS STEELS 400SERIES		TITANIUM		INCONEL	
HARDNESS	~HRc 20									
STRENGTH	~1000N/mm <sup>2</sup>									
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	13530	53.20	7770	24.19	7020	16.38	5510	10.42	3010	5.21
3/16	9020	42.59	5180	20.27	4680	18.21	3680	8.69	2010	3.31
1/4	6770	40.71	3880	24.93	3510	16.38	2760	8.58	1500	3.73
5/16	5410	50.80	3110	21.85	2810	17.49	2210	10.36	1200	4.77
3/8	4510	42.64	2590	20.31	2340	16.60	1840	8.69	1000	4.16
7/16	3870	39.54	2220	18.30	2010	15.01	1580	8.64	860	4.35
1/2	3380	37.21	1940	16.79	1750	13.82	1380	8.61	750	4.49
9/16	3010	34.21	1730	15.63	1560	12.77	1230	8.03	670	4.45
5/8	2710	31.82	1550	14.70	1400	11.93	1100	7.57	600	4.41
3/4	2260	31.95	1290	13.27	1170	10.79	920	8.74	500	4.20
1	1690	26.49	970	10.73	880	8.15	690	7.37	380	3.12

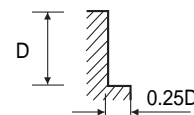
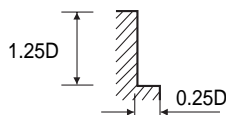


RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 5 FLUTE**

**EMB76, EMB77 SERIES**

MATERIAL	ALLOY STEELS CAST IRON		STAINLESS STEELS 300SERIES		STAINLESS STEELS 400SERIES		TITANIUM		INCONEL	
HARDNESS	~HRc 20									
STRENGTH	~1000N/mm <sup>2</sup>									
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	6870	46.12	5710	34.16	5310	31.79	4200	24.93	1350	4.41
5/16	5490	41.27	4570	28.55	4250	26.45	3360	20.63	1080	4.30
3/8	4580	45.47	3810	28.51	3540	26.33	2800	20.70	900	4.49
7/16	3920	43.96	3270	32.59	3040	23.93	2400	20.78	770	4.67
1/2	3430	42.83	2860	35.65	2660	22.14	2100	20.84	680	4.81
9/16	3050	41.73	2540	32.69	2360	29.58	1860	20.87	600	5.35
5/8	2750	41.35	2290	30.92	2130	28.42	1680	20.70	540	5.13
3/4	2290	39.63	1900	28.59	1770	26.41	1400	20.70	450	5.37
1	1720	34.19	1430	24.83	1330	23.24	1050	18.31	340	5.10



RPM = rev./min.  
FEED = inch/min.



Being the best through innovation

# CARBIDE

















# ALU-POWER

- Silent Cutting of Aluminium Alloys, Mirror Surface








# SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
<b>INCH</b>					
<b>E5253</b>		CARBIDE, 2 FLUTE 42° HELIX REGULAR & LONG LENGTH - "BANSHEE" (FLAT SHANK) ◆	D1/4	D1	<b>586</b>
<b>E5254</b>		CARBIDE, 2 FLUTE 42° HELIX REGULAR & LONG LENGTH - "BANSHEE" (PLAIN SHANK) ◆	D1/16	D1	<b>587</b>
<b>E5976</b>		CARBIDE, 2 FLUTE 37° HELIX with EXTENDED NECK ◆	D1/4	D1	<b>588</b>
<b>E5980</b>		CARBIDE, 3 FLUTE 45° HELIX STUB LENGTH ◆	D1/8	D1	<b>589</b>
<b>E5981</b>		CARBIDE, 3 FLUTE 45° HELIX REGULAR LENGTH ◆	D1/8	D1	<b>590</b>
<b>E5983</b>		CARBIDE, 3 FLUTE, 45° HELIX REGULAR LENGTH CORNER RADIUS ◆	D1/2	D1	<b>591</b>
<b>E5982</b>		CARBIDE, 3 FLUTE 45° HELIX LONG LENGTH ◆	D1/4	D1	<b>592</b>
<b>E5984</b>		CARBIDE, 3 FLUTE 45° HELIX LONG LENGTH CORNER RADIUS ◆	D1/2	D1	<b>593</b>
<b>E5977</b>		CARBIDE, 3 FLUTE 37° HELIX with EXTENDED NECK ◆	D1/4	D1	<b>594</b>
<b>E5985</b>		CARBIDE, 3 FLUTE 37° HELIX with EXTENDED NECK CORNER RADIUS ◆	D1/2	D1	<b>595</b>
<b>E5973</b>		CARBIDE, 2 FLUTE CORNER RADIUS with NECK ◆	D5/32	D3/4	<b>596</b>
<b>E5974</b>		CARBIDE, 2 FLUTE 50° HELIX STUB CUT LENGTH BALL NOSE with NECK ◆	D1/4	D3/4	<b>597</b>
<b>E5978</b>		CARBIDE, 2 FLUTE 37° HELIX LONG REACH BALL NOSE ◆	D1/4	D1	<b>598</b>
<b>E5975</b>		CARBIDE, 3 FLUTE 40° HELIX LONG LENGTH BALL NOSE with NECK ◆	D3/32	D5/8	<b>599</b>

◆ U.S.A Stock

## METRIC

<b>E5522 EG522</b>		CARBIDE, 2 FLUTE 45° HELIX LONG LENGTH TiCN COATED ◇	D3.0	D20.0	<b>600</b>
<b>EG930</b>		CARBIDE, 2 FLUTE 25° HELIX STUB CUT LENGTH CORNER RADIUS TiCN COATED	D2.0	D20.0	<b>601</b>
<b>EG909</b>		CARBIDE, 2 FLUTE STUB CUT LENGTH CORNER RADIUS with NECK TiCN COATED ◇	D4.0	D20.0	<b>602</b>
<b>EG910</b>		CARBIDE 2 FLUTE 50° HELIX STUB CUT LENGTH BALL NOSE with NECK TiCN COATED ◇	D6.0	D20.0	<b>603</b>
<b>EG908</b>		CARBIDE, 3 FLUTE 40° HELIX LONG LENGTH BALL NOSE with NECK TiCN COATED	D6.0	D16.0	<b>604</b>

◇ Call for Availability

# ALU-POWER END MILLS

◎ : Excellent  
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRc40~45	HRc45~55								
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							



									◎			
									◎			
									◎			
									◎			
									◎			
									◎			
									◎			
									◎			
									◎			
									◎			
									◎			
									◎			
									◎			
									◎			
									◎			
									◎			
									◎			

									◎			
									◎			
									◎			
									◎			
									◎			

# SELECTION GUIDE



ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	

## INCH / SPEED FREEK

<b>EK191</b>		T15, 3 FLUTE 42° HELIX REGULAR LENGTH ROUGHING for ALUMINUM	◆	D1/2	D2	<b>605</b>
<b>EK191</b>		T15, 3 FLUTE 42° HELIX REGULAR LENGTH ROUGHING with CORNER RADIUS for ALUMINUM	◆	D3/4	D1-1/4	<b>605</b>
<b>EK226</b>		T15, 3 FLUTE 42° HELIX MEDIUM LENGTH ROUGHING for ALUMINUM	◆	D3/4	D2	<b>606</b>
<b>EK226</b>		T15, 3 FLUTE 42° HELIX MEDIUM LENGTH ROUGHING with CORNER RADIUS for ALUMINUM	◆	D3/4	D1-1/4	<b>606</b>
<b>EK192</b>		T15, 3 FLUTE 42° HELIX LONG LENGTH ROUGHING for ALUMINUM	◆	D1/2	D2	<b>607</b>
<b>EK192</b>		T15, 3 FLUTE 42° HELIX LONG LENGTH ROUGHING with CORNER RADIUS for ALUMINUM	◆	D3/4	D1-1/4	<b>608</b>
<b>EK196</b>		3 FLUTE BALL NOSE 42° HELIX ROUGHING BALL NOSE REGULAR LENGTH for ALUMINUM	◆	R1/4	R5/8	<b>609</b>
<b>EK193</b>		3 FLUTE FINISHING with & without CORNER RADIUS REGULAR & MEDIUM & LONG LENGTH	◆	D1/2	D1-1/4	<b>610</b>

◆ U.S.A Stock

## METRIC / SPEED FREEK

<b>EP922</b>		PREMIUM HSS-PM, 3 FLUTE, 42° HELIX SHORT LENGTH ROUGHING for ALUMINUM	◇	D12.0	D32.0	<b>612</b>
<b>EP924</b>		PREMIUM HSS-PM, 3 FLUTE 42° HELIX LONG LENGTH ROUGHING for ALUMINUM	◇	D12.0	D32.0	<b>613</b>
RECOMMENDED CUTTING CONDITIONS						<b>614</b>

◇ Call for Availability

# ALU-POWER END MILLS

⊙ : Excellent  
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRc40~45	HRc45~55								
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							

									⊙			
									⊙			
									⊙			
									⊙			
									⊙			
									⊙			
									⊙			
									⊙			
									⊙			

									⊙			
									⊙			

**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.



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

MG 2 42° FLAT P.614

◆ U.S.A Stock

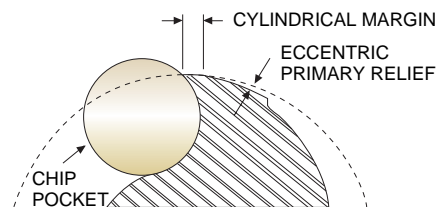
Unit : Inch

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
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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
									◎			

# 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.



◆ U.S.A Stock

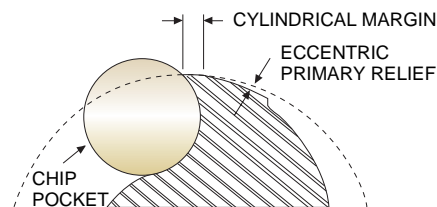
Unit : Inch

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
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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
									◎			

CBN END MILL

i-Mill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

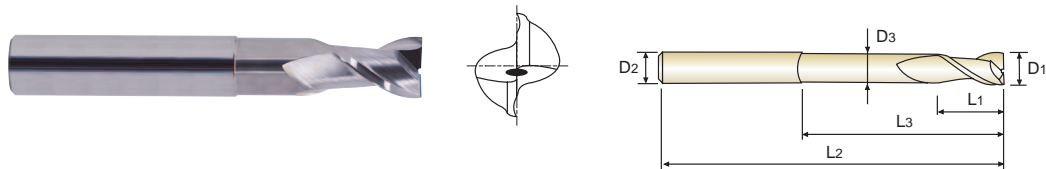
TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

**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.



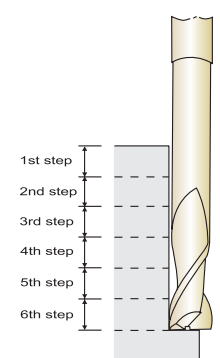
MG 2 37° PLAIN P.617

◆ 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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
									◎			

# 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.615

◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED				
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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

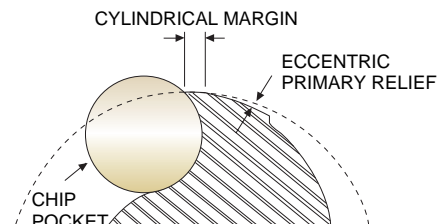
TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



- 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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
									◎			



**CARBIDE, 3 FLUTE 45° HELIX REGULAR LENGTH**

- ▶ 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.



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

MG 3 45° PLAIN P.615

◆ U.S.A Stock

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

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0005	0~-.0003

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
									◎			

## 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.



◆ U.S.A Stock

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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
									◎			

**CARBIDE, 3 FLUTE 45° HELIX LONG LENGTH**

- ▶ 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.



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

MG 3 45° PLAIN P.615

◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED				
<b>36573</b>	<b>36573TC</b>	1/4	1/4	1-1/4	3-1/4
<b>36579</b>	<b>36579TC</b>	5/16	5/16	1-1/4	3-1/2
<b>36584</b>	<b>36584TC</b>	3/8	3/8	1-1/2	3-1/2
<b>36588</b>	<b>36588TC</b>	7/16	7/16	2	4
<b>36593</b>	<b>36593TC</b>	1/2	1/2	2	4
<b>36595</b>	<b>36595TC</b>	5/8	5/8	2-1/2	5
<b>36598</b>	<b>36598TC</b>	3/4	3/4	3-1/4	6
<b>36600</b>	<b>36600TC</b>	1	1	3-1/4	6

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~- .0005	0~- .0003

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
									◎			

# 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.



◆ U.S.A Stock

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED	R				
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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

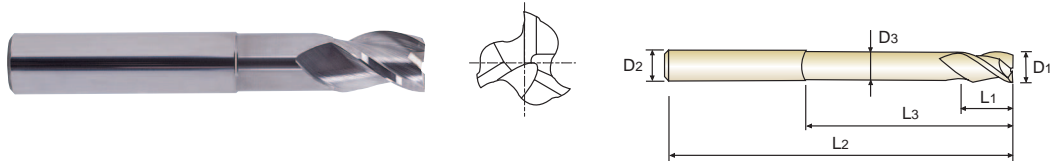
TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
									◎			

**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.

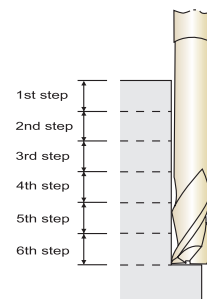


◆ U.S.A Stock

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



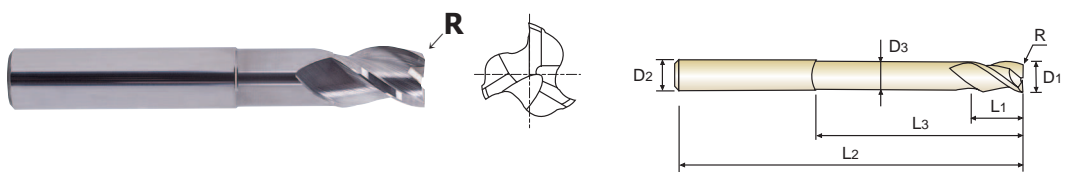
**STEP MILLING**

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
									◎			

# 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.



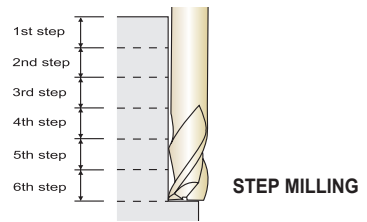
MG
3
37°
PLAIN
P.616

◆ 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



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
									◎			

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

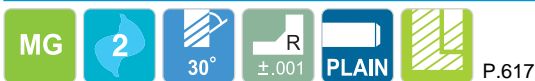
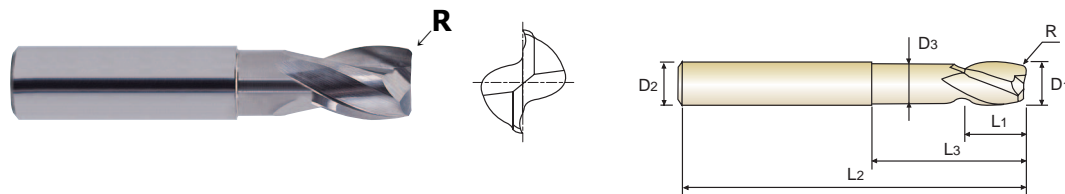
STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



**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.

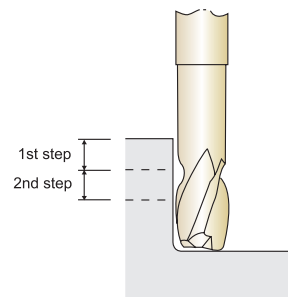


◆ U.S.A Stock

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
<b>24562</b>	<b>24562TC</b>	R.012	<b>5/32</b>	1/4	3/16	3/8	2	.140
<b>24573</b>	<b>24573TC</b>	R.020	<b>1/4</b>	1/4	5/16	3/4	2-3/8	.226
<b>24579</b>	<b>24579TC</b>	R.024	<b>5/16</b>	5/16	3/8	1-1/8	2-3/4	.282
<b>24584</b>	<b>24584TC</b>	R.031	<b>3/8</b>	3/8	1/2	1-1/2	3-1/8	.336
<b>24593</b>	<b>24593TC</b>	R.040	<b>1/2</b>	1/2	9/16	1-1/2	3-1/2	.460
<b>24595</b>	<b>24595TC</b>	R.051	<b>5/8</b>	5/8	3/4	1-3/4	4	.566
<b>24598</b>	<b>24598TC</b>	R.063	<b>3/4</b>	3/4	1	1-3/4	4	.670

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0003



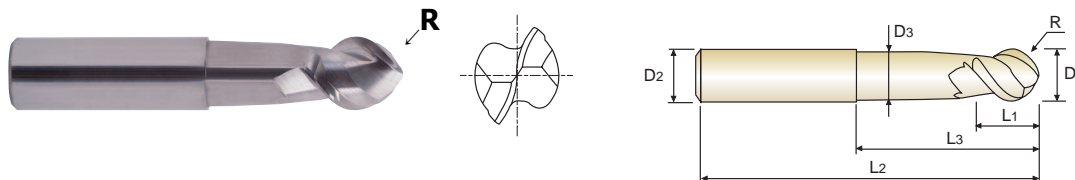
**STEP MILLING**

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
									◎			

◎ : Excellent ○ : Good

### 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.

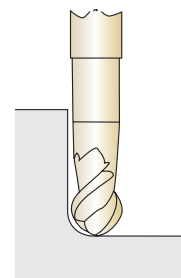


◆ U.S.A Stock

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
<b>37573</b>	<b>37573TC</b>	R 1/8	<b>1/4</b>	1/4	7/32	1	2-1/4	.226
<b>37579</b>	<b>37579TC</b>	R 5/32	<b>5/16</b>	5/16	9/32	1-1/8	2-1/2	.280
<b>37584</b>	<b>37584TC</b>	R 3/16	<b>3/8</b>	3/8	11/32	1-3/8	3	.335
<b>37593</b>	<b>37593TC</b>	R 1/4	<b>1/2</b>	1/2	13/32	1-1/2	3	.460
<b>37595</b>	<b>37595TC</b>	R 5/16	<b>5/8</b>	5/8	9/16	2	3-1/2	.566
<b>37598</b>	<b>37598TC</b>	R 3/8	<b>3/4</b>	3/4	11/16	2	4	.671

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0010	0~-.0003



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

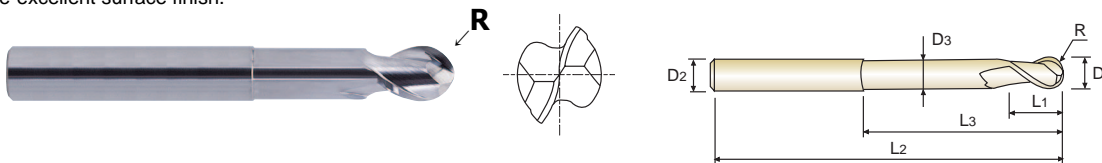
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
									◎			



**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-cylindrical margin which is controlled tightly
- ▶ Maximum-metal removal rate.
- ▶ Superior chip evacuation.
- ▶ Mirror face-excellent surface finish.



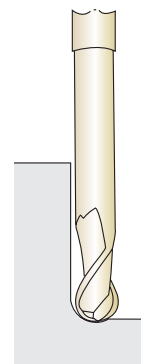
MG 2 37° ±.001 PLAIN P.618

◆ 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

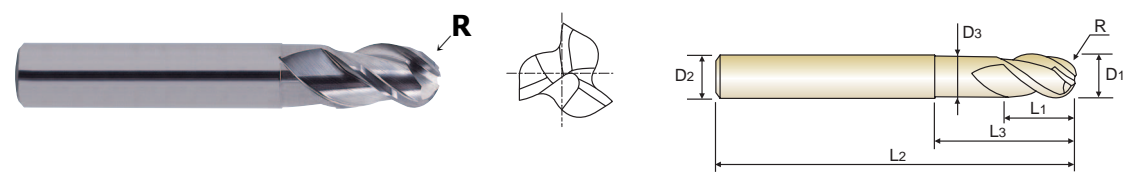


Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
									◎			

◎ : Excellent ○ : Good

# 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.



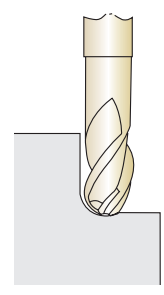
MG
3
40°
R ±.0005
PLAIN
P.619

◆ 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
<b>38602</b>	<b>38602TC</b>	R 3/64	<b>3/32</b>	1/4	1/8	3/16	2-3/8	.090
<b>38601</b>	<b>38601TC</b>	R 1/16	<b>1/8</b>	1/4	3/16	1/4	2-3/8	.117
<b>38566</b>	<b>38566TC</b>	R 3/32	<b>3/16</b>	1/4	1/4	3/8	2-1/2	.172
<b>38573</b>	<b>38573TC</b>	R 1/8	<b>1/4</b>	1/4	3/8	1/2	3	.235
<b>38579</b>	<b>38579TC</b>	R 5/32	<b>5/16</b>	5/16	1/2	1	3	.289
<b>38584</b>	<b>38584TC</b>	R 3/16	<b>3/8</b>	3/8	5/8	1-1/4	3-1/8	.351
<b>38593</b>	<b>38593TC</b>	R 1/4	<b>1/2</b>	1/2	3/4	1-3/8	3-1/2	.476
<b>38595</b>	<b>38595TC</b>	R 5/16	<b>5/8</b>	5/8	1	1-1/2	4	.601

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0003



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

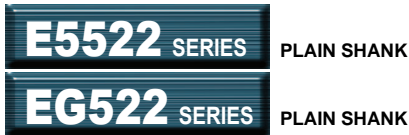
TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
									◎			



**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.



- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

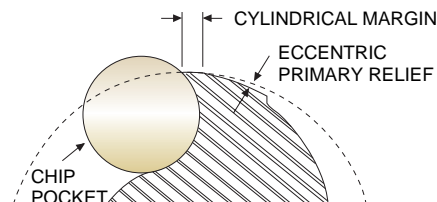


Unit : mm

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.

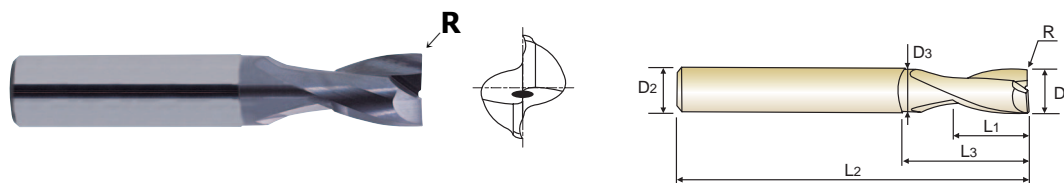


◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
									◎			

**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.



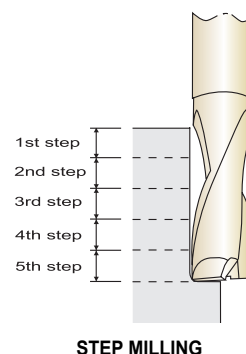
MG
2
25°
±0.025
PLAIN
P.620

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R (±0.025)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
EG930020	RO.2	2.0	.0787	3	3	6	40	1.9
EG930030	RO.2	3.0	.1181	3	4	8	40	2.9
EG930040	RO.2	4.0	.1575	4	5	12	50	3.8
EG930050	RO.2	5.0	.1969	5	8	14	50	4.8
EG930060	RO.2	6.0	.2362	6	8	18	65	5.7
EG930080	RO.2	8.0	.3150	8	10	22	70	7.7
EG930100	RO.2	10.0	.3937	10	14	28	80	9.7
EG930120	RO.2	12.0	.4724	12	16	35	90	11.5
EG930160	RO.2	16.0	.6299	16	20	40	90	15.5
EG930200	RO.2	20.0	.7874	20	25	50	100	19.5

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	h6



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
									◎			

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

**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.

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

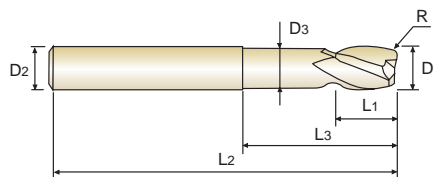
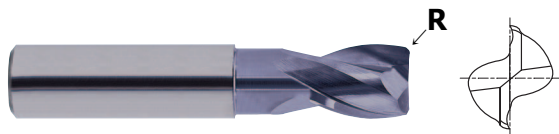
D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



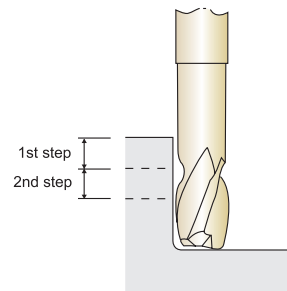
MG 2 30° ±0.025 PLAIN P.621

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius R (±0.025)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric	Inch					
EG909040	RO.3	4.0	.1575	6	5	10	50	3.6
EG909060	RO.5	6.0	.2362	6	8	20	60	5.4
EG909080	RO.6	8.0	.3150	8	10	30	70	7.2
EG909100	RO.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



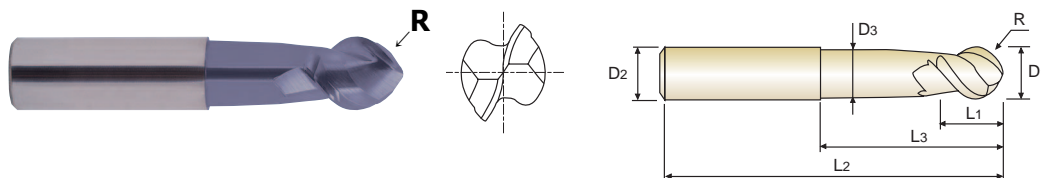
**STEP MILLING**

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
									◎			

**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.



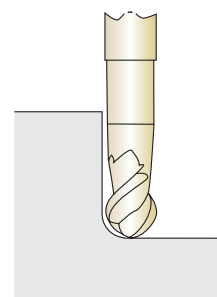
MG
2
50°
R ±0.01
PLAIN
P.621

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
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



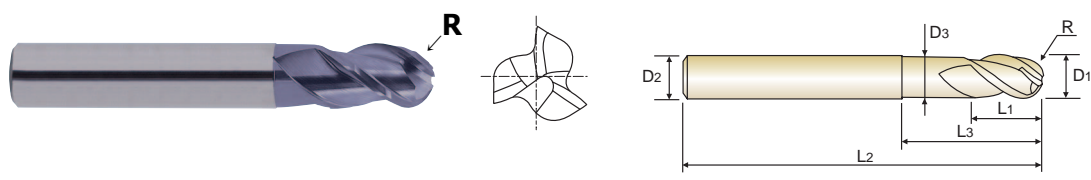
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
									◎			



**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.

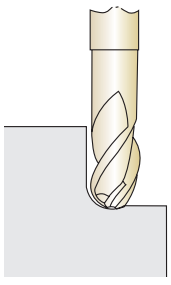


MG 3 40° R ±0.01 PLAIN P.622

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric	Inch					
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



- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
									◎			

**YG SPEED FREEK 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.624

◆ 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

T15 ALU 3 42° ±.001 FLAT P.

◆ 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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
									◎			

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



# YG SPEED FREEK 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



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

T15
ALU
3
42°
FLAT
P.624

◆ U.S.A Stock

■ SQUARE

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED				
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

T15
ALU
3
42°
R ±.001
FLAT
P.

◆ U.S.A Stock

■ with CORNER RADIUS

Unit : Inch

EDP No.		Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED					
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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
									◎			

**T15, 3 FLUTE 42° HELIX LONG LENGTH ROUGHING for ALUMINUM**

▶ High performance metal removal in aluminum alloys.



T15

ALU

3

42°

FLAT

P.624

◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED				
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

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
EK10482	3/4	3/4	1-1/2	3	5-1/4	.705
EK10483	3/4	3/4	1-1/2	4	6-1/4	.705
EK10642	1	1	1-1/2	3	5-1/2	.950
EK10643	1	1	2	4	6-1/2	.950
EK10644	1	1	2	6	8-1/2	.950
EK11601	1-1/4	1-1/4	2	4	6-1/2	1.200
EK11602	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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
									◎			

 CBN  
END MILL

 i-Xmill  
END MILL

 X5070  
END MILLS

 X-SPEED  
ROUGHER  
END MILLS

 X-POWER  
END MILLS

 JET-POWER  
END MILLS

 V7 Mill STEEL  
END MILLS

 V7 Mill INOX  
END MILLS

 ALU-POWER  
END MILLS

 D-POWER  
END MILLS

 STANDARD  
CARBIDE  
END MILLS

 TANK-POWER  
END MILLS

 STANDARD  
COBALT  
& HSS  
END MILLS

 TECHNICAL  
DATA

CARBIDE

HSS

# SPEED FREEK 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°
±.001
FLAT
P.624

◆ U.S.A Stock

Unit : Inch

	EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	UNCOATED	TiCN COATED	R				
	<b>67904</b>	<b>67904 PC</b>	R .060	<b>3/4</b>	3/4	3	5-1/4
	<b>67905</b>	<b>67905 PC</b>	R .090	<b>3/4</b>	3/4	3	5-1/4
	<b>67906</b>	<b>67906 PC</b>	R .120	<b>3/4</b>	3/4	3	5-1/4
	<b>67907</b>	<b>67907 PC</b>	R .060	<b>1</b>	1	4	6-1/2
	<b>67908</b>	<b>67908 PC</b>	R .090	<b>1</b>	1	4	6-1/2
	<b>67909</b>	<b>67909 PC</b>	R .120	<b>1</b>	1	4	6-1/2
	<b>67910</b>	<b>67910 PC</b>	R .060	<b>1-1/4</b>	1-1/4	4	6-1/2
	<b>67911</b>	<b>67911 PC</b>	R .090	<b>1-1/4</b>	1-1/4	4	6-1/2
	<b>67912</b>	<b>67912 PC</b>	R .120	<b>1-1/4</b>	1-1/4	4	6-1/2
	<b>67913</b>	<b>67913 PC</b>	R .060	<b>1-1/4</b>	1-1/4	6	8-1/2
	<b>67914</b>	<b>67914 PC</b>	R .090	<b>1-1/4</b>	1-1/4	6	8-1/2
	<b>67915</b>	<b>67915 PC</b>	R .120	<b>1-1/4</b>	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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
									◎			

◎ : Excellent ○ : Good

**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.623

◆ 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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
									◎			

CARBIDE

HSS

**YG SPEED FREEK END MILLS**

**EK193 SERIES** FLAT SHANK

**T15, 3 FLUTE FINISHING  
REGULAR LENGTH & MEDIUM LENGTH & LONG LENGTH**

▶ High performance metal removal in aluminum alloys.



CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA

T15 3 42° FLAT P.623

◆ U.S.A Stock

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

■ 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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
									◎			

**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.623

◆ U.S.A Stock

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED	R				
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)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
									◎			

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA

CARBIDE

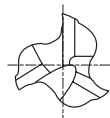
HSS

# YG SPEED FREEK 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.



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

YPM
ALU
3
42°
PLAIN
P.624

◇ 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 $\mu\text{m}$						
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	$\pm 50$	$\pm 60$	$\pm 75$	$\pm 90$	$\pm 105$	$\pm 125$
h6	$\begin{matrix} 0 \\ -6 \end{matrix}$	$\begin{matrix} 0 \\ -8 \end{matrix}$	$\begin{matrix} 0 \\ -9 \end{matrix}$	$\begin{matrix} 0 \\ -11 \end{matrix}$	$\begin{matrix} 0 \\ -13 \end{matrix}$	$\begin{matrix} 0 \\ -16 \end{matrix}$

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
									◎			

**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.



◇ 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 $\mu\text{m}$						
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	$\pm 50$	$\pm 60$	$\pm 75$	$\pm 90$	$\pm 105$	$\pm 125$
h6	$\begin{matrix} 0 \\ -6 \end{matrix}$	$\begin{matrix} 0 \\ -8 \end{matrix}$	$\begin{matrix} 0 \\ -9 \end{matrix}$	$\begin{matrix} 0 \\ -11 \end{matrix}$	$\begin{matrix} 0 \\ -13 \end{matrix}$	$\begin{matrix} 0 \\ -16 \end{matrix}$

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
									◎			

 CBN  
END MILL

 i-Xmill  
END MILL

 X5070  
END MILLS

 X-SPEED  
ROUGHER  
END MILLS

 X-POWER  
END MILLS

 JET-POWER  
END MILLS

 V7 Mill STEEL  
END MILLS

 V7 Mill INOX  
END MILLS

 ALU-POWER  
END MILLS

 D-POWER  
END MILLS

 STANDARD  
CARBIDE  
END MILLS

 TANK-POWER  
END MILLS

 STANDARD  
COBALT  
& HSS  
END MILLS

 TECHNICAL  
DATA





**RECOMMENDED CUTTING CONDITIONS**

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGH  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

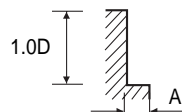
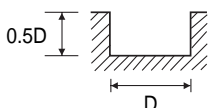
STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA

**CARBIDE, 2 FLUTE 42° HELIX - "BANSHEE"**

**E5253, E5254 SERIES**

MATERIAL	ALUMINUM NONFERROUS METALS		ALUMINUM NONFERROUS METALS	
	DIAMETER	RPM	FEED	RPM
1/8	10000	27.56	10000	35.43
5/32	10000	35.43	10000	43.31
3/16	10000	39.37	10000	51.18
1/4	10000	47.24	10000	59.06
5/16	8000	55.12	8000	70.87
3/8	8000	66.93	8000	82.68
1/2	8000	82.68	8000	102.40
9/16	6000	70.87	6000	86.61
5/8	6000	74.80	6000	94.49
11/16	4000	55.12	4000	70.87
13/16	4000	62.99	4000	74.80



A :  $\varnothing 1/8 \sim \varnothing 3/8 = 0.25 \times D$   
 $\varnothing 1/2 \sim \varnothing 13/16 = 0.5 \times D$

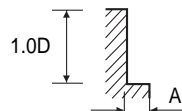
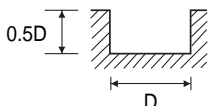
※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 2 FLUTE 42° HELIX TiCN COATED - "BANSHEE"**

**EG253, EG254 SERIES**

MATERIAL	ALUMINUM NONFERROUS METALS		ALUMINUM NONFERROUS METALS	
	DIAMETER	RPM	FEED	RPM
1/8	15600	42.52	12000	56.69
5/32	15600	56.69	12000	66.14
3/16	15600	61.42	12000	80.32
1/4	15600	70.87	12000	94.49
5/16	12000	85.05	9600	108.66
3/8	12000	103.93	9600	127.56
1/2	12000	127.56	9600	160.56
9/16	9600	108.66	7200	132.24
5/8	9600	118.12	7200	146.52
11/16	6000	85.04	4800	108.66
13/16	6000	94.49	4800	118.12



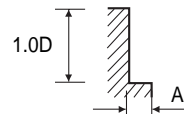
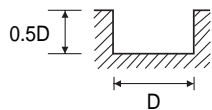
A :  $\varnothing 1/8 \sim \varnothing 3/8 = 0.25 \times D$   
 $\varnothing 1/2 \sim \varnothing 13/16 = 0.5 \times D$

※ 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	ALUMINUM NONFERROUS METALS		ALUMINUM NONFERROUS METALS	
	DIAMETER	RPM	FEED	FEED
1/8	10000	33.05	10000	42.50
5/32	10000	42.50	10000	52.00
3/16	10000	47.25	10000	61.40
1/4	10000	56.70	10000	70.90
5/16	8000	66.15	8000	85.05
3/8	8000	80.30	8000	99.20
1/2	8000	99.15	8000	122.90
9/16	6000	85.05	6000	103.95
5/8	6000	89.75	6000	113.40
11/16	4000	66.15	4000	85.05
13/16	4000	75.60	4000	89.75



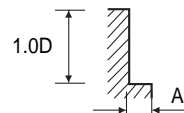
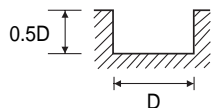
A :  $\varnothing 1/8 - \varnothing 3/8 = 0.25 \times D$   
 $\varnothing 1/2 - \varnothing 13/16 = 0.5 \times D$

※ 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	ALUMINUM NONFERROUS METALS		ALUMINUM NONFERROUS METALS	
	DIAMETER	RPM	FEED	FEED
1/8	15600	43.00	12000	55.25
5/32	15600	55.25	12000	67.60
3/16	15600	61.40	12000	79.80
1/4	15600	73.70	12000	92.20
5/16	12000	86.00	9600	110.55
3/8	12000	104.40	9600	129.00
1/2	12000	128.90	9600	159.80
9/16	9600	110.55	7200	135.15
5/8	9600	116.65	7200	147.40
11/16	6000	86.00	4800	110.55
13/16	6000	98.30	4800	116.65



A :  $\varnothing 1/8 - \varnothing 3/8 = 0.25 \times D$   
 $\varnothing 1/2 - \varnothing 13/16 = 0.5 \times D$

※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.  
 FEED = inch/min.



**RECOMMENDED CUTTING CONDITIONS**

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

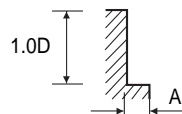
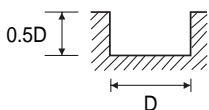
STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA

**CARBIDE, 3 FLUTE 37° HELIX with EXTENDED NECK**

**E5977, E5985 SERIES**

MATERIAL	ALUMINUM NONFERROUS METALS		ALUMINUM NONFERROUS METALS		
	DIAMETER	RPM	FEED	RPM	FEED
	1/4	8000	45.35	8000	56.70
	3/8	6400	64.25	6400	79.40
	1/2	6400	79.40	6400	98.25
	5/8	4800	71.80	4800	90.70
	3/4	3200	70.85	3200	87.40
	1	2600	63.80	2600	78.65



A :  $\varnothing 1/4 \sim \varnothing 3/8 = 0.25 \times D$   
 $\varnothing 1/2 \sim \varnothing 1 = 0.5 \times D$

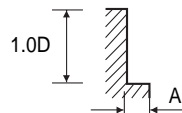
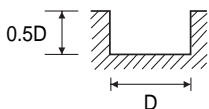
※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 3 FLUTE 37° HELIX with EXTENDED NECK TiCN COATED**

**EG977, EG985 SERIES**

MATERIAL	ALUMINUM NONFERROUS METALS		ALUMINUM NONFERROUS METALS		
	DIAMETER	RPM	FEED	RPM	FEED
	1/4	10500	58.95	10500	73.70
	3/8	8300	83.50	8300	103.20
	1/2	8300	103.20	8300	127.70
	5/8	6200	93.35	6200	117.90
	3/4	4200	92.10	4200	113.60
	1	3400	82.95	3400	102.00



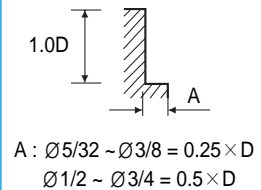
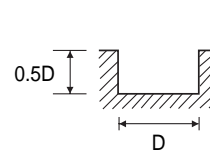
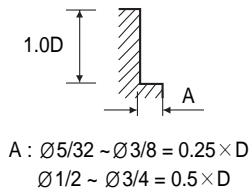
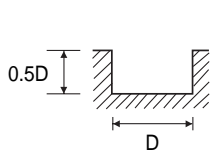
A :  $\varnothing 1/4 \sim \varnothing 3/8 = 0.25 \times D$   
 $\varnothing 1/2 \sim \varnothing 1 = 0.5 \times D$

※ 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	ALUMINUM NONFERROUS METALS				COPPER ALLOY				
	DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R.012 × 5/32	10000	36.35	10000	42.40	3000	9.10	3000	10.60	
R.020 × 1/4	10000	45.40	10000	60.60	3000	11.50	3000	15.15	
R.024 × 5/16	8000	54.50	8000	69.60	2300	13.60	2300	17.55	
R.031 × 3/8	8000	66.60	8000	81.75	2300	16.65	2300	20.60	
R.040 × 1/2	8000	81.75	8000	103.00	2300	20.55	2300	25.75	
R.051 × 5/8	6000	75.70	6000	93.90	1800	19.05	1800	23.60	
R.063 × 3/4	4000	60.60	4000	75.70	1150	15.15	1150	19.10	

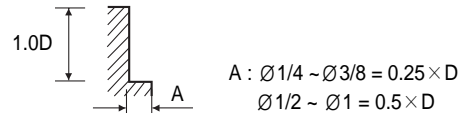
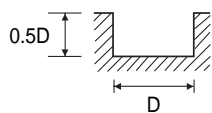


※ The Feed, in long &amp; extra long types, should be reduced by around 50%.

 RPM = rev./min.  
 FEED = inch/min.

**CARBIDE, 2 FLUTE 37° HELIX with EXTENDED NECK**
**E5976 SERIES**

MATERIAL	ALUMINUM NONFERROUS METALS		ALUMINUM NONFERROUS METALS		
	DIAMETER	RPM	FEED	RPM	FEED
1/4	8000	37.80	8000	47.25	
3/8	6400	53.55	6400	66.15	
1/2	6400	66.15	6400	81.90	
5/8	4800	59.85	4800	75.60	
3/4	3200	59.05	3200	72.85	
1	2600	53.15	2600	65.55	



※ The Feed, in long &amp; extra long types, should be reduced by around 50%.

 RPM = rev./min.  
 FEED = inch/min.

 CBN  
 END MILL

 i-Xmill  
 END MILL

 X5070  
 END MILLS

 X-SPEED  
 ROUGHER  
 END MILLS

 X-POWER  
 END MILLS

 JET-POWER  
 END MILLS

 V7 Mill STEEL  
 END MILLS

 V7 Mill INOX  
 END MILLS

 ALU-POWER  
 END MILLS

 D-POWER  
 END MILLS

 STANDARD  
 CARBIDE  
 END MILLS

 TANK-POWER  
 END MILLS

 STANDARD  
 COBALT  
 & HSS  
 END MILLS

 TECHNICAL  
 DATA



**RECOMMENDED CUTTING CONDITIONS**

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

**ALU-POWER  
END MILLS**

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

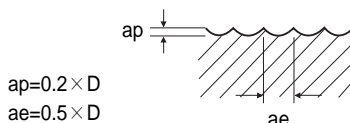
STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA

**CARBIDE, 2 FLUTE 37° HELIX LONG REACH BALL NOSE**

**E5978** SERIES

MATERIAL	ALUMINUM NONFERROUS METALS	
DIAMETER	RPM	FEED
R1/8 × 1/4	11200	55.10
R5/32 × 5/16	8600	63.00
R3/16 × 3/8	8600	74.00
R1/4 × 1/2	8600	94.50
R5/16 × 5/8	6800	85.00
R3/8 × 3/4	4300	69.30



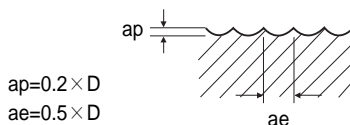
※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 2 FLUTE 37° HELIX LONG REACH BALL NOSE TiCN COATED**

**EG978** SERIES

MATERIAL	ALUMINUM NONFERROUS METALS	
DIAMETER	RPM	FEED
R1/8 × 1/4	14500	71.65
R5/32 × 5/16	11200	81.90
R3/16 × 3/8	11200	96.20
R1/4 × 1/2	11200	122.85
R5/16 × 5/8	8800	110.50
R3/8 × 3/4	5600	104.00

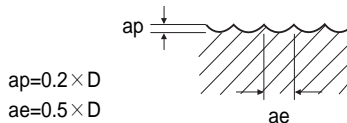


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 2 FLUTE 50° HELIX BALL NOSE with NECK**
**E5974 SERIES**

MATERIAL	ALUMINUM ALUMINUM ALLOY		COPPER ALLOY	
	DIAMETER	RPM	FEED	FEED
R1/8 × 1/4	14000	53.00	4200	13.30
R5/32 × 5/16	10800	60.50	3200	15.10
R3/16 × 3/8	10800	71.20	3200	17.50
R1/4 × 1/2	10800	90.80	3200	22.70
R5/16 × 5/8	8500	81.80	2500	20.30
R3/8 × 3/4	5400	66.60	1600	16.70

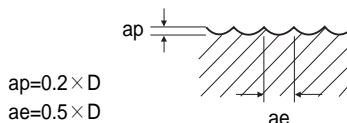


※ The Feed, in long &amp; extra long types, should be reduced by around 50%.

 RPM = rev./min.  
 FEED = inch/min.

**CARBIDE, 3 FLUTE 40° HELIX BALL NOSE with NECK**
**E5975 SERIES**

MATERIAL	ALUMINUM ALUMINUM ALLOY		COPPER ALLOY	
	DIAMETER	RPM	FEED	FEED
R3/64 × 3/32	20700	28.80	6200	7.25
R1/16 × 1/8	13800	28.80	4200	7.25
R3/32 × 3/16	13800	40.90	4200	10.30
R1/8 × 1/4	13800	53.00	4200	13.30
R5/32 × 5/16	10800	60.55	3200	15.15
R3/16 × 3/8	10800	71.15	3200	17.55
R1/4 × 1/2	10800	90.85	3200	22.70
R5/16 × 5/8	8500	81.75	2500	20.30



※ The Feed, in long &amp; extra long types, should be reduced by around 50%.

 RPM = rev./min.  
 FEED = inch/min.



**RECOMMENDED CUTTING CONDITIONS**

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

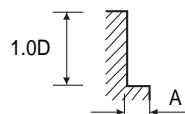
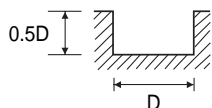
STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA

**CARBIDE, 2 FLUTE**

**E5522 SERIES**

MATERIAL	ALUMINUM LOW SILICON ALUMINUM			
	DIAMETER	RPM	FEED	FEED
3.0	10000	27.56	10000	35.43
4.0	10000	35.43	10000	43.31
5.0	10000	39.37	10000	51.18
6.0	10000	47.24	10000	59.06
8.0	8000	55.12	8000	70.87
10.0	8000	66.93	8000	82.68
12.0	8000	82.68	8000	102.36
14.0	6000	70.87	6000	86.61
16.0	6000	74.80	6000	94.49
18.0	4000	55.12	4000	70.87
20.0	4000	62.99	4000	74.80



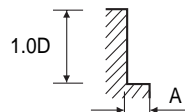
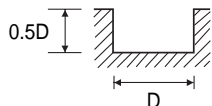
A :  $\varnothing 3 \sim \varnothing 10 = 0.25 \times D$   
 $\varnothing 12 \sim \varnothing 20 = 0.5 \times D$

RPM = rev./min.  
 FEED = inch/min.

**CARBIDE, 2 FLUTE TiCN COATED**

**EG522, EG930 SERIES**

MATERIAL	ALUMINUM LOW SILICON ALUMINUM			
	DIAMETER	RPM	FEED	FEED
3.0	13000	35.43	13000	47.24
4.0	13000	47.24	13000	55.12
5.0	13000	51.18	13000	66.93
6.0	13000	59.06	13000	78.74
8.0	10000	70.87	10000	90.55
10.0	10000	86.61	10000	106.30
12.0	10000	106.30	10000	133.86
14.0	8000	90.55	8000	110.24
16.0	8000	98.43	8000	122.05
18.0	5000	70.87	5000	90.55
20.0	5000	78.74	5000	98.43

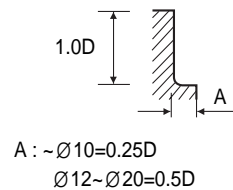
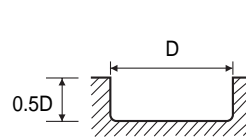
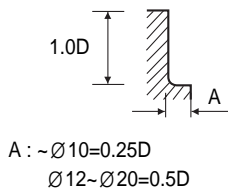
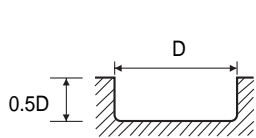


A :  $\varnothing 3 \sim \varnothing 10 = 0.25 \times D$   
 $\varnothing 12 \sim \varnothing 20 = 0.5 \times D$

RPM = rev./min.  
 FEED = inch/min.

**CARBIDE, 2 FLUTE CORNER RADIUS TiCN COATED**
**EG909 SERIES**

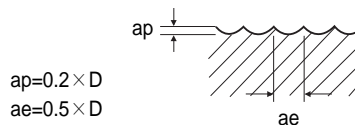
MATERIAL	ALUMINUM ALUMINUM ALLOY				COPPER ALLOY			
	DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM
4.0	13000	47.24	13000	55.12	3900	11.81	3900	13.78
6.0	13000	59.06	13000	78.74	3900	14.96	3900	19.69
8.0	10000	70.87	10000	90.55	3000	17.72	3000	22.83
10.0	10000	86.61	10000	106.30	3000	21.65	3000	26.77
12.0	10000	106.30	10000	133.86	3000	26.77	3000	33.46
16.0	8000	98.43	8000	122.05	2400	24.80	2400	30.71
20.0	5000	78.74	5000	98.43	1500	19.69	1500	24.80



RPM = rev./min.  
 FEED = inch/min.

**CARBIDE, 2 FLUTE 50° HELIX BALL NOSE TiCN COATED**
**EG910 SERIES**

MATERIAL	ALUMINUM ALUMINUM ALLOY		COPPER ALLOY	
	DIAMETER	RPM	FEED	RPM
R3.0 × 6.0	18000	68.90	5500	17.32
R4.0 × 8.0	14000	78.74	4200	19.69
R5.0 × 10.0	14000	92.52	4200	22.83
R6.0 × 12.0	14000	118.11	4200	29.53
R8.0 × 16.0	11000	106.30	3300	26.38
R10.0 × 20.0	7000	86.61	2100	21.65



RPM = rev./min.  
 FEED = inch/min.

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT &amp; HSS END MILLS

TECHNICAL DATA





**RECOMMENDED CUTTING CONDITIONS**

**CARBIDE, 3 FLUTE 40° HELIX BALL NOSE TiCN COATED**

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

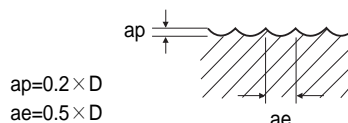
TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA

**EG908 SERIES**

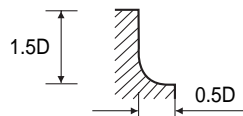
MATERIAL	ALUMINUM LOW SILICON ALUMINUM		COPPER ALLOY		
	DIAMETER	RPM	FEED	RPM	FEED
<b>R1.0 × 2.0</b>		27000	37.40	8000	9.45
<b>R1.25 × 2.5</b>		22000	37.40	6500	9.45
<b>R1.5 × 3.0</b>		18000	37.40	5500	9.45
<b>R2.0 × 4.0</b>		18000	49.21	5500	12.20
<b>R2.5 × 5.0</b>		18000	53.15	5500	13.39
<b>R3.0 × 6.0</b>		18000	68.90	5500	17.32
<b>R4.0 × 8.0</b>		14000	78.74	4200	19.69
<b>R5.0 × 10.0</b>		14000	92.52	4200	22.83
<b>R6.0 × 12.0</b>		14000	118.11	4200	29.53
<b>R8.0 × 16.0</b>		11000	106.30	3300	26.38



RPM = rev./min.  
FEED = inch/min.

**T15, 3 FLUTE 42° HELIX SPEED-FREAK BALL NOSE**
CBN  
END MILLi-Xmill  
END MILLX5070  
END MILLSX-SPEED  
ROUGHER  
END MILLSX-POWER  
END MILLSJET-POWER  
END MILLSV7 Mill STEEL  
END MILLSV7 Mill INOX  
END MILLSALU-POWER  
END MILLSD-POWER  
END MILLSSTANDARD  
CARBIDE  
END MILLSTANK-POWER  
END MILLSSTANDARD  
COBALT  
& HSS  
END MILLSTECHNICAL  
DATA
**EK196** SERIES

MATERIAL	ALUMINUM ALUMINUM ALLOYS	
DIAMETER	RPM	FEED
1/4	4500	7.90
5/16	3100	9.10
3/8	2500	13.80
1/2	2000	15.80
5/8	1600	17.70

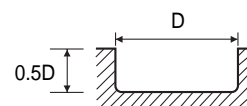
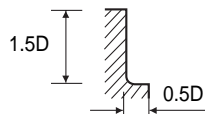


※ The FEED, in long &amp; long reach types, should be reduced by around 50%

 RPM = rev./min.  
FEED = inch/min.

**T15, 3 FLUTE, 42° HELIX FINISHING with CORNER RADIUS**
**EK193** SERIES

MATERIAL	ALUMINUM ALUMINUM ALLOY			
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 &amp; long reach types, should be reduced by around 50%

 RPM = rev./min.  
FEED = inch/min.



RECOMMENDED CUTTING CONDITIONS

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

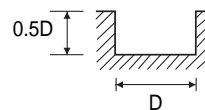
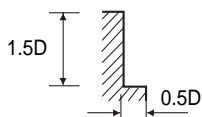
STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

PREMIUM HSS-PM, 3 FLUTE 42° HELIX ROUGHING TiAIN COATED

EP922, EP924 SERIES

MATERIAL	ALUMINUM ALUMINUM ALLOY			
	DIAMETER	RPM	FEED	FEED
12.0	2800	16.14	2800	21.65
16.0	2200	18.31	2200	24.61
20.0	1700	20.67	1700	27.56
25.0	1400	18.31	1400	24.61
32.0	1100	20.67	1100	27.56



※ 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	$0.262 \times \text{CUTTER DIA} \times \text{RPM}$	FPT	$\frac{\text{IPM}}{N \times \text{RPM}}$
RPM	$3.82 \times \frac{\text{SFM}}{\text{CUTTER DIA}}$	IPR	$\frac{\text{IPM}}{\text{RPM}}$
IPM	$\text{FPT} \times N \times \text{RPM}$	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



Being the best through innovation













# CARBIDE



# D-POWER

- Diamond Coated Carbide End Mills for Graphite

# SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE	
			MIN	MAX		
<b>INCH</b>						
<b>EI107</b>		CARBIDE, 4 FLUTE REGULAR LENGTH	◆	D1/8	D1/2	<b>628</b>
<b>EI099</b>		CARBIDE, 2 FLUTE REGULAR LENGTH BALL NOSE	◆	R.0391	R1/4	<b>629</b>
<b>EI106</b>		CARBIDE, 4 FLUTE REGULAR LENGTH BALL NOSE	◆	R.0391	R1/4	<b>629</b>
<b>EI971</b>		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE	◆	R.0391	R1/4	<b>630</b>
<b>EI972</b>		CARBIDE, 2 FLUTE LONG REACH BALL NOSE	◆	R.0391	R5/32	<b>631</b>
<b>EIB07</b>		CARBIDE, 4 FLUTE REGULAR LENGTH BALL NOSE with NECK	◆	R.0156	R.0625	<b>632</b>
<b>EIB05</b>		CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS	◆	D1/16	D1/2	<b>633</b>
<b>EIB06</b>		CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS with NECK	◆	D1/32	D1/8	<b>634</b>
◆ U.S.A Stock						
<b>METRIC</b>						
<b>EI880</b>		CARBIDE, 2 FLUTE SHORT LENGTH BALL NOSE	◇	R1.0	R6.0	<b>635</b>
<b>EI881</b>		CARBIDE, 3 FLUTE SHORT LENGTH BALL NOSE	◇	R1.0	R6.0	<b>635</b>
<b>EI451</b>		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE	◇	R1.0	R6.0	<b>636</b>
<b>EI450</b>		CARBIDE, 2 FLUTE LONG REACH BALL NOSE	◇	R1.0	R4.0	<b>637</b>
RECOMMENDED CUTTING CONDITIONS					<b>638</b>	

◇ Call for Availability

# D-POWER END MILLS

⊙ : Excellent  
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRc40~45	HRc45~55								
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							

							⊙		○			
							⊙		○			
							⊙		○			
							⊙		○			
							⊙		○			
							⊙		○			
							⊙		○			
							⊙		○			

							⊙		○			
							⊙		○			
							⊙		○			
							⊙		○			



**CARBIDE, 4 FLUTE REGULAR LENGTH**

- ▶ Higher hardness of film and excellent wear-resistance increase the tool life surprisingly.
- ▶ Ultra fine film of YG-1's diamond coated carbide end mills ensure the smooth and excellent surface on work materials.
- ▶ High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass, etc.
- ▶ YG-1's diamond coated carbide end mills may have good result for the machining of non-ferrous metals and non-metallic materials.



CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA



**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/teeth

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
							◎		○			

## CARBIDE, 2&4 FLUTE REGULAR LENGTH BALL NOSE

- ▶ Higher hardness of film and excellent wear-resistance increase the tool life surprisingly.
- ▶ Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- ▶ High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass, etc.
- ▶ YG-1's diamond coated carbide ball end mills may have good result for the machining of non-ferrous metals and non-metallic materials.



MG 2 30° ±.0008 PLAIN P.638

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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

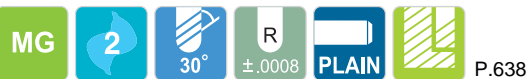
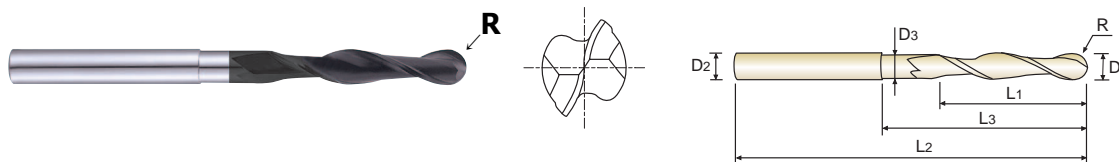
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
							◎		○			





**CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE**

- ▶ Higher hardness of film and excellent wear-resistance increase the tool life surprisingly.
- ▶ Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- ▶ High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass, etc.
- ▶ YG-1's diamond coated carbide ball end mills may have good result for the machining of non-ferrous metals and non-metallic materials. metallic materials.

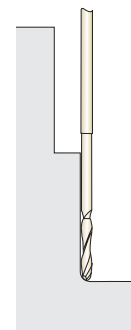


**for GRAPHITE**  
◆ U.S.A Stock

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
<b>99671</b>	R.0391	<b>5/64</b>	1/8	3/8	3/4	3-1/4	.076
<b>99672</b>	R 1/16	<b>1/8</b>	1/8	5/8	1	3-1/4	.120
<b>99973</b>	R 3/32	<b>3/16</b>	3/16	1-1/8	2	4	.182
<b>99673</b>	R 3/32	<b>3/16</b>	1/4	1-1/8	2	4	.185
<b>99674</b>	R 1/8	<b>1/4</b>	1/4	1-1/8	2	4	.230
<b>99675</b>	R 5/32	<b>5/16</b>	5/16	1-1/2	2-3/8	4-1/2	.293
<b>99676</b>	R 3/16	<b>3/8</b>	3/8	2	2-3/4	4-3/4	.355
<b>99677</b>	R1/4	<b>1/2</b>	1/2	2-1/8	3	5-1/8	.480

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0~- .0012	0~- .0003



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

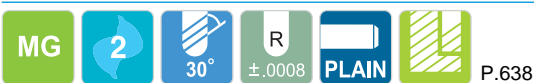
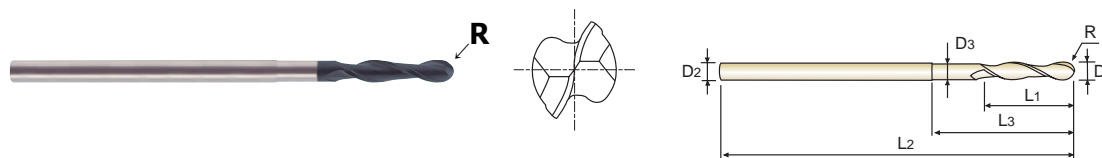
TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
							◎		○			

**CARBIDE, 2 FLUTE LONG REACH BALL NOSE**

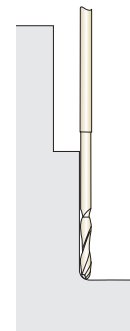
- ▶ Higher hardness of film and excellent wear-resistance increase the tool life surprisingly.
- ▶ Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- ▶ High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass, etc.
- ▶ YG-1's diamond coated carbide ball end mills may have good result for the machining of non-ferrous metals and non-metallic materials. metallic materials.


**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
<b>99678</b>	R.0391	<b>5/64</b>	1/8	3/8	3/4	4	.076
<b>99679</b>	R1/16	<b>1/8</b>	1/8	5/8	1	4	.120
<b>99980</b>	R3/32	<b>3/16</b>	3/16	1-1/8	2	4-3/4	.182
<b>99680</b>	R3/32	<b>3/16</b>	1/4	1-1/8	2	4-3/4	.186
<b>99681</b>	R1/8	<b>1/4</b>	1/4	1-1/8	2	6	.230
<b>99682</b>	R5/32	<b>5/16</b>	5/16	1-1/2	2-3/8	6	.293

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~- .0012	0~- .0003



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
							◎		○			

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

**D-POWER END MILLS**

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

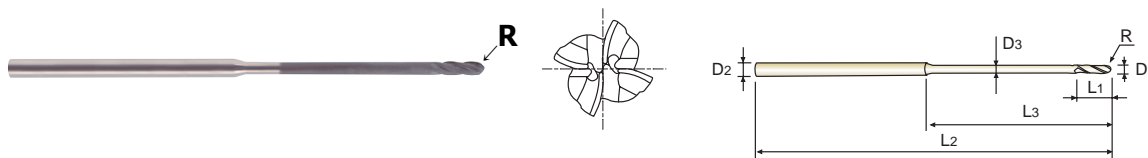
STANDARD COBALT &amp; HSS END MILLS

TECHNICAL DATA



**CARBIDE, 4 FLUTE REGULAR LENGTH BALL NOSE with NECK**

- ▶ Higher hardness of film and excellent wear-resistance increase the tool life surprisingly.
- ▶ Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- ▶ High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass, etc.
- ▶ YG-1's diamond coated carbide ball end mills may have good result for the machining of non-ferrous metals and non-metallic materials. metallic materials.



MG 4 30° ±.0008 PLAIN P.638

**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
<b>EIB07002</b>	R.0156	<b>1/32</b>	1/8	3/32	3/8	3	.028
<b>EIB07901</b>	R.0156	<b>1/32</b>	1/8	3/32	1/2	3	.028
<b>EIB07003</b>	R.0234	<b>3/64</b>	1/8	9/64	9/16	3	.043
<b>EIB07902</b>	R.0234	<b>3/64</b>	1/8	9/64	3/4	3	.043
<b>EIB07004</b>	R.0312	<b>1/16</b>	1/8	3/16	3/4	3	.057
<b>EIB07903</b>	R.0312	<b>1/16</b>	1/8	3/16	1	3	.057
<b>EIB07006</b>	R.0469	<b>3/32</b>	1/8	9/32	1	3	.086
<b>EIB07904</b>	R.0469	<b>3/32</b>	1/8	9/32	1-1/2	3	.086
<b>EIB07008</b>	R.0625	<b>1/8</b>	1/8	3/8	1-1/2	3	.115
<b>EIB07905</b>	R.0625	<b>1/8</b>	1/8	3/8	2	3	.115

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~- .0012	0~- .0003

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

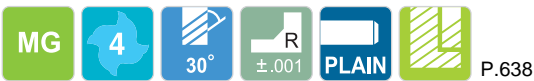
TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
							◎		○			

## CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS

- ▶ Higher hardness of film and excellent wear-resistance increase the tool life surprisingly.
- ▶ Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- ▶ High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass, etc.
- ▶ YG-1's diamond coated carbide ball end mills may have good result for the machining of non-ferrous metals and non-metallic materials. metallic materials.


**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)	D1	D2	L1	L3	L2	D3
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

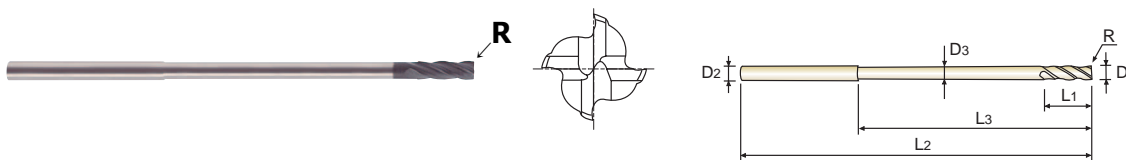
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
							◎		○			



**CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS with NECK**

- ▶ Higher hardness of film and excellent wear-resistance increase the tool life surprisingly.
- ▶ Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- ▶ High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass, etc.
- ▶ YG-1's diamond coated carbide ball end mills may have good result for the machining of non-ferrous metals and non-metallic materials. metallic materials.



**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)	D1	D2	L1	L3	L2	D3
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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

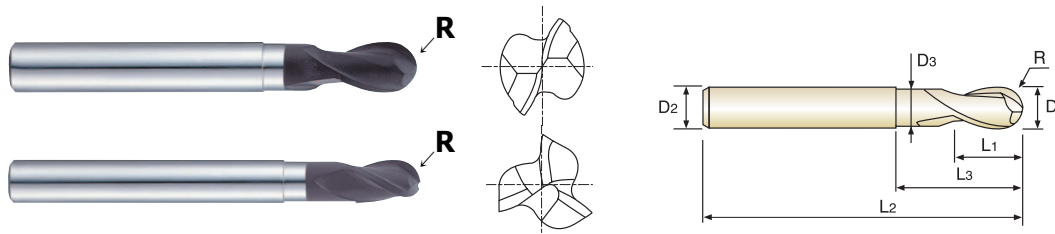
TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
							◎		○			

## CARBIDE, 2&3 FLUTE SHORT LENGTH BALL NOSE

- ▶ Higher hardness of film and excellent wear-resistance increase the tool life surprisingly.
- ▶ Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- ▶ High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass, etc.
- ▶ YG-1's diamond coated carbide ball end mills may have good result for the machining of non-ferrous metals and non-metallic materials.



MG 2&3 30° R ±0.01 PLAIN P.639

**for GRAPHITE**  
 ◇ Call for Availability

**EI880(2 FLUTE), EI881(3 FLUTE) Series**

Unit : mm

EDP No.		Radius of Ball Nose R (±0.01)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
2 FLUTE	3 FLUTE		Metric	Inch					
			D1						
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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
							◎		○			

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

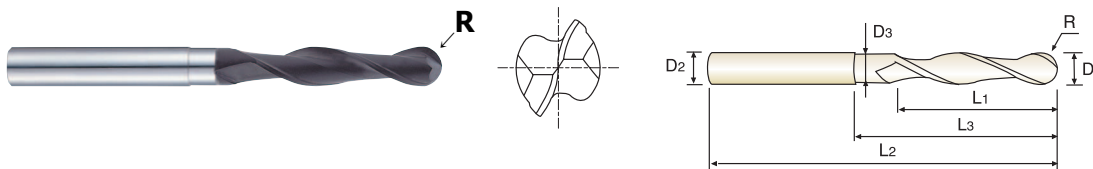
TECHNICAL DATA



**EI451 SERIES** PLAIN SHANK

**CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE**

- ▶ Higher hardness of film and excellent wear-resistance increase the tool life surprisingly.
- ▶ Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- ▶ High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass, etc.
- ▶ YG-1's diamond coated carbide ball end mills may have good result for the machining of non-ferrous metals and non-metallic materials.



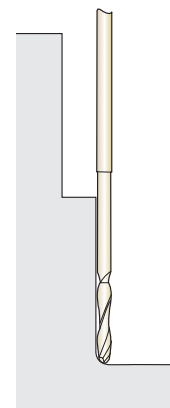
MG 2 30° ±0.01 PLAIN P.639

**for GRAPHITE**  
 ◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
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

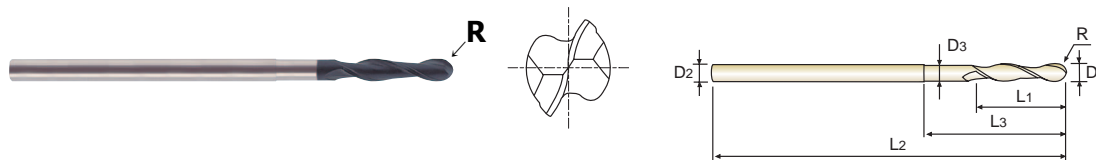


◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
							◎		○			

# CARBIDE, 2 FLUTE LONG REACH BALL NOSE

- ▶ Higher hardness of film and excellent wear-resistance increase the tool life surprisingly.
- ▶ Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- ▶ High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass, etc.
- ▶ YG-1's diamond coated carbide ball end mills may have good result for the machining of non-ferrous metals and non-metallic materials.



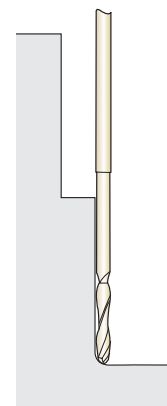
MG
2
30°
R ±0.01
PLAIN
P.639

for GRAPHITE  
 ◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose R (±0.01)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric D1	Inch					
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



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

**D-POWER** END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT &amp; HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
							◎		○			





CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

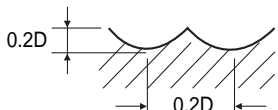
TECHNICAL  
DATA

**CARBIDE, 4 FLUTE BALL NOSE**

**EI106 SERIES**

MATERIAL	GRAPHITE	
	DIAMETER	RPM
5/64	16000	62.99
3/32	16000	88.19
1/8	16000	114.17
9/64	16000	137.80
5/32	16000	165.35
3/16	15500	200.79
1/4	15000	232.28
6/16	13000	236.22
3/8	11500	324.16
1/2	10500	248.03

RPM = rev./min.  
FEED = inch/min.

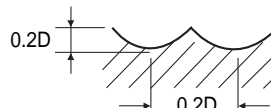


RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 2 FLUTE BALL NOSE**

**EI099, EI971, EI972 SERIES**

MATERIAL	GRAPHITE	
	DIAMETER	RPM
5/64	16000	31.50
3/32	16000	44.09
1/8	16000	57.09
9/64	16000	58.90
5/32	16000	82.68
3/16	15500	100.39
1/4	15000	116.14
6/16	13000	118.11
3/8	11500	120.08
1/2	10500	124.02

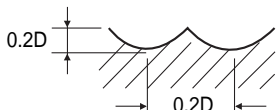


RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 4 FLUTE BALL NOSE  
with NECK**

**EIB07 SERIES**

MATERIAL	GRAPHITE	
	DIAMETER	RPM
1/32	20000	30.36
3/64	20000	33.73
1/16	20000	37.48
5/64	16000	44.09
3/32	16000	61.73
1/8	16000	79.92
9/64	16000	96.46
5/32	16000	115.75
3/16	15500	140.55
1/4	15000	162.60
5/16	13000	165.35
3/8	11500	168.11
1/2	10500	

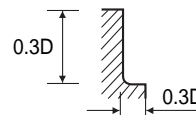


RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 4 FLUTE  
CORNER RADIUS**

**EIB05 SERIES**

MATERIAL	GRAPHITE	
	DIAMETER	RPM
1/16	40000	125.98
5/64	40000	157.48
1/8	40000	220.47
5/32	40000	314.96
3/16	40000	377.95
1/4	40000	440.94
5/16	32000	440.94
3/8	26000	451.44
1/2	21000	430.45

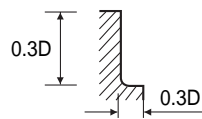


RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 4 FLUTE  
CORNER RADIUS with NECK**

**EIB06 SERIES**

MATERIAL	GRAPHITE	
DIAMETER	RPM	FEED
1/32	40000	44.09
3/64	40000	66.14
1/16	40000	88.19
5/64	40000	110.24
1/8	40000	154.33
5/32	40000	220.47
3/16	40000	264.57
1/4	40000	308.66
5/16	32000	308.66
3/8	26000	316.14
1/2	21000	301.41

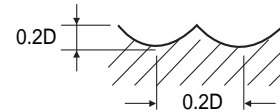


RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 2 FLUTE BALL NOSE**

**EI880, EI451, EI450 SERIES**

MATERIAL	GRAPHITE	
DIAMETER	RPM	FEED
2.0	16000	31.50
2.5	16000	44.09
3.0	16000	57.09
3.5	16000	68.90
4.0	16000	82.68
5.0	15500	100.39
6.0	15000	116.14
8.0	13000	118.11
10.0	11500	120.08
12.0	10500	124.02

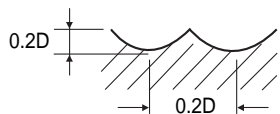


RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 3 FLUTE BALL NOSE**

**EI881 SERIES**

MATERIAL	GRAPHITE	
DIAMETER	RPM	FEED
2.0	16000	47.24
2.5	16000	66.93
3.0	16000	84.65
3.5	16000	104.33
4.0	16000	122.05
5.0	15500	149.61
6.0	15000	175.20
8.0	13000	177.17
10.0	11500	181.10
12.0	10500	187.01

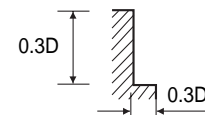


RPM = rev./min.  
FEED = inch/min.

**CARBIDE, 4 FLUTE**

**EI107 SERIES**

MATERIAL	GRAPHITE	
DIAMETER	RPM	FEED
1/64	40000	31.50
1/8	40000	62.99
3/16	40000	125.98
1/4	40000	188.98
5/16	32000	196.85
3/8	26000	204.72
1/2	20000	188.98



RPM = rev./min.  
FEED = inch/min.

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA



Global Cutting Tool Leader **YG-1**





Being the best through innovation

# CARBIDE



# STANDARD CARBIDE

- General Purpose, Non-coated, Many Coatings Available

# SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
<b>INCH</b>					
<b>E5020</b>		CARBIDE, 2 FLUTE REGULAR LENGTH	D1/32	D1	<b>646</b>
<b>E5021</b>		CARBIDE, 4 FLUTE REGULAR LENGTH	D1/16	D1	<b>647</b>
<b>E5244</b>		CARBIDE, 2 FLUTE STUB LENGTH	D1/16	D3/4	<b>648</b>
<b>E5245</b>		CARBIDE, 4 FLUTE STUB LENGTH	D1/16	D3/4	<b>649</b>
<b>E5011</b>		CARBIDE, 2 FLUTE LONG LENGTH	D1/8	D1	<b>650</b>
<b>E5012</b>		CARBIDE, 4 FLUTE LONG LENGTH	D1/8	D1	<b>650</b>
<b>E5026</b>		CARBIDE, 2 FLUTE EXTRA LONG LENGTH	D1/8	D1	<b>651</b>
<b>E5065</b>		CARBIDE, 4 FLUTE EXTRA LONG LENGTH	D1/8	D1	<b>652</b>
<b>E5022</b>		CARBIDE, 2 FLUTE STUB LENGTH DOUBLE	D1/32	D1/2	<b>653</b>
<b>E5023</b>		CARBIDE, 4 FLUTE STUB LENGTH DOUBLE	D1/16	D1/2	<b>654</b>
<b>E5025</b>		CARBIDE, 2 FLUTE REGULAR LENGTH DOUBLE	D1/8	D1/2	<b>655</b>
<b>E5024</b>		CARBIDE, 4 FLUTE REGULAR LENGTH DOUBLE	D1/8	D1/2	<b>655</b>
<b>E5249</b>		CARBIDE, 2 FLUTE REGULAR LENGTH BALL NOSE	R1/16	R1/2	<b>656</b>
<b>E5250</b>		CARBIDE, 4 FLUTE REGULAR LENGTH BALL NOSE	R1/16	R1/2	<b>656</b>
<b>E5014</b>		CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE	R1/16	R1/2	<b>657</b>
<b>E5060</b>		CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE	R1/16	R1/2	<b>657</b>
<b>E5018</b>		CARBIDE, 2 FLUTE EXTRA LONG LENGTH BALL NOSE	R1/16	R1/2	<b>658</b>
<b>E5062</b>		CARBIDE, 4 FLUTE EXTRA LONG LENGTH BALL NOSE	R1/16	R1/2	<b>659</b>
<b>E5251 E5252</b>		CARBIDE, 2&4 FLUTE STUB LENGTH DOUBLE BALL NOSE	R7/64	R1/4	<b>660</b>



# SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
<b>INCH</b>					
<b>E5216</b>		CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS	D1/8	D1	<b>661</b>
<b>E5069</b>		CARBIDE, 5 FLUTE 45° HELIX REGULAR LENGTH CORNER RADIUS	D1/4	D1	<b>663</b>
<b>E5243</b>		CARBIDE, 3 FLUTE 45° HELIX REGULAR LENGTH	D1/8	D1	<b>664</b>
<b>E5059</b>		CARBIDE, 3 FLUTE 50° HELIX STUB & REGULAR & LONG LENGTH	D1/4	D3/4	<b>665</b>
<b>E5246</b>		CARBIDE, 3 FLUTE 60° HELIX REGULAR LENGTH	D1/8	D1	<b>666</b>
<b>E5066</b>		CARBIDE, 5 FLUTE 45° HELIX STUB LENGTH	D1/8	D1	<b>667</b>
<b>E5067</b>		CARBIDE, 5 FLUTE 45° HELIX REGULAR LENGTH	D1/8	D1	<b>668</b>
<b>E5068</b>		CARBIDE, 5 FLUTE 45° HELIX MEDIUM & LONG LENGTH	D1/4	D1	<b>669</b>
<b>E5073</b>		CARBIDE, 5 FLUTE 45° HELIX EXTRA LONG LENGTH	D5/16	D1	<b>670</b>
<b>E5058</b>		CARBIDE, 6 FLUTE 40° HELIX REGULAR LENGTH	D3/16	D3/4	<b>671</b>
<b>E5056</b> <b>E5057</b>		CARBIDE, 5 FLUTE 45° HELIX STUB & REGULAR LENGTH FINE PITCH ROUGHING	D3/8	D1	<b>672</b>
<b>E5077</b>		CARBIDE, 3 FLUTE TAPER	D3/32	D1/4	<b>673</b>
<b>E5078</b>		CARBIDE, 3 FLUTE TAPER BALL NOSE	R.047	R.125	<b>674</b>
<b>METRIC</b>					
<b>EH527</b>		CARBIDE, 2 FLUTE LONG LENGTH TiAlN 'F' COATED	D3.5	D20.0	<b>675</b>
<b>EH540</b>		CARBIDE, 4 FLUTE LONG LENGTH TiAlN 'F' COATED	D3.5	D20.0	<b>676</b>
<b>EH882</b>		CARBIDE, 3 FLUTE 35° HELIX CORNER RADIUS TiAlN 'F' COATED	D3.0	D20.0	<b>677</b>
RECOMMENDED CUTTING CONDITIONS					<b>678</b>

# STANDARD CARBIDE END MILLS

⊙ : Excellent  
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRc40~45	HRc45~55								
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							

○	○	○	○			○		○	○	○		
⊙	⊙	⊙	○			○		○		⊙	○	○
○	○	○	○			○		○		⊙	○	○
○	○	○	○			○		○		⊙	○	○
○	○	○	○			○		○		⊙	○	○
○	○	○	○			○		○		⊙	○	○
○	○	○	○			○		○		⊙	○	○
○	○	○	○			○		○		⊙	○	○
○	○	○	○			○		○		⊙	○	○
○	○	○	○			○		○		⊙	○	○
○	○	○	○							⊙	○	
○	○	○	○			○		○	○	○		
○	○	○	○			○		○	○	○		

○	○	○	○			○		○	○	○		
○	○	○	○			○		○	○	○		
○	○	○	○			⊙		○	⊙			



**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.



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎				○		○	○	○		

# CARBIDE, 4 FLUTE REGULAR LENGTH

► Possible for high-speed cutting, suitable for high efficiency machining 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.



P.680

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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎				○		○	○	○		

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT &amp; HSS END MILLS

TECHNICAL DATA



**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.



CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA



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

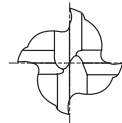
Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~- .0012	0~- .0005

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎				○		○	○	○		

**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.



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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT &amp; HSS END MILLS

TECHNICAL DATA

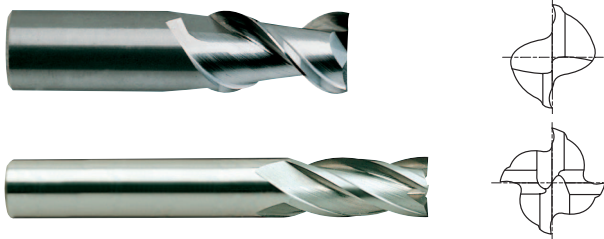
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎				○		○	○	○		



**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.



CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA



P.679, 680

**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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎				○		○	○	○		

# 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.679

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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT &amp; HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎				○		○	○	○		



**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.



CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA



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

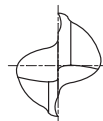
Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~- .0012	0~- .0005

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎				○		○	○	○		

**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.679

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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎				○		○	○	○		

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT &amp; HSS END MILLS

TECHNICAL DATA





**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.



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



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

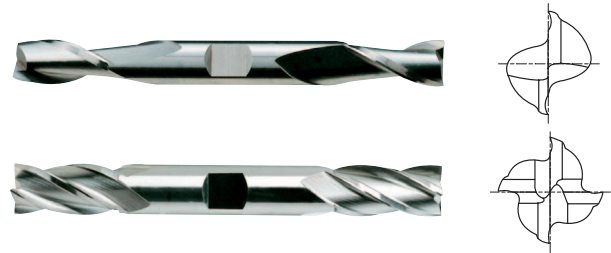
\*\*The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎				○		○	○	○		

## 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.679, 680

### 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

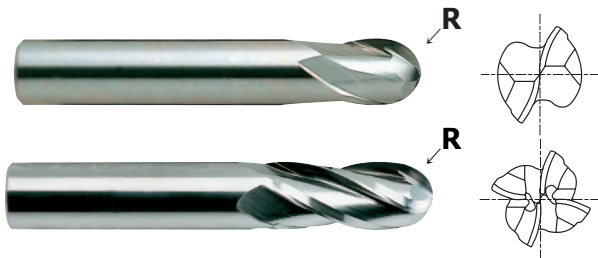
\*\*The shank of end mills is the same diameter as the cutting portion. ◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎				○		○	○	○		



**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.



- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

**E5049(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

**E5050(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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRC20	HRC20~30	HRC30~40	HRC40~45	HRC45~55	HRC55~70							
◎	◎	◎	○			○		○	○			

## 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.



P.681, 682

### E5014(2 FLUTE) Series

Unit : Inch

EDP No.					Radius of Ball Nose R (±.0008)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TIN COATED	TICN COATED	YG:TYLON F	YG:TYLON E					
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 R (±.0008)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TIN COATED	TICN COATED	YG:TYLON F	YG:TYLON E					
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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○			○		○	○			

- CBN END MILL
- i-Mill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA



**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.



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

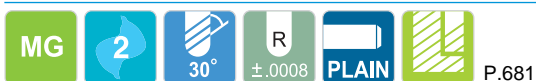
D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~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.



Unit : Inch

EDP No.					Radius of Ball Nose R (±.0008)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TIN COATED	TICN COATED	YG:TYLON F	YG:TYLON E					
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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

**STANDARD CARBIDE END MILLS**

TANK-POWER END MILLS

STANDARD COBALT &amp; HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○			○		○	○			



**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.



P.681, 682

**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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○			○		○	○			

# 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.



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

CBN END MILL

i-Mill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT &amp; HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○			○		○	○	○		





**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.



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	YG:TYLON F	R				
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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○			○		○	○	○		

# 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°
±.001
PLAIN
P.678

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R				
86573TF-03OR	R.030	1/4	1/4	3/4	2-1/2
86584TF-03OR	R.030	3/8	3/8	1	2-1/2
86584TF-06OR	R.060	3/8	3/8	1	2-1/2
86593TF-03OR	R.030	1/2	1/2	1-1/4	3
86593TF-06OR	R.060	1/2	1/2	1-1/4	3
86593TF-09OR	R.090	1/2	1/2	1-1/4	3
86595TF-03OR	R.030	5/8	5/8	1-5/8	3-1/2
86595TF-06OR	R.060	5/8	5/8	1-5/8	3-1/2
86595TF-09OR	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-03OR	R.030	3/4	3/4	1-5/8	4
86598TF-06OR	R.060	3/4	3/4	1-5/8	4
86598TF-09OR	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-03OR	R.030	1	1	2	4
86600TF-06OR	R.060	1	1	2	4
86600TF-09OR	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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○			○		○		◎	○	○

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT &amp; HSS END MILLS

TECHNICAL DATA



**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.



CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA



Ø1/8-Ø5/16 Ø3/8-Ø1

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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○			○		○		◎	○	○

# 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.

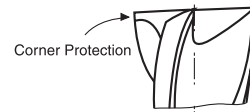


P.678

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



◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○			○		○		◎	○	○



**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.



CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA

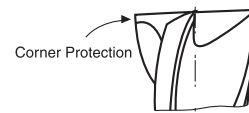
MG 3 60° PLAIN FLAT P.678

Ø1/8-Ø5/16 Ø3/8-Ø1

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

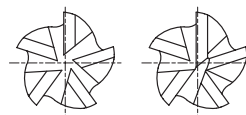


◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○			○		○		◎	○	○

**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  $\varnothing 3/16$     over  $\varnothing 3/16$ 

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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT &amp; HSS END MILLS

TECHNICAL DATA

◎ : Excellent    ○ : Good

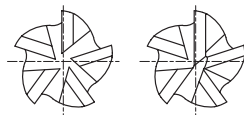
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○			○		○		◎	○	○



**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.678

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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○			○		○		◎	○	○

**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.



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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT &amp; HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

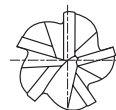
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○			○		○		◎	○	○





**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.678

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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○			○		○		◎	○	○

**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.678

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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○			○		○		◎	○	○

 CBN  
END MILL

 i-Xmill  
END MILL

 X5070  
END MILLS

 X-SPEED  
ROUGHER  
END MILLS

 X-POWER  
END MILLS

 JET-POWER  
END MILLS

 V7 Mill STEEL  
END MILLS

 V7 Mill INOX  
END MILLS

 ALU-POWER  
END MILLS

 D-POWER  
END MILLS

 STANDARD  
CARBIDE  
END MILLS

 TANK-POWER  
END MILLS

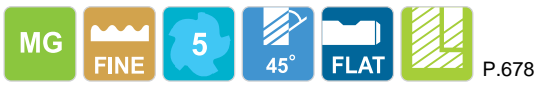
 STANDARD  
COBALT  
& HSS  
END MILLS

 TECHNICAL  
DATA



**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.



**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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○	◎	◎	○							◎	○	

◎ : Excellent ○ : Good

**CARBIDE, 3 FLUTE TAPER**

- ▶ Designed for milling die cavity.
- ▶ Many different center line angles are available on your job requirement.



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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○			○		○	○	○		

CBN END MILL

i-Mill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT &amp; HSS END MILLS

TECHNICAL DATA



**CARBIDE, 3 FLUTE TAPER BALL NOSE**

- ▶ Designed for milling die cavity.
- ▶ Many different center line angles are available on your job requirement.



- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

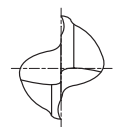
Unit : Inch

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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○			○		○	○	○		

**CARBIDE, 2 FLUTE LONG LENGTH - TiAlN 'F' Coated**


MG DIN 6528 N 2 ≈ 30° DIN 6535HA P.683

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**

▶ TiN &amp; TiCN-COATING are available on your request.

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
<b>h10</b>	0 - 40	0 - 48	0 - 58	0 - 70	0 - 84
<b>h6</b>	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○			○		○	○	○		

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT &amp; HSS END MILLS

TECHNICAL DATA

**CARBIDE, 4 FLUTE LONG LENGTH - TiAlN 'F' Coated**

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



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**

► TiN & TiCN-COATING are available on your request.

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
<b>h10</b>	0 - 40	0 - 48	0 - 58	0 - 70	0 - 84
<b>h6</b>	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○			○		○	○	○		

**CARBIDE, 3 FLUTE 35° HELIX CORNER RADIUS - TiAIN 'F' Coated**


Unit : mm

EDP No.	Corner Radius R	Mill Diameter		Shank Diameter h6	Length of Cut	Overall Length
		Metric h10	Inch			
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 &amp; TiCN-COATING are available on your request.

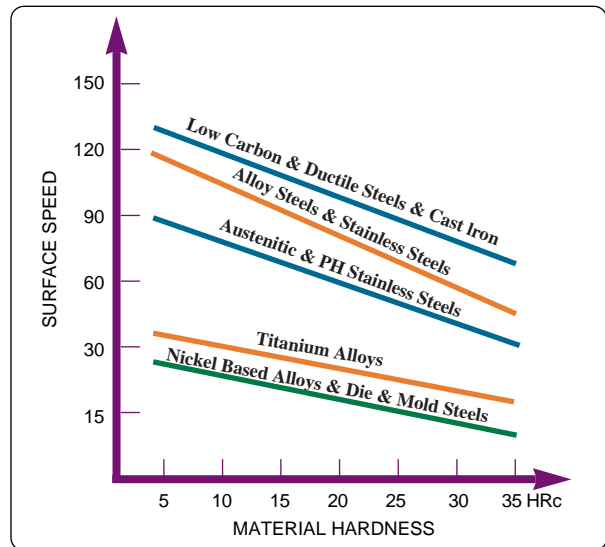
**Tolerances according to DIN 7160 & 7161**

Tolerance range in $\mu\text{m}$					
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

**TiAIN 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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎	○			◎		○	◎			

 CBN  
END MILL

 i-Xmill  
END MILL

 X5070  
END MILLS

 X-SPEED  
ROUGH  
END MILLS

 X-POWER  
END MILLS

 JET-POWER  
END MILLS

 V7 Mill STEEL  
END MILLS

 V7 Mill INOX  
END MILLS

 ALU-POWER  
END MILLS

 D-POWER  
END MILLS

 STANDARD  
CARBIDE  
END MILLS

 TANK-POWER  
END MILLS

 STANDARD  
COBALT  
& HSS  
END MILLS

 TECHNICAL  
DATA



CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

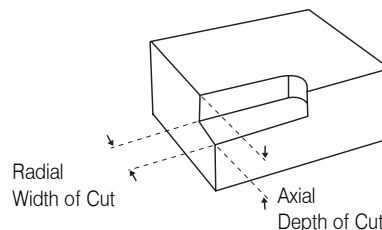
STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA

## 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	600-1000	.0005-.002	.002-.003	.003-.006	TiCN
Graphite	600-1000	.0005-.005	.001-.008	.002-.010	D
Plastic	600-1200	.0006-.003	.003-.006	.006-.012	TF

**TF** = YG:TYLON F  
**TE** = YG:TYLON E  
**D** = DIAMOND  
**CrN** = CROME NITRIDE

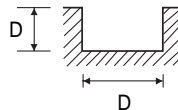


### SPEED & FEED DETERMINANTS

1. MATERIAL HARDNESS
2. MACHINE RIGIDITY
3. TYPE OF COATING
4. TOOL GEOMETRY
5. FINISH REQUIREMENTS
6. DEPTH & WIDTH OF CUT

**CARBIDE, 2 FLUTE - SLOTTING**
**E5020, E5244, E5011, E5026, E5022, E5025 SERIES**

MATERIAL	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	
	~ HRc 20		HRc 20 ~ HRc 30		HRc 30 ~ HRc 40									
STRENGTH	500 ~ 800N/mm <sup>2</sup>		800 ~ 1000N/mm <sup>2</sup>		1000 ~ 1300N/mm <sup>2</sup>									
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	5500	3.15	4800	2.76	4000	2.17	8000	2.56	6500	5.91	16000	12.60	12000	9.45
1/8	3700	3.54	3200	3.15	2600	2.36	5300	2.56	4200	5.91	11000	12.60	8000	9.45
5/32	2800	3.54	2400	3.15	2000	2.36	4000	2.56	3200	5.91	8000	12.60	6000	9.45
3/16	2200	3.54	1900	3.15	1600	2.36	3200	2.56	2500	5.91	6400	12.60	4800	9.45
1/4	1800	3.54	1600	3.15	1300	2.36	2600	2.56	2100	7.09	5300	13.39	4000	10.24
5/16	1400	3.54	1200	3.15	1000	2.36	2000	2.56	1600	7.48	4000	13.39	3000	10.24
3/8	1100	3.54	950	3.15	800	2.36	1600	2.56	1300	7.87	3200	13.39	2400	10.24
1/2	900	3.54	800	3.15	660	2.36	1300	2.56	1000	8.27	2600	13.39	2000	10.24
9/16	800	3.54	700	3.15	570	2.36	1100	2.56	900	8.66	2300	13.39	1700	10.24
5/8	700	3.94	600	3.35	500	2.95	1000	2.95	800	8.86	2000	13.39	1500	10.24
13/16	550	3.94	480	3.35	400	2.95	800	3.15	640	9.45	1600	13.39	1200	10.24

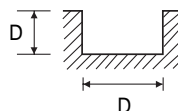


※ The Feed, in long &amp; extra long types, should be reduced by around 50%.

RPM = rev./min. FEED = inch/min.

**CARBIDE, 2 FLUTE TiAlN "F" COATED - SLOTTING**
**EH020, EH244, EH011, EH026, EH022, EH025 SERIES**

MATERIAL	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	
	~ HRc 20		HRc 20 ~ HRc 30		HRc 30 ~ HRc 40									
STRENGTH	500 ~ 800N/mm <sup>2</sup>		800 ~ 1000N/mm <sup>2</sup>		1000 ~ 1300N/mm <sup>2</sup>									
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	8640	4.73	7440	4.25	6240	3.31	12000	4.02	10200	9.44	24000	19.85	18000	14.64
1/8	5760	5.66	5040	4.96	4080	3.78	8280	4.02	6600	9.44	16800	19.85	12000	14.64
5/32	4370	5.66	3720	4.96	3120	3.78	6240	4.02	5040	9.44	12000	19.85	9600	14.64
3/16	3430	5.66	3000	4.96	2400	3.78	5040	4.02	3960	9.44	9960	19.85	7440	14.64
1/4	2880	5.66	2400	4.96	2040	3.78	4080	4.02	3240	10.87	8280	20.78	6240	16.07
5/16	2160	5.66	1800	4.96	1560	3.78	3120	4.02	2400	11.81	6240	20.78	4800	16.07
3/8	1680	5.66	1440	4.96	1200	3.78	2400	4.02	2040	12.29	5040	20.78	3720	16.07
1/2	1440	5.66	1200	4.96	1030	3.78	2040	4.02	1560	12.76	4080	20.78	3120	16.07
9/16	1200	5.66	1080	4.96	890	3.78	1680	4.02	1440	13.22	3600	20.78	2640	16.07
5/8	1080	6.14	960	5.20	780	4.73	1560	4.73	1200	13.70	3120	20.78	2400	16.07
13/16	880	6.14	740	5.20	620	4.73	1200	4.73	1000	14.64	2400	20.78	1870	16.07



※ The Feed, in long &amp; extra long types, should be reduced by around 50%.

RPM = rev./min. FEED = inch/min.

 CBN  
END MILL

 i-Xmill  
END MILL

 X5070  
END MILLS

 X-SPEED  
ROUGHER  
END MILLS

 X-POWER  
END MILLS

 JET-POWER  
END MILLS

 V7 Mill STEEL  
END MILLS

 V7 Mill INOX  
END MILLS

 ALU-POWER  
END MILLS

 D-POWER  
END MILLS

 STANDARD  
CARBIDE  
END MILLS

 TANK-POWER  
END MILLS

 STANDARD  
COBALT  
& HSS  
END MILLS

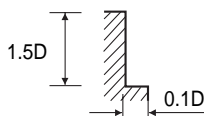
 TECHNICAL  
DATA



**CARBIDE, 4 FLUTE - SIDE CUTTING**

**E5021, E5245, E5012, E5065, E5023, E5024, E5216 SERIES**

MATERIAL	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	
	~ HRC 20		HRC 20 ~ HRC 30		HRC 30 ~ HRC 40									
STRENGTH	500 ~ 800N/mm <sup>2</sup>		800 ~ 1000N/mm <sup>2</sup>		1000 ~ 1300N/mm <sup>2</sup>									
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
	3/32	5500	9.45	4800	8.27	4000	6.30	8000	7.87	6500	17.72	16000	37.80	12000
1/8	3700	10.63	3200	9.45	2600	7.09	5300	7.87	4200	17.72	11000	37.80	8000	25.35
5/32	2800	10.63	2400	9.45	2000	7.09	4000	7.87	3200	17.72	8000	37.80	6000	25.35
3/16	2200	10.63	1900	9.45	1600	7.09	3200	7.87	2500	17.72	6400	37.80	4800	25.35
1/4	1800	10.63	1600	9.45	1300	7.09	2600	7.87	2100	21.26	5300	40.16	4000	30.71
5/16	1400	10.63	1200	9.45	1000	7.09	2000	7.87	1600	22.44	4000	40.16	3000	30.71
3/8	1100	10.63	950	9.45	800	7.09	1600	7.87	1300	23.62	3200	40.16	2400	30.71
1/2	900	10.63	800	9.45	660	7.09	1300	7.87	1000	24.80	2600	40.16	2000	30.71
9/16	800	10.63	700	9.45	570	7.09	1100	7.87	900	25.98	2300	40.16	1700	30.71
5/8	700	11.81	600	10.24	500	8.66	1000	8.86	800	26.77	2000	40.16	1500	30.71
13/16	550	11.81	480	10.24	400	8.66	800	9.45	640	28.35	1600	40.16	1200	30.71



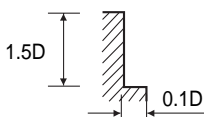
※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min. FEED = inch/min.

**CARBIDE, 4 FLUTE TiAlN "F" COATED - SIDE CUTTING**

**EH021, EH245, EH012, EH065, EH023, EH024, EH216 SERIES**

MATERIAL	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	
	~ HRC 20		HRC 20 ~ HRC 30		HRC 30 ~ HRC 40									
STRENGTH	500 ~ 800N/mm <sup>2</sup>		800 ~ 1000N/mm <sup>2</sup>		1000 ~ 1300N/mm <sup>2</sup>									
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
	3/32	8640	14.65	7440	12.76	6240	9.92	12000	12.29	10200	27.40	24000	56.69	18000
1/8	5760	16.54	5040	14.64	4080	10.87	8280	12.29	6600	27.40	16800	56.69	12000	44.41
5/32	4370	16.54	3720	14.64	3120	10.87	6240	12.29	5040	27.40	12000	56.69	9600	44.41
3/16	3430	16.54	3000	14.64	2400	10.87	5040	12.29	3960	27.40	9960	56.69	7440	44.41
1/4	2880	16.54	2400	14.64	2040	10.87	4080	12.29	3240	33.07	8280	61.42	6240	47.24
5/16	2160	16.54	1800	14.64	1560	10.87	3120	12.29	2400	34.96	6240	61.42	4800	47.24
3/8	1680	16.54	1440	14.64	1200	10.87	2400	12.29	2040	36.85	5040	61.42	3720	47.24
1/2	1440	16.54	1200	14.64	1030	10.87	2040	12.29	1560	38.74	4080	61.42	3120	47.24
9/16	1200	16.54	1080	14.64	890	10.87	1680	12.29	1440	40.63	3600	61.42	2640	47.24
5/8	1080	18.42	960	16.07	780	13.70	1560	13.70	1200	41.58	3120	61.42	2400	47.24
13/16	880	18.42	740	16.07	620	13.70	1200	14.64	1000	36.85	2400	61.42	1870	47.24

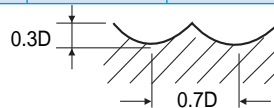


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min. FEED = inch/min.

**CARBIDE, 2 FLUTE BALL NOSE**
**E5249, E5014, E5018, E5251 SERIES**

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CAST IRON		ALUMINUM ALLOYS	
HARDNESS	~ HRC30		HRC30 ~ HRC40					
STRENGTH	~ 1000N/mm <sup>2</sup>		1000 ~ 1300N/mm <sup>2</sup>					
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	5200	3.54	4400	1.77	7300	5.91	21500	11.02
1/8	3500	3.94	2900	1.77	4900	6.30	14300	11.02
5/32	2600	3.94	2100	1.77	3600	7.87	10900	11.02
3/16	2100	4.13	1700	1.77	2900	9.06	8800	12.99
1/4	1700	3.94	1430	1.77	2400	9.84	7260	12.99
5/16	1270	3.74	1100	1.77	1800	12.60	5500	14.96
3/8	1000	3.74	870	1.77	1430	12.60	4300	14.96
1/2	870	3.35	730	1.77	1200	12.60	3600	17.32
9/16	750	3.35	620	1.77	1000	12.80	3000	17.32
5/8	650	3.35	540	1.77	920	12.80	2700	14.96
11/16	580	3.35	480	1.77	810	12.80	2400	14.96
13/16	500	3.35	430	1.77	730	11.42	2100	14.96

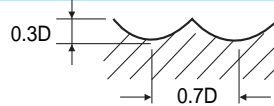


※ The Feed, in long &amp; extra long types, should be reduced by around 50%.

RPM = rev./min. FEED = inch/min.

**CARBIDE, 2 FLUTE BALL NOSE TiAIN "F" COATED**
**EH249, EH014, EF018, EF251 SERIES**

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CAST IRON		ALUMINUM ALLOYS	
HARDNESS	~ HRC30		HRC30 ~ HRC40					
STRENGTH	~ 1000N/mm <sup>2</sup>		1000 ~ 1300N/mm <sup>2</sup>					
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	8110	5.66	6840	2.83	11400	9.44	33600	17.00
1/8	5400	6.14	4560	2.83	7680	9.92	22320	17.00
5/32	4080	6.14	3240	2.83	5640	12.29	16800	17.00
3/16	3240	6.37	2640	2.83	4560	14.17	13200	20.32
1/4	2640	6.14	2270	2.83	3720	15.59	11280	20.32
5/16	1920	5.66	1680	2.83	2760	19.85	8640	23.15
3/8	1560	5.66	1320	2.83	1680	19.85	6720	23.15
1/2	1320	5.20	1140	2.83	1920	19.85	5640	26.93
9/16	1180	5.20	960	2.83	1560	19.85	4680	26.93
5/8	1020	5.20	840	2.83	1440	19.85	4200	23.15
11/16	900	5.20	740	2.83	1200	19.85	3720	23.15
13/16	780	5.20	670	2.83	1140	17.96	3240	23.15



※ The Feed, in long &amp; extra long types, should be reduced by around 50%.

RPM = rev./min. FEED = inch/min.

 CBN  
END MILL

 i-Xmill  
END MILL

 X5070  
END MILLS

 X-SPEED  
ROUGHER  
END MILLS

 X-POWER  
END MILLS

 JET-POWER  
END MILLS

 V7 Mill STEEL  
END MILLS

 V7 Mill INOX  
END MILLS

 ALU-POWER  
END MILLS

 D-POWER  
END MILLS

 STANDARD  
CARBIDE  
END MILLS

 TANK-POWER  
END MILLS

 STANDARD  
COBALT  
& HSS  
END MILLS

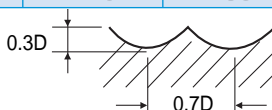
 TECHNICAL  
DATA



**CARBIDE, 4 FLUTE BALL NOSE**

**E5250, E5060, E5062, E5252 SERIES**

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CAST IRON		ALUMINUM ALLOYS	
	~ HRC30		HRC30 ~ HRC40					
STRENGTH	~ 1000N/mm <sup>2</sup>		1000 ~ 1300N/mm <sup>2</sup>					
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	5200	5.51	4400	2.76	7300	9.06	21500	16.54
1/8	3500	5.91	2900	2.76	4900	9.45	14300	16.54
5/32	2600	5.91	2100	2.76	3600	11.81	10900	16.54
3/16	2100	6.30	1700	2.76	2900	13.78	8800	19.69
1/4	1700	5.91	1430	2.76	2400	14.96	7260	19.69
5/16	1270	5.52	1100	2.76	1800	18.90	5500	22.44
3/8	1000	5.52	870	2.76	1430	18.90	4300	22.44
1/2	870	5.12	730	2.76	1200	18.90	3600	25.98
9/16	750	5.12	620	2.76	1000	19.29	3000	25.98
5/8	650	5.12	540	2.76	920	19.29	2700	22.44
11/16	580	5.12	480	2.76	810	19.29	2400	22.44
13/16	500	5.12	430	2.76	730	17.29	2100	22.44



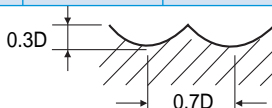
※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min. FEED = inch/min.

**CARBIDE, 4 FLUTE BALL NOSE TiAlN "F" COATED**

**EH250, EH060, EH062, EH252 SERIES**

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CAST IRON		ALUMINUM ALLOYS	
	~ HRC30		HRC30 ~ HRC40					
STRENGTH	~ 1000N/mm <sup>2</sup>		1000 ~ 1300N/mm <sup>2</sup>					
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	8110	8.51	6840	4.25	11400	14.17	33600	25.98
1/8	5400	9.44	4560	4.25	7680	14.64	22320	25.98
5/32	4080	9.44	3240	4.25	5640	18.42	16800	25.98
3/16	3240	9.92	2640	4.25	4560	21.26	13200	30.71
1/4	2640	9.44	2270	4.25	3720	23.15	11280	30.71
5/16	1920	8.51	1680	4.25	2760	29.30	8640	34.96
3/8	1560	8.51	1320	4.25	2270	29.30	6720	34.96
1/2	1320	8.03	1140	4.25	1920	29.30	5640	40.62
9/16	1180	8.03	960	4.25	1560	30.23	4680	40.62
5/8	1020	8.03	840	4.25	1440	30.23	4200	34.96
11/16	900	8.03	740	4.25	1200	30.23	3720	34.96
13/16	780	8.03	670	4.25	1140	26.93	3240	34.96

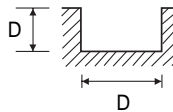


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min. FEED = inch/min.

**CARBIDE, 2 FLUTE TiAlN-COATED - SLOTTING**
**EH527 SERIES**

MATERIAL	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/mm <sup>2</sup>		800 ~ 1000N/mm <sup>2</sup>		1000 ~ 1300N/mm <sup>2</sup>									
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	7700	4.33	6720	3.94	5600	2.95	11200	3.54	9100	8.27	22400	17.72	16800	13.19
3.0	5180	4.92	4480	4.33	3640	3.35	7420	3.54	5880	8.27	15400	17.72	11200	13.19
4.0	3920	4.92	3360	4.33	2800	3.35	5600	3.54	4480	8.27	11200	17.72	8400	13.19
5.0	3080	4.92	2660	4.33	2240	3.35	4480	3.54	3500	8.27	8960	17.72	6720	13.19
6.0	2520	4.92	2240	4.33	1820	3.35	3640	3.54	2940	9.84	7420	18.70	5600	14.37
8.0	1960	4.92	1680	4.33	1400	3.35	2800	3.54	2240	10.43	5600	18.70	4200	14.37
10.0	1540	4.92	1330	4.33	1120	3.35	2240	3.54	1820	11.02	4480	18.70	3360	14.37
12.0	1260	4.92	1120	4.33	924	3.35	1820	3.54	1400	11.61	3640	18.70	2800	14.37
14.0	1120	4.92	980	4.33	798	3.35	1540	3.54	1260	12.20	3220	18.70	2380	14.37
16.0	980	5.51	840	4.72	700	4.13	1400	4.13	1120	12.40	2800	18.70	2100	14.37
20.0	770	5.51	672	4.72	560	4.13	1120	4.33	900	13.19	2240	18.70	1680	14.37

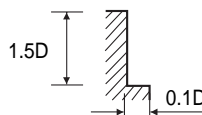


※ The FEED, in long &amp; extra long types, should be reduced by around 50%

RPM = rev./min. FEED = inch/min.

**CARBIDE, 4 FLUTE TiAlN-COATED - SIDE CUTTING**
**EH540 SERIES**

MATERIAL	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/mm <sup>2</sup>		800 ~ 1000N/mm <sup>2</sup>		1000 ~ 1300N/mm <sup>2</sup>									
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2.0	7700	13.19	6720	11.61	5600	8.86	11200	11.02	9100	24.80	22400	52.95	16800	39.76
3.0	5180	14.96	4480	13.19	3640	9.84	7420	11.02	5880	24.80	15400	52.95	11200	39.76
4.0	3920	14.96	3360	13.19	2800	9.84	5600	11.02	4480	24.80	11200	52.95	8400	39.76
5.0	3080	14.96	2660	13.19	2240	9.84	4480	11.02	3500	24.80	8960	52.95	6720	39.76
6.0	2520	14.96	2240	13.19	1820	9.84	3640	11.02	2940	29.72	7420	56.30	5600	42.91
8.0	1960	14.96	1680	13.19	1400	9.84	2800	11.02	2240	31.50	5600	56.30	4200	42.91
10.0	1540	14.96	1330	13.19	1120	9.84	2240	11.02	1820	33.07	4480	56.30	3360	42.91
12.0	1260	14.96	1120	13.19	920	9.84	1820	11.02	1400	34.65	3640	56.30	2800	42.91
14.0	1120	14.96	980	13.19	800	9.84	1540	11.02	1260	36.42	3220	56.30	2380	42.91
16.0	980	16.54	840	14.37	700	12.20	1400	12.40	1120	37.40	2800	56.30	2100	42.91
20.0	770	16.54	670	14.37	560	12.20	1120	13.19	900	39.76	2240	56.30	1680	42.91



※ The FEED, in long &amp; extra long types, should be reduced by around 50%

RPM = rev./min. FEED = inch/min.



CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA

**PROPERTIES AND APPLICATIONS OF COATINGS**

	Titanium Nitride	Titanium Carbonitride	Super TiAlN "F" Coatings	Super TiAlN "E" Coatings
<b>Hardness</b>	82 Rc	92 Rc	92 Rc	95 Rc
<b>Coefficient of Friction Against Dry Steel (.8)</b>	.4	.4	.4	.4
<b>Coating Thickness 3 Microns = .0001</b>	1- 4	1- 4	1- 5	1- 3
<b>Maximum Working Temperature</b>	1100 F	750 F	1470 F	1470 F
<b>Coating Color</b>	Gold	Blue - Gray	Violet - Gray	Violet - Gray
<b>Key Characteristics</b>	Good General Purpose	Good Wear Resistance Good Toughness Moderate Heat Resistance	Enhanced Toughness High Heat Resistance	High Hardness Enhanced Toughness High Heat Resistance
<b>Primary Applications</b>	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
<b>YG:TYLON SUPER TiAlN COATED TOOLS CAN BE RUN 20% - 50% FASTER THAN TiN or TiCN ON MOST MATERIALS</b>				

# HSS



Being the best through innovation














# TANK-POWER

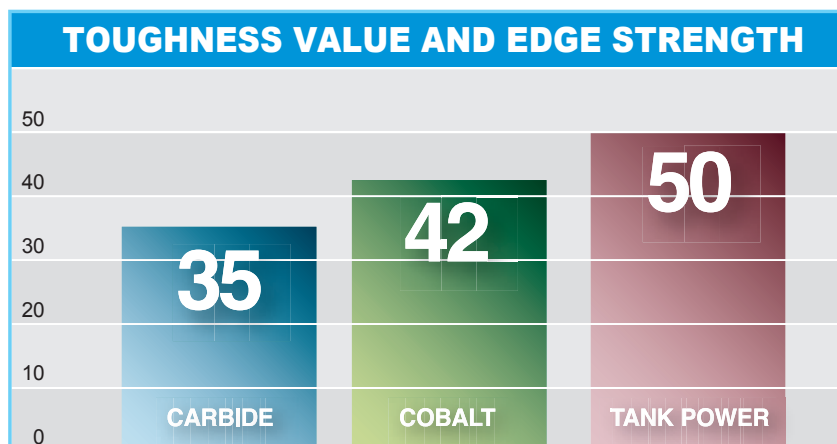
- Next Generation of Powered Metal End Mills  
Higher Edge Strength & Feed Rates



# SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE	
			MIN	MAX		
<b>INCH</b>						
<b>E9983</b>		PREMIUM HSS-PM, 2 FLUTE REGULAR LENGTH	◆	D1/8	D1	<b>688</b>
<b>E9984</b>		PREMIUM HSS-PM, 2 FLUTE REGULAR LENGTH DOUBLE	◆	D1/8	D1	<b>689</b>
<b>E9985</b>		PREMIUM HSS-PM, 4 FLUTE REGULAR LENGTH	◆	D1/8	D1	<b>690</b>
<b>E9986</b>		PREMIUM HSS-PM, 4 FLUTE REGULAR LENGTH DOUBLE	◆	D1/8	D1	<b>691</b>
<b>E9988</b>		PREMIUM HSS-PM, 3&4 FLUTE 60° HELIX REGULAR LENGTH	◆	D1/4	D1	<b>692</b>
<b>E9992</b>		PREMIUM HSS-PM, 2 FLUTE REGULAR LENGTH BALL NOSE	◆	D1/8	D1	<b>693</b>
<b>E9990</b>		PREMIUM HSS-PM, MULTI FLUTE REGULAR LENGTH FINE PITCH ROUGHING	◆	D1/4	D1-1/4	<b>694</b>
<b>E9991</b>		PREMIUM HSS-PM, MULTI FLUTE REGULAR LENGTH COARSE PITCH ROUGHING	◆	D1/4	D1-1/4	<b>695</b>
<b>E9A86</b>		PREMIUM HSS-PM, MULTI FLUTE LONG LENGTH FINE PITCH ROUGHING	◆	D5/16	D1-1/4	<b>696</b>
<b>E9A87</b>		PREMIUM HSS-PM, MULTI FLUTE LONG LENGTH COARSE PITCH ROUGHING	◆	D5/16	D1-1/4	<b>697</b>
<b>E9921</b>		PREMIUM HSS-PM, MULTI FLUTE FINE PITCH ROUGHING EXTENDED NECK CENTER CUTTING	◆	D1/2	D1-1/4	<b>698</b>
RECOMMENDED CUTTING CONDITIONS					<b>699</b>	

◆ U.S.A Stock

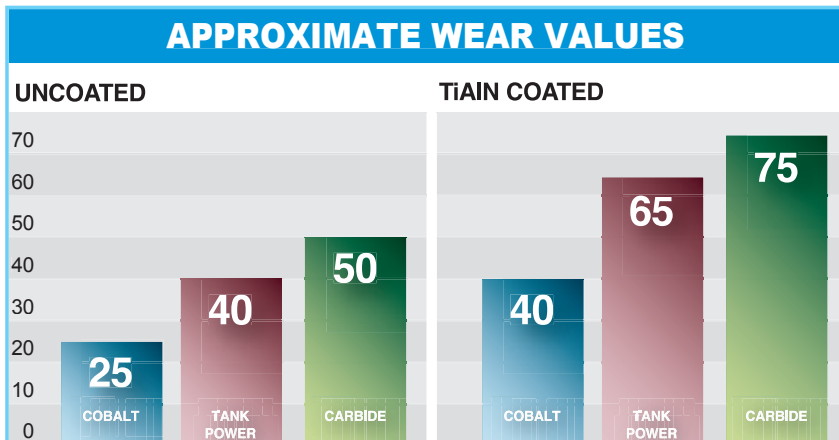


# TANK-POWER END MILLS

⊙ : Excellent  
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRc40~45	HRc45~55								
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							

⊙	⊙	⊙				○		⊙		⊙		
⊙	⊙	⊙				○		⊙		⊙		
⊙	⊙	⊙				○		⊙		⊙		
⊙	⊙	⊙				○		⊙		⊙		
⊙	⊙	⊙				○		⊙		⊙		
⊙	⊙	⊙				○		⊙		⊙		
⊙	⊙	⊙				○		⊙		⊙		
⊙	⊙	⊙				○		⊙		⊙		
⊙	⊙	⊙				○		⊙		⊙		
⊙	⊙	⊙				○		⊙		⊙		
⊙	⊙	⊙				○		⊙		⊙		
⊙	⊙	⊙				○		⊙		⊙		
⊙	⊙	⊙				○		⊙		⊙		
⊙	⊙	⊙				○		⊙		⊙		



CARBIDE

HSS



**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.699

◆ 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.

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎				○		◎		◎		

◎ : Excellent ○ : Good

**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.699

◆ 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.

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎				○		◎		◎		

CARBIDE

HSS



**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.699

◆ 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.

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎				○		◎		◎		

◎ : Excellent ○ : Good

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS






STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

### 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.








 P.699

◆ 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.

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎				○		◎		◎		

CARBIDE

HSS



**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.



◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
UNCOATED	TANK-POWER COATED					
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.

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎				○		◎		◎		

### **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.701

◆ 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

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎				○		◎		◎		

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

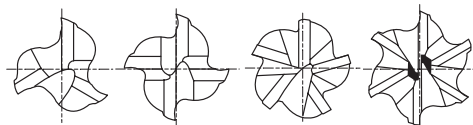




**E9990** SERIES FLAT SHANK

**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.700

◆ 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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎				○		◎		◎		

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

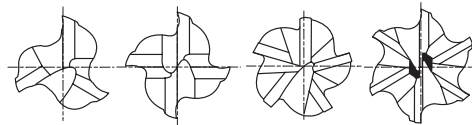
TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

## 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.



◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
UNCOATED	TANK-POWER COATED					
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

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎				○		◎		◎		

CBN  
END MILL

i-Mill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA

CARBIDE

HSS

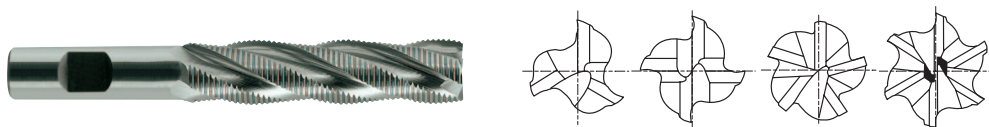


**E9A86** SERIES

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.700

◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
UNCOATED	TANK-POWER COATED					
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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

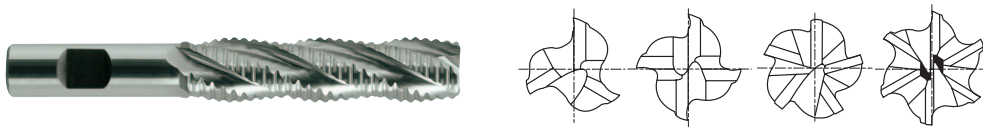
TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎				○		◎		◎		

## 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.



◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
UNCOATED	TANK-POWER COATED					
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

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎				○		◎		◎		

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT &amp; HSS END MILLS

TECHNICAL DATA

CARBIDE

HSS



**E9921** SERIES FLAT SHANK

**PREMIUM HSS-PM, MULTI FLUTE FINE PITCH ROUGHING  
EXTENDED NECK CENTER CUTTING**

- ▶ High performance metal removal in Titanium
- ▶ Corner radius against chipping



YPM
FINE
5&6
35°
FLAT
P.624

◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Reach Extended Neck	Overall Length	No. of Flute
UNCOATED	TiAIN COATED						
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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

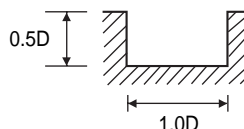
TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	◎				○		◎		◎		

**PREMIUM HSS-PM, 2 FLUTE FINISH - SLOTTING**
**E9983, E9984 SERIES**

MATERIAL	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/mm <sup>2</sup>		500~800N/mm <sup>2</sup>		800~1000N/mm <sup>2</sup>		1000~1100N/mm <sup>2</sup>		1100~1300N/mm <sup>2</sup>	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	4600	5.93	3800	4.97	3150	4.21	2150	2.82	1650	2.23
3/16	3800	8.47	3150	6.70	2600	6.11	1650	3.45	1350	2.56
1/4	3150	9.12	2650	7.46	2100	6.56	1350	3.77	1050	2.95
5/16	2500	9.44	2100	8.24	1700	6.88	1100	3.93	855	2.95
3/8	2100	10.05	1800	8.87	1450	7.64	910	4.24	715	3.40
1/2	1650	9.31	1350	8.13	1050	6.95	665	3.87	525	2.88
5/8	1300	9.06	1100	7.32	855	6.14	535	3.56	425	2.76
3/4	995	7.85	820	6.18	710	5.31	450	3.24	360	2.46
7/8	795	6.23	675	5.09	560	4.30	375	2.74	300	1.95
1	710	5.24	590	4.65	465	3.90	335	2.52	235	1.73

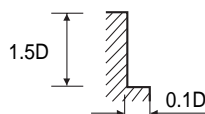


※ The Feed, in long &amp; extra long types, should be reduced by around 50%.

RPM = rev./min. FEED = inch/min.

**PREMIUM HSS-PM, 4 FLUTE FINISH - SIDE CUTTING**
**E9985, E9986 SERIES**

MATERIAL	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/mm <sup>2</sup>		500~800N/mm <sup>2</sup>		800~1000N/mm <sup>2</sup>		1000~1100N/mm <sup>2</sup>		1100~1300N/mm <sup>2</sup>	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	6300	17.72	6000	14.37	4250	10.43	2700	7.24	2320	5.12
3/16	4600	19.69	4100	16.14	3040	12.60	2070	8.46	1780	6.20
1/4	3800	22.05	3300	18.11	2500	12.99	1700	9.65	1400	7.13
5/16	3100	22.44	2600	18.90	2000	14.17	1400	9.37	1150	7.24
3/8	2500	24.80	2200	20.47	1680	14.96	1180	10.24	960	7.72
1/2	1900	22.05	1720	18.50	1270	14.37	860	9.33	690	2.72
5/8	1600	20.08	1410	16.93	1000	13.27	690	8.86	620	6.69
3/4	1400	17.72	1150	15.16	830	11.50	580	7.28	470	5.71
7/8	1030	15.75	930	12.40	675	9.84	470	6.26	390	5.12
1	1000	14.57	830	11.81	620	8.78	420	5.63	360	4.92



※ The Feed, in long &amp; extra long types, should be reduced by around 50%.

RPM = rev./min. FEED = inch/min.

 CBN  
END MILL

 i-Xmill  
END MILL

 X5070  
END MILLS

 X-SPEED  
ROUGHER  
END MILLS

 X-POWER  
END MILLS

 JET-POWER  
END MILLS

 V7 Mill STEEL  
END MILLS

 V7 Mill INOX  
END MILLS

 ALU-POWER  
END MILLS

 D-POWER  
END MILLS

 STANDARD  
CARBIDE  
END MILLS

 TANK-POWER  
END MILLS

 STANDARD  
COBALT  
& HSS  
END MILLS

 TECHNICAL  
DATA



RECOMMENDED CUTTING CONDITIONS

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

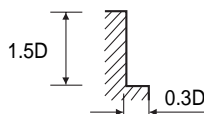
STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

PREMIUM HSS-PM, 3&4 FLUTE 60° HELIX - SIDE CUTTING

**E9988** SERIES

MATERIAL	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/mm <sup>2</sup>		800 ~ 1000N/mm <sup>2</sup>		1000 ~ 1300N/mm <sup>2</sup>	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED
1/4	3850	7.87	2500	5.32	1900	3.54
5/16	3050	7.87	2100	6.26	1700	3.54
3/8	2700	8.47	1700	6.30	1450	3.84
1/2	1850	9.72	1200	6.30	960	4.07
5/8	1300	10.97	845	8.51	690	5.44
3/4	895	14.59	580	11.85	475	7.87
7/8	720	16.63	475	14.00	380	8.75
1	630	19.00	415	16.00	335	10.00



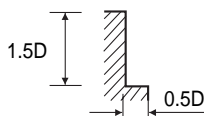
※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.  
FEED = inch/min.

PREMIUM HSS-PM, MULTI FLUTE ROUGHING - SIDE CUTTING

**E9990, E9991, E9A86, E9A87** SERIES

MATERIAL	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/mm <sup>2</sup>		800 ~ 1000N/mm <sup>2</sup>		1000 ~ 1100N/mm <sup>2</sup>		1100 ~ 1300N/mm <sup>2</sup>			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	2650	7.81	2050	6.25	1450	4.38	1200	3.44	1900	5.60
3/8	1900	13.14	1500	10.13	1050	6.41	885	5.23	1270	8.75
1/2	1450	14.17	1100	11.42	805	7.87	665	6.10	950	9.28
5/8	1150	14.17	905	11.42	630	7.87	525	6.10	760	9.66
3/4	960	14.38	780	11.42	540	7.87	445	6.10	630	9.48
7/8	845	14.54	615	11.37	445	7.84	375	6.10	540	9.34
1	740	13.98	560	10.64	395	7.39	315	6.01	470	8.97



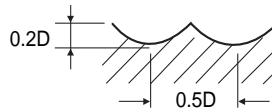
※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.  
FEED = inch/min.

**PREMIUM HSS-PM, 2 FLUTE BALL NOSE PROFILING**

**E9992 SERIES**

MATERIAL	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/mm <sup>2</sup>		500 ~ 800N/mm <sup>2</sup>		800 ~ 1000N/mm <sup>2</sup>		1000 ~ 1300N/mm <sup>2</sup>	
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	6800	12.29	5300	8.22	3550	4.54	1850	2.07
3/16	5100	15.32	4000	10.29	2650	5.74	1350	2.71
1/4	4050	16.81	3150	11.23	2100	6.24	1100	2.95
5/16	3250	18.06	2550	12.17	1700	6.87	860	2.95
3/8	2750	19.91	2100	13.41	1450	7.64	700	3.40
1/2	2100	17.83	1600	12.00	1100	6.75	530	2.92
5/8	1600	16.58	1250	11.06	860	6.13	425	2.76
3/4	1350	14.73	1050	9.82	700	5.35	360	2.46
7/8	1100	12.60	865	8.40	560	4.59	300	2.10
1	890	10.51	690	6.99	445	3.89	235	1.73



※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.  
FEED = inch/min.

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA





Global Cutting Tool Leader **YG-1**



# HSS



Being the best through innovation



# COBALT & HSS

- General Purpose, Non-coated, Many Coatings Available

# SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
<b>E2030</b> <b>E1030</b>		HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH	D1/8	D2	<b>711</b>
<b>E2080</b> <b>E1080</b>		HSSCo8 & HSS, 2 FLUTE LONG LENGTH	D1/4	D2	<b>713</b>
<b>E2033</b> <b>E1033</b>		HSSCo8 & HSS, 2 FLUTE EXTENDED LENGTH	D1/8	D1-1/4	<b>714</b>
<b>E2050</b> <b>E1050</b>		HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH DOUBLE	D1/8	D1	<b>715</b>
<b>E2110</b> <b>E1110</b>		HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH BALL NOSE	R1/16	R1	<b>717</b>
<b>E2111</b> <b>E1111</b>		HSSCo8 & HSS, 2 FLUTE EXTENDED LENGTH BALL NOSE	R1/16	R1/2	<b>718</b>
<b>E2112</b> <b>E1112</b>		HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH BALL NOSE DOUBLE	R1/16	R1/2	<b>719</b>
<b>E2031</b> <b>E1031</b>		HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH	D1/8	D1	<b>720</b>
<b>E2032</b> <b>E1032</b>		HSSCo8 & HSS, 6 FLUTE REGULAR LENGTH	D5/8	D2	<b>722</b>
<b>E2034</b> <b>E1034</b>		HSSCo8 & HSS, 4 FLUTE LONG LENGTH	D1/4	D1	<b>723</b>
<b>E2035</b> <b>E1035</b>		HSSCo8 & HSS, 6 FLUTE LONG LENGTH	D1-1/8	D2	<b>723</b>
<b>E2036</b> <b>E1036</b>		HSSCo8 & HSS, 4 FLUTE EXTRA LONG LENGTH	D1/4	D1	<b>724</b>
<b>E2037</b> <b>E1037</b>		HSSCo8 & HSS, 6 FLUTE EXTRA LONG LENGTH	D1-1/4	D2	<b>724</b>
<b>E2051</b> <b>E1051</b>		HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH DOUBLE	D1/8	D1	<b>725</b>
<b>E2031</b> <b>E1031</b>		HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH 3/4 SHANK	D3/4	D1	<b>727</b>
<b>E2032</b> <b>E1032</b>		HSSCo8 & HSS, 6&8 FLUTE REGULAR LENGTH 3/4 SHANK	D1-1/8	D2	<b>727</b>
<b>E2020</b>		HSSCo8, 4 FLUTE REGULAR LENGTH BALL NOSE	R1/16	R1	<b>728</b>
<b>E2021</b>		HSSCo8, 4 FLUTE LONG LENGTH BALL NOSE	R1/8	R1/2	<b>729</b>
<b>E2069</b>		HSSCo8, 4 FLUTE REGULAR LENGTH BALL NOSE DOUBLE	R1/16	R1/2	<b>730</b>
<b>E2039</b> <b>E1039</b>		HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH CENTER CUTTING	D1/8	D1-1/2	<b>731</b>
<b>E2042</b> <b>E1042</b>		HSSCo8 & HSS, 6 FLUTE REGULAR LENGTH CENTER CUTTING	D1/2	D2	<b>733</b>



# SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
<b>INCH</b>					
<b>E2039</b> <b>E2042</b>		HSSCo8, MULTI FLUTE MEDIUM LENGTH CENTER CUTTING	D1	D2	<b>734</b>
<b>E2040</b> <b>E1040</b>		HSSCo8 & HSS, 4 FLUTE LONG LENGTH CENTER CUTTING	D1/4	D1-1/2	<b>735</b>
<b>E2162</b> <b>E1162</b>		HSSCo8 & HSS, 6 FLUTE LONG LENGTH CENTER CUTTING	D1/2	D2	<b>735</b>
<b>E2041</b> <b>E1041</b>		HSSCo8 & HSS, 4 FLUTE EXTRA LONG LENGTH CENTER CUTTING	D1/4	D1-1/4	<b>736</b>
<b>E2175</b> <b>E1175</b>		HSSCo8 & HSS, 6 FLUTE EXTRA LONG LENGTH CENTER CUTTING	D1/2	D2	<b>736</b>
<b>E2053</b> <b>E1053</b>		HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH DOUBLE CENTER CUTTING	D1/8	D1	<b>737</b>
<b>E2100</b> <b>E1100</b>		HSSCo8 & HSS, 6 FLUTE REGULAR with COMBINATION 2" SHANK CENTER CUTTING	D2	D2	<b>739</b>
<b>E2001</b> <b>E1001</b>		HSSCo8 & HSS, 2 FLUTE MINIATURE STUB LENGTH DOUBLE	D1/32	D3/16	<b>740</b>
<b>E2003</b> <b>E1003</b>		HSSCo8 & HSS, 2 FLUTE MINIATURE REGULAR LENGTH DOUBLE	D1/32	D3/16	<b>741</b>
<b>E2005</b> <b>E1005</b>		HSSCo8 & HSS, 2 FLUTE MINIATURE LONG LENGTH DOUBLE	D1/16	D3/16	<b>742</b>
<b>E2002</b> <b>E1002</b>		HSSCo8 & HSS, 4 FLUTE MINIATURE STUB LENGTH DOUBLE	D1/16	D3/16	<b>743</b>
<b>E2004</b> <b>E1004</b>		HSSCo8 & HSS, 4 FLUTE MINIATURE REGULAR LENGTH DOUBLE	D1/16	D3/16	<b>744</b>
<b>E2006</b> <b>E1006</b>		HSSCo8 & HSS, 4 FLUTE MINIATURE LONG LENGTH DOUBLE	D1/16	D3/16	<b>745</b>
<b>E2008</b> <b>E1008</b>		HSSCo8 & HSS, 2 FLUTE MINIATURE STUB LENGTH BALL NOSE DOUBLE	R1/32	R3/32	<b>746</b>
<b>E2013</b> <b>E1013</b>		HSSCo8 & HSS, 2 FLUTE MINIATURE REGULAR LENGTH BALL NOSE DOUBLE	R1/64	R3/32	<b>747</b>
<b>E2015</b> <b>E1015</b>		HSSCo8 & HSS, 2 FLUTE MINIATURE LONG LENGTH BALL NOSE DOUBLE	R1/32	R3/32	<b>748</b>
<b>E1070</b>		HSS, 2 FLUTE 42° HELIX REGULAR & MEDIUM LENGTH for ALUMINUM	D1/4	D2	<b>749</b>
<b>E1071</b>		HSS, 2 FLUTE 42° HELIX LONG LENGTH for ALUMINUM	D1/4	D2	<b>750</b>
<b>E1072</b>		HSS, 2 FLUTE 42° HELIX EXTRA LONG LENGTH for ALUMINUM	D1/4	D1-1/2	<b>750</b>
<b>E2086</b>		HSSCo8, MULTI FLUTE STUB LENGTH FINE PITCH ROUGHING CENTER CUTTING	D1/4	D1	<b>751</b>
<b>E2085</b>		HSSCo8, MULTI FLUTE REGULAR LENGTH FINE PITCH ROUGHING CENTER CUTTING	D1/4	D1	<b>752</b>

# STANDARD COBALT & HSS END MILLS

⊙ : Excellent  
○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
			HRc40~45	HRc45~55	HRc55~70							
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							

⊙	⊙	○				○			○			
⊙	⊙	○				○			○			
⊙	⊙	○				○						
⊙	⊙	○				○			○			
⊙	⊙	○				○						
⊙	⊙	○				○			○			
⊙	⊙	○				○						
⊙	⊙	○				○			○			
⊙	⊙	○				○			○			
⊙	⊙	○				○			○			
⊙	⊙	○				○			○			
⊙	⊙	○				○			○			
⊙	⊙	○				○			○			
⊙	⊙	○				○			○			
⊙	⊙	○				○			○			
○									⊙			
○									⊙			
○									⊙			
⊙	⊙	○				○			○			
⊙	⊙	○				○			○			

# SELECTION GUIDE

ITEM	MODEL	DESCRIPTION	SIZE		PAGE
			MIN	MAX	
<b>INCH</b>					
<b>E2079</b>		HSSCo8, MULTI FLUTE REGULAR LENGTH FINE PITCH ROUGHING	D1/4	D2	<b>753</b>
<b>E2077</b>		HSSCo8, MULTI FLUTE LONG LENGTH FINE PITCH ROUGHING	D1/2	D2	<b>754</b>
<b>E2086</b>		HSSCo8, 3 FLUTE STUB LENGTH FINE PITCH ROUGHING CENTER CUTTING	D1/4	D1	<b>755</b>
<b>E2170</b>		HSSCo8, MULTI FLUTE REGULAR LENGTH COARSE PITCH ROUGHING	D1/4	D2	<b>756</b>
<b>E2171</b>		HSSCo8, MULTI FLUTE MEDIUM LENGTH COARSE PITCH ROUGHING	D1	D2	<b>757</b>
<b>E2172</b>		HSSCo8, MULTI FLUTE LONG LENGTH COARSE PITCH ROUGHING	D1/2	D2	<b>758</b>
<b>E2241</b>		HSSCo8, 3 FLUTE STUB LENGTH COARSE PITCH ROUGHING CENTER CUTTING	D1/4	D1	<b>759</b>
<b>E2195</b>		HSSCo8, MULTI FLUTE REGULAR LENGTH COARSE PITCH ROUGHING CENTER CUTTING	D1/2	D1-1/2	<b>760</b>
<b>E2197</b>		HSSCo8, MULTI FLUTE LONG LENGTH COARSE PITCH ROUGHING CENTER CUTTING	D1/2	D1-1/2	<b>760</b>
<b>E2193</b> <b>E2125</b>		HSSCo8, MULTI FLUTE REGULAR & LONG LENGTH COARSE PITCH ROUGHING BALL NOSE	R1/8	R1-1/4	<b>761</b>
<b>E2248</b>		HSSCo8, MULTI FLUTE REGULAR LENGTH ROUGHING & FINISHING	D1/4	D2	<b>762</b>
<b>E2191</b>		HSSCo8, 3 FLUTE 37° HELIX REGULAR LENGTH ROUGHING for ALUMINUM	D1/4	D1-1/2	<b>763</b>
<b>E2226</b> <b>E2192</b>		HSSCo8, 3 FLUTE 37° HELIX MEDIUM & LONG LENGTH ROUGHING for ALUMINUM	D1/2	D1-1/2	<b>764</b>
<b>E2163</b> <b>E1163</b>		HSSCo8 & HSS, 2 FLUTE 15° HELIX for KEYWAY CUTTING	D1/8	D1	<b>765</b>
<b>E2120</b> <b>E2121</b>		HSSCo8, 3&4 FLUTE 60° HELIX REGULAR LENGTH	D1/4 D7/8	D3/4 D2	<b>766</b>
<b>E2160</b>		HSSCo8, 3 FLUTE SHORT LENGTH THROW AWAY	D1/16	D1/4	<b>767</b>
<b>E2161</b>		HSSCo8, 3 FLUTE LONG LENGTH THROW AWAY	D1/16	D1/4	<b>767</b>
<b>E2237</b> <b>E1237</b>		HSSCo8 & HSS, 4 FLUTE CORNER ROUNDING	D1/4	D5/8	<b>768</b>
<b>METRIC</b>					
<b>E2482</b> <b>E1482</b>		HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH - METRIC	D2.0 (.0787)	D45.0 (1.772)	<b>769</b>
<b>E2483</b> <b>E1483</b>		HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH - METRIC	D2.0 (.0787)	D45.0 (1.772)	<b>770</b>
END MILL SET SERIES / RECOMMENDED CUTTING CONDITIONS					<b>773</b>







**SUPER CUTTING END MILLS**

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA

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.

## 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.773, 779, 783

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
01422	01172	1	3/4	1-1/2	3-3/4
01426	01176	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.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA



8% COBALT (M42)  
FLAT SHANK  
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.



- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

HSS Co8
HSS
2
30°
FLAT
P.773, 779, 783

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
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

- 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

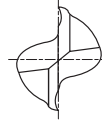
\*\*The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

## HSSCo8 & HSS, 2 FLUTE LONG LENGTH

► Longer flute length than E2030 type and allows deeper cutting.



P.773, 779, 783

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

- 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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

CBN  
END MILL

i-Mill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA



**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.773, 779, 783

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length
8% COBALT (M42)	HSS (M2)					
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.

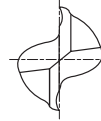
- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

## 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.



P.773, 779, 783

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
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
11330	11080	9/16	5/8	1-1/8	4-1/2
11334	11084	19/32	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.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA



**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.



- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

HSS Co8
HSS
2
30°
FLAT
P.773, 779, 783

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

### 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.



P.776, 781, 785

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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

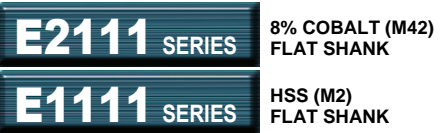
STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

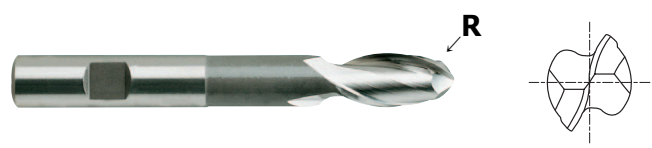




- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

## 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.776, 781, 785

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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

## 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.



P.776, 781, 785

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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



8% COBALT (M42)  
FLAT SHANK  
HSS (M2)  
FLAT SHANK

## HSSCo8 & HSS, 4 FLUTE REGULAR LENGTH

► Possible for high-speed cutting, suitable for high efficiency machining. Easy to regrind.



- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

HSS Co8
HSS
4
30°
FLAT
P.775, 780, 784

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
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
04328	04078	9/16	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.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

## 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.775, 780, 784

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

CBN  
END MILL

i-Mill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA



**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.



- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

HSS Co8
HSS
6
30°
FLAT
P.775, 780, 784

Unit : Inch

EDP No.	8% COBALT (M42)		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	8% COBALT (M42)	HSS (M2)				
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

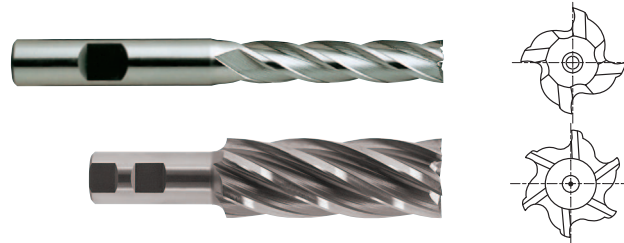
\*\*The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○						

## HSSCo8 & HSS, 4&6 FLUTE LONG LENGTH

► Longer flute length than E2031 type and allows deeper cutting. Easy to regrind.



P.775, 780, 784

### E2034(8% COBALT) , E1034(HSS) Series ■ 4 FLUTE

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
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.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
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

- 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	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
	~HRC20	HRC20~30	HRC30~40	HRC40~45	HRC45~55	HRC55~70							
E1034 E2034	◎	◎	○				○			○			
E1035 E2035	◎	◎	○				○						



**E2036 / E2037 SERIES**  
**E1036 / E1037 SERIES**

8% COBALT (M42)  
 FLAT SHANK  
 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.



- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

HSS Co8
HSS
4&6
30°
FLAT
P.775, 780, 784

**E2036(8% COBALT) , E1036(HSS) Series ■ 4 FLUTE** Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
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.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
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

- 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	Carbon Steels ~HRc20	Alloy Steels HRc20~30	Prehardened Steels HRc30~40	Hardened Steels HRc40~45 HRc45~55		High Hardened Steels HRc55~70	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
E1036 E2036	◎	◎	○				○			○			
E1037 E2037	◎	◎	○				○						

## 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.775, 780, 784

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.
- 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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

- CBN END MILL
- i-Mill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA





**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.775, 780, 784

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
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.

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

## 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.



### E2031(8% COBALT) , E1031(HSS) Series ■ 4 FLUTE

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
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.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
8% COBALT (M42)	HSS (M2)					
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	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
	~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
E1031 E2031	◎	◎	○				○			○			
E1032 E2032	◎	◎	○				○						

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA

**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.776, 781, 785

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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

**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.776, 781, 785

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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

**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.776, 781, 785

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.

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

## 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.775, 780, 784

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.

Mill Dia. Tolerance (inch)	
0~+.0010	* * 0~+.0015

\*\*The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA



**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.775, 780, 784

Unit : Inch

EDP No.	8% COBALT (M42)		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

## 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.775, 780, 784

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
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

- 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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○						

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

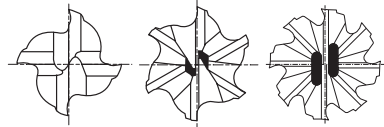




**E2039** SERIES 8% COBALT (M42) FLAT SHANK  
**E2042** SERIES 8% COBALT (M42) FLAT SHANK

## 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.



- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

HSS Co8 4-8 30° FLAT P.775, 780, 784

**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

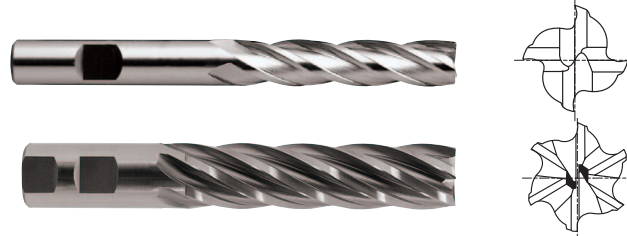
\*\*The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

## HSSCo8 & HSS, 4&6 FLUTE LONG LENGTH CENTER CUTTING

► Longer flute length than E2039 type, E2042 and allows deeper cutting.



P.775, 780, 784

### E2040(8% COBALT) , E1040(HSS) Series ■ 4 FLUTE

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
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.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
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

Mill Dia. Tolerance (inch)	
0~+.0010	* * 0~+.0015

- 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.

\*\* The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

Series	Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
	~HRC20	HRC20~30	HRC30~40	HRC40~45	HRC45~55	HRC55~70							
E1040 E2040	◎	◎	○				○			○			
E1162 E2162	◎	◎	○				○						

CBN  
END MILL

i-Mill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA



**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.775, 780, 784

**E2041(8% COBALT) , E1041(HSS) Series ■ 4 FLUTE**

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
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.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
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

- 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

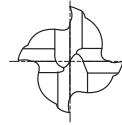
\*\*The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

Series	Carbon Steels ~HRC20	Alloy Steels HRC20~30	Prehardened Steels HRC30~40	Hardened Steels HRC40~45 HRC45~55		High Hardened Steels HRC55~70	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
E1041 E2041	◎	◎	○				○			○			
E1175 E2175	◎	◎	○				○						

## 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.



P.775, 780, 784

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.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA

**YG 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.



- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

HSS Co8
HSS
4
30°
FLAT
P.775, 780, 784

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
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.

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

◎ : Excellent ○ : Good

## 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.775, 780, 784

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
<b>10481</b>	<b>10231</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>5-3/4</b>
<b>10485</b>	<b>10235</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>7-3/4</b>
<b>10487</b>	<b>10237</b>	<b>2</b>	<b>2</b>	<b>5</b>	<b>8-3/4</b>
<b>10489</b>	<b>10239</b>	<b>2</b>	<b>2</b>	<b>6</b>	<b>9-3/4</b>
<b>10491</b>	<b>10241</b>	<b>2</b>	<b>2</b>	<b>8</b>	<b>11-3/4</b>

- 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~+.0030

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○						



**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.



- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

HSS Co8
HSS
2
39°
30°
PLAIN
P.778

~Ø3/32    Ø7/64~

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
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

- 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

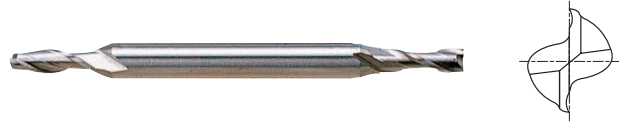
\*\*The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent    ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

## 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
P.778

~Ø3/32 Ø7/64~

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 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~—.0010	* * 0~—.0020

\*\*The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA





**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
P.778

~Ø3/32 Ø7/64~

Unit : Inch

JET-POWER END MILLS	EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	8% COBALT (M42)	HSS (M2)				
	51256	51006	1/16	3/16	7/32	2-1/2
	51258	51008	5/64	3/16	1/4	2-1/2
V7 Mill STEEL END MILLS	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
V7 Mill INOX END MILLS	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.

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

◎ : Excellent ○ : Good

## 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
P.778

~Ø3/32 Ø7/64~

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA



**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 P.778  
 ~Ø3/32 Ø7/64~

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.

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

## 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
P.778

~Ø3/32 Ø7/64~

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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

# YG 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
P.778

~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				
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.

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

**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.778

~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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

# YG 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
P.778

~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				
<b>57256</b>	<b>57006</b>	R1/32	<b>1/16</b>	3/16	7/32	2-1/2
<b>57260</b>	<b>57010</b>	R3/64	<b>3/32</b>	3/16	9/32	2-5/8
<b>57264</b>	<b>57014</b>	R1/16	<b>1/8</b>	3/16	3/4	3-1/8
<b>57268</b>	<b>57018</b>	R5/64	<b>5/32</b>	3/16	7/8	3-1/4
<b>57272</b>	<b>57022</b>	R3/32	<b>3/16</b>	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.

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

# YG 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.773

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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○									◎			

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA





**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.773

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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
○									◎			



**E2086** SERIES

8% COBALT (M42)  
FLAT SHANK

HSS

## 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.777, 782, 786

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

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA

◎ : Excellent ○ : Good

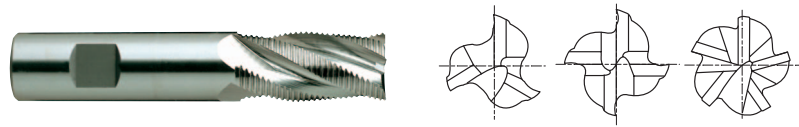
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

**YG 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.



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

HSS Co8
FINE
3-5
30°
FLAT
P.777, 782, 786

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.

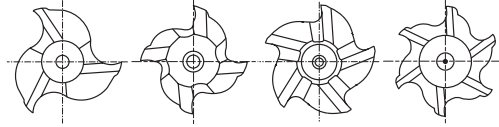
Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

## 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.



P.777, 782, 786

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

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

 CBN  
END MILL

 i-Xmill  
END MILL

 X5070  
END MILLS

 X-SPEED  
ROUGHER  
END MILLS

 X-POWER  
END MILLS

 JET-POWER  
END MILLS

 V7 Mill STEEL  
END MILLS

 V7 Mill INOX  
END MILLS

 ALU-POWER  
END MILLS

 D-POWER  
END MILLS

 STANDARD  
CARBIDE  
END MILLS

 TANK-POWER  
END MILLS

 STANDARD  
COBALT  
& HSS  
END MILLS

 TECHNICAL  
DATA

**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.777, 782, 786

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	5-1/8	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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

◎ : Excellent ○ : Good

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA



**E2086** SERIES

8% COBALT (M42)  
FLAT SHANK

HSS

## 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.777, 782, 786

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

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

**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.

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

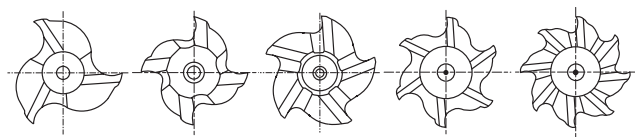
D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



P.777, 782, 786

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

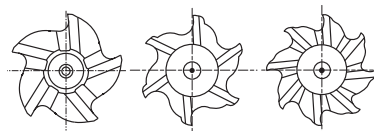
- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt  
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

## 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.



P.777, 782, 786

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
<b>61426</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>5-1/2</b>	<b>5</b>
<b>61445</b>	<b>1-1/4</b>	<b>1-1/4</b>	<b>3</b>	<b>5-1/2</b>	<b>6</b>
<b>61461</b>	<b>1-1/2</b>	<b>1-1/4</b>	<b>3</b>	<b>5-1/2</b>	<b>6</b>
<b>61488</b>	<b>2</b>	<b>2</b>	<b>6</b>	<b>9-3/4</b>	<b>8</b>

- 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

 CBN  
END MILL

 i-Xmill  
END MILL

 X5070  
END MILLS

 X-SPEED  
ROUGHER  
END MILLS

 X-POWER  
END MILLS

 JET-POWER  
END MILLS

 V7 Mill STEEL  
END MILLS

 V7 Mill INOX  
END MILLS

 ALU-POWER  
END MILLS

 D-POWER  
END MILLS

 STANDARD  
CARBIDE  
END MILLS

 TANK-POWER  
END MILLS

 STANDARD  
COBALT  
& HSS  
END MILLS

 TECHNICAL  
DATA

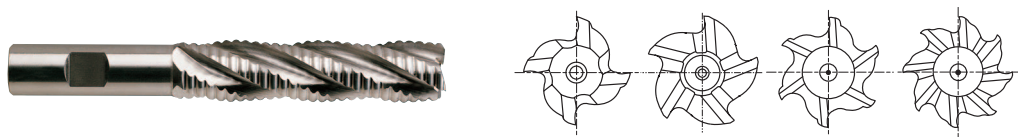
◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			



**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.



- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

HSS Co8
COARSE
4-8
30°
FLAT
P.777, 782, 786

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

- 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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

## 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.777, 782, 786

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
<b>63297</b>	<b>1/4</b>	<b>3/8</b>	<b>1/4</b>	<b>2-1/16</b>
<b>63305</b>	<b>3/8</b>	<b>3/8</b>	<b>3/8</b>	<b>2-5/32</b>
<b>63321</b>	<b>1/2</b>	<b>1/2</b>	<b>1/2</b>	<b>2-1/2</b>
<b>63337</b>	<b>5/8</b>	<b>5/8</b>	<b>5/8</b>	<b>2-3/4</b>
<b>63359</b>	<b>3/4</b>	<b>3/4</b>	<b>3/4</b>	<b>2-7/8</b>
<b>63426</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3-1/2</b>

- 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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

 CBN  
END MILL

 i-Xmill  
END MILL

 X5070  
END MILLS

 X-SPEED  
ROUGHER  
END MILLS

 X-POWER  
END MILLS

 JET-POWER  
END MILLS

 V7 Mill STEEL  
END MILLS

 V7 Mill INOX  
END MILLS

 ALU-POWER  
END MILLS

 D-POWER  
END MILLS

 STANDARD  
CARBIDE  
END MILLS

 TANK-POWER  
END MILLS

 STANDARD  
COBALT  
& HSS  
END MILLS

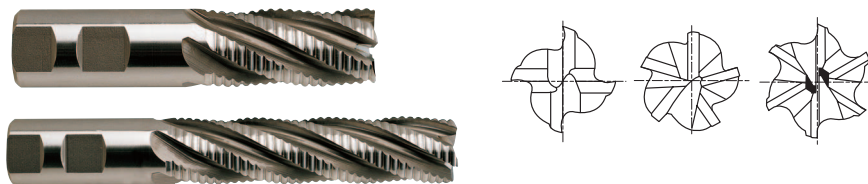
 TECHNICAL  
DATA



**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.



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

HSS Co8 COARSE 4-6 30° FLAT P.777, 782, 786

**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

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

## 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.



P.777, 782, 786

### 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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

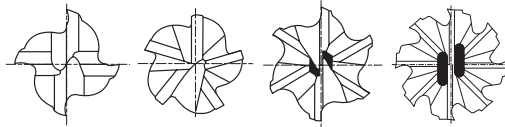
TECHNICAL  
DATA

# 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.



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA







 P.777, 782, 786

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

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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			



**E2191** SERIES 8% COBALT (M42) FLAT SHANK

HSS

## 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.777, 782, 786

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

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			◎			

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

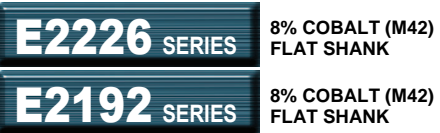
D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

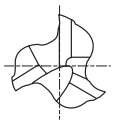
STANDARD COBALT & HSS END MILLS

TECHNICAL DATA



## 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.



CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

HSS Co8
ALU
3
37°
FLAT
P.777, 782, 786

**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.

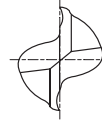
Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			◎			

## 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.



P.773, 779, 783

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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA



CARBIDE

HSS



**COBALT & HSS  
END MILLS**

**E2120** SERIES

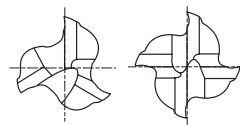
8% COBALT (M42)  
FLAT SHANK

**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.775

**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(Hardstick)
- ▶ 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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○						

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

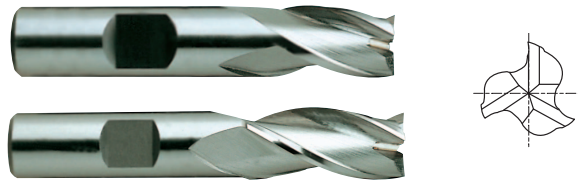
TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA

## 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.



**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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA



**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

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

Unit : Inch

EDP No.		Radius	Pilot Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)					
29251	29001	1/16	1/4	3/8	7/16	2-1/2
29252	29002	3/32	1/4	3/8	1/2	2-1/2
29253	29003	1/8	1/4	1/2	5/8	3
29254	29004	5/32	5/16	1/2	3/4	3
29255	29005	3/16	3/8	1/2	7/8	3
29256	29006	3/16	3/8	3/4	7/8	3-1/8
29257	29007	7/32	5/16	1/2	7/8	3-1/4
29258	29008	1/4	3/8	1/2	1	3
29259	29009	9/32	3/8	5/8	1	3
29260	29010	1/4	3/8	3/4	1	3-1/4
29261	29011	5/16	3/8	1/2	1-1/8	3-1/4
29262	29012	5/16	3/8	5/8	1-1/8	3-1/2
29263	29013	5/16	3/8	3/4	1-1/8	3-1/2
29264	29014	5/16	3/8	7/8	1-1/8	3-1/2
29265	29015	3/8	3/8	1/2	1-1/4	3-1/2
29266	29016	3/8	3/8	3/4	1-1/4	3-3/4
29267	29017	3/8	3/8	7/8	1-1/4	3-3/4
29268	29018	7/16	3/8	3/4	1-3/8	3-3/4
29269	29019	7/16	3/8	1	1-3/8	4
29270	29020	1/2	3/8	3/4	1-1/2	3-7/8
29271	29021	1/2	3/8	1	1-1/2	4-1/8
29272	29022	5/8	5/16	3/4	1-5/8	4
29273	29023	5/8	5/16	1	1-5/8	4
29274	29024	5/8	9/16	3/4	1-15/16	4
29275	29025	5/8	9/16	1	1-15/16	4-1/4
29276	29026	3/4	5/16	3/4	1-7/8	4
29277	29027	3/4	5/16	1	1-7/8	4
29278	29028	3/4	5/8	3/4	2-1/4	4-1/8
29279	29029	3/4	5/8	1	2-1/4	4-5/16
29280	29030	7/8	5/8	3/4	2-1/2	4-1/2
29281	29031	1	5/8	3/4	2-5/8	4-1/2
29282	29032	1	5/8	1	2-3/4	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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

## 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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HRc20	HRc20~30	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
◎	◎	○				○			○			

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA



**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)			
16252	16002	2.0	.0787	3/8	2-5/16
16253	16003	2.5	.0984	3/8	2-5/16
16254	16004	3.0	.1181	3/8	2-5/16
16255	16005	3.5	.1378	3/8	1/2
16256	16006	4.0	.1575	3/8	1/2
16257	16007	4.5	.1772	3/8	9/16
16258	16008	5.0	.1969	3/8	9/16
16259	16009	5.5	.2165	3/8	5/8
16260	16010	6.0	.2362	3/8	5/8
16261	16011	7.0	.2756	3/8	11/16
16262	16012	8.0	.3150	3/8	3/4
16263	16013	9.0	.3543	3/8	3/4
16264	16014	10.0	.3937	3/8	1
16265	16015	11.0	.4330	3/8	1
16266	16016	12.0	.4724	3/8	1
16267	16017	12.5	.4921	1/2	1-1/4
16268	16018	13.0	.5118	1/2	1-1/4
16270	16020	14.0	.5512	1/2	1-3/8
16276	16026	16.0	.6299	5/8	1-5/8
16280	16030	18.0	.7087	5/8	1-5/8
16282	16032	20.0	.7874	5/8	1-7/8
16284	16034	22.0	.8661	3/4	1-7/8
16288	16038	24.0	.9449	3/4	2
16290	16040	25.0	.9843	1	2
16296	16046	32.0	1.2598	1	2
16298	16048	36.0	1.4173	1	2
16300	16050	40.0	1.5748	1-1/4	2
16302	16052	45.0	1.7717	1-1/4	2

- CBN END MILL
- i-Xmill END MILL
- X5070 END MILLS
- X-SPEED ROUGHER END MILLS
- X-POWER END MILLS
- JET-POWER END MILLS
- V7 Mill STEEL END MILLS
- V7 Mill INOX END MILLS
- ALU-POWER END MILLS
- D-POWER END MILLS
- STANDARD CARBIDE END MILLS
- TANK-POWER END MILLS
- STANDARD COBALT & HSS END MILLS
- TECHNICAL DATA

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

Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~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

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.

\* WITH TRANSPARENT PLASTIC CASE

■ 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.

### ■ 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 TiAlN coated is available on your request.

\* WITH TRANSPARENT PLASTIC CASE

■ 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.

CBN  
END MILLi-Xmill  
END MILLX5070  
END MILLSX-SPEED  
ROUGHER  
END MILLSX-POWER  
END MILLSJET-POWER  
END MILLSV7 Mill STEEL  
END MILLSV7 Mill INOX  
END MILLSALU-POWER  
END MILLSD-POWER  
END MILLSSTANDARD  
CARBIDE  
END MILLSTANK-POWER  
END MILLSSTANDARD  
COBALT  
& HSS  
END MILLSTECHNICAL  
DATA



## 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

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.

\* WITH TRANSPARENT PLASTIC CASE

■ Coating Codes for Cobalt

Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)

■ Coating Codes for HSS

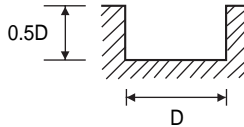
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)

► Coated Price Shown in Price List. Call for Availability.

CBN  
END MILLi-Xmill  
END MILLX5070  
END MILLSX-SPEED  
ROUGHER  
END MILLSX-POWER  
END MILLSJET-POWER  
END MILLSV7 Mill STEEL  
END MILLSV7 Mill INOX  
END MILLSALU-POWER  
END MILLSD-POWER  
END MILLSSTANDARD  
CARBIDE  
END MILLSTANK-POWER  
END MILLSSTANDARD  
COBALT  
& HSS  
END MILLSTECHNICAL  
DATA

HSSCo8 & HSS, 2 FLUTE FINISH - SLOTTING

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm <sup>2</sup>		500~800N/mm <sup>2</sup>		800~1000N/mm <sup>2</sup>		1000~1300N/mm <sup>2</sup>			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	3500	2.20	3200	1.80	2500	1.60	1600	0.80	11000	9.80
1/4	1800	3.50	1600	3.10	1200	2.40	800	1.60	5600	12.20
3/8	1100	4.00	900	3.50	800	3.10	450	1.80	3100	15.80
1/2	900	4.30	800	4.00	630	3.10	400	2.00	2500	15.00
5/8	700	4.30	560	3.50	450	2.80	280	1.80	2000	13.80
3/4	630	4.00	500	3.50	400	2.80	250	1.80	1800	13.80
7/8	500	4.00	450	3.50	350	2.80	220	1.80	1400	11.80
1	450	3.50	400	3.10	310	2.40	180	1.40	1200	11.00
1-1/8	400	3.10	350	2.80	280	2.20	160	1.20	1100	10.50
1-3/8	310	2.40	250	2.00	200	1.60	120	1.00	900	8.70
1-1/2	310	2.40	250	2.00	200	1.60	120	1.00	900	8.70
1-3/4	280	2.40	220	2.00	180	1.60	110	1.00	800	7.80
2	250	2.00	190	1.80	110	1.00	80	0.80	630	6.30

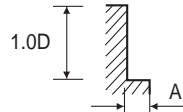
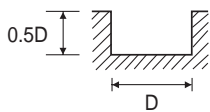


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.  
FEED = inch/min.

HSS, 2 FLUTE, 42° HELIX FINISH for ALUMINUM

MATERIAL	ALUMINUM NONFERROUS METALS		NON-ALLOYED STEELS ALLOY STEELS CAST IRON	
DIAMETER	RPM	FEED	RPM	FEED
1/8	8000	22.50	8000	29.00
3/16	7400	25.00	7400	32.50
1/4	6800	28.50	6800	37.00
5/16	5200	43.50	5200	55.00
7/16	5000	47.00	5000	47.00
1/2	4500	47.00	4500	61.00
9/16	3500	49.00	3500	63.00
5/8	3500	49.00	3500	63.00
3/4	2300	51.00	2300	67.00
13/16	2000	51.00	2000	67.00



A : Ø1/8 ~ Ø5/16 = 0.25 × D  
Ø7/16 ~ Ø13/16 = 0.5 × D

RPM = rev./min.  
FEED = inch/min.

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA





CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

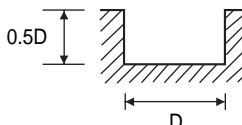
TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

### HSSCo8, 3 FLUTE FINISH - SLOTING

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm <sup>2</sup>		500~800N/mm <sup>2</sup>		800~1000N/mm <sup>2</sup>		1000~1300N/mm <sup>2</sup>			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	5600	2.40	4500	1.80	4000	1.80	2200	0.80	12000	9.40
1/8	3500	3.12	3200	2.60	2500	2.40	1600	1.20	11000	15.00
1/4	1800	5.30	1600	4.70	1200	3.50	800	2.40	5600	18.50
3/8	1100	6.00	900	5.30	800	4.70	450	2.60	3100	23.60
1/2	900	6.50	800	6.00	630	4.70	400	3.00	2500	22.40
9/16	800	6.50	700	5.30	560	4.70	350	3.00	2200	20.90
5/8	700	6.50	560	5.30	450	4.10	280	2.60	2000	20.90
7/8	500	6.00	450	5.30	350	4.10	220	2.60	1400	17.70
1	450	5.3	400	4.70	310	3.50	180	2.00	1200	16.50
1-1/8	400	4.70	350	4.10	280	3.10	160	1.80	1100	15.80

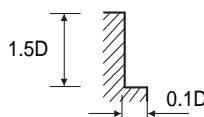


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.  
FEED = inch/min.

### HSSCo8, 3 FLUTE FINISH - SIDE CUTTING

MATERIAL	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 <sup>2</sup>		500~800N/mm <sup>2</sup>		800~1000N/mm <sup>2</sup>		1000~1300N/mm <sup>2</sup>			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	5600	2.40	4500	1.60	4000	1.40	2200	0.60	12000	7.10
1/8	3500	3.10	3200	2.40	2500	1.80	1600	0.80	11000	11.00
5/32	2800	4.10	2200	3.00	1800	2.00	1100	1.20	8000	13.00
3/16	2200	5.30	1800	3.70	1600	2.60	900	1.40	6300	13.80
1/4	1800	5.30	1600	4.30	1200	2.60	800	1.80	5600	13.80
5/16	1400	6.00	1100	4.70	900	3.10	560	2.00	4000	17.30
3/8	1100	6.00	900	4.70	800	3.80	450	2.00	3100	17.70
1/2	900	6.50	800	5.30	630	3.80	400	2.20	2500	16.90
9/16	800	6.50	700	4.70	560	3.80	350	2.20	2200	15.80
5/8	700	6.50	560	4.70	450	3.10	280	2.00	2000	15.80
11/16	630	6.00	500	4.70	400	3.10	250	2.00	1800	15.80
13/16	560	6.00	450	4.70	400	3.10	220	2.00	1600	14.20
7/8	500	6.00	450	4.70	350	3.10	220	2.00	1400	13.40
1	450	5.30	400	4.30	310	2.60	180	1.40	1200	12.60
1-1/8	400	4.70	350	3.70	280	2.40	160	1.20	1100	11.80
1-3/16	350	4.10	310	3.10	250	2.20	160	1.20	1100	11.80

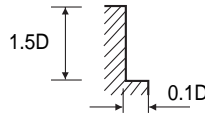


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.  
FEED = inch/min.

**HSSCo8 & HSS, MULTI FLUTE FINISH - SIDE CUTTING**

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
	~500N/mm <sup>2</sup>		500~800N/mm <sup>2</sup>		800~1000N/mm <sup>2</sup>		1000~1300N/mm <sup>2</sup>			
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH										
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	3500	4.30	3200	3.10	2500	2.40	1600	1.20	11000	15.00
1/4	1800	7.10	1600	5.70	1200	3.50	800	2.40	5600	18.50
3/8	1100	7.90	900	6.30	800	4.70	450	2.60	3100	23.60
1/2	900	8.70	800	7.10	630	4.70	400	3.00	2500	22.40
5/8	700	8.70	560	6.30	450	4.10	280	2.60	2000	20.90
3/4	630	7.90	500	6.30	400	4.10	250	2.60	1800	20.90
13/16	500	7.90	450	6.30	350	4.10	220	2.60	1400	17.70
15/16	500	7.90	450	6.30	350	4.10	220	2.60	1400	17.70
1	450	7.10	400	5.70	310	3.50	180	2.00	1200	16.50
1-1/2	310	4.70	250	3.50	200	2.40	120	1.40	900	13.00
1-3/4	280	4.70	220	3.50	150	2.40	110	1.40	800	11.80
2	280	4.70	190	3.50	110	1.80	80	1.00	630	11.80

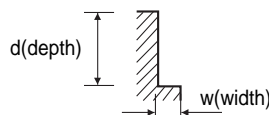


※ The Feed, in long &amp; extra long types, should be reduced by around 50%.

 RPM = rev./min.  
FEED = inch/min.

**HSSCo8, MULTI FLUTE 60° HELIX FINISH - SIDE CUTTING**

MATERIAL		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	3.60	1250	2.20	980	1.80	2050	4.80
1/4	0.08 × 0.35	1600	3.60	650	2.20	510	1.60	1100	4.50
5/8	0.02 × 1	750	2.90	460	2.00	390	1.40	840	4.10
5/8	0.18 × 1	650	2.90	400	2.00	340	1.40	730	4.10
3/4	0.02 × 1.2	520	2.50	370	1.80	300	1.40	630	4.10
3/4	0.26 × 1.2	450	2.50	320	1.80	260	1.40	550	4.10
1	0.02 × 1.6	460	2.90	290	1.80	240	1.40	510	4.30
1	0.30 × 1.6	400	2.90	250	1.80	210	1.40	440	4.30
1-1/2	0.02 × 1.6	280	2.50	170	1.40	150	1.30	320	3.60
1-1/2	0.80 × 1.6	240	2.50	150	1.40	130	1.30	280	3.60
2	0.02 × 2	220	2.20	140	1.30	115	1.10	260	2.90
2	1.60 × 2	190	2.20	120	1.30	100	1.10	225	2.90



※ The Feed, in long &amp; extra long types, should be reduced by around 50%.

 RPM = rev./min.  
FEED = inch/min.

 CBN  
END MILL

 i-Xmill  
END MILL

 X5070  
END MILLS

 X-SPEED  
ROUGHER  
END MILLS

 X-POWER  
END MILLS

 JET-POWER  
END MILLS

 V7 Mill STEEL  
END MILLS

 V7 Mill INOX  
END MILLS

 ALU-POWER  
END MILLS

 D-POWER  
END MILLS

 STANDARD  
CARBIDE  
END MILLS

 TANK-POWER  
END MILLS

 STANDARD  
COBALT  
& HSS  
END MILLS

 TECHNICAL  
DATA

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

STANDARD CARBIDE END MILLS

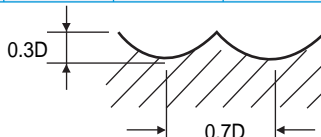
TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

**HSSCo8 & HSS, 2 FLUTE BALL NOSE**

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm <sup>2</sup>		500~800N/mm <sup>2</sup>		800~1000N/mm <sup>2</sup>		1000~1300N/mm <sup>2</sup>			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	4500	3.70	3400	2.80	2000	1.20	1400	0.80	11000	9.10
R5/64 × 5/32	3200	4.50	2400	3.10	1400	1.40	1000	1.00	8000	10.20
R1/8 × 1/4	2200	5.30	1700	3.50	1000	1.80	700	1.00	5600	11.00
R5/32 × 5/16	1600	6.30	1200	4.10	700	2.00	500	1.20	4000	13.80
R3/16 × 3/8	1300	7.10	1000	4.70	560	2.40	400	1.40	3200	14.20
R1/4 × 1/2	1000	6.70	800	4.10	450	2.20	320	1.40	2500	13.40
R5/16 × 5/8	800	6.00	600	4.00	350	2.20	250	1.40	2000	11.80
R3/32 × 3/16	600	5.50	500	3.40	300	2.00	200	1.40	1600	11.00
R1/2 × 1	500	5.10	400	2.80	220	1.60	160	1.20	1300	9.80

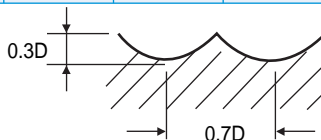


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.  
FEED = inch/min.

**HSSCo8 & HSS, MULTI FLUTE BALL NOSE**

MATERIAL	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 <sup>2</sup>		500~800N/mm <sup>2</sup>		800~1000N/mm <sup>2</sup>		1000~1300N/mm <sup>2</sup>			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/8 × 1/4	2200	7.90	1700	5.30	1000	2.80	700	1.60	5600	16.50
R5/32 × 5/16	1600	9.40	1200	6.30	700	3.00	500	1.80	4000	20.90
R3/16 × 3/8	1300	10.60	1000	7.10	560	3.50	400	2.00	3200	21.30
R1/4 × 1/2	1000	10.20	800	6.30	450	3.10	320	2.00	2500	20.10
R5/16 × 5/8	800	9.10	600	6.00	350	3.10	250	2.00	2000	17.70
R3/32 × 3/16	600	8.30	500	5.10	300	3.00	200	2.00	1600	16.50
R1/2 × 1	500	7.90	400	4.10	220	2.40	160	1.80	1300	15.00

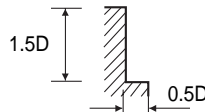


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.  
FEED = inch/min.

**HSSCo8, MULTI FLUTE ROUGHING - SIDE CUTTING**

MATERIAL	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	
	~ 500N/mm <sup>2</sup>		500~800N/mm <sup>2</sup>		800~1000N/mm <sup>2</sup>		1000~1300N/mm <sup>2</sup>			
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH										
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	1800	3.10	1600	2.40	1200	2.20	800	1.20	4500	7.90
5/16	1400	4.10	1100	3.00	900	2.60	560	1.40	3100	9.10
3/8	1100	6.00	900	4.70	800	4.30	450	2.40	2500	13.80
1/2	900	7.10	800	5.50	630	4.30	400	2.80	2000	15.80
5/8	700	7.10	560	5.50	450	4.30	280	2.80	1600	17.70
11/16	630	7.10	500	5.50	400	4.30	250	2.80	1400	18.50
7/8	500	8.70	450	6.70	350	5.50	220	3.40	1100	18.50
1	450	8.70	400	6.70	310	5.50	180	3.40	1000	17.70
1-1/8	400	8.10	350	6.30	280	5.10	160	3.40	900	20.10
1-1/4	350	8.10	280	6.30	220	5.10	140	3.40	800	19.70
1-3/8	310	8.10	250	6.30	200	5.10	120	3.40	700	18.50
1-3/4	280	7.90	220	6.00	180	4.70	110	3.10	630	17.70
2	220	7.90	180	6.70	160	5.50	90	3.10	500	14.60



※ The Feed, in long &amp; extra long types, should be reduced by around 50%.

 RPM = rev./min.  
FEED = inch/min.

**HSSCo8, MULTI FLUTE BALL NOSE ROUGHING - SIDE CUTTING**

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
	~ 500N/mm <sup>2</sup>		500~800N/mm <sup>2</sup>		800~1000N/mm <sup>2</sup>		1000~1300N/mm <sup>2</sup>			
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH										
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R5/32 × 5/16	1400	4.10	1100	3.00	900	2.60	560	1.40	3100	9.10
R3/16 × 3/8	1100	6.00	900	4.70	800	4.30	450	2.40	2500	9.80
R1/4 × 1/2	900	7.10	800	5.50	630	4.30	400	2.80	2000	15.80
R5/16 × 5/8	700	7.10	560	5.50	450	4.30	280	2.80	1600	17.70
R7/16 × 7/8	560	7.10	450	5.50	400	4.30	220	2.80	1200	19.70
R1/2 × 1	450	8.70	400	6.70	310	5.50	180	3.40	1000	17.70
R5/8 × 1-1/4	350	8.10	280	6.30	220	5.10	140	3.40	800	19.70
R7/8 × 1-3/4	280	7.90	220	6.00	180	4.70	110	3.10	630	17.70



※ The Feed, in long &amp; extra long types, should be reduced by around 50%.

 RPM = rev./min.  
FEED = inch/min.

 CBN  
END MILL

 i-Xmill  
END MILL

 X5070  
END MILLS

 X-SPEED  
ROUGHER  
END MILLS

 X-POWER  
END MILLS

 JET-POWER  
END MILLS

 V7 Mill STEEL  
END MILLS

 V7 Mill INOX  
END MILLS

 ALU-POWER  
END MILLS

 D-POWER  
END MILLS

 STANDARD  
CARBIDE  
END MILLS

 TANK-POWER  
END MILLS

 STANDARD  
COBALT  
& HSS  
END MILLS

 TECHNICAL  
DATA



RECOMMENDED CUTTING CONDITIONS

HSSCo8 & HSS, MULTI FLUTE ROUGHING & FINISHING - SIDE CUTTING

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

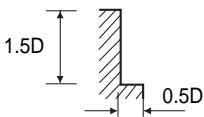
STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
	~ 500N/mm <sup>2</sup>		500~800N/mm <sup>2</sup>		800~1000N/mm <sup>2</sup>		1000~1300N/mm <sup>2</sup>		RPM	FEED
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH										
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	1800	2.50	1300	2.00	1200	1.80	800	1.00	4500	6.30
5/16	1400	3.35	1100	2.40	900	2.20	560	1.20	3100	7.30
3/8	1100	4.70	900	3.70	800	3.50	450	2.00	2500	11.00
1/2	900	5.70	800	4.30	630	3.50	400	2.20	2000	12.60
5/8	700	5.70	560	4.30	450	3.50	280	2.20	1600	14.20
11/16	630	5.70	500	4.30	400	3.50	250	2.20	1400	15.00
7/8	500	6.90	450	5.30	350	4.30	220	2.80	1100	15.00
1	450	6.90	400	5.30	310	4.30	180	2.80	1000	14.20
1-1/4	350	6.70	280	5.10	220	4.10	140	2.80	800	15.80
1-3/8	310	6.70	250	5.10	200	4.10	120	2.80	700	15.00
2	240	5.35	190	4.00	150	3.40	110	2.60	500	11.20



※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.  
FEED = inch/min.

HSSCo8 & HSS, MINIATURE

MATERIAL	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	
	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	6600~8800	0.34	11000 up	0.45	11000 up	0.79	11000 up	1.24	11000 up	1.46
1/32	3300~4400	0.45	5500~5600	0.56	7700~9900	1.58	11000 up	1.58	11000 up	2.48
3/64	2200~2935	0.56	3665~4400	0.56	5135~6600	2.48	7335~8800	2.03	11000 up	2.59
1/16	1650~2260	0.56	2750~3300	1.01	3350~4950	3.26	5500~6600	2.59	11000 up	4.16
5/64	1320~1760	0.56	2200~2640	1.01	3850~3960	3.26	4400~5820	2.59	8500 up	4.16
3/32	1100~1285	0.56	1835~2200	1.01	2565~3300	3.26	3665~4400	2.59	7330up	4.16
7/64	345~1255	0.56	1570~1885	1.01	2200~2830	3.26	3140~3770	2.59	5625 up	4.28
1/8	825~1100	0.56	1375~1650	1.01	1925~2475	3.26	2750~3300	2.81	5500 up	4.50
9/64	735~980	0.62	1220~1465	1.01	1710~2200	3.38	2445~3770	2.81	4890~9780	4.50
5/32	560~880	0.79	1100~1320	1.13	1540~1980	3.60	2205~2640	2.93	4400~8800	4.50
11/64	600~800	0.90	1000~1200	1.24	1400~1800	3.71	2000~2400	3.04	4000~3000	4.61
3/16	550~735	1.01	915~1100	1.35	1285~1650	3.33	1535~2200	3.26	3685~7335	4.73

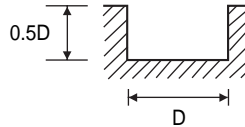
NOTES :

- (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 conditions.
- (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	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	~500N/mm <sup>2</sup>		~HRc20		HRc20~HRc30		HRc30~HRc40		
STRENGTH	~500N/mm <sup>2</sup>		500~800N/mm <sup>2</sup>		800~1000N/mm <sup>2</sup>		1000~1300N/mm <sup>2</sup>			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	4200	2.64	3840	2.16	3000	1.92	1920	0.96	13200	11.76
1/4	2160	4.20	1920	3.72	1440	2.88	960	1.92	6720	14.64
3/8	1320	4.80	1080	4.20	960	3.72	540	2.16	3720	18.96
1/2	1090	5.16	960	4.80	756	3.72	480	2.40	3000	18.00
5/8	840	5.16	672	4.20	540	3.72	336	2.16	2400	16.56
3/4	756	4.80	600	4.20	480	3.36	300	2.16	2160	16.56
7/8	600	4.80	540	4.20	420	3.36	264	2.16	1680	14.16
1	540	4.20	480	3.72	372	2.88	260	2.16	1440	13.20
1-1/8	480	3.72	420	3.36	336	2.64	432	1.68	1320	12.60
1-3/8	372	2.88	300	2.40	240	1.92	144	1.20	1080	10.44
1-1/2	372	2.88	300	2.40	240	1.92	144	1.20	1080	10.44
1-3/4	336	2.88	264	2.40	216	1.92	132	1.20	960	9.48
2	300	2.40	228	2.16	132	1.20	96	0.96	756	7.56

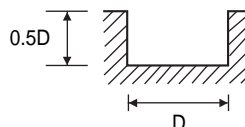


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.  
FEED = inch/min.

**HSSCo8 & HSS, 3 FLUTE FINISH TiN-COATED - SLOTTING**

MATERIAL	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	~500N/mm <sup>2</sup>		~HRc20		HRc20~HRc30		HRc30~HRc40		
STRENGTH	~500N/mm <sup>2</sup>		500~800N/mm <sup>2</sup>		800~1000N/mm <sup>2</sup>		1000~1300N/mm <sup>2</sup>			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	6720	2.80	5400	2.16	4800	2.16	2640	0.96	14400	11.28
1/5	4200	3.72	3840	3.12	3000	2.88	1920	1.44	13200	18.00
1/4	2160	6.36	1920	5.64	1440	4.20	960	2.88	6720	21.66
3/8	1320	7.20	1080	6.36	960	5.64	540	3.12	3720	28.32
1/2	1080	7.80	960	7.20	756	5.64	480	3.60	3000	26.88
5/8	840	7.80	672	6.36	540	4.92	336	3.12	2400	25.08
11/16	756	7.20	600	6.36	480	4.92	300	3.12	2160	25.08
7/8	600	7.20	540	6.36	420	4.92	264	3.12	1680	21.24
1	540	6.36	480	5.64	372	4.20	216	2.40	1440	19.80
1-1/8	430	5.62	420	4.92	336	3.72	192	2.16	1320	18.96
1-3/16	420	4.92	372	4.20	300	3.60	192	2.16	1320	18.96



※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.  
FEED = inch/min.

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA



RECOMMENDED CUTTING CONDITIONS

HSSCo8 & HSS, 3 FLUTE FINISH TiN-COATED - SIDE CUTTING

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

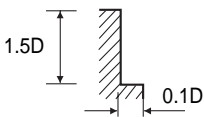
STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
	~ 500N/mm <sup>2</sup>		500~800N/mm <sup>2</sup>		800~1000N/mm <sup>2</sup>		1000~1300N/mm <sup>2</sup>		RPM	FEED
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH										
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	6720	2.88	5400	1.92	4800	1.68	2640	0.72	14400	8.52
1/8	4200	3.72	3840	2.88	3000	2.16	1920	0.96	13200	13.20
1/4	2160	6.36	1920	5.16	1440	3.12	960	2.16	6720	16.56
3/8	1320	7.20	1080	5.64	960	4.20	540	2.40	3720	21.24
1/2	1080	7.80	960	6.36	756	4.20	480	2.64	3000	20.28
9/16	960	7.80	840	5.64	672	4.20	420	2.64	2640	18.96
5/8	840	7.80	672	5.64	540	3.72	336	2.40	2400	18.96
11/16	756	7.20	600	5.64	480	3.72	300	2.40	2160	18.96
7/8	600	7.20	540	5.64	420	3.72	264	2.40	1680	16.08
1	540	6.36	480	5.16	372	3.12	216	1.68	1440	15.12
1-1/8	430	5.64	420	4.44	336	2.88	192	1.44	1320	14.16

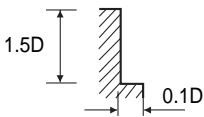


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.  
FEED = inch/min.

HSSCo8 & HSS, MULTI FLUTE FINISH TiN-COATED - SIDE CUTTING

MATERIAL	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	
	~ 500N/mm <sup>2</sup>		500~800N/mm <sup>2</sup>		800~1000N/mm <sup>2</sup>		1000~1300N/mm <sup>2</sup>		RPM	FEED
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH										
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	4200	5.16	3840	3.72	3000	2.88	1920	1.44	13200	18.00
1/4	2640	8.52	1920	6.84	1440	4.20	960	2.88	6720	22.20
3/8	1320	9.48	1080	7.56	960	5.64	540	3.12	3700	28.32
1/2	1080	10.44	960	8.52	756	5.64	480	3.60	3000	26.88
5/8	840	10.44	672	7.56	540	4.92	336	3.12	2400	25.08
3/4	756	9.48	600	7.56	480	4.92	300	3.12	2160	25.08
7/8	600	9.48	540	7.56	420	4.92	264	3.12	1680	21.24
15/16	600	9.48	540	7.56	420	4.92	264	3.12	1680	21.24
1	540	8.52	480	6.84	372	4.20	216	2.40	1440	19.80
1-1/2	372	5.64	300	4.20	240	2.88	144	1.68	1080	15.60
1-3/4	336	5.64	264	4.20	216	2.88	132	1.68	960	14.16
2	336	5.64	264	4.20	168	2.16	96	1.20	960	14.16

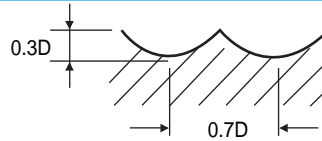


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.  
FEED = inch/min.

**HSSCo8 & HSS, 2 FLUTE BALL NOSE TIN-COATED**

MATERIAL	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	
	~ 500N/mm <sup>2</sup>		500~800N/mm <sup>2</sup>		800~1000N/mm <sup>2</sup>		1000~1300N/mm <sup>2</sup>			
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH			~HRc20		HRc20~HRc30		HRc30~HRc40			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	5400	4.44	4080	3.36	2400	1.44	1680	0.96	13200	10.92
R5/64 × 5/32	3840	5.40	2880	3.72	1680	1.68	1200	1.20	9600	12.24
R1/8 × 1/4	2640	6.36	2040	4.20	720	2.16	840	1.20	6720	13.20
R5/32 × 5/16	1920	7.56	1440	4.92	840	2.40	600	1.44	4800	16.56
R3/16 × 3/8	1560	8.52	1200	5.64	672	2.88	480	1.68	3840	17.04
R1/4 × 1/2	1200	8.04	960	4.92	540	2.64	384	1.68	3330	16.08
R5/16 × 5/8	960	7.20	720	4.80	420	2.64	300	1.68	2400	14.16
R3/32 × 3/16	720	6.60	600	4.08	360	2.40	240	1.68	1923	13.20
R1/2 × 1	600	6.12	480	3.36	264	1.92	192	1.44	1560	11.76

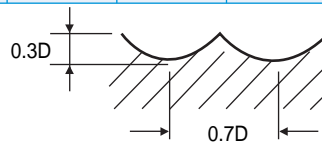


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.  
FEED = inch/min.

**HSSCo8 & HSS, MULTI FLUTE BALL NOSE TIN-COATED**

MATERIAL	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	
	~ 500N/mm <sup>2</sup>		500~800N/mm <sup>2</sup>		800~1000N/mm <sup>2</sup>		1000~1300N/mm <sup>2</sup>			
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH			~HRc20		HRc20~HRc30		HRc30~HRc40			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/8 × 1/4	2640	9.48	2040	6.36	1200	3.36	840	1.92	6720	19.80
R5/32 × 5/16	1920	11.28	1440	7.56	840	3.60	600	2.16	4800	25.08
R3/16 × 3/8	1560	12.72	1200	8.52	672	4.20	480	2.40	3840	25.56
R1/4 × 1/2	1200	12.24	960	7.56	540	3.72	384	2.40	3000	24.12
R5/16 × 5/8	960	10.92	720	7.20	420	3.72	300	2.40	2400	21.24
R3/32 × 3/16	720	9.96	600	6.12	380	3.60	240	2.40	1920	19.80
R1/2 × 1	600	9.48	480	4.80	264	2.88	192	2.16	1560	18.00



※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.  
FEED = inch/min.

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA





**HSSCo8, MULTI FLUTE ROUGHING TiN-COATED - SIDE CUTTING**

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

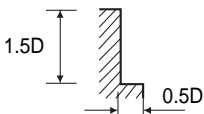
STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
	~ 500N/mm <sup>2</sup>		500~800N/mm <sup>2</sup>		800~1000N/mm <sup>2</sup>		1000~1300N/mm <sup>2</sup>		RPM	FEED
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH										
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	2160	3.72	1920	2.88	1440	2.64	960	1.44	5400	9.48
5/16	1680	4.92	1320	3.60	1080	3.12	672	1.68	3720	10.92
3/8	1320	7.20	1080	5.64	960	5.16	540	2.88	3000	16.56
1/2	1080	8.52	960	6.60	756	5.16	480	3.36	2400	18.96
5/8	840	8.52	672	6.60	540	5.16	336	3.36	1920	22.20
11/16	756	8.52	600	6.60	480	5.16	300	3.36	1680	22.20
7/8	600	10.44	540	8.04	420	6.60	264	4.08	1320	21.24
1	540	10.44	480	8.04	372	6.60	216	4.08	1200	21.24
1-1/8	480	9.72	420	7.56	336	6.12	192	4.08	1680	24.12
1-1/4	420	9.72	336	7.56	264	6.12	168	4.08	960	23.64
1-3/8	372	9.72	300	7.56	240	6.12	144	4.08	840	22.20
1-3/4	336	9.48	264	7.20	216	5.64	132	3.72	756	21.24
2	264	9.48	216	8.04	192	6.60	108	3.72	600	7.52

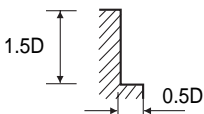


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.  
FEED = inch/min.

**HSSCo8, MULTI FLUTE ROUGHING & FINISHING TiN-COATED - SIDE CUTTING**

MATERIAL	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	
	~ 500N/mm <sup>2</sup>		500~800N/mm <sup>2</sup>		800~1000N/mm <sup>2</sup>		1000~1300N/mm <sup>2</sup>		RPM	FEED
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH										
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	2160	3.00	1920	2.40	1440	2.16	960	1.20	5400	7.56
5/16	1680	4.02	1320	2.88	1080	2.40	672	1.44	3720	8.76
3/8	1320	5.64	1080	4.44	960	4.20	540	2.40	3000	13.20
1/2	1080	6.84	960	5.16	756	4.20	480	2.64	2400	15.12
5/8	840	6.84	672	5.16	540	4.20	336	2.64	1920	17.64
11/16	756	6.84	600	5.16	480	4.20	300	2.64	1680	18.00
7/8	600	8.28	540	6.36	420	5.16	264	3.36	1320	18.00
1	540	8.28	480	6.36	372	5.16	216	3.36	1200	17.64
1-1/4	420	8.04	336	6.12	264	4.92	168	3.36	960	18.96
1-3/8	372	8.04	300	6.12	240	4.92	144	3.36	840	18.00
2	288	6.42	228	4.80	192	4.08	132	3.12	600	13.44

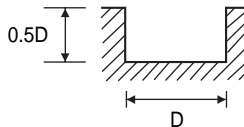


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.  
FEED = inch/min.

**HSSCo8 & HSS, 2 FLUTE FINISH TiCN-COATED - SLOTTING**

MATERIAL	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	
	~ 500N/mm <sup>2</sup>		500~800N/mm <sup>2</sup>		800~1000N/mm <sup>2</sup>		1000~1300N/mm <sup>2</sup>			
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH										
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	4550	2.86	3840	2.34	3250	2.08	2048	1.04	14300	12.74
1/4	2340	4.55	2080	4.03	1560	3.12	1040	3.24	7280	15.86
3/8	1430	5.20	1170	4.55	1040	4.03	585	3.24	4030	20.54
1/2	1170	5.59	1040	5.20	819	4.03	520	2.80	3250	19.50
5/8	910	5.59	728	4.55	585	3.64	364	2.34	2600	17.94
3/4	819	5.20	650	4.55	520	3.64	325	2.34	2340	17.94
7/8	650	5.20	585	4.55	455	3.64	286	2.34	1820	15.34
1	585	4.55	520	4.03	403	3.12	234	1.82	1560	14.30
1-1/8	520	4.03	455	3.64	364	2.86	208	1.56	1430	13.65
1-3/8	403	3.12	325	2.60	260	2.08	156	1.30	1170	11.31
1-1/2	403	3.12	325	2.60	260	2.08	156	1.30	1170	11.31
1-3/4	364	3.12	286	2.60	234	2.08	143	1.30	1040	10.27
2	325	2.60	228	2.34	143	1.30	104	1.04	819	8.19

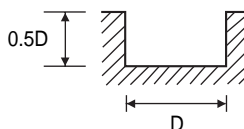


※ The Feed, in long &amp; extra long types, should be reduced by around 50%.

 RPM = rev./min.  
FEED = inch/min.

**HSSCo8, 3 FLUTE FINISH TiCN-COATED - SLOTTING**

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
	~ 500N/mm <sup>2</sup>		500~800N/mm <sup>2</sup>		800~1000N/mm <sup>2</sup>		1000~1300N/mm <sup>2</sup>			
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH										
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	7280	3.12	5850	2.34	5200	2.34	2860	1.04	15600	12.22
1/8	4550	4.03	2340	3.38	3250	3.12	2080	1.56	14300	19.50
1/4	2340	6.89	2080	6.11	1560	4.55	1040	3.12	7280	23.46
3/8	1430	7.80	1170	6.89	1040	6.11	585	3.38	4030	30.68
1/2	1170	8.45	1040	7.80	819	6.11	520	3.80	3250	29.12
9/16	1040	8.45	910	6.89	728	6.11	455	3.80	2860	27.17
5/8	910	8.45	728	6.89	585	5.33	364	3.38	2600	27.17
7/8	650	7.80	585	6.89	455	5.33	286	3.38	1820	23.01
1	585	6.89	520	6.11	403	4.55	324	2.6	1560	21.45
1-1/8	520	6.89	455	5.33	364	4.33	208	2.34	1430	20.54



※ The Feed, in long &amp; extra long types, should be reduced by around 50%.

 RPM = rev./min.  
FEED = inch/min.

 CBN  
END MILL

 i-Xmill  
END MILL

 X5070  
END MILLS

 X-SPEED  
ROUGHER  
END MILLS

 X-POWER  
END MILLS

 JET-POWER  
END MILLS

 V7 Mill STEEL  
END MILLS

 V7 Mill INOX  
END MILLS

 ALU-POWER  
END MILLS

 D-POWER  
END MILLS

 STANDARD  
CARBIDE  
END MILLS

 TANK-POWER  
END MILLS

 STANDARD  
COBALT  
& HSS  
END MILLS

 TECHNICAL  
DATA

**HSSCo8 & HSS, 3 FLUTE FINISH TiCN-COATED - SIDE CUTTING**

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

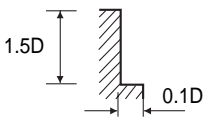
STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
	~ 500N/mm <sup>2</sup>		500~800N/mm <sup>2</sup>		800~1000N/mm <sup>2</sup>		1000~1300N/mm <sup>2</sup>		RPM	FEED
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH										
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3/32	7280	3.12	5850	2.08	5200	1.82	2860	0.78	15600	9.23
1/8	4550	4.03	4160	3.12	3250	2.34	2080	1.04	14300	14.30
1/4	2240	6.89	2080	5.59	1560	3.38	1040	2.34	7280	17.94
5/16	1820	7.80	1430	5.11	1170	4.03	728	2.60	5200	22.49
1/2	1170	8.45	1040	6.89	819	4.55	520	2.86	3250	21.97
9/16	1040	8.45	910	6.11	728	4.55	455	2.86	2860	20.54
5/8	910	8.45	728	6.11	585	4.55	364	2.60	2600	20.54
11/16	819	7.80	650	6.11	520	4.03	325	2.60	2340	20.54
7/8	650	7.80	585	6.11	455	4.03	286	2.60	1820	17.42
1	585	6.89	520	5.59	403	3.38	234	1.82	1560	16.38
1-1/8	520	6.11	455	4.81	362	3.12	208	1.56	1430	15.34

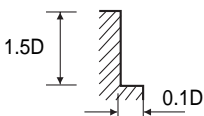


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.  
FEED = inch/min.

**HSSCo8 & HSS, MULTI FLUTE FINISH TiCN-COATED - SIDE CUTTING**

MATERIAL	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	
	~ 500N/mm <sup>2</sup>		500~800N/mm <sup>2</sup>		800~1000N/mm <sup>2</sup>		1000~1300N/mm <sup>2</sup>		RPM	FEED
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH										
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/8	4550	9.49	4160	4.03	3250	3.12	22080	1.56	14300	19.50
1/4	2340	9.23	2090	8.41	1560	4.55	1040	3.12	7280	24.05
3/8	1430	10.27	1170	8.19	1040	6.11	585	3.38	4030	30.68
1/2	1170	11.31	1040	9.23	818	6.11	520	3.90	3250	29.12
5/8	910	11.31	728	8.19	585	5.33	364	3.38	2600	27.17
3/4	819	10.27	819	8.19	520	5.33	325	3.38	2340	27.17
7/8	650	10.27	585	8.19	455	5.33	286	3.38	1820	23.01
15/16	650	10.27	585	8.19	455	5.33	234	3.38	1820	23.01
1	585	9.23	520	8.41	403	4.55	208	2.60	1560	21.85
1-1/2	403	6.11	325	4.55	260	3.12	156	1.82	1170	16.90
1-3/4	364	6.11	286	4.55	234	3.12	143	1.82	1040	15.34
2	364	6.11	286	4.55	182	2.34	104	1.30	1040	15.34

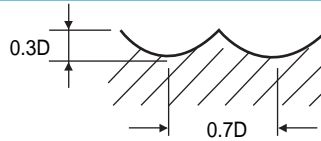


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.  
FEED = inch/min.

**HSSCo8 & HSS, 2 FLUTE BALL NOSE TiCN-COATED**

MATERIAL	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	
	~ 500N/mm <sup>2</sup>		500~800N/mm <sup>2</sup>		800~1000N/mm <sup>2</sup>		1000~1300N/mm <sup>2</sup>			
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH			500~800N/mm <sup>2</sup>		800~1000N/mm <sup>2</sup>		1000~1300N/mm <sup>2</sup>			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/16 × 1/8	5850	4.81	4420	3.64	2600	1.56	1820	1.04	14300	11.83
R5/64 × 5/32	4160	5.85	3120	4.03	1820	1.82	1300	1.30	10400	13.26
R1/8 × 1/4	2860	6.89	2210	4.55	1300	2.34	910	1.30	7280	12.30
R5/32 × 5/16	2080	8.19	1560	5.33	910	2.60	650	1.56	5200	17.94
R3/16 × 3/8	1690	9.23	1300	6.11	728	3.12	520	1.82	4160	18.46
R1/4 × 1/2	1300	8.71	1040	5.33	585	2.86	416	1.82	3250	17.42
R5/16 × 5/8	1043	7.80	780	5.20	455	2.86	325	1.82	2600	15.34
R3/32 × 3/16	780	7.15	650	4.42	390	2.60	263	1.82	2080	14.80
R1/2 × 1	650	6.63	520	3.64	286	2.08	208	1.56	1690	12.74

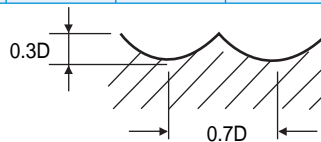


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.  
FEED = inch/min.

**HSSCo8 & HSS, MULTI FLUTE BALL NOSE TiCN-COATED**

MATERIAL	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	
	~ 500N/mm <sup>2</sup>		500~800N/mm <sup>2</sup>		800~1000N/mm <sup>2</sup>		1000~1300N/mm <sup>2</sup>			
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH			500~800N/mm <sup>2</sup>		800~1000N/mm <sup>2</sup>		1000~1300N/mm <sup>2</sup>			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1/8 × 1/4	2860	10.27	2210	6.89	1300	3.64	910	2.08	7280	21.45
R5/32 × 5/16	2080	12.22	1560	8.19	910	3.90	650	2.34	5200	27.17
R3/16 × 3/8	1690	13.78	1300	9.23	728	4.55	520	2.60	4160	27.69
R1/4 × 1/2	1300	13.26	1040	8.19	585	4.03	416	2.60	3250	26.13
R5/16 × 5/8	1040	11.83	780	7.80	455	4.03	325	2.60	2600	23.01
R3/32 × 3/16	780	10.79	650	6.63	390	3.90	260	2.60	2080	21.45
R1/2 × 1	650	10.27	520	5.20	286	3.12	208	2.34	1690	19.50



※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.  
FEED = inch/min.

CBN  
END MILL

i-Xmill  
END MILL

X5070  
END MILLS

X-SPEED  
ROUGHER  
END MILLS

X-POWER  
END MILLS

JET-POWER  
END MILLS

V7 Mill STEEL  
END MILLS

V7 Mill INOX  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
END MILLS

STANDARD  
CARBIDE  
END MILLS

TANK-POWER  
END MILLS

STANDARD  
COBALT  
& HSS  
END MILLS

TECHNICAL  
DATA



HSSCo8, MULTI FLUTE ROUGHING TiCN-COATED - SIDE CUTTING

CBN END MILL

i-Xmill END MILL

X5070 END MILLS

X-SPEED ROUGHER END MILLS

X-POWER END MILLS

JET-POWER END MILLS

V7 Mill STEEL END MILLS

V7 Mill INOX END MILLS

ALU-POWER END MILLS

D-POWER END MILLS

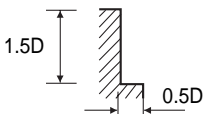
STANDARD CARBIDE END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS END MILLS

TECHNICAL DATA

MATERIAL	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS		ALUMINUM ALUMINUM ALLOYS	
HARDNESS			~HRc20		HRc20~HRc30		HRc30~HRc40			
STRENGTH	~ 500N/mm <sup>2</sup>		500~800N/mm <sup>2</sup>		800~1000N/mm <sup>2</sup>		1000~1300N/mm <sup>2</sup>			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	2340	4.03	2080	3.12	1560	2.86	1040	1.56	5850	10.27
5/16	1820	5.33	1430	3.90	1170	3.38	728	1.82	4030	11.53
3/8	1430	7.80	1170	6.11	1040	5.59	585	3.12	3250	17.94
1/2	1170	9.23	1040	7.15	819	5.59	520	3.64	2600	20.54
5/8	910	9.23	728	7.15	585	5.59	364	3.64	2080	24.05
11/16	819	9.23	650	7.15	520	5.59	325	3.64	1820	24.05
7/8	650	11.31	585	8.71	455	7.15	286	4.42	1430	23.01
1	585	11.31	520	8.71	403	7.15	234	4.42	1300	23.01
1-1/8	520	10.53	455	8.19	364	6.63	208	4.42	1170	26.13
1-1/4	455	10.53	364	8.19	286	6.63	182	4.42	1040	25.61
1-3/8	403	10.53	325	8.19	260	6.63	156	4.42	910	24.05
1-3/4	364	10.27	286	7.80	234	6.11	143	4.03	819	23.01
2	286	10.27	234	8.71	208	7.15	117	4.03	650	18.98

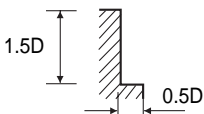


※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.  
FEED = inch/min.

HSSCo8, MULTI FLUTE ROUGHING & FINISHING TiCN-COATED - SIDE CUTTING

MATERIAL	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 <sup>2</sup>		500~800N/mm <sup>2</sup>		800~1000N/mm <sup>2</sup>		1000~1300N/mm <sup>2</sup>			
DIAMETER	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1/4	2340	3.25	2080	2.60	1560	2.34	1040	1.30	5850	8.19
5/16	1820	4.35	1430	3.12	1170	2.60	728	1.56	4030	9.49
3/8	1430	6.11	1170	4.81	1040	4.55	585	2.60	3250	14.30
1/2	1170	7.41	1040	5.59	819	4.55	520	2.86	2600	16.38
5/8	910	7.41	728	5.59	585	4.55	364	2.86	2080	18.46
11/16	819	7.41	650	5.59	520	4.55	325	2.86	1820	19.50
7/8	650	8.97	585	6.89	455	5.59	286	3.64	1430	19.50
1	585	8.97	520	6.89	403	5.59	234	3.64	1300	18.46
1-1/4	455	8.71	384	6.63	286	5.33	182	3.64	1040	20.54
1-3/4	403	8.71	325	6.63	260	5.33	156	3.64	910	19.50
2	312	6.95	247	5.20	238	4.42	143	3.38	650	14.56



※ The Feed, in long & extra long types, should be reduced by around 50%.

RPM = rev./min.  
FEED = inch/min.



Being the best through innovation

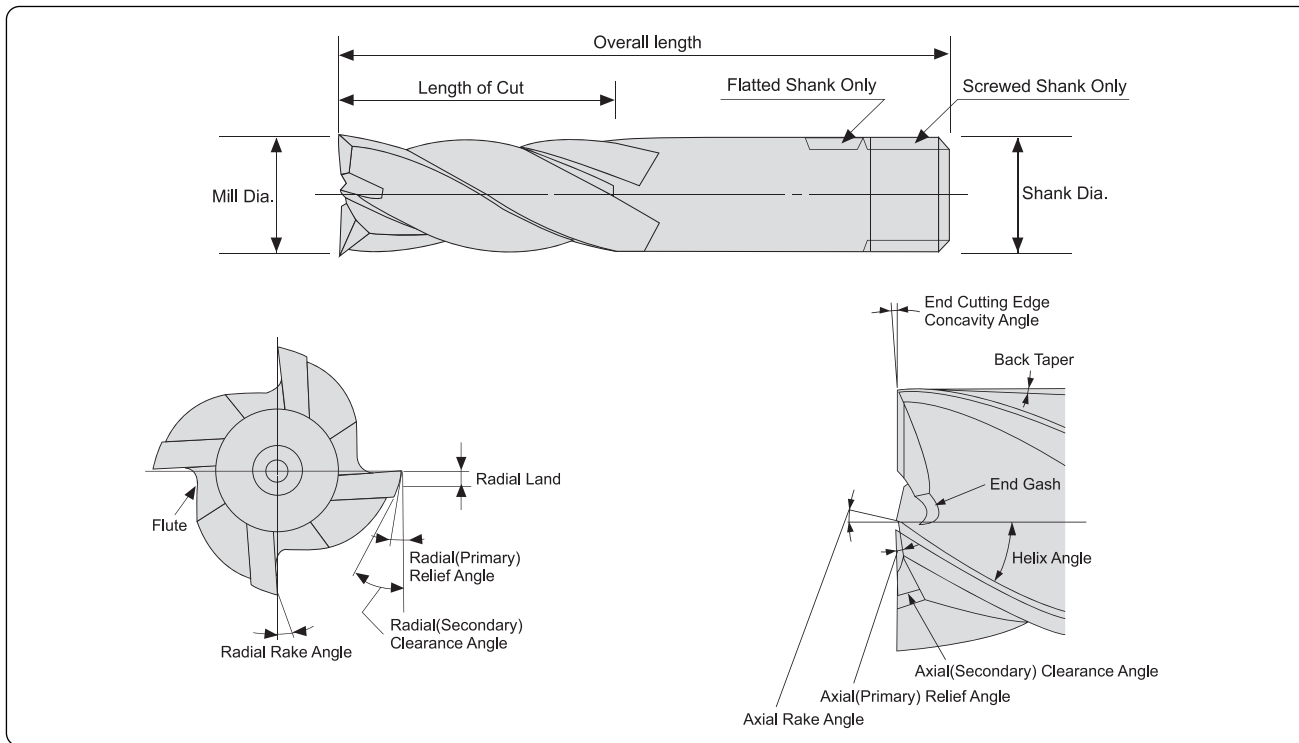
# END MILLS



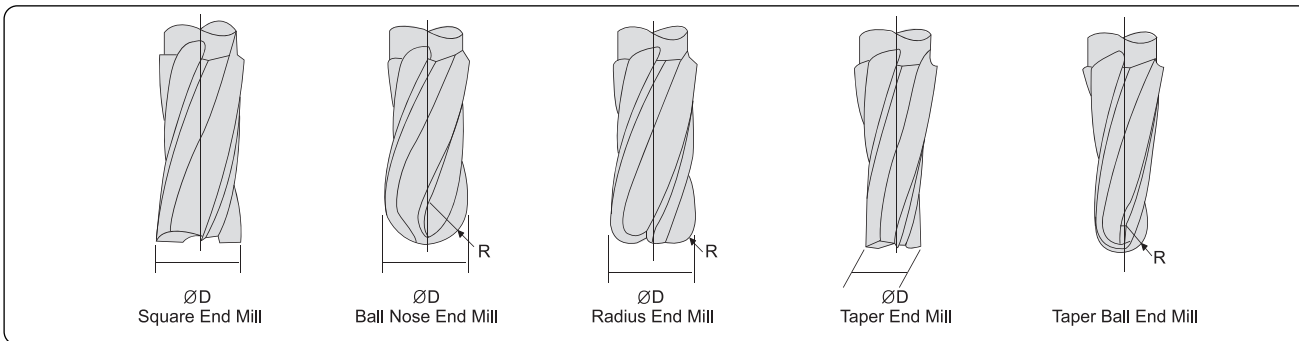
# TECHNICAL DATA



**Names of End Mill Parts**

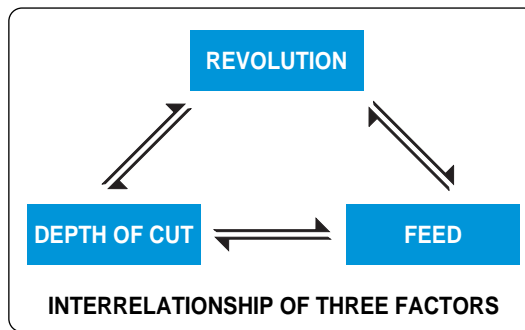


**Type of End Mill**



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.



**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)

$\pi$  : 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
<ul style="list-style-type: none"> <li>Hard materials</li> <li>Tough materials</li> <li>Abrasive materials</li> <li>Heavy cuts</li> <li>Minimum tool wear</li> <li>Maximum cutter life</li> </ul>	<ul style="list-style-type: none"> <li>Softer materials</li> <li>Better finishes</li> <li>Smaller diameter cutters</li> <li>Light cuts</li> <li>Frail work pieces or set-ups</li> <li>Hand feed operations</li> <li>Maximum production rates</li> <li>Non-metallics</li> </ul>

**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

$$F.M = F.R. \times R.P.M$$

F.R. : Feed per Revolutions in millimeters

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
<ul style="list-style-type: none"> <li>Heavy, roughing cuts</li> <li>Rigid set-ups</li> <li>Easy-to-machine work materials</li> <li>Rugged cutters</li> <li>Slab milling cuts</li> <li>Low tensile strength materials</li> <li>Coarse tooth cutters</li> <li>Abrasive materials</li> </ul>	<ul style="list-style-type: none"> <li>Light, and finishing cuts</li> <li>Frail set-ups</li> <li>Hard to machine work materials</li> <li>Frail and small cutters</li> <li>Deep slots</li> <li>High tensile strength materials</li> <li>Fine tooth cutters</li> </ul>



**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 millimeters =D Revolutions per Minute =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 =S.P.M. Diameter of Tool in millimeters =D	$R.P.M. = \frac{V \times 1000}{D \times 3.1416}$
Feed per Revolution in millimeters-F.R.	Feed in millimeters per Minute =F.M. Revolution per Minute =R.P.M.	$F.R. = \frac{F.M.}{R.P.M.}$
Feed in millimeters Per Minute-F.M.	Feed per Revolution in millimeters =F.R. Revolution per Minute =R.P.M.	$F.M. = F.R. \times R.P.M.$
Number of Cutting Teeth per Minute=T.M.	Number of Teeth in Tool =T Revolution per Minute =R.P.M.	$T.M. = T \times R.P.M.$
Feed per tooth=F.T.	Number of Teeth in Tool =T Feed per Revolution in millimeters =R.P.M.	$F.T. = \frac{F.R.}{T}$
Feed per Tooth=F.T.	Number of Teeth in Tool =T Feed in millimeters per Minute =F.M. Speed in Revolution per Minute =R.P.M.	$F.T. = \frac{F.M.}{T \times R.P.M.}$

**5 Case of Resharpener**

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.

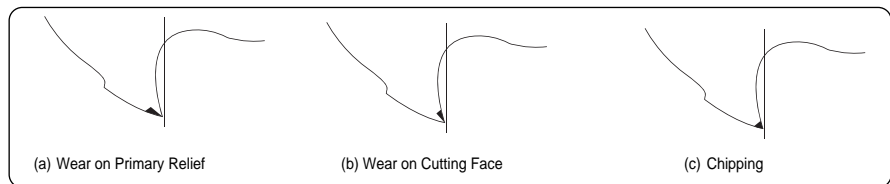


Fig. 1. Damages of Cutting Edge

**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 hundredths 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.

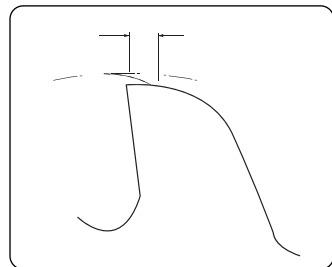


Fig. 2. Wear Land



## Resharpener 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.

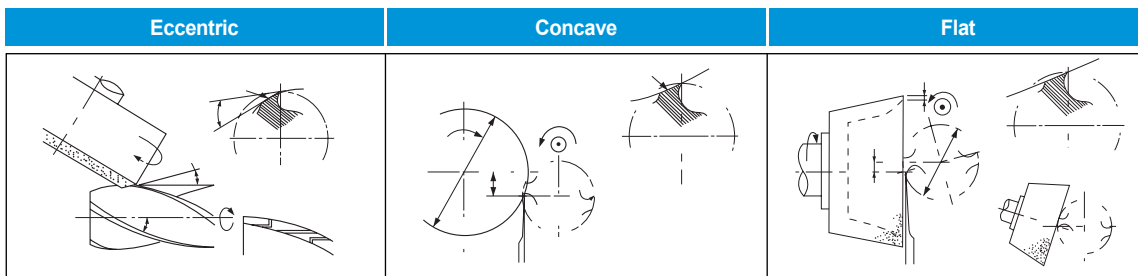


Fig. 3. Three Types of Primary Relief

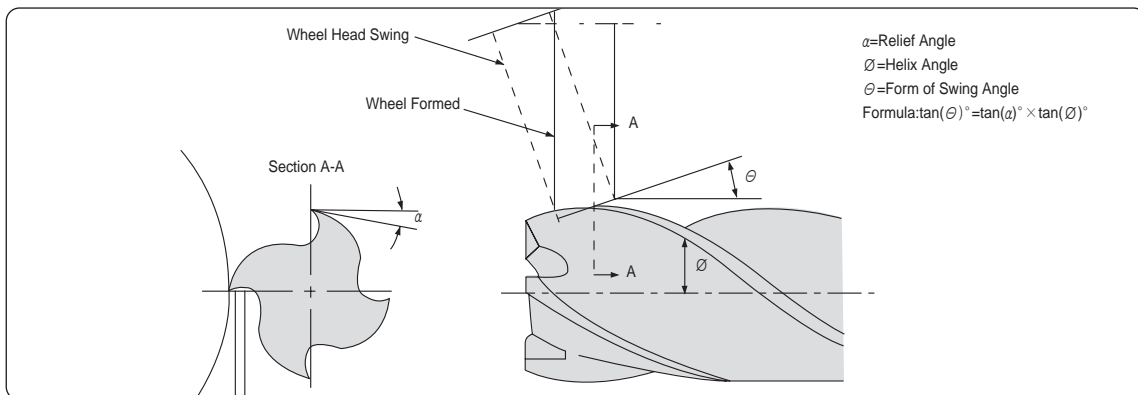


Fig. 4. Tothing of Eccentric Relief Angle

### 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.) $\theta$			Radial Relief Angles( $\alpha$ )	Clearance Angles( $\alpha$ 2)
	Min	Max.		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.



**Resharpener 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.

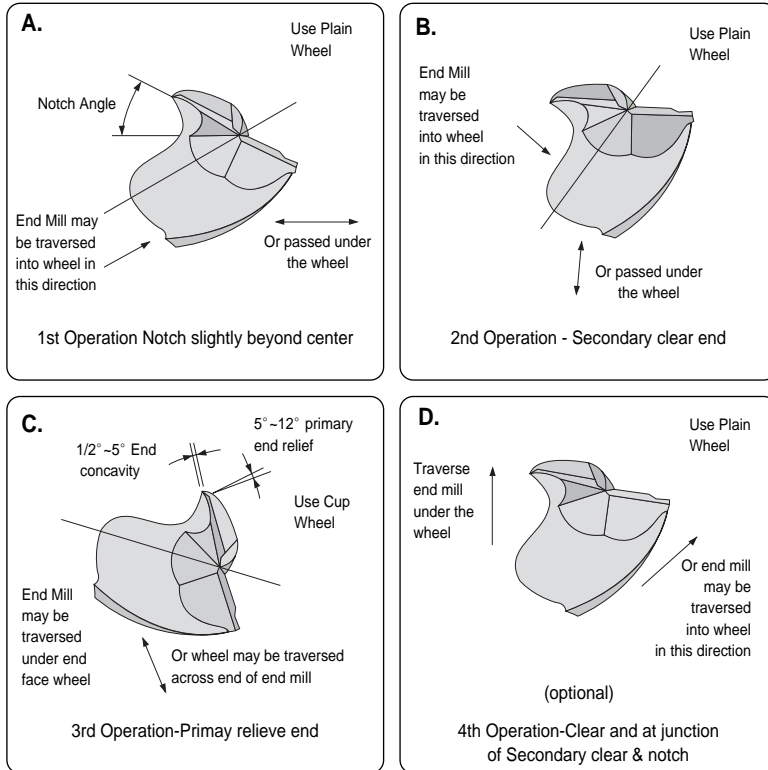


Fig 5. PROCEDURE FOR SHARPENING END OF 2 FLUTE SQUARE END MILLS



**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 tabulated 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.

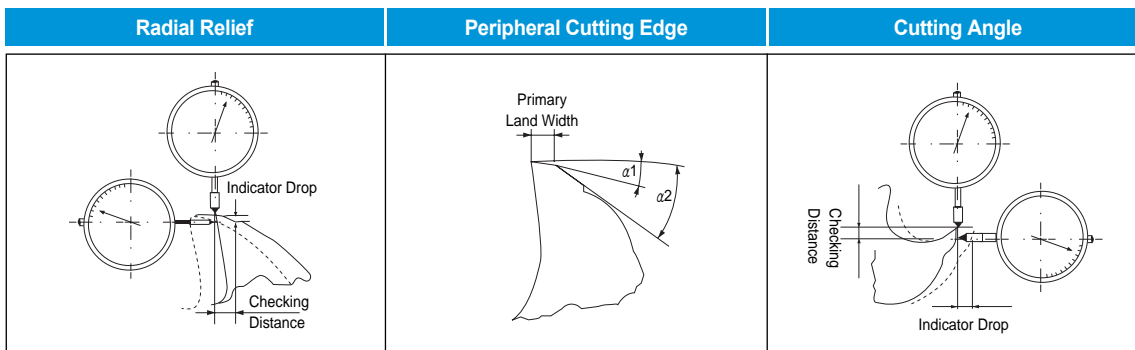
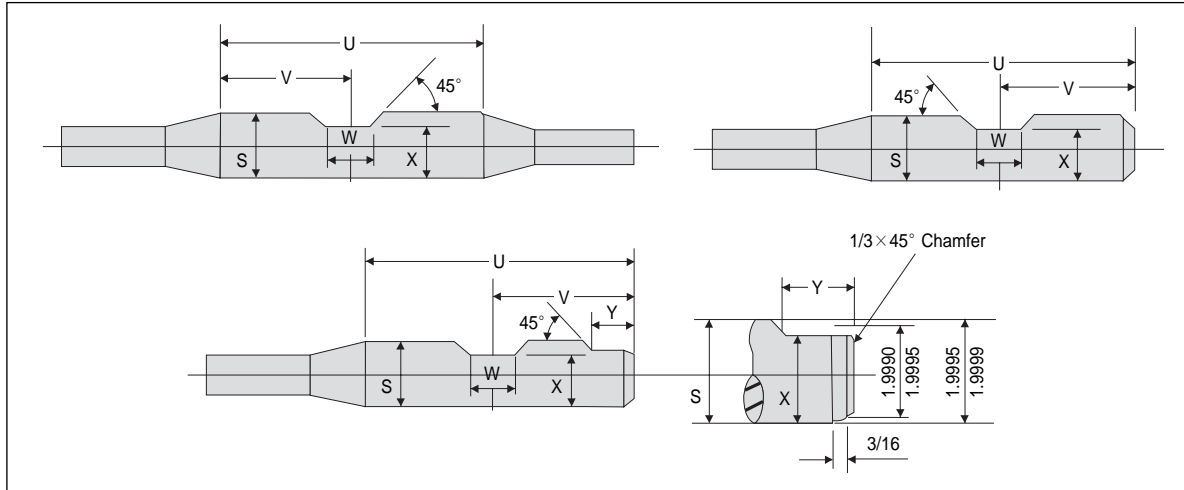


Fig. 6. Indicator Set-Up for Checking

## 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.

 CBN  
END MILL

 i-Xmill  
END MILL

 X5070  
END MILLS

 X-SPEED  
ROUGHER  
END MILLS

 X-POWER  
END MILLS

 JET-POWER  
END MILLS

 V7 Mill STEEL  
END MILLS

 V7 Mill INOX  
END MILLS

 ALU-POWER  
END MILLS

 D-POWER  
END MILLS

 STANDARD  
CARBIDE  
END MILLS

 TANK-POWER  
END MILLS

 STANDARD  
COBALT  
& HSS  
END MILLS

 TECHNICAL  
DATA



## 16 Troubleshooting in Endmilling

Trouble	Occurrences of trouble	Countermeasures
Breaking of tool	<ul style="list-style-type: none"> <li>· At time of engaging with work material</li> <li>· When ending cut</li> </ul>	<ol style="list-style-type: none"> <li>1. Decrease feed rate.</li> <li>2. Decrease projection amount</li> <li>3. Shorten cutting edge length to required minimum limit</li> </ol>
	<ul style="list-style-type: none"> <li>· During normal cutting</li> </ul>	<ol style="list-style-type: none"> <li>1. Decrease feed rate</li> <li>2. Control wear → replace tool early</li> <li>3. Replace chuck or collet</li> <li>4. Decrease projection amount</li> <li>5. Carry out honing</li> <li>6. If 4 flute, reduce to 2 flute(clogging of chipping)</li> <li>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.</li> </ol>
	<ul style="list-style-type: none"> <li>· When changing direction of feed</li> </ul>	<ol style="list-style-type: none"> <li>1. Utilize circular interpolation(in case of NC machine) or temporarily stop feed(Dowelling)</li> <li>2. Reduce feed rate before and after change of directions</li> <li>3. Replace chuck or collect</li> </ol>
Fracture of cutting edge	<ul style="list-style-type: none"> <li>· Fracture of corners</li> </ul>	<ol style="list-style-type: none"> <li>1. Carry out chamfering or nose with hand lapper.</li> <li>2. Down cut → Up cut</li> </ol>
	<ul style="list-style-type: none"> <li>· Fracture at boundary of depth of cut</li> </ul>	<ol style="list-style-type: none"> <li>1. Down cut → Up cut</li> <li>2. Reduce cutting speed</li> </ol>
	<ul style="list-style-type: none"> <li>· Chipping at center part or overall</li> </ul>	<ol style="list-style-type: none"> <li>1. Carry out honing. Or enlarge.</li> <li>2. Change number of rotation(in case machine vibrates)</li> <li>3. Increase cutting speed</li> <li>4. In ease of squeaking noise during cutting, increase feed.</li> <li>5. If dry cutting use cutting fluid or blow air.</li> <li>6. Replace chuck or collet</li> <li>7. Reduce cutting speed</li> </ol>
	<ul style="list-style-type: none"> <li>· Large fracturing of cutting edge</li> </ul>	<ol style="list-style-type: none"> <li>1. Decrease feed rate</li> <li>2. If 4 flute reduce to 2 flute</li> <li>3. Carry out honing. Or enlarge</li> <li>4. Replace chuck or collet</li> <li>5. Reduce cutting speed</li> <li>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.</li> </ol>
Rapid tool wear		<ol style="list-style-type: none"> <li>1. Reduce cutting speed</li> <li>2. Up cut → Down cut</li> <li>3. Increase feed</li> <li>4. Utilize wet cutting or air</li> <li>5. If reground tool, improve surface roughness of flank.</li> </ol>

 CBN  
END MILL

 i-Mill  
END MILL

 X5070  
END MILLS

 X-SPEED  
ROUGHER  
END MILLS

 X-POWER  
END MILLS

 JET-POWER  
END MILLS

 V7 Mill STEEL  
END MILLS

 V7 Mill INOX  
END MILLS

 ALU-POWER  
END MILLS

 D-POWER  
END MILLS

 STANDARD  
CARBIDE  
END MILLS

 TANK-POWER  
END MILLS

 STANDARD  
COBALT  
& HSS  
END MILLS

**TECHNICAL  
DATA**



Trouble	Occurrences of trouble	Countermeasures
Inferior finished surface	· Surface is good but rough	<ol style="list-style-type: none"> <li>1. Decrease feed</li> <li>2. In case using 2 flute, increase to 4 flute</li> </ol>
	· Small chip welding	<ol style="list-style-type: none"> <li>1. Increase cutting speed</li> <li>2. Utilize wet cutting air blow(ample supply)</li> <li>3. Carry out fine honing</li> <li>4. Up cut → Down cut</li> <li>5. Increase feed or enlarge finish allowance</li> </ol>
	· With transverse streaks	<ol style="list-style-type: none"> <li>1. Carry out fine honing</li> <li>2. Use water insoluble cutting fluid</li> <li>3. Down cut → Up cut</li> </ol>
	· Signs of excessive cutting	<ol style="list-style-type: none"> <li>1. Reduce finishing depth of cut</li> <li>2. Increase cutting speed</li> <li>3. Reduce feed</li> </ol>
Poor machining accuracy	· Finish dimensions are on minus side	<ol style="list-style-type: none"> <li>1. Up cut → Down cut</li> <li>2. Reduce finishing depth of cut</li> <li>3. Replace chuck or collet</li> <li>4. Reduce projection amount</li> <li>5. Increase cutting speed</li> </ol>
	· Poor perpendicularity	<ol style="list-style-type: none"> <li>1. Reduce finishing depth of cut</li> <li>2. Replace chuck or collet</li> <li>3. Reduce projection amount</li> <li>4. Increase cutting speed</li> <li>5. 2Flute → 4 Flute</li> <li>6. Reduce feed</li> <li>7. Check wear rate → Replace tool</li> </ol>
Chattering		<ol style="list-style-type: none"> <li>1. Increase feed rate(in case over 0.05 mm/Zahn, try reducing)</li> <li>2. Change cutting speed</li> <li>3. Replace chuck or collet</li> <li>4. Reduce projection amount</li> <li>5. Use 2 flute cutter for rough cutting and 4 flute for finishing</li> <li>6. Down cut → Up cut</li> </ol>

# ROTARY TOOL HOLDERS

END MILL HOLDERS - CAT, BT

HIGH BALANCED END MILL HOLDERS - CAT, BT

ER COLLET CHUCKS - CAT, BT

HIGH BALANCED ER COLLET CHUCKS - CAT, BT

ER NUTS, ER WRENCHES, ER STOP SCREWS

ER COLLET-STANDARD

TG COLLET CHUCKS - CAT, BT

TG NUTS, TG WRENCHES, TG STOP SCREWS

MILLING CHUCKS - CAT / BT

MILLING CHUCK COLLETS, MILLING CHUCK WRENCHES

MORSE TAPER ADAPTERS - CAT / BT

TAPPING CHUCKS - CAT, BT

POSITIVE QUICK CHANGE TAP ADAPTERS

SHELL MILL ARBORS - CAT, BT

SHELL MILL DRIVE KEY, SHELL MILL LOCK SCREW - CAT / BT

JACOBS TAPER ARBORS - CAT / BT

STUB ARBORS - CAT / BT

STUB ARBOR NUTS, KEYS, SPACERS - CAT / BT

SLITTING SAW ARBORS, SLITTING SAW ARBOR CAPS - CAT / BT

PULL STUD

TOOL CLAMP, END MILL HOLDER SCREWS

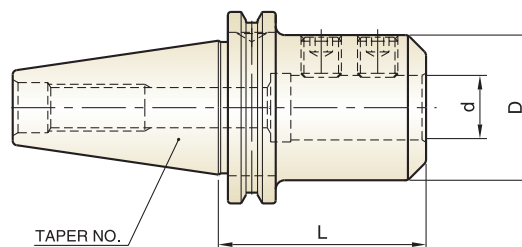


# SELECTION GUIDE

END MILL HOLDERS - CAT	799-800
END MILL HOLDERS - BT	801-802
HIGH BALANCED END MILL HOLDERS - CAT	803-804
HIGH BALANCED END MILL HOLDERS - BT	805-806
ER COLLET CHUCKS - CAT	807
ER COLLET CHUCKS - BT	808
HIGH BALANCED ER COLLET CHUCKS - CAT	809
HIGH BALANCED ER COLLET CHUCKS - BT	810
ER NUTS, ER WRENCHES, ER STOP SCREWS	811
ER COLLET-STANDARD	812
TG COLLET CHUCKS - CAT	813
TG COLLET CHUCKS - BT	814
TG NUTS, TG WRENCHES, TG STOP SCREWS	815
MILLING CHUCKS - CAT / BT	816
MILLING CHUCK COLLETS, MILLING CHUCK WRENCHES	817
MORSE TAPER ADAPTERS - CAT / BT	818
TAPPING CHUCKS - CAT	819
TAPPING CHUCKS - BT	820
POSITIVE QUICK CHANGE TAP ADAPTERS	821
SHELL MILL ARBORS - CAT	822
SHELL MILL ARBORS - BT	823
SHELL MILL DRIVE KEY, SHELL MILL LOCK SCREW - CAT / BT	824
JACOBS TAPER ARBORS - CAT / BT	825
STUB ARBORS - CAT / BT	826
STUB ARBOR NUTS, KEYS, SPACERS - CAT / BT	827
SLITTING SAW ARBORS, SLITTING SAW ARBOR CAPS - CAT / BT	828
PULL STUD	829
TOOL CLAMP, END MILL HOLDER SCREWS	830

# END MILL HOLDER

CAT



■ STUB

EDP NO	TYPE	TAPER No.	d	L	D
AK206	CAT40-EMH1/2-1.75	40	0.500	1.75	1.25
AK208	CAT40-EMH5/8-1.75	40	0.625	1.75	1.50
AK210	CAT40-EMH3/4-1.75	40	0.750	1.75	1.75
AK214	CAT40-EMH1 -1.75	40	1.000	1.75	1.75
AK217	CAT40-EMH1 1/4-2.00	40	1.250	2.00	2.25

■ STANDARD

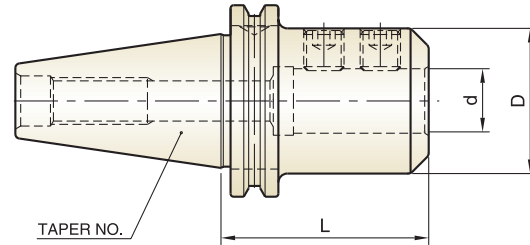
EDP NO	TYPE	TAPER No.	d	L	D
AK000	CAT40-EMH1/8-2.50	40	0.125	2.50	0.69
AK001	CAT40-EMH3/16-2.50	40	0.187	2.50	0.69
AK002	CAT40-EMH1/4-2.50	40	0.250	2.50	0.78
AK003	CAT40-EMH5/16-2.50	40	0.312	2.50	0.88
AK004	CAT40-EMH3/8-2.50	40	0.375	2.50	1.00
AK005	CAT40-EMH7/16-2.50	40	0.437	2.50	1.13
AK006	CAT40-EMH1/2-2.63	40	0.500	2.63	1.25
AK008	CAT40-EMH5/8-3.75	40	0.625	3.75	1.50
AK010	CAT40-EMH3/4-3.75	40	0.750	3.75	1.75
AK012	CAT40-EMH7/8-4.00	40	0.875	4.00	1.88
AK014	CAT40-EMH1 -4.00	40	1.000	4.00	2.00
AK017	CAT40-EMH1 1/4-4.25	40	1.250	4.25	2.50
AK021	CAT40-EMH1 1/2-4.63	40	1.500	4.63	2.50
AL002	CAT50-EMH1/4-2.50	50	0.250	2.50	0.78
AL003	CAT50-EMH5/16-2.50	50	0.312	2.50	0.88
AL004	CAT50-EMH3/8-2.50	50	0.375	2.50	1.00
AL005	CAT50-EMH7/16-2.63	50	0.437	2.63	1.13
AL006	CAT50-EMH1/2-2.63	50	0.500	2.63	1.25
AL008	CAT50-EMH5/8-3.75	50	0.625	3.75	1.50
AL010	CAT50-EMH3/4-3.75	50	0.750	3.75	1.75
AL012	CAT50-EMH7/8-3.75	50	0.875	3.75	1.88
AL014	CAT50-EMH1 -4.00	50	1.000	4.00	2.00
AL017	CAT50-EMH1 1/4-4.00	50	1.250	4.00	2.50
AL021	CAT50-EMH1 1/2-4.00	50	1.500	4.00	2.50
AL029	CAT50-EMH2 -5.63	50	2.000	5.63	3.75

- ▶ BALANCING GRADE : BASED ON G6.3 / 15,000rpm
- ▶ HIGH BALANCED END MILL HOLDERS ARE AVAILABLE ON REQUEST
- ▶ SET SCREWS FOR END MILL HOLDERS ON PAGE 830



## END MILL HOLDER

CAT



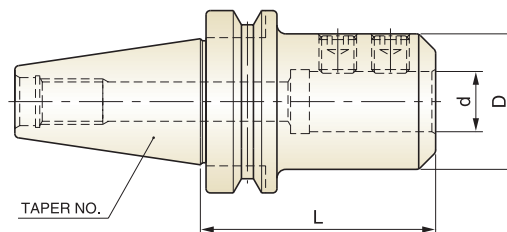
### ■ EXTENDED

EDP No.	Type	TAPER No.	d	L	D
AK104	CAT40-EMH3/8-4.50	40	0.375	4.50	1.00
AK106	CAT40-EMH1/2-4.63	40	0.500	4.63	1.25
AK108	CAT40-EMH5/8-5.75	40	0.625	5.75	1.50
AK110	CAT40-EMH3/4-5.75	40	0.750	5.75	1.75
AK112	CAT40-EMH7/8-6.00	40	0.875	6.00	1.88
AK114	CAT40-EMH1 -6.00	40	1.000	6.00	2.00
AK117	CAT40-EMH1 1/4-6.25	40	1.250	6.25	2.50
AK121	CAT40-EMH1 1/2-6.63	40	1.500	6.63	2.50
AL104	CAT50-EMH3/8-4.50	50	0.375	4.50	1.00
AL106	CAT50-EMH1/2-4.63	50	0.500	4.63	1.25
AL108	CAT50-EMH5/8-5.75	50	0.625	5.75	1.50
AL110	CAT50-EMH3/4-5.75	50	0.750	5.75	1.75
AL112	CAT50-EMH7/8-5.75	50	0.875	5.75	1.88
AL114	CAT50-EMH1 -6.00	50	1.000	6.00	2.00
AL117	CAT50-EMH1 1/4-6.00	50	1.250	6.00	2.50
AL121	CAT50-EMH1 1/2-6.00	50	1.500	6.00	2.50
AL129	CAT50-EMH2 -7.63	50	2.000	7.63	3.75

- ▶ BALANCING GRADE : BASED ON G6.3 / 15,000rpm
- ▶ HIGH BALANCED END MILL HOLDERS ARE AVAILABLE ON REQUEST
- ▶ SET SCREWS FOR END MILL HOLDERS ON PAGE 830

# END MILL HOLDER

BT



■ STUB

EDP No.	Type	TAPER No.	d	L	D
AH206	BT40 - EMH 1/2 - 1.25	40	0.500	1.25	1.25
AH208	BT40 - EMH 5/8 - 1.38	40	0.625	1.38	1.50
AH210	BT40 - EMH 3/4 - 1.44	40	0.750	1.44	1.75
AH214	BT40 - EMH 1 - 2.50	40	1.000	2.50	2.00
AH217	BT40 - EMH 1 1/4 - 2.50	40	1.250	2.50	2.50

■ STANDARD

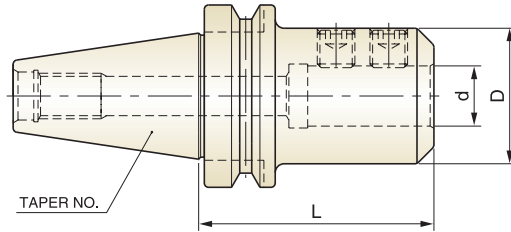
EDP No.	Type	TAPER No.	d	L	D
AH000	BT40 - EMH 1/8 - 2.50	40	0.125	2.50	0.69
AH001	BT40 - EMH 3/16 - 2.50	40	0.187	2.50	0.69
AH002	BT40 - EMH 1/4 - 2.50	40	0.250	2.50	0.78
AH003	BT40 - EMH 5/16 - 2.50	40	0.312	2.50	0.88
AH004	BT40 - EMH 3/8 - 2.50	40	0.375	2.50	1.00
AH005	BT40 - EMH 7/16 - 2.50	40	0.437	2.50	1.13
AH006	BT40 - EMH 1/2 - 2.50	40	0.500	2.50	1.25
AH008	BT40 - EMH 5/8 - 2.50	40	0.625	2.50	1.50
AH010	BT40 - EMH 3/4 - 2.50	40	0.750	2.50	1.75
AH012	BT40 - EMH 7/8 - 3.50	40	0.875	3.50	1.88
AH014	BT40 - EMH 1 - 3.75	40	1.000	3.75	2.00
AH017	BT40 - EMH 1 1/4 - 3.75	40	1.250	3.75	2.50
AH021	BT40 - EMH 1 1/2 - 4.25	40	1.500	4.25	2.50
AI002	BT50 - EMH 1/4 - 3.00	50	0.250	3.00	0.78
AI004	BT50 - EMH 3/8 - 3.00	50	0.375	3.00	1.00
AI006	BT50 - EMH 1/2 - 3.00	50	0.500	3.00	1.25
AI008	BT50 - EMH 5/8 - 3.00	50	0.625	3.00	1.50
AI010	BT50 - EMH 3/4 - 3.00	50	0.750	3.00	1.75
AI012	BT50 - EMH 7/8 - 4.00	50	0.875	4.00	1.88
AI014	BT50 - EMH 1 - 4.25	50	1.000	4.25	2.00
AI017	BT50 - EMH 1 1/4 - 4.25	50	1.250	4.25	2.50
AI021	BT50 - EMH 1 1/2 - 4.25	50	1.500	4.25	2.50
AI029	BT50 - EMH 2 - 5.00	50	2.000	5.00	3.75

- ▶ BALANCING GRADE : BASED ON G6.3 / 15,000rpm
- ▶ HIGH BALANCED END MILL HOLDERS ARE AVAILABLE ON REQUEST
- ▶ SET SCREWS FOR END MILL HOLDERS ON PAGE 830



## END MILL HOLDER

BT

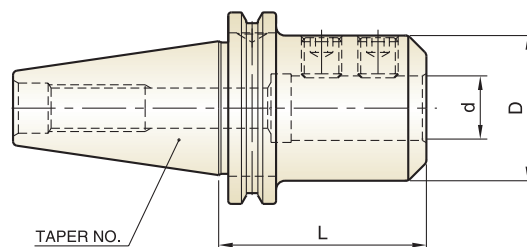


### ■ EXTENDED

EDP No.	Type	TAPER No.	d	L	D
AH104	BT40 - EMH 3/8 - 4.00	40	0.375	4.00	1.00
AH106	BT40 - EMH 1/2 - 4.00	40	0.500	4.00	1.25
AH108	BT40 - EMH 5/8 - 4.00	40	0.625	4.00	1.50
AH110	BT40 - EMH 3/4 - 4.00	40	0.750	4.00	1.75
AH114	BT40 - EMH 1 - 5.00	40	1.000	5.00	2.00
AH117	BT40 - EMH 1 1/4 - 5.00	40	1.250	5.00	2.50
AH121	BT40 - EMH 1 1/2 - 6.00	40	1.500	6.00	2.50
AI104	BT50 - EMH 3/8 - 6.00	50	0.375	6.00	1.00
AI106	BT50 - EMH 1/2 - 6.00	50	0.500	6.00	1.25
AI108	BT50 - EMH 5/8 - 6.00	50	0.625	6.00	1.50
AI110	BT50 - EMH 3/4 - 6.00	50	0.750	6.00	1.75
AI112	BT50 - EMH 7/8 - 6.00	50	0.875	6.00	1.88
AI114	BT50 - EMH 1 - 6.00	50	1.000	6.00	2.00
AI117	BT50 - EMH 1 1/4 - 6.00	50	1.250	6.00	2.50
AI121	BT50 - EMH 1 1/2 - 6.00	50	1.500	6.00	2.50
AI129	BT50 - EMH 2 - 6.00	50	2.000	6.00	3.75

- ▶ BALANCING GRADE : BASED ON G6.3 / 15,000rpm
- ▶ HIGH BALANCED END MILL HOLDERS ARE AVAILABLE ON REQUEST
- ▶ SET SCREWS FOR END MILL HOLDERS ON PAGE 830

## HIGH BALANCED END MILL HOLDER

**CAT**

**STUB**

EDP No.	Type	TAPER No.	d	L	D
AK206B25	CAT40 - EMH 1/2 - 1.75	40	0.500	1.75	1.25
AK208B25	CAT40 - EMH 5/8 - 1.75	40	0.625	1.75	1.50
AK210B25	CAT40 - EMH 3/4 - 1.75	40	0.750	1.75	1.75
AK214B25	CAT40 - EMH 1 - 1.75	40	1.000	1.75	1.75
AK217B25	CAT40 - EMH 1 1/4 - 2.00	40	1.250	2.00	2.25

**STANDARD**

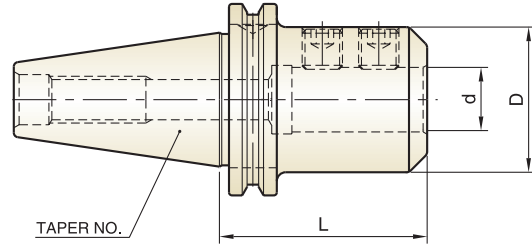
EDP No.	Type	TAPER No.	d	L	D
AK000B25	CAT40 - EMH 1/8 - 2.50	40	0.125	2.50	0.69
AK001B25	CAT40 - EMH 3/16 - 2.50	40	0.187	2.50	0.69
AK002B25	CAT40 - EMH 1/4 - 2.50	40	0.250	2.50	0.78
AK003B25	CAT40 - EMH 5/16 - 2.50	40	0.312	2.50	0.88
AK004B25	CAT40 - EMH 3/8 - 2.50	40	0.375	2.50	1.00
AK005B25	CAT40 - EMH 7/16 - 2.50	40	0.437	2.50	1.13
AK006B25	CAT40 - EMH 1/2 - 2.63	40	0.500	2.63	1.25
AK008B25	CAT40 - EMH 5/8 - 3.75	40	0.625	3.75	1.50
AK010B25	CAT40 - EMH 3/4 - 3.75	40	0.750	3.75	1.75
AK012B25	CAT40 - EMH 7/8 - 4.00	40	0.875	4.00	1.88
AK014B25	CAT40 - EMH 1 - 4.00	40	1.000	4.00	2.00
AK017B25	CAT40 - EMH 1 1/4 - 4.25	40	1.250	4.25	2.50
AK021B25	CAT40 - EMH 1 1/2 - 4.63	40	1.500	4.63	2.50

- ▶ BALANCING GRADE : BASED ON G2.5 / 25,000rpm
- ▶ HIGH BALANCED END MILL HOLDERS ARE AVAILABLE ON REQUEST
- ▶ THESE TOOLS ARE BALANCED WITH NO HARDWARE, NUTS, COLLETS OR CUTTING TOOLS IN THEM
- ▶ TO ACHIEVE TRUE G2.5 @ 25,000 RPM THE ENTIRE ROTARY TOOLING ASSEMBLY INCLUDING THE CUTTING TOOL NEEDS TO BE BALANCED
- ▶ SET SCREWS FOR END MILL HOLDERS ON PAGE 830



## HIGH BALANCED END MILL HOLDER

CAT

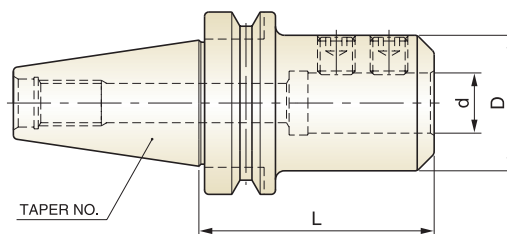


### ■ EXTENDED

EDP No.	Type	TAPER No.	d	L	D
AK104B25	CAT40 - EMH 3/8 - 4.50	40	0.375	4.50	1.00
AK106B25	CAT40 - EMH 1/2 - 4.63	40	0.500	4.63	1.25
AK108B25	CAT40 - EMH 5/8 - 5.75	40	0.625	5.75	1.50
AK110B25	CAT40 - EMH 3/4 - 5.75	40	0.750	5.75	1.75
AK112B25	CAT40 - EMH 7/8 - 6.00	40	0.875	6.00	1.88
AK114B25	CAT40 - EMH 1 - 6.00	40	1.000	6.00	2.00
AK117B25	CAT40 - EMH 1 1/4 - 6.25	40	1.250	6.25	2.50
AK121B25	CAT40 - EMH 1 1/2 - 6.63	40	1.500	6.63	2.50

- ▶ BALANCING GRADE : BASED ON G2.5 / 25,000rpm
- ▶ HIGH BALANCED END MILL HOLDERS ARE AVAILABLE ON REQUEST
- ▶ THESE TOOLS ARE BALANCED WITH NO HARDWARE, NUTS, COLLETS OR CUTTING TOOLS IN THEM
- ▶ TO ACHIEVE TRUE G2.5 @ 25,000 RPM THE ENTIRE ROTARY TOOLING ASSEMBLY INCLUDING THE CUTTING TOOL NEEDS TO BE BALANCED
- ▶ SET SCREWS FOR END MILL HOLDERS ON PAGE 830

# HIGH BALANCED END MILL HOLDER

**BT**

**STUB**

EDP No.	Type	TAPER No.	d	L	D
AH206B25	BT40 - EMH 1/2 - 1.25	40	0.500	1.25	1.25
AH208B25	BT40 - EMH 5/8 - 1.38	40	0.625	1.38	1.50
AH210B25	BT40 - EMH 3/4 - 1.44	40	0.750	1.44	1.75
AH214B25	BT40 - EMH 1 - 2.50	40	1.000	2.50	2.00
AH217B25	BT40 - EMH 1 1/4 - 2.50	40	1.250	2.50	2.50

**STANDARD**

EDP No.	Type	TAPER No.	d	L	D
AH000B25	BT40 - EMH 1/8 - 2.50	40	0.125	2.50	0.69
AH001B25	BT40 - EMH 3/16 - 2.50	40	0.187	2.50	0.69
AH002B25	BT40 - EMH 1/4 - 2.50	40	0.250	2.50	0.78
AH003B25	BT40 - EMH 5/16 - 2.50	40	0.312	2.50	0.88
AH004B25	BT40 - EMH 3/8 - 2.50	40	0.375	2.50	1.00
AH005B25	BT40 - EMH 7/16 - 2.50	40	0.437	2.50	1.13
AH006B25	BT40 - EMH 1/2 - 2.50	40	0.500	2.50	1.25
AH008B25	BT40 - EMH 5/8 - 2.50	40	0.625	2.50	1.50
AH010B25	BT40 - EMH 3/4 - 2.50	40	0.750	2.50	1.75
AH012B25	BT40 - EMH 7/8 - 3.50	40	0.875	3.50	1.88
AH014B25	BT40 - EMH 1 - 3.75	40	1.000	3.75	2.00
AH017B25	BT40 - EMH 1 1/4 - 3.75	40	1.250	3.75	2.50
AH021B25	BT40 - EMH 1 1/2 - 4.25	40	1.500	4.25	2.50

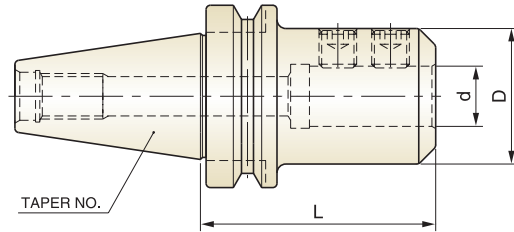
- ▶ BALANCING GRADE : BASED ON G2.5 / 25,000rpm
- ▶ HIGH BALANCED END MILL HOLDERS ARE AVAILABLE ON REQUEST
- ▶ THESE TOOLS ARE BALANCED WITH NO HARDWARE, NUTS, COLLETS OR CUTTING TOOLS IN THEM
- ▶ TO ACHIEVE TRUE G2.5 @ 25,000 RPM THE ENTIRE ROTARY TOOLING ASSEMBLY INCLUDING THE CUTTING TOOL NEEDS TO BE BALANCED
- ▶ SET SCREWS FOR END MILL HOLDERS ON PAGE 830





## HIGH BALANCED END MILL HOLDER

BT



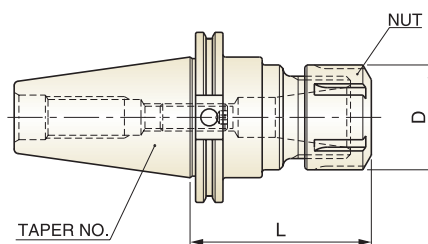
### ■ EXTENDED

EDP No.	Type	TAPER No.	d	L	D
AH104B25	BT40 - EMH 3/8 - 4.00	40	0.375	4.00	1.00
AH106B25	BT40 - EMH 1/2 - 4.00	40	0.500	4.00	1.25
AH108B25	BT40 - EMH 5/8 - 4.00	40	0.625	4.00	1.50
AH110B25	BT40 - EMH 3/4 - 4.00	40	0.750	4.00	1.75
AH114B25	BT40 - EMH 1 - 5.00	40	1.000	5.00	2.00
AH117B25	BT40 - EMH 1 1/4 - 5.00	40	1.250	5.00	2.50
AH121B25	BT40 - EMH 1 1/2 - 6.00	40	1.500	6.00	2.50

- ▶ BALANCING GRADE : BASED ON G2.5 / 25,000rpm
- ▶ HIGH BALANCED END MILL HOLDERS ARE AVAILABLE ON REQUEST
- ▶ THESE TOOLS ARE BALANCED WITH NO HARDWARE, NUTS, COLLETS OR CUTTING TOOLS IN THEM
- ▶ TO ACHIEVE TRUE G2.5 @ 25,000 RPM THE ENTIRE ROTARY TOOLING ASSEMBLY INCLUDING THE CUTTING TOOL NEEDS TO BE BALANCED
- ▶ SET SCREWS FOR END MILL HOLDERS ON PAGE 830

## ER COLLET CHUCK

### CAT



#### ■ STUB

EDP No.	Type	TAPER No.	Size Range	L	D	Collet Series
BK232	CAT40 - ER20 - 2.55	40	0.039-0.511	2.55	1.26	ER20
BK233	CAT40 - ER25 - 2.50	40	0.039-0.629	2.50	1.65	ER25
BK234	CAT40 - ER32 - 2.70	40	0.078-0.787	2.70	1.88	ER32

#### ■ STANDARD

EDP No.	Type	TAPER No.	Size Range	L	D	Collet Series
BK030	CAT40 - ER11 - 3.00	40	0.019-0.275	3.00	0.63	ER11
BK031	CAT40 - ER16 - 2.88	40	1/32-13/32	2.88	1.08	ER16
BK032	CAT40 - ER20 - 4.00	40	0.039-0.511	4.00	1.26	ER20
BK133	CAT40 - ER25 - 4.00	40	0.039-0.629	4.00	1.65	ER25
BK134	CAT40 - ER32 - 4.00	40	0.078-0.787	4.00	1.88	ER32
BL031	CAT50 - ER16 - 4.88	50	1/32-13/32	4.88	1.08	ER16
BL032	CAT50 - ER20 - 4.00	50	0.039-0.511	4.00	1.26	ER20
BL033	CAT50 - ER25 - 4.00	50	0.039-0.629	4.00	1.65	ER25
BL034	CAT50 - ER32 - 4.00	50	0.078-0.787	4.00	1.88	ER32

#### ■ EXTENDED

EDP No.	Type	TAPER No.	Size Range	L	D	Collet Series
BK331	CAT40 - ER16 - 4.88	40	1/32-13/32	4.88	1.08	ER16
BK332	CAT40 - ER20 - 6.00	40	0.039-0.511	6.00	1.26	ER20
BK333	CAT40 - ER25 - 6.00	40	0.039-0.629	6.00	1.65	ER25
BK334	CAT40 - ER32 - 6.00	40	0.078-0.787	6.00	1.88	ER32
BL331	CAT50 - ER16 - 6.88	50	1/32-13/32	6.88	1.08	ER16
BL332	CAT50 - ER20 - 6.00	50	0.039-0.511	6.00	1.26	ER20
BL333	CAT50 - ER25 - 6.00	50	0.039-0.629	6.00	1.65	ER25
BL334	CAT50 - ER32 - 6.00	50	0.078-0.787	6.00	1.88	ER32

#### ■ EXTRA EXTENDED

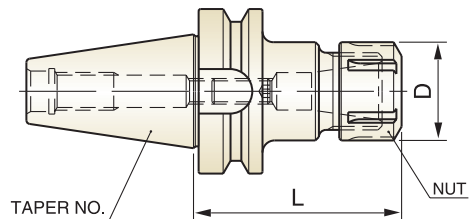
EDP No.	Type	TAPER No.	Size Range	L	D	Collet Series
BK432	CAT40-ER20-8.00	40	0.039-0.511	8.00	1.26	ER20

- ▶ BALANCING GRADE : BASED ON G6.3 / 15,000rpm
- ▶ HIGH BALANCED END MILL HOLDERS ARE AVAILABLE ON REQUEST
- ▶ ER NUT : SWISS MADE PRECISION ER NUT
- ▶ SUPPLIED without WRENCH
- ▶ WRENCHES ON PAGE 811



## ER COLLET CHUCK

BT



### ■ STUB

EDP No.	Type	TAPER No.	Size Range	L	D	Collet Series
BH232	BT40 - ER20 - 2.20	40	0.039-0.511	2.20	1.26	ER20
BH233	BT40 - ER25 - 2.50	40	0.039-0.629	2.50	1.65	ER25
BH234	BT40 - ER32 - 2.40	40	0.078-0.787	2.40	1.88	ER32

### ■ STANDARD

EDP No.	Type	TAPER No.	Size Range	L	D	Collet Series
BH030	BT40 - ER11 - 3.00	40	0.019-0.250	3.00	0.63	ER11
BH031	BT40 - ER16 - 2.88	40	1/32-13/32	2.88	1.08	ER16
BH032	BT40 - ER20 - 4.00	40	0.039-0.511	4.00	1.26	ER20
BH133	BT40 - ER25 - 4.00	40	0.039-0.629	4.00	1.65	ER25
BH134	BT40 - ER32 - 4.00	40	0.078-0.787	4.00	1.88	ER32
BI031	BT50 - ER16 - 4.88	50	1/32-13/32	4.88	1.08	ER16
BI032	BT50 - ER20 - 2.63	50	0.039-0.511	2.63	1.26	ER20
BI033	BT50 - ER25 - 2.63	50	0.039-0.629	2.63	1.65	ER25
BI034	BT50 - ER32 - 4.00	50	0.078-0.787	4.00	1.88	ER32

### ■ EXTENDED

EDP No.	Type	TAPER No.	Size Range	L	D	Collet Series
BH331	BT40 - ER16 - 4.88	40	1/32-13/32	4.88	1.08	ER16
BH332	BT40 - ER20 - 6.00	40	0.039-0.511	6.00	1.26	ER20
BH333	BT40 - ER25 - 6.00	40	0.039-0.629	6.00	1.65	ER25
BH334	BT40 - ER32 - 6.00	40	0.078-0.787	6.00	1.88	ER32
BI331	BT50 - ER16 - 6.00	50	1/32-13/32	6.00	1.08	ER16
BI332	BT50 - ER20 - 6.00	50	0.039-0.511	6.00	1.26	ER20
BI333	BT50 - ER25 - 6.00	50	0.039-0.629	6.00	1.65	ER25
BI334	BT50 - ER32 - 6.00	50	0.078-0.787	6.00	1.88	ER32

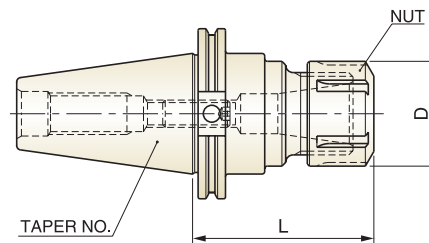
### ■ EXTRA EXTENDED

EDP No.	Type	TAPER No.	Size Range	L	D	Collet Series
BH432	BT40 - ER20 - 8.00	40	0.039-0.511	8.00	1.26	ER20

- ▶ BALANCING GRADE : BASED ON G6.3 / 15,000rpm
- ▶ HIGH BALANCED END MILL HOLDERS ARE AVAILABLE ON REQUEST
- ▶ ER NUT : SWISS MADE PRECISION ER NUT
- ▶ SUPPLIED without WRENCH
- ▶ WRENCHES ON PAGE 811

# HIGH BALANCED ER COLLET CHUCK

CAT


**STUB**

EDP No.	Type	TAPER No.	Size Range	L	D	Collet Series
BK232B25	CAT40 - ER20 - 2.55	40	0.039-0.511	2.55	1.26	ER20
BK233B25	CAT40 - ER25 - 2.50	40	0.039-0.629	2.50	1.65	ER25
BK234B25	CAT40 - ER32 - 2.70	40	0.078-0.787	2.70	1.88	ER32

**STANDARD**

EDP No.	Type	TAPER No.	Size Range	L	D	Collet Series
BK030B25	CAT40 - ER11 - 3.00	40	0.019-0.250	3.00	0.63	ER11
BK031B25	CAT40 - ER16 - 2.88	40	1/32-13/32	2.88	1.08	ER16
BK032B25	CAT40 - ER20 - 4.00	40	0.039-0.511	4.00	1.26	ER20
BK133B25	CAT40 - ER25 - 4.00	40	0.039-0.629	4.00	1.65	ER25
BK134B25	CAT40 - ER32 - 4.00	40	0.078-0.787	4.00	1.88	ER32

**EXTENDED**

EDP No.	Type	TAPER No.	Size Range	L	D	Collet Series
BK331B25	CAT40 - ER16 - 4.88	40	1/32-13/32	4.88	1.08	ER16
BK332B25	CAT40 - ER20 - 6.00	40	0.039-0.511	6.00	1.26	ER20
BK333B25	CAT40 - ER25 - 6.00	40	0.039-0.629	6.00	1.65	ER25
BK334B25	CAT40 - ER32 - 6.00	40	0.078-0.787	6.00	1.88	ER32

**EXTRA EXTENDED**

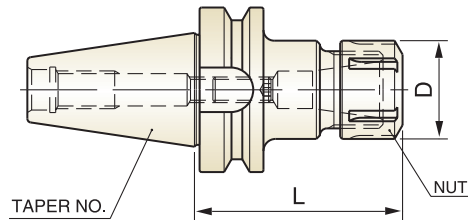
EDP No.	Type	TAPER No.	Size Range	L	D	Collet Series
BK432B25	CAT40 - ER20 - 8.00	40	0.039-0.511	8.00	1.26	ER20

- ▶ BALANCING GRADE : BASED ON G2.5 / 25,000rpm
- ▶ HIGH BALANCED END MILL HOLDERS ARE AVAILABLE ON REQUEST
- ▶ THESE TOOLS ARE BALANCED WITH NO HARDWARE, NUTS, SCREWS, COLLETS OR CUTTING TOOLS IN THEM
- ▶ TO ACHIEVE TRUE G2.5 @ 25,000 RPM THE ENTIRE ROTARY TOOLING ASSEMBLY INCLUDING THE CUTTING TOOL NEEDS TO BE BALANCED
- ▶ ER NUT : SWISS MADE PRECISION ER NUT
- ▶ SUPPLIED without WRENCH
- ▶ WRENCHES ON PAGE 811



## HIGH BALANCED ER COLLET CHUCK

BT



### STUB

EDP No.	Type	TAPER No.	Size Range	L	D	Collet Series
BH232B25	BT40-ER20-2.20	40	0.039 - 0.511	2.20	1.26	ER20
BH233B25	BT40-ER25-2.50	40	0.039 - 0.629	2.50	1.65	ER25
BH234B25	BT40-ER32-2.40	40	0.078 - 0.787	2.40	1.88	ER32

### STANDARD

EDP No.	Type	TAPER No.	Size Range	L	D	Collet Series
BH030B25	BT40-ER11-3.00	40	0.019 - 0.250	3.00	0.63	ER11
BH031B25	BT40-ER16-2.88	40	1/32 - 13/32	2.88	1.08	ER16
BH032B25	BT40-ER20-4.00	40	0.039 - 0.511	4.00	1.26	ER20
BH133B25	BT40-ER25-4.00	40	0.039 - 0.629	4.00	1.65	ER25
BH134B25	BT40-ER32-4.00	40	0.078 - 0.787	4.00	1.88	ER32

### EXTENDED

EDP No.	Type	TAPER No.	Size Range	L	D	Collet Series
BH331B25	BT40-ER16-4.88	40	1/32 - 13/32	4.88	1.08	ER16
BH332B25	BT40-ER20-6.00	40	0.039 - 0.511	6.00	1.26	ER20
BH333B25	BT40-ER25-6.00	40	0.039 - 0.629	6.00	1.65	ER25
BH334B25	BT40-ER32-6.00	40	0.078 - 0.787	6.00	1.88	ER32

### EXTRA EXTENDED

EDP No.	Type	TAPER No.	Size Range	L	D	Collet Series
BH432B25	BT40-ER20-8.00	40	0.039 - 0.511	8.00	1.26	ER20

- ▶ BALANCING GRADE : BASED ON G2.5 / 25,000rpm
- ▶ HIGH BALANCED END MILL HOLDERS ARE AVAILABLE ON REQUEST
- ▶ THESE TOOLS ARE BALANCED WITH NO HARDWARE, NUTS, SCREWS, COLLETS OR CUTTING TOOLS IN THEM
- ▶ TO ACHIEVE TRUE G2.5 @ 25,000 RPM THE ENTIRE ROTARY TOOLING ASSEMBLY INCLUDING THE CUTTING TOOL NEEDS TO BE BALANCED
- ▶ ER NUT : SWISS MADE PRECISION ER NUT
- ▶ SUPPLIED without WRENCH
- ▶ WRENCHES ON PAGE 811

## ER NUT

CAT / BT

EDP No.	Series	Type
ZZ061	ER11 - NUT	FIG. 1
ZZ063	ER16 - NUT	FIG. 1
ZZ066	ER20 - NUT	FIG. 1
ZZ069	ER25 - NUT	FIG. 2
ZZ072	ER32 - NUT	FIG. 2

FIG.1



FIG.2



## ER WRENCH

CAT / BT

EDP No.	For Use With	Type
ZZ062	ER11	FIG. 1
ZZ064	ER16	FIG. 1
ZZ067	ER20	FIG. 1
ZZ070	ER25	FIG. 2
ZZ073	ER32	FIG. 2

FIG.1



FIG.2



## ER STOP SCREW

CAT / BT

FIG.1

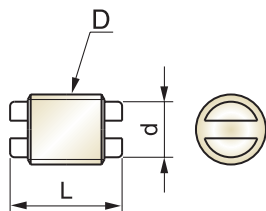
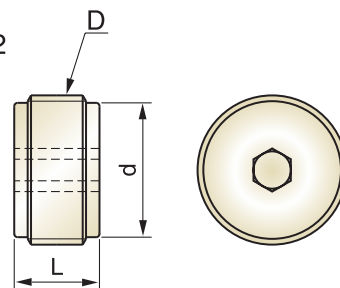


FIG.2



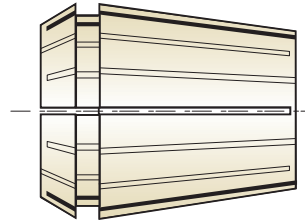
EDP No.	Series	L	d	D	Type
ZZ060	ER11	0.50	0.25	UN5/16 - 18	FIG. 1
ZZ065	ER16	0.50	0.35	UN7/16 - 16	FIG. 2
ZZ068	ER20	0.50	0.48	UN9/16 - 16	FIG. 2
ZZ071	ER25	0.50	0.60	UN11/16 - 16	FIG. 2
ZZ074	ER32	0.50	0.79	UN7/8 - 16	FIG. 2



# ROTARY TOOL HOLDERS

ROTARY TOOL HOLDERS

## ER COLLET - STANDARD

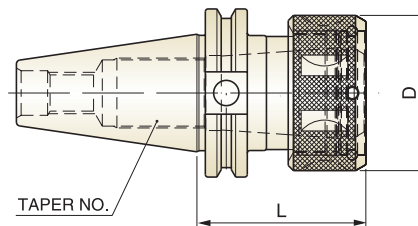


Type ER 11		Type ER 16		Type ER 20		Type ER 25		Type ER 32	
Clamping Capacity	EDP No.	Clamping Capacity	EDP No.	Clamping Capacity	EDP No.	Clamping Capacity	EDP No.	Clamping Capacity	EDP No.
1/16	110116	1/16	160116	1/16	200116	1/16	250116	3/32	320332
3/32	110332	3/32	160332	3/32	200332	3/32	250332	1/8	320108
1/8	110108	1/8	160108	1/8	200108	1/8	250108	5/32	320532
5/32	110532	5/32	160532	5/32	200532	5/32	250532	3/16	320316
3/16	110316	3/16	160316	3/16	200316	3/16	250316	7/32	320732
7/32	110732	7/32	160732	7/32	200732	7/32	250732	1/4	320104
1/4	110104	1/4	160104	1/4	200104	1/4	250104	9/32	320932
		9/32	160932	9/32	200932	9/32	250932	5/16	320516
		5/16	160516	5/16	200516	5/16	250516	11/32	321132
		11/32	161132	11/32	201132	11/32	251132	3/8	320308
		3/8	160308	3/8	200308	3/8	250308	13/32	321332
		13/32	161332	13/32	201332	13/32	251332	7/16	320716
				7/16	200716	7/16	250716	15/32	321532
				15/32	201532	15/32	251532	1/2	320102
				1/2	200102	1/2	250102	17/32	321732
						17/32	251732	9/16	320916
						9/16	250916	19/32	321932
						19/32	251932	5/8	320508
						5/8	250508	21/32	322132
								11/16	321116
								23/32	322332
								3/4	320304
Standard Set	ER11S07	Standard Set	ER16S12	Standard Set	ER20S15	Standard Set	ER25S19	Standard Set	ER32S22
1/16 to 1/4		1/16 to 13/32		1/16 to 1/2		1/16 to 5/8		3/32 to 3/4	
7 Pcs.		12 Pcs.		15 Pcs.		19 Pcs.		22 Pcs.	

► Rubber sealed er collets are available on request

# TG COLLET CHUCK

CAT



## TG75

■ STANDARD

EDP No.	Type	TAPER No.	Size Range	L	D	Collet Series
VK012	CAT40-TG75-2.50	40	3/64-3/4	2.50	1.87	75TG

■ EXTENDED

EDP No.	Type	TAPER No.	Size Range	L	D	Collet Series
VK312	CAT40-TG75-3.00	40	3/64-3/4	3.00	1.87	75TG

## TG100

■ STANDARD

EDP No.	Type	TAPER No.	Size Range	L	D	Collet Series
OK014	CAT40-TG100-3.25	40	1/16-1	3.25	2.50	100TG
OL014	CAT50-TG100-3.25	50	1/16-1	3.25	2.50	100TG

■ EXTENDED

EDP No.	Type	TAPER No.	Size Range	L	D	Collet Series
OK314	CAT40-TG100-4.50	40	1/16-1	4.50	2.50	100TG
OL314	CAT50-TG100-5.50	50	1/16-1	5.50	2.50	100TG

## TG150

■ STANDARD

EDP No.	Type	TAPER No.	Size Range	L	D	Collet Series
UL052	CAT50-TG150-3.50	50	1/2-1 1/2	3.50	3.50	150TG

■ EXTENDED

EDP No.	Type	TAPER No.	Size Range	L	D	Collet Series
UL352	CAT50 - TG150 - 6.00	50	1/2-1 1/2	6.00	3.50	150TG

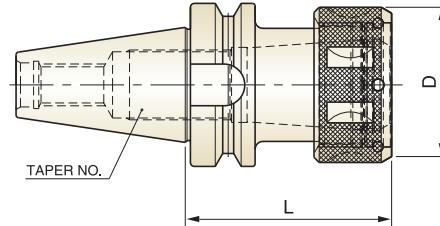
► WRENCH / NUTS / STOP SCREW FOR TG COLLET CHUCKS ON PAGE 815





## TG COLLET CHUCK

BT



### TG75

■ STANDARD

EDP No.	Type	TAPER No.	Size Range	L	D	Collet Series
VH012	BT40 - TG75 - 3.00	40	3/64-3/4	3.00	1.87	75TG

### TG100

■ STANDARD

EDP No.	Type	TAPER No.	Size Range	L	D	Collet Series
OH014	BT40 - TG100 - 3.50	40	1/16-1	3.50	2.50	100TG
OI014	BT50 - TG100 - 3.50	50	1/16-1	3.50	2.50	100TG

■ EXTENDED

EDP No.	Type	TAPER No.	Size Range	L	D	Collet Series
OH314	BT40 - TG100 - 5.50	40	1/16-1	5.50	2.50	100TG
OI314	BT50 - TG100 - 6.00	50	1/16-1	6.00	2.50	100TG

### TG150

■ STANDARD

EDP No.	Type	TAPER No.	Size Range	L	D	Collet Series
UI052	BT50 - TG150 - 4.00	50	1/2-1 1/2	4.00	3.50	150TG

■ EXTENDED

EDP No.	Type	TAPER No.	Size Range	L	D	Collet Series
UI352	BT50 - TG150 - 6.00	50	1/2-1 1/2	6.00	3.50	150TG

► WRENCH / NUTS / STOP SCREW FOR TG COLLET CHUCKS ON PAGE 815

## TG NUT

CAT / BT

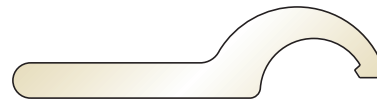
EDP No.	Series
ZZ084	TG75-NUT
ZZ081	TG100-NUT
ZZ087	TG150-NUT



## TG WRENCH

CAT / BT

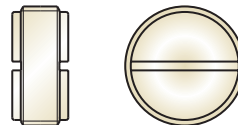
EDP No.	For Use With
ZZ085	TG75
ZZ082	TG100
ZZ088	TG150



## TG STOP SCREW

CAT / BT

EDP No.	Series
ZZ086	TG75
ZZ083	TG100
ZZ089	TG150



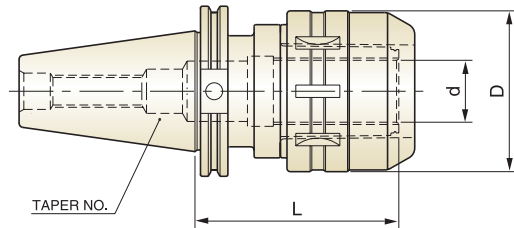


# ROTARY TOOL HOLDERS

ROTARY TOOL HOLDERS

## MILLING CHUCK

CAT



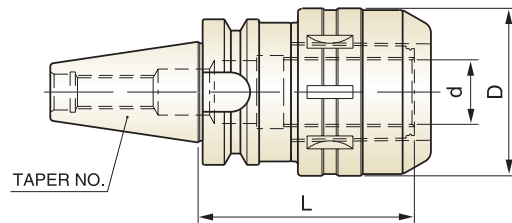
### STANDARD

EDP No.	Type	TAPER No.	d	L	D
LK010	CAT40 - C 3/4 - 4.13	40	0.750	4.13	2.13
LK014	CAT40 - C 1 - 4.13	40	1.000	4.13	2.50
LK017	CAT40 - C 1 1/4 - 4.13	40	1.250	4.13	2.81
LL010	CAT50 - C 3/4 - 4.13	50	0.750	4.13	2.13
LL014	CAT50 - C 1 - 4.13	50	1.000	4.13	2.50
LL017	CAT50 - C 1 1/4 - 4.13	50	1.250	4.13	2.81

► COLLETS / WRENCHES FOR MILLING CHUCKS ON PAGE 817

## MILLING CHUCK

BT



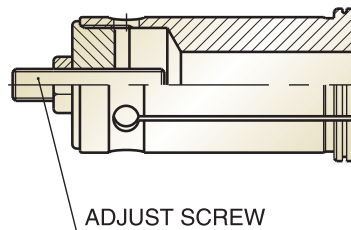
### STANDARD

EDP No.	Type	TAPER No.	d	L	D
LH010	BT40 - C 3/4 - 3.56	40	0.750	3.56	2.13
LH014	BT40 - C 1 - 4.13	40	1.000	4.13	2.50
LH017	BT40 - C 1 1/4 - 4.13	40	1.250	4.13	2.81
LI010	BT50 - C 3/4 - 4.13	50	0.750	4.13	2.13
LI014	BT50 - C 1 - 4.13	50	1.000	4.13	2.50
LI017	BT50 - C 1 1/4 - 4.13	50	1.250	4.13	2.81

► COLLETS / WRENCHES FOR MILLING CHUCKS ON PAGE 817

## MILLING CHUCK COLLET

CAT / BT



EDP No.	Type	Hole Size (D)	EDP No.	Type	Hole Size (D)	EDP No.	Type	Hole Size (D)
MZ002	C3/4	1/4	MZ102	C1	1/4	MZ302	C1 1/4	1/4
MZ003	C3/4	5/16	MZ103	C1	5/16	MZ303	C1 1/4	5/16
MZ004	C3/4	3/8	MZ104	C1	3/8	MZ304	C1 1/4	3/8
MZ006	C3/4	1/2	MZ106	C1	1/2	MZ306	C1 1/4	1/2
MZ008	C3/4	5/8	MZ108	C1	5/8	MZ308	C1 1/4	5/8
			MZ110	C1	3/4	MZ310	C1 1/4	3/4
						MZ312	C1 1/4	7/8
						MZ314	C1 1/4	1"

## WRENCH

CAT / BT

EDP No.	For Use With
ZZ056	C3/4
ZZ057	C1
ZZ058	C1 1/4

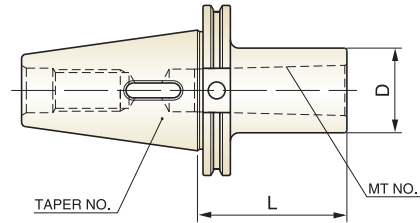




# ROTARY TOOL HOLDERS

## MORSE TAPER ADAPTER

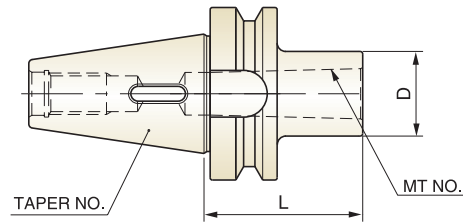
CAT



EDP No.	Type	TAPER No.	MT No.	L	D
CK037	CAT40-MTA1-1.75	40	#1	1.75	1.00
CK038	CAT40-MTA2-2.00	40	#2	2.00	1.26
CK039	CAT40-MTA3-2.75	40	#3	2.75	1.58
CK040	CAT40-MTA4-3.63	40	#4	3.63	1.97
CLO38	CAT50-MTA2-1.38	50	#2	1.38	1.26
CLO39	CAT50-MTA3-1.88	50	#3	1.88	1.58
CLO40	CAT50-MTA4-2.75	50	#4	2.75	1.97
CLO41	CAT50-MTA5-4.06	50	#5	4.06	2.55

## MORSE TAPER ADAPTER

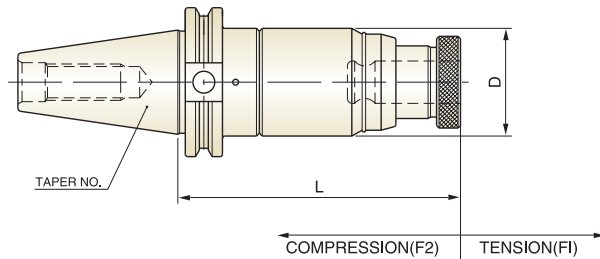
BT



EDP No.	Type	TAPER No.	MT No.	L	D
CH037	BT40 - MTA 1 - 1.75	40	#1	1.75	1.00
CH038	BT40 - MTA 2 - 2.36	40	#2	2.36	1.26
CH039	BT40 - MTA 3 - 2.95	40	#3	2.95	1.58
CH040	BT40 - MTA 4 - 3.74	40	#4	3.74	1.97
CI038	BT50 - MTA 2 - 2.36	50	#2	2.36	1.26
CI039	BT50 - MTA 3 - 2.95	50	#3	2.95	1.58
CI040	BT50 - MTA 4 - 3.74	50	#4	3.74	1.97
CI041	BT50 - MTA 5 - 4.13	50	#5	4.13	2.55

# TAPPING CHUCK

CAT


**These holders use Tap System #1 collets.**

EDP No.	Type	TAPER No.	D	L	F1	F2
<b>JK048</b>	CAT40-TC#1-4.56	40	1.77	4.56	0.197	0.591
<b>JL048</b>	CAT50-TC#1-4.56	50	1.77	4.56	0.197	0.591

**These holders use Tap System #2 collets.**

EDP No.	Type	TAPER No.	D	L	F1	F2
<b>JK049</b>	CAT40-TC#2-6.47	40	2.48	6.47	0.197	0.787
<b>JL049</b>	CAT50-TC#2-5.82	50	2.48	5.82	0.197	0.787

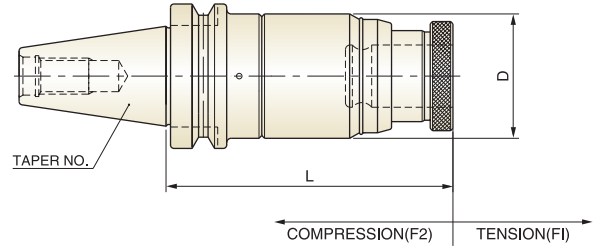
**These holders use Tap System #3 collets.**

EDP No.	Type	TAPER No.	D	L	F1	F2
<b>JL050</b>	CAT50-TC#3-7.75	50	3.86	7.75	0.394	0.984



## TAPPING CHUCK

BT



■ These holders use Tap System #1 collets.

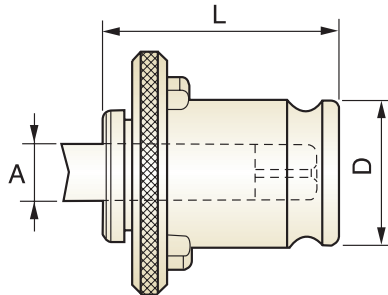
EDP No.	Type	TAPER No.	D	L	F1	F2
JH048	BT40 - TC #1 - 4.53	40	1.77	4.53	0.197	0.591
J1048	BT50 - TC #1 - 4.64	50	1.77	4.64	0.197	0.591

■ These holders use Tap System #2 collets.

EDP No.	Type	TAPER No.	D	L	F1	F2
JH049	BT40 - TC #2 - 6.72	40	2.48	6.72	0.197	0.787
J1049	BT50 - TC #2 - 6.72	50	2.48	6.72	0.197	0.787

■ These holders use Tap System #3 collets.

EDP No.	Type	TAPER No.	D	L	F1	F2
J1050	BT50 - TC #3 - 8.33	50	3.86	8.33	0.394	0.984

**POSITIVE QUICK CHANGE TAP ADAPTERS**

**■ Bilz Type Tap Chucks**

EDP No.	Adapter size	Tap size range	tap size	A shank dia	square AF
QCT12001	<b>QCT 12</b>  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			1/8 PIPE	9/16	0.429
QCT12011		1/8pss		0.3125	0.234
QCT12012		1/8pls		0.4370	0.328
QCT24001	<b>QCT 24</b>  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	0.442
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	0.421
QCT24012			3/8p	0.7000	0.531
QCT24013			1/2p	0.6875	0.515
QCT32001	<b>QCT 32</b>  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

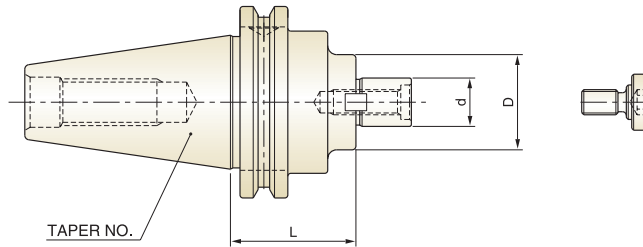
- ▶ IMPROPER SELECTION OF PULL STUDS CAN CAUSE SERIOUS DAMAGE AND POSSIBLE INJURY.  
PLEASE MAKE SURE THE MACHINE ACCEPTS THE PULL STUD YOU SELECT.
- ▶ ADDITIONAL PULL STUDS AVAILABLE





## SHELL MILL ARBOR

CAT



### STANDARD

EDP No.	Type	TAPER No.	d	L	D
EK006	CAT40-SMA1/2-1.50	40	0.500	1.50	1.44
EK010	CAT40-SMA3/4-1.50	40	0.750	1.50	1.69
EK014	CAT40-SMA1 -2.06	40	1.000	2.06	2.19
EK017	CAT40-SMA1 1/4-2.63	40	1.250	2.63	2.75
EK021	CAT40-SMA1 1/2-3.00	40	1.500	3.00	3.81
EL010	CAT50-SMA3/4-1.50	50	0.750	1.50	1.69
EL014	CAT50-SMA1 -2.00	50	1.000	2.00	2.19
EL017	CAT50-SMA1 1/4-1.50	50	1.250	1.50	2.75
EL021	CAT50-SMA1 1/2-2.50	50	1.500	2.50	3.81
EL029	CAT50-SMA2 -3.00	50	2.000	3.00	4.88

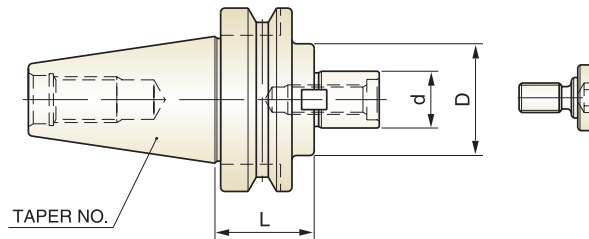
### EXTENDED

EDP No.	Type	TAPER No.	d	L	D
EK306	CAT40-SMA1/2-3.50	40	0.500	3.50	1.44
EK310	CAT40-SMA3/4-3.50	40	0.750	3.50	1.69
EK314	CAT40-SMA1 -4.00	40	1.000	4.00	2.19
EK317	CAT40-SMA1 1/4-4.00	40	1.250	4.00	2.75
EK321	CAT40-SMA1 1/2-4.00	40	1.500	4.00	3.81
EL310	CAT50-SMA3/4-3.50	50	0.750	3.50	1.69
EL314	CAT50-SMA1 -4.00	50	1.000	4.00	2.19
EL317	CAT50-SMA1 1/4-3.50	50	1.250	3.50	2.75
EL321	CAT50-SMA1 1/2-4.00	50	1.500	4.00	3.81
EL329	CAT50-SMA2 -4.00	50	2.000	4.00	4.88

- ▶ BALANCING GRADE : BASED ON G6.3 / 15,000rpm
- ▶ HIGH BALANCED END MILL HOLDERS ARE AVAILABLE ON REQUEST
- ▶ DRIVE KEY / LOCK SCREW FOR SHELL MILL ARBORS ON PAGE 824

**SHELL MILL ARBOR**

BT


**STANDARD**

EDP No.	Type	TAPER No.	d	L	D
EH006	BT40 - SMA 1/2 - 1.75	40	0.500	1.75	1.44
EH010	BT40 - SMA 3/4 - 1.77	40	0.750	1.77	1.69
EH014	BT40 - SMA 1 - 1.77	40	1.000	1.77	2.19
EH017	BT40 - SMA 1 1/4 - 1.81	40	1.250	1.81	2.75
EH021	BT40 - SMA 1 1/2 - 2.36	40	1.500	2.36	3.81
EI010	BT50 - SMA 3/4 - 1.75	50	0.750	1.75	1.69
EI014	BT50 - SMA 1 - 1.75	50	1.000	1.75	2.19
EI017	BT50 - SMA 1 1/4 - 1.75	50	1.250	1.75	2.75
EI021	BT50 - SMA 1 1/2 - 1.75	50	1.500	1.75	3.81
EI029	BT50 - SMA 2 - 3.00	50	2.000	3.00	4.88

**EXTENDED**

EDP No.	Type	TAPER No.	d	L	D
EH306	BT40 - SMA 1/2 - 3.50	40	0.500	3.50	1.44
EH310	BT40 - SMA 3/4 - 4.13	40	0.750	4.13	1.69
EH314	BT40 - SMA 1 - 4.13	40	1.000	4.13	2.19
EH317	BT40 - SMA 1 1/4 - 4.13	40	1.250	4.13	2.75
EH321	BT40 - SMA 1 1/2 - 4.72	40	1.500	4.72	3.81
EI310	BT50 - SMA 3/4 - 3.50	50	0.750	3.50	1.69
EI314	BT50 - SMA 1 - 4.00	50	1.000	4.00	2.19
EI317	BT50 - SMA 1 1/4 - 4.00	50	1.250	4.00	2.75
EI321	BT50 - SMA 1 1/2 - 4.00	50	1.500	4.00	3.81
EI329	BT50 - SMA 2 - 4.00	50	2.000	4.00	4.88

- ▶ BALANCING GRADE : BASED ON G6.3 / 15,000rpm
- ▶ HIGH BALANCED END MILL HOLDERS ARE AVAILABLE ON REQUEST
- ▶ DRIVE KEY / LOCK SCREW FOR SHELL MILL ARBORS ON PAGE 824



# ROTARY TOOL HOLDERS

ROTARY TOOL HOLDERS

## SHELL MILL DRIVE KEY

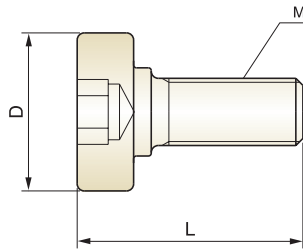
CAT / BT

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

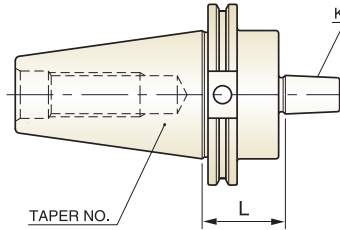


## SHELL MILL LOCK SCREW

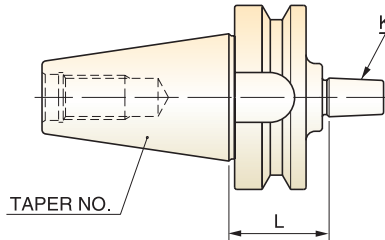
CAT / BT



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	UNS 1 - 14	2.52	2.5	SMA 2 - SCREW

**JACOBS TAPER ARBOR**
**CAT**


EDP No.	Type	TAPER No.	K	L
GK042	CAT40 - JTA 1 - 1.50	40	#1	1.50
GK043	CAT40 - JTA 2 - 1.50	40	#2	1.50
GK044	CAT40 - JTA 3 - 1.50	40	#3	1.50
GK045	CAT40 - JTA 4 - 1.50	40	#4	1.50
GK046	CAT40 - JTA 6 - 1.50	40	#6	1.50
GK047	CAT40 - JTA 33 - 1.50	40	#33	1.50
GL042	CAT50 - JTA 1 - 1.50	50	#1	1.50
GL043	CAT50 - JTA 2 - 1.50	50	#2	1.50
GL044	CAT50 - JTA 3 - 1.50	50	#3	1.50
GL045	CAT50 - JTA 4 - 1.50	50	#4	1.50
GL046	CAT50 - JTA 6 - 1.50	50	#6	1.50
GL047	CAT50 - JTA 33 - 1.50	50	#33	1.50

**JACOBS TAPER ARBOR**
**BT**


EDP No.	Type	TAPER No.	K	L
GH042	BT40 - JTA 1 - 1.34	40	#1	1.34
GH043	BT40 - JTA 2 - 1.77	40	#2	1.77
GH044	BT40 - JTA 3 - 1.77	40	#3	1.77
GH045	BT40 - JTA 4 - 1.77	40	#4	1.77
GH046	BT40 - JTA 6 - 1.77	40	#6	1.77
GH047	BT40 - JTA 33 - 1.77	40	#33	1.77
GI042	BT50 - JTA 1 - 1.80	50	#1	1.80
GI043	BT50 - JTA 2 - 1.77	50	#2	1.77
GI044	BT50 - JTA 3 - 1.77	50	#3	1.77
GI045	BT50 - JTA 4 - 1.77	50	#4	1.77
GI046	BT50 - JTA 6 - 1.77	50	#6	1.77
GI047	BT50 - JTA 33 - 1.77	50	#33	1.77

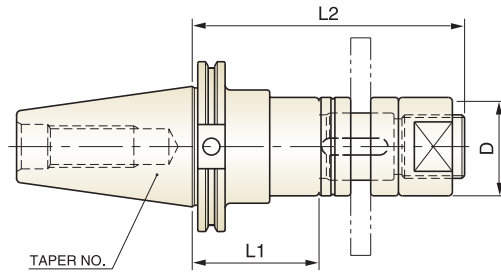


# ROTARY TOOL HOLDERS

ROTARY TOOL HOLDERS

## STUB ARBOR

CAT

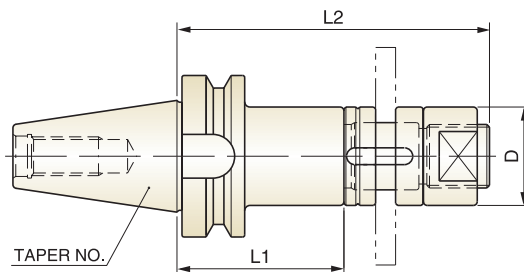


### STANDARD

EDP No.	Type	TAPER No.	Cutter Size I.D	L1	D	L2
PK014	CAT40-STUB1 -4.00	40	1.000	4.00	1.56	6.25
PK017	CAT40-STUB1 1/4-4.00	40	1.250	4.00	1.88	6.50
PK021	CAT40-STUB1 1/2-4.00	40	1.500	4.00	2.12	6.75
PL014	CAT50-STUB1 -4.00	50	1.000	4.00	1.56	6.25
PL017	CAT50-STUB1 1/4-4.00	50	1.250	4.00	1.88	6.50
PL021	CAT50-STUB1 1/2-4.00	50	1.500	4.00	2.12	6.75

## STUB ARBOR

BT



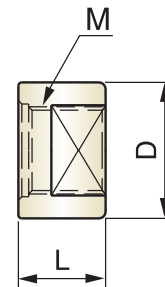
### STANDARD

EDP No.	Type	TAPER No.	Cutter Size I.D	L1	D	L2
PH014	BT40 - STUB 1 - 3.00	40	1.000	3.00	1.56	5.25
PH017	BT40 - STUB 1 1/4 - 3.00	40	1.250	3.00	1.88	5.50
PH021	BT40 - STUB 1 1/2 - 3.00	40	1.500	3.00	2.12	5.75
PI014	BT50 - STUB 1 - 4.00	50	1.000	4.00	1.56	6.25
PI017	BT50 - STUB 1 1/4 - 4.00	50	1.250	4.00	1.88	6.50
PI021	BT50 - STUB 1 1/2 - 4.00	50	1.500	4.00	2.12	6.75

## NUT

CAT / BT

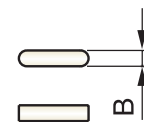
EDP No.	Type(M)	L	D	Series
ZZ041	1.56	1.00	1.56	STUB 1
ZZ046	1.87	1.25	1.87	STUB 1 1/4
ZZ052	2.12	1.50	2.12	STUB 1 1/2



## KEY

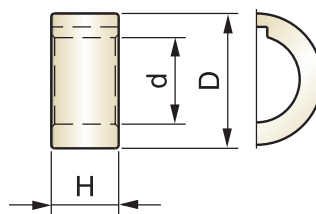
CAT / BT

EDP No.	Serie	B
ZZ042	STUB 1	0.25
ZZ047	STUB 1 1/4	0.312
ZZ054	STUB 1 1/2	0.375



## SPACER

CAT / BT



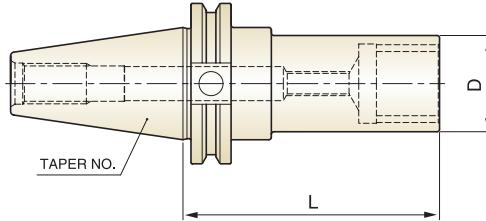
EDP No.	Type	H	D	d	Series
ZZ048	1/4-SPACER	0.25	1.87	1.25	STUB1 1/4
ZZ049	3/8-SPACER	0.375	1.87	1.25	STUB1 1/4
ZZ050	3/4-SPACER	0.75	1.87	1.25	STUB1 1/4
ZZ043	1/4-SPACER	0.25	1.56	1.00	STUB1
ZZ044	3/8-SPACER	0.375	1.56	1.00	STUB1
ZZ045	3/4-SPACER	0.75	1.56	1.00	STUB1
ZZ037	1/4-SPACER	0.25	2.12	1.50	STUB1 1/2
ZZ038	3/8-SPACER	0.375	2.12	1.50	STUB1 1/2
ZZ039	3/4-SPACER	0.75	2.12	1.50	STUB1 1/2



# ROTARY TOOL HOLDERS

## SLITTING SAW ARBOR

CAT

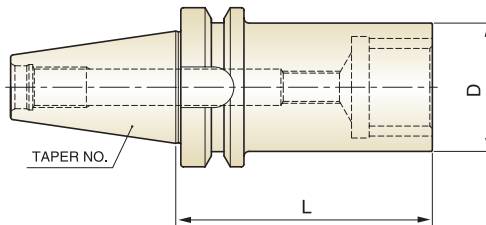


■ STANDARD

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



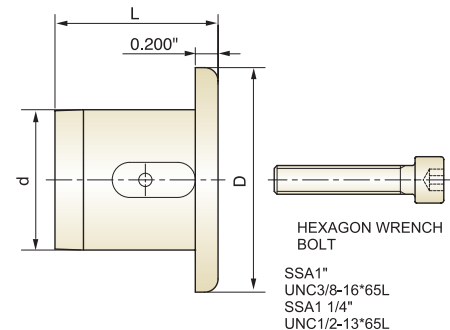
■ STANDARD

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

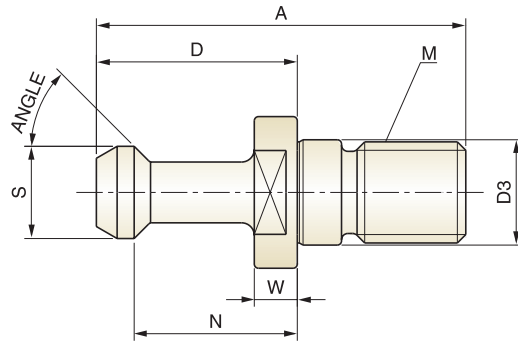
CAT / BT

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

PS



EDP No.	Type C = Coolant	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 III	90°	0.590	0.394	0.512	2.250	0.990	1.266	0.120	5/8-11
SK861	CAT-40 TYPE I C	45°	0.590	0.394	0.512	2.250	0.990	1.266	0.120	5/8-11
SK862	CAT-40 TYPE II C	60°	0.590	0.394	0.512	2.250	0.990	1.266	0.120	5/8-11
SK863	CAT-40 TYPE III C	90°	0.590	0.394	0.512	2.250	0.990	1.266	0.120	5/8-11
SL761	CAT-50 TYPE I	45°	0.906	0.669	0.827	3.346	1.377	1.772	0.390	1-8
SL762	CAT-50 TYPE II	60°	0.906	0.669	0.827	3.346	1.377	1.772	0.390	1-8
SL763	CAT-50 TYPE III	90°	0.906	0.669	0.827	3.346	1.377	1.772	0.390	1-8
SL861	CAT-50 TYPE I C	45°	0.906	0.669	0.827	3.346	1.377	1.772	0.390	1-8
SL862	CAT-50 TYPE II C	60°	0.906	0.669	0.827	3.346	1.377	1.772	0.390	1-8
SL863	CAT-50 TYPE III 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 0	90°	0.905	0.669	0.984	3.346	1.377	1.772	0.390	M24
SK161	CAT-40 TYPE I	45°	0.590	0.394	0.512	2.250	0.990	1.266	0.236	5/8-11
SK162	CAT-40 TYPE II	60°	0.590	0.394	0.512	2.250	0.990	1.266	0.236	5/8-11
SK163	CAT-40 TYPE III	90°	0.590	0.394	0.512	2.250	0.990	1.266	0.236	5/8-11
SK261	CAT-40 TYPE I C	45°	0.590	0.394	0.512	2.250	0.990	1.266	0.236	5/8-11
SK262	CAT-40 TYPE II C	60°	0.590	0.394	0.512	2.250	0.990	1.266	0.236	5/8-11
SK263	CAT-40 TYPE III C	90°	0.590	0.394	0.512	2.250	0.990	1.266	0.236	5/8-11

► 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

TBT, TCT

EDP No.	Type	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.



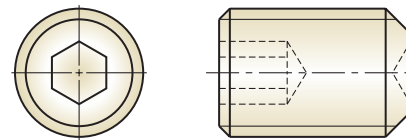
### FEATURES :

- ▶ ACCESS BOTH ENDS OF YOUR TOOL HOLDERS SIMULTANEOUSLY
- ▶ MINIMIZES TOOL HOLDERS HANDLING
- ▶ SPEEDS UP YOUR OPERATIONS
- ▶ CONVENIENT

## END MILL HOLDER SCREWS

HEXAGON SOCKET SET SCREW (FLAT TYPE)

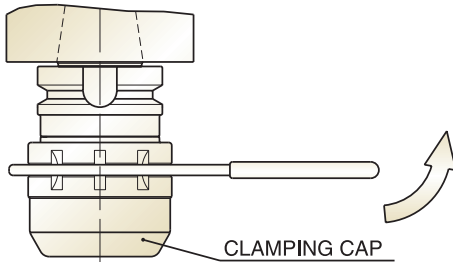
EDP No.	Screw	End Mill DIA.
ZZ003	UNF5/16-24	1/8
ZZ003	UNF5/16-24	3/16
ZZ003	UNF5/16-24	1/4
ZZ003	UNF5/16-24	5/16
ZZ004	UNF3/8-24	3/8
ZZ005	UNF3/8-24	7/16
ZZ006	UNF7/16-20	1/2
ZZ007	UNF1/2-20	5/8
ZZ008	UNF5/8-18	3/4
ZZ009	UNF5/8-18	7/8
ZZ010	UNF3/4-16	1
ZZ011	UNF3/4-16	1 1/4
ZZ012	UNF3/4-16	1 1/2
ZZ013	UNF1-14	2



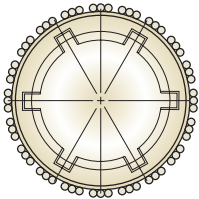


### MILLING CHUCK

#### Grasping;



#### Structure;



### SPECIAL FEATURES

#### EASE OF USE

BORE DIAMETER IS REDUCED BY .006 WITH ONLY TWO FULL TURNS OF THE CLAMPING CAP.

#### HOLDING POWER

THICKER BODY STRUCTURE OF CLAMPING CAP ASSURES STRONG HOLDING POWER MAXIMUM DURABILITY AND SMOOTH MOVEMENT OF NEEDLE BEARINGS 300 kgm 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 .0002 TIR AT 3940 FROM NOSE

#### DURABILITY

SPECIAL ENGINEERED STEELS AND ALLOYS ARE USED IN THE BEARING AND STOP SEAL TO INCREASE LIFE AND REDUCE MAINTENANCE.

### T.I.R TOLERANCE

#### ER CHUCK

Concentric to 0.0002" T.I.R  
puts tool precisely on spindle centerline

#### END MILL HOLDER

Concentric to 0.0002" T.I.R  
puts tool precisely on spindle centerline

#### MILLING CHUCK

Concentric to 0.0002" T.I.R  
puts tool precisely on spindle centerline

#### SLITTING SAW ARBOR

Face perpendicular to taper within 0.0002" T.I.R

#### STUB ARBOR

Face perpendicular to taper within 0.0002" T.I.R

#### SHELL MILL ARBOR

Face perpendicular to taper within 0.0001" T.I.R  
Out diameter to taper within 0.0002" T.I.R

#### MORSE TAPER ARBOR

Concentric to 0.0003" T.I.R

#### JACOBS TAPER ARBOR

Concentric to 0.0002" T.I.R

# EDP No. INDEX

EDP No.	PAG.	EDP No.	PAG.	EDP No.	PAG.
0081L~0641L	188	16002~16052	770	54558~54600	651
01039~01230	711~712	16252~16302	770	55006~55022	746
01289~01480	711~712	17047~17227	749	55256~55272	746
01552~01600	646	17574~18600	586	55558~55600	652
0201JCN~1301JCN	114~115	18047~18227	750	56002~56022	747
0201KCN~2001KCN	116~118	19047~19211	750	56252~56272	747
02047~02232	713	20297~20359	766	56558~56579	535
02297~02482	713	20394~20477	766	56582~56600	535
02558~02600	650	20558~20600	666	57006~57022	748
03039~03195	714	2081L~2641L	188	57256~57272	748
03289~03445	714	21554~21903	587	57558~57600	534
04039~04176	720~721	22257~22281	767	58573~58902	669
04088~04231	722	23257~23281	767	59579~59600	670
04109~04172	727	24562~24598	596	60297~60484	756
04182~04226	727	25558~25600	589	61426~61488	757
04289~04426	720~721	28558~28600	590	62321~62490	758
04338~04481	722	29001~29032	768	63297~63426	759
04432~04476	727	29251~29282	768	64321~64461	760
05047~05176	723	30554~30598	648	65321~65461	760
05186~05235	723	31554~31598	649	66297~66461	763
05297~05426	723	32552~32593	653	66515~66543	605
05436~05485	723	33554~33593	654	66901~66902	764
06047~06176	724	34558~34600	664	66903~66911	605
06196~06241	724	36573~36600	592	67321~67461	764
06297~06426	724	37573~37598	597	67515~67546	607
06446~06491	724	38602~38595	599	68297~68461	761
07039~07071	731	39573~39907	588	69321~69461	761
07072~07231	733	40573~40908	594	70297~70477	753
07289~07461	731~732	41039~41227	717	71321~71477	754
07322~07481	733	41289~41478	717	72297~72426	755
07554~07600	647	41558~41600	656	73297~73484	762
07558-015R~		42039~42176	718	75297~75426	751
07595-045R	661	42289~42426	718	76297~76426	752
07901~99098	734	43289~43477	728	80524~80543	606
08047~08211	735	43558~43600	656	80901~80909	606
08072~08239	735	44297~44426	729	81584~81600	672
08297~08461	735	45039~45176	719	82584~82600	672
08322~08489	735	45289~45426	719	83573~83908	665
08558~08600	650	46289~46426	730	84565~84598	671
09047~09195	736	47570~47593	660	85558~85600	667
09072~09241	736	48570~48593	660	86558~86600	668
09297~09445	736	49002~49022	740	86573TF-030R~	
09322~09491	736	49252~49272	740	86600TF-187R	663
10231~10241	739	50002~50022	741	87552~87903	673
10481~10491	739	50252~50272	741	88552~88903	674
11039~11084	715	50558~50600	657	89573~89908	598
11289~11334	715	51006~51022	742	93074~93083	450
11559~11593	655	51256~51272	742	93084~93092	450
12039~12069	725	51558~51600	657	93093~93102	452
12289~12319	725	52006~52022	743	93103~93111	452
13039~13067	737	52256~52272	743	93112~93118	473
13289~13317	737	52558~52600	658	93119~93171	459
13559~13593	655	53006~53022	744	93134~93142	461
14039~14176	765	53256~53272	744	93143~93156	455
14289~14426	765	53558~53906	659	93157~93170	455
15002~15052	769	54006~54022	745	93172~93193	453
15252~15302	769	54256~54272	745	93194~93215	454

# EDP No. INDEX

EDP No.	PAG.	EDP No.	PAG.	EDP No.	PAG.
93216~93237	453	AK000~ALO21	799	D1119	146
93238~93259	454	AK000B25~AK021B25	803	D1191	176
93260~93133	461	AK104~AK121	800	D1211	182
93263~93269	474	AK104B25~AK121B25	804	D1631	169
93270~93276	473	AK206~AK217	799	D1632	170
93277~93287	460	AK206B25~AK217B25	803	D1633	171
93288~93294	469	AL002~ALO29	799	D1634	169
93295~93301	470	AL104~AL129	800	D1635	170
93302~93319	490	BO	275	D1636	171
93320~93334	490	B1	275	D1C90	194
93335~93351	490	B2	275	D1GP113	124
93352~93366	490	B3	273	D1GP138	126
93395~93399	456	B5	273	D1GP139	125
93400~93409	457	BB	271	D1GP182	124
93410~93416	471	BD	287	D2	275
93417~93423	472	BF	271	D2146	147
93424~93433	493	BH	287	D2147	148
93485~93493	465	BH030~BH134	808	D2148	149
93495~93506	451	BH030B25~BH134B25	810	D2GP185	127
93507~93516	464	BH232~BH234	808	D2GP186	128
93517~93525	462	BH232B25~BH234B25	810	D2GP187	129
93526~93533	466	BH331~BH334	808	D3	279
93534~93543	467	BH331B25~BH334B25	810	D4	279
93544~93547	458	BH432	808	D4107	155
93548~93562	475	BH432B25	810	D4146	147
93563~93577	476	BI	271	D4147	148
93578~93586	463	BIO31~BIO34	808	D4148	149
95063~95115	532	BI331~BI334	808	D5412	98
95072~95078	536	BK	271	D5413	99
95079~95085	537	BK030~BK134	807	D5417	100
95094~95098	533	BK030B25~BK134B25	809	D6	273
95101~95106	539	BK232~BK234	807	D8	281
95107~95114	538	BK232B25~BK234B25	809	D9	327
99089~99093	749	BK331~BK334	807	DGE433	77
99098	734	BK331B25~BK334B25	809	DGE466	76
99558~99565	636	BK432	807	DH404	49
99566~99571	637	BK432B25	809	DH406	51
99572~99583	629	BLO31~BLO34	807	DH408	54
99588~99591	459	BL331~BL334	807	DH414	846
99621~99628	629	BM	287	DH416	47
99666~99591	459	BO	287	DH418	48
99671~99677	630	BS	288	DH421	57
99678~99682	631	BT	288	DH424	53
99686~99635	628	BU	289	DH451	66
A3	331	BV	289	DH452	68
A5	331	BW	290	DH453	70
A6	332	BX	290	DH463	64
A7	331	CO	281	DH464	65
A9	332	C2	327	DH500	92
AH000~AH021	801	C3	327	DH501	90
AH000B25~AH021B25	805	C4	327	DH510	84
AH104~AH121	802	CHO37~CHO40	818	DH515	85
AH104B25~AH121B25	806	CIO38~CIO41	818	DH520	85
AH206~AH217	801	CKO37~CKO40	818	DL517	154
AH206B25~AH217B25	805	CLO38~CLO41	818	DL601	166
AIO02~AIO29	801	D1115	145	DL602	167
AI104~AI129	802	D1118	144	DL603	168

# EDP No. INDEX

EDP No.	PAG.	EDP No.	PAG.	EDP No.	PAG.
DL604	166	EK10482~EK11602	607	EMD39	560
DL605	167	EK306~EK321	822	EMD40	561
DL606	168	ELO10~ELO29	822	EMD41	561
DLGP195	133~134	EL310~EL329	822	EMD42	558
DLGP506	135~136	EM669	496	EMD43	558
DLGP511	130	EM673	497	EMD44	559
DLGP512	132	EM810	477	EMD45	559
DLGP513	131	EM810	482	EMD46	556
DN514	151	EM811	479	EMD47	556
DN515	153	EM812	486	EMD48	557
DN516	152	EM814	501	EMD49	557
DX517	154	EM816	478	EMD56	554
EO082~EO944	279~280	EM817	480	EMD57	554
E2	289	EM818	483	EMD58	555
E4	289	EM819	483	EMD59	555
E5	289	EM832	500	EMD60	566
E6	288	EM833	502	EMD61	567
E8	288	EM834	486	EP10323~EP11326	610
E9	288	EM835	487	EP12032~EP12110	609
E9983	688	EM837	503	EP2	698
E9984	689	EM838	492	EP922	612
E9985	690	EM839	485	EP924	613
E9986	691	EM863	498	ER11S07	812
E9988	692	EM864	499	ER16S12	812
E9990	694	EM868	494	ER20S15	812
E9991	695	EM876	489	ER25S19	812
E9992	693	EM883	504	ER32S22	812
E9A86	696	EM886	505	ESB94	378
E9A87	697	EM895	481	ESD02	379
EA40321~EA10643	595	EM897	488	F1	290
EA50321~EA20641	591	EM899	491	F3	290
EA60321~EA30641	593	EM902	495	F4	282
EE515	541	EM905	484	F6	282
EG522	600	EMB12	568	F8	282
EG908	604	EMB13	569	G0	284
EG909	602	EMB14	575	G1	284
EG910	603	EMB15	576	G2	284
EG930	601	EMB20	570	G4	291
EH006~EH021	823	EMB37	568	G5	291
EH306~EH321	823	EMB38	569	G6	291
EH527	675	EMB39	575	G7	277
EH540	676	EMB40	576	G8	277
EH830	540	EMB41	573	G826	400
EH831	543	EMB42	573	G850	402
EH852	542	EMB43	574	G851	403
EH882	677	EMB44	574	G854	405
EH917	544	EMB72	578	G859	404
EH919	545	EMB73	578	G8A28	411
EH921	546	EMB74	577	G8A36	415
EIO10~EIO29	823	EMB75	577	G8A37	419
EI310~EI329	823	EMB76	572	G8A38	412
EI880	635	EMB77	572	G8A39	420
EI881	635	EMB78	571	G8A43	401
EIB05	633	EMB79	571	G8A46	406
EIB06	634	EMC75	566	G8A47	418
EIB07	632	EMC76	567	G8A50	417
EKO06~EKO21	822	EMD38	560	G8A53	413

# EDP No. INDEX

EDP No.	PAG.	EDP No.	PAG.	EDP No.	PAG.
G8A54	410	K9	304	PR1030~PR1054	230
G8A59	414	LO	304	Q0	315
G9	277	L1	304	Q1	315
G907	434	L3	306	Q6	315
G908	435	L4	306	Q9	316
G909	436	L5	306	QCT12~QCT320	821
G928	434	L7	311	QH014~QH017	828
G929	435	L8	311	QK014~QK017	828
G930	436	L9	311	QL014~QL017	828
G9D75	437	LH010~LH017	816	RO	316
G9D76	438	LI010~LI017	816	R1	316
G9D77	439	LK010~LK017	816	R7	317
GHO42~GHO47	825	LL010~LL017	816	R8	317
GIO42~GIO47	825	MO	301	R9	317
GKO42~GKO47	825	M1	301	RHO99	830
GLO42~GLO47	825	M150	106	RK099	830
H0	277	M160	107	RLO99	830
H1	278	M170	108	RM099	830
H2	278	M2	301	SO	317
H3	278	M3	301	SO1101~SO1122	198
H4	278	M5	296	SO1201~SO1226	198~199
H6	272	M6	296	SO1301~SO1328	199~200
H7	272	M7	296	SO1402~SO1440	200~201
H8	272	M8	297	SO1501~SO1524	201
H9	273	M9	295	SO1602~SO1622	201
I0	299	MZ002~MZ008	817	SO1703~SO1722	201
I2	299	MZ102~MZ110	817	SO1804~SO1815	201
I3	297	MZ302~MZ314	817	SO3101~SO3122	198
I5	297	N3	308	SO3201~SO3226	198~199
I9	328	N4	295	SO3301~SO3328	199~200
IA	309	N7	308	SO3402~SO3440	200~201
IB	310	N8	308	SO3501~SO3524	201
IC	310	O1	295	SO3602~SO3622	201
JO	328	O3	308	SO3703~SO3722	201
J1	328	O5	295	SO3804~SO3815	201
J2	299	O9	309	SO4101~SO4122	198
J3	302	OH014	814	SO4201~SO4226	198~199
J4	302	OH314	814	SO4301~SO4328	199~200
J5Y007~J55025	230	OIO14	814	SO4402~SO4440	200~201
J6	297	OI314	814	SO4501~SO4524	201
J8	302	OK014	813	SO4602~SO4622	201
J9	310	OK314	813	SO4703~SO4722	201
JH048	820	OLO14	813	SO4804~SO4815	201
JH049	820	OL314	813	SO6001~SO6018	202~203
JIO48	820	PO1Y02~PO1705	228	SO6101~SO6122	203
JIO49	820	PO3Y02~PO3705	229	SO6201~SO6226	204
JIO50	820	PO8103~PO8254	228	SO6301~SO6328	204~205
JK048	819	P13Y01~P13708	225	SO6402~SO6440	205~206
JK049	819	P14102~P14304	225	SO6Y01~SO6Y11	202
JL048	819	P15Y01~P15708	226	SO6Z01~SO6Z08	202
JL049	819	P16Y01~P16708	226	SO8001~SO8018	202~203
JL050	819	P17001~P17051	227	SO8101~SO8122	203
K2	310	P17101~P17708	227	SO8201~SO8226	204
K3	309	PH014~PH021	826	SO8301~SO8328	204~205
K5	309	PIO14~PIO21	826	SO8402~SO8440	205~206
K6	309	PK014~PK021	826	SO8Y01~SO8Y11	202
K7	310	PL014~PLO21	826	SO8Z01~SO8Z08	202

# EDP No. INDEX

EDP No.	PAG.	EDP No.	PAG.	EDP No.	PAG.
S09001~S09018	202~203	S28101~S28122	214	Y03E	35
S09101~S09122	203	S28201~S28226	215	Y03F	35
S09201~S09226	204	S28301~S28328	216	Y03G	36
S09301~S09328	204~205	S28Y01~S28Y11	212	Y03H	36
S09402~S09440	205~206	S28Z01~S28Z08	212	Y03I	37
S09501~S09524	206~207	SF05024~SF05124	224	Y03J	37
S09601~S09622	207	SF15024~SF15124	224	YI3A	32
S09701~S09722	207~208	SH063	829	YI3B	32~33
S09801~S09815	208	SI182~SI722	286	YI3C	33~34
S09Y01~S09Y11	202	SI162~SI702	307	YI3D	34
S09Z01~S09Z08	202	SI061~SI063	829	YI3E	35
S10	318	SK161~SK263	829	YI3F	35
S11001~S11018	209~210	SL661~SL863	829	YI3G	36
S11101~S11122	210	SM08001~SM08018	218	YI3H	36
S11201~S11226	211	SM08101~SM08122	218	YI3I	37
S11Y01~S11Y11	209	SM08201~SM08226	219	YI3J	37
S11Z01~S11Z08	209	SM08301~SM08328	219	Z0	321
S13001~S13018	209~210	SM08401~SM08440	220	Z1	321
S13101~S13122	210	SM08501~SM08524	220	Z2	321
S13201~S13226	211	SM08601~SM08619	221	Z3	321
S13Y01~S13Y11	209	SM08701~SM08722	221	Z4	322
S13Z01~S13Z08	209	SM08801~SM08815	221	Z5	322
S14001~S14018	209~210	SM08Y01~SM08Y11	218	Z6	322
S14101~S14122	210	SM08Z01~SM08Z08	218	Z7	322
S14201~S14226	211	SM28001~SM28018	222	Z8	323
S14Y01~S14Y11	209	SM28101~SM28122	222	ZA	323
S14Z01~S14Z08	209	SM28201~SM28226	223	ZB	32~33
S16001~S16018	213	SM28301~SM28328	223	ZC	33~34
S16101~S16122	214	SM28Y01~SM28Y11	222	ZC	323
S16201~S16226	215	SM28Z01~SM28Z08	222	ZD	34
S16Y01~S16Y11	212	ST162~ST702	286	ZE	35
S16Z01~S16Z08	212	ST182~ST722	307	ZF	35
S18001~S18018	213	T2, T2-C	263	ZG	36
S18101~S18122	214	T3, T3-C	268	ZH	36
S18201~S18226	215	T4, T4-C	266	ZI	37
S18Y01~S18Y11	212	T5, T5-C	265	ZJ	37
S18Z01~S18Z08	212	UI052	814	ZZ000~ZZ013	830
S21001~S21018	213	UI352	814	ZZ021~ZZ036	824
S21101~S21122	214	UL052	813	ZZ037~ZZ054	827
S21201~S21226	215	UL352	813	ZZ051~ZZ053	828
S21301~S21328	216	VH012	814	ZZ056~ZZ058	817
S21Y01~S21Y11	212	VK012	813	ZZ060~ZZ074	811
S21Z01~S21Z08	212	VK312	813	ZZ084~ZZ087	815
S23001~S23018	213	XB1A	384	ZZ085~ZZ088	815
S23101~S23122	214	XB1N	389	ZZ086~ZZ089	815
S23201~S23226	215	XB2C	384		
S23301~S23328	216	XB2N	389		
S23Y01~S23Y11	212	XR1A	387		
S23Z01~S23Z08	212	XR2A	387		
S26001~S26018	213	XRAA	392		
S26101~S26122	214	XRBA	392		
S26201~S26226	215	Y03A	32		
S26301~S26328	216	Y03B	32		
S26Y01~S26Y11	212	Y03B	33		
S26Z01~S26Z08	212	Y03C	33		
S27	318	Y03C	34		
S28001~S28018	213	Y03D	34		

# Based on Global Management, YG-1 Brand is Exporting to 75 countries.

In front of the technology and goods of YG-1, Borders is collapsed.

We have already established regional manufacturing plants in the US, the UK, France, China and India, and also have been exporting our goods to 75 countries in the name of YG-1 by means of building up local subsidiaries and worldwide sales network.

Automobiles of Germany, Aircrafts of the US and Electronics of Japan need cutting tools of YG-1 to come into existence.

From now on, when you look at a global map, please remember the name, YG-1.



## GLOBAL COMPANY

 YG-1 TOOL(U.S.A) PHONE : +1 800 765 8665 FAX : +1 866 941 8665	 YG-1 HONG KONG LTD.(HONG KONG) PHONE : +852 2439 9018 FAX : +852 2439 9020	 YG-1 EUROPE(FRANCE) PHONE : +33 172 84 4070 FAX : +33 172 84 4086
 REGAL CUTTING TOOLS INC.(U.S.A) PHONE : +1 815 389 3461 FAX : +1 815 389 9858	 YG CUTTING TOOL CORP. PVT. LTD.(INDIA) PHONE : +91 080 4354 3636 FAX : +91 080 4354 3613	 YG-1 DEUTSCHLAND GmbH(GERMANY) PHONE : +49 6173 9667 0 FAX : +49 6173 9667 29
 YG-1 LATIN AMERICA(BRAZIL) PHONE : +55 11 4586 6780 FAX : +55 11 4586 8934	 YG-1 PT.YGI TOOLS (INDONESIA) PHONE : +62 21 4587 7288 FAX : +62 21 4587 7289	 YG-1 POLAND Sp. z o.o.(POLAND) PHONE : +48 22 622 2586 FAX : +48 22 622 2587
 YG-1 CANADA INC.(CANADA) PHONE : +1 905 335 2500 FAX : +1 905 335 4003	 YG-1 JAPAN CO., LTD.(JAPAN) PHONE : +81 6 6305 9897 FAX : +81 6 6305 9898	 YG-1 CO., TRADING SRL(ROMANIA) PHONE : +40 21 25 25 501~3 FAX : +40 21 25 25 506
 YG-1 TOOLS MEXICO SA DE CV(MEXICO) PHONE : +55 5576 8798 FAX : +55 5576 8790	 NEW SANKYO CUTTING TOOLS(JAPAN) PHONE : +81 87 876 1155 FAX : +81 87 876 3461	 TEKNO TAKIM San. Tic. AS.(TURKEY) PHONE : +90 212 671 1590 FAX : +90 212 671 1595
 NEW CENTURY TOOL CO., LTD.(CHINA) PHONE : +86 532 8676 9779 FAX : +86 532 8676 9105	 YG-1 MALAYSIA SDN. BHD.(MALAYSIA) PHONE : +603 5569 4834 FAX : +603 5569 4814	 CLARKSON OSBORN INTERNATIONAL LTD.(U.K) PHONE : +44 114 276 8622 FAX : +44 114 275 4012
 QINGDAO YG-1 TOOL CO.,LTD.(CHINA) PHONE : +86 532 8519 7366 FAX : +86 532 8519 7959	 YG-1 TOOLS ASIA PTE. LTD.(SINGAPORE) PHONE : +65 6842 0468 FAX : +65 6842 0482	 EUROPA TOOLS CO., LTD.(U.K) PHONE : +44 24 7664 1282 FAX : +44 24 7664 1390
 YG-1 AUSTRALIA PTY. LTD.(AUSTRALIA) PHONE : +61 3 9558 0177 FAX : +61 3 9558 2778	 YG-1 THAILAND CO., LTD.(THAILAND) PHONE : +662 732 0186~7 FAX : +662 732 0188	



## DRILLING TOOLS



## THREADING TOOLS



## MILLING TOOLS



## OTHER TOOLS



# YG-1 CO., LTD.

### HEAD OFFICE

68, Cheongcheon-Dong, Bupyeong-Gu, Incheon 403-030, KOREA

PHONE : +82-32-526-0909, FAX : +82-32-526-4373

<http://www.yg1.kr>

E-mail: [yg1@yg1.kr](mailto:yg1@yg1.kr)

### USA OFFICE

730 Corporate Woods Parkway Vernon Hills, IL 60061 U.S.A

PHONE : 800-765-8665, FAX : 866-941-8665

Technical Assistance : 888-868-5988

<http://www.yg1usa.com>

### CANADA OFFICE

3375 North Service Road, Unit A8

Burlington, ON L7N 3G2, CANADA

PHONE : +1-905-335-2500, FAX : +1-905-335-4003

Tool specifications are subject to change without notice.