

**YU24**  
**AMERICA**  
2024



**CUTTING TOOLS**



**MILLING**

**YG-1 CO., LTD.**

# MILLING TOOLS

CBN END MILLS

i-Xmill CARBIDE END MILLS

i-SMART SOLID CARBIDE MODULAR TYPE END MILLS

X5070 SOLID CARBIDE END MILLS

4G Mill SOLID CARBIDE END MILLS

X-POWER PRO SOLID CARBIDE END MILLS

TitaNox-POWER SOLID CARBIDE END MILLS

JET-POWER SOLID CARBIDE & HSS-PM END MILLS

V7 PLUS A SOLID CARBIDE END MILLS

V7 MILL INOX SOLID CARBIDE END MILLS

ALU-POWER HPC SOLID CARBIDE END MILLS

ALU-POWER SOLID CARBIDE & HSS END MILLS

D-POWER GRAPHITE SOLID CARBIDE END MILLS

STANDARD CARBIDE END MILLS

ONLY ONE COATED PM60 END MILLS

SINE POWER HSS END MILLS

TANK-POWER HSS-PM END MILLS

COBALT & HSS END MILLS

TECHNICAL DATA



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## Contents / MILLING TOOLS

CARBIDE

HSS

### CBN END MILLS

### CARBIDE EXCHANGEABLE END MILLS

### SOLID CARBIDE END MILLS

### CARBIDE & HSS END MILLS

### SOLID CARBIDE END MILLS

### HSS END MILLS

### TECHNICAL DATA

#### CBN END MILLS

CBN(Cubic Boron Nitride) Machining High Hardened Steels up to HRc70 / Mirror Finish

#### i-Xmills, CARBIDE INSERT END MILLS

Various Applications Type of Inserts Available for General Steels, Pre-Hardened Steels, High Hardened Steels, Stainless Steels and Graphite

#### i-Smart MODULAR TYPE END MILLS

For General Steels, Hardened Steels and Cast Iron

#### X5070 SOLID CARBIDE END MILLS

For High Hardened Steels (HRc45 to HRc70)

#### 4G Mill SOLID CARBIDE END MILLS

High Speed Cutting for Pre-Hardened Steels up to HRc55

#### X-POWER PRO SOLID CARBIDE END MILLS

For Pre-Hardened Steels up to HRc55

#### TitaNox-POWER SOLID CARBIDE END MILLS

High Speed Machining for Exotic Materials: Titanium and Stainless Steels

#### JET-POWER SOLID CARBIDE & HSS-PM END MILLS

For Exotic materials like Stainless Steels, Nickel Alloys and Titanium

#### V7 PLUS A SOLID CARBIDE END MILLS

High Performance Carbide End Mills for Steels, Cast Iron and Stainless Steels

#### V7 MILL INOX SOLID CARBIDE END MILLS

Silent Cutting of Stainless Steels up to HRc 40. Designed as Variable Leads, YG-1's Patent.

#### ALU-POWER HPC SOLID CARBIDE END MILLS

For Aluminium, Aluminium Die Cast, Non-ferrous Alloys and Plastics

#### ALU-POWER END MILLS

Aluminium Alloys and Silent Cutting

#### D-POWER GRAPHITE SOLID CARBIDE END MILLS

For Graphites

#### STANDARD SOLID CARBIDE END MILLS

General Purpose

#### ONLY ONE COATED PM60 END MILLS

Perfect Solution of Carbide Chipping under Vibrations

#### SINE POWER HSS END MILLS

Perfect Solution of Carbide Chipping under Vibrations

#### TANK-POWER HSS-PM END MILLS

High Toughness for Stainless Steels, Carbon steels and Alloy Steels / for General Application, Roughing & Finishing

#### COBALT & HSS END MILLS

General Purpose / Coating Available

#### TECHNICAL DATA

CBN  
END MILLS

i-Xmill  
END MILLS

i-SMART  
MODULAR  
TYPE END MILLS

X5070  
END MILLS

4G MILL  
END MILLS

X-POWER  
END MILLS

TitaNox-  
POWER  
END MILLS

JET-POWER  
END MILLS

V7 PLUS A  
END MILLS

V7 MILL  
INOX  
END MILLS

ALU-POWER  
HPC  
END MILLS

ALU-POWER  
END MILLS

D-POWER  
GRAPHITE  
END MILLS

STANDARD  
END MILLS

ONLY ONE  
COATED PM60  
END MILLS

SINE-POWER  
END MILLS

TANK-POWER  
END MILLS

COBALT &  
HSS  
END MILLS

TECHNICAL  
DATA

**SELECTION GUIDE**



**MILLING TOOLS**

SERIES  
FLUTE  
HELIX ANGLE  
CUTTING EDGE SHAPE  
SIZE MIN  
SIZE MAX  
PAGE

SERIES	CBN		i-Xmill Insert (Inch)					
	ESB94	ESD02	XB1A	XB2C	XB1D	XR1A	XR2A	XR1D
FLUTE	2	2	2	2	2	2	2	2
HELIX ANGLE	30°	0°	-	-	-	-	-	-
CUTTING EDGE SHAPE	BALL NOSE	CORNER RADIUS	BALL NOSE	BALL NOSE	BALL NOSE	CORNER RADIUS	CORNER RADIUS	CORNER RADIUS
SIZE MIN	R0.2	D0.5	R5/32	R5/32	R5/32	D5/16	D5/16	D5/16
SIZE MAX	R1.5	D2.0	R5/8	R5/8	R5/8	D1-1/4	D1-1/4	D1-1/4
PAGE	C45	C46	C52			C55		

LENGTH

SURFACE TREATMENT

LENGTH	Uncoated	Uncoated	AlTiN	Z-Coating	Diamond	AlTiN	Z-Coating	Diamond
			for GENERAL PURPOSE	for HARDENED STEEL	for GRAPHITE	for GENERAL PURPOSE	for HARDENED STEEL	for GRAPHITE



Please visit [globalyg1.com/mat](http://globalyg1.com/mat) for material search

◎ : Excellent  
○ : Good

ISO	VDI 3323	Material Description	HB	HRc							
P	1	Non-alloy steel	125					◎			
	2		190	13				◎			
	3		250	25				◎			
	4		270	28				◎			
	5		300	32				◎			
	6	180	Low alloy steel	10				◎			
	7	275		29				◎			
	8	300		32				◎			
	9	350		38					◎		
	10	200		15					◎		
	11	325	35					◎			
M	12	Stainless steel	200	15				◎			
	13		240	23				◎			
	14		180	10				◎			
K	15	Grey cast iron	180	10					◎		
	16		260	26					◎		
	17	Nodular cast iron	160	3					◎		
	18		250	25					◎		
	19		130						◎		
20	Malleable cast iron	230	21					◎			
N	21	Aluminum-wrought alloy	60						○		
	22		100						○		
	23	Aluminum-cast, alloyed	75						○		
	24		90						○		
	25		130							○	
	26		110								○
	27	Copper and Copper Alloys (Bronze / Brass)	90								
	28		100								
	29		Non Metallic Materials (Duroplastic, Fiber Reinforced Plastic, Graphite, CFRP, GFRP, etc.)							◎	
	30										◎
S	31	Heat Resistant Super Alloys	200	15							
	32		280	30							
	33		250	25							
	34		350	38							
	35		320	34							
	36	Titanium Alloys	400 Rm								
	37		1050 Rm								
H	38	Hardened steel	550	55	◎	◎					
	39		630	60	◎	◎					
	40	Chilled Cast Iron	400	42							
	41	Hardened Cast Iron	550	55	◎	◎					

i-Xmill Insert (Metric)						i-Xmill Holder		
XB1N	XB2N	XBAD	XRAA	XRBA	XRAD	ZBS ZBT	ZBC	ZRS ZRT
2	2	2	2	2	2	-	-	-
-	-	-	-	-	-	-	-	-
BALL NOSE	BALL NOSE	BALL NOSE	CORNER RADIUS	CORNER RADIUS	CORNER RADIUS	BALL NOSE	BALL NOSE	CORNER RADIUS
R4.0	R4.0	R4.0	D8.0	D8.0	D8.0	-	-	-
R16.0	R16.0	R16.0	D32.0	D32.0	D32.0	-	-	-
C57			C60-C61			in C53 / mm C58	in C54 / mm C59	in C56 / mm C62
FULL RADIUS	-	-	-	-	HIGH FEED	STRAIGHT & TAPER NECK	STRAIGHT NECK	STRAIGHT & TAPER NECK
AlTiN	Z-Coating	Diamond	AlTiN	Z-Coating	Diamond	Steel	Carbide	Steel
for GENERAL PURPOSE	for HARDENED STEEL	for GRAPHITE	for GENERAL PURPOSE	for HARDENED STEEL	for GRAPHITE			



◎			◎						1
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	◎			◎					39
									40
									41



# SELECTION GUIDE



## MILLING TOOLS

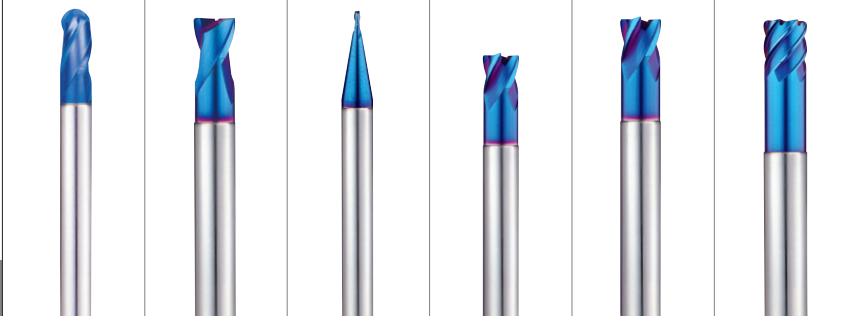
SERIES  
FLUTE  
HELIX ANGLE  
CUTTING EDGE SHAPE  
SIZE MIN  
SIZE MAX  
PAGE  
LENGTH  
SURFACE TREATMENT

X5070 (Metric)					
G8A59	G8A36	G8A50	G8A47	G8A37	G8A39
3	2	2	4	4	6
30°	30°	30°	30°	30°	45°
BALL NOSE	CORNER RADIUS	CORNER RADIUS	CORNER RADIUS	CORNER RADIUS	CORNER RADIUS
R1.5	D0.3	D0.3	D3.0	D1.0	D6.0
R10.0	D20.0	D2.0	D12.0	D20.0	D20.0
C100	C101	C103	C104	C105	C106
-	STUB LENGTH EXTENDED NECK	MINIATURE	EXTENDED NECK	EXTENDED NECK	EXTENDED NECK
Blue Coating	Blue Coating	Blue Coating	Blue Coating	Blue Coating	Blue Coating

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◎ : Excellent  
○ : Good

ISO	VDI 3323	Material Description	HB	HRc
P	1	Non-alloy steel	125	
	2		190	13
	3		250	25
	4		270	28
	5	300	32	
	6	180	10	
	7	275	29	
	8	300	32	
	9	350	38	
	10	High alloyed steel, and tool steel	200	15
	11	325	35	
M	12	Stainless steel	200	15
	13		240	23
	14		180	10
K	15	Grey cast iron	180	10
	16		260	26
	17	Nodular cast iron	160	3
	18		250	25
	19	Malleable cast iron	130	
	20		230	21
N	21	Aluminum-wrought alloy	60	
	22		100	
	23	Aluminum-cast, alloyed	75	
	24		90	
	25		130	
	26		110	
	27	Copper and Copper Alloys (Bronze / Brass)	90	
	28		100	
	29	Non Metallic Materials Duroplastic, Fiber Reinforced Plastic, Graphite, CFRP, GFRP, etc.		
	30			
S	31	Heat Resistant Super Alloys	200	15
	32		280	30
	33		250	25
	34		350	38
	35	320	34	
	36	Titanium Alloys	400 Rm	
	37		1050 Rm	
H	38	Hardened steel	550	55
	39		630	60
	40	Chilled Cast Iron	400	42
	41		550	55



# 4G Mills (Inch)

GMF15	GMF16	GMF17	GMF18	GMF19	GMF20	GMF21	GMF22	GMF23	GMF24	GMF25	GMF26	GMF27	GMF28
2	2	4	2	2	4	4	2	2	2	4	4	4	4
30°	30°	30°	30°	30°	27°/30° (MULTIPLE HELIX)	27°/30° (MULTIPLE HELIX)	30°	30°	30°	27°/30° (MULTIPLE HELIX)	35°/38° (MULTIPLE HELIX)	30°	30°
BALL NOSE	BALL NOSE	BALL NOSE	CORNER RADIUS	CORNER RADIUS	CORNER RADIUS	CORNER RADIUS	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE
R.002	R.004	R1/16	D3/64	D.008	D3/64	D3/64	D.008	D.004	D3/64	D3/64	D3/64	D3/64	D3/64
R3/8	R1/4	R1/4	D3/4	D3/4	D3/4	D3/4	D1/2	D.120	D3/4	D3/4	D3/4	D1	D1/2
C130	C132	C135	C136	C139	C145	C147	C152	C155	C158	C161	C162	C163	C166
	NECK			NECK		NECK	NECK		LONGLENGTH			LONGLENGTH	NECK
Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating



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SELECTION GUIDE



MILLING TOOLS

SERIES	4G Mills (Inch)				4G Mills (Metric)				
FLUTE	6	4&5	4&5	4&5	2	2	2	2	2
HELIX ANGLE	45°	4 Flute : 44°/45° 5 Flute : 44°/44.5°/45°	4 Flute : 44°/45° 5 Flute : 44°/44.5°/45°	4 Flute : 44°/45° 5 Flute : 44°/44.5°/45°	30°	30°	30°	30°	30°
CUTTING EDGE SHAPE	SQUARE	CORNER RADIUS ROUGHING	CORNER RADIUS ROUGHING	CORNER RADIUS ROUGHING	BALL NOSE	BALL NOSE	BALL NOSE	CORNER RADIUS	CORNER RADIUS
SIZE MIN	D1/4	D1/4	D1/4	D1/4	R0.05	R0.05	R0.25	D0.2	D0.2
SIZE MAX	D3/4	D1	D1	D3/4	R12.5	R6.0	R1.0	D20.0	D20.0
PAGE	C168	C169	C170	C171	C172	C177	C185	C188	C194
LENGTH		STUB LENGTH	REGULAR LENGTH	EXTENDED REACH		LONG NECK	LONG NECK (6mm Shank)		LONG NECK
SURFACE TREATMENT	Y-Coating	X-Coating	X-Coating	X-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating

Call for Availability



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⊙ : Excellent  
○ : Good

ISO	VDI 3323	Material Description	HB	HRc	G907 G928	G908 G929	G909 G930	SEMD98	SEM846	SEM846	SEMD99	SEME61
P	1	Non-alloy steel	125		○	○	○	○	○	○	○	○
	2		190	13	○	○	○	○	○	○	○	○
	3		250	25	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	4		270	28	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	5	300	32	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	
	6	180	10	○	○	○	○	○	○	○	○	○
	7	275	29	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	8	300	32	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	9	350	38	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	10	High alloyed steel, and tool steel	200	15	○	○	○	○	○	○	○	○
	11	325	35	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
M	12	Stainless steel	200	15	○	○	○	○	○	○	○	○
	13	240	23	○	○	○	○	○	○	○	○	○
	14	180	10	○	○	○	○	○	○	○	○	○
K	15	Grey cast iron	180	10	○	○	○	○	○	○	○	○
	16	260	26	○	○	○	○	○	○	○	○	○
	17	Nodular cast iron	160	3	○	○	○	○	○	○	○	○
	18	250	25	○	○	○	○	○	○	○	○	○
	19	Malleable cast iron	130		○	○	○	○	○	○	○	○
20	230	21	○	○	○	○	○	○	○	○	○	
N	21	Aluminum-wrought alloy	60									
	22	100										
	23	Aluminum-cast, alloyed	75									
	24	90										
	25	130										
	26	Copper and Copper Alloys	110		○	○	○					
	27	90			○	○	○					
	28	(Bronze / Brass)	100		○	○	○					
	29	Non Metallic Materials Duroplastic, Fiber Reinforced Plastic, Graphite, CFRP, GFRP, etc.										
	30											
S	31	Heat Resistant Super Alloys	200	15								
	32		280	30								
	33		250	25								
	34		350	38								
	35	320	34									
	36	Titanium Alloys	400 Rm									
	37	1050 Rm										
H	38	Hardened steel	550	55	○	○	○	○	○	○	○	○
	39	630	60									
	40	Chilled Cast Iron	400	42	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	41	Hardened Cast Iron	550	55	○	○	○	○	○	○	○	○

4G Mills (Metric)													
SEME01	SEME64	SEME35	SEME70	SEM845	SEME36	SEME71	SEME72	SEME73	SEME75	G9D75 G9D67	G9D76 G9D68	G9D77 G9D69	GAE53
4	4	2	2	2	4	4	4	4	6	4&5	4&5	4&5	4&5
27°/30° (MULTIPLE HELIX)	27°/30° (MULTIPLE HELIX)	30°	30°	30°	27°/30°	35°/38°	30°	30°	45°	4 Flute : 44°/45° 5 Flute : 44°/44.5°/45°	4 Flute : 44°/45° 5 Flute : 44°/44.5°/45°	4 Flute : 44°/45° 5 Flute : 44°/44.5°/45°	4 Flute : 44°/45° 5 Flute : 44°/44.5°/45°
CORNER RADIUS	CORNER RADIUS	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	CORNER RADIUS ROUGHING	CORNER RADIUS ROUGHING	CORNER RADIUS ROUGHING	CORNER RADIUS ROUGHING
D1.0	D1.0	D0.1	D1.0	D0.1	D0.8	D1.0	D1.0	D1.0	D6.0	D6.0	D6.0	D6.0	D6.0
D20.0	D20.0	D25.0	D25.0	D12.0	D25.0	D20.0	D25.0	D12.0	D20.0	D20.0	D20.0	D20.0	D20.0
C210	C216	C229	C234	C239	C247	C249	C252	C257	C262	C264	C265	C266	C267
	LONG NECK		LONG LENGTH	LONG NECK			LONG LENGTH	LONG NECK		SHORT LENGTH	LONG LENGTH	LONG REACH	SHORT LENGTH
Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	X-Coating	X-Coating	X-Coating	X-Coating

Call for Availability



○	○	○	○	○	○	○	○	○	○	○	○	○	○	1
○	○	○	○	○	○	○	○	○	○	○	○	○	○	2
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	3
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	4
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	5
○	○	○	○	○	○	○	○	○	○	○	○	○	○	6
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	7
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	8
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	9
○	○	○	○	○	○	○	○	○	○	○	○	○	○	10
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	11
														12
														13
														14
○	○	○	○	○	○	○	○	○	○	○	○	○	○	15
○	○	○	○	○	○	○	○	○	○	○	○	○	○	16
○	○	○	○	○	○	○	○	○	○	○	○	○	○	17
○	○	○	○	○	○	○	○	○	○	○	○	○	○	18
○	○	○	○	○	○	○	○	○	○	○	○	○	○	19
○	○	○	○	○	○	○	○	○	○	○	○	○	○	20
														21
														22
														23
														24
														25
										○	○	○	○	26
										○	○	○	○	27
										○	○	○	○	28
														29
														30
														31
														32
														33
														34
														35
														36
														37
○	○	○	○	○	○	○	○	○	○	○	○	○	○	38
○	○	○	○	○	○	○	○	○	○	○	○	○	○	39
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	40
○	○	○	○	○	○	○	○	○	○	○	○	○	○	41

**SELECTION GUIDE**



**MILLING TOOLS**

SERIES  
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X-Power Pro (Inch)						
GM153	GM207	GM639	GM649	GM212	GM103	GM208
4	4	4	4	4	4	6&8
30°	30°	30°	30°	30°	45°	45°
SQUARE	SQUARE	CORNER RADIUS	CORNER RADIUS	CORNER RADIUS	CORNER RADIUS	SQUARE
D1/16	D1/8	D1/16	D1/16	D1/4	D3/8	D1/4
D1"	D1"	D1/2	D1/2	D1/2	D7/8	D1"
C396	C397	C398	C399	C400	C401	C402
MEDIUM LENGTH	MINIATURE	STUB LENGTH	REGULAR LENGTH	LONG LENGTH	LONG REACH	LONG LENGTH
Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating

Please visit [global.yg1.com/mat](http://global.yg1.com/mat) for material search  
 ◎ : Excellent  
 ○ : Good

ISO	VDI 3323	Material Description	HB	HRc	GM153	GM207	GM639	GM649	GM212	GM103	GM208	
P	1	Non-alloy steel	125		○	○	○	○	○	○	○	
	2		190	13	○	○	○	○	○	○	○	
	3		250	25	◎	◎	◎	◎	◎	◎	◎	
	4		270	28	◎	◎	◎	◎	◎	◎	◎	
	5	300	32	◎	◎	◎	◎	◎	◎	◎		
	6	180	Low alloy steel	10		○	○	○	○	○	○	
	7	275		29	◎	◎	◎	◎	◎	◎	◎	
	8	300		32	◎	◎	◎	◎	◎	◎	◎	
	9	350		38	◎	◎	◎	◎	◎	◎	◎	
	10	200		15			○	○	○	○	○	
	11	325	35	◎	◎	◎	◎	◎	◎	◎	◎	
M	12	Stainless steel	200	15	○					○		
	13		240	23	○					○		
	14		180	10	○					○		
K	15	Grey cast iron	180	10								
	16		260	26								
	17	Nodular cast iron	160	3							○	
	18		250	25							○	
	19		130								○	
20	Malleable cast iron	230	21							○		
N	21	Aluminum-wrought alloy	60									
	22		100									
	23	Aluminum-cast, alloyed	75									
	24		90									
	25		130									
	26	Copper and Copper Alloys	110									
	27		90									
	28	(Bronze / Brass)	100									
	29	Non Metallic Materials Duroplastic, Fiber Reinforced Plastic, Graphite, CFRP, GFRP, etc.										
	30											
S	31	Heat Resistant Super Alloys	200	15								
	32		280	30								
	33		250	25								
	34		350	38								
	35	320	34									
	36	Titanium Alloys	400 Rm									
	37		1050 Rm									
H	38	Hardened steel	550	55	○	○	○	○	○	○	○	
	39		630	60								
	40	Chilled Cast Iron	400	42	◎	◎	◎	◎	◎	◎	◎	
	41	Hardened Cast Iron	550	55	○	○	○	○	○	○	○	

X-Power Pro (Inch)										
GM218	GM668	GM209	GM210	GM961	GM960	GM109	GM963	GM666	GM156	GM967
6&8	6&8	2	4	2	2	2	2	3~5	3~5	2
45°	45°	30°	30°	30°	30°	15°	30°	20°	20°	30°
SQUARE	CORNER RADIUS	BALL NOSE	BALL NOSE	BALL NOSE	BALL NOSE	BALL NOSE	BALL NOSE	ROUGHING	ROUGHING	BALL NOSE
D1/4	D1/4	R1/64	R1/16	R1/16	R.012	R1/64	R1/32	D1/4	D1/4	R1/64
D1"	D3/4	R3/8	R3/8	R1/2	R.031	R1/4	R3/16	D1"	D1"	R1/16
C402	C403	C404	C405	C406	C407	C408	C409	C410		C411
EXTRA LONG LENGTH	LONG LENGTH	LONG LENGTH	LONG LENGTH	MEDIUM LENGTH	MINIATURE	STUB CUT LENGTH	TAPER NECK	STUB LENGTH FINE PITCH	LONG LENGTH FINE PITCH	RIB PROCESSING
Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating



○	○	○	○	○				○	○	○	1
○	○	○	○	○				○	○	○	2
◎	◎	◎	◎	◎				◎	◎	◎	3
◎	◎	◎	◎	◎				◎	◎	◎	4
◎	◎	◎	◎	◎				◎	◎	◎	5
○	○	○	○	○	◎			○	○	○	6
◎	◎	◎	◎	◎				◎	◎	◎	7
◎	◎	◎	◎	◎	◎			◎	◎	◎	8
◎	◎	◎	◎	◎	◎			◎	◎	◎	9
○	○	○	○	○				○	○	○	10
◎	◎	◎	◎	◎	◎			◎	◎	◎	11
											12
											13
											14
											15
										○	16
										○	17
										○	18
										○	19
										○	20
											21
											22
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											29
											30
											31
											32
											33
											34
											35
											36
											37
○	○	○	○	○	○	○	◎	○	○	○	38
◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	39
◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	40
○	○	○	○	○	○	○	○	○	○	○	41

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**MILLING TOOLS**

SERIES  
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SIZE MIN  
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X-Power Pro (Metric)						
GM876	GM813	GM886	GM902	GM815	GM818	GM8A1
2	2	2	2	4	2	2
30°	30°	30°	30°	30°	30°	30°
BALL NOSE	BALL NOSE	BALL NOSE	BALL NOSE	BALL NOSE	CORNER RADIUS	CORNER RADIUS
R0.5	R0.5	R0.25	R0.5	R1.0	D4.0	D1.0
R8.0	R10.0	R3.0	R4.0	R8.0	D12.0	D6.0
C412	C413	C414	C416	C417	C418	C419
SHORT LENGTH	LONG LENGTH	RIB PROCESSING	TAPER NECK	LONG LENGTH	LONG LENGTH	RIB PROCESSING
Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating

LENGTH  
SURFACE TREATMENT



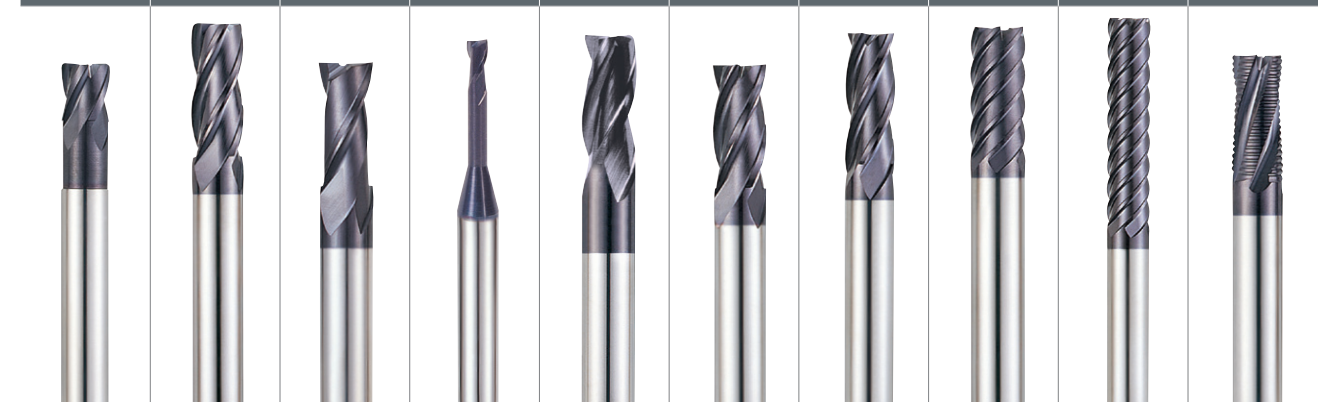
Please visit [globalyg1.com/mat](http://globalyg1.com/mat) for material search

⊙ : Excellent  
○ : Good

ISO	VDI 3323	Material Description	HB	Hrc	GM876	GM813	GM886	GM902	GM815	GM818	GM8A1
P	1	Non-alloy steel	125		○	○	○	○	○	○	○
	2		190	13	○	○	○	○	○	○	○
	3		250	25	○	○	○	○	○	○	○
	4		270	28	⊙	⊙	⊙	○	⊙	⊙	⊙
	5	300	32	⊙	⊙	⊙	○	⊙	⊙	⊙	
	6	180	10	○	○	○	○	○	○	○	○
	7	275	29	⊙	⊙	⊙	○	⊙	⊙	⊙	⊙
	8	300	32	⊙	⊙	⊙	○	⊙	⊙	⊙	⊙
	9	350	38	⊙	⊙	⊙	○	⊙	⊙	⊙	⊙
	10	High alloyed steel, and tool steel	200	15	○	○	○	○	○	○	○
	11		325	35	⊙	⊙	⊙	⊙	⊙	⊙	⊙
M	12	Stainless steel	200	15							
	13		240	23							
	14		180	10							
K	15	Grey cast iron	180	10	○	○	○		○	○	○
	16		260	26	○	○	○		○	○	○
	17	Nodular cast iron	160	3	○	○	○		○	○	○
	18		250	25	○	○	○		○	○	○
	19		130		○	○	○		○	○	○
20	Malleable cast iron	230	21	○	○	○		○	○	○	
N	21	Aluminum-wrought alloy	60								
	22		100								
	23	Aluminum-cast, alloyed	75								
	24		90								
	25		130								
	26		110								
	27	Copper and Copper Alloys (Bronze / Brass)	90								
	28		100								
	29										
	30	Non Metallic Materials (Duroplastic, Fiber Reinforced Plastic, Graphite, CFRP, GFRP, etc.)									
S	31	Heat Resistant Super Alloys	200	15							
	32		280	30							
	33		250	25							
	34		350	38							
	35		320	34							
	36	Titanium Alloys	400 Rm								
	37		1050 Rm								
H	38	Hardened steel	550	55	○	○	○	○	○	○	○
	39		630	60							
	40	Chilled Cast Iron	400	42	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	41	Hardened Cast Iron	550	55	○	○	○	○	○	○	○

X-Power Pro (Metric)

GM839	GM819	GM810	GM883	GM895	GM811	GM817	GM812	GM834	GM814
4	4	2	2	3	4	4	6&8	6	3&4
30°	30°	30°	30°	38°	30°	30°	45°	45°	20°
CORNER RADIUS	CORNER RADIUS	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	ROUGHING
D2.0	D3.0	D0.4	D0.4	D1.0	D2.0	D2.0	D6.0	D6.0	D6.0
D12.0	D20.0	D20.0	D6.0	D16.0	D25.0	D20.0	D20.0	D25.0	D20.0
C420	C421	C422	C423	C425	C426	C427	C428	C429	C430
STUB LENGTH	LONG LENGTH	SHORT LENGTH	RIB PROCESSING	SHORT LENGTH	SHORT LENGTH	LONG LENGTH	LONG LENGTH	EXTRA LONG LENGTH	LONG LENGTH FINE PITCH
Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating



○	○	○	○	○	○	○	○	○	○	1
○	○	○	○	○	○	○	○	○	○	2
○	○	○	○	○	○	○	○	○	○	3
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	4
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	5
○	○	○	○	○	○	○	○	○	○	6
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	7
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	8
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	9
○	○	○	○	○	○	○	○	○	○	10
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	11
										12
										13
										14
○	○	○	○	○	○	○	○	○	○	15
○	○	○	○	○	○	○	○	○	○	16
○	○	○	○	○	○	○	○	○	○	17
○	○	○	○	○	○	○	○	○	○	18
○	○	○	○	○	○	○	○	○	○	19
○	○	○	○	○	○	○	○	○	○	20
										21
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										32
										33
										34
										35
										36
										37
○	○	○	○	○	○	○	○	○	○	38
										39
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	40
○	○	○	○	○	○	○	○	○	○	41

# SELECTION GUIDE



## MILLING TOOLS

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SERIES

FLUTE (SHANK)

HELIX ANGLE

CUTTING EDGE SHAPE

SIZE MIN

SIZE MAX

PAGE

LENGTH

SURFACE TREATMENT

### TitaNox-Power (Inch)

UGMG42	UGMG43	UGMH12	UGMG32	UGMG34	UGMH06	UGMH07
4 (Plain Shank)	4 (Weldon Flat)	5 (Plain Shank)			5 (Plain Shank)	
43° / 45° (MULTIPLE HELIX)		43°/44°/45° (MULTIPLE HELIX)			43°/44°/45° (MULTIPLE HELIX)	
CORNER RADIUS	CORNER RADIUS	SQUARE	CHAMFER	CORNER RADIUS	SQUARE	CORNER RADIUS
1/4	3/8	1/8	1/8	1/8	1/8	1/8
1	1	1-1/4	1	1-1/4	1	1
C474	C475	C476-C477			C478-C479	
DOUBLE CORE STANDARD LENGTH		STANDARD LENGTH	STANDARD LENGTH		EXTENDED LENGTH	
Y-Coating		Y-Coating			Y-Coating	



ISO	VDI 3323	Material Description	HB	HRc
P	1	Non-alloy steel	125	
	2		190	13
	3		250	25
	4		270	28
	5	300	32	
	6	180	10	
	7	275	29	
	8	300	32	
	9	350	38	
	10	High alloyed steel, and tool steel	200	15
	11	325	35	
M	12	Stainless steel	200	15
	13		240	23
	14		180	10
K	15	Grey cast iron	180	10
	16		260	26
	17	Nodular cast iron	160	3
	18		250	25
	19		130	
20	Malleable cast iron	230	21	
N	21	Aluminum-wrought alloy	60	
	22		100	
	23	Aluminum-cast, alloyed	75	
	24		90	
	25		130	
	26		110	
	27	Copper and Copper Alloys (Bronze / Brass)	90	
	28		100	
	29			
	30	Non Metallic Materials Duroplastic, Fiber Reinforced Plastic, Graphite, CFRP, GFRP, etc.		
S	31	Heat Resistant Super Alloys	200	15
	32		280	30
	33		250	25
	34		350	38
	35		320	34
	36	Titanium Alloys	400 Rm	
	37		1050 Rm	
H	38	Hardened steel	550	55
	39		630	60
	40	Chilled Cast Iron	400	42
	41	Hardened Cast Iron	550	55

TitaNox-Power (Inch)		TitaNox-Power (Metric)			JET-POWER (Inch)						
EMI42	EMI43	GMG40	GMG24 GMG26	GMG28 GMG30	EH108	EE882	E5075 E5105	E5074 E5104	EH094	EH095	
5 (Plain Shank)		4 (Plain Shank)	5 (Plain Shank)		3&4	6 (Weldon)	3	3	3~5	3~5	
38°		43° / 45° (MULTIPLE HELIX)		43°/44°/45° (MULTIPLE HELIX)		50°	35°	35°	35°	30°	30°
SQUARE	CORNER RADIUS	CORNER RADIUS	CHAMFER	CORNER RADIUS	SQUARE	SQUARE	CORNER RADIUS	CORNER RADIUS	ROUGHING	ROUGHING	
1/4	1/4	6.0	6.0	6.0	D1/8	D3/4	D1/8	D1/8	D1/4	D1/4	
1	1	25.0	25.0	25.0	D1	D1-1/2	D1	D1	D1	D1	
C480-C481		C482	C483		C496	C497	C498	C499	C500	C501	
STANDARD LENGTH		EXTENDED LENGTH	STANDARD LENGTH		REGULAR LENGTH	REGULAR LENGTH	STUB LENGTH HOSS	REGULAR LENGTH HOSS	STUB LENGTH FINE PITCH	LONG LENGTH FINE PITCH	
AlTiN		Y-Coating	Y-Coating		TiAlN	TiAlN	Uncoated TiN	Uncoated TiN	TiAlN	TiAlN	
TitaNox-Power HPC					U.S.A Stock	Call for Availability	TiCN	TiCN	U.S.A Stock		
						HSS-PM	TYLON F	TYLON F			
							TYLON E	TYLON E			
							U.S.A Stock				



○	○	○	○	○	○	○	○	○	○	○	1
○	○	○	○	○	○	○	○	○	○	○	2
○	○	○	○	○	○	○	○	○	○	○	3
○	○	○	○	○	○	○	○	○	○	○	4
○	○	○	○	○	○	○	○	○	○	○	5
○	○	○	○	○	○	○	○	○	○	○	6
○	○	○	○	○	○	○	○	○	○	○	7
○	○	○	○	○	○	○	○	○	○	○	8
○	○	○	○	○	○	○	○	○	○	○	9
○	○	○	○	○	○	○	○	○	○	○	10
○	○	○	○	○	○	○	○	○	○	○	11
○	○	○	○	○	○	○	○	○	○	○	12
○	○	○	○	○	○	○	○	○	○	○	13
○	○	○	○	○	○	○	○	○	○	○	14
○	○	○	○	○	○	○	○	○	○	○	15
○	○	○	○	○	○	○	○	○	○	○	16
○	○	○	○	○	○	○	○	○	○	○	17
○	○	○	○	○	○	○	○	○	○	○	18
○	○	○	○	○	○	○	○	○	○	○	19
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○	○	○	○	○	○	○	○	○	○	○	32
○	○	○	○	○	○	○	○	○	○	○	33
○	○	○	○	○	○	○	○	○	○	○	34
○	○	○	○	○	○	○	○	○	○	○	35
○	○	○	○	○	○	○	○	○	○	○	36
○	○	○	○	○	○	○	○	○	○	○	37
											38
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											40
											41



# SELECTION GUIDE



## MILLING TOOLS

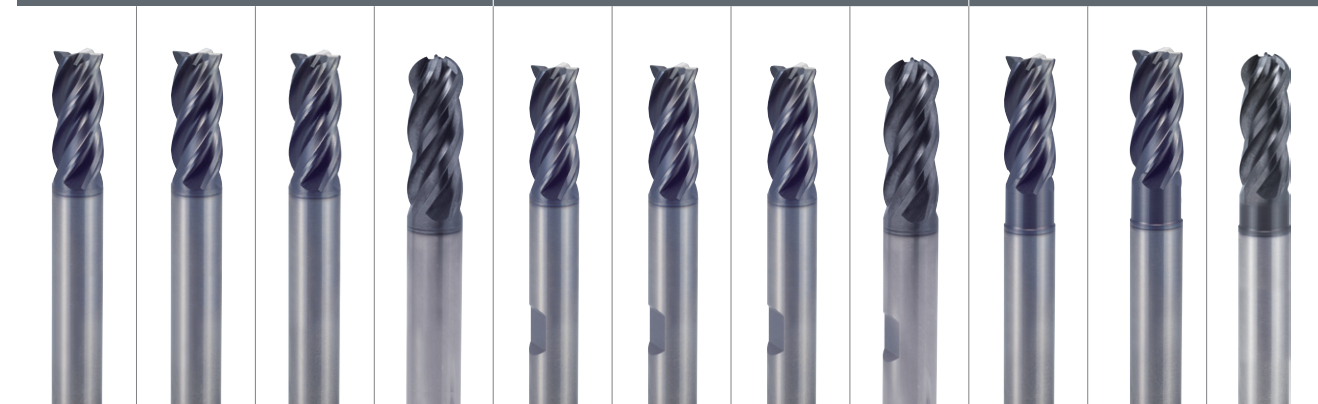
Please visit [globalyg1.com/mat](http://globalyg1.com/mat) for material search

SERIES	Jet- Power (Inch)		JET-POWER (Metric)						
	EH969	EH970	EH830	EE15	EH852	EH831	EH917	EH919	EH921
FLUTE (SHANK)	3~6	4~6	3&4	4&6(Weldon)	3~5	3~5	4~6	3~6	4~6
HELIX ANGLE	45°	45°	50°	30°	30°	30°	45°	45°	45°
CUTTING EDGE SHAPE	ROUGHING	ROUGHING	SQUARE	SQUARE	ROUGHING	ROUGHING	ROUGHING	ROUGHING	ROUGHING
SIZE MIN	D3/16	D1/4	D6.0	D3.0	D6.0	D6.0	D6.0	D4.0	D6.0
SIZE MAX	D1	D3/4	D25.0	D25.0	D25.0	D25.0	D20.0	D25.0	D20.0
PAGE	C502	C503	C504	C505	C506	C507	C508	C509	C510
LENGTH	LONG LENGTH FINE PITCH	LONG REACH FINE PITCH	LONG LENGTH	SHORT LENGTH	STUB LENGTH FINE PITCH	LONG LENGTH FINE PITCH	SHORT LENGTH FINE PITCH	LONG LENGTH FINE PITCH	LONG REACH FINE PITCH
SURFACE TREATMENT	TiAIN	TiAIN	TiAIN	TiAIN	TiAIN	TiAIN	TiAIN	TiAIN	TiAIN



ISO	VDI 3323	Material Description	HB	HRc	EH969	EH970	EH830	EE15	EH852	EH831	EH917	EH919	EH921
P	1	Non-alloy steel	125		○	○	○	○	○	○	○	○	○
	2		190	13	○	○	○	○	○	○	○	○	○
	3		250	25	◎	◎	◎	◎	◎	◎	◎	◎	◎
	4		270	28	◎	◎	◎	◎	◎	◎	◎	◎	◎
	5	300	32	◎	◎	◎	◎	◎	◎	◎	◎	◎	
	6	180	Low alloy steel	10	○	○	○	○	○	○	○	○	○
	7	275		29	◎	◎	◎	◎	◎	◎	◎	◎	◎
	8	300		32	◎	◎	◎	◎	◎	◎	◎	◎	◎
	9	350		38	◎	◎	◎	◎	◎	◎	◎	◎	◎
	10	200		15	○	○	○	○	○	○	○	○	○
	11	325	35	◎	◎	◎	◎	◎	◎	◎	◎	◎	
M	12	Stainless steel	200	15	◎	◎	◎	◎	◎	◎	◎	◎	◎
	13		240	23	◎	◎	◎	◎	◎	◎	◎	◎	◎
	14		180	10	◎	◎	◎	◎	◎	◎	◎	◎	◎
K	15	Grey cast iron	180	10									
	16		260	26									
	17	Nodular cast iron	160	3									
	18		250	25									
19	Malleable cast iron	130											
20		230	21										
N	21	Aluminum-wrought alloy	60										
	22		100										
	23	Aluminum-cast, alloyed	75										
	24		90										
	25		130										
	26	Copper and Copper Alloys (Bronze / Brass)	110										
	27		90										
	28		100										
	29	Non Metallic Materials Duroplastic, Fiber Reinforced Plastic, Graphite, CFRP, GFRP, etc.											
30													
S	31	Heat Resistant Super Alloys	200	15	○	○	○	○	○	○	○	○	○
	32		280	30	○	○	○	○	○	○	○	○	○
	33		250	25	○	○	○	○	○	○	○	○	○
	34		350	38	○	○	○	○	○	○	○	○	○
	35		320	34	○	○	○	○	○	○	○	○	○
	36	Titanium Alloys	400 Rm		◎	◎	◎	◎	◎	◎	◎	◎	◎
	37		1050 Rm		◎	◎	◎	◎	◎	◎	◎	◎	◎
H	38	Hardened steel	550	55									
	39		630	60									
	40	Hardened Cast Iron	400	42	○	○	○	○	○	○	○	○	○
	41		550	55									

V7 Plus A(Inch)										
UGMF68	UGMF76	UGMF70	UGMG53	UGMF69	UGMF77	UGMF71	UGMG54	UGMF72	UGMF74	UGMH10
4 (Plain Shank)			4 (Weldon Flat)				4 (Plain Shank)			
35°/37° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)
SQUARE	CHAMFER	CORNER RADIUS	BALL NOSE	SQUARE	CHAMFER	CORNER RADIUS	BALL NOSE	SQUARE	CORNER RADIUS	BALL NOSE
1/8	1/4	1/8	1/8	11/32	3/8	3/8	11/32	1/8	1/8	1/8
1	1	1	1	1	1	1	1	1	1	1
C532-C534			C535				C536-C537			
MULTIPLE LENGTH			MULTIPLE LENGTH				EXTENDED REACH			
Y-Coating			Y-Coating				Y-Coating			



◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	1
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											41

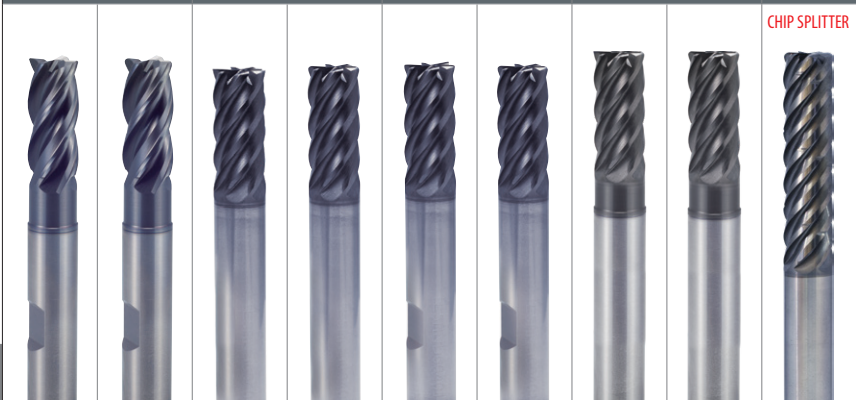
# SELECTION GUIDE



## MILLING TOOLS

Please visit [globalyg1.com/mat](http://globalyg1.com/mat) for material search

SERIES	V7 Plus A(Inch)									
	UGMF73	UGMF75	UGMG20	UGMG22	UGMG21	UGMG23	UGMH08	UGMH09	GMH72	
FLUTE (SHANK)	4 (Weldon Flat)		6 (Plain Shank)		6 (Weldon Flat)		6 (Plain Shank)			
HELIX ANGLE	35°/37° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)	45°	45°	45°	45°	45°	45°	45°	
CUTTING EDGE SHAPE	SQUARE	CORNER RADIUS	SQUARE	CORNER RADIUS	SQUARE	CORNER RADIUS	SQUARE	CORNER RADIUS	CORNER RADIUS	
SIZE MIN	3/8	3/8	1/4	1/4	3/8	3/8	1/4	1/4	3/8	
SIZE MAX	1	1	1	1	1	1	1	1	1	
PAGE	C538		C543-C544		C545		C546-C547		C550	
LENGTH	EXTENDED REACH		MULTIPLE LENGTH		MULTIPLE LENGTH		EXTENDED REACH		MULTIPLE LENGTH	
SURFACE TREATMENT	Y-Coating		Y-Coating		Y-Coating		Y-Coating		Y-Coating	



CHIP SPLITTER

ISO	VDI 3323	Material Description	HB	HRc	UGMF73	UGMF75	UGMG20	UGMG22	UGMG21	UGMG23	UGMH08	UGMH09	GMH72
P	1	Non-alloy steel	125		⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	2		190	13	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	3		250	25	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	4		270	28	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	5	300	32	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	
	6	180	10	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	
	7	275	29	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	
	8	300	32	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	
	9	350	38	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	
	10	High alloyed steel, and tool steel	200	15	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	11	325	35	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
M	12	Stainless steel	200	15	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	13		240	23	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	14		180	10	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
K	15	Grey cast iron	180	10	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	16		260	26	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	17	Nodular cast iron	160	3	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	18		250	25	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
19	Malleable cast iron	130		⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	
20		230	21	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	
N	21	Aluminum-wrought alloy	60										
	22		100										
	23	Aluminum-cast, alloyed	75										
	24		90										
	25		130										
	26	Copper and Copper Alloys (Bronze / Brass)	110										
	27		90										
	28		100										
	29	Non Metallic Materials Duroplastic, Fiber Reinforced Plastic, Graphite, CFRP, GFRP, etc.											
30													
S	31	Heat Resistant Super Alloys	200	15	○	○	○	○	○	○	○	○	○
	32		280	30	○	○	○	○	○	○	○	○	○
	33		250	25	○	○	○	○	○	○	○	○	○
	34		350	38	○	○	○	○	○	○	○	○	○
	35		320	34	○	○	○	○	○	○	○	○	○
	36	Titanium Alloys	400 Rm		○	○	○	○	○	○	○	○	○
	37		1050 Rm		○	○	○	○	○	○	○	○	○
H	38	Hardened steel	550	55									
	39		630	60									
	40	Chilled Cast Iron	400	42									
	41		550	55									

V7 Plus A(Metric)											
GMF52 GMF56	GMF54 GMF58	GMG55	GMF53 GMF57	GMF55 GMF59	GMG56	GMF60	GMF62	GMF61	GMF63	GMG12 GMG14	GMG16 GMG18
4 (Plain Shank)			4 (Weldon Flat)			4 (Plain Shank)		4 (Weldon Flat)		6 (Plain Shank)	
35°/37° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)	35°/37° (MULTIPLE HELIX)	45°	45°
CHAMFER	CORNER RADIUS	BALL NOSE	CHAMFER	CORNER RADIUS	BALL NOSE	CHAMFER	CORNER RADIUS	CHAMFER	CORNER RADIUS	SQUARE	CORNER RADIUS
3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	6.0	6.0
25.0	25.0	25.0	25.0	25.0	25.0	20.0	20.0	20.0	20.0	25.0	25.0
C539			C540			C541		C542		C548	
MULTIPLE LENGTH			MULTIPLE LENGTH			EXTENDED REACH		EXTENDED REACH		MULTIPLE LENGTH	
Y-Coating			Y-Coating			Y-Coating		Y-Coating		Y-Coating	



⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	1
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⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	3
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	4
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	5
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	6
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⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	14
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	15
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	16
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	17
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	18
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	19
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# SELECTION GUIDE

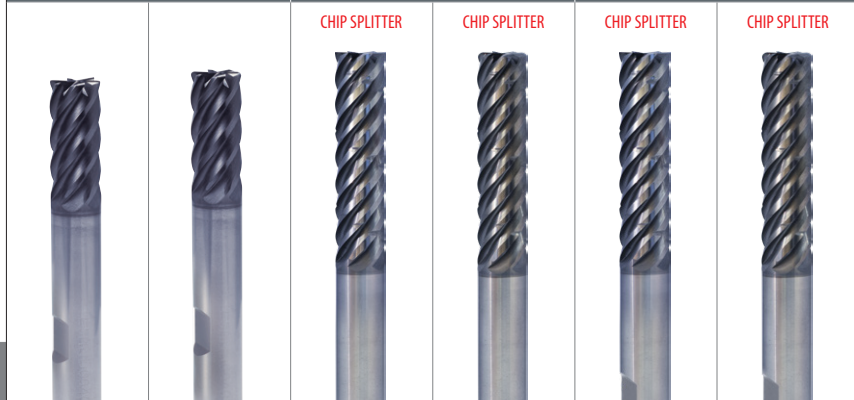


## MILLING TOOLS

Please visit [globalyg1.com/mat](http://globalyg1.com/mat) for material search

SERIES  
FLUTE (SHANK)  
HELIX ANGLE  
CUTTING EDGE SHAPE  
SIZE MIN  
SIZE MAX  
PAGE  
LENGTH  
SURFACE TREATMENT

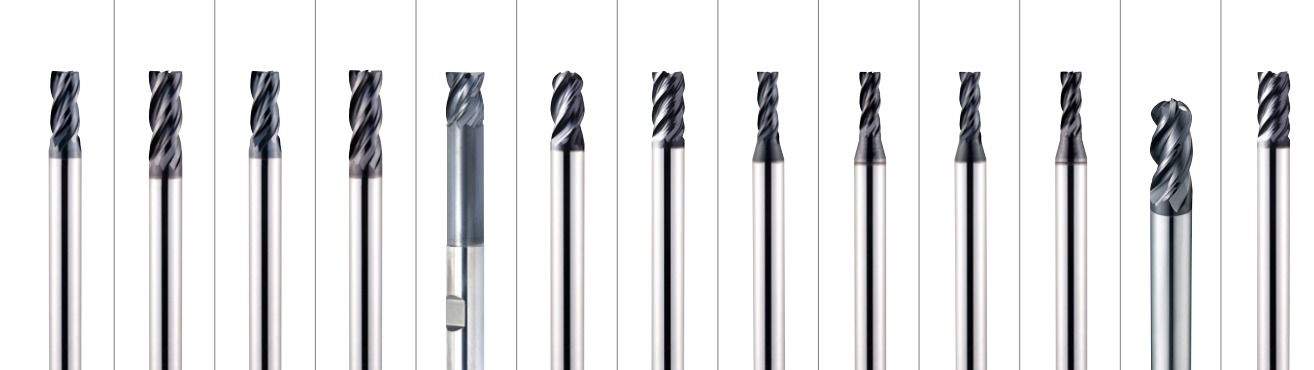
V7 Plus A (Metric)					
GMG13 GMG15	GMG17 GMG19	GMH56	GMH58	GMH57	GMH59
6 (Flat Shank)		6 (Plain Shank)		6 (Flat Shank)	
45°	45°	45°	45°	45°	45°
SQUARE	CORNER RADIUS	SQUARE	CORNER RADIUS	SQUARE	CORNER RADIUS
6.0	6.0	6.0	6.0	6.0	6.0
25.0	25.0	25.0	25.0	25.0	25.0
C549		C551		C552	
EXTENDED REACH		EXTENDED REACH		EXTENDED REACH	
Y-Coating		Y-Coating		Y-Coating	



ISO	VDI 3323	Material Description	HB	HRc						
P	1	Non-alloy steel	125		⊙	⊙	⊙	⊙	⊙	⊙
	2		190	13	⊙	⊙	⊙	⊙	⊙	⊙
	3		250	25	⊙	⊙	⊙	⊙	⊙	⊙
	4		270	28	⊙	⊙	⊙	⊙	⊙	⊙
	5	300	32	⊙	⊙	⊙	⊙	⊙	⊙	
	6	180	10	⊙	⊙	⊙	⊙	⊙	⊙	
	7	275	29	⊙	⊙	⊙	⊙	⊙	⊙	
	8	300	32	⊙	⊙	⊙	⊙	⊙	⊙	
	9	350	38	⊙	⊙	⊙	⊙	⊙	⊙	
	10	High alloyed steel, and tool steel	200	15	⊙	⊙	⊙	⊙	⊙	⊙
	11	325	35	⊙	⊙	⊙	⊙	⊙	⊙	⊙
M	12	Stainless steel	200	15	⊙	⊙	⊙	⊙	⊙	⊙
	13		240	23	⊙	⊙	⊙	⊙	⊙	⊙
	14		180	10	⊙	⊙	⊙	⊙	⊙	⊙
K	15	Grey cast iron	180	10	⊙	⊙	⊙	⊙	⊙	⊙
	16		260	26	⊙	⊙	⊙	⊙	⊙	⊙
	17	Nodular cast iron	160	3	⊙	⊙	⊙	⊙	⊙	⊙
	18		250	25	⊙	⊙	⊙	⊙	⊙	⊙
19	Malleable cast iron	130		⊙	⊙	⊙	⊙	⊙	⊙	
20		230	21	⊙	⊙	⊙	⊙	⊙	⊙	
N	21	Aluminum-wrought alloy	60							
	22		100							
	23	Aluminum-cast, alloyed	75							
	24		90							
	25		130							
	26	Copper and Copper Alloys	110							
	27		90							
	28	(Bronze / Brass)	100							
	29	Non Metallic Materials Duroplastic, Fiber Reinforced Plastic, Graphite, CFRP, GFRP, etc.								
30										
S	31	Heat Resistant Super Alloys	200	15	○	○	○	○	○	○
	32		280	30	○	○	○	○	○	○
	33		250	25	○	○	○	○	○	○
	34		350	38	○	○	○	○	○	○
	35		320	34	○	○	○	○	○	○
	36	Titanium Alloys	400 Rm		○	○	○	○	○	○
	37		1050 Rm		○	○	○	○	○	○
H	38	Hardened steel	550	55						
	39		630	60						
	40	Chilled Cast Iron	400	42						
	41	Hardened Cast Iron	550	55						

⊙ : Excellent  
○ : Good

V7 Mill INOX (Inch)							V7 Mill INOX (Metric)					
EMC75 EMD60	EMC76 EMD61	EMB12 EMB37	EMB13 EMB38	EMB20	EMB78 EMB79	EMB76 EMB77	EMB41 EMB42	EMB43 EMB44	EMB14 EMB39	EMB15 EMB40	EMB74 EMB75	EMB72 EMB73
4	4	4	4	4	4	5	4	4	4	4	4	5
SINUSOIDAL							SINUSOIDAL					
SQUARE	CORNER RADIUS	SQUARE	CORNER RADIUS	SQUARE	BALL NOSE	SQUARE	SQUARE	CORNER RADIUS	SQUARE	CORNER RADIUS	BALL NOSE	SQUARE
D1/8	D1/8	D1/8	D1/8	D1/4	R1/16	D1/4	D3.0	D3.0	D3.0	D3.0	R1.5	D6.0
D1	D1	D1	D1	D1	R1/2	D1	D20.0	D20.0	D25.0	D25.0	R12.5	D25.0
C566	C567	C568	C569	C570	C571	C572	C573	C574	C575	C576	C577	C578
STUB LENGTH	STUB LENGTH	REGULAR LENGTH	REGULAR LENGTH	EXTENDED LENGTH LONG REACH	REGULAR LENGTH	REGULAR LENGTH	SHORT LENGTH	SHORT LENGTH	REGULAR LENGTH	REGULAR LENGTH	REGULAR LENGTH	REGULAR LENGTH
AITiN							AITiN					
U.S.A Stock							Call for Availability					



⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	1
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	2
○	○	○	○	○	○	○	○	○	○	○	○	○	3
○	○	○	○	○	○	○	○	○	○	○	○	○	4
○	○	○	○	○	○	○	○	○	○	○	○	○	5
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	6 P
○	○	○	○	○	○	○	○	○	○	○	○	○	7
○	○	○	○	○	○	○	○	○	○	○	○	○	8
○	○	○	○	○	○	○	○	○	○	○	○	○	9
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	10
○	○	○	○	○	○	○	○	○	○	○	○	○	11
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	12 M
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	13 M
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	14
													15
													16
													17 K
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													21
													22
													23
													24
													25 N
													26
													27
													28
													29
													30
○	○	○	○	○	○	○	○	○	○	○	○	○	31
○	○	○	○	○	○	○	○	○	○	○	○	○	32
○	○	○	○	○	○	○	○	○	○	○	○	○	33
○	○	○	○	○	○	○	○	○	○	○	○	○	34 S
○	○	○	○	○	○	○	○	○	○	○	○	○	35
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	36
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	37
													38
													39 H
													40
													41



# SELECTION GUIDE



## MILLING TOOLS

SERIES

FLUTE (SHANK)

HELIX ANGLE

CUTTING EDGE SHAPE

SIZE MIN

SIZE MAX

PAGE

LENGTH

SURFACE TREATMENT

ALU-POWER HPC							
JAG95	JAG97	E5G95	E5G97	JAG96	JAG98	E5G96	E5G98
3		3		3		3	
37°		37°		37°		37°	
SQUARE	CORNER RADIUS	SQUARE	CORNER RADIUS	SQUARE	CORNER RADIUS	SQUARE	CORNER RADIUS
1/8	1/8	1/8	1/8	1/4	1/4	1/4	1/4
1	1	1	1	1	1	1	1
C590-C591		C592-C593		C594		C595	
STANDARD LENGTH		STANDARD LENGTH		EXTENDED NECK		EXTENDED NECK	
DLC		Uncoated		DLC		Uncoated	



Please visit [globalyg1.com/mat](http://globalyg1.com/mat) for material search

◎ : Excellent  
○ : Good

ISO	VDI 3323	Material Description	HB	HRc
P	1	Non-alloy steel	125	
	2		190	13
	3		250	25
	4		270	28
	5		300	32
	6	180	10	
	7	275	29	
	8	300	32	
	9	350	38	
	10	High alloyed steel, and tool steel	200	15
	11	325	35	
M	12	Stainless steel	200	15
	13		240	23
	14		180	10
K	15	Grey cast iron	180	10
	16		260	26
	17	Nodular cast iron	160	3
	18		250	25
	19	Malleable cast iron	130	
	20		230	21
N	21	Aluminum-wrought alloy	60	◎
	22		100	◎
	23	Aluminum-cast, alloyed	75	◎
	24		90	◎
	25		130	○
	26	Copper and Copper Alloys	110	○
	27		90	○
	28	(Bronze / Brass)	100	○
	29	Non Metallic Materials Duroplastic, Fiber Reinforced Plastic, Graphite, CFRP, GFRP, etc.		○
	30			○
S	31	Heat Resistant Super Alloys	200	15
	32		280	30
	33		250	25
	34		350	38
	35	320	34	
	36	Titanium Alloys	400 Rm	
	37		1050 Rm	
H	38	Hardened steel	550	55
	39		630	60
	40	Chilled Cast Iron	400	42
	41		550	55

ALU-POWER HPC						ALU-POWER (Inch)					
JAI38	E5I36	E5I38	JAI39	E5I37	E5I39	E5253	E5254	E5976	E5980	E5981	E5983
3		3		3		2 (Weldon)		2		3	
37°		37°		37°		42°		42°		37°	
CORNER RADIUS	SQUARE	CORNER RADIUS	CORNER RADIUS	SQUARE	CORNER RADIUS	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	CORNER RADIUS
1/8	1/2	1/8	1/4	1/2	1/4	D1/4	D1/16	D1/4	D1/8	D1/8	D1/2
1	3/4	1	1	1/2	1	D1	D1	D1	D1	D1	D1
C596		C597		C598		C599		C608		C612	
STANDARD LENGTH		STANDARD LENGTH		EXTENDED NECK		EXTENDED NECK		EXTENDED NECK		REGULAR LENGTH	
DLC		Uncoated		DLC		Uncoated		TICN		TICN	
								Uncoated		Uncoated	



												1
												2
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												10
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												41







# SELECTION GUIDE



## MILLING TOOLS

SERIES  
FLUTE  
HELIX ANGLE  
CUTTING EDGE SHAPE  
SIZE MIN  
SIZE MAX  
PAGE

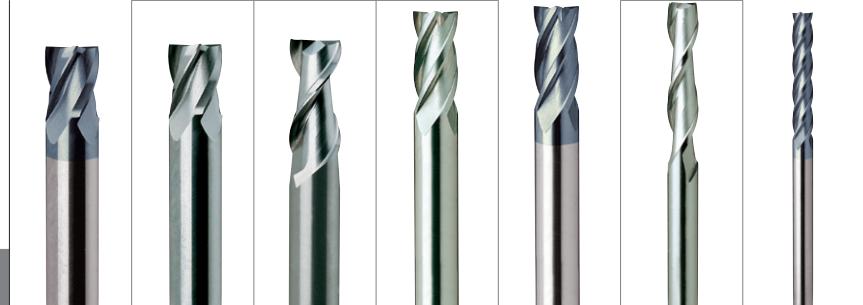
STANDARD CARBIDE (Inch)							
UGMGF57	E5245	E5011	E5012	UGMGF58	E5026	UGMGF59	
4	4	2	4	4	2	4	
30°	30°	30°	30°	30°	30°	30°	
SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	
D1/16	D1/16	D1/8	D1/8	D1/8	D1/8	D1/8	
D3/4	D3/4	D1	D1	D1	D1	D1	
C673	C674	C675	C675	C676	C677	C678	

LENGTH

STUB LENGTH	STUB LENGTH	LONG LENGTH	LONG LENGTH	LONG LENGTH	EXTRA LONG LENGTH	EXTRA LONG LENGTH	
Y-Coating	Uncoated	Uncoated	Uncoated	Y-Coating	Uncoated	Y-Coating	

SURFACE TREATMENT

Y-Coating	Uncoated	Uncoated	Uncoated	Y-Coating	Uncoated	Y-Coating	
	TIN	TIN	TIN		TIN		
	TICN	TICN	TICN		TICN		
	TYLON F	TYLON F	TYLON F		TYLON F		
	TYLON E	TYLON E	TYLON E		TYLON E		

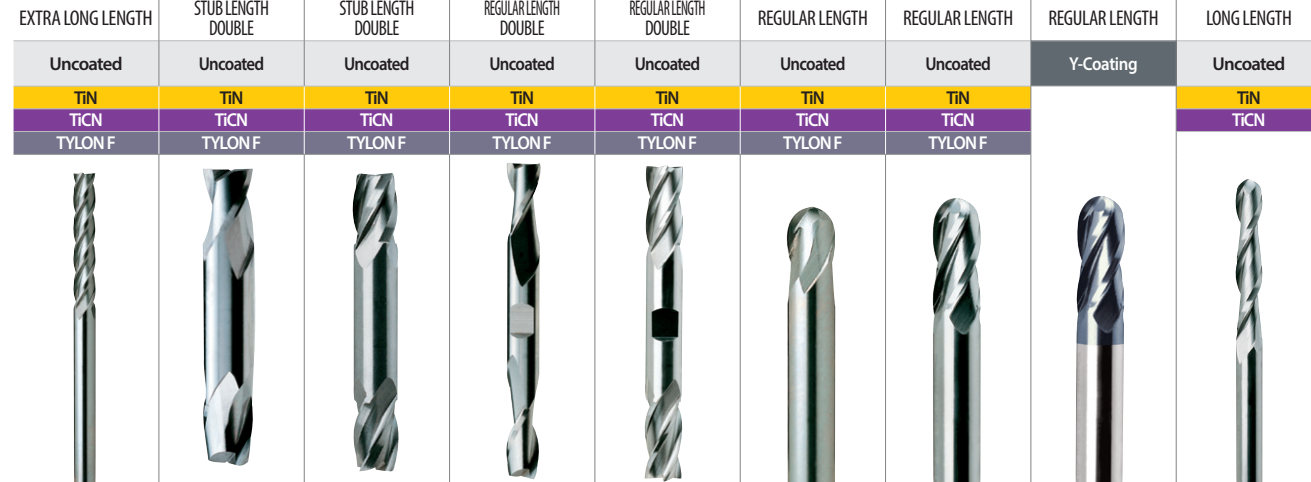


Please visit [global.yg1.com/mat](http://global.yg1.com/mat) for material search  
◎ : Excellent  
○ : Good

ISO	VDI 3323	Material Description	HB	HRc	UGMGF57	E5245	E5011	E5012	UGMGF58	E5026	UGMGF59
P	1	Non-alloy steel	125		◎	◎	◎	◎	◎	◎	◎
	2		190	13	◎	◎	◎	◎	◎	◎	◎
	3		250	25	◎	◎	◎	◎	◎	◎	◎
	4		270	28	◎	◎	◎	◎	◎	◎	◎
	5	300	32	○	◎	◎	◎	◎	◎	◎	
	6	180	10	◎	◎	◎	◎	◎	◎	◎	
	7	275	29	◎	◎	◎	◎	◎	◎	◎	
	8	300	32	○	◎	◎	◎	◎	◎	◎	
	9	350	38	◎	◎	◎	◎	◎	◎	◎	
	10	High alloyed steel, and tool steel	200	15	◎	◎	◎	◎	◎	◎	◎
	11	325	35	○	◎	◎	◎	◎	◎	◎	◎
M	12	Stainless steel	200	15	○	○	○	○	○	○	○
	13		240	23	○	○	○	○	○	○	○
	14		180	10	○	○	○	○	○	○	○
K	15	Grey cast iron	180	10	○	○	○	○	○	○	○
	16		260	26	○	○	○	○	○	○	○
	17	Nodular cast iron	160	3	○	○	○	○	○	○	○
	18		250	25	○	○	○	○	○	○	○
	19		130		○	○	○	○	○	○	○
20	Malleable cast iron	230	21	○	○	○	○	○	○	○	
N	21	Aluminum-wrought alloy	60		○	○	○	○	○	○	○
	22		100		○	○	○	○	○	○	○
	23	Aluminum-cast, alloyed	75		○	○	○	○	○	○	○
	24		90		○	○	○	○	○	○	○
	25		130		○	○	○	○	○	○	○
	26		110		○	○	○	○	○	○	○
	27	Copper and Copper Alloys (Bronze / Brass)	90		○	○	○	○	○	○	○
	28		100		○	○	○	○	○	○	○
	29										
	30	Non Metallic Materials (Duroplastic, Fiber Reinforced Plastic, Graphite, CFRP, GFRP, etc.)									
S	31	Heat Resistant Super Alloys	200	15							
	32		280	30							
	33		250	25							
	34		350	38							
	35		320	34							
	36	Titanium Alloys	400 Rm								
	37		1050 Rm								
H	38	Hardened steel	550	55							
	39		630	60							
	40	Hardened Cast Iron	400	42							
	41		550	55							

# STANDARD CARBIDE (Inch)

E5065	E5022	E5023	E5025	E5024	E5249	E5250	UGMF91	E5014
4	2	4	2	4	2	4	4	2
30°	30°	30°	30°	30°	30°	30°	30°	45°
SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	BALL NOSE	BALL NOSE	BALL NOSE	BALL NOSE
D1/8	D1/32	D1/16	D1/8	D1/8	R1/16	R1/16	R1/16	R1/16
D1	D1/2	D1/2	D1/2	D1/2	R1/2	R1/2	R1/2	R1/2
C679	C680	C681	C682	C683	C684	C685	C686	C687
EXTRA LONG LENGTH	STUB LENGTH DOUBLE	STUB LENGTH DOUBLE	REGULAR LENGTH DOUBLE	REGULAR LENGTH DOUBLE	REGULAR LENGTH	REGULAR LENGTH	REGULAR LENGTH	LONG LENGTH
Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Y-Coating	Uncoated
TIN	TIN	TIN	TIN	TIN	TIN	TIN		TIN
TICN	TICN	TICN	TICN	TICN	TICN	TICN		TICN
TYLON F	TYLON F	TYLON F	TYLON F	TYLON F	TYLON F	TYLON F		



◎	◎	◎	◎	◎	◎	◎	◎	◎	1
◎	◎	◎	◎	◎	◎	◎	◎	◎	2
◎	◎	◎	◎	◎	◎	◎	◎	◎	3
◎	◎	◎	◎	◎	◎	◎	◎	◎	4
◎	◎	◎	◎	◎	◎	◎	◎	◎	5
◎	◎	◎	◎	◎	◎	◎	◎	◎	6
◎	◎	◎	◎	◎	◎	◎	◎	◎	7
◎	◎	◎	◎	◎	◎	◎	◎	◎	8
◎	◎	◎	◎	◎	◎	◎	◎	◎	9
◎	◎	◎	◎	◎	◎	◎	◎	◎	10
◎	◎	◎	◎	◎	◎	◎	◎	◎	11
○	○	○	○	○	○	○	○	○	12
○	○	○	○	○	○	○	○	○	13
○	○	○	○	○	○	○	○	○	14
○	○	○	○	○	○	○	○	○	15
○	○	○	○	○	○	○	○	○	16
○	○	○	○	○	○	○	○	○	17
○	○	○	○	○	○	○	○	○	18
○	○	○	○	○	○	○	○	○	19
○	○	○	○	○	○	○	○	○	20
○	○	○	○	○	○	○	○	○	21
○	○	○	○	○	○	○	○	○	22
○	○	○	○	○	○	○	○	○	23
○	○	○	○	○	○	○	○	○	24
○	○	○	○	○	○	○	○	○	25
○	○	○	○	○	○	○	○	○	26
○	○	○	○	○	○	○	○	○	27
○	○	○	○	○	○	○	○	○	28
○	○	○	○	○	○	○	○	○	29
○	○	○	○	○	○	○	○	○	30
									31
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									40
									41



SELECTION GUIDE



MILLING TOOLS

SERIES
FLUTE
HELIX ANGLE
CUTTING EDGE SHAPE
SIZE MIN
SIZE MAX
PAGE
LENGTH
SURFACE TREATMENT

STANDARD CARBIDE(Inch)						
E5060	E5018	E5062	E5251 E5252	E5216	E5069	E5243
4	2	4	2&4	4	5	3
30°	30°	30°	30°	30°	45°	45°
BALL NOSE	BALL NOSE	BALL NOSE	BALL NOSE	CORNER RADIUS	CORNER RADIUS	SQUARE
R1/16	R1/16	R1/16	R7/64	D1/8	D1/4	D1/8
R1/2	R1/2	R1/2	R1/4	D1	D1	D1
C687	C688	C689	C690	C691	C693	C694
LONG LENGTH	EXTRA LONG LENGTH	EXTRA LONG LENGTH	STUB LENGTH DOUBLE	REGULAR LENGTH	REGULAR LENGTH	REGULAR LENGTH
Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated
TIN	TIN	TIN	TIN	TIN	TYLON F	TIN
TICN	TICN	TICN	TICN	TICN		TICN
TYLON F	TYLON F	TYLON F	TYLON F	TYLON F		TYLON F
TYLON E	TYLON E	TYLON E	TYLON E	TYLON E		TYLON E

Please visit [global.yg1.com/mat](http://global.yg1.com/mat) for material search

⊙ : Excellent  
○ : Good

ISO	VDI 3323	Material Description	HB	HRc	E5060	E5018	E5062	E5251 E5252	E5216	E5069	E5243
P	1	Non-alloy steel	125		⊙	⊙	⊙	⊙	⊙	⊙	⊙
	2		190	13	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	3		250	25	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	4		270	28	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	5	300	32	⊙	⊙	⊙	⊙	⊙	⊙	⊙	
	6	180	10	⊙	⊙	⊙	⊙	⊙	⊙	⊙	
	7	275	29	⊙	⊙	⊙	⊙	⊙	⊙	⊙	
	8	300	32	⊙	⊙	⊙	⊙	⊙	⊙	⊙	
	9	350	38	⊙	⊙	⊙	⊙	⊙	⊙	⊙	
	10	High alloyed steel, and tool steel	200	15	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	11	325	35	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
M	12	Stainless steel	200	15					○	○	○
	13		240	23					○	○	○
	14		180	10					○	○	○
K	15	Grey cast iron	180	10	○	○	○	○	○	○	○
	16		260	26	○	○	○	○	○	○	○
	17	Nodular cast iron	160	3	○	○	○	○	○	○	○
	18		250	25	○	○	○	○	○	○	○
	19		130		○	○	○	○	○	○	○
20	Malleable cast iron	230	21	○	○	○	○	○	○	○	
N	21	Aluminum-wrought alloy	60		○	○	○	○	○	○	○
	22		100		○	○	○	○	○	○	○
	23	Aluminum-cast, alloyed	75		○	○	○	○	○	○	○
	24		90		○	○	○	○	○	○	○
	25		130		○	○	○	○	○	○	○
	26	Copper and Copper Alloys (Bronze / Brass)	110						○	○	○
	27		90					○	○	○	○
	28		100					○	○	○	○
	29	Non Metallic Materials: Duroplastic, Fiber Reinforced Plastic, Graphite, CFRP, GFRP, etc.									
30											
S	31	Heat Resistant Super Alloys	200	15						○	○
	32		280	30					○	○	○
	33		250	25					○	○	○
	34		350	38					○	○	○
	35		320	34					○	○	○
	36	Titanium Alloys	400 Rm						○	○	○
	37		1050 Rm					○	○	○	○
H	38	Hardened steel	550	55							
	39		630	60							
	40	Chilled Cast Iron	400	42					○	○	○
	41	Hardened Cast Iron	550	55							

STANDARD CARBIDE (Inch)										STANDARD CARBIDE (Metric)		
E5059	E5246	E5066	E5067	E5068	E5073	E5058	E5056 E5057	E5077	E5078	EH527	EH540	EH882
3	3	5	5	5	5	6	5	3	3	2	4	3
50°	60°	45°	45°	45°	45°	40°	45°	30°	30°	30°	30°	35°
SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	ROUGHING	TAPER	TAPER BALL NOSE	SQUARE	SQUARE	CORNER RADIUS
D1/4	D1/8	D1/8	D1/8	D1/4	D5/16	D3/16	D3/8	D3/32	R.047	D3.5	D3.5	D3.0
D3/4	D1	D1	D1	D1	D1	D3/4	D1	D1/4	R.125	D20.0	D20.0	D20.0
C695	C696	C697	C698	C699	C700	C701	C702	C703	C704	C705	C706	C707
STUB & REGULAR & LONG LENGTH	REGULAR LENGTH	STUB LENGTH	REGULAR LENGTH	MEDIUM & LONG LENGTH	EXTRA LONG LENGTH	REGULAR LENGTH	STUB & REGULAR LENGTH			LONG LENGTH	LONG LENGTH	
Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	TiAIN	TiAIN	TiAIN
TIN	TIN	TIN	TIN	TIN	TIN	TIN	TIN	TIN	TIN			
TICN	TICN	TICN	TICN	TICN	TICN	TICN	TICN	TICN	TICN			
TYLON F	TYLON F	TYLON F	TYLON F	TYLON F	TYLON F	TYLON F	TYLON F	TYLON F	TYLON F			
TYLON E	TYLON E	TYLON E	TYLON E	TYLON E	TYLON E	TYLON E	TYLON E	TYLON E	TYLON E			



⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	1
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	2
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	3
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	4
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	5
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	6
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	7
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	8
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	9
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	10
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	11
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○	○	○	○	○	12
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○	○	○	○	○	13
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○	○	○	○	○	14
○	○	○	○	○	○	○	○	○	○	○	○	○	15
○	○	○	○	○	○	○	○	○	○	○	○	○	16
○	○	○	○	○	○	○	○	○	○	○	○	○	17
○	○	○	○	○	○	○	○	○	○	○	○	○	18
○	○	○	○	○	○	○	○	○	○	○	○	○	19
○	○	○	○	○	○	○	○	○	○	○	○	○	20
								○	○	○	○	○	21
								○	○	○	○	○	22
								○	○	○	○	○	23
								○	○	○	○	○	24
								○	○	○	○	○	25
○	○	○	○	○	○	○	○	○	○	○	○	○	26
○	○	○	○	○	○	○	○	○	○	○	○	○	27
○	○	○	○	○	○	○	○	○	○	○	○	○	28
													29
													30
○	○	○	○	○	○	○	○						31
○	○	○	○	○	○	○	○						32
○	○	○	○	○	○	○	○						33
○	○	○	○	○	○	○	○						34
○	○	○	○	○	○	○	○						35
○	○	○	○	○	○	○	○						36
○	○	○	○	○	○	○	○	○					37
													38
													39
○	○	○	○	○	○	○	○	○	○	○	○	○	40
													41





# SELECTION GUIDE



## MILLING TOOLS

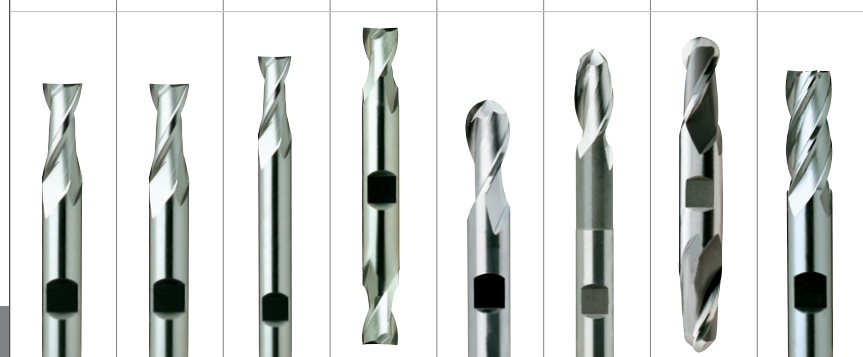
Please visit [global.yg1.com/mat](http://global.yg1.com/mat) for material search

⊙ : Excellent  
○ : Good

### COBALT & HSS (Inch)

SERIES	E2030 E1030	E2080 E1080	E2033 E1033	E2050 E1050	E2110 E1110	E2111 E1111	E2112 E1112	E2031 E1031
FLUTE	2	2	2	2	2	2	2	4
HELIX ANGLE	30°	30°	30°	30°	30°	30°	30°	30°
CUTTING EDGE SHAPE	SQUARE	SQUARE	SQUARE	SQUARE	BALL NOSE	BALL NOSE	BALL NOSE	SQUARE
SIZE MIN	D1/8	D1/4	D1/8	D1/8	R1/16	R1/16	R1/16	D1/8
SIZE MAX	D2	D2	D1-1/4	D1	R1	R1/2	R1/2	D1
PAGE	C771	C773	C774	C775	C777	C778	C779	C780

LENGTH	REGULAR LENGTH	LONG LENGTH	EXTENDED LENGTH	REGULAR LENGTH DOUBLE	REGULAR LENGTH	EXTENDED LENGTH	REGULAR LENGTH DOUBLE	REGULAR LENGTH
SURFACE TREATMENT	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated
	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS



ISO	VDI 3323	Material Description	HB	HRc								
P	1	Non-alloy steel	125		⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	2		190	13	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	3		250	25	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	4		270	28	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	5	300	32	○	○	○	○	○	○	○	○	○
	6	180	10	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	7	275	29	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	8	300	32	○	○	○	○	○	○	○	○	○
	9	350	38	○	○	○	○	○	○	○	○	○
	10	200	15	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
	11	325	35	○	○	○	○	○	○	○	○	○
M	12	Stainless steel	200	15								
	13		240	23								
	14		180	10								
K	15	Grey cast iron	180	10								
	16		260	26								
	17	Nodular cast iron	160	3								
	18		250	25								
	19		130									
20	Malleable cast iron	230	21									
N	21	Aluminum-wrought alloy	60		○	○	○	○	○	○	○	○
	22		100		○	○	○	○	○	○	○	○
	23	Aluminum-cast, alloyed	75		○	○	○	○	○	○	○	○
	24		90		○	○	○	○	○	○	○	○
	25		130		○	○	○	○	○	○	○	○
	26		110		○	○	○	○	○	○	○	○
	27	Copper and Copper Alloys (Bronze / Brass)	90		○	○	○	○	○	○	○	○
	28		100		○	○	○	○	○	○	○	○
	29		Non Metallic Materials (Duroplastic, Fiber Reinforced Plastic, Graphite, CFRP, GFRP, etc.)									
	30											
S	31	Heat Resistant Super Alloys	200	15								
	32		280	30								
	33		250	25								
	34		350	38								
	35		320	34								
	36	Titanium Alloys	400 Rm									
	37		1050 Rm									
H	38	Hardened steel	550	55								
	39		630	60								
	40	Chilled Cast Iron	400	42								
	41		550	55								

### COBALT & HSS (Inch)

E2032 E1032	E2034 E1034	E2035 E1035	E2036 E1036	E2037 E1037	E2051 E1051	E2031 E1031	E2032 E1032	E2020	E2021	E2069	E2039 E1039	E2042 E1042
6	4	6	4	6	4	4	6&8	4	4	4	4	6
30°	30°	30°	30°	30°	30°	30°	30°	30°	30°	30°	30°	30°
SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	BALL NOSE	BALL NOSE	BALL NOSE	SQUARE	SQUARE
D5/8	D1/4	D1-1/8	D1/4	D1-1/4	D1/8	D3/4	D1-1/8	R1/16	R1/8	R1/16	D1/8	D1/2
D2	D1	D2	D1	D2	D1	D1	D2	R1	R1/2	R1/2	D1-1/2	D2
C782	C783		C784		C785	C787		C788	C789	C790	C791	C793
REGULAR LENGTH	LONG LENGTH	LONG LENGTH	EXTRA LONG LENGTH	EXTRA LONG LENGTH	REGULAR LENGTH DOUBLE	REGULAR LENGTH 3/4 SHANK	REGULAR LENGTH 3/4 SHANK	REGULAR LENGTH	LONG LENGTH	REGULAR LENGTH DOUBLE	REGULAR LENGTH CENTER CUTTING	REGULAR LENGTH CENTER CUTTING
Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated
HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8	HSSCo8	HSSCo8	HSSCo8 & HSS	HSSCo8 & HSS

REGULAR LENGTH	LONG LENGTH	LONG LENGTH	EXTRA LONG LENGTH	EXTRA LONG LENGTH	REGULAR LENGTH DOUBLE	REGULAR LENGTH 3/4 SHANK	REGULAR LENGTH 3/4 SHANK	REGULAR LENGTH	LONG LENGTH	REGULAR LENGTH DOUBLE	REGULAR LENGTH CENTER CUTTING	REGULAR LENGTH CENTER CUTTING
Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated
HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8	HSSCo8	HSSCo8	HSSCo8 & HSS	HSSCo8 & HSS



⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	1
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	2
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	3
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	4
○	○	○	○	○	○	○	○	○	○	○	○	○	5
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	6 P
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	7
○	○	○	○	○	○	○	○	○	○	○	○	○	8
○	○	○	○	○	○	○	○	○	○	○	○	○	9
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	10
○	○	○	○	○	○	○	○	○	○	○	○	○	11
													12
													13 M
													14
													15
													16
													17 K
													18
													19
													20
○	○	○	○	○	○	○	○	○	○	○	○	○	21
○	○	○	○	○	○	○	○	○	○	○	○	○	22
○	○	○	○	○	○	○	○	○	○	○	○	○	23
○	○	○	○	○	○	○	○	○	○	○	○	○	24
○	○	○	○	○	○	○	○	○	○	○	○	○	25
○	○	○	○	○	○	○	○	○	○	○	○	○	26 N
○	○	○	○	○	○	○	○	○	○	○	○	○	27
○	○	○	○	○	○	○	○	○	○	○	○	○	28
													29
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# SELECTION GUIDE



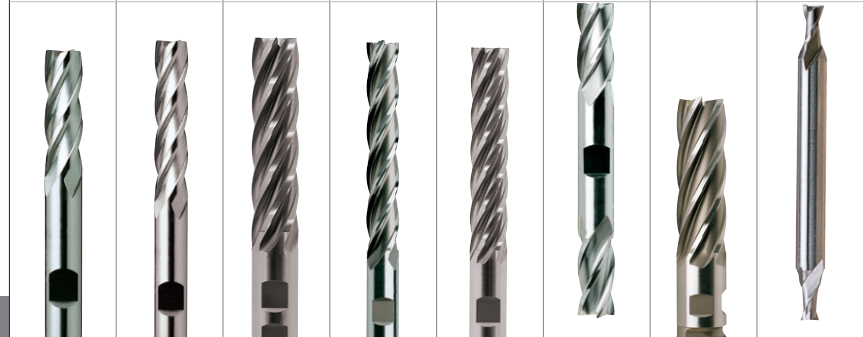
## MILLING TOOLS

Please visit [globalyg1.com/mat](http://globalyg1.com/mat) for material search

⊙ : Excellent  
○ : Good

ISO	VDI 3323	Material Description	HB	HRc	
P	1	Non-alloy steel	125		
	2		190	13	
	3		250	25	
	4		270	28	
	5	300	32		
	6	180	10		
	7	275	29		
	8	300	32		
	9	350	38		
	10	High alloyed steel, and tool steel	200	15	
	11		325	35	
M	12	Stainless steel	200	15	
	13		240	23	
	14		180	10	
K	15	Grey cast iron	180	10	
	16		260	26	
	17	Nodular cast iron	160	3	
	18		250	25	
	19		130		
20	Malleable cast iron	230	21		
N	21	Aluminum-wrought alloy	60		
	22		100		
	23	Aluminum-cast, alloyed	75		
	24		90		
	25		130		
	26		Copper and Copper Alloys (Bronze / Brass)	110	
	27		90		
	28		100		
	29		Non Metallic Materials Duroplastic, Fiber Reinforced Plastic, Graphite, CFRP, GFRP, etc.		
	30				
S	31	Heat Resistant Super Alloys	200	15	
	32		280	30	
	33		250	25	
	34		350	38	
	35		320	34	
	36	Titanium Alloys	400 Rm		
37		1050 Rm			
H	38	Hardened steel	550	55	
	39		630	60	
	40	Chilled Cast Iron	400	42	
	41	Hardened Cast Iron	550	55	

COBALT & HSS (Inch)								
SERIES	E2039 E2042	E2040 E1040	E2162 E1162	E2041 E1041	E2175 E1175	E2053 E1053	E2100 E1100	E2001 E1001
FLUTE	4~8	4	6	4	6	4	6	2
HELIX ANGLE	30°	30°	30°	30°	30°	30°	30°	30°&39°
CUTTING EDGE SHAPE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE
SIZE MIN	D1	D1/4	D1/2	D1/4	D1/2	D1/8	D2	D1/32
SIZE MAX	D2	D1-1/2	D2	D1-1/4	D2	D1	D2	D3/16
PAGE	C794	C795		C796		C797	C799	C800
LENGTH	MEDIUM LENGTH CENTER CUTTING	LONG LENGTH CENTER CUTTING	LONG LENGTH CENTER CUTTING	EXTRA LONG LENGTH CENTER CUTTING	EXTRA LONG LENGTH CENTER CUTTING	REGULAR LENGTH DOUBLE CENTER CUTTING	REGULAR COMBINATION 2 SHANK CENTER CUTTING	STUB LENGTH MINIATURE DOUBLE
SURFACE TREATMENT	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated
	HSSCo8	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS



COBALT & HSS (Inch)												
E2003 E1003	E2005 E1005	E2002 E1002	E2004 E1004	E2006 E1006	E2008 E1008	E2013 E1013	E2015 E1015	E1070	E1071	E1072	E2086	E2085
2	2	4	4	4	2	2	2	2	2	2	4~5	3~5
30°&39°	30°&39°	30°&39°	30°&39°	30°&39°	30°&39°	30°&39°	30°&39°	42°	42°	42°	30°	30°
SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	BALL NOSE	BALL NOSE	BALL NOSE	SQUARE	SQUARE	SQUARE	ROUGHING	ROUGHING
D1/32	D1/16	D1/16	D1/16	D1/16	R1/32	R1/64	R1/32	D1/4	D1/4	D1/4	D1/4	D1/4
D3/16	D3/16	D3/16	D3/16	D3/16	R3/32	R3/32	R3/32	D2	D2	D1-1/2	D1	D1
C801	C802	C803	C804	C805	C806	C807	C808	C809	C810		C811	C812
REGULAR LENGTH MINIATURE DOUBLE	LONG LENGTH MINIATURE DOUBLE	STUB LENGTH MINIATURE DOUBLE	REGULAR LENGTH MINIATURE DOUBLE	LONG LENGTH MINIATURE DOUBLE	STUB LENGTH MINIATURE DOUBLE	REGULAR LENGTH MINIATURE DOUBLE	LONG LENGTH MINIATURE DOUBLE	REGULAR & MEDIUM LENGTH ALUMINUM	LONG LENGTH ALUMINUM	EXTRA LONG LENGTH ALUMINUM	STUB LENGTH FINE PITCH CENTER CUTTING	REGULAR LENGTH FINE PITCH CENTER CUTTING
Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated
HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS	HSSCo8 & HSS



⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○	○	○	⊙	⊙	1
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○	○	○	⊙	⊙	2
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○	○	○	⊙	⊙	3
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○	○	○	⊙	⊙	4
○	○	○	○	○	○	○	○	○	○	○	○	○	5
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○	○	○	⊙	⊙	6 P
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○	○	○	⊙	⊙	7
○	○	○	○	○	○	○	○	○	○	○	○	○	8
○	○	○	○	○	○	○	○	○	○	○	○	○	9
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○	○	○	⊙	⊙	10
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													18
													19
													20
○	○	○	○	○	○	○	○	⊙	⊙	⊙	○	○	21
○	○	○	○	○	○	○	○	⊙	⊙	⊙	○	○	22
○	○	○	○	○	○	○	○	⊙	⊙	⊙	○	○	23
○	○	○	○	○	○	○	○	⊙	⊙	⊙	○	○	24
○	○	○	○	○	○	○	○	⊙	⊙	⊙	○	○	25
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○	○	○	○	○	○	○	○	○	○	○	○	○	27
○	○	○	○	○	○	○	○	○	○	○	○	○	28
													29
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													31
													32
													33
													34 S
													35
													36
													37
													38
													39 H
													40
													41



SELECTION GUIDE



MILLING TOOLS



Please visit globalyg1.com/mat for material search

⊙ : Excellent ○ : Good

Table with columns: ISO, VDI 3323, Material Description, HB, HRc. Rows include P (Non-alloy steel, Low alloy steel, High alloyed steel), M (Stainless steel), K (Grey cast iron, Nodular cast iron, Malleable cast iron), N (Aluminum-wrought alloy, Aluminum-cast alloyed, Copper and Copper Alloys), S (Heat Resistant Super Alloys, Titanium Alloys), H (Hardened steel, Chilled Cast Iron, Hardened Cast Iron).

COBALT & HSS (Inch) table with columns: SERIES, FLUTE, HELIX ANGLE, CUTTING EDGE SHAPE, SIZE MIN, SIZE MAX, PAGE, LENGTH, SURFACE TREATMENT. Rows list series E2079 through E2195 with corresponding specifications and images.

HSS

CBN END MILLS

i-Xmill END MILLS

i-SMART MODULAR END MILLS

X5070 END MILLS

4G MILL END MILLS

X-POWER PRO END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

V7 PLUS A END MILLS

V7 MILL INOX

ALU-POWER HPC END MILLS

ALU-POWER END MILLS

D-POWER GRAPHITE END MILLS

STANDARD CARBIDE

ONLY ONE COATED PM60 END MILLS

SINE-POWER

TANK-POWER END MILLS

STANDARD COBALT & HSS

TECHNICAL DATA

COBALT & HSS (Inch) table with columns: E2197, E2193 E2125, E2248, E2191, E2226 E2192, E2163 E1163, E2120 E2121, E2160, E2161, E2237 E1237, E2482 E1482, E2483 E1483. Rows list series with specifications and images.





Global Cutting Tool Leader **YG-1**



**MILLING**



Being the best through innovation

# CBN (Cubic Boron Nitride) END MILLS

- Cubic Boron Nitride, Machining High Hardened Steels up to HRC70,  
Mirror Finish

SELECTION GUIDE



CBN END MILLS

- Cubic Boron Nitride, Machining High Hardened Steels up to HRC70, Mirror Finish



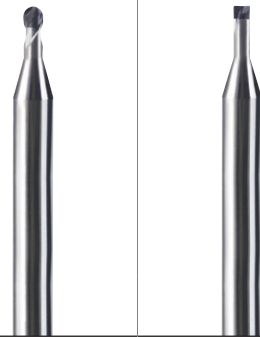
Please visit [globalyg1.com/mat](http://globalyg1.com/mat) for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : p. C47

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRC	
P	1	Non-alloy steel	About 0.15% C Annealed	125		
	2		About 0.45% C Annealed	190	13	
	3		About 0.45% C Quenched & Tempered	250	25	
	4		About 0.75% C Annealed	270	28	
	5		About 0.75% C Quenched & Tempered	300	32	
	6	Low alloy steel	Annealed	180	10	
	7		Quenched & Tempered	275	29	
	8		Quenched & Tempered	300	32	
	9		Quenched & Tempered	350	38	
	10		High alloyed steel, and tool steel	Annealed	200	15
	11			Quenched & Tempered	325	35
M	12	Stainless steel	Ferritic / Martensitic Annealed	200	15	
	13		Martensitic Quenched & Tempered	240	23	
	14	Austenitic	180	10		
K	15	Grey cast iron	Pearlitic / ferritic	180	10	
	16		Pearlitic (Martensitic)	260	26	
	17	Nodular cast iron	Ferritic	160	3	
	18		Pearlitic	250	25	
	19	Malleable cast iron	Ferritic	130		
	20		Pearlitic	230	21	
N	21	Aluminum-wrought alloy	Not Curable	60		
	22		Curable Hardened	100		
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable	75		
	24		≤ 12% Si, Curable Hardened	90		
	25		> 12% Si, Not Curable	130		
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%	110		
	27		CuZn, CuSnZn (Brass)	90		
	28		CuSn, lead-free copper and electrolytic copper	100		
	29		Non Metallic Materials			
	30	Rubber, Wood, etc.				
S	31	Heat Resistant Super Alloys	Fe Based Annealed	200	15	
	32		Cured	280	30	
	33		Annealed	250	25	
	34		Cured	350	38	
	35	Titanium Alloys	Pure Titanium	400 Rm		
	36		Alpha + Beta Alloys	Hardened	1050 Rm	
	37					
H	38	Hardened steel	Hardened	550	55	
	39		Hardened	630	60	
	40	Chilled Cast Iron	Cast	400	42	
	41	Hardened Cast Iron	Hardened	550	55	

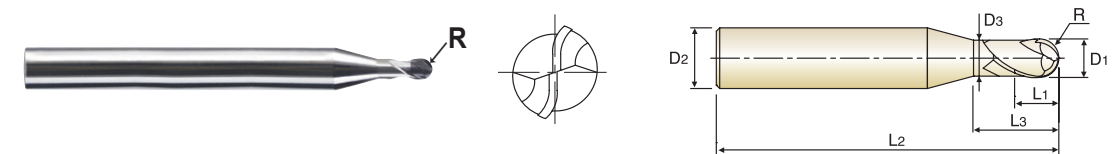
SERIES	ESB94	ESD02
FLUTE	2	2
HELIX ANGLE	30°	0°
CUTTING EDGE SHAPE	BALL NOSE	CORNER RADIUS
SIZE MIN	R0.2	D0.5
SIZE MAX	R1.5	D2.0
PAGE	C45	C46
	Uncoated	Uncoated



PLAIN SHANK ESB94 SERIES

CBN, 2 FLUTE BALL NOSE

- ▶ Higher accuracy, better finishes, longer tool life.
- ▶ Special geometry improves tool rigidity at high Speed.
- ▶ Tighter radius tolerance (±0.005mm) assures higher accuracy.



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					
		D1						
ESB94004012	R0.2	0.4	.0157	4	0.3	1.2	50	0.37
ESB94005015	R0.25	0.5	.0197	4	0.4	1.5	50	0.46
ESB94006015	R0.3	0.6	.0236	4	0.5	1.5	50	0.56
ESB94008020	R0.4	0.8	.0315	4	0.6	2	50	0.76
ESB94010025	R0.5	1.0	.0394	4	0.6	2.5	50	0.95
ESB94010040	R0.5	1.0	.0394	4	0.6	4	50	0.95
ESB94010060	R0.5	1.0	.0394	4	0.6	6	50	0.95
ESB94012030	R0.6	1.2	.0472	4	0.8	3	50	1.15
ESB94015030	R0.75	1.5	.0591	4	0.95	3	50	1.45
ESB94015040	R0.75	1.5	.0591	4	0.95	4	50	1.45
ESB94015060	R0.75	1.5	.0591	4	0.95	6	50	1.45
ESB94020050	R1.0	2.0	.0787	4	1.2	5	50	1.95
ESB94020060	R1.0	2.0	.0787	4	1.2	6	50	1.95
ESB94030060	R1.5	3.0	.1181	4	1.8	6	50	2.85

Radius Tolerance(mm)	Shank Dia. Tolerance
±0.005	h5

◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend																					

ISO	N				S						H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		◎	◎		◎

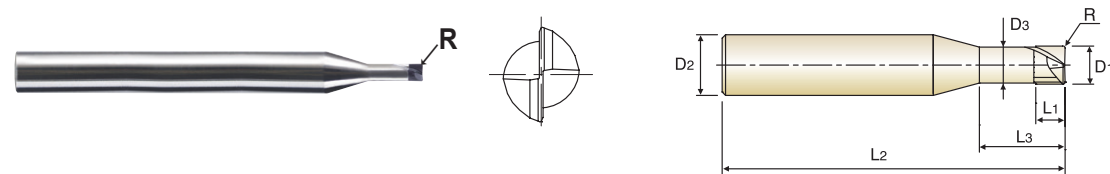




PLAIN SHANK ESD02 SERIES

### 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.



p.C47

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 D1	Inch					
ESD02005052	R0.05	0.5	.0197	4	0.3	2	50	0.46
ESD02005053	R0.05	0.5	.0197	4	0.3	3	50	0.46
ESD02010053	R0.05	1.0	.0394	4	0.7	3	50	0.95
ESD02010055	R0.05	1.0	.0394	4	0.7	5	50	0.95
ESD02010103	R0.1	1.0	.0394	4	0.7	3	50	0.95
ESD02010105	R0.1	1.0	.0394	4	0.7	5	50	0.95
ESD02015105	R0.1	1.5	.0591	4	1.0	5	50	1.45
ESD02015108	R0.1	1.5	.0591	4	1.0	8	50	1.45
ESD02015205	R0.2	1.5	.0591	4	1.0	5	50	1.45
ESD02015208	R0.2	1.5	.0591	4	1.0	8	50	1.45
ESD02020106	R0.1	2.0	.0787	4	1.2	6	50	1.95
ESD02020100	R0.1	2.0	.0787	4	1.2	10	50	1.95
ESD02020206	R0.2	2.0	.0787	4	1.2	6	50	1.95
ESD02020200	R0.2	2.0	.0787	4	1.2	10	50	1.95

Corner Radius Tolerance(mm)	Shank Dia. Tolerance
$\pm 0.005$	h5

◎ : Excellent ○ : Good

ISO	P										M					K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel					Stainless steel		Grey cast iron		Nodular cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323																					
HRC	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend																					

ISO	N										S					H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
VDI 3323																				
HRC											15	30	25	38	34	55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400
Recommend																◎	◎	◎	◎	◎

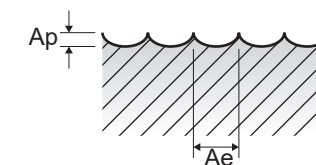


RECOMMENDED CUTTING CONDITIONS

### ESB94 SERIES 2 FLUTE BALL NOSE

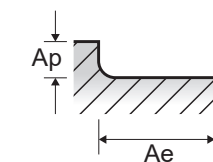
SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)									
						0.4	0.5	0.6	0.8	1.0	1.2	1.5	2.0	3.0	
H	38.2-39.1	Non-alloy steel	$\emptyset 0.4 \sim \emptyset 0.8 = .0002"$	$\emptyset 0.4 \sim \emptyset 0.8 = .0002"$	SFM (Vc)	205	260	310	410	515	620	775	825	820	
			$\emptyset 1.0 \sim \emptyset 3.0 = .0004"$	$\emptyset 1.0 \sim \emptyset 3.0 = .0004"$	IPT (fz)	.0005	.0006	.0008	.0008	.0012	.0012	.0012	.0016	.0016	
					RPM	50000	50000	50000	50000	50000	50000	50000	40000	26500	
	39.2-39.3		$\emptyset 0.4 \sim \emptyset 0.8 = .0002"$	$\emptyset 0.4 \sim \emptyset 0.8 = .0002"$	SFM (Vc)	205	260	310	410	515	620	775	660	665	
			$\emptyset 1.0 \sim \emptyset 3.0 = .0004"$	$\emptyset 1.0 \sim \emptyset 3.0 = .0004"$	IPT (fz)	.0005	.0006	.0008	.0008	.0012	.0012	.0012	.0015	.0016	
					RPM	50000	50000	50000	50000	50000	50000	50000	32000	21500	
41	High alloyed steel, and tool steel	$\emptyset 0.4 \sim \emptyset 0.8 = .0002"$	$\emptyset 0.4 \sim \emptyset 0.8 = .0002"$	SFM (Vc)	205	260	310	410	515	620	775	825	820		
		$\emptyset 1.0 \sim \emptyset 3.0 = .0004"$	$\emptyset 1.0 \sim \emptyset 3.0 = .0004"$	IPT (fz)	.0005	.0006	.0008	.0008	.0012	.0012	.0012	.0016	.0016		
				RPM	50000	50000	50000	50000	50000	50000	50000	40000	26500		
			IPM (FEED)	47	59	79	79	118	118	118	126	83			
			SFM (Vc)	205	260	310	410	515	620	775	825	820			
			IPT (fz)	.0005	.0006	.0008	.0008	.0012	.0012	.0012	.0016	.0016			
		RPM	50000	50000	50000	50000	50000	50000	50000	40000	26500				
		IPM (FEED)	47	59	79	79	118	118	118	126	83				



### ESD02 SERIES 2FLUTE CORNER RADIUS

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)			
						0.5	1.0	1.5	2.0
H	38.2-39.1	Hardened steel	$\emptyset 0.5 = .0039"$	$\emptyset 0.5 = .0004"$	SFM (Vc)	260	445	465	455
			$\emptyset 1.0 = .0079"$	$\emptyset 1.0 = .0004"$	IPT (fz)	.0003	.0005	.0007	.0008
			$\emptyset 1.5 = .0158"$	$\emptyset 1.5 = .0008"$	RPM	50000	43000	30000	22000
	39.2-39.3		$\emptyset 2.0 = .0236"$	$\emptyset 2.0 = .0012"$	IPM (FEED)	28	39	39	35
			$\emptyset 0.5 = .0024"$	$\emptyset 0.5 = .0020"$	SFM (Vc)	260	310	295	290
			$\emptyset 1.0 = .0039"$	$\emptyset 1.0 = .0039"$	IPT (fz)	.0002	.0005	.0007	.0011
41	Hardened Cast Iron	$\emptyset 1.5 = .0079"$	$\emptyset 1.5 = .0079"$	RPM	50000	30000	19000	14000	
		$\emptyset 2.0 = .0118"$	$\emptyset 2.0 = .0118"$	IPM (FEED)	22	28	28	32	
		$\emptyset 0.5 = .0039"$	$\emptyset 0.5 = .0004"$	SFM (Vc)	205	260	310	410	
$\emptyset 1.0 = .0079"$		$\emptyset 1.0 = .0004"$	IPT (fz)	.0005	.0006	.0008	.0008		
$\emptyset 1.5 = .0158"$		$\emptyset 1.5 = .0008"$	RPM	50000	50000	50000	50000		
$\emptyset 2.0 = .0236"$		$\emptyset 2.0 = .0012"$	IPM (FEED)	47	59	79	79		







Being the best through innovation



Global Cutting Tool Leader **YG-1**



**CARBIDE INSERT & HOLDER**

**MILLING**

***i-Xmill* END MILLS**

- Various Applications Type of Inserts Available for General Steels, Pre-Hardened Steels, High Hardened Steels, Stainless Steels and Graphite

SELECTION GUIDE

HSS  
CBN END MILLS  
i-Xmill END MILLS  
i-SMART MODULAR END MILLS  
X5070 END MILLS  
4G MILL END MILLS  
X-POWER PRO END MILLS  
TitaNox-POWER END MILLS  
JET-POWER END MILLS  
V7 PLUS A END MILLS  
V7 MILL INOX  
ALU-POWER HPC END MILLS  
ALU-POWER END MILLS  
D-POWER GRAPHITE END MILLS  
STANDARD CARBIDE  
ONLY ONE COATED PM60 END MILLS  
SINE-POWER  
TANK-POWER END MILLS  
STANDARD COBALT & HSS  
TECHNICAL DATA

SERIES  
FLUTE  
HELIX ANGLE  
CUTTING EDGE SHAPE  
SIZE MIN  
SIZE MAX  
PAGE

Inch			
SERIES	XB1A	XB2C	XB1D
FLUTE	2	2	2
HELIX ANGLE	-	-	-
CUTTING EDGE SHAPE	BALL NOSE	BALL NOSE	BALL NOSE
SIZE MIN	R5/32	R5/32	R5/32
SIZE MAX	R5/8	R5/8	R5/8
PAGE	C52		
	for GENERAL PURPOSE	for HARDENED STEEL	for GRAPHITE
	AlTiN	Z-Coating	Diamond

CARBIDE INSERT & HOLDER **i-Xmill** END MILLS

Available for General Steels, Pre-Hardened Steels, High Hardened Steels, Stainless Steel and Graphite



ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc				
P	1	Non-alloy steel	About 0.15% C Annealed	125		⊙			
	2		About 0.45% C Annealed	190	13	⊙			
	3		About 0.45% C Quenched & Tempered	250	25	⊙			
	4		About 0.75% C Annealed	270	28	⊙			
	5		About 0.75% C Quenched & Tempered	300	32	⊙			
	6	Low alloy steel	Annealed	180	10	⊙			
	7		Quenched & Tempered	275	29	⊙			
	8		Quenched & Tempered	300	32	⊙			
	9		Quenched & Tempered	350	38	⊙	⊙		
	10		High alloyed steel, and tool steel	Annealed	200	15		○	
	11	Quenched & Tempered		325	35		○		
M	12	Stainless steel	Ferritic / Martensitic Annealed	200	15				
	13		Martensitic Quenched & Tempered	240	23				
	14		Austenitic	180	10				
K	15	Grey cast iron	Pearlitic / ferritic	180	10		⊙		
	16		Pearlitic (Martensitic)	260	26		⊙		
	17	Nodular cast iron	Ferritic	160	3		⊙		
	18		Pearlitic	250	25		⊙		
	19		Malleable cast iron	Ferritic	130			⊙	
	20			Pearlitic	230	21		⊙	
N	21	Aluminum-wrought alloy	Not Curable	60				○	
	22		Curable Hardened	100				○	
	23		≤ 12% Si, Not Curable	75				○	
	24	Aluminum-cast, alloyed	≤ 12% Si, Curable Hardened	90				○	
	25		> 12% Si, Not Curable	130				○	
	26		Copper and Copper Alloys (Bronze / Brass)	CuZn, CuSnZn (Brass)	90				
	27		Copper Alloys (Bronze / Brass)	CuSn, lead-free copper and electrolytic copper	100				
	28	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic						⊙
	29.2		Rubber, Wood, etc.						
	30								
S	31	Heat Resistant Super Alloys	Fe Based Annealed	200	15				
	32		Cured	280	30				
	33		Annealed	250	25				
	34		Ni or Co Based Cured	350	38				
	35		Cast	320	34				
	36		Titanium Alloys	Pure Titanium	400 Rm				
37	Alpha + Beta Alloys Hardened	1050 Rm							
H	38	Hardened steel	Hardened	550	55				
	39		Hardened	630	60				
	40	Hardened Cast Iron	Cast	400	42				
	41		Hardened	550	55				

Inch			Metric						Inch & Metric		
XR1A	XR2A	XR1D	XB1N	XB2N	XBAD	XRAA	XRBA	XRAD	ZBS ZBT	ZBC	ZRS ZRT
2	2	2	2	2	2	2	2	2	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
CORNER RADIUS D5/16	CORNER RADIUS D5/16	CORNER RADIUS D5/16	BALL NOSE R4.0	BALL NOSE R4.0	BALL NOSE R4.0	CORNER RADIUS D8.0	CORNER RADIUS D8.0	CORNER RADIUS D8.0	BALL NOSE	BALL NOSE	CORNER RADIUS
D1-1/4	D1-1/4	D1-1/4	R16.0	R16.0	R16.0	D32.0	D32.0	D32.0	-	-	-
C55			C57			C60-C61			in C53 / mm C58	in C54 / mm C59	in C56 / mm C62
for GENERAL PURPOSE	for HARDENED STEEL	for GRAPHITE	for GENERAL PURPOSE	for HARDENED STEEL	for GRAPHITE	for GENERAL PURPOSE	for HARDENED STEEL	for GRAPHITE	STRAIGHT & TAPER NECK	STRAIGHT NECK	STRAIGHT & TAPER NECK
AlTiN	Z-Coating	Diamond	AlTiN	Z-Coating	Diamond	AlTiN	Z-Coating	Diamond	Steel	Carbide	Steel



⊙			⊙			⊙						1
⊙			⊙			⊙						2
⊙			⊙			⊙						3
⊙			⊙			⊙						4
⊙			⊙			⊙						5
⊙			⊙			⊙						6
⊙			⊙			⊙						7
⊙			⊙			⊙						8
	⊙			⊙			⊙					9
	○			○			○					10
	○			○			○					11
⊙			⊙			⊙						12
⊙			⊙			⊙						13
⊙			⊙			⊙						14
	⊙			⊙			⊙					15
	⊙			⊙			⊙					16
	⊙			⊙			⊙					17
	⊙			⊙			⊙					18
	⊙			⊙			⊙					19
	⊙			⊙			⊙					20
		○			○			○				21
		○			○			○				22
		○			○			○				23
		○			○			○				24
		○			○			○				25
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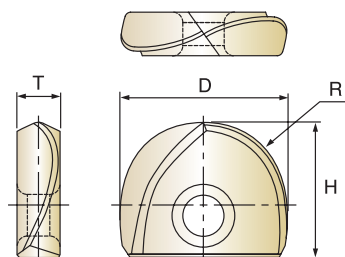
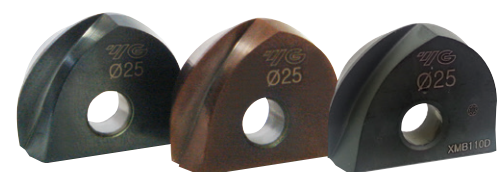
HSS  
CBN END MILLS  
i-Xmill END MILLS  
i-SMART MODULAR END MILLS  
X5070 END MILLS  
4G MILL END MILLS  
X-POWER PRO END MILLS  
TitaNox-POWER END MILLS  
JET-POWER END MILLS  
V7 PLUS A END MILLS  
V7 MILL INOX  
ALU-POWER HPC END MILLS  
ALU-POWER END MILLS  
D-POWER GRAPHITE END MILLS  
STANDARD CARBIDE  
ONLY ONE COATED PM60 END MILLS  
SINE-POWER  
TANK-POWER END MILLS  
STANDARD COBALT & HSS  
TECHNICAL DATA





### i-Xmill BALL INSERTS

- ▶ Exchangeable End Mill for economic use
- ▶ Three Types of Inserts are available
  - For General Purpose (~HRc50)
  - For Hardened Material (HRc40~HRc65)
  - For Graphite
- ▶ Special Geometry and extremely abrasive resistant Coating for Excellent Performance



cutting conditions : p.C64

Unit :Inch

EDP No.			Radius of Ball Nose	Mill Diameter	Height	Thickness
For General Material	For Hardened Material	For Graphite				
			R	D	H	T
XB1A020	XB2C020	XB1D020	R5/32	5/16	5/16	.094
XB1A024	XB2C024	XB1D024	R3/16	3/8	3/8	.106
XB1A032	XB2C032	XB1D032	R1/4	1/2	7/16	.126
XB1A040	XB2C040	XB1D040	R5/16	5/8	1/2	.165
XB1A048	XB2C048	XB1D048	R3/8	3/4	5/8	.205
XB1A100	XB2C100	XB1D100	R1/2	1	3/4	.244
XB1A116	XB2C116	XB1D116	R5/8	1-1/4	31/32	.283

- The ball radius tolerance is ±.0004" and the set-up accuracy is ±.0008"

◎ : Excellent ○ : Good

ISO Material Description	P										M				K																										
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel				Grey cast iron		Nodular cast iron		Malleable cast iron																		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230																					
XB1A	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
XB2C																																									
XB1D																																									

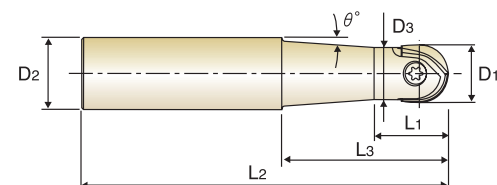
  

ISO Material Description	N										S										H															
	Aluminum-wrought alloy					Aluminum-cast, alloyed					Copper and Copper Alloys (Bronze / Brass)					Non Metallic Materials					Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
HRc	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550															
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550															
XB1A																																				
XB2C																																				
XB1D	○	○	○	○						◎																										



### i-Xmill BALL HOLDERS - STEEL

- ▶ Premium alloy steel with excellent strength.
- ▶ Precise shank, Tolerance (h6).
- ▶ Nickel plated, to prevent corrosion and improve lubricity.

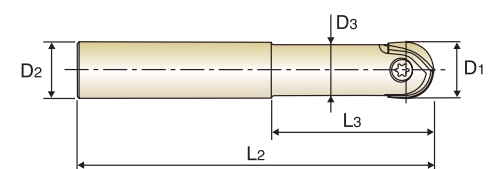


#### Taper neck Type

Unit :Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Interference Angle	Length Type	Wrench No.	Screw No.
	D1	D2	L1	L3	L2	D3	θ°			
ZBT1020	5/16	1/2	1/2	1-5/8	3-5/8	9/32	4° 33'	Short	TWF07	TX0807
ZBT2020			1	2-1/2	4-3/8		3° 25'	Regular		
ZBT1024	3/8	1/2	5/8	1-1/2	3-9/16	11/32	3° 49'	Short	TWF08	TX1008
ZBT2024			1-1/4	2-5/16	4-3/8		3° 08'	Regular		
ZBT1032	1/2	5/8	11/16	2-3/16	4-3/8	7/16	2° 49'	Short	TWF10	TX1210
ZBT1040	5/8	3/4	13/16	2-9/16	5	9/16	2° 25'	Short	TWF15	TX1615
ZBT1048	3/4	1	1	3-1/8	6	43/64	3° 53'	Short	● TWB20	TX2020
ZBT1100	1	1-1/4	1-1/4	3-9/16	7	29/32	3° 45'	Short	● TWB25	TX2525
ZBT1116	1-1/4	1-1/4	1-9/16	4-3/8	8	1-1/16	1° 30'	Short	● TWB30	TX3030

- \* ● Required to use T-HANDLE (TWH600)



#### 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		

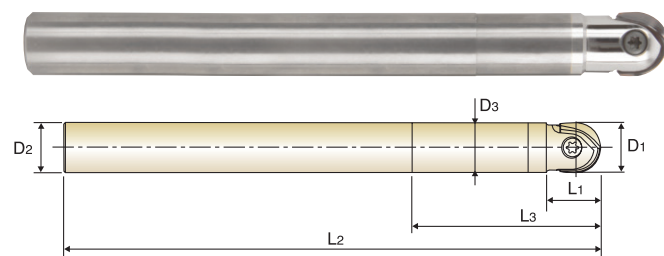
- \* ● Required to use T-HANDLE (TWH600)



ZBC SERIES

**i-Xmill BALL HOLDERS - CARBIDE**

- ▶ Equal tool rigidity like solid carbide end mill that makes the stable and high finishing machining with less vibration.
- ▶ The high finishing machining for the deeper part of mold.
- ▶ The tool's life of carbide ball holders is longer than steel holder.
- ▶ Shrink Fit Holding system can be applied.
- ▶ Upon request, the worn holder is able to be regenerated.



Unit :Inch

EDP No.	Mill Diameter	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				4	9-7/8				
ZBCB100	1	1	1-3/16	4-3/4	9-7/8	63/64	Long	TWB25	TX2525
ZBCB116	1-1/4	1-1/4	1-9/16	5-15/16	11-7/8	1-15/64	Long	TWB30	TX3030

\* ● Required to use T-HANDLE (TWH600)

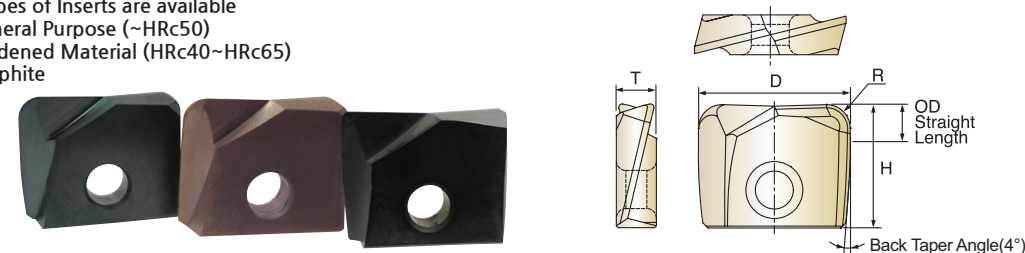


XR1A SERIES  
XR2A SERIES

XR1D SERIES

**i-Xmill CORNER RADIUS INSERTS**

- ▶ The optimum geometry of the tool to achieve the better reliability and less vibration and cutting load.
- ▶ Interchangeability with i-Xmill ball holder, but the precise cutting is possible with i-Xmill corner radius holder due to higher stability and strength of tool.
- ▶ The various and wide cutting range makes it possible to machine over the roughing and finishing.
- ▶ Special coating makes high hardness with high thermal stability against oxidation.
- ▶ Three Types of Inserts are available
  - For General Purpose (~HRc50)
  - For Hardened Material (HRc40~HRc65)
  - For Graphite



cutting conditions : p.C65

Unit :Inch

EDP No.			Corner Radius	Mill Diameter	Height	Thickness	OD Straight Length
For General Material	For Hardened Material	For Graphite					
			R	D	H	T	
XR1A020 01	XR2A020 01	XR1D020 01	R1/64	5/16	5/16	.094	.079
XR1A020 02	XR2A020 02	XR1D020 02	R1/32				
XR1A024 01	XR2A024 01	XR1D024 01	R1/64				
XR1A024 02	XR2A024 02	XR1D024 02	R1/32	3/8	3/8	.106	.118
XR1A024 04	XR2A024 04	XR1D024 04	R1/16				
XR1A032 01	XR2A032 01	XR1D032 01	R1/64	1/2	7/16	.126	.118
XR1A032 02	XR2A032 02	XR1D032 02	R1/32				
XR1A032 04	XR2A032 04	XR1D032 04	R1/16				
XR1A040 01	XR2A040 01	XR1D040 01	R1/64	5/8	1/2	.165	.157
XR1A040 02	XR2A040 02	XR1D040 02	R1/32				
XR1A040 04	XR2A040 04	XR1D040 04	R1/16				
XR1A040 08	XR2A040 08	XR1D040 08	R1/8	3/4	5/8	.205	.157
XR1A048 01	XR2A048 01	XR1D048 01	R1/64				
XR1A048 02	XR2A048 02	XR1D048 02	R1/32				
XR1A048 04	XR2A048 04	XR1D048 04	R1/16	1	3/4	.244	.157
XR1A048 08	XR2A048 08	XR1D048 08	R1/8				
XR1A100 01	XR2A100 01	XR1D100 01	R1/64				
XR1A100 02	XR2A100 02	XR1D100 02	R1/32	1-1/4	29/32	.283	.157
XR1A100 04	XR2A100 04	XR1D100 04	R1/16				
XR1A100 08	XR2A100 08	XR1D100 08	R1/8				
XR1A116 01	XR2A116 01	XR1D116 01	R1/64	1-1/4	29/32	.283	.157
XR1A116 02	XR2A116 02	XR1D116 02	R1/32				
XR1A116 04	XR2A116 04	XR1D116 04	R1/16				
XR1A116 08	XR2A116 08	XR1D116 08	R1/8				

- The other corner radius values are available on request.
- The corner radius tolerance is ±.0006" and the set-up accuracy is ±.0008"

◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron		
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	13	25	28	32	32	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HRc	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
XR1A	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	
XR2A										◎	◎				◎	◎	◎	◎	◎	◎	
XR1D																					
ISO	N									S					H						
Material Description	Aluminum-wrought alloy			Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	15	30	25	38	34	15	30	25	38	34	200	280	250	350	320	400Rm	1050Rm	550	630	400	550
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550
XR1A																					
XR2A																		◎			
XR1D	◎	◎	◎	◎						◎											



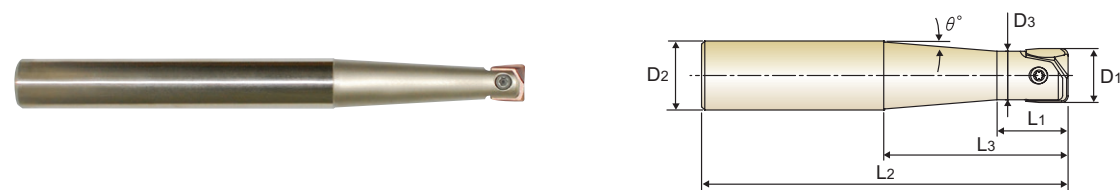
HSS



ZRT SERIES  
ZRS SERIES

**i-Xmill CORNER RADIUS HOLDERS - STEEL**

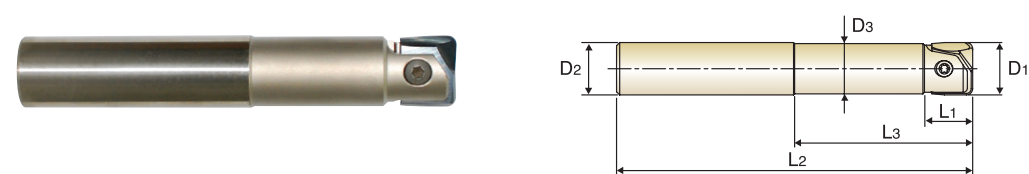
- ▶ Premium alloy steel with excellent strength.
- ▶ Precise shank, Tolerance (h6).
- ▶ Nickel plated, to prevent corrosion and improve lubricity.



**Taper neck Type**

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Interference Angle	Length Type	Wrench No.	Screw No.
	D1	D2	L1	L3	L2	D3	θ°			
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	5/8	5/8	5/8	2	5-1/8	19/32	Regular	TWF15	TX1615
ZRS2040				2-9/16	6-1/2		Intermediate		
ZRS1048	3/4	3/4	23/32	2-3/8	5-1/2	23/32	Regular	TWB20	TX2020
ZRS2048				3-1/8	7-1/8		Intermediate		
ZRS1100	1	1	29/32	2-3/4	5-15/16	31/32	Regular	TWB25	TX2525
ZRS2100				3-9/16	8		Intermediate		
ZRS1116	1-1/4	1-1/4	1-1/8	3-1/8	6-5/16	1-7/32	Regular	TWB30	TX3030
ZRS2116				4	8-11/16		Intermediate		

\* ● Required to use T-HANDLE (TWH600)



XB1N SERIES  
XB2N SERIES  
XBAD SERIES

**i-Xmill BALL INSERTS**

- ▶ Indexable Ball End Mill for economic use
- ▶ Three Types of Inserts are available
  - For General Purpose (~HRC50)
  - For Hardened Material (HRC40~HRC65)
  - For Graphite
- ▶ Special Geometry and extremely abrasive resistant Coating for Excellent Performance



cutting conditions : p.C64

Unit : mm

EDP No.			Radius of Ball Nose	Mill Diameter	Height	Thickness
For General Material	For Hardened Material	For Graphite				
			R	D	H	T
XB1N080	XB2N080	XBAD080	R4.0	8.0	8	2.4
XB1N100	XB2N100	XBAD100	R5.0	10.0	9.5	2.7
XB1N120	XB2N120	XBAD120	R6.0	12.0	11	3.2
XB1N160	XB2N160	XBAD160	R8.0	16.0	13	4.2
XB1N200	XB2N200	XBAD200	R10.0	20.0	16	5.2
XB1N250	XB2N250	XBAD250	R12.5	25.0	19.5	6.2
XB1N300	XB2N300	XBAD300	R15.0	30.0	23.5	7.2
XB1N320	XB2N320	XBAD320	R16.0	32.0	24.5	7.2

• The ball radius tolerance is ±0.01mm and the set-up accuracy is ±0.02mm

◎ : Excellent ○ : Good

ISO Material Description	P										M			K							
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel		Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRC		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25	42	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
XB1N	◎	◎	◎	◎	◎	◎	◎	◎									◎	◎	◎	◎	
XB2N										◎	○										
XBAD																					
ISO Material Description	N									S					H						
	Aluminum-wrought alloy			Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRC											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550
XB1N																					
XB2N																		○			
XBAD																		◎	◎	○	◎

HSS



ZBT SERIES

ZBS SERIES

**i-Xmill BALL HOLDERS - STEEL**

- ▶ Premium alloy steel with excellent strength.
- ▶ Precise shank, Tolerance (h6).
- ▶ Nickel plated, to prevent corrosion and improve lubricity.



**Taper neck Type**

Unit : mm

EDP No.	Mill Diameter	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	40	110	195	27	1° 38'	Short	●TWB30	TX3030
ZBT3002	32.0									

\* ● Required to use T-HANDLE (TWH600)



**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	0.5	Short	TWF10	TX1210
ZBS1202			55	110		Regular		
ZBS1601	16.0	16	35	95	14.5	Short	TWF15	TX1615
ZBS1602			65	125		Regular		
ZBS2001	20.0	20	40	110	18	Short	●TWB20	TX2020
ZBS2002			75	145		Regular		
ZBS2501	25.0	25	45	125	22.5	Short	●TWB25	TX2525
ZBS2502			90	170		Regular		
ZBS3001	30.0	32	55	140	27	Short	●TWB30	TX3030
ZBS3002	32.0		110	195		Regular		

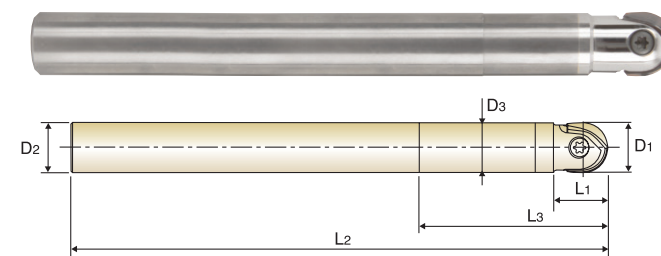
\* ● Required to use T-HANDLE (TWH600)



ZBC SERIES

**i-Xmill BALL HOLDERS - CARBIDE**

- ▶ Equal tool rigidity like solid carbide end mill that makes the stable and high finishing machining with less vibration.
- ▶ The high finishing machining for the deeper part of mold.
- ▶ The tool's life of carbide ball holders is longer than steel holder.
- ▶ Shrink Fit Holding system can be applied.
- ▶ Upon request, the worn holder is able to be regenerated.



Unit : 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	12	130	7.7	Long	TWF07	TX0807
ZBC1100	10.0	10	15	15	140	9.7	Long	TWF08	TX1008
ZBC1120	12.0	12	17	17	150	11.7	Long	TWF10	TX1210
ZBC1160	16.0	16	20	20	200	15.7	Long	TWF15	TX1615
ZBC1200	20.0	20	25	25	200	19.7	Long	●TWB20	TX2020
ZBC1250	25.0	25	30	30	200	24.7	Long	●TWB25	TX2525
ZBC1320	30.0	32	40	40	250	29.7	Long	●TWB30	TX3030
ZBC1320	32.0								

\* ● Required to use T-HANDLE (TWH600)

HSS

HSS

CBN END MILLS

CBN END MILLS

i-Xmill END MILLS

i-Xmill END MILLS

i-SMART MODULAR END MILLS

i-SMART MODULAR END MILLS

X5070 END MILLS

X5070 END MILLS

4G MILL END MILLS

4G MILL END MILLS

X-POWER PRO END MILLS

X-POWER PRO END MILLS

TitaNox-POWER END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

JET-POWER END MILLS

V7 PLUS A END MILLS

V7 PLUS A END MILLS

V7 MILL INOX

V7 MILL INOX

ALU-POWER HPC END MILLS

ALU-POWER HPC END MILLS

ALU-POWER END MILLS

ALU-POWER END MILLS

D-POWER GRAPHITE END MILLS

D-POWER GRAPHITE END MILLS

STANDARD CARBIDE

STANDARD CARBIDE

ONLY ONE COATED PM60 END MILLS

ONLY ONE COATED PM60 END MILLS

SINE-POWER

SINE-POWER

TANK-POWER END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS

STANDARD COBALT & HSS

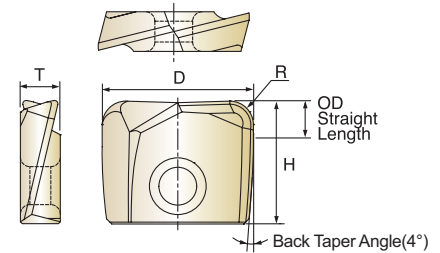
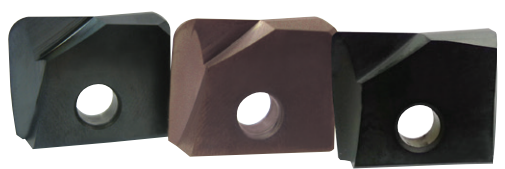
TECHNICAL DATA

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.
- ▶ Three Types of Inserts are available
  - For General Purpose (~HRc50)
  - For Hardened Material (HRc40~HRc65)
  - For Graphite



cutting conditions : p.C65

Unit : mm

EDP No.	Corner Radius			Mill Diameter	Height	Thickness	OD Straight Length
	For General Material	For Hardened Material	For Graphite				
XRAA080 03	XRBA080 03	XRAD080 03	R0.3	8.0	8	2.4	2
XRAA080 05	XRBA080 05	XRAD080 05	R0.5				
XRAA080 10	XRBA080 10	XRAD080 10	R1.0				
XRAA100 05	XRBA100 05	XRAD100 05	R0.5	10.0	9.5	2.7	3
XRAA100 10	XRBA100 10	XRAD100 10	R1.0				
XRAA100 20	XRBA100 20	XRAD100 20	R2.0				
XRAA120 05	XRBA120 05	XRAD120 05	R0.5	12.0	11	3.2	3
XRAA120 10	XRBA120 10	XRAD120 10	R1.0				
XRAA120 20	XRBA120 20	XRAD120 20	R2.0				
XRAA130 05	XRBA130 05	XRAD130 05	R0.5	13.0	11.2	3.2	3
XRAA130 10	XRBA130 10	XRAD130 10	R1.0				
XRAA130 20	XRBA130 20	XRAD130 20	R2.0				
XRAA160 05	XRBA160 05	XRAD160 05	R0.5	16.0	13	4.2	4
XRAA160 10	XRBA160 10	XRAD160 10	R1.0				
XRAA160 20	XRBA160 20	XRAD160 20	R2.0				
XRAA170 05	XRBA170 05	XRAD170 05	R0.5	17.0	13	4.2	4
XRAA170 10	XRBA170 10	XRAD170 10	R1.0				
XRAA170 20	XRBA170 20	XRAD170 20	R2.0				

- The other corner radius values are available on request.
- The corner radius tolerance is ±0.015mm and the set-up accuracy is ±0.02mm

▶ NEXT PAGE

◎ : Excellent ○ : Good

ISO	P											M			K					
	Non-alloy steel					Low alloy steel				High alloyed steel and tool steel		Stainless steel			Grey cast iron	Nodular cast iron		Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
XRAA	◎	◎	◎	◎	◎	◎	◎	◎		◎	○		◎	◎	◎	◎	◎	◎	◎	◎
XRBA																				
XRAD																				

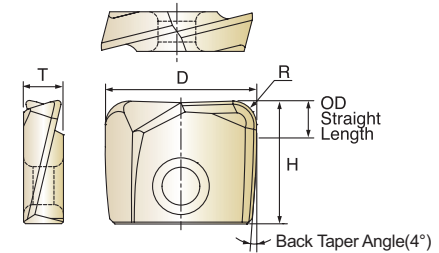
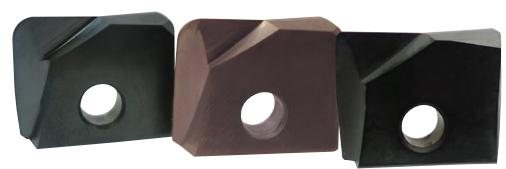
  

ISO	N										S					H					
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	15	30	25	38	34	15	30	25	38	34	15	30	25	38	34	400Rm	1050Rm	550	630	400	550
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550
XRAA																					
XRBA																					
XRAD																					



**i-Xmill CORNER RADIUS INSERTS**

- ▶ The optimum geometry of the tool to achieve the better reliability and less vibration and cutting load.
- ▶ Interchangeability with i-Xmill ball holder, but the precise cutting is possible with i-Xmill corner radius holder due to higher stability and strength of tool.
- ▶ The various and wide cutting range makes it possible to machine over the roughing and finishing.
- ▶ Special coating makes high hardness with high thermal stability against oxidation.
- ▶ Three Types of Inserts are available
  - For General Purpose (~HRc50)
  - For Hardened Material (HRc40~HRc65)
  - For Graphite



cutting conditions : p.C65

Unit : mm

EDP No.	Corner Radius			Mill Diameter	Height	Thickness	OD Straight Length
	For General Material	For Hardened Material	For Graphite				
XRAA200 05	XRBA200 05	XRAD200 05	R0.5	20.0	16	5.2	4
XRAA200 10	XRBA200 10	XRAD200 10	R1.0				
XRAA200 20	XRBA200 20	XRAD200 20	R2.0				
XRAA210 05	XRBA210 05	XRAD210 05	R0.5	21.0	16	5.2	4
XRAA210 10	XRBA210 10	XRAD210 10	R1.0				
XRAA210 20	XRBA210 20	XRAD210 20	R2.0				
XRAA250 05	XRBA250 05	XRAD250 05	R0.5	25.0	19.5	6.2	4
XRAA250 10	XRBA250 10	XRAD250 10	R1.0				
XRAA250 20	XRBA250 20	XRAD250 20	R2.0				
XRAA260 05	XRBA260 05	XRAD260 05	R0.5	26.0	19.5	6.2	4
XRAA260 10	XRBA260 10	XRAD260 10	R1.0				
XRAA260 20	XRBA260 20	XRAD260 20	R2.0				
XRAA300 05	XRBA300 05	XRAD300 05	R0.5	30.0	23.5	7.2	4
XRAA300 10	XRBA300 10	XRAD300 10	R1.0				
XRAA300 20	XRBA300 20	XRAD300 20	R2.0				
XRAA320 05	XRBA320 05	XRAD320 05	R0.5	32.0	23.5	7.2	4
XRAA320 10	XRBA320 10	XRAD320 10	R1.0				
XRAA320 20	XRBA320 20	XRAD320 20	R2.0				

- The other corner radius values are available on request.
- The corner radius tolerance is ±0.015mm and the set-up accuracy is ±0.02mm

◎ : Excellent ○ : Good

ISO	P											M			K					
	Non-alloy steel					Low alloy steel				High alloyed steel and tool steel		Stainless steel			Grey cast iron	Nodular cast iron		Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
XRAA	◎	◎	◎	◎	◎	◎	◎	◎		◎	○		◎	◎	◎	◎	◎	◎	◎	◎
XRBA																				
XRAD																				

ISO	N										S					H					
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	15	30	25	38	34	15	30	25	38	34	15	30	25	38	34	400Rm	1050Rm	550	630	400	550
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550
XRAA																					
XRBA																					
XRAD																					



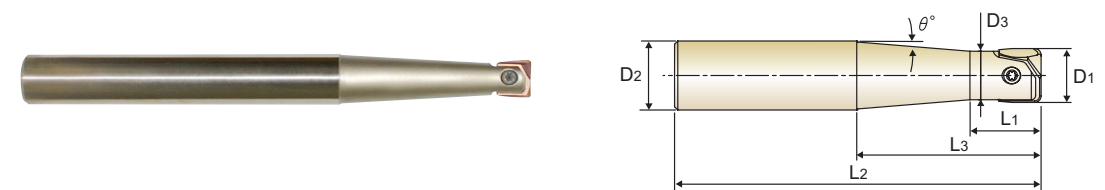
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ZRT SERIES  
ZRS SERIES

**i-Xmill CORNER RADIUS HOLDERS - STEEL**

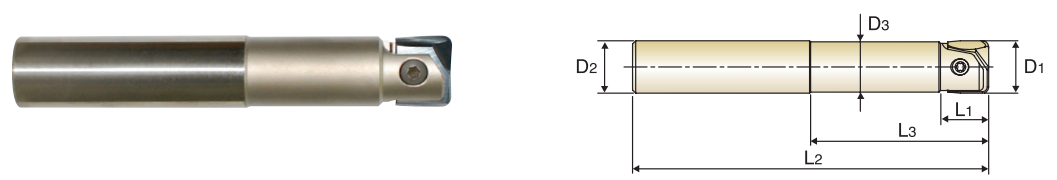
- ▶ Premium alloy steel with excellent strength.
- ▶ Precise shank, Tolerance (h6).
- ▶ Nickel plated, to prevent corrosion and improve lubricity.



**Taper neck Type**

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Interference Angle	Length Type	Wrench No.	Screw No.
	D1	D2	L1	L3	L2	D3	θ°			
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

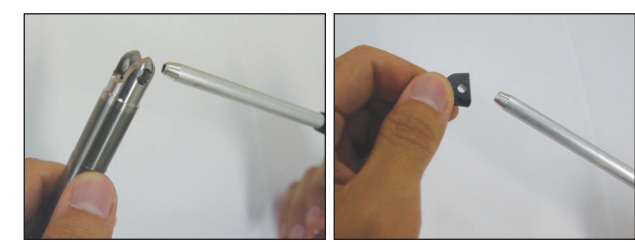
EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Length Type	Wrench No.	Screw No.
	D1	D2	L1	L3	L2	D3			
ZRS1120	12.0 13.0	12	13	30	110	11	Regular	TWF10	TX1210
ZRS1160	16.0	16	15	50	130	15	Regular	TWF15	TX1615
ZRS2160	17.0			65	165		Intermediate		
ZRS1200	20.0	20	18	60	140	19	Regular	TWB20	TX2020
ZRS2200	21.0			80	180		Intermediate		
ZRS1250	25.0	25	23	70	150	24	Regular	TWB25	TX2525
ZRS2250	26.0			90	200		Intermediate		
ZRS1300	30.0	32	27	80	160	29	Regular	TWB30	TX3030
ZRS2300				100	220		Intermediate		
ZRS1320	32.0	32	28	80	160	31	Regular	TWB30	TX3030
ZRS2320				100	220		Intermediate		

\* ● Required to use T-HANDLE (TWH600)

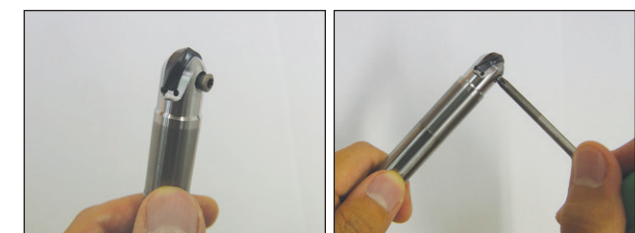


**RECOMMENDED CUTTING CONDITIONS**

**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.

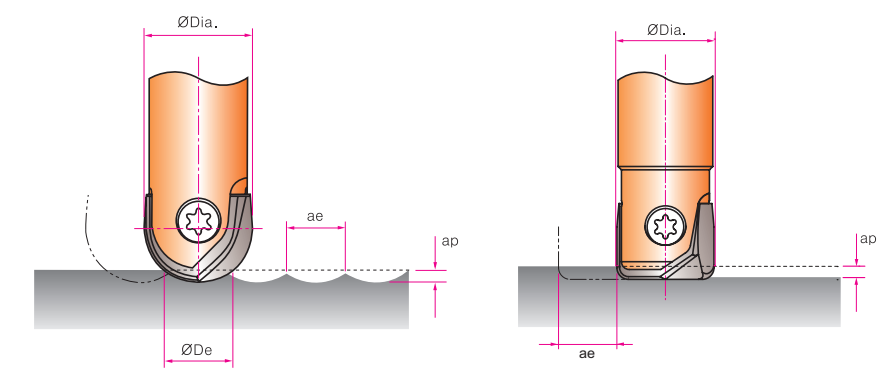


**Wrench No.**

	WRENCH TYPE	PRODUCT NO.	T-HANDLE No.
WING TYPE		TWFT10	-
		TWFT15	-
TORX BIT TYPE		● TWBT20	TWH600
		● TWBT25	
		● TWBT30	

\* ● Required to use T-HANDLE (TWH600)

**CUTTING CONDITION SCHNEIDKONDITIONEN**



- 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)

$$SFM [ft/min] = \frac{(RPM) \cdot (\pi) \cdot (Dia.)}{12}$$

$$RPM [rev/min] = \frac{(SFM) \cdot (12)}{(\pi) \cdot (Dia.)}$$

$$IPM [inch/min] = (RPM) \cdot (IPR)$$

$$De [inch] = 2 \sqrt{(ap) \cdot (Dia. - ap)}$$



HSS

HSS



RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

SFM(Vc) = ft./min. IPT(fz) = in./tooth RPM = rev./min. IPM(Feed) = in./min.

SFM(Vc) = ft./min. IPT(fz) = in./tooth RPM = rev./min. IPM(Feed) = in./min.

XB1A SERIES BALL INSERTS for General Material

Table with columns: ISO, VDI 3323, Material Description, Parameter, O.D SIZE (Ø) (5/16 (8), 3/8 (10), 1/2 (12, 13), 5/8 (16, 17), 3/4 (20, 21), 1 (25, 26), 1-1/4 (30, 32)). Rows include Non-alloy steel and Low alloy steel.

XR1A SERIES CORNER RADIUS INSERTS for General Material

Table with columns: ISO, VDI 3323, Material Description, Parameter, O.D SIZE (Ø) (5/16 (8), 3/8 (10), 1/2 (12, 13), 5/8 (16, 17), 3/4 (20, 21), 1 (25, 26), 1-1/4 (30, 32)). Rows include Non-alloy steel, Low alloy steel, and Stainless steel.

XB2C SERIES BALL INSERTS for Hardened Material

Table with columns: ISO, VDI 3323, Material Description, Parameter, O.D SIZE (Ø) (5/16 (8), 3/8 (10), 1/2 (12, 13), 5/8 (16, 17), 3/4 (20, 21), 1 (25, 26), 1-1/4 (30, 32)). Rows include Low alloy steel, High alloyed steel, and Hardened steel.

XR2A SERIES CORNER RADIUS INSERTS for Hardened Material

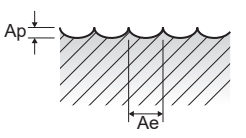
Table with columns: ISO, VDI 3323, Material Description, Parameter, O.D SIZE (Ø) (5/16 (8), 3/8 (10), 1/2 (12, 13), 5/8 (16, 17), 3/4 (20, 21), 1 (25, 26), 1-1/4 (30, 32)). Rows include Low alloy steel, High alloyed steel, and Hardened steel.

XB1D SERIES BALL INSERTS for Graphite

Table with columns: ISO, VDI 3323, Material Description, Parameter, O.D SIZE (Ø) (5/16 (8), 3/8 (10), 1/2 (12, 13), 5/8 (16, 17), 3/4 (20, 21), 1 (25, 26), 1-1/4 (30, 32)). Rows include Aluminum-wrought alloy, Aluminum-cast, alloyed, and Graphite.

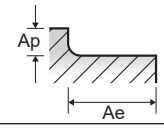
XR1D SERIES CORNER RADIUS INSERTS for Graphite

Table with columns: ISO, VDI 3323, Material Description, Parameter, O.D SIZE (Ø) (5/16 (8), 3/8 (10), 1/2 (12, 13), 5/8 (16, 17), 3/4 (20, 21), 1 (25, 26), 1-1/4 (30, 32)). Rows include Aluminum-wrought alloy, Aluminum-cast, alloyed, and Graphite.



ae : Roughing - 0.1 x D Finishing - Under Ø1/2 : .01" Under Ø3/4 : .012" From Ø3/4 : .016" ap : Roughing - Under Ø5/8 : 0.025 x D From Ø5/8 : 0.05 x D Finishing - .004"

- ▶ When the length of overhang exceeds 4xD, we recommend using the carbide shank holder with 20% lower feed
▶ When using long (long & intermediate type holder) tools, we recommend reducing the feed rate to 70 ~ 85%.



ae : Roughing - 0.1 x D Finishing - .008" ap : Roughing - Under Ø5/8 : 0.025 x D From Ø5/8 : 0.05 x D Finishing - Under Ø5/8 : .004" From Ø5/8 : .008"

- ▶ When the length of overhang exceeds 4xD, we recommend using the carbide shank holder with 20% lower feed
▶ When using long (long & intermediate type holder) tools, we recommend reducing the feed rate to 70 ~ 85%.



Global Cutting Tool Leader **YG-1**



**MILLING**



Being the best through innovation



**SOLID CARBIDE**

***i* - SMART MODULAR TYPE  
END MILL**

- For General Steels, Hardened Steels and Cast Iron



SELECTION GUIDE



CARBIDE MODULAR HEAD & HOLDER **i-SMART** END MILLS

- Exchangeable Modular Head for Semi-finishing and finishing on Pre-Hardened Steels up to HRc55

Please visit [globalyg1.com/mat](http://globalyg1.com/mat) for material search  
 ◎: Excellent ○: Good  
 Recommended cutting conditions : p.C78

SERIES	XGMF15	XGMF17
FLUTE	2	4
HELIX ANGLE	30°	30°
CUTTING EDGE SHAPE	BALL NOSE	BALL NOSE
SIZE MIN	R3/16	R3/16
SIZE MAX	R5/8	R5/8
PAGE	C70	C71

Y-Coating Y-Coating



ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc		
P	1	Non-alloy steel	About 0.15% C Annealed	125		○	○
	2		About 0.45% C Annealed	190	13	○	○
	3		About 0.45% C Quenched & Tempered	250	25	○	○
	4		About 0.75% C Annealed	270	28	○	○
	5		About 0.75% C Quenched & Tempered	300	32	○	○
	6	Low alloy steel	Annealed	180	10	○	○
	7		Quenched & Tempered	275	29	○	○
	8		Quenched & Tempered	300	32	○	○
	9		Quenched & Tempered	350	38	◎	◎
	10-11.1		High alloyed steel, and tool steel	Annealed	200	15	○
	11.2	Quenched & Tempered		325	35	◎	◎
M	12	Stainless steel	Ferritic / Martensitic Annealed	200	15		
	13		Martensitic Quenched & Tempered	240	23		
	14.1	Austenitic	180	10			
K	15	Grey cast iron	Pearlitic / ferritic	180	10	○	○
	16		Pearlitic (Martensitic)	260	26	○	○
	17	Nodular cast iron	Ferritic	160	3	○	○
	18		Pearlitic	250	25	○	○
	19	Malleable cast iron	Ferritic	130		○	○
20	Pearlitic		230	21	○	○	
N	21	Aluminum-wrought alloy	Not Curable	60			
	22		Curable Hardened	100			
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable	75			
	24		≤ 12% Si, Curable Hardened	90			
	25		> 12% Si, Not Curable	130			
	26	Copper and Copper Alloys	Cutting Alloys, PB>1%	110			
	27	(Bronze / Brass)	CuZn, CuSnZn (Brass)	90			
	28		CuSn, lead-free copper and electrolytic copper	100			
	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic				
	30		Rubber, Wood, etc.				
S	31	Heat Resistant Super Alloys	Fe Based Annealed	200	15		
	32		Cured	280	30		
	33		Annealed	250	25		
	34		Ni or Co Based Cured	350	38		
	35		Cast	320	34		
	36	Titanium Alloys	Pure Titanium	400 Rm			
37	Alpha + Beta Alloys Hardened		1050 Rm				
H	38.1-38.2	Hardened steel	Hardened	550	55	○	○
	39		Hardened	630	60		
	40	Hardened Cast Iron	Cast	400	42	◎	◎
	41		Hardened	550	55	○	○

XGMF20	XGMF25	XGMF29	ZMC	ZMS	ZMT
4	4	6	-	-	-
27°/30° (MULTIPLE HELIX)	27°/30° (MULTIPLE HELIX)	45°	-	-	-
CORNER RADIUS	SQUARE	SQUARE	-	-	-
D3/8	D3/8	D3/8	-	-	-
D1-1/4	D1-1/4	D1-1/4	-	-	-
C72	C73	C74	C75	C76	C77
-	-	-	STRAIGHT NECK	STRAIGHT NECK	TAPER NECK
Y-Coating	Y-Coating	Y-Coating	Carbide	Steel	Steel



○	○	○				1
○	○	○				2
○	○	○				3
○	○	○				4
○	○	○				5
○	○	○				6
○	○	○				7
○	○	○				8
◎	◎	◎				9
○	○	○				10
◎	◎	◎				11
						12
						13
						14
○	○	○				15
○	○	○				16
○	○	○				17
○	○	○				18
○	○	○				19
○	○	○				20
						21
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						34
						35
						36
						37
○	○	○				38
						39
◎	◎	◎				40
○	○	○				41

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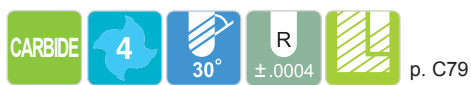
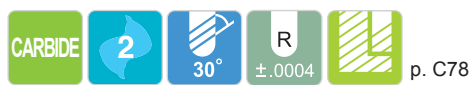
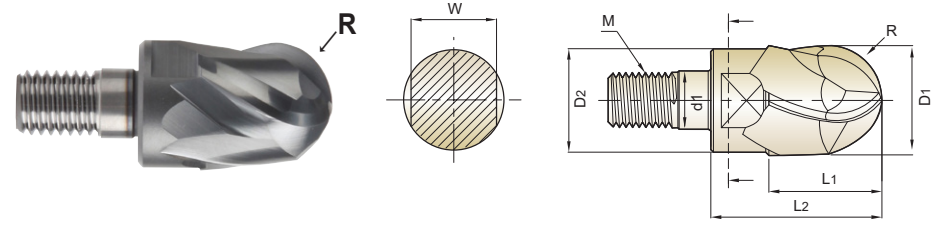
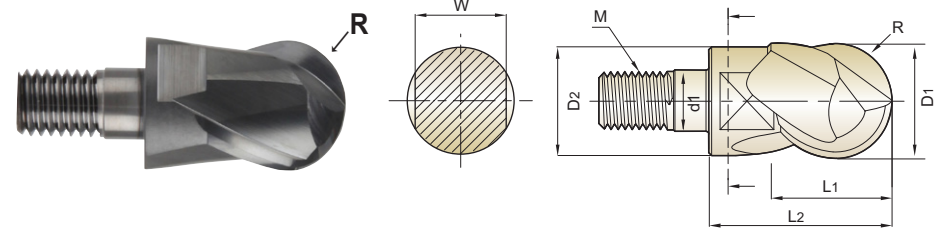
XGMF15 SERIES



XGMF17 SERIES

CARBIDE MODULAR HEAD, 2 FLUTE BALL NOSE

CARBIDE MODULAR HEAD, 4 FLUTE BALL NOSE



Unit: Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Neck Diameter	Length of Cut	Length Below Shank	Coupling Diameter	Wrench Width	Thread	Wrench
	R	D1	D2	L1	L2	d1	W	M	
XGMF15024	R3/16	3/8	.351	3/8	.689	.256	.315	M6	SPIS0810
XGMF15032	R1/4	1/2	.469	1/2	.835	.256	.394	M6	SPIS0810
XGMF15040	R5/16	5/8	.591	5/8	1.004	.335	.512	M8	SPIS1300
XGMF15048	R3/8	3/4	.711	3/4	1.144	.413	.669	M10	SPIS1700
XGMF15100	R1/2	1	.961	1	1.472	.492	.866	M12	SPIS2200
XGMF15116	R5/8	1-1/4	1.221	1-1/4	1.772	.669	1.063	M16	SPIS2700

Unit: Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Neck Diameter	Length of Cut	Length Below Shank	Coupling Diameter	Wrench Width	Thread	Wrench
	R	D1	D2	L1	L2	d1	W	M	
XGMF17024	R3/16	3/8	.351	3/8	.689	.256	.315	M6	SPIS0810
XGMF17032	R1/4	1/2	.469	1/2	.835	.256	.394	M6	SPIS0810
XGMF17040	R5/16	5/8	.591	5/8	1.004	.335	.512	M8	SPIS1300
XGMF17048	R3/8	3/4	.711	3/4	1.144	.413	.669	M10	SPIS1700
XGMF17100	R1/2	1	.961	1	1.472	.492	.866	M12	SPIS2200
XGMF17116	R5/8	1-1/4	1.221	1-1/4	1.772	.669	1.063	M16	SPIS2700

Radius Tolerance(Inch)	Mill Dia. Tolerance(Inch)
±.0004	0~-.0008

Radius Tolerance(Inch)	Mill Dia. Tolerance(Inch)
±.0004	0~-.0008

◎ : Excellent ○ : Good

ISO	P										M			K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel			Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron		
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	○	○	○	○	○	○	○	◎	○	◎	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

◎ : Excellent ○ : Good

ISO	P										M			K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel			Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron		
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	○	○	○	○	○	○	○	◎	○	◎	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

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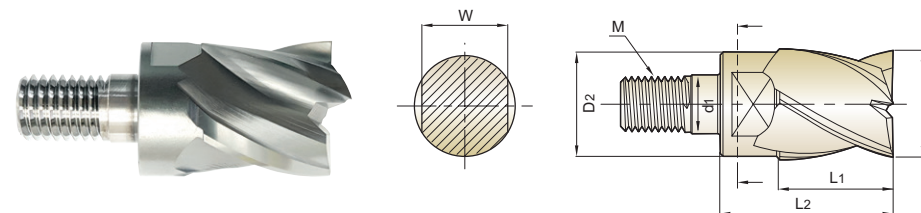
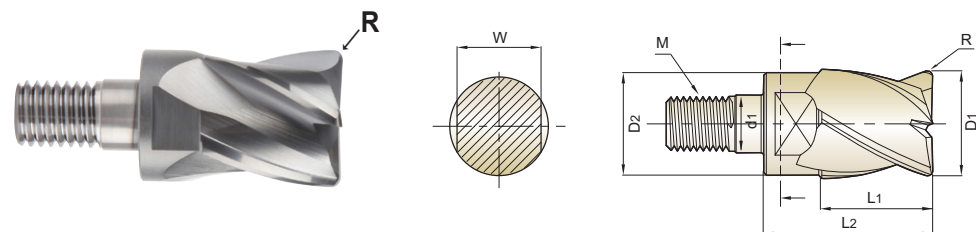
XGMF20 SERIES



XGMF25 SERIES

CARBIDE MODULAR HEAD, 4 FLUTE MULTIPLE HELIX CORNER RADIUS

CARBIDE MODULAR HEAD, 4 FLUTE MULTIPLE HELIX



Unit: Inch

Unit: Inch

EDP No.	Corner Radius	Mill Diameter	Neck Diameter	Length of Cut	Length Below Shank	Coupling Diameter	Wrench Width	Thread	Wrench
	R	D1	D2	L1	L2	d1	W	M	
XGMF20024 012	R.012	3/8	.351	3/8	.689	.256	.315	M6	SPIS0810
XGMF20024 020	R.020	3/8	.351	3/8	.689	.256	.315	M6	SPIS0810
XGMF20024 030	R.030	3/8	.351	3/8	.689	.256	.315	M6	SPIS0810
XGMF20024 040	R.040	3/8	.351	3/8	.689	.256	.315	M6	SPIS0810
XGMF20024 050	R.050	3/8	.351	3/8	.689	.256	.315	M6	SPIS0810
XGMF20024 060	R.060	3/8	.351	3/8	.689	.256	.315	M6	SPIS0810
XGMF20024 080	R.080	3/8	.351	3/8	.689	.256	.315	M6	SPIS0810
XGMF20032 020	R.020	1/2	.469	1/2	.835	.256	.394	M6	SPIS0810
XGMF20032 030	R.030	1/2	.469	1/2	.835	.256	.394	M6	SPIS0810
XGMF20032 040	R.040	1/2	.469	1/2	.835	.256	.394	M6	SPIS0810
XGMF20032 060	R.060	1/2	.469	1/2	.835	.256	.394	M6	SPIS0810
XGMF20032 080	R.080	1/2	.469	1/2	.835	.256	.394	M6	SPIS0810
XGMF20040 020	R.020	5/8	.591	5/8	1.004	.335	.512	M8	SPIS1300
XGMF20040 030	R.030	5/8	.591	5/8	1.004	.335	.512	M8	SPIS1300
XGMF20040 040	R.040	5/8	.591	5/8	1.004	.335	.512	M8	SPIS1300
XGMF20040 060	R.060	5/8	.591	5/8	1.004	.335	.512	M8	SPIS1300
XGMF20040 080	R.080	5/8	.591	5/8	1.004	.335	.512	M8	SPIS1300
XGMF20048 030	R.030	3/4	.711	3/4	1.144	.413	.669	M10	SPIS1700
XGMF20048 040	R.040	3/4	.711	3/4	1.144	.413	.669	M10	SPIS1700
XGMF20048 080	R.080	3/4	.711	3/4	1.144	.413	.669	M10	SPIS1700
XGMF20100 030	R.030	1	.961	1	1.472	.492	.866	M12	SPIS2200
XGMF20100 040	R.040	1	.961	1	1.472	.492	.866	M12	SPIS2200
XGMF20100 080	R.080	1	.961	1	1.472	.492	.866	M12	SPIS2200
XGMF20116 030	R.030	1-1/4	1.221	1-1/4	1.772	.669	1.063	M16	SPIS2700
XGMF20116 040	R.040	1-1/4	1.221	1-1/4	1.772	.669	1.063	M16	SPIS2700
XGMF20116 080	R.080	1-1/4	1.221	1-1/4	1.772	.669	1.063	M16	SPIS2700

EDP No.	Mill Diameter	Neck Diameter	Length of Cut	Length Below Shank	Coupling Diameter	Wrench Width	Thread	Wrench
	D1	D2	L1	L2	d1	W	M	
XGMF25024	3/8	.351	3/8	.689	.256	.315	M6	SPIS0810
XGMF25032	1/2	.469	1/2	.835	.256	.394	M6	SPIS0810
XGMF25040	5/8	.591	5/8	1.004	.335	.512	M8	SPIS1300
XGMF25048	3/4	.711	3/4	1.144	.413	.669	M10	SPIS1700
XGMF25100	1	.961	1	1.472	.492	.866	M12	SPIS2200
XGMF25116	1-1/4	1.221	1-1/4	1.772	.669	1.063	M16	SPIS2700

Mill Dia. Tolerance(Inch)
0~.0012

Radius Tolerance(Inch)	Mill Dia. Tolerance(Inch)
±.0008	0~.0012

◎ : Excellent ○ : Good

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10-11.1	11.2	12	13	14.1	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10-11.1	11.2	12	13	14.1	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	○	○	○	○	○	○	◎	○	◎	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1-38.2	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1-38.2	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	○	○	○	○	◎	○

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10-11.1	11.2	12	13	14.1	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10-11.1	11.2	12	13	14.1	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	○	○	○	○	○	○	◎	○	◎	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1-38.2	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1-38.2	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	○	○	○	○	◎	○



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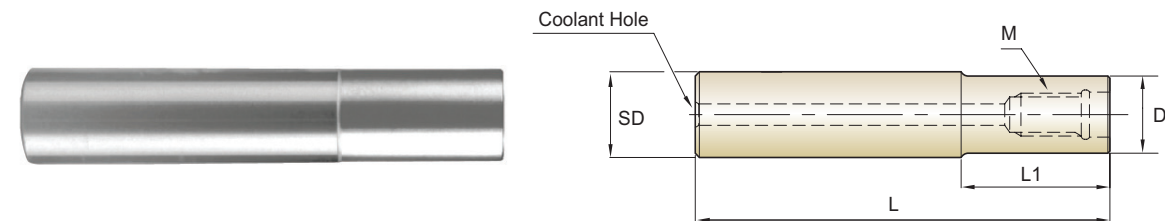
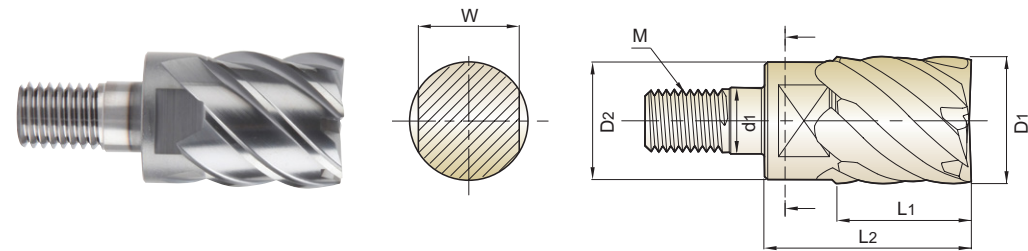
**XGMF29** SERIES



**ZMC** SERIES

**CARBIDE MODULAR HEAD, 6 FLUTE 45° HELIX**

**CARBIDE HOLDER, STRAIGHT NECK TYPE**



Unit: Inch

EDP No.	Mill Diameter	Neck Diameter	Length of Cut	Length Below Shank	Coupling Diameter	Wrench Width	Thread	Wrench
	D1	D2	L1	L2	d1	W	M	
XGMF29024	3/8	.351	3/8	.689	.256	.315	M6	SPIS0810
XGMF29032	1/2	.469	1/2	.835	.256	.394	M6	SPIS0810
XGMF29040	5/8	.591	5/8	1.004	.335	.512	M8	SPIS1300
XGMF29048	3/4	.711	3/4	1.144	.413	.669	M10	SPIS1700
XGMF29100	1	.961	1	1.472	.492	.866	M12	SPIS2200
XGMF29116	1-1/4	1.221	1-1/4	1.772	.669	1.063	M16	SPIS2700

Mill Dia. Tolerance(Inch)
0~- .0012

Unit: Inch

EDP No.	Mill Diameter	Shank Diameter	Overall Length	Neck Length	Neck Diameter	Thread Size	Wrench No.	Coolant Hole
		SD	L	L1	D	M		
ZMC024A024	3/8	3/8	2-3/4	25/32	23/64	M6	SPIS0810	5/64
ZMC024B024			3-15/16	1-37/64				
ZMC024C024			5-1/8	2-3/4				
ZMC032A032	1/2	1/2	3-1/8	25/32	29/64	M6	SPIS0810	5/64
ZMC032B032			3-15/16	1-37/64				
ZMC032C032			5-1/8	2-3/4				
ZMC040A040	5/8	5/8	3-15/16	1-37/64	19/32	M8	SPIS1300	1/8
ZMC040B040			5-7/8	3-5/32				
ZMC040C040			7-7/8	4-23/32				
ZMC048A048	3/4	3/4	3-15/16	1-37/64	45/64	M10	SPIS1700	5/32
ZMC048B048			5-7/8	3-5/32				
ZMC048C048			7-7/8	4-23/32				
ZMC048D048	1	1	9-13/16	6-19/64	61/64	M12	SPIS2200	13/64
ZMC100A100			5-7/8	2-3/4				
ZMC100B100			7-7/8	3-15/16				
ZMC100C100	1-1/4	1-1/4	9-13/16	5-29/32	1-9/64	M16	SPIS2700	15/64
ZMC100D100			11-13/16	7-7/8				
ZMC116A116			5-7/8	2-3/4				
ZMC116B116	1-1/4	1-1/4	7-7/8	4-23/32	1-9/64	M16	SPIS2700	15/64
ZMC116C116			9-13/16	5-29/32				
ZMC116D116			11-13/16	7-7/8				
ZMC116E116			13-3/4	9-27/32				

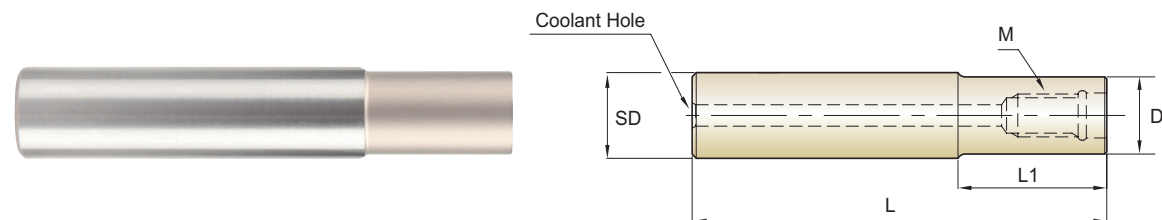
◎ : Excellent ○ : Good

ISO	P										M					K																													
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel					Stainless steel					Grey cast iron					Nodular cast iron					Malleable cast iron														
VDI 3323	1	2	3	4	5	6	7	8	9	10-11.1	11.2	12	13	14.1	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1-38.2	39	40	41				
HRC	13	25	28	32	35	10	29	32	38	15	35	15	23	10	10	26	3	25																											
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230																									
Recommend	○	○	○	○	○	○	○	○	◎	○	◎	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

ISO	N				S					H																																				
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)					Non Metallic Materials					Heat Resistant Super Alloys					Titanium Alloys					Hardened steel					Chilled Cast Iron					Hardened Cast Iron											
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38.1-38.2	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61					
HRC	60	100	75	90	130	110	90	100			15	30	25	38	34	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150	155	160	165					
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	450 Rm	500 Rm	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650					
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

**STEEL HOLDER, STRAIGHT NECK TYPE**



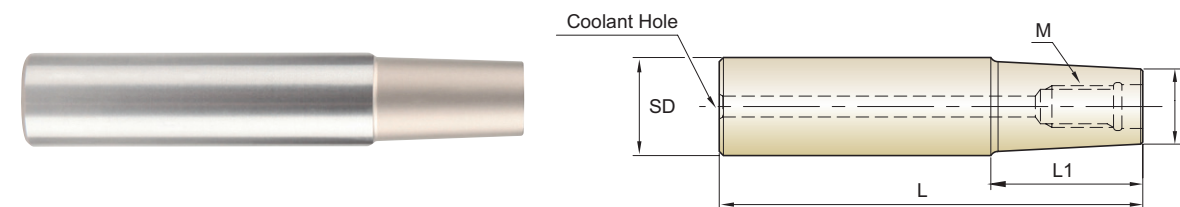
Unit: Inch

EDP No.	Mill Diameter	Shank Diameter	Overall Length	Neck Length	Neck Diameter	Thread Size	Coolant Hole
		SD					
ZMS024A024	3/8	3/8	2-3/4	25/32	23/64	M6	1/8
ZMS032A032	1/2	1/2	3-35/64	1-3/16	29/64	M6	1/8
ZMS040A040	5/8	5/8	3-15/16	1-3/16	19/32	M8	5/32
ZMS048A048	3/4	3/4	3-15/16	1-3/16	45/64	M10	13/64
ZMS100A100	1	1	4-17/32	1-37/64	61/64	M12	13/64
ZMS116A116	1-1/4	1-1/4	4-59/64	1-37/64	1-9/64	M16	15/64

**Wrench**

Model	Wrench No.	Wrench Width	Mill Diameter	Clamping Torque [in·lbs]
	SPIS0810	.315	3/8	57.6
		.394	1/2	57.6
	SPIS1300	.512	5/8	88.6
	SPIS1700	.669	3/4	106.3
	SPIS2200	.866	1	132.9
	SPIS2700	1.063	1-1/4	177.1

**STEEL HOLDER, TAPER NECK TYPE**



Unit: Inch

EDP No.	Mill Diameter	Shank Diameter	Overall Length	Neck Length	Neck Diameter	Thread Size	Coolant Hole
		SD					
ZMT024A032	3/8	1/2	3-15/16	1-31/32	23/64	M6	1/8
ZMT032A040	1/2	5/8	5-1/8	2-3/4	29/64	M6	1/8
ZMT040A048	5/8	3/4	5-29/32	3-35/64	19/32	M8	5/32
ZMT048A100	3/4	1	6-11/16	3-15/16	45/64	M10	13/64
ZMT100A116	1	1-1/4	7-7/8	4-21/64	61/64	M12	13/64
ZMT116A116	1-1/4	1-1/4	7-7/8	4-21/64	1-9/64	M16	15/64

**Wrench**

Model	Wrench No.	Wrench Width	Mill Diameter	Clamping Torque [in·lbs]
	SPIS0810	.315	3/8	57.6
		.394	1/2	57.6
	SPIS1300	.512	5/8	88.6
	SPIS1700	.669	3/4	106.3
	SPIS2200	.866	1	132.9
	SPIS2700	1.063	1-1/4	177.1

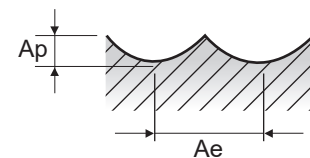


RECOMMENDED CUTTING CONDITIONS

**XGMF15** SERIES 2 FLUTE BALL NOSE - Plain Cutting

RPM = rev./min. FEED = inch/min.  
Vc = ft/min. fz = inch/tooth

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	O.D SIZE					
						R3/16 x3/8	R1/4 x1/2	R5/16 x5/8	R3/8 x3/4	R1/2 x1	R5/8x1-1/4
P	1-5	Non-alloy steel	0.08D	0.03D	SFM(Vc)	558	558	558	558	558	558
					IPT(fz)	0.008	0.008	0.009	0.01	0.011	0.012
					RPM	5680	4260	3410	2840	2130	1700
	6-8	Low alloy steel	0.08D	0.03D	SFM(Vc)	558	558	558	558	558	558
					IPT(fz)	0.008	0.008	0.009	0.01	0.011	0.012
					RPM	5680	4260	3410	2840	2130	1700
	9	Low alloy steel	0.08D	0.03D	SFM(Vc)	541	541	541	541	541	541
					IPT(fz)	0.007	0.007	0.008	0.009	0.009	0.01
					RPM	5510	4140	3310	2760	2070	1650
	10-11.1	High alloyed steel, and tool steel	0.08D	0.03D	SFM(Vc)	558	558	558	558	558	558
					IPT(fz)	0.008	0.008	0.009	0.01	0.011	0.012
					RPM	5680	4260	3410	2840	2130	1700
11.2	High alloyed steel, and tool steel	0.08D	0.03D	SFM(Vc)	541	541	541	541	541	541	
				IPT(fz)	0.007	0.007	0.008	0.009	0.009	0.01	
				RPM	5510	4140	3310	2760	2070	1650	
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.08D	0.03D	SFM(Vc)	558	558	558	558	558	558
					IPT(fz)	0.008	0.008	0.009	0.01	0.011	0.012
					RPM	5680	4260	3410	2840	2130	1700
H	38.1-38.2	Hardened steel	0.08D	0.03D	SFM(Vc)	453	453	453	453	453	453
					IPT(fz)	0.006	0.007	0.007	0.008	0.008	0.009
					RPM	4610	3460	2770	2310	1730	1380
	40	Chilled Cast Iron	0.08D	0.03D	SFM(Vc)	541	541	541	541	541	541
					IPT(fz)	0.007	0.007	0.008	0.009	0.009	0.01
					RPM	5510	4140	3310	2760	2070	1650
	41	Hardened Cast Iron	0.08D	0.03D	SFM(Vc)	453	453	453	453	453	453
					IPT(fz)	0.006	0.007	0.007	0.008	0.008	0.009
					RPM	4610	3460	2770	2310	1730	1380

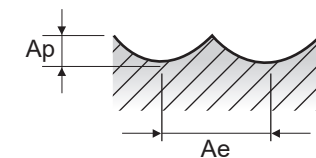


RECOMMENDED CUTTING CONDITIONS

**XGMF17** SERIES 4 FLUTE BALL NOSE - Plain Cutting

RPM = rev./min. FEED = inch/min.  
Vc = ft/min. fz = inch/tooth

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	O.D SIZE					
						R3/16 x3/8	R1/4 x1/2	R5/16 x5/8	R3/8 x3/4	R1/2 x1	R5/8x1-1/4
P	1-5	Non-alloy steel	0.05D	0.02D	SFM(Vc)	968	968	968	968	968	968
					IPT(fz)	0.006	0.006	0.007	0.007	0.007	0.008
					RPM	9860	7390	5920	4930	3700	2960
	6-8	Low alloy steel	0.05D	0.02D	SFM(Vc)	968	968	968	968	968	968
					IPT(fz)	0.006	0.006	0.007	0.007	0.007	0.008
					RPM	9860	7390	5920	4930	3700	2960
	9	Low alloy steel	0.05D	0.02D	SFM(Vc)	771	771	771	771	771	771
					IPT(fz)	0.005	0.006	0.006	0.006	0.006	0.007
					RPM	7850	5890	4710	3930	2940	2360
	10-11.1	High alloyed steel, and tool steel	0.05D	0.02D	SFM(Vc)	968	968	968	968	968	968
					IPT(fz)	0.006	0.006	0.007	0.007	0.007	0.008
					RPM	9860	7390	5920	4930	3700	2960
11.2	High alloyed steel, and tool steel	0.05D	0.02D	SFM(Vc)	771	771	771	771	771	771	
				IPT(fz)	0.005	0.006	0.006	0.006	0.006	0.007	
				RPM	7850	5890	4710	3930	2940	2360	
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.05D	0.02D	SFM(Vc)	968	968	968	968	968	968
					IPT(fz)	0.006	0.006	0.007	0.007	0.007	0.008
					RPM	9860	7390	5920	4930	3700	2960
	38.1-38.2	Hardened steel	0.05D	0.02D	SFM(Vc)	689	689	689	689	689	689
					IPT(fz)	0.005	0.005	0.005	0.006	0.006	0.006
					RPM	7020	5260	4210	3510	2630	2110
	40	Chilled Cast Iron	0.05D	0.02D	SFM(Vc)	771	771	771	771	771	771
					IPT(fz)	0.005	0.006	0.006	0.006	0.006	0.007
					RPM	7850	5890	4710	3930	2940	2360
	41	Hardened Cast Iron	0.05D	0.02D	SFM(Vc)	689	689	689	689	689	689
					IPT(fz)	0.005	0.005	0.005	0.006	0.006	0.006
					RPM	7020	5260	4210	3510	2630	2110



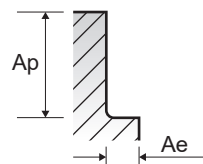


**XGMF20** SERIES 4 FLUTE CORNER RADIUS - Side Cutting

RPM = rev./min. FEED = inch/min.  
Vc = ft/min. fz = inch/tooth

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	O.D SIZE					
						3/8	1/2	5/8	3/4	1	1*1/4
P	1-5	Non-alloy steel	0.05D	0.8D	SFM(Vc)	512	512	512	512	512	512
					IPT(fz)	0.001	0.001	0.001	0.001	0.001	0.001
					RPM	5210	3910	3130	2610	1950	1560
	6-8	Low alloy steel	0.05D	0.8D	SFM(Vc)	512	512	512	512	512	512
					IPT(fz)	0.001	0.001	0.001	0.001	0.001	0.001
					RPM	5210	3910	3130	2610	1950	1560
	9	Low alloy steel	0.05D	0.8D	SFM(Vc)	344	344	344	344	344	344
					IPT(fz)	0.001	0.001	0.001	0.001	0.001	0.001
					RPM	3510	2630	2110	1750	1320	1050
	10-11.1	High alloyed steel, and tool steel	0.05D	0.8D	SFM(Vc)	512	512	512	512	512	512
					IPT(fz)	0.001	0.001	0.001	0.001	0.001	0.001
					RPM	5210	3910	3130	2610	1950	1560
11.2	High alloyed steel, and tool steel	0.05D	0.8D	SFM(Vc)	344	344	344	344	344	344	
				IPT(fz)	0.001	0.001	0.001	0.001	0.001	0.001	
				RPM	3510	2630	2110	1750	1320	1050	
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.02D	0.8D	SFM(Vc)	512	512	512	512	512	512
					IPT(fz)	0.001	0.001	0.001	0.001	0.001	0.001
					RPM	5210	3910	3130	2610	1950	1560
H	38.1-38.2	Hardened steel	0.02D	0.8D	SFM(Vc)	207	207	207	207	207	207
					IPT(fz)	0.001	0.001	0.001	0.001	0.001	0.001
					RPM	2110	1580	1260	1050	790	630
H	40	Chilled Cast Iron	0.05D	0.8D	SFM(Vc)	344	344	344	344	344	344
					IPT(fz)	0.001	0.001	0.001	0.001	0.001	0.001
					RPM	3510	2630	2110	1750	1320	1050
H	41	Hardened Cast Iron	0.02D	0.8D	SFM(Vc)	207	207	207	207	207	207
					IPT(fz)	0.001	0.001	0.001	0.001	0.001	0.001
					RPM	2110	1580	1260	1050	790	630

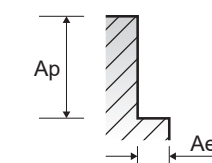
\* 1.5xD Axial cutting depth should be for DIA over 5/8inch



**XGMF25** SERIES 6 FLUTE SQUARE - Side Cutting

RPM = rev./min. FEED = inch/min.  
Vc = ft/min. fz = inch/tooth

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	O.D SIZE					
						3/8	1/2	5/8	3/4	1	1*1/4
P	1-5	Non-alloy steel	0.05D	0.6D	SFM(Vc)	427	427	427	427	427	427
					IPT(fz)	0.002	0.002	0.002	0.002	0.002	0.002
					RPM	4340	3260	2610	2170	1630	1300
	6-8	Low alloy steel	0.05D	0.6D	SFM(Vc)	427	427	427	427	427	427
					IPT(fz)	0.002	0.002	0.002	0.002	0.002	0.002
					RPM	4340	3260	2610	2170	1630	1300
	9	Low alloy steel	0.05D	0.6D	SFM(Vc)	262	262	262	262	262	262
					IPT(fz)	0.001	0.001	0.001	0.001	0.001	0.001
					RPM	2670	2010	1600	1340	1000	800
	10-11.1	High alloyed steel, and tool steel	0.05D	0.6D	SFM(Vc)	427	427	427	427	427	427
					IPT(fz)	0.002	0.002	0.002	0.002	0.002	0.002
					RPM	4340	3260	2610	2170	1630	1300
11.2	High alloyed steel, and tool steel	0.05D	0.6D	SFM(Vc)	262	262	262	262	262	262	
				IPT(fz)	0.001	0.001	0.001	0.001	0.001	0.001	
				RPM	2670	2010	1600	1340	1000	800	
M	14.1	Stainless steel	0.05D	0.6D	SFM(Vc)	217	217	217	217	217	217
					IPT(fz)	0.001	0.001	0.001	0.001	0.001	0.001
					RPM	2210	1650	1320	1100	830	660
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.05D	0.6D	SFM(Vc)	427	427	427	427	427	427
					IPT(fz)	0.002	0.002	0.002	0.002	0.002	0.002
					RPM	4340	3260	2610	2170	1630	1300
H	38.1-38.2	Hardened steel	0.05D	0.6D	SFM(Vc)	174	174	174	174	174	174
					IPT(fz)	0.001	0.001	0.001	0.001	0.001	0.001
					RPM	1770	1330	1060	890	660	530
H	40	Chilled Cast Iron	0.05D	0.6D	SFM(Vc)	262	262	262	262	262	262
					IPT(fz)	0.001	0.001	0.001	0.001	0.001	0.001
					RPM	2670	2010	1600	1340	1000	800
H	41	Hardened Cast Iron	0.02D	0.6D	SFM(Vc)	174	174	174	174	174	174
					IPT(fz)	0.001	0.001	0.001	0.001	0.001	0.001
					RPM	1770	1330	1060	890	660	530





**XGMF29** SERIES

**6 FLUTE SQUARE - Side Cutting**

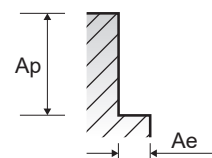
**Normal**

RPM = rev./min. FEED = inch/min.  
Vc = ft/min. fz = inch/tooth

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	O.D SIZE					
						3/8	1/2	5/8	3/4	1	1*1/4
<b>P</b>	1-5	Non-alloy steel	0.1D	0.8D	SFM(Vc)	364	364	364	364	364	364
					IPT(fz)	0.004	0.004	0.004	0.004	0.004	0.004
					RPM	3710	2780	2230	1850	1390	1110
	6-8	Low alloy steel	0.1D	0.8D	SFM(Vc)	364	364	364	364	364	364
					IPT(fz)	0.004	0.004	0.004	0.004	0.004	0.004
					RPM	3710	2780	2230	1850	1390	1110
	9	High alloyed steel, and tool steel	0.1D	0.8D	SFM(Vc)	253	253	253	253	253	253
					IPT(fz)	0.004	0.004	0.004	0.004	0.004	0.004
					RPM	2570	1930	1540	1290	960	770
	10-11.1	High alloyed steel, and tool steel	0.1D	0.8D	SFM(Vc)	364	364	364	364	364	364
					IPT(fz)	0.004	0.004	0.004	0.004	0.004	0.004
					RPM	3710	2780	2230	1850	1390	1110
11.2	High alloyed steel, and tool steel	0.1D	0.8D	SFM(Vc)	253	253	253	253	253	253	
				IPT(fz)	0.004	0.004	0.004	0.004	0.004	0.004	
				RPM	2570	1930	1540	1290	960	770	
<b>K</b>	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.1D	0.8D	SFM(Vc)	364	364	364	364	364	364
					IPT(fz)	0.004	0.004	0.004	0.004	0.004	0.004
					RPM	3710	2780	2230	1850	1390	1110
<b>H</b>	38.1-38.2	Hardened steel	0.05D	0.6D	SFM(Vc)	108	108	108	108	108	108
					IPT(fz)	0.001	0.001	0.001	0.001	0.001	0.001
					RPM	1100	830	660	550	410	330
	40	Chilled Cast Iron	0.05D	0.8D	SFM(Vc)	253	253	253	253	253	253
					IPT(fz)	0.004	0.004	0.004	0.004	0.004	0.004
					RPM	2570	1930	1540	1290	960	770
	41	Hardened Cast Iron	0.05D	0.6D	SFM(Vc)	108	108	108	108	108	108
					IPT(fz)	0.001	0.001	0.001	0.001	0.001	0.001
					RPM	1100	830	660	550	410	330

**High**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	O.D SIZE					
						3/8	1/2	5/8	3/4	1	1*1/4
<b>P</b>	11.2	High alloyed steel, and tool steel	0.05D	0.6D	SFM(Vc)	1089	1089	1089	1089	1089	1089
					IPT(fz)	0.004	0.004	0.004	0.004	0.004	0.004
					RPM	11090	8320	6660	5550	4160	3330
					IPM(FEED)	249	186.7	149.4	124.5	93.4	74.7
<b>H</b>	38.1-38.2	Hardened steel	0.05D	0.4D	SFM(Vc)	545	545	545	545	545	545
					IPT(fz)	0.004	0.004	0.004	0.004	0.004	0.004
					RPM	5550	4160	3330	2770	2080	1660
	40	Chilled Cast Iron	0.05D	0.6D	SFM(Vc)	1089	1089	1089	1089	1089	1089
					IPT(fz)	0.004	0.004	0.004	0.004	0.004	0.004
					RPM	11090	8320	6660	5550	4160	3330
	41	Hardened Cast Iron	0.05D	0.4D	SFM(Vc)	545	545	545	545	545	545
					IPT(fz)	0.004	0.004	0.004	0.004	0.004	0.004
					RPM	5550	4160	3330	2770	2080	1660





Leading Through Innovation



**SOLID CARBIDE**

# **X5070 END MILLS**

- For High Hardened Steels (HRc45 to HRc70)  
High Speed Machining and Dry Cutting







PLAIN SHANK **G826** SERIES

**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.



**High Feed End Mill**  
◆ U.S.A Stock

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R	D1	D2	L1	L3	L2	D3
G826082	R1/32	1/8	1/4	.050	3/8	2-1/4	.110
G826124	R1/16	3/16	1/4	.075	3/8	2-1/4	.180
G826164	R1/16	1/4	1/4	.100	1/2	2-1/2	.220
G826206	R3/32	5/16	5/16	.130	5/8	2-1/2	.280
G826246	R3/32	3/8	3/8	.150	3/4	2-3/4	.330
G826328	R1/8	1/2	1/2	.200	1	3-1/4	.460

↙ The original bright blue color may discolor during use, however, the performance will not be negatively affected

Mill Dia. Tolerance (inch)	Corner Radius Tolerance (inch)	Shank Dia. Tolerance
0~-.0008	±.0002	h5

**Comparison of the endteeth shape**

- Reduced clearance angles and short flutes strengthens corner radius and reduces chattering
- Extra-short flute length for high rigidity
- Heavy core with reduced diameter allows greater depths and maximum rigidity

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323																				
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend					○					○	○									

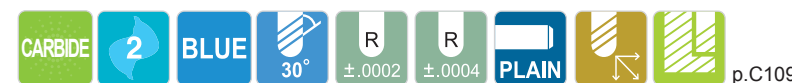
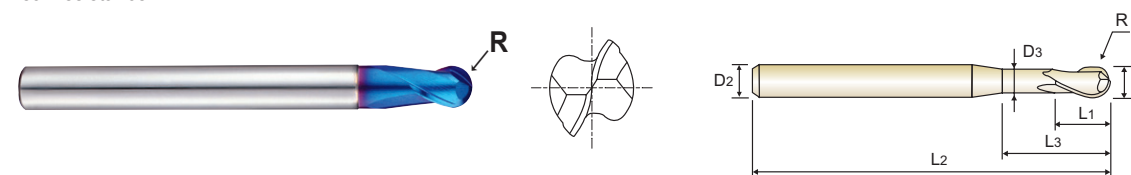
ISO	N				S					H											
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323																					
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		◎	◎	○	◎



PLAIN SHANK **G8A43** SERIES

**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.



◆ U.S.A Stock

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R	D1	D2	L1	L3	L2	D3
G8A43002	R1/64	1/32	1/4	1/32	1/16	2	.029
G8A43004	R1/32	1/16	1/4	1/16	1/8	2	.059
G8A43006	R3/64	3/32	1/4	3/32	3/16	2	.090
G8A43008	R1/16	1/8	1/4	1/8	1/4	2-1/2	.121
G8A43012	R3/32	3/16	1/4	3/16	3/8	3	.184
G8A43016	R1/8	1/4	1/4	1/4	1/2	3-1/2	.246
G8A43020	R5/32	5/16	5/16	5/16	5/8	4	.309
G8A43024	R3/16	3/8	3/8	3/8	3/4	4	.371
G8A43032	R1/4	1/2	1/2	1/2	1	4-1/2	.496

↙ The original bright blue color may discolor during use, however, the performance will not be negatively affected

Size	Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	±.0002	0~-.0005	h5
over Ø1/4	±.0004	0~-.0006	

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323																				
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend					○					○	○									

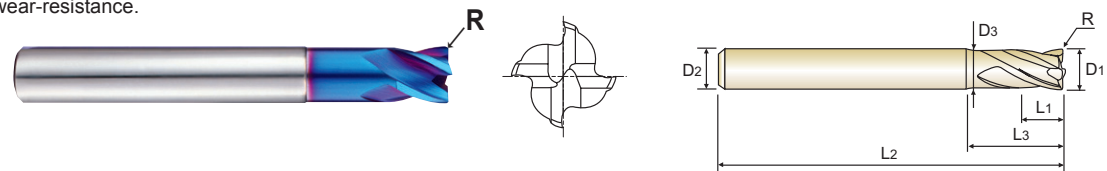
ISO	N				S					H											
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323																					
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		◎	◎	○	◎



PLAIN SHANK **G850** SERIES

**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.



◆ U.S.A Stock

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R	D1	D2	L1	L3	L2	D3
<b>G85004</b>	R.004	1/16	1/8	3/32	-	1-1/2	-
<b>G85008</b>	R.004	1/8	1/4	5/32	1/4	2	.119
<b>G85012</b>	R.004	3/16	1/4	1/4	3/8	2	.181
<b>G85016</b>	R.008	1/4	1/4	5/16	9/16	2	.238
<b>G85020</b>	R.008	5/16	5/16	3/8	3/4	2-1/2	.301
<b>G85024</b>	R.008	3/8	3/8	1/2	1	3	.363
<b>G85032</b>	R.012	1/2	1/2	5/8	1-3/16	3	.488
<b>G85040</b>	R.012	5/8	5/8	3/4	1-1/2	3-1	.613
<b>G85048</b>	R.012	3/4	3/4	1	1-3/4	4	.738

↘ The original bright blue color may discolor during use, however, the performance will not be negatively affected

Size	Corner Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	±.0002	0~-.0005	h5
over Ø1/4	±.0004	0~-.0006	

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend					○						○									

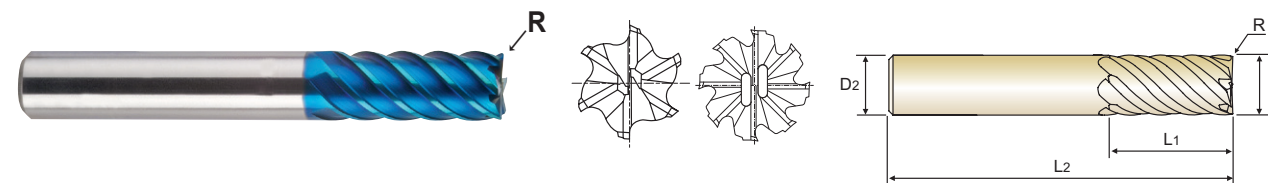
ISO	N				S						H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials			Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		◎	◎	◎	◎



PLAIN SHANK **G851** SERIES

**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.
- ▶ Corner radius for preventing the chipping in high speed machining.
- ▶ Higher wear-resistance.



◆ U.S.A Stock

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	1/4	1/4	1/2	2-1/4	6
<b>G85120</b>	R.02	5/16	5/16	3/4	2-1/2	6
<b>G85125</b>	R.03	3/8	3/8	7/8	2-7/8	6
<b>G85133</b>	R.03	1/2	1/2	1	3-1/4	6
<b>G85140</b>	R.03	5/8	5/8	1-1/4	3-5/8	6
<b>G85141</b>	R.06	5/8	5/8	1-1/4	3-5/8	6
<b>G85148</b>	R.03	3/4	3/4	1-1/2	4-1/8	8
<b>G85149</b>	R.06	3/4	3/4	1-1/2	4-1/8	8
<b>G85164</b>	R.03	1	1	1-3/4	4-1/4	8
<b>G85165</b>	R.06	1	1	1-3/4	4-1/4	8
<b>G85167</b>	R.03	1	1	4-1/8	7	8
<b>G85168</b>	R.06	1	1	4-1/8	7	8

↘ The original bright blue color may discolor during use, however, the performance will not be negatively affected

Size	Corner Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	±.0002	0~-.0005	h5
over Ø1/4	±.0004	0~-.0006	

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend					○						○									

ISO	N				S						H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials			Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		◎	◎	◎	◎





PLAIN SHANK **G859** SERIES

**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.



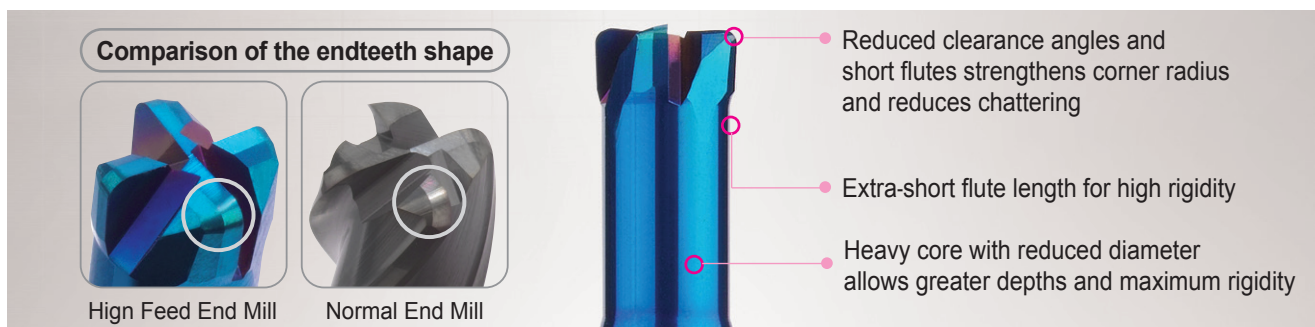
**High Feed End Mill**  
◆ U.S.A Stock

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					
G859020	R0.5	2.0	.0787	6	1	6	50	1.8
G859030	R0.5	3.0	.1181	6	1.2	8	50	2.8
G859040	R0.5	4.0	.1575	6	1.5	10	50	3.8
G859060	R0.5	6.0	.2362	6	2.5	12	60	5.4
G859061	R1.0	6.0	.2362	6	2.5	12	60	5.4
G859081	R1.0	8.0	.3150	8	3.5	16	60	7.2
G859082	R2.0	8.0	.3150	8	3.5	16	60	7.2
G859101	R1.0	10.0	.3937	10	4	20	70	9
G859102	R2.0	10.0	.3937	10	4	20	70	9
G859122	R2.0	12.0	.4724	12	5	25	80	11
G859123	R3.0	12.0	.4724	12	5	25	80	11
G859163	R3.0	16.0	.6299	16	6.5	30	90	15

▶ The original bright blue color may discolor during use, however, the performance will not be negatively affected

Mill Dia. Tolerance (inch)	Corner Radius Tolerance (inch)	Shank Dia. Tolerance
0~-.0008	±.0002	h5



◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend					○					○	○									

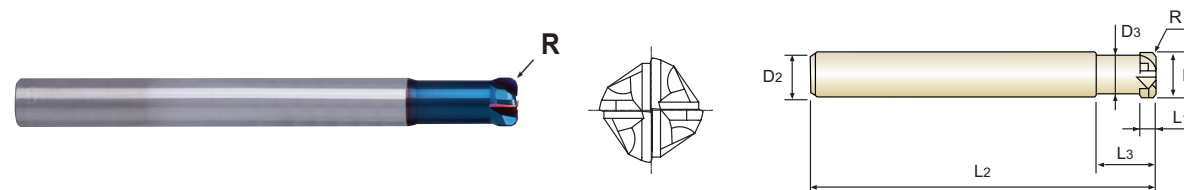
ISO Material Description	N				S						H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		◎	◎	○	◎



PLAIN SHANK **G854** SERIES

**CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS HIGH FEED (Long Shank)**

- ▶ 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.



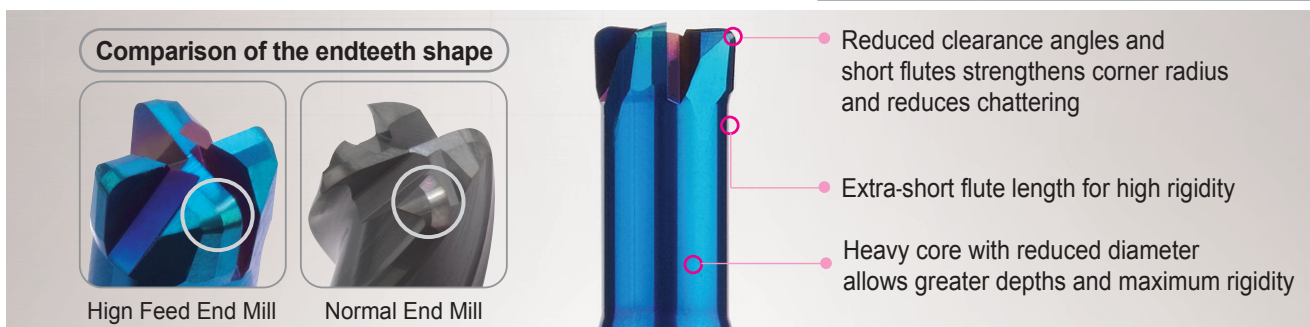
**High Feed End Mill**  
◆ U.S.A Stock

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 performance will not be negatively affected

Mill Dia. Tolerance (inch)	Corner Radius Tolerance (inch)	Shank Dia. Tolerance
0~-.0008	±.0002	h5



◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend					○					○	○									

ISO Material Description	N				S						H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		◎	◎	○	◎

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PLAIN SHANK **G8A46** SERIES

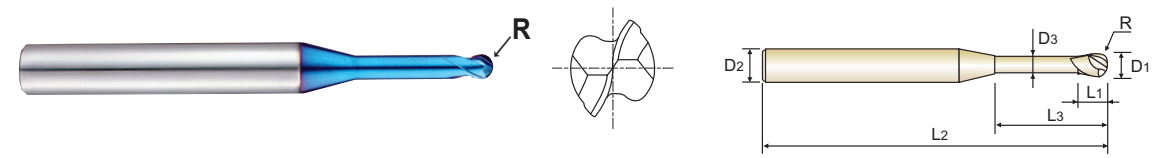
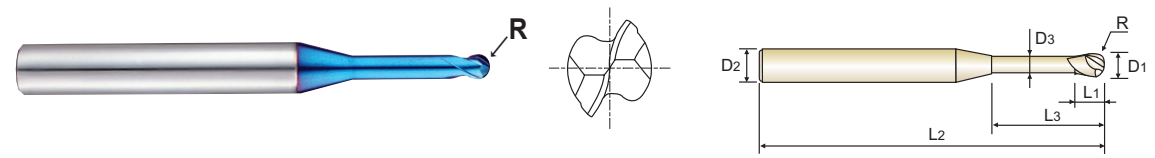
PLAIN SHANK **G8A46** SERIES

**CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING**

**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.

- ▶ 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.



◆ U.S.A Stock

◆ U.S.A Stock

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					
G8A46805	R0.05	0.1	.0039	4	0.1	0.3	45	0.085
G8A46806	R0.05	0.1	.0039	4	0.1	0.5	45	0.085
G8A46002	R0.1	0.2	.0079	4	0.2	0.5	45	0.17
G8A46977	R0.1	0.2	.0079	4	0.2	1	45	0.17
G8A46958	R0.1	0.2	.0079	4	0.2	1.5	45	0.17
G8A46003	R0.15	0.3	.0118	4	0.3	1	45	0.27
G8A46959	R0.15	0.3	.0118	4	0.3	2	45	0.27
G8A46986	R0.15	0.3	.0118	4	0.3	3	45	0.27
G8A46004	R0.2	0.4	.0157	4	0.4	1	45	0.37
G8A46960	R0.2	0.4	.0157	4	0.4	2	45	0.37
G8A46961	R0.2	0.4	.0157	4	0.4	3	45	0.37
G8A46981	R0.2	0.4	.0157	4	0.4	4	45	0.37
G8A46987	R0.2	0.4	.0157	4	0.4	5	45	0.37
G8A46005	R0.25	0.5	.0197	4	0.4	2	45	0.45
G8A46804	R0.25	0.5	.0197	4	0.4	2.5	45	0.45
G8A46962	R0.25	0.5	.0197	4	0.4	4	45	0.45
G8A46963	R0.25	0.5	.0197	4	0.4	6	45	0.45
G8A46964	R0.25	0.5	.0197	4	0.4	8	45	0.45
G8A46957	R0.3	0.6	.0236	4	0.5	2	45	0.55
G8A46988	R0.3	0.6	.0236	4	0.5	3	45	0.55
G8A46915	R0.3	0.6	.0236	4	0.5	4	45	0.55
G8A46989	R0.3	0.6	.0236	4	0.5	5	45	0.55
G8A46916	R0.3	0.6	.0236	4	0.5	6	45	0.55
G8A46917	R0.3	0.6	.0236	4	0.5	8	45	0.55

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					
G8A46990	R0.3	0.6	.0236	4	0.5	10	45	0.55
G8A46918	R0.4	0.8	.0315	4	0.6	2	45	0.75
G8A46919	R0.4	0.8	.0315	4	0.6	4	45	0.75
G8A46008	R0.4	0.8	.0315	4	0.6	6	45	0.75
G8A46901	R0.4	0.8	.0315	4	0.6	8	45	0.75
G8A46965	R0.4	0.8	.0315	4	0.6	10	45	0.75
G8A46920	R0.5	1.0	.0394	4	0.8	3	45	0.95
G8A46921	R0.5	1.0	.0394	4	0.8	4	45	0.95
G8A46923	R0.5	1.0	.0394	4	0.8	5	45	0.95
G8A46010	R0.5	1.0	.0394	4	0.8	6	45	0.95
G8A46924	R0.5	1.0	.0394	4	0.8	7	45	0.95
G8A46902	R0.5	1.0	.0394	4	0.8	8	45	0.95
G8A46925	R0.5	1.0	.0394	4	0.8	9	45	0.95
G8A46903	R0.5	1.0	.0394	4	0.8	10	45	0.95
G8A46904	R0.5	1.0	.0394	4	0.8	12	45	0.95
G8A46926	R0.5	1.0	.0394	4	0.8	14	50	0.95
G8A46927	R0.5	1.0	.0394	4	0.8	16	50	0.95
G8A46966	R0.5	1.0	.0394	4	0.8	20	55	0.95
G8A46982	R0.6	1.2	.0472	4	1.0	6	45	1.15
G8A46012	R0.6	1.2	.0472	4	1.0	8	45	1.15
G8A46983	R0.6	1.2	.0472	4	1.0	10	45	1.15
G8A46905	R0.6	1.2	.0472	4	1.0	12	45	1.15
G8A46930	R0.75	1.5	.0472	4	1.2	6	45	1.45
G8A46015	R0.75	1.5	.0472	4	1.2	8	45	1.45

▶ The original bright blue color may discolor during use, however, the performance will not be negatively affected

▶ The original bright blue color may discolor during use, however, the performance will not be negatively affected

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.012	h5

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.012	h5

▶ NEXT PAGE

▶ NEXT PAGE

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend					○					○										

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron				
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		◎	◎	○	◎

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend					○					○										

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron				
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		◎	◎	○	◎

HSS

HSS



PLAIN SHANK **G8A46** SERIES

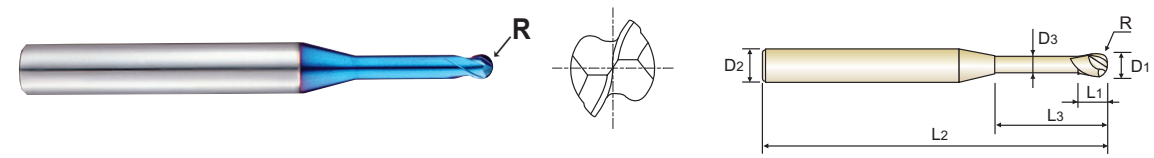
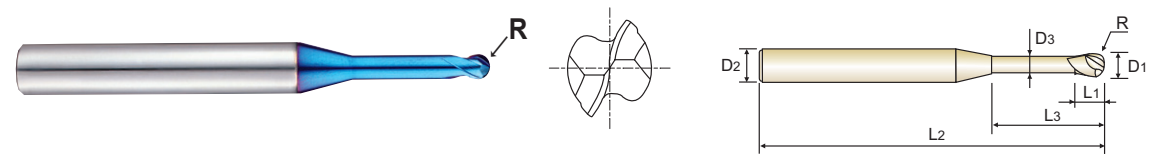
PLAIN SHANK **G8A46** SERIES

**CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING**

**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.

- ▶ 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.



CARBIDE 2 BLUE 30° ±0.005 PLAIN p.C114 **◆ U.S.A Stock**

CARBIDE 2 BLUE 30° ±0.005 PLAIN p.C114 **◆ U.S.A Stock**

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					
G8A46931	R0.75	1.5	.0472	4	1.2	10	45	1.45
G8A46906	R0.75	1.5	.0472	4	1.2	12	45	1.45
G8A46992	R0.75	1.5	.0472	4	1.2	14	50	1.45
G8A46907	R0.75	1.5	.0472	4	1.2	16	50	1.45
G8A46932	R0.75	1.5	.0472	4	1.2	20	55	1.45
G8A46939	R1.0	2.0	.0787	4	1.6	4	45	1.95
G8A46940	R1.0	2.0	.0787	4	1.6	6	45	1.95
G8A46020	R1.0	2.0	.0787	4	1.6	8	45	1.95
G8A46941	R1.0	2.0	.0787	4	1.6	10	45	1.95
G8A46942	R1.0	2.0	.0787	4	1.6	12	50	1.95
G8A46943	R1.0	2.0	.0787	4	1.6	14	50	1.95
G8A46909	R1.0	2.0	.0787	4	1.6	16	50	1.95
G8A46993	R1.0	2.0	.0787	4	1.6	18	55	1.95
G8A46910	R1.0	2.0	.0787	4	1.6	20	55	1.95
G8A46944	R1.0	2.0	.0787	4	1.6	22	60	1.95
G8A46945	R1.0	2.0	.0787	4	1.6	25	60	1.95
G8A46967	R1.0	2.0	.0787	4	1.6	30	70	1.95
G8A46948	R1.5	3.0	.1181	6	2.4	12	50	2.85
G8A46984	R1.5	3.0	.1181	6	2.4	14	55	2.85
G8A46030	R1.5	3.0	.1181	6	2.4	16	55	2.85
G8A46985	R1.5	3.0	.1181	6	2.4	18	60	2.85
G8A46911	R1.5	3.0	.1181	6	2.4	20	60	2.85
G8A46968	R1.5	3.0	.1181	6	2.4	25	65	2.85
G8A46969	R1.5	3.0	.1181	6	2.4	30	70	2.85

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					
G8A46970	R1.5	3.0	.1181	6	2.4	35	80	2.85
G8A46950	R2.0	4.0	.1575	6	3.2	12	60	3.85
G8A46040	R2.0	4.0	.1575	6	3.2	16	60	3.85
G8A46912	R2.0	4.0	.1575	6	3.2	20	65	3.85
G8A46913	R2.0	4.0	.1575	6	3.2	25	70	3.85
G8A46971	R2.0	4.0	.1575	6	3.2	30	70	3.85
G8A46972	R2.0	4.0	.1575	6	3.2	35	80	3.85
G8A46973	R2.0	4.0	.1575	6	3.2	40	90	3.85
G8A46974	R2.0	4.0	.1575	6	3.2	45	90	3.85
G8A46975	R2.0	4.0	.1575	6	3.2	50	100	3.85

▶ The original bright blue color may discolor during use, however, the performance will not be negatively affected

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.012	h5

▶ NEXT PAGE

▶ The original bright blue color may discolor during use, however, the performance will not be negatively affected

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.012	h5

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend					○					○										

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
Recommend																		◎	◎	○	◎

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend					○					○										

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
Recommend																		◎	◎	○	◎



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PLAIN SHANK G8A54 SERIES



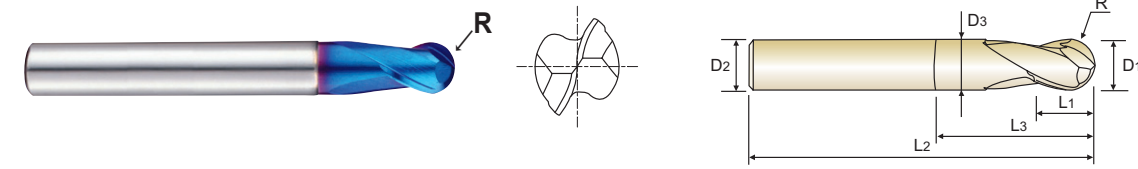
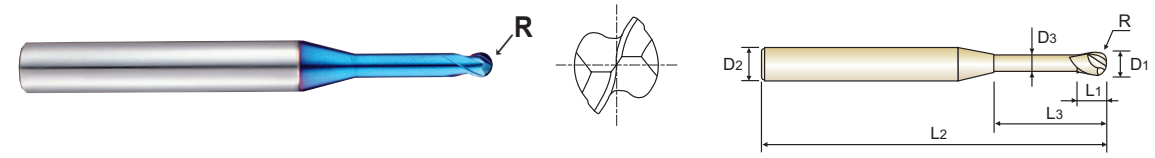
PLAIN SHANK G8A28 SERIES

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING

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.

- 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.



Icons for CARBIDE, 2, BLUE, 30°, ±0.005, PLAIN, and U.S.A Stock

Icons for CARBIDE, 2, BLUE, 30°, ±0.005, ±0.010, PLAIN, and U.S.A Stock

Table with 8 columns: EDP No., Radius of Ball Nose, Mill Diameter (Metric/Inch), Shank Diameter, Length of Cut, Length Below Shank, Overall Length, Neck Diameter. Lists 20 different end mill models.

Table with 8 columns: EDP No., Radius of Ball Nose, Mill Diameter (Metric/Inch), Shank Diameter, Length of Cut, Length Below Shank, Overall Length, Neck Diameter. Lists 30 different end mill models.

The original bright blue color may discolor during use, however, the performance will not be negatively affected. Mill Dia. Tolerance(mm) 0~-0.012, Shank Dia. Tolerance h5

The original bright blue color may discolor during use, however, the performance will not be negatively affected. Size up to R3, Corner Radius Tolerance (mm) ±0.005, Mill Dia. Tolerance (mm) 0 ~ - 0.012, Shank Dia. Tolerance h5

ISO material compatibility chart for G8A54 series, showing suitability for various materials like Non-alloy steel, Low alloy steel, Stainless steel, etc.

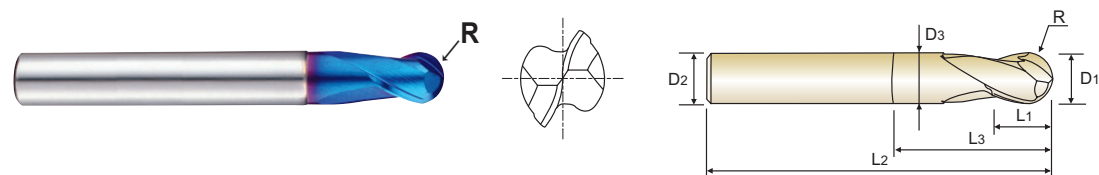
ISO material compatibility chart for G8A28 series, showing suitability for various materials like Non-alloy steel, Low alloy steel, Stainless steel, etc.



PLAIN SHANK **G8A38** SERIES

**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.



CARBIDE 2 BLUE 30° ±0.005 ±0.010 PLAIN U.S.A Stock

EDP No.	Radius of Ball Nose R	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric	Inch					
		D1						
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
G8A380204S	R1.0	2.0	.0787	4	2	4	50	1.95
G8A38020	R1.0	2.0	.0787	6	2	4	50	1.95
G8A38030	R1.5	3.0	.1181	6	3	6	60	2.85
G8A38040	R2.0	4.0	.1575	6	4	8	70	3.85
G8A38050	R2.5	5.0	.1969	6	5	10	80	4.85
G8A38060	R3.0	6.0	.2362	6	6	12	90	5.85
G8A38070	R3.5	7.0	.2756	8	7	14	90	6.7
G8A38080	R4.0	8.0	.3150	8	8	16	100	7.7
G8A38090	R4.5	9.0	.3543	10	9	18	100	8.7
G8A38100	R5.0	10.0	.3937	10	10	20	100	9.7
G8A38120	R6.0	12.0	.4724	12	12	24	110	11.7
G8A38140	R7.0	14.0	.5512	14	14	28	110	13.7
G8A38160	R8.0	16.0	.6299	16	16	32	140	15.7
G8A38180	R9.0	18.0	.7087	18	18	36	140	17.7
G8A38200	R10.0	20.0	.7874	20	20	40	160	19.7
G8A38250	R12.5	25.0	.9843	25	25	50	180	24.7

↙ The original bright blue color may discolor during use, however, the performance will not be negatively affected

Size	Corner Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to R3	±0.005	0 ~ - 0.012	h5
over R3	±0.010	0 ~ - 0.015	

© : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323																				
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend					○					○	○									

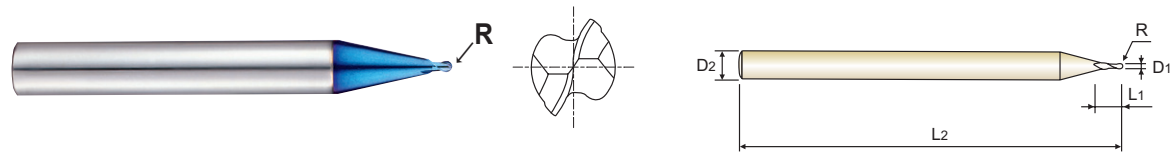
ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323																					
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		◎	◎	○	◎



PLAIN SHANK **G8A53** SERIES

**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.



CARBIDE 2 BLUE 30° ±0.005 PLAIN U.S.A Stock

EDP No.	Radius of Ball Nose R (±0.005)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Overall Length L2
		Metric	Inch			
		D1				
G8A53004	R0.2	0.4	.0157	6	0.4	50
G8A53005	R0.25	0.5	.0197	6	0.5	50
G8A53006	R0.3	0.6	.0236	6	0.6	50
G8A53008	R0.4	0.8	.0315	6	0.8	50
G8A53010	R0.5	1.0	.0394	6	1.0	50
G8A53012	R0.6	1.2	.0472	6	1.2	50
G8A53015	R0.75	1.5	.0591	6	1.5	50
G8A53020	R1.0	2.0	.0787	6	2.0	50

↙ The original bright blue color may discolor during use, however, the performance will not be negatively affected

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.012	h5

© : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323																				
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend					○					○	○									

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323																					
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		◎	◎	○	◎

HSS

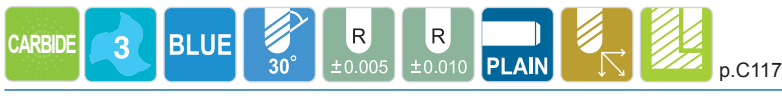
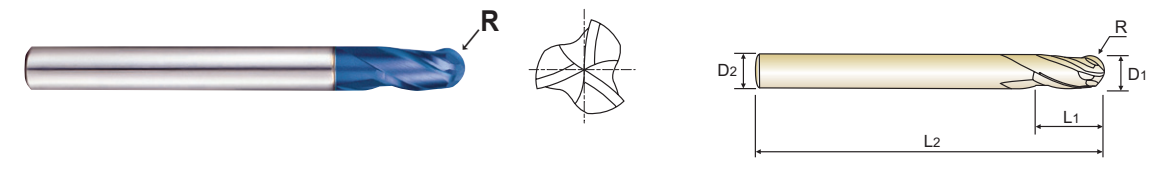
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PLAIN SHANK G8A59 SERIES

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.



U.S.A Stock

Table with columns: EDP No., Radius of Ball Nose (R), Mill Diameter (Metric D1, Inch), Shank Diameter (D2), Length of Cut (L1), Overall Length (L2). Rows include G8A59030 to G8A59200.

The original bright blue color may discolor during use, however, the performance will not be negatively affected

Table with columns: Size, Corner Radius Tolerance (mm), Mill Dia. Tolerance (mm), Shank Dia. Tolerance. Rows: up to R3, over R3.

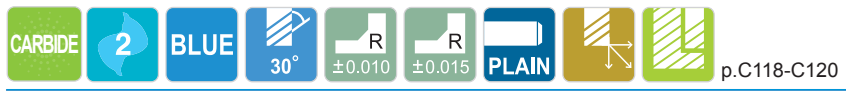
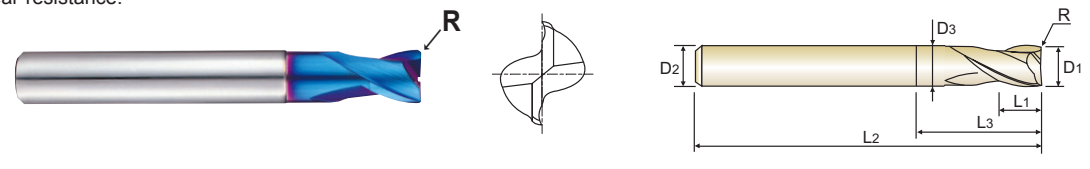
ISO material compatibility chart for G8A59 series. Columns: P (Non-alloy steel, Low alloy steel, High alloyed steel, Stainless steel, Grey cast iron, Nodular cast iron, Malleable cast iron), S (Aluminum-wrought alloy, Aluminum-cast, Copper and Copper Alloys, Non Metallic Materials, Heat Resistant Super Alloys, Titanium Alloys), H (Hardened steel, Chilled Cast Iron, Hardened Cast Iron).



PLAIN SHANK G8A36 SERIES

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.



U.S.A Stock

Table with columns: EDP No., Corner Radius (R), Mill Diameter (Metric D1, Inch), Shank Diameter (D2), Length of Cut (L1), Length Below Shank (L3), Overall Length (L2), Neck Diameter (D3). Rows include G8A36003 to G8A36045.

The original bright blue color may discolor during use, however, the performance will not be negatively affected

Table with columns: Size, Corner Radius Tolerance (mm), Mill Dia. Tolerance (mm), Shank Dia. Tolerance. Rows: up to Ø6, over Ø6.

ISO material compatibility chart for G8A36 series. Columns: P (Non-alloy steel, Low alloy steel, High alloyed steel, Stainless steel, Grey cast iron, Nodular cast iron, Malleable cast iron), S (Aluminum-wrought alloy, Aluminum-cast, Copper and Copper Alloys, Non Metallic Materials, Heat Resistant Super Alloys, Titanium Alloys), H (Hardened steel, Chilled Cast Iron, Hardened Cast Iron).

HSS

CBN END MILLS

i-Xmill END MILLS

i-SMART MODULAR END MILLS

X5070 END MILLS

4G MILL END MILLS

X-POWER PRO END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

V7 PLUS A END MILLS

V7 MILL INOX

ALU-POWER HPC END MILLS

ALU-POWER END MILLS

D-POWER GRAPHITE END MILLS

STANDARD CARBIDE

ONLY ONE COATED PM60 END MILLS

SINE-POWER

TANK-POWER END MILLS

STANDARD COBALT & HSS

TECHNICAL DATA

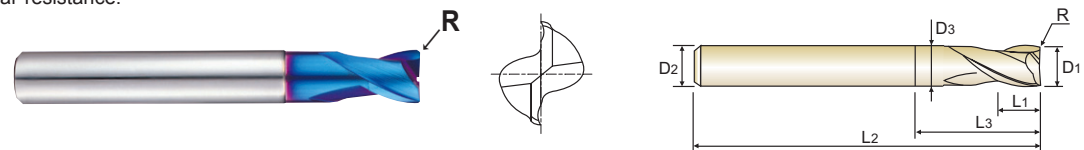




PLAIN SHANK **G8A36** SERIES

**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.



◆ U.S.A Stock

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	Inch					
		D1						
G8A36050	R0.2	5.0	.1969	6	6	11	50	4.85
G8A36060	R0.2	6.0	.2362	6	7	14	50	5.85
G8A36080	R0.2	8.0	.3150	8	9	18	60	7.7
G8A36100	R0.2	10.0	.3937	10	12	25	75	9.7
G8A36120	R0.3	12.0	.4724	12	15	30	75	11.7
G8A36160	R0.3	16.0	.6299	16	18	38	90	15.7
G8A36200	R0.3	20.0	.7874	20	24	45	100	19.7

↙ The original bright blue color may discolor during use, however, the performance will not be negatively affected

Size	Corner Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	±0.010	0 ~ - 0.012	h5
over Ø6	±0.015	0 ~ - 0.015	

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend					○					○	○										

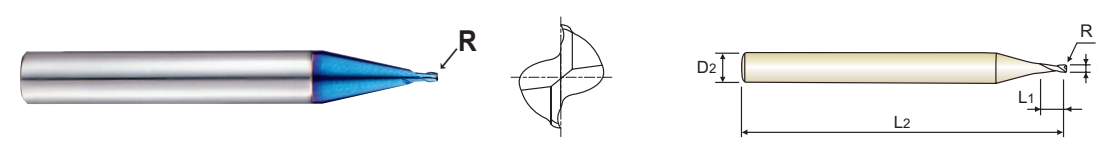
ISO Material Description	N				S						H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials			Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		◎	◎	○	◎



PLAIN SHANK **G8A50** SERIES

**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.
- ▶ Corner radius for preventing the chipping in high speed machining.
- ▶ Higher wear-resistance.



◆ U.S.A Stock

Unit : mm

EDP No.	Corner Radius R (±0.010)	Mill Diameter		Shank Diameter D2	Length of Cut L1	Overall Length L2
		Metric	Inch			
		D1				
G8A50003	-	0.3	.0118	6	0.45	50
G8A50004	-	0.4	.0157	6	0.6	50
G8A50005	R0.05	0.5	.0197	6	0.7	50
G8A50006	R0.05	0.6	.0236	6	0.9	50
G8A50008	R0.05	0.8	.0315	6	1.2	50
G8A50010	R0.1	1.0	.0394	6	1.5	50
G8A50012	R0.1	1.2	.0472	6	1.8	50
G8A50015	R0.15	1.5	.0591	6	2.2	50
G8A50020	R0.15	2.0	.0787	6	2.2	50

↙ The original bright blue color may discolor during use, however, the performance will not be negatively affected

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.012	h5

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend					○					○	○										

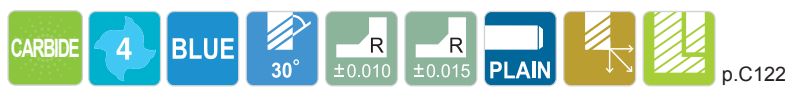
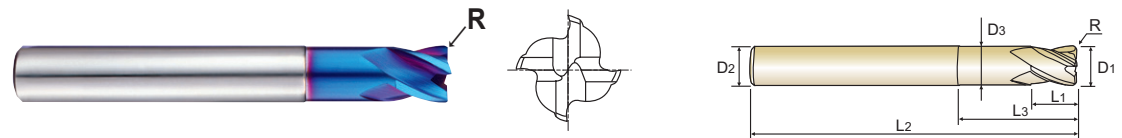
ISO Material Description	N				S						H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials			Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		◎	◎	○	◎



PLAIN SHANK **G8A47** SERIES

**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.



◆ U.S.A Stock

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	Inch					
		D1						
G8A47916	R0.3	3.0	.1181	6	4	12	55	2.85
G8A47917	R0.3	3.0	.1181	6	4	16	55	2.85
G8A47918	R0.3	3.0	.1181	6	4	20	55	2.85
G8A47030	R0.5	3.0	.1181	6	4	10	55	2.85
G8A47901	R0.5	3.0	.1181	6	4	16	55	2.85
G8A47902	R0.5	3.0	.1181	6	4	20	55	2.85
G8A47919	R0.3	4.0	.1575	6	5	12	55	3.85
G8A47920	R0.3	4.0	.1575	6	5	16	55	3.85
G8A47921	R0.3	4.0	.1575	6	5	20	55	3.85
G8A47040	R0.5	4.0	.1575	6	5	12	55	3.85
G8A47903	R0.5	4.0	.1575	6	5	16	55	3.85
G8A47904	R0.5	4.0	.1575	6	5	20	55	3.85
G8A47922	R1.0	4.0	.1575	6	5	12	55	3.85
G8A47060	R0.5	6.0	.2362	6	7	20	60	5.85
G8A47905	R1.0	6.0	.2362	6	7	20	60	5.85
G8A47906	R1.5	6.0	.2362	6	7	20	60	5.85
G8A47910	R0.5	8.0	.3150	8	9	25	60	7.7
G8A47080	R1.0	8.0	.3150	8	9	25	60	7.7
G8A47907	R1.5	8.0	.3150	8	9	25	60	7.7
G8A47913	R2.0	8.0	.3150	8	9	25	60	7.7
G8A47911	R0.5	10.0	.3937	10	11	32	70	9.7
G8A47100	R1.0	10.0	.3937	10	11	32	70	9.7
G8A47908	R1.5	10.0	.3937	10	11	32	70	9.7
G8A47914	R2.0	10.0	.3937	10	11	32	70	9.7
G8A47912	R0.5	12.0	.4724	12	12	38	80	11.7
G8A47120	R1.0	12.0	.4724	12	12	38	80	11.7
G8A47909	R1.5	12.0	.4724	12	12	38	80	11.7
G8A47915	R2.0	12.0	.4724	12	12	38	80	11.7

Size	Corner Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	±0.010	0 ~ - 0.012	h5
over Ø6	±0.015	0 ~ - 0.015	

▶ The original bright blue color may discolor during use, however, the performance will not be negatively affected

◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend					○					○	○										

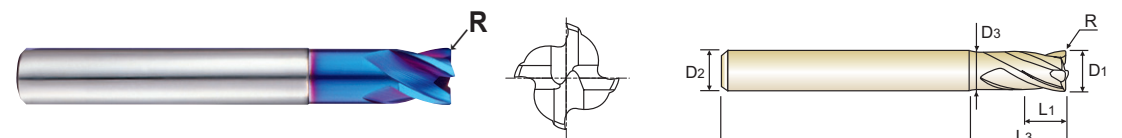
ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron								
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34		55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											◎	◎					◎	◎	○		◎



PLAIN SHANK **G8A37** SERIES

**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.



◆ U.S.A Stock

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	Inch					
		D1						
G8A37010	R0.1	1.0	.0394	3	1.5	-	40	-
G8A37901	R0.1	1.0	.0394	6	1.5	-	40	-
G8A37015	R0.1	1.5	.0591	3	2.2	-	40	-
G8A37902	R0.1	1.5	.0591	6	2.2	-	40	-
G8A37020	R0.1	2.0	.0787	3	3	6	40	1.95
G8A37903	R0.1	2.0	.0787	6	3	6	40	1.95
G8A37025	R0.1	2.5	.0984	3	4	6	40	2.4
G8A37904	R0.1	2.5	.0984	6	4	6	40	2.4
G8A37030	R0.1	3.0	.1181	6	4	7	45	2.85
G8A37035	R0.1	3.5	.1378	6	5	9	45	3.35
G8A37040	R0.1	4.0	.1575	6	5	9	45	3.85
G8A37045	R0.1	4.5	.1772	6	6	10	45	4.35
G8A37050	R0.2	5.0	.1969	6	6	11	50	4.85
G8A37060	R0.2	6.0	.2362	6	7	14	50	5.85
G8A37080	R0.2	8.0	.3150	8	9	18	60	7.7
G8A37100	R0.2	10.0	.3937	10	12	25	75	9.7
G8A37120	R0.3	12.0	.4724	12	15	30	75	11.7
G8A37160	R0.3	16.0	.6299	16	18	38	90	15.7
G8A37200	R0.3	20.0	.7874	20	24	45	100	19.7

▶ The original bright blue color may discolor during use, however, the performance will not be negatively affected

Size	Corner Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	±0.010	0 ~ - 0.012	h5
over Ø6	±0.015	0 ~ - 0.015	

◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend					○					○	○										

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron								
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34		55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											◎	◎					◎	◎	○		◎

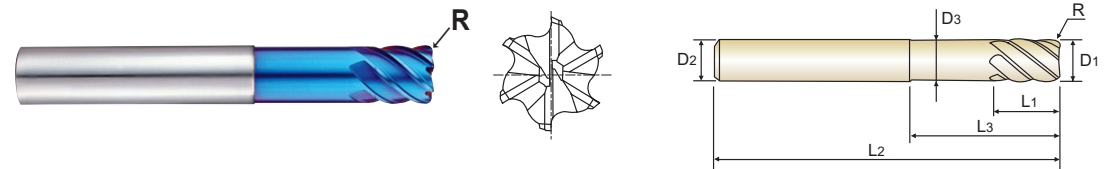
HSS



PLAIN SHANK **G8A39** SERIES

**CARBIDE, 6 FLUTE 45° HELIX 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.



CARBIDE 6 BLUE 45° ±0.010 ±0.015 PLAIN U.S.A Stock

EDP No.	Corner Radius R	Mill Diameter D1		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
		Metric	Inch					
G8A39916	R0.25	6.0	.2362	6	6	14	50	5.85
G8A39060	R0.5	6.0	.2362	6	6	14	50	5.85
G8A39901	R0.5	6.0	.2362	6	13	-	70	-
* G8A39910	R0.5	6.0	.2362	6	26	-	70	-
G8A39080	R0.5	8.0	.3150	8	8	24	60	7.7
G8A39902	R0.5	8.0	.3150	8	19	-	90	-
* G8A39911	R0.5	8.0	.3150	8	36	-	90	-
G8A39903	R0.5	10.0	.3937	10	22	-	100	-
G8A39100	R1.0	10.0	.3937	10	10	30	70	9.7
G8A39904	R1.0	10.0	.3937	10	22	-	100	-
* G8A39912	R1.0	10.0	.3937	10	46	-	100	-
G8A39905	R0.5	12.0	.4724	12	26	-	110	-
G8A39120	R1.0	12.0	.4724	12	12	30	75	11.7
G8A39906	R1.0	12.0	.4724	12	26	-	110	-
* G8A39913	R1.0	12.0	.4724	12	56	-	110	-
G8A39160	R1.0	16.0	.6299	16	32	-	130	-
G8A39907	R1.5	16.0	.6299	16	32	-	130	-
* G8A39914	R1.5	16.0	.6299	16	66	-	130	-
G8A39200	R1.0	20.0	.7874	20	38	-	140	-
G8A39908	R1.5	20.0	.7874	20	38	-	140	-
G8A39909	R2.0	20.0	.7874	20	38	-	140	-
* G8A39915	R2.0	20.0	.7874	20	76	-	140	-

The original bright blue color may discolor during use, however, the performance will not be negatively affected

Size	Corner Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	±0.010	0~-0.02	h5
over Ø6	±0.015	(* Extra Long Type : 0~-0.03)	

◎ : Excellent ○ : Good

ISO	P									M				K								
	Non-alloy steel			Low alloy steel			High alloyed steel, and tool steel			Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron						
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	
HB	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360	370	380	390	
Recommend																						

ISO	N					S					H											
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron	
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150	155	160	
HB	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	
Recommend																						



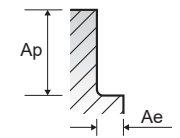
**RECOMMENDED CUTTING CONDITIONS**

**G826** SERIES 4 FLUTE CORNER RADIUS - SIDE CUTTING

HIGH SPEED

ISO	VDI 3323	Material Description	HRc	Ae	Ap	Parameter	Diameter (Ø)					
							1/8	3/16	1/4	5/16	3/8	1/2
P	5	Non-alloy steel	32	0.3D	0.1R	SFM (vc)	685	810	820	820	835	850
						IPT (fz)	.0071	.0109	.0144	.0180	.0212	.0277
						RPM	21000	16500	12500	10000	8500	6500
						IPM (feed)	600	720	720	720	720	720
						SFM (vc)	685	810	820	820	835	850
						IPT (fz)	.0071	.0109	.0144	.0180	.0212	.0277
	8-9	Low alloy steel	32-38	0.3D	0.1R	SFM (vc)	685	810	820	820	835	850
						IPT (fz)	.0071	.0109	.0144	.0180	.0212	.0277
						RPM	21000	16500	12500	10000	8500	6500
						IPM (feed)	600	720	720	720	720	720
						SFM (vc)	685	810	820	820	835	850
						IPT (fz)	.0071	.0109	.0144	.0180	.0212	.0277
11.1	High alloyed steel, and tool steel	35	0.3D	0.1R	SFM (vc)	685	810	820	820	835	850	
					IPT (fz)	.0071	.0109	.0144	.0180	.0212	.0277	
					RPM	21000	16500	12500	10000	8500	6500	
					IPM (feed)	600	720	720	720	720	720	
					SFM (vc)	525	665	655	655	660	655	
					IPT (fz)	.0059	.0102	.0138	.0172	.0205	.0275	
11.2	High alloyed steel, and tool steel	44	0.3D	0.1R	SFM (vc)	525	665	655	655	660	655	
					IPT (fz)	.0059	.0102	.0138	.0172	.0205	.0275	
					RPM	16000	13500	10000	8000	6700	5000	
					IPM (feed)	380	550	550	550	550	550	
					SFM (vc)	395	565	555	555	560	565	
					IPT (fz)	.0063	.0091	.0124	.0154	.0184	.0244	
H	38.1	Hardened steel	45-49	0.3D	0.1R	SFM (vc)	525	665	655	655	660	655
						IPT (fz)	.0059	.0102	.0138	.0172	.0205	.0275
						RPM	16000	13500	10000	8000	6700	5000
						IPM (feed)	380	550	550	550	550	550
						SFM (vc)	295	395	395	395	395	395
						IPT (fz)	.0047	.0078	.0104	.0130	.0156	.0208
	38.2	Hardened steel	50-55	0.3D	0.1R	SFM (vc)	295	395	395	395	395	395
						IPT (fz)	.0047	.0078	.0104	.0130	.0156	.0208
						RPM	9000	8000	6000	4800	4000	3000
						IPM (feed)	170	250	250	250	250	250
						SFM (vc)	215	280	280	280	280	280
						IPT (fz)	.0035	.0066	.0087	.0110	.0132	.0174
39.1	Hardened steel	56-60	0.3D	0.05R	SFM (vc)	6500	5700	4300	3400	2850	2150	
					IPT (fz)	.0035	.0066	.0087	.0110	.0132	.0174	
					RPM	92	150	150	150	150	150	
					IPM (feed)	92	150	150	150	150	150	
					SFM (vc)	215	280	280	280	280	280	
					IPT (fz)	.0035	.0066	.0087	.0110	.0132	.0174	
39.2	Hardened steel	61-65	0.3D	0.05R	SFM (vc)	6500	5700	4300	3400	2850	2150	
					IPT (fz)	.0035	.0066	.0087	.0110	.0132	.0174	
					RPM	92	150	150	150	150	150	
					IPM (feed)	92	150	150	150	150	150	
					SFM (vc)	525	665	655	655	660	655	
					IPT (fz)	.0059	.0102	.0138	.0172	.0205	.0275	
40	Chilled Cast Iron	42	0.3D	0.1R	SFM (vc)	16000	13500	10000	8000	6700	5000	
					IPT (fz)	.0059	.0102	.0138	.0172	.0205	.0275	
					RPM	16000	13500	10000	8000	6700	5000	
					IPM (feed)	380	550	550	550	550	550	
					SFM (vc)	395	565	555	555	560	565	
					IPT (fz)	.0063	.0091	.0124	.0154	.0184	.0244	
41	Hardened Cast Iron	55	0.3D	0.1R	SFM (vc)	12000	11500	8500	6800	5700	4300	
					IPT (fz)	.0063	.0091	.0124	.0154	.0184	.0244	
					RPM	12000	11500	8500	6800	5700	4300	
					IPM (feed)	300	420	420	420	420	420	
					SFM (vc)	395	565	555	555	560	565	
					IPT (fz)	.0063	.0091	.0124	.0154	.0184	.0244	

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)



HSS

CBN END MILLS

i-Xmill END MILLS

i-SMART MODULAR END MILLS

X5070 END MILLS

4G MILL END MILLS

X-POWER PRO END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

V7 PLUS A END MILLS

V7 MILL INOX

ALU-POWER HPC END MILLS

ALU-POWER END MILLS

D-POWER GRAPHITE END MILLS

STANDARD CARBIDE

ONLY ONE COATED PM60 END MILLS

SINE-POWER

TANK-POWER END MILLS

STANDARD COBALT & HSS

TECHNICAL DATA

TECHNICAL DATA



HSS

HSS



RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

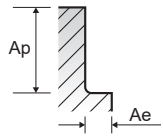
**G826** SERIES 4 FLUTE CORNER RADIUS - SIDE CUTTING

**G8A43** SERIES 2 FLUTE BALL NOSE

NORMAL SPEED

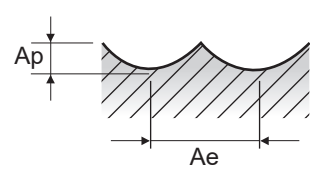
ISO	VDI 3323	Material Description	HRc	Ae	Ap	Parameter	Diameter (Ø)					
							1/8	3/16	1/4	5/16	3/8	1/2
P	5	Non-alloy steel	32	0.5D	0.2R	SFM (vc)	295	370	360	370	375	365
						IPT (fz)	.0068	.0103	.0141	.0172	.0204	.0277
						RPM	9000	7500	5500	4500	3800	2800
						IPM (feed)	245	310	310	310	310	310
	8-9	Low alloy steel	32-38	0.5D	0.2R	SFM (vc)	295	370	360	370	375	365
						IPT (fz)	.0068	.0103	.0141	.0172	.0204	.0277
						RPM	9000	7500	5500	4500	3800	2800
						IPM (feed)	245	310	310	310	310	310
	11.1	High alloyed steel, and tool steel	35	0.5D	0.2R	SFM (vc)	295	370	360	370	375	365
						IPT (fz)	.0068	.0103	.0141	.0172	.0204	.0277
						RPM	9000	7500	5500	4500	3800	2800
						IPM (feed)	245	310	310	310	310	310
11.2	High alloyed steel, and tool steel	44	0.5D	0.2R	SFM (vc)	215	250	255	255	255	255	
					IPT (fz)	.0060	.0098	.0128	.0161	.0192	.0256	
					RPM	6500	5100	3900	3100	2600	1950	
					IPM (feed)	155	200	200	200	200	200	
H	38.1	45-49	0.5D	0.2R	SFM (vc)	215	250	255	255	255	255	
					IPT (fz)	.0060	.0098	.0128	.0161	.0192	.0256	
					RPM	6500	5100	3900	3100	2600	1950	
					IPM (feed)	155	200	200	200	200	200	
	38.2	50-55	0.5D	0.2R	SFM (vc)	140	185	185	180	180	185	
					IPT (fz)	.0058	.0092	.0125	.0159	.0189	.0250	
					RPM	4300	3800	2800	2200	1850	1400	
					IPM (feed)	100	140	140	140	140	140	
	39.1	56-60	0.5D	0.1R	SFM (vc)	90	115	115	115	115	115	
					IPT (fz)	.0040	.0074	.0100	.0125	.0150	.0199	
					RPM	2700	2350	1750	1400	1170	880	
					IPM (feed)	43	70	70	70	70	70	
39.2	61-65	0.5D	0.1R	SFM (vc)	60	80	80	80	80	80		
				IPT (fz)	.0032	.0045	.0060	.0075	.0089	.0119		
				RPM	1800	1650	1250	1000	840	630		
				IPM (feed)	23	30	30	30	30	30		
40	Chilled Cast Iron	42	0.5D	0.2R	SFM (vc)	215	250	255	255	255	255	
					IPT (fz)	.0060	.0098	.0128	.0161	.0192	.0256	
					RPM	6500	5100	3900	3100	2600	1950	
					IPM (feed)	155	200	200	200	200	200	
41	Hardened Cast Iron	55	0.5D	0.1R	SFM (vc)	140	185	185	180	180	185	
					IPT (fz)	.0058	.0092	.0125	.0159	.0189	.0250	
					RPM	4300	3800	2800	2200	1850	1400	
					IPM (feed)	100	140	140	140	140	140	

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)



ISO	VDI 3323	Material Description	HRc	Ae	Ap	Parameter	Diameter (Ø)								
							1/32	1/16	3/32	1/8	3/16	1/4	5/16	3/8	1/2
P	5	Non-alloy steel	32	0.05D	0.02D	SFM (vc)	410	815	1220	1085	915	910	910	910	
						IPT (fz)	.0019	.0023	.0023	.0036	.0061	.0069	.0074	.0078	.0083
						RPM	50000	49700	49700	33100	18600	13900	11100	9300	6950
						IPM (feed)	189	224	224	236	228	191	165	146	116
	8-9	Low alloy steel	32-38	0.05D	0.02D	SFM (vc)	410	815	1220	1085	915	910	910	910	
						IPT (fz)	.0019	.0023	.0023	.0036	.0061	.0069	.0074	.0078	.0083
						RPM	50000	49700	49700	33100	18600	13900	11100	9300	6950
						IPM (feed)	189	224	224	236	228	191	165	146	116
	11.1	High alloyed steel, and tool steel	35	0.05D	0.02D	SFM (vc)	410	815	1220	1085	915	910	910	910	
						IPT (fz)	.0019	.0023	.0023	.0036	.0061	.0069	.0074	.0078	.0083
						RPM	50000	49700	49700	33100	18600	13900	11100	9300	6950
						IPM (feed)	189	224	224	236	228	191	165	146	116
11.2	High alloyed steel, and tool steel	44	0.05D	0.02D	SFM (vc)	410	780	1175	1040	875	875	875	875		
					IPT (fz)	.0017	.0020	.0020	.0033	.0054	.0060	.0064	.0069	.0073	
					RPM	50000	47800	47800	31800	17800	13400	10700	8900	6680	
					IPM (feed)	165	189	189	209	193	161	138	122	98	
H	38.1	45-49	0.05D	0.02D	SFM (vc)	410	780	1175	1040	875	875	875	875		
					IPT (fz)	.0017	.0020	.0020	.0033	.0054	.0060	.0064	.0069	.0073	
					RPM	50000	47800	47800	31800	17800	13400	10700	8900	6680	
					IPM (feed)	165	189	189	209	193	161	138	122	98	
	38.2	50-55	0.05D	0.02D	SFM (vc)	370	655	980	865	735	720	735	735		
					IPT (fz)	.0017	.0020	.0020	.0030	.0049	.0055	.0059	.0063	.0067	
					RPM	45000	40000	40000	26500	15000	11000	9000	7500	5600	
					IPM (feed)	150	158	158	158	148	122	106	95	75	
	39.1	Hardened steel	56-60	0.05D	0.02D	SFM (vc)	325	575	860	770	665	655	655	650	
						IPT (fz)	.0015	.0018	.0018	.0026	.0044	.0049	.0053	.0057	.0061
						RPM	40000	35000	35000	23500	13500	10000	8000	6600	5000
						IPM (feed)	118	124	124	124	120	98	85	75	61
39.2	Hardened steel	61-65	0.05D	0.02D	SFM (vc)	285	525	785	685	565	575	575	570		
					IPT (fz)	.0015	.0017	.0017	.0026	.0043	.0048	.0052	.0056	.0056	
					RPM	35000	32000	32000	21000	11500	8800	7000	5800	4400	
					IPM (feed)	102	110	110	110	100	85	73	65	49	
39.3	Hardened steel	66-70	0.05D	0.02D	SFM (vc)	285	465	700	620	515	525	530	520		
					IPT (fz)	.0013	.0016	.0016	.0024	.0040	.0043	.0047	.0051	.0051	
					RPM	35000	28500	28500	19000	10500	8000	6500	5300	4000	
					IPM (feed)	91	91	91	91	83	69	61	54	41	
40	Chilled Cast Iron	42	0.05D	0.02D	SFM (vc)	410	780	1175	1040	875	875	875	875		
					IPT (fz)	.0017	.0020	.0020	.0033	.0054	.0060	.0064	.0069	.0073	
					RPM	50000	47800	47800	31800	17800	13400	10700	8900	6680	
					IPM (feed)	165	189	189	209	193	161	138	122	98	
41	Hardened Cast Iron	55	0.05D	0.02D	SFM (vc)	370	655	980	865	735	720	735	735		
					IPT (fz)	.0017	.0020	.0020	.0030	.0049	.0055	.0059	.0063	.0067	
					RPM	45000	40000	40000	26500	15000	11000	9000	7500	5600	
					IPM (feed)	150	158	158	158	148	122	106	95	75	

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)



HSS

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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

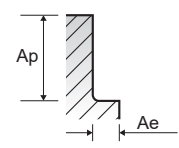
G850 SERIES 4 FLUTE CORNER RADIUS - SIDE CUTTING

G851 SERIES 6 & 8 FLUTE CORNER RADIUS - SIDE CUTTING

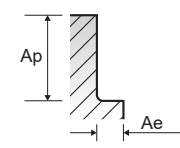
Table with columns: ISO, VDI 3323, Material Description, HRc, Ae, Ap, Parameter, Diameter (Ø) [1/16, 1/8, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8, 3/4]. Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and Hardened steel.

Table with columns: ISO, VDI 3323, Material Description, HRc, Ae, Ap, Parameter, Diameter (Ø) [1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 1]. Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and Hardened steel.

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)



SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)



HSS



RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

HSS

G859, G854 SERIES

4 FLUTE CORNER RADIUS - SIDE CUTTING

G859, G854 SERIES

4 FLUTE CORNER RADIUS - SIDE CUTTING

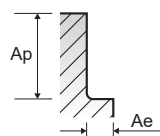
HIGH SPEED

Table with columns: ISO, VDI 3323, Material Description, HRc, Ae, Ap, Parameter, Diameter (Ø) [2, 3, 4, 5, 6, 8, 10, 12, 16]. Rows include P (5, 8-9, 11.1, 11.2) and H (38.1, 38.2, 39.1, 39.2, 40, 41) series.

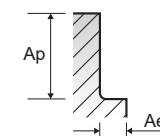
NORMAL SPEED

Table with columns: ISO, VDI 3323, Material Description, HRc, Ae, Ap, Parameter, Diameter (Ø) [2, 3, 4, 5, 6, 8, 10, 12, 16]. Rows include P (5, 8-9, 11.1, 11.2) and H (38.1, 38.2, 39.1, 39.2, 40, 41) series.

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)



SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)





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HSS



RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

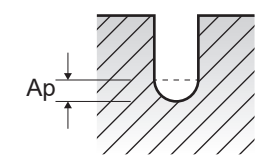
G8A46, G8A54 SERIES 2 FLUTE BALL NOSE - RIB PROCESSING

G8A38, G8A28, G8A53 SERIES 2 FLUTE BALL NOSE

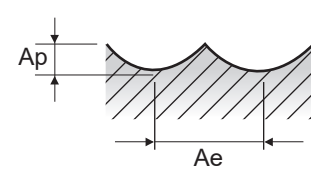
Table with columns: ISO, VDI 3323, Material Description, HRc, Parameter, Diameter (Ø) (0.2 to 4), SFM (vc), IPT (fz), RPM, IPM (feed), Ap (mm). Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and Hardened steel.

Table with columns: ISO, VDI 3323, Material Description, HRc, Ae, Ap, Parameter, Diameter (Ø) (0.2 to 2), SFM (vc), IPT (fz), RPM, IPM (feed). Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and Hardened steel.

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)



SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)



▶ NEXT PAGE

HSS

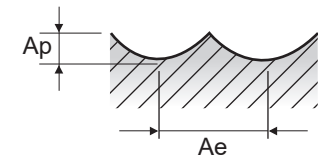


RECOMMENDED CUTTING CONDITIONS

**G8A38, G8A28, G8A53** SERIES 2 FLUTE BALL NOSE

ISO	VDI 3323	Material Description	HRc	Ae	Ap	Parameter	Diameter (Ø)								
							3	4	5	6	8	10	12	16	20
P	5	Non-alloy steel	32	0.05D	0.02D	SFM (vc)	1025	1025	960	860	915	960	860	920	915
						IPT (fz)	.0036	.0047	.0061	.0069	.0074	.0078	.0083	.0093	.0104
						RPM	33100	24900	18600	13900	11100	9300	6950	5570	4450
						IPM (feed)	236	236	228	191	165	146	116	104	93
						SFM (vc)	1025	1025	960	860	915	960	860	920	915
						IPT (fz)	.0036	.0047	.0061	.0069	.0074	.0078	.0083	.0093	.0104
	8-9	Low alloy steel	32-38	0.05D	0.02D	SFM (vc)	1025	1025	960	860	915	960	860	920	915
						IPT (fz)	.0036	.0047	.0061	.0069	.0074	.0078	.0083	.0093	.0104
						RPM	33100	24900	18600	13900	11100	9300	6950	5570	4450
						IPM (feed)	236	236	228	191	165	146	116	104	93
						SFM (vc)	1025	1025	960	860	915	960	860	920	915
						IPT (fz)	.0036	.0047	.0061	.0069	.0074	.0078	.0083	.0093	.0104
11.1	High alloyed steel, and tool steel	35	0.05D	0.02D	SFM (vc)	1025	1025	960	860	915	960	860	920	915	
					IPT (fz)	.0036	.0047	.0061	.0069	.0074	.0078	.0083	.0093	.0104	
					RPM	33100	24900	18600	13900	11100	9300	6950	5570	4450	
					IPM (feed)	236	236	228	191	165	146	116	104	93	
					SFM (vc)	985	985	915	830	880	915	825	880	885	
					IPT (fz)	.0033	.0044	.0054	.0060	.0064	.0069	.0073	.0081	.0090	
11.2	High alloyed steel, and tool steel	44	0.05D	0.02D	SFM (vc)	985	985	915	830	880	915	825	880	885	
					IPT (fz)	.0033	.0044	.0054	.0060	.0064	.0069	.0073	.0081	.0090	
					RPM	31800	23900	17800	13400	10700	8900	6680	5350	4300	
					IPM (feed)	209	209	193	161	138	122	98	87	77	
					SFM (vc)	985	985	915	830	880	915	825	880	885	
					IPT (fz)	.0033	.0044	.0054	.0060	.0064	.0069	.0073	.0081	.0090	
H	38.1	45-49	0.05D	0.02D	SFM (vc)	985	985	915	830	880	915	825	880	885	
					IPT (fz)	.0033	.0044	.0054	.0060	.0064	.0069	.0073	.0081	.0090	
					RPM	31800	23900	17800	13400	10700	8900	6680	5350	4300	
					IPM (feed)	209	209	193	161	138	122	98	87	77	
					SFM (vc)	820	825	775	680	740	775	695	740	740	
					IPT (fz)	.0030	.0040	.0049	.0055	.0059	.0063	.0067	.0074	.0082	
	38.2	50-55	0.05D	0.02D	SFM (vc)	820	825	775	680	740	775	695	740	740	
					IPT (fz)	.0030	.0040	.0049	.0055	.0059	.0063	.0067	.0074	.0082	
					RPM	26500	20000	15000	11000	9000	7500	5600	4500	3600	
					IPM (feed)	158	158	148	122	106	95	75	67	59	
					SFM (vc)	725	720	695	620	660	680	620	660	660	
					IPT (fz)	.0026	.0035	.0044	.0049	.0053	.0057	.0061	.0066	.0073	
39.1	Hardened steel	56-60	0.05D	0.02D	SFM (vc)	725	720	695	620	660	680	620	660	660	
					IPT (fz)	.0026	.0035	.0044	.0049	.0053	.0057	.0061	.0066	.0073	
					RPM	23500	17500	13500	10000	8000	6600	5000	4000	3200	
					IPM (feed)	124	124	120	98	85	75	61	53	47	
					SFM (vc)	650	660	595	545	575	600	545	575	575	
					IPT (fz)	.0026	.0034	.0043	.0048	.0052	.0056	.0056	.0056	.0057	
39.2	61-65	0.05D	0.02D	SFM (vc)	21000	16000	11500	8800	7000	5800	4400	3500	2800		
				IPT (fz)	.0026	.0034	.0043	.0048	.0052	.0056	.0056	.0056	.0057		
				RPM	21000	16000	11500	8800	7000	5800	4400	3500	2800		
				IPM (feed)	110	110	100	85	73	65	49	39	32		
				SFM (vc)	585	600	540	495	535	545	495	530	525		
				IPT (fz)	.0024	.0031	.0040	.0043	.0047	.0051	.0051	.0053	.0051		
39.3	66-70	0.05D	0.02D	SFM (vc)	19000	14500	10500	8000	6500	5300	4000	3200	2550		
				IPT (fz)	.0024	.0031	.0040	.0043	.0047	.0051	.0051	.0053	.0051		
				RPM	19000	14500	10500	8000	6500	5300	4000	3200	2550		
				IPM (feed)	91	91	83	69	61	54	41	34	26		
				SFM (vc)	985	985	915	830	880	915	825	880	885		
				IPT (fz)	.0033	.0044	.0054	.0060	.0064	.0069	.0073	.0081	.0090		
40	Chilled Cast Iron	42	0.05D	0.02D	SFM (vc)	31800	23900	17800	13400	10700	8900	6680	5350	4300	
					IPT (fz)	.0033	.0044	.0054	.0060	.0064	.0069	.0073	.0081	.0090	
					RPM	31800	23900	17800	13400	10700	8900	6680	5350	4300	
					IPM (feed)	209	209	193	161	138	122	98	87	77	
					SFM (vc)	820	825	775	680	740	775	695	740	740	
					IPT (fz)	.0030	.0040	.0049	.0055	.0059	.0063	.0067	.0074	.0082	
41	Hardened Cast Iron	55	0.05D	0.02D	SFM (vc)	26500	20000	15000	11000	9000	7500	5600	4500	3600	
					IPT (fz)	.0030	.0040	.0049	.0055	.0059	.0063	.0067	.0074	.0082	
					RPM	26500	20000	15000	11000	9000	7500	5600	4500	3600	
					IPM (feed)	158	158	148	122	106	95	75	67	59	
					SFM (vc)	820	825	775	680	740	775	695	740	740	
					IPT (fz)	.0030	.0040	.0049	.0055	.0059	.0063	.0067	.0074	.0082	

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)



RECOMMENDED CUTTING CONDITIONS

**G8A59** SERIES 3 FLUTE BALL NOSE

ISO	VDI 3323	Material Description	HRc	Ae	Ap	Parameter	Diameter (Ø)								
							3	4	5	6	8	10	12	16	20
P	5	Non-alloy steel	32	0.05D	0.02D	SFM (vc)	990	995	1030	1115	1115	1115	1120	1105	1115
						IPT (fz)	.0035	.0042	.0048	.0062	.0071	.0079	.0088	.0090	.0088
						RPM	32000	24080	20000	18000	13500	10800	9050	6700	5400
						IPM (feed)	339	303	285	337	289	257	240	181	142
						SFM (vc)	990	995	1030	1115	1115	1115	1120	1105	1115
						IPT (fz)	.0035	.0042	.0048	.0062	.0071	.0079	.0088	.0090	.0088
	8-9	Low alloy steel	32-38	0.05D	0.02D	SFM (vc)	990	995	1030	1115	1115	1115	1120	1105	1115
						IPT (fz)	.0035	.0042	.0048	.0062	.0071	.0079	.0088	.0090	.0088
						RPM	32000	24080	20000	18000	13500	10800	9050	6700	5400
						IPM (feed)	339	303	285	337	289	257	240	181	142
						SFM (vc)	990	995	1030	1115	1115	1115	1120	1105	1115
						IPT (fz)	.0035	.0042	.0048	.0062	.0071	.0079	.0088	.0090	.0088
11.1 - 11.2	High alloyed steel, and tool steel	35-44	0.05D	0.02D	SFM (vc)	990	995	1030	1115	1115	1115	1120	1105	1115	
					IPT (fz)	.0035	.0042	.0048	.0062	.0071	.0079	.0088	.0090	.0088	
					RPM	32000	24080	20000	18000	13500	10800	9050	6700	5400	
					IPM (feed)	339	303	285	337	289	257	240	181	142	
					SFM (vc)	830	830	865	940	930	940	940	940	940	
					IPT (fz)	.0028	.0035	.0043	.0054	.0061	.0066	.0074	.0075	.0075	
H	38.1 - 38.2	45-49 - 50-55	0.05D	0.02D	SFM (vc)	830	830	865	940	930	940	940	940	940	
					IPT (fz)	.0028	.0035	.0043	.0054	.0061	.0066	.0074	.0075	.0075	
					RPM	26840	20130	16780	15200	11300	9100	7590	5690	4550	
					IPM (feed)	228	214	214	245	207	181	168	128	103	
					SFM (vc)	615	615	640	755	760	760	760	760	755	
					IPT (fz)	.0028	.0034	.0039	.0048	.0057	.0062	.0069	.0071	.0071	
	39.1	Hardened steel	56-60	0.05D	0.02D	SFM (vc)	615	615	640	755	760	760	760	760	755
						IPT (fz)	.0028	.0034	.0039	.0048	.0057	.0062	.0069	.0071	.0071
						RPM	19840	14880	12400	12200	9200	7350	6130	4600	3670
						IPM (feed)	169	153	145	177	157	136	126	98	78
						SFM (vc)	580	585	600	685	685	685	685	685	680
						IPT (fz)	.0028	.0034	.0039	.0045	.0053	.0057	.0057	.0057	.0058
39.2	61-65	0.05D	0.02D	SFM (vc)	580	585	600	685	685	685	685	685	680		
				IPT (fz)	.0028	.0034	.0039	.0045	.0053	.0057	.0057	.0057	.0058		
				RPM	18680	14220	11670	1							

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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

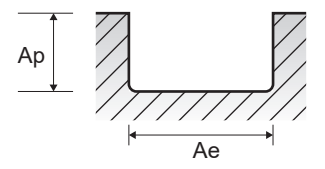
**G8A36** SERIES 2 FLUTE CORNER RADIUS - **SLOTING**

**G8A36** SERIES 2 FLUTE CORNER RADIUS - **SLOTING**

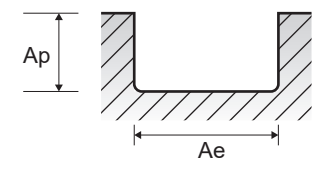
ISO	VDI 3323	Material Description	HRc	Ae	Ap	Parameter	Diameter (Ø)									
							0.2	0.3	0.4	0.5	0.6	0.8	0.9	1	2	
<b>P</b>	5	Non-alloy steel	32	1.0D	0.05D	SFM (vc)	105	155	205	260	310	410	455	495	685	
						IPT (fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0003	.0003	.0005	
						RPM	50000	50000	50000	50000	50000	50000	49000	48000	33300	
						IPM (feed)	5	8	9	15	19	24	26	30	34	
	8-9	Low alloy steel	32-38	1.0D	0.05D	SFM (vc)	105	155	205	260	310	410	455	495	685	
						IPT (fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0003	.0003	.0005	
						RPM	50000	50000	50000	50000	50000	50000	49000	48000	33300	
						IPM (feed)	5	8	9	15	19	24	26	30	34	
	11.1	High alloyed steel, and tool steel	35	1.0D	0.05D	SFM (vc)	105	155	205	260	310	410	455	495	685	
						IPT (fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0003	.0003	.0005	
						RPM	50000	50000	50000	50000	50000	50000	49000	48000	33300	
						IPM (feed)	5	8	9	15	19	24	26	30	34	
11.2	High alloyed steel, and tool steel	44	1.0D	0.05D	SFM (vc)	95	140	185	230	280	330	360	390	535		
					IPT (fz)	.0001	.0001	.0001	.0001	.0002	.0002	.0003	.0003	.0005		
					RPM	45000	45000	45000	45000	45000	40000	39000	38000	2600		
					IPM (feed)	32	38	38	39	39	38	38	33	30		
<b>H</b>	38.1	45-49	1.0D	0.05D	SFM (vc)	95	140	185	230	280	330	360	390	535		
					IPT (fz)	.0001	.0001	.0001	.0001	.0002	.0002	.0003	.0003	.0005		
					RPM	45000	45000	45000	45000	45000	40000	39000	38000	26000		
					IPM (feed)	5	6	7	11	14	17	21	22	27		
	38.2	50-55	1.0D	0.05D	SFM (vc)	80	125	165	205	245	245	260	265	360		
					IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0003	.0005		
					RPM	40000	40000	40000	40000	40000	30000	27800	25500	17500		
					IPM (feed)	4	5	6	9	11	12	13	14	17		
	39.1	Hardened steel	56-60	1.0D	0.05D	SFM (vc)	70	100	135	170	185	205	210	210	300	
						IPT (fz)	.0000	.0000	.0001	.0001	.0001	.0001	.0002	.0002	.0003	
						RPM	33000	33000	33000	33000	30000	25000	22700	20500	14500	
						IPM (feed)	2	3	4	6	6	7	8	9	10	
39.2	Hardened steel	61-65	1.0D	0.05D	SFM (vc)	70	75	105	130	155	155	160	165	225		
					IPT (fz)	.0000	.0000	.0000	.0001	.0001	.0001	.0001	.0002	.0003		
					RPM	33000	25000	25000	25000	25000	19000	17500	16000	11000		
					IPM (feed)	2	2	2	3	4	4	5	5	6		
39.3	Hardened steel	66-70	1.0D	0.02D	SFM (vc)	55	60	80	105	125	125	130	130	195		
					IPT (fz)	.0000	.0000	.0001	.0001	.0001	.0001	.0001	.0001	.0003		
					RPM	26400	20000	20000	20000	20000	15200	14000	12500	9500		
					IPM (feed)	1	1	2	2	3	3	4	3	5		
40	Chilled Cast Iron	42	1.0D	0.05D	SFM (vc)	95	140	185	230	280	330	360	390	535		
					IPT (fz)	.0001	.0001	.0001	.0001	.0002	.0002	.0003	.0003	.0005		
					RPM	45000	45000	45000	45000	45000	40000	39000	38000	26000		
					IPM (feed)	5	6	7	11	14	17	21	22	27		
41	Hardened Cast Iron	55	1.0D	0.05D	SFM (vc)	80	125	165	205	245	245	260	265	360		
					IPT (fz)	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0003	.0005		
					RPM	40000	40000	40000	40000	40000	30000	27800	25500	17500		
					IPM (feed)	4	5	6	9	11	12	13	14	17		

ISO	VDI 3323	Material Description	HRc	Ae	Ap	Parameter	Diameter (Ø)									
							3	4	5	6	8	10	12	16	20	
<b>P</b>	5	Non-alloy steel	32	1.0D	0.05D	SFM (vc)	675	690	810	810	815	805	820	810	805	
						IPT (fz)	.0008	.0010	.0012	.0014	.0019	.0022	.0026	.0030	.0033	
						RPM	21800	16700	15700	13100	9880	7800	6650	4900	3900	
						IPM (feed)	34	35	39	37	37	34	34	29	26	
	8-9	Low alloy steel	32-38	1.0D	0.05D	SFM (vc)	675	690	810	810	815	805	820	810	805	
						IPT (fz)	.0008	.0010	.0012	.0014	.0019	.0022	.0026	.0030	.0033	
						RPM	21800	16700	15700	13100	9880	7800	6650	4900	3900	
						IPM (feed)	34	35	39	37	37	34	34	29	26	
	11.1	High alloyed steel, and tool steel	35	1.0D	0.05D	SFM (vc)	675	690	810	810	815	805	820	810	805	
						IPT (fz)	.0008	.0010	.0012	.0014	.0019	.0022	.0026	.0030	.0033	
						RPM	21800	16700	15700	13100	9880	7800	6650	4900	3900	
						IPM (feed)	34	35	39	37	37	34	34	29	26	
11.2	High alloyed steel, and tool steel	44	1.0D	0.05D	SFM (vc)	535	545	645	640	645	635	650	645	640		
					IPT (fz)	.0008	.0011	.0013	.0014	.0018	.0022	.0026	.0029	.0034		
					RPM	17300	13200	12500	10350	7800	6150	5250	3900	3100		
					IPM (feed)	27	28	32	30	28	27	27	23	21		
<b>H</b>	38.1	45-49	1.0D	0.05D	SFM (vc)	535	545	645	640	645	635	650	645	640		
					IPT (fz)	.0008	.0011	.0013	.0014	.0018	.0022	.0026	.0029	.0034		
					RPM	17300	13200	12500	10350	7800	6150	5250	3900	3100		
					IPM (feed)	27	28	32	30	28	27	27	23	21		
	38.2	50-55	1.0D	0.05D	SFM (vc)	355	365	430	425	430	425	435	430	425		
					IPT (fz)	.0007	.0010	.0012	.0014	.0017	.0020	.0023	.0027	.0034		
					RPM	11500	8800	8300	6900	5200	4100	3500	2600	2050		
					IPM (feed)	17	17	20	19	18	16	16	14	14		
	39.1	Hardened steel	56-60	1.0D	0.05D	SFM (vc)	295	295	330	330	330	330	330	330	330	
						IPT (fz)	.0005	.0008	.0009	.0010	.0013	.0016	.0019	.0020	.0025	
						RPM	9500	7200	6400	5300	4000	3200	2650	2000	1600	
						IPM (feed)	10	11	11	11	10	10	8	8	8	
39.2	Hardened steel	61-65	1.0D	0.05D	SFM (vc)	230	230	265	260	265	265	260	265	270		
					IPT (fz)	.0004	.0006	.0007	.0008	.0011	.0012	.0014	.0016	.0019		
					RPM	7500	5600	5100	4200	3200	2550	2100	1600	1300		
					IPM (feed)	6	7	7	7	7	6	6	5	5		
39.3	Hardened steel	66-70	1.0D	0.02D	SFM (vc)	200	195	230	230	230	225	230	230	225		
					IPT (fz)	.0004	.0005	.0006	.0007	.0009	.0009	.0011	.0014	.0014		
					RPM	6400	4750	4450	3700	2800	2200	1860	1400	1100		
					IPM (feed)	5	5	5	5	5	4	4	4	3		
40	Chilled Cast Iron	42	1.0D	0.05D	SFM (vc)	535	545	645	640	645	635	650	645	640		
					IPT (fz)	.0008	.0011	.0013	.0014	.0018	.0022	.0026	.0029	.0034		
					RPM	17300	13200	12500	10350	7800	6150	5250	3900	3100		
					IPM (feed)	27	28	32	30	28	27	27	23	21		
41	Hardened Cast Iron	55	1.0D	0.05D	SFM (vc)	355	365	430	425	430	425	435	430	425		
					IPT (fz)	.0007	.0010	.0012	.0014	.0017	.0020	.0023	.0027	.0034		
					RPM	11500	8800	8300	6900	5200	4100	3500	2600	2050		
					IPM (feed)	17	17	20	19	18	16	16	14	14		

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)



SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)







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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

G8A47 SERIES 4 FLUTE CORNER RADIUS - SIDE CUTTING

G8A37 SERIES 4 FLUTE CORNER RADIUS - SIDE CUTTING

Table with columns: ISO, VDI 3323, Material Description, HRc, Ae, Ap, Parameter, Diameter (Ø) [1, 2, 3, 4, 5, 6, 8, 10, 12, 16, 20]. Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and Hardened steel.

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

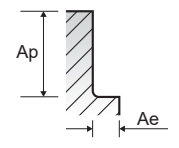
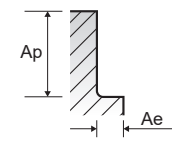


Table with columns: ISO, VDI 3323, Material Description, HRc, Ae, Ap, Parameter, Diameter (Ø) [1, 2, 3, 4, 5, 6, 8, 10, 12, 16, 20]. Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and Hardened steel.

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)





**X5070  
END MILLS**

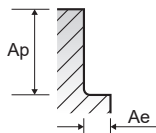
**RECOMMENDED CUTTING CONDITIONS**

**G8A39** SERIES

**6 FLUTE CORNER RADIUS - SIDE CUTTING**

ISO	VDI 3323	Material Description	HRc	Ae	Ap	Parameter	Diameter (Ø)					
							6	8	10	12	16	20
P	5	Non-alloy steel	32	0.05D	1.0D	SFM (vc)	1535	1650	1650	1610	1650	1650
						IPT (fz)	.0014	.0018	.0020	.0023	.0026	.0028
						RPM	24800	20000	16000	13000	10000	8000
						IPM (feed)	211	217	193	177	158	132
	8-9	Low alloy steel	32-38	0.05D	1.0D	SFM (vc)	1535	1650	1650	1610	1650	1650
						IPT (fz)	.0014	.0018	.0020	.0023	.0026	.0028
						RPM	24800	20000	16000	13000	10000	8000
						IPM (feed)	211	217	193	177	158	132
	11.1	High alloyed steel, and tool steel	35	0.05D	1.0D	SFM (vc)	1535	1650	1650	1610	1650	1650
						IPT (fz)	.0014	.0018	.0020	.0023	.0026	.0028
						RPM	24800	20000	16000	13000	10000	8000
						IPM (feed)	211	217	193	177	158	132
11.2	High alloyed steel, and tool steel	44	0.05D	1.0D	SFM (vc)	1455	1565	1595	1545	1600	1610	
					IPT (fz)	.0014	.0017	.0019	.0021	.0025	.0029	
					RPM	23500	19000	15500	12500	9700	7800	
					IPM (feed)	193	197	177	161	146	134	
H	38.1	Hardened steel	45-49	0.05D	1.0D	SFM (vc)	1455	1565	1595	1545	1600	1610
						IPT (fz)	.0014	.0017	.0019	.0021	.0025	.0029
						RPM	23500	19000	15500	12500	9700	7800
						IPM (feed)	193	197	177	161	146	134
	38.2	Hardened steel	50-55	0.05D	1.0D	SFM (vc)	990	990	980	990	990	990
						IPT (fz)	.0020	.0025	.0028	.0031	.0037	.0044
						RPM	16000	12000	9500	8000	6000	4800
						IPM (feed)	193	181	161	150	134	126
	39.1	Hardened steel	56-60	0.03D	1.0D	SFM (vc)	835	825	825	815	825	825
						IPT (fz)	.0016	.0020	.0024	.0025	.0030	.0035
						RPM	13500	10000	8000	6600	5000	4000
						IPM (feed)	130	122	114	98	91	83
39.2	Hardened steel	61-65	0.03D	1.0D	SFM (vc)	650	660	660	655	660	660	
					IPT (fz)	.0013	.0016	.0018	.0020	.0020	.0021	
					RPM	10500	8000	6400	5300	4000	3200	
					IPM (feed)	83	79	71	63	49	40	
39.3	Hardened steel	66-70	0.03D	1.0D	SFM (vc)	495	495	495	495	495	495	
					IPT (fz)	.0012	.0015	.0018	.0019	.0019	.0019	
					RPM	8000	6000	4800	4000	3000	2400	
					IPM (feed)	57	55	51	45	34	27	
40	Chilled Cast Iron	42	0.05D	1.0D	SFM (vc)	1455	1565	1595	1545	1600	1610	
					IPT (fz)	.0014	.0017	.0019	.0021	.0025	.0029	
					RPM	23500	19000	15500	12500	9700	7800	
					IPM (feed)	193	197	177	161	146	134	
41	Hardened Cast Iron	55	0.05D	1.0D	SFM (vc)	990	990	980	990	990	990	
					IPT (fz)	.0020	.0025	.0028	.0031	.0037	.0044	
					RPM	16000	12000	9500	8000	6000	4800	
					IPM (feed)	193	181	161	150	134	126	

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)







Being the best through innovation

**SOLID CARBIDE**



# 4G Mill END MILLS

- High Speed Cutting for Pre-Hardened Steels up to HRc55

SELECTION GUIDE



SOLID CARBIDE 4G MILLS

- High Speed Cutting for Pre-Hardened Steels up to HRc55



Please visit globalyg1.com/mat for material search

Recommended cutting conditions : p. C268

Table with 5 columns: SERIES (GMF15-GMF19), FLUTE (2, 4, 2), HELIX ANGLE (30°), CUTTING EDGE SHAPE (BALL NOSE, CORNER RADIUS), SIZE MIN, SIZE MAX, PAGE (C130-C139)

Table with 5 columns: NECK, Y-Coating



Main material selection table with columns: ISO, VDI 3323, Material Description, Composition / Structure / Heat Treatment, HB, HRc, and application suitability icons

Table with 13 columns: GMF20-GMF29, G907-G909, and application suitability icons

Table with 13 columns: NECK, LONG LENGTH, REGULAR LENGTH, EXTENDED REACH, X-Coating



Main material selection table for the second page with columns: ISO, VDI 3323, Material Description, Composition / Structure / Heat Treatment, HB, HRc, and application suitability icons



# SELECTION GUIDE



## SOLID CARBIDE 4G MILLS

- High Speed Cutting for Pre-Hardened Steels up to HRc55

Please visit [globalyg1.com/mat](http://globalyg1.com/mat) for material search

⊙ : Excellent ○ : Good

Recommended cutting conditions : p. C268

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc
P	1	Non-alloy steel	About 0.15% C Annealed	125	
	2		About 0.45% C Annealed	190	13
	3		About 0.45% C Quenched & Tempered	250	25
	4		About 0.75% C Annealed	270	28
	5		About 0.75% C Quenched & Tempered	300	32
	6	Low alloy steel	Annealed	180	10
	7		Quenched & Tempered	275	29
	8		Quenched & Tempered	300	32
	9		Quenched & Tempered	350	38
	10		High alloyed steel, and tool steel	Annealed	200
	11	Quenched & Tempered	325	35	
M	12	Stainless steel	Ferritic / Martensitic Annealed	200	15
	13		Martensitic Quenched & Tempered	240	23
	14		Austenitic	180	10
K	15	Grey cast iron	Pearlitic / ferritic	180	10
	16		Pearlitic (Martensitic)	260	26
	17	Nodular cast iron	Ferritic	160	3
	18		Pearlitic	250	25
	19		Ferritic	130	
20	Malleable cast iron	Pearlitic	230	21	
N	21	Aluminum-wrought alloy	Not Curable	60	
	22		Curable Hardened	100	
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable	75	
	24		≤ 12% Si, Curable Hardened	90	
	25		> 12% Si, Not Curable	130	
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%	110	
	27		CuZn, CuSnZn (Brass)	90	
	28		CuSn, lead-free copper and electrolytic copper	100	
	29		Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic Rubber, Wood, etc.	
	S	31	Heat Resistant Super Alloys	Fe Based Annealed	200
32		Cured		280	30
33		Annealed		250	25
34		Ni or Co Based Cured		350	38
35		Cast		320	34
36		Titanium Alloys	Pure Titanium	400 Rm	
37			Alpha + Beta Alloys Hardened	1050 Rm	
H	38	Hardened steel	Hardened	550	55
	39		Hardened	630	60
	40	Chilled Cast Iron	Cast	400	42
	41	Hardened Cast Iron	Hardened	550	55

SERIES	Metric				
	SEMD98	SEM846	SEM846	SEMD99	SEME61
FLUTE	2	2	2	2	2
HELIX ANGLE	30°	30°	30°	30°	30°
CUTTING EDGE SHAPE	BALL NOSE	BALL NOSE	BALL NOSE	CORNER RADIUS	CORNER RADIUS
SIZE MIN	R0.05	R0.05	R0.25	D0.2	D0.2
SIZE MAX	R12.5	R6.0	R1.0	D20.0	D20.0
PAGE	C172	C177	C185	C188	C194
		LONG NECK	LONG NECK (6mm Shank)		LONG NECK
	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating

Call for Availability



SERIES	Metric													
	SEME01	SEME64	SEME35	SEME70	SEM845	SEME36	SEME71	SEME72	SEME73	SEME75	G9D75 G9D67	G9D76 G9D68	G9D77 G9D69	GAE53
FLUTE	4	4	2	2	2	4	4	4	4	6	4&5	4&5	4&5	4&5
HELIX ANGLE	27°/30° (MULTIPLE HELIX)	27°/30° (MULTIPLE HELIX)	30°	30°	30°	27°/30°	35°/38°	30°	30°	45°	4 Flute : 44°/45° 5 Flute : 44°/44.5°/45°	4 Flute : 44°/45° 5 Flute : 44°/44.5°/45°	4 Flute : 44°/45° 5 Flute : 44°/44.5°/45°	4 Flute : 44°/45° 5 Flute : 44°/44.5°/45°
CORNER RADIUS	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	CORNER RADIUS ROUGHING	CORNER RADIUS ROUGHING	CORNER RADIUS ROUGHING	CORNER RADIUS ROUGHING
SIZE MIN	D1.0	D1.0	D0.1	D1.0	D0.1	D0.8	D1.0	D1.0	D1.0	D6.0	D6.0	D6.0	D6.0	D6.0
SIZE MAX	D20.0	D20.0	D25.0	D25.0	D12.0	D25.0	D20.0	D25.0	D12.0	D20.0	D20.0	D20.0	D20.0	D20.0
PAGE	C210	C216	C229	C234	C239	C247	C249	C252	C257	C262	C264	C265	C266	C267
		LONG NECK		LONG LENGTH	LONG NECK			LONG LENGTH	LONG NECK		SHORT LENGTH	LONG LENGTH	LONG REACH	SHORT LENGTH
	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	X-Coating	X-Coating	X-Coating	X-Coating

Call for Availability



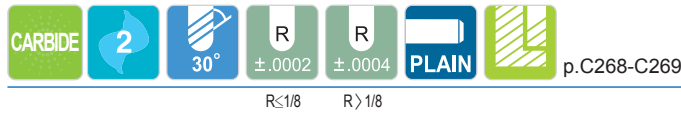
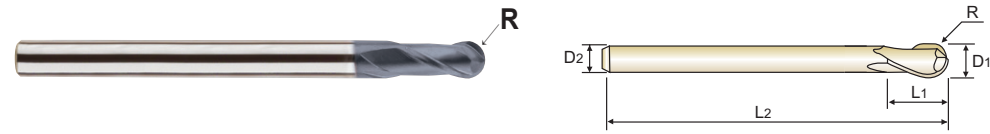


# YG 4G MILL END MILLS

PLAIN SHANK **GMF15** SERIES

## CARBIDE, 2 FLUTE BALL NOSE

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Unique ball nose geometry with superior cutting edges result in decreased cutting forces.
- ▶ Excellent performance when cutting steels, up to HRc55



EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D <sub>1</sub>	D <sub>2</sub>	L <sub>1</sub>	L <sub>2</sub>
GMF15901	R.002	.004	3/16	.008	1-1/2
GMF15902	R.004	.008	3/16	1/64	1-1/2
GMF15903	R.006	.012	3/16	1/32	1-1/2
GMF15904	R.075	.015	3/16	1/32	1-1/2
GMF15905	R.010	.020	3/16	3/64	1-1/2
GMF15906	R.012	.024	3/16	3/64	1-1/2
GMF15907	R.014	.028	3/16	1/16	1-1/2
GMF15908	R.0155	.031	3/16	1/16	1-1/2
GMF15909	R.0175	.035	3/16	5/64	1-1/2
GMF15003	R.0234	3/64	3/16	3/32	2
GMF15910	R.0234	3/64	1/4	3/32	2
GMF15911	R.0234	3/64	1/4	3/32	2-3/4
GMF15004	R1/32	1/16	3/16	5/32	2
GMF15912	R1/32	1/16	1/4	5/32	2
GMF15913	R1/32	1/16	1/4	5/32	2-3/4
GMF15005	R.0391	5/64	1/4	1/8	1-1/2
GMF15914	R.0391	5/64	3/16	3/16	2
GMF15915	R.0391	5/64	1/4	3/16	2
GMF15916	R.0391	5/64	1/4	3/16	3-1/8
GMF15006	R3/64	3/32	1/4	1/4	2-3/8
GMF15917	R3/64	3/32	1/4	1/4	3-1/8
GMF15008	R1/16	1/8	1/4	3/16	1-1/2
GMF15918	R1/16	1/8	3/16	1/4	2-3/8
GMF15919	R1/16	1/8	1/4	1/4	2-3/8
GMF15920	R1/16	1/8	1/4	1/4	3-1/8
GMF15921	R1/16	1/8	1/4	1/4	4
GMF15012	R3/32	3/16	1/4	1/4	2
GMF15922	R3/32	3/16	3/16	5/16	2-3/4
GMF15923	R3/32	3/16	1/4	5/16	2-3/4
GMF15924	R3/32	3/16	3/16	5/16	4
GMF15925	R3/32	3/16	1/4	5/16	4
GMF15926	R3/32	3/16	1/4	5/16	4-1/2

▶ NEXT PAGE

◎: Excellent ○: Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	○	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○

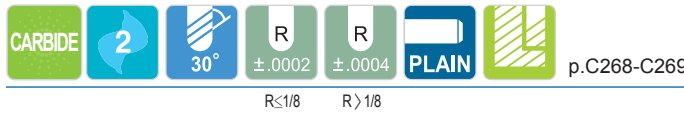
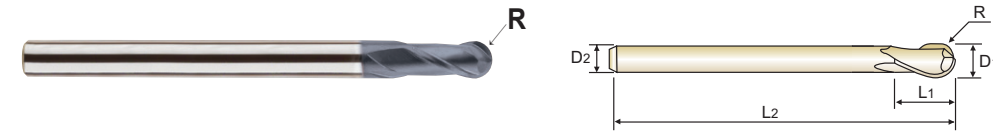
ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34		55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○

# YG 4G MILL END MILLS

PLAIN SHANK **GMF15** SERIES

## CARBIDE, 2 FLUTE BALL NOSE

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Unique ball nose geometry with superior cutting edges result in decreased cutting forces.
- ▶ Excellent performance when cutting steels, up to HRc55



EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D <sub>1</sub>	D <sub>2</sub>	L <sub>1</sub>	L <sub>2</sub>
GMF15013	R.102	13/64	1/4	5/16	2-3/8
GMF15927	R.102	13/64	1/4	3/8	3-1/8
GMF15016	R1/8	1/4	1/4	3/8	2
GMF15928	R1/8	1/4	1/4	3/8	3-1/8
GMF15929	R1/8	1/4	1/4	1/2	3-1/2
GMF15930	R1/8	1/4	1/4	1/2	5
GMF15018	R9/64	9/32	5/16	9/16	3-1/2
GMF15020	R5/32	5/16	5/16	1/2	2
GMF15931	R5/32	5/16	5/16	1/2	3-1/2
GMF15932	R5/32	5/16	5/16	9/16	4
GMF15933	R5/32	5/16	5/16	9/16	6
GMF15024	R3/16	3/8	3/8	5/8	2-3/8
GMF15934	R3/16	3/8	3/8	5/8	3-1/2
GMF15935	R3/16	3/8	3/8	11/16	4
GMF15936	R3/16	3/8	3/8	11/16	5
GMF15937	R3/16	3/8	3/8	11/16	6
GMF15938	R3/16	3/8	3/8	11/16	7
GMF15032	R1/4	1/2	1/2	11/16	3-1/8
GMF15939	R1/4	1/2	1/2	11/16	4
GMF15940	R1/4	1/2	1/2	7/8	4-1/4
GMF15941	R1/4	1/2	1/2	7/8	6
GMF15942	R1/4	1/2	1/2	7/8	8
GMF15036	R9/32	9/16	9/16	1	4
GMF15040	R5/16	5/8	5/8	1	4
GMF15943	R5/16	5/8	5/8	1-3/16	6
GMF15048	R3/8	3/4	3/4	1-3/16	4
GMF15944	R3/8	3/4	3/4	1-1/2	6

Size	Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	±.0002	0---.0005	h5
over Ø1/4	±.0004	0---.0006	

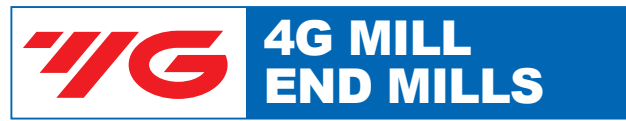
◎: Excellent ○: Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	○	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34		55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○

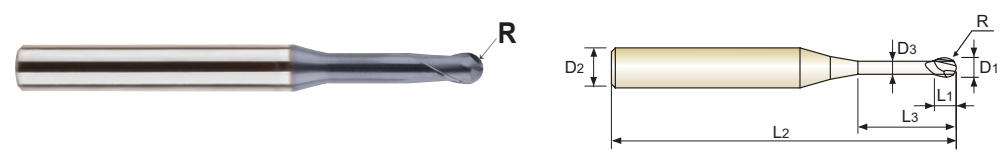




PLAIN SHANK **GMF16** SERIES

### CARBIDE, 2 FLUTE BALL NOSE WITH NECK

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Unique ball nose geometry with superior cutting edges result in decreased cutting forces.
- ▶ Excellent performance when cutting steels, up to HRC55



CARBIDE 2 30° ±.0002 ±.0004 PLAIN p.C270-C275  
 R<1/8 R>1/8

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
GMF16959	R1/16	1/8	1/4	1/8	1/2	2	.119
GMF16960	R1/16	1/8	1/4	1/8	9/16	2-3/8	.119
GMF16961	R1/16	1/8	1/4	1/8	5/8	2-3/8	.119
GMF16962	R1/16	1/8	1/4	1/8	11/16	2-3/8	.119
GMF16963	R1/16	1/8	1/4	1/8	3/4	2-3/8	.119
GMF16964	R1/16	1/8	1/4	1/8	1	2-3/4	.119
GMF16965	R1/16	1/8	1/4	1/8	1-3/16	2-3/4	.119
GMF16966	R1/16	1/8	1/4	1/8	1-3/8	2-3/4	.119
GMF16012	R3/32	3/16	1/4	5/32	3/8	2	.181
GMF16967	R3/32	3/16	1/4	5/32	1/2	2	.181
GMF16968	R3/32	3/16	1/4	5/32	9/16	2-3/8	.181
GMF16969	R3/32	3/16	1/4	5/32	5/8	2-3/8	.181
GMF16970	R3/32	3/16	1/4	5/32	11/16	2-3/8	.181
GMF16971	R3/32	3/16	1/4	5/32	3/4	2-3/8	.181
GMF16972	R3/32	3/16	1/4	5/32	1	2-3/4	.181
GMF16973	R3/32	3/16	1/4	5/32	1-3/16	2-3/4	.181
GMF16974	R3/32	3/16	1/4	5/32	1-3/8	2-3/4	.181
GMF16975	R3/32	3/16	1/4	5/32	1-1/2	3-1/8	.181
GMF16013	R.102	13/64	1/4	1/4	1-3/16	2-3/4	.197
GMF16016	R1/8	1/4	1/4	5/16	3/4	2-3/8	.244
GMF16976	R1/8	1/4	1/4	5/16	1-3/16	2-3/8	.244
GMF16020	R5/32	5/16	5/16	3/8	1	2-3/4	.300
GMF16977	R5/32	5/16	5/16	9/16	1-3/8	4	.300
GMF16024	R3/16	3/8	3/8	1/2	1-3/16	3	.363
GMF16978	R3/16	3/8	3/8	11/16	1-3/16	4	.363
GMF16979	R3/16	3/8	3/8	11/16	1-1/2	4	.363
GMF16032	R1/4	1/2	1/2	9/16	1-1/4	3-1/8	.488
GMF16980	R1/4	1/2	1/2	7/8	1-1/4	4-1/4	.488

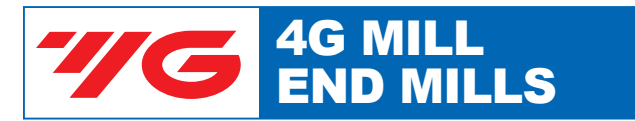
Size	Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	±.0002	0~-.0005	h5
over Ø1/4	±.0004	0~-.0006	

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel	Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron				
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	29	32	38	35	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	○	◎	◎	○	◎	◎	◎	◎	○	◎	◎	◎	○	○	○	○	○	○

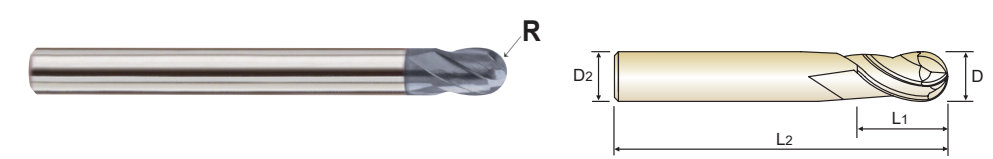
ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials	Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron								
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	◎	○



PLAIN SHANK **GMF17** SERIES

### CARBIDE, 4 FLUTE BALL NOSE

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Unique ball nose geometry with superior cutting edges result in decreased cutting forces.
- ▶ Excellent performance when cutting steels, up to HRC55
- ▶ Cutting edge strength is increased and part finish is improved due to new End Geometry



CARBIDE 4 30° ±.0002 ±.0004 PLAIN p.C276  
 R1/8 R>1/8

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D1	D2	L1	L2
GMF17008	R1/16	1/8	1/4	1/8	2-3/8
GMF17012	R3/32	3/16	1/4	5/32	2-3/4
GMF17016	R1/8	1/4	1/4	1/4	3-1/2
GMF17020	R5/32	5/16	5/16	5/16	4
GMF17024	R3/16	3/8	3/8	3/8	4
GMF17032	R1/4	1/2	1/2	1/2	4-1/4

Size	Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	±.0002	0~-.0008	h5
over Ø1/4	±.0004		

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel	Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron				
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	29	32	38	35	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	○	◎	◎	○	◎	◎	◎	◎	○	◎	◎	◎	○	○	○	○	○	○

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials	Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron								
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	◎	○

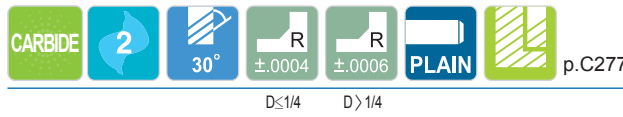
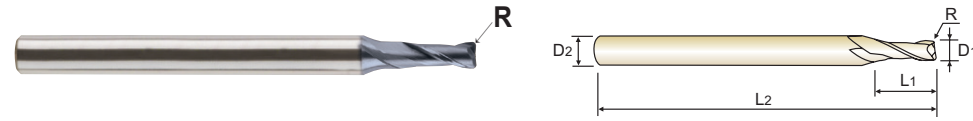


# YG 4G MILL END MILLS

PLAIN SHANK **GMF18** SERIES

## CARBIDE, 2 FLUTE CORNER RADIUS

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRc55
- ▶ Available in various length shanks and corner radii.



EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut		Overall Length L2
				L1	L2	
GMF18003	R.008	3/64	1/4	3/32	2	2
GMF18901	R.012	3/64	1/4	3/32	2	2
GMF18004	R.008	1/16	1/4	5/32	2	2
GMF18902	R.012	1/16	1/4	5/32	2	2
GMF18903	R.020	1/16	1/4	5/32	2	2
GMF18005	R.008	5/64	1/4	1/4	2	2
GMF18904	R.012	5/64	1/4	1/4	2	2
GMF18905	R.020	5/64	1/4	1/4	2	2
GMF18008	R.008	1/8	1/4	5/16	2-3/8	2-3/8
GMF18906	R.012	1/8	1/4	5/16	2-3/8	2-3/8
GMF18907	R.020	1/8	1/4	5/16	2-3/8	2-3/8
GMF18940	R.030	1/8	1/4	5/16	2-3/8	2-3/8
GMF18009	R.008	9/64	1/4	3/8	2-3/4	2-3/4
GMF18908	R.012	9/64	1/4	3/8	2-3/4	2-3/4
GMF18909	R.020	9/64	1/4	3/8	2-3/4	2-3/4
GMF18941	R.030	9/64	1/4	3/8	2-3/4	2-3/4
GMF18910	R.040	9/64	1/4	3/8	2-3/4	2-3/4
GMF18013	R.008	13/64	1/4	1/2	3-1/2	3-1/2
GMF18911	R.012	13/64	1/4	1/2	3-1/2	3-1/2
GMF18912	R.020	13/64	1/4	1/2	3-1/2	3-1/2
GMF18942	R.030	13/64	1/4	1/2	3-1/2	3-1/2
GMF18913	R.040	13/64	1/4	1/2	3-1/2	3-1/2
GMF18016	R.008	1/4	1/4	5/8	2-3/8	2-3/8
GMF18914	R.012	1/4	1/4	5/8	2-3/8	2-3/8
GMF18915	R.020	1/4	1/4	5/8	2-3/8	2-3/8
GMF18943	R.030	1/4	1/4	5/8	2-3/8	2-3/8

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◎: Excellent ○: Good

ISO Material Description	P										M				K			H			
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	3	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	◎	○	◎	◎	◎	○	○	○	○	○	○	

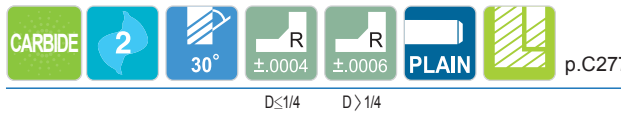
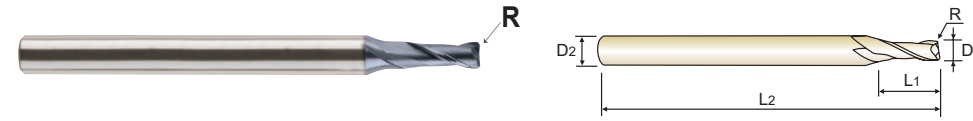
ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34	55	60	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																○	○	◎	◎	○	○

# YG 4G MILL END MILLS

PLAIN SHANK **GMF18** SERIES

## CARBIDE, 2 FLUTE CORNER RADIUS

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRc55
- ▶ Available in various length shanks and corner radii.



EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut		Overall Length L2
				L1	L2	
GMF18916	R.040	1/4	1/4	5/8	2-3/8	2-3/8
GMF18917	R.008	1/4	1/4	5/8	3-1/2	3-1/2
GMF18918	R.012	1/4	1/4	5/8	3-1/2	3-1/2
GMF18919	R.020	1/4	1/4	5/8	3-1/2	3-1/2
GMF18944	R.030	1/4	1/4	5/8	3-1/2	3-1/2
GMF18920	R.040	1/4	1/4	5/8	3-1/2	3-1/2
GMF18020	R.020	5/16	5/16	3/4	2-3/4	2-3/4
GMF18945	R.030	5/16	5/16	3/4	2-3/4	2-3/4
GMF18921	R.040	5/16	5/16	3/4	2-3/4	2-3/4
GMF18922	R.020	5/16	5/16	3/4	4	4
GMF18946	R.030	5/16	5/16	3/4	4	4
GMF18923	R.040	5/16	5/16	3/4	4	4
GMF18924	R.060	5/16	5/16	3/4	4	4
GMF18925	R.080	5/16	5/16	3/4	4	4
GMF18024	R.020	3/8	3/8	1	3	3
GMF18947	R.030	3/8	3/8	1	3	3
GMF18926	R.040	3/8	3/8	1	3	3
GMF18927	R.020	3/8	3/8	1	4	4
GMF18948	R.030	3/8	3/8	1	4	4
GMF18928	R.040	3/8	3/8	1	4	4
GMF18929	R.060	3/8	3/8	1	4	4
GMF18930	R.080	3/8	3/8	1	4	4
GMF18032	R.020	1/2	1/2	1-3/16	3-1/8	3-1/8
GMF18949	R.030	1/2	1/2	1-3/16	3-1/8	3-1/8
GMF18931	R.040	1/2	1/2	1-3/16	3-1/8	3-1/8
GMF18932	R.020	1/2	1/2	1-3/16	4-1/4	4-1/4

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◎: Excellent ○: Good

ISO Material Description	P										M				K			H			
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	3	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	◎	○	◎	◎	◎	○	○	○	○	○	○	

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34	55	60	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																○	○	◎	◎	○	○

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**YG 4G MILL END MILLS**

**YG 4G MILL END MILLS**

PLAIN SHANK **GMF18** SERIES

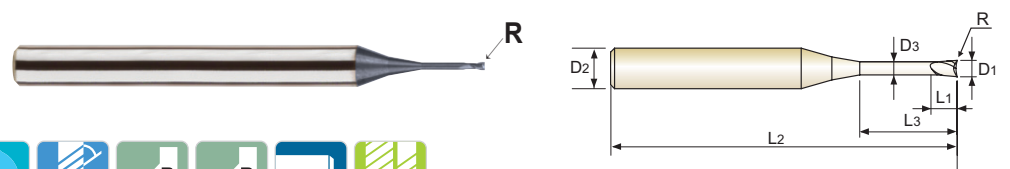
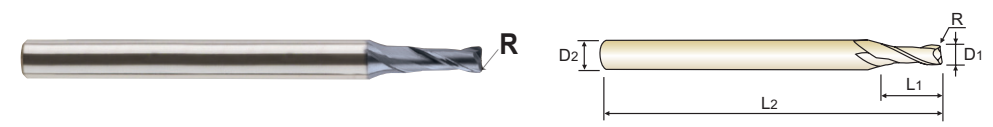
PLAIN SHANK **GMF19** SERIES

**CARBIDE, 2 FLUTE CORNER RADIUS**

**CARBIDE, 2 FLUTE CORNER RADIUS WITH NECK**

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRC55
- ▶ Available in various length shanks and corner radiuses.

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRC55
- ▶ Available in many more various length shanks and corner radiuses.



CARBIDE 2 30° ±.0004 ±.0006 PLAIN p.C277

CARBIDE 2 30° ±.0004 ±.0006 PLAIN p.C278-C281

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D1	D2	L1	L2
GMF18950	R.030	1/2	1/2	1-3/16	4-1/4
GMF18933	R.040	1/2	1/2	1-3/16	4-1/4
GMF18934	R.060	1/2	1/2	1-3/16	4-1/4
GMF18935	R.080	1/2	1/2	1-3/16	4-1/4
GMF18936	R.100	1/2	1/2	1-3/16	4-1/4
GMF18937	R.118	1/2	1/2	1-3/16	4-1/4
GMF18951	R.030	9/16	5/8	1-3/8	6
GMF18036	R.040	9/16	5/8	1-3/8	6
GMF18952	R.030	5/8	5/8	1-1/4	6
GMF18040	R.040	5/8	5/8	1-1/4	6
GMF18938	R.080	5/8	5/8	1-1/4	6
GMF18953	R.030	3/4	3/4	1-1/2	6
GMF18048	R.040	3/4	3/4	1-1/2	6
GMF18939	R.080	3/4	3/4	1-1/2	6

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
GMF19901	R.001	.008	3/16	.010	3/64	1-1/2	.006
GMF19902	R.002	.008	3/16	.010	3/64	1-1/2	.006
GMF19903	R.001	.012	3/16	1/64	3/64	1-1/2	.010
GMF19904	R.001	.012	3/16	1/64	5/64	1-1/2	.010
GMF19905	R.002	.012	3/16	1/64	3/64	1-1/2	.010
GMF19906	R.002	.012	3/16	1/64	5/64	1-1/2	.010
GMF19907	R.002	.015	3/16	1/32	3/64	1-1/2	.013
GMF19908	R.002	.015	3/16	1/32	1/16	1-1/2	.013
GMF19909	R.002	.015	3/16	1/32	5/64	1-1/2	.013
GMF19910	R.002	.015	3/16	1/32	3/32	1-1/2	.013
GMF19911	R.004	.015	3/16	1/32	3/64	1-1/2	.013
GMF19912	R.004	.015	3/16	1/32	5/64	1-1/2	.013
GMF19913	R.002	.020	3/16	1/32	3/64	1-3/4	.018
GMF19914	R.002	.020	3/16	1/32	1/16	1-3/4	.018
GMF19915	R.002	.020	3/16	1/32	5/64	1-3/4	.018
GMF19916	R.002	.020	3/16	1/32	5/32	1-3/4	.018
GMF19917	R.004	.020	3/16	1/32	5/64	1-3/4	.018
GMF19918	R.004	.020	3/16	1/32	1/8	1-3/4	.018
GMF19919	R.002	.024	3/16	1/32	1/8	1-3/4	.022
GMF19920	R.002	.024	3/16	1/32	1/4	1-3/4	.022
GMF19921	R.004	.024	3/16	1/32	5/64	1-3/4	.022
GMF19922	R.004	.024	3/16	1/32	5/32	1-3/4	.022
GMF19923	R.004	.024	3/16	1/32	1/4	1-3/4	.022
GMF19924	R.008	.024	3/16	1/32	5/64	1-3/4	.022
GMF19925	R.008	.024	3/16	1/32	5/32	1-3/4	.022
GMF19926	R.008	.024	3/16	1/32	1/4	1-3/4	.022
GMF19927	R.002	.031	3/16	3/64	5/64	1-3/4	.029
GMF19928	R.002	.031	3/16	3/64	5/32	1-3/4	.029
GMF19929	R.002	.031	3/16	3/64	1/4	1-3/4	.029
GMF19930	R.004	.031	3/16	3/64	5/64	1-3/4	.029

Size	Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	±.0004	0~-.0005	h5
over Ø1/4	±.0006	0~-.0006	

▶ NEXT PAGE

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRC	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	3	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	◎	○	◎	◎	◎	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials	Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron								
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRC	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRC	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	3	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	◎	○	◎	◎	◎	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials	Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron								
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRC	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

HSS

CBN END MILLS

i-Xmill END MILLS

i-SMART MODULAR END MILLS

X5070 END MILLS

4G MILL END MILLS

X-POWER PRO END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

V7 PLUS A END MILLS

V7 MILL INOX

ALU-POWER HPC END MILLS

ALU-POWER END MILLS

D-POWER GRAPHITE END MILLS

STANDARD CARBIDE

ONLY ONE COATED PM60 END MILLS

SINE-POWER

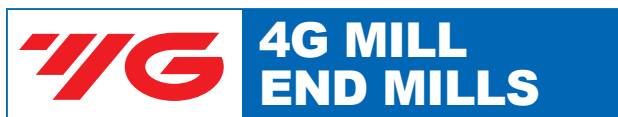
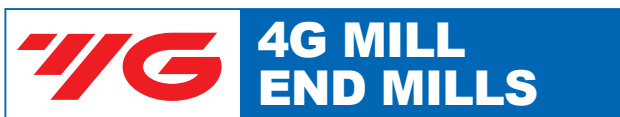
TANK-POWER END MILLS

STANDARD COBALT & HSS

TECHNICAL DATA

HSS

HSS



PLAIN SHANK GMF19 SERIES

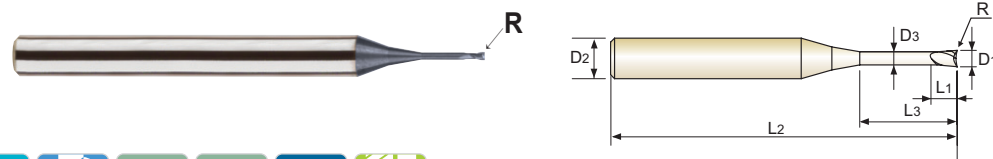
PLAIN SHANK GMF19 SERIES

CARBIDE, 2 FLUTE CORNER RADIUS WITH NECK

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- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRC55
- ▶ Available in many more various length shanks and corner radiuses.

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CARBIDE 2 30° ±.0004 ±.0006 PLAIN p.C278-C281

D<1/4 D>1/4

CARBIDE 2 30° ±.0004 ±.0006 PLAIN p.C278-C281

D<1/4 D>1/4

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
GMF19931	R.004	.031	3/16	3/64	5/32	1-3/4	.029
GMF19932	R.004	.031	3/16	3/64	1/4	1-3/4	.029
GMF19933	R.004	.031	3/16	3/64	5/16	1-3/4	.029
GMF19934	R.008	.031	3/16	3/64	5/32	1-3/4	.029
GMF19935	R.008	.031	3/16	3/64	1/4	1-3/4	.029
GMF19936	R.008	.031	3/16	3/64	5/16	1-3/4	.029
GMF19003	R.002	3/64	3/16	1/16	1/8	2	.044
GMF19937	R.002	3/64	3/16	1/16	5/32	2	.044
GMF19938	R.002	3/64	3/16	1/16	1/4	2	.044
GMF19939	R.004	3/64	3/16	1/16	1/8	2	.044
GMF19940	R.004	3/64	3/16	1/16	5/32	2	.044
GMF19941	R.004	3/64	3/16	1/16	1/4	2	.044
GMF19942	R.004	3/64	3/16	1/16	5/16	2	.044
GMF19943	R.004	3/64	3/16	1/16	3/8	2	.044
GMF19944	R.008	3/64	3/16	1/16	1/8	2	.044
GMF19945	R.008	3/64	3/16	1/16	5/32	2	.044
GMF19946	R.008	3/64	3/16	1/16	1/4	2	.044
GMF19947	R.008	3/64	3/16	1/16	5/16	2	.044
GMF19948	R.008	3/64	3/16	1/16	3/8	2	.044
GMF19949	R.012	3/64	3/16	1/16	5/32	2	.044
GMF19950	R.012	3/64	3/16	1/16	1/4	2	.044
GMF19951	R.012	3/64	3/16	1/16	5/16	2	.044
GMF19952	R.012	3/64	3/16	1/16	3/8	2	.044
GMF19004	R.002	1/16	3/16	3/32	5/32	2	.060
GMF19953	R.002	1/16	3/16	3/32	1/4	2	.060
GMF19954	R.002	1/16	3/16	3/32	5/16	2	.060
GMF19955	R.004	1/16	3/16	3/32	5/32	2	.060
GMF19956	R.004	1/16	3/16	3/32	1/4	2	.060
GMF19957	R.004	1/16	3/16	3/32	5/16	2	.060
GMF19958	R.008	1/16	3/16	3/32	5/32	2	.060

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
GMF19959	R.008	1/16	3/16	3/32	1/4	2	.060
GMF19960	R.008	1/16	3/16	3/32	5/16	2	.060
GMF19961	R.008	1/16	3/16	3/32	3/8	2	.060
GMF19962	R.008	1/16	3/16	3/32	1/2	2	.060
GMF19963	R.012	1/16	3/16	3/32	5/32	2	.060
GMF19964	R.012	1/16	3/16	3/32	1/4	2	.060
GMF19965	R.012	1/16	3/16	3/32	5/16	2	.060
GMF19966	R.012	1/16	3/16	3/32	3/8	2	.060
GMF19967	R.012	1/16	3/16	3/32	1/2	2	.060
GMF19005	R.004	5/64	3/16	1/8	1/4	2	.076
GMF19968	R.004	5/64	3/16	1/8	5/16	2	.076
GMF19969	R.004	5/64	3/16	1/8	3/8	2	.076
GMF19970	R.004	5/64	3/16	1/8	1/2	2	.076
GMF19971	R.008	5/64	3/16	1/8	1/4	2	.076
GMF19972	R.008	5/64	3/16	1/8	5/16	2	.076
GMF19973	R.008	5/64	3/16	1/8	3/8	2	.076
GMF19974	R.008	5/64	3/16	1/8	1/2	2	.076
GMF19975	R.008	5/64	3/16	1/8	5/8	2	.076
GMF19976	R.012	5/64	3/16	1/8	1/4	2	.076
GMF19977	R.012	5/64	3/16	1/8	5/16	2	.076
GMF19978	R.012	5/64	3/16	1/8	3/8	2	.076
GMF19979	R.012	5/64	3/16	1/8	1/2	2	.076
GMF19980	R.012	5/64	3/16	1/8	5/8	2	.076
GMF19981	R.020	5/64	3/16	1/8	1/4	2	.076
GMF19982	R.020	5/64	3/16	1/8	5/16	2	.076
GMF19983	R.020	5/64	3/16	1/8	3/8	2	.076
GMF19984	R.020	5/64	3/16	1/8	1/2	2	.076
GMF19985	R.020	5/64	3/16	1/8	9/16	2	.076
GMF19008	R.004	1/8	1/4	3/16	3/8	2	.119
GMF19986	R.004	1/8	1/4	3/16	1/2	2	.119

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◎ : Excellent ○ : Good

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron			
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRC	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRC	60	100	75	90	130	110	90	100			15	30	25	38	34		55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	◎	○

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron				
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRC	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○

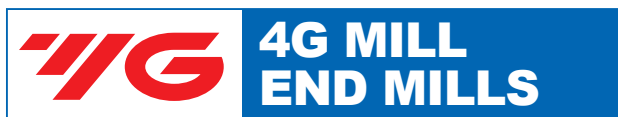
  

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRC	60	100	75	90	130	110	90	100			15	30	25	38	34		55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	◎	○



HSS

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PLAIN SHANK GMF19 SERIES

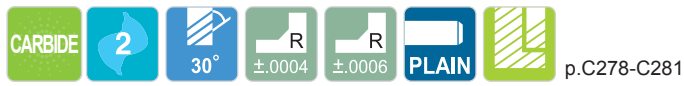
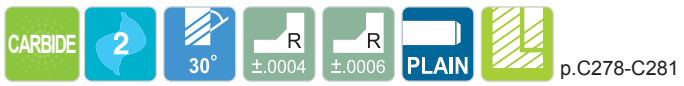
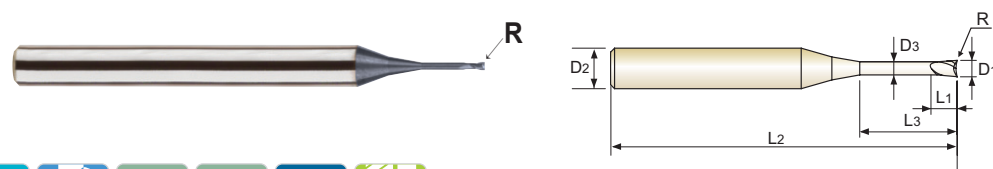
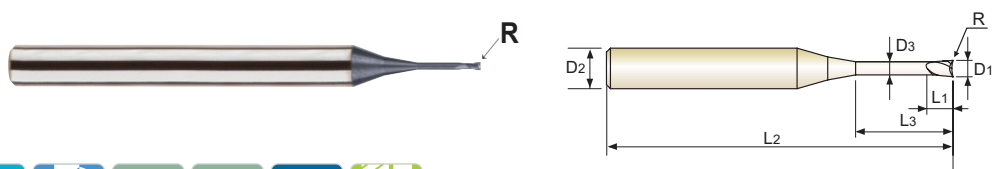
PLAIN SHANK GMF19 SERIES

CARBIDE, 2 FLUTE CORNER RADIUS WITH NECK

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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
GMF19987	R.004	1/8	1/4	3/16	5/8	2-3/8	.119
GMF19988	R.008	1/8	1/4	3/16	5/16	2	.119
GMF19989	R.008	1/8	1/4	3/16	3/8	2	.119
GMF19990	R.008	1/8	1/4	3/16	1/2	2	.119
GMF19991	R.008	1/8	1/4	3/16	5/8	2-3/8	.119
GMF19992	R.008	1/8	1/4	3/16	3/4	2-3/8	.119
GMF19993	R.008	1/8	1/4	3/16	1	2-3/4	.119
GMF19994	R.012	1/8	1/4	3/16	5/16	2	.119
GMF19995	R.012	1/8	1/4	3/16	3/8	2	.119
GMF19996	R.012	1/8	1/4	3/16	1/2	2	.119
GMF19997	R.012	1/8	1/4	3/16	5/8	2-3/8	.119
GMF19998	R.012	1/8	1/4	3/16	3/4	2-3/8	.119
GMF19999	R.020	1/8	1/4	3/16	5/16	2	.119
GMF19801	R.020	1/8	1/4	3/16	3/8	2	.119
GMF19802	R.020	1/8	1/4	3/16	1/2	2	.119
GMF19803	R.020	1/8	1/4	3/16	5/8	2-3/8	.119
GMF19804	R.020	1/8	1/4	3/16	3/4	2-3/8	.119
GMF19805	R.020	1/8	1/4	3/16	1	2-3/4	.119
GMF19845	R.030	1/8	1/4	3/16	3/8	2	.119
GMF19846	R.030	1/8	1/4	3/16	1/2	2	.119
GMF19847	R.030	1/8	1/4	3/16	5/16	2	.119
GMF19848	R.030	1/8	1/4	3/16	3/4	2-3/8	.119
GMF19849	R.030	1/8	1/4	3/16	5/8	2-3/8	.119
GMF19850	R.030	1/8	1/4	3/16	1	2-3/4	.119
GMF19806	R.040	1/8	1/4	3/16	5/16	2	.119
GMF19807	R.040	1/8	1/4	3/16	3/8	2	.119
GMF19808	R.040	1/8	1/4	3/16	1/2	2	.119
GMF19809	R.040	1/8	1/4	3/16	5/8	2-3/8	.119
GMF19810	R.040	1/8	1/4	3/16	3/4	2-3/8	.119
GMF19012	R.004	3/16	1/4	1/4	3/8	2	.181

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
GMF19811	R.004	3/16	1/4	1/4	1/2	2	.181
GMF19812	R.004	3/16	1/4	1/4	5/8	2-3/8	.181
GMF19813	R.008	3/16	1/4	1/4	3/8	2	.181
GMF19814	R.008	3/16	1/4	1/4	1/2	2	.181
GMF19815	R.008	3/16	1/4	1/4	5/8	2-3/8	.181
GMF19816	R.008	3/16	1/4	1/4	3/4	2-3/8	.181
GMF19817	R.008	3/16	1/4	1/4	1	2-3/4	.181
GMF19818	R.012	3/16	1/4	1/4	1/2	2	.181
GMF19819	R.012	3/16	1/4	1/4	5/8	2-3/8	.181
GMF19820	R.012	3/16	1/4	1/4	3/4	2-3/8	.181
GMF19821	R.012	3/16	1/4	1/4	1	2-3/4	.181
GMF19822	R.020	3/16	1/4	1/4	3/8	2	.181
GMF19823	R.020	3/16	1/4	1/4	1/2	2	.181
GMF19824	R.020	3/16	1/4	1/4	5/8	2-3/8	.181
GMF19825	R.020	3/16	1/4	1/4	3/4	2-3/8	.181
GMF19826	R.020	3/16	1/4	1/4	1	2-3/4	.181
GMF19827	R.020	3/16	1/4	1/4	1-3/16	2-3/4	.181
GMF19851	R.030	3/16	1/4	1/4	3/8	2	.181
GMF19852	R.030	3/16	1/4	1/4	1/2	2	.181
GMF19853	R.030	3/16	1/4	1/4	5/8	2-3/8	.181
GMF19854	R.030	3/16	1/4	1/4	3/4	2-3/8	.181
GMF19855	R.030	3/16	1/4	1/4	1	2-3/4	.181
GMF19856	R.030	3/16	1/4	1/4	1-3/16	2-3/4	.181
GMF19828	R.040	3/16	1/4	1/4	3/8	2	.181
GMF19829	R.040	3/16	1/4	1/4	1/2	2	.181
GMF19830	R.040	3/16	1/4	1/4	5/8	2-3/8	.181
GMF19831	R.040	3/16	1/4	1/4	3/4	2-3/8	.181
GMF19016	R.008	1/4	1/4	3/8	3/4	2-3/8	.244
GMF19832	R.012	1/4	1/4	3/8	3/4	2-3/8	.244
GMF19833	R.020	1/4	1/4	3/8	3/4	2-3/8	.244

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◎ : Excellent ○ : Good

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

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# YG 4G MILL END MILLS

# YG 4G MILL END MILLS

PLAIN SHANK **GMF19** SERIES

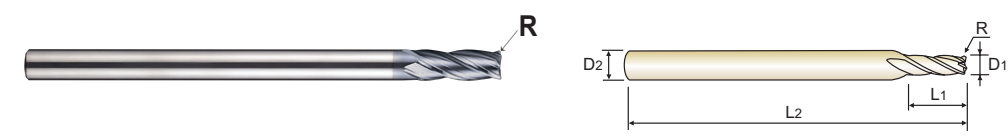
PLAIN SHANK **GMF20** SERIES

## CARBIDE, 2 FLUTE CORNER RADIUS WITH NECK

## CARBIDE, 4 FLUTE CORNER RADIUS

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRC55
- ▶ Available in many more various length shanks and corner radiuses.

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- ▶ Excellent performance when cutting steels, up to HRC55
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- ▶ Due to Multiple Helix on 1/8" and over diameter end mills, vibration is minimized and tool life increased.
- ▶ 4 flute series has new designs to reduce vibrations



CARBIDE 2 30° ±.0004 ±.0006 PLAIN p.C278-C281

CARBIDE 4 27°/30° ±.0008 PLAIN p.C282

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
GMF19834	R.040	1/4	1/4	3/8	3/4	2-3/8	.244
GMF19835	R.020	1/4	1/4	5/8	1-3/16	3-1/2	.244
GMF19857	R.030	1/4	1/4	3/8	3/4	2-3/8	.244
GMF19858	R.030	1/4	1/4	5/8	1-3/16	3-1/2	.244
GMF19020	R.008	5/16	5/16	1/2	1	2-3/4	.300
GMF19836	R.012	5/16	5/16	1/2	1	2-3/4	.300
GMF19837	R.020	5/16	5/16	1/2	1	2-3/4	.300
GMF19859	R.030	5/16	5/16	1/2	1	2-3/4	.300
GMF19838	R.040	5/16	5/16	1/2	1	2-3/4	.300
GMF19024	R.012	3/8	3/8	5/8	1-3/16	3	.363
GMF19839	R.020	3/8	3/8	5/8	1-3/16	3	.363
GMF19860	R.030	3/8	3/8	5/8	1-3/16	3	.363
GMF19840	R.040	3/8	3/8	5/8	1-3/16	3	.363
GMF19032	R.020	1/2	1/2	11/16	1-1/4	3-1/8	.488
GMF19861	R.030	1/2	1/2	11/16	1-1/4	3-1/8	.488
GMF19841	R.040	1/2	1/2	11/16	1-1/4	3-1/8	.488
GMF19842	R.060	1/2	1/2	11/16	1-1/4	3-1/8	.488
GMF19040	R.020	5/8	5/8	3/4	1-3/8	4	.613
GMF19862	R.030	5/8	5/8	3/4	1-3/8	4	.613
GMF19843	R.040	5/8	5/8	3/4	1-3/8	4	.613
GMF19048	R.020	3/4	3/4	1	1-1/2	4	.738
GMF19863	R.030	3/4	3/4	1	1-1/2	4	.738
GMF19844	R.040	3/4	3/4	1	1-1/2	4	.738

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF20003	R.004	3/64	1/4	3/32	2
GMF20005	R.004	5/64	1/4	1/4	2
GMF20901	R.008	5/64	1/4	1/4	2
GMF20008	R.008	1/8	1/4	5/16	2-3/8
GMF20902	R.012	1/8	1/4	5/16	2-3/8
GMF20903	R.020	1/8	1/4	5/16	2-3/8
GMF20933	R.030	1/8	1/4	5/16	2-3/8
GMF20012	R.008	3/16	1/4	3/8	2-3/4
GMF20904	R.012	3/16	1/4	3/8	2-3/4
GMF20905	R.020	3/16	1/4	3/8	2-3/4
GMF20934	R.030	3/16	1/4	3/8	2-3/4
GMF20906	R.040	3/16	1/4	3/8	2-3/4
GMF20013	R.012	13/64	1/4	1/2	3-1/2
GMF20907	R.020	13/64	1/4	1/2	3-1/2
GMF20935	R.030	13/64	1/4	1/2	3-1/2
GMF20016	R.008	1/4	1/4	5/8	3-1/2
GMF20908	R.012	1/4	1/4	5/8	3-1/2
GMF20909	R.020	1/4	1/4	5/8	3-1/2
GMF20936	R.030	1/4	1/4	5/8	3-1/2
GMF20910	R.040	1/4	1/4	5/8	3-1/2
GMF20020	R.012	5/16	5/16	3/4	2-3/4
GMF20911	R.020	5/16	5/16	3/4	2-3/4
GMF20937	R.030	5/16	5/16	3/4	2-3/4
GMF20912	R.040	5/16	5/16	3/4	2-3/4
GMF20913	R.008	5/16	5/16	3/4	4
GMF20914	R.012	5/16	5/16	3/4	4
GMF20915	R.020	5/16	5/16	3/4	4
GMF20938	R.030	5/16	5/16	3/4	4
GMF20916	R.040	5/16	5/16	3/4	4
GMF20917	R.060	5/16	5/16	3/4	4

Size	Radius Tolerance (Inch)	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	±.0004	0~-.0005	h5
over Ø1/4	±.0006	0~-.0006	

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron		
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

ISO	N					S					H											
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron							
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron			
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○

ISO	N					S					H											
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron							
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

TECHNICAL DATA

TECHNICAL DATA

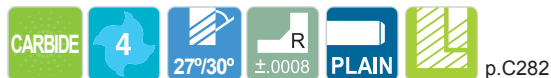
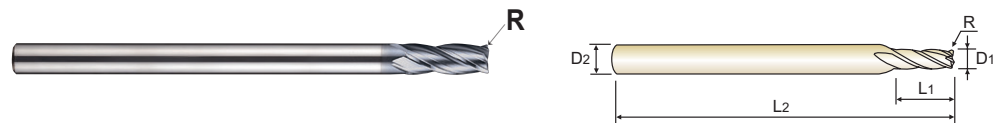
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# YG 4G MILL END MILLS

PLAIN SHANK **GMF20** SERIES

## CARBIDE, 4 FLUTE CORNER RADIUS

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRC55
- ▶ Available in many more various length shanks and corner radii.
- ▶ Due to Multiple Helix on 1/8" and over diameter end mills, vibration is minimized and tool life increased.
- ▶ 4 flute series has new designs to reduce vibrations



D1<math>\phi</math>1/8, 30° Helix

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D <sub>1</sub>	D <sub>2</sub>	L <sub>1</sub>	L <sub>2</sub>
GMF20918	R.080	5/16	5/16	3/4	4
GMF20024	R.020	3/8	3/8	1	3
GMF20939	R.030	3/8	3/8	1	3
GMF20919	R.012	3/8	3/8	1	4
GMF20920	R.020	3/8	3/8	1	4
GMF20940	R.030	3/8	3/8	1	4
GMF20921	R.040	3/8	3/8	1	4
GMF20922	R.060	3/8	3/8	1	4
GMF20923	R.080	3/8	3/8	1	4
GMF20032	R.020	1/2	1/2	1-3/16	3-1/8
GMF20941	R.030	1/2	1/2	1-3/16	3-1/8
GMF20924	R.040	1/2	1/2	1-3/16	3-1/8
GMF20925	R.020	1/2	1/2	1-3/16	4-1/4
GMF20942	R.030	1/2	1/2	1-3/16	4-1/4
GMF20926	R.040	1/2	1/2	1-3/16	4-1/4
GMF20927	R.060	1/2	1/2	1-3/16	4-1/4
GMF20928	R.080	1/2	1/2	1-3/16	4-1/4
GMF20040	R.020	5/8	5/8	1-1/4	6
GMF20943	R.030	5/8	5/8	1-1/4	6
GMF20929	R.040	5/8	5/8	1-1/4	6
GMF20930	R.060	5/8	5/8	1-1/4	6
GMF20931	R.080	5/8	5/8	1-1/4	6
GMF20944	R.030	3/4	3/4	1-1/2	6
GMF20048	R.040	3/4	3/4	1-1/2	6
GMF20932	R.080	3/4	3/4	1-1/2	6

Mill Dia. Tolerance (Inch)	Corner Radius Tolerance (Inch)	Shank Dia. Tolerance
0~-.0012	±.0008	h5

◎ : Excellent ○ : Good

ISO Material Description	P											M				K				
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○

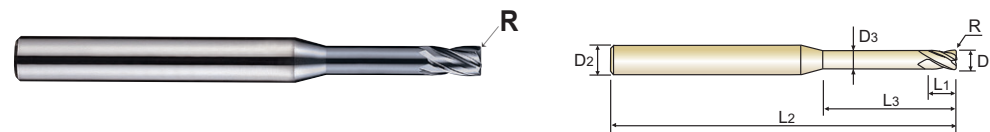
ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	◎	○

# YG 4G MILL END MILLS

PLAIN SHANK **GMF21** SERIES

## CARBIDE, 4 FLUTE CORNER RADIUS WITH NECK

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRC55
- ▶ Due to Multiple Helix on 1/8" and over diameter end mills, vibration is minimized and tool life increased.
- ▶ 4 flute series has new designs to reduce vibrations



D1<math>\phi</math>1/8, 30° Helix

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R	D <sub>1</sub>	D <sub>2</sub>	L <sub>1</sub>	L <sub>3</sub>	L <sub>2</sub>	D <sub>3</sub>
GMF21003	R.004	3/64	3/16	1/16	5/32	2	.044
GMF21901	R.004	3/64	3/16	1/16	1/4	2	.044
GMF21902	R.004	3/64	3/16	1/16	5/16	2	.044
GMF21903	R.008	3/64	3/16	1/16	5/32	2	.044
GMF21904	R.008	3/64	3/16	1/16	1/4	2	.044
GMF21905	R.008	3/64	3/16	1/16	5/16	2	.044
GMF21906	R.012	3/64	3/16	1/16	5/32	2	.044
GMF21907	R.012	3/64	3/16	1/16	1/4	2	.044
GMF21908	R.012	3/64	3/16	1/16	5/16	2	.044
GMF21004	R.004	1/16	3/16	3/32	1/4	2	.060
GMF21909	R.004	1/16	3/16	3/32	5/16	2	.060
GMF21910	R.004	1/16	3/16	3/32	3/8	2	.060
GMF21911	R.004	1/16	3/16	3/32	1/2	2	.060
GMF21912	R.008	1/16	3/16	3/32	1/4	2	.060
GMF21913	R.008	1/16	3/16	3/32	5/16	2	.060
GMF21914	R.008	1/16	3/16	3/32	3/8	2	.060
GMF21915	R.008	1/16	3/16	3/32	1/2	2	.060
GMF21916	R.012	1/16	3/16	3/32	1/4	2	.060
GMF21917	R.012	1/16	3/16	3/32	5/16	2	.060
GMF21918	R.012	1/16	3/16	3/32	3/8	2	.060
GMF21919	R.012	1/16	3/16	3/32	1/2	2	.060
GMF21920	R.020	1/16	3/16	3/32	1/4	2	.060
GMF21921	R.020	1/16	3/16	3/32	5/16	2	.060
GMF21922	R.020	1/16	3/16	3/32	3/8	2	.060
GMF21923	R.020	1/16	3/16	3/32	1/2	2	.060
GMF21005	R.004	5/64	3/16	1/8	1/4	2	.076
GMF21924	R.004	5/64	3/16	1/8	5/16	2	.076
GMF21925	R.004	5/64	3/16	1/8	3/8	2	.076
GMF21926	R.004	5/64	3/16	1/8	1/2	2	.076
GMF21927	R.008	5/64	3/16	1/8	1/4	2	.076

▶ NEXT PAGE

◎ : Excellent ○ : Good

ISO Material Description	P											M				K				
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	◎	○



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# YG 4G MILL END MILLS

# YG 4G MILL END MILLS

PLAIN SHANK **GMF21** SERIES

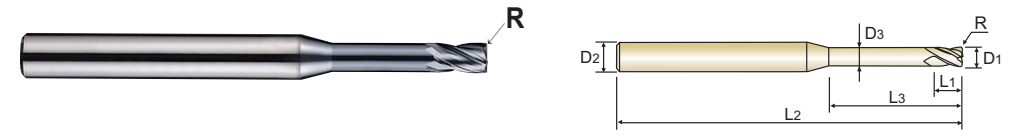
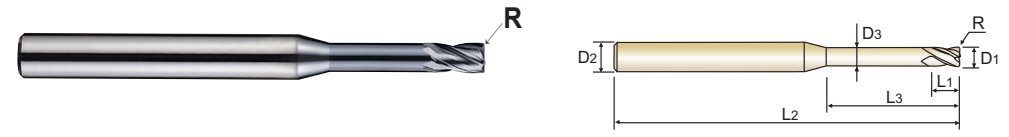
PLAIN SHANK **GMF21** SERIES

## CARBIDE, 4 FLUTE CORNER RADIUS WITH NECK

## CARBIDE, 4 FLUTE CORNER RADIUS WITH NECK

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRC55
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CARBIDE 4 27°/30° ±.0008 PLAIN p.C284-C285

CARBIDE 4 27°/30° ±.0008 PLAIN p.C284-C285

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
GMF21928	R.008	5/64	3/16	1/8	5/16	2	.076
GMF21929	R.008	5/64	3/16	1/8	3/8	2	.076
GMF21930	R.008	5/64	3/16	1/8	1/2	2	.076
GMF21931	R.012	5/64	3/16	1/8	1/4	2	.076
GMF21932	R.012	5/64	3/16	1/8	5/16	2	.076
GMF21933	R.012	5/64	3/16	1/8	3/8	2	.076
GMF21934	R.012	5/64	3/16	1/8	1/2	2	.076
GMF21935	R.020	5/64	3/16	1/8	1/4	2	.076
GMF21936	R.020	5/64	3/16	1/8	5/16	2	.076
GMF21937	R.020	5/64	3/16	1/8	3/8	2	.076
GMF21938	R.020	5/64	3/16	1/8	1/2	2	.076
GMF21008	R.004	1/8	1/4	3/16	5/16	2	.119
GMF21939	R.004	1/8	1/4	3/16	3/8	2	.119
GMF21940	R.004	1/8	1/4	3/16	1/2	2	.119
GMF21941	R.004	1/8	1/4	3/16	5/8	2-3/8	.119
GMF21942	R.008	1/8	1/4	3/16	3/8	2	.119
GMF21943	R.008	1/8	1/4	3/16	1/2	2	.119
GMF21944	R.008	1/8	1/4	3/16	5/8	2-3/8	.119
GMF21945	R.008	1/8	1/4	3/16	3/4	2-3/8	.119
GMF21946	R.012	1/8	1/4	3/16	5/16	2	.119
GMF21947	R.012	1/8	1/4	3/16	3/8	2	.119
GMF21948	R.012	1/8	1/4	3/16	1/2	2	.119
GMF21949	R.012	1/8	1/4	3/16	5/8	2-3/8	.119
GMF21950	R.012	1/8	1/4	3/16	3/4	2-3/8	.119
GMF21951	R.020	1/8	1/4	3/16	5/16	2	.119
GMF21952	R.020	1/8	1/4	3/16	3/8	2	.119
GMF21953	R.020	1/8	1/4	3/16	1/2	2	.119
GMF21954	R.020	1/8	1/4	3/16	5/8	2-3/8	.119
GMF21955	R.020	1/8	1/4	3/16	3/4	2-3/8	.119
GMF21956	R.020	1/8	1/4	3/16	1	2-3/4	.119

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
GMF21999	R.030	1/8	1/4	3/16	5/16	2	.119
GMF21801	R.030	1/8	1/4	3/16	3/8	2	.119
GMF21802	R.030	1/8	1/4	3/16	1/2	2	.119
GMF21803	R.030	1/8	1/4	3/16	5/8	2-3/8	.119
GMF21804	R.030	1/8	1/4	3/16	3/4	2-3/8	.119
GMF21805	R.030	1/8	1/4	3/16	1	2-3/4	.119
GMF21957	R.040	1/8	1/4	3/16	5/16	2	.119
GMF21958	R.040	1/8	1/4	3/16	3/8	2	.119
GMF21959	R.040	1/8	1/4	3/16	1/2	2	.119
GMF21960	R.040	1/8	1/4	3/16	5/8	2-3/8	.119
GMF21012	R.004	3/16	1/4	1/4	3/8	2	.181
GMF21961	R.004	3/16	1/4	1/4	1/2	2	.181
GMF21962	R.004	3/16	1/4	1/4	5/8	2-3/8	.181
GMF21963	R.004	3/16	1/4	1/4	3/4	2-3/8	.181
GMF21964	R.008	3/16	1/4	1/4	3/8	2	.181
GMF21965	R.008	3/16	1/4	1/4	1/2	2	.181
GMF21966	R.008	3/16	1/4	1/4	5/8	2-3/8	.181
GMF21967	R.008	3/16	1/4	1/4	3/4	2-3/8	.181
GMF21968	R.008	3/16	1/4	1/4	1	2-3/4	.181
GMF21969	R.012	3/16	1/4	1/4	3/8	2	.181
GMF21970	R.012	3/16	1/4	1/4	1/2	2	.181
GMF21971	R.012	3/16	1/4	1/4	5/8	2-3/8	.181
GMF21972	R.012	3/16	1/4	1/4	3/4	2-3/8	.181
GMF21973	R.012	3/16	1/4	1/4	1	2-3/4	.181
GMF21974	R.020	3/16	1/4	1/4	3/8	2	.181
GMF21975	R.020	3/16	1/4	1/4	1/2	2	.181
GMF21976	R.020	3/16	1/4	1/4	5/8	2-3/8	.181
GMF21977	R.020	3/16	1/4	1/4	3/4	2-3/8	.181
GMF21978	R.020	3/16	1/4	1/4	1	2-3/4	.181
GMF21806	R.030	3/16	1/4	1/4	3/8	2	.181

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◎ : Excellent ○ : Good

ISO	P											M				K				
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRC	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

ISO	N					S					H											
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRC	60	100	75	90	130	110	90	100			15	30	25	38	34		55	60	42	55	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

◎ : Excellent ○ : Good

ISO	P											M				K					
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRC	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○

ISO	N					S					H											
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRC	60	100	75	90	130	110	90	100			15	30	25	38	34		55	60	42	55	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

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# YG 4G MILL END MILLS

# YG 4G MILL END MILLS

PLAIN SHANK GMF21 SERIES

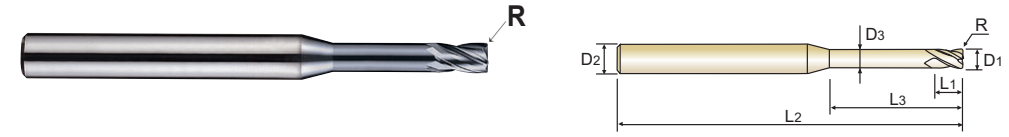
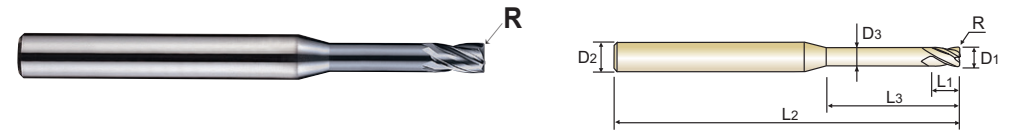
PLAIN SHANK GMF21 SERIES

## CARBIDE, 4 FLUTE CORNER RADIUS WITH NECK

## CARBIDE, 4 FLUTE CORNER RADIUS WITH NECK

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRc55
- ▶ Due to Multiple Helix on 1/8" and over diameter end mills, vibration is minimized and tool life increased.
- ▶ 4 flute series has new designs to reduce vibrations

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CARBIDE 4 27°/30° ±.0008 PLAIN p.C284-C285

CARBIDE 4 27°/30° ±.0008 PLAIN p.C284-C285

D1<math>\phi</math>1/8, 30° Helix

D1<math>\phi</math>1/8, 30° Helix

Unit : Inch

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
GMF21807	R.030	3/16	1/4	1/4	1/2	2	.181
GMF21808	R.030	3/16	1/4	1/4	5/8	2-3/8	.181
GMF21809	R.030	3/16	1/4	1/4	3/4	2-3/8	.181
GMF21810	R.030	3/16	1/4	1/4	1	2-3/4	.181
GMF21979	R.040	3/16	1/4	1/4	3/8	2	.181
GMF21980	R.040	3/16	1/4	1/4	1/2	2	.181
GMF21981	R.040	3/16	1/4	1/4	5/8	2-3/8	.181
GMF21982	R.040	3/16	1/4	1/4	3/4	2-3/8	.181
GMF21983	R.040	3/16	1/4	1/4	1	2-3/4	.181
GMF21016	R.012	1/4	1/4	3/8	3/4	2-3/8	.244
GMF21984	R.020	1/4	1/4	3/8	3/4	2-3/8	.244
GMF21811	R.030	1/4	1/4	3/8	3/4	2-3/8	.244
GMF21985	R.040	1/4	1/4	3/8	3/4	2-3/8	.244
GMF21020	R.008	5/16	5/16	1/2	1	2-3/4	.300
GMF21986	R.012	5/16	5/16	1/2	1	2-3/4	.300
GMF21987	R.020	5/16	5/16	1/2	1	2-3/4	.300
GMF21988	R.040	5/16	5/16	1/2	1	2-3/4	.300
GMF21989	R.020	5/16	5/16	3/4	1-3/8	4	.300
GMF21812	R.030	5/16	5/16	1/2	1	2-3/4	.300
GMF21813	R.030	5/16	5/16	3/4	1-3/8	4	.300
GMF21024	R.020	3/8	3/8	5/8	1-3/16	3	.363
GMF21990	R.040	3/8	3/8	5/8	1-3/16	3	.363
GMF21991	R.060	3/8	3/8	5/8	1-3/16	3	.363
GMF21992	R.020	3/8	3/8	1	1-1/2	4	.363
GMF21814	R.030	3/8	3/8	5/8	1-3/16	3	.363
GMF21815	R.030	3/8	3/8	1	1-1/2	4	.363
GMF21032	R.020	1/2	1/2	11/16	1-1/4	3-1/8	.488
GMF21816	R.030	1/2	1/2	11/16	1-1/4	3-1/8	.488
GMF21817	R.030	1/2	1/2	1-3/16	1-3/4	4-1/4	.488
GMF21993	R.040	1/2	1/2	11/16	1-1/4	3-1/8	.488

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
GMF21994	R.060	1/2	1/2	11/16	1-1/4	3-1/8	.488
GMF21995	R.080	1/2	1/2	11/16	1-1/4	3-1/8	.488
GMF21996	R.020	1/2	1/2	1-3/16	1-3/4	4-1/4	.488
GMF21040	R.020	5/8	5/8	3/4	1-3/8	4	.613
GMF21818	R.030	5/8	5/8	3/4	1-3/8	4	.613
GMF21997	R.040	5/8	5/8	3/4	1-3/8	4	.613
GMF21048	R.020	3/4	3/4	1	1-1/2	4	.738
GMF21819	R.030	3/4	3/4	1	1-1/2	4	.738
GMF21998	R.040	3/4	3/4	1	1-1/2	4	.738

Mill Dia. Tolerance (Inch)	Corner Radius Tolerance (Inch)	Shank Dia. Tolerance
0~-.0012	±.0008	h5

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◎ : Excellent ○ : Good

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron			
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	◎	◎	◎	◎	○	◎	◎	◎	◎	○	◎	◎	◎	○	○	○	○	○	○

ISO	N				S					H											
	Aluminum-wrought alloy	Aluminum-cast, alloyed	Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials	Heat Resistant Super Alloys					Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron								
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	55	60	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	◎	◎	◎	◎	○	◎	◎	◎	◎	○	◎	◎	◎	◎	○	○	○	○	○	○

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron			
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	◎	◎	◎	◎	○	◎	◎	◎	◎	○	◎	◎	◎	○	○	○	○	○	○

ISO	N				S					H											
	Aluminum-wrought alloy	Aluminum-cast, alloyed	Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials	Heat Resistant Super Alloys					Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron								
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	55	60	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	◎	◎	◎	◎	○	◎	◎	◎	◎	○	◎	◎	◎	◎	○	○	○	○	○	○

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PLAIN SHANK GMF22 SERIES

PLAIN SHANK GMF22 SERIES

CARBIDE, 2 FLUTE WITH NECK

CARBIDE, 2 FLUTE WITH NECK

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRC55
- ▶ Due to Multiple Helix on 1/8" and over diameter end mills, vibration is minimized and tool life increased.
- ▶ For 1/32" and under 1/32" diameter sizes, double neck increases tool rigidity and minimizes vibration.
- ▶ Excellent for Rib Processing of various depths

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- ▶ For 1/32" and under 1/32" diameter sizes, double neck increases tool rigidity and minimizes vibration.
- ▶ Excellent for Rib Processing of various depths



Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D1	D2	L1	L3	L2	D3
GMF22901	.008	3/16	.010	3/64	1-1/2	.006
GMF22902	.015	3/16	1/32	3/64	1-1/2	.013
GMF22903	.015	3/16	1/32	5/64	1-1/2	.013
GMF22904	.015	3/16	1/32	1/8	1-1/2	.013
GMF22905	.015	3/16	1/32	5/32	1-1/2	.013
GMF22906	.015	3/16	1/32	3/16	1-1/2	.013
GMF22907	.020	3/16	1/32	5/64	1-3/4	.018
GMF22908	.020	3/16	1/32	1/8	1-3/4	.018
GMF22909	.020	3/16	1/32	5/32	1-3/4	.018
GMF22910	.020	3/16	1/32	3/16	1-3/4	.018
GMF22911	.020	3/16	1/32	1/4	1-3/4	.018
GMF22912	.024	3/16	1/32	5/64	1-3/4	.022
GMF22913	.024	3/16	1/32	1/8	1-3/4	.022
GMF22914	.024	3/16	1/32	5/32	1-3/4	.022
GMF22915	.024	3/16	1/32	3/16	1-3/4	.022
GMF22916	.024	3/16	1/32	1/4	1-3/4	.022
GMF22917	.024	3/16	1/32	5/16	1-3/4	.022
GMF22918	.024	3/16	1/32	3/8	1-3/4	.022
GMF22002	1/32	3/16	3/64	5/64	1-3/4	.029
GMF22919	1/32	3/16	3/64	1/8	1-3/4	.029
GMF22920	1/32	3/16	3/64	5/32	1-3/4	.029
GMF22921	1/32	3/16	3/64	3/16	1-3/4	.029
GMF22922	1/32	3/16	3/64	1/4	1-3/4	.029
GMF22923	1/32	3/16	3/64	5/16	1-3/4	.029
GMF22924	1/32	3/16	3/64	3/8	1-3/4	.029
GMF22003	3/64	3/16	1/16	1/8	2	.044
GMF22925	3/64	3/16	1/16	5/32	2	.044
GMF22926	3/64	3/16	1/16	3/16	2	.044
GMF22927	3/64	3/16	1/16	1/4	2	.044
GMF22928	3/64	3/16	1/16	5/16	2	.044

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D1	D2	L1	L3	L2	D3
GMF22929	3/64	3/16	1/16	3/8	2	.044
GMF22930	3/64	3/16	1/16	1/2	2	.044
GMF22931	3/64	3/16	1/16	9/16	2	.044
GMF22932	3/64	3/16	1/16	5/8	2	.044
GMF22933	3/64	3/16	1/16	3/4	2	.044
GMF22004	1/16	3/16	3/32	5/32	2	.060
GMF22934	1/16	3/16	3/32	1/4	2	.060
GMF22935	1/16	3/16	3/32	5/16	2	.060
GMF22936	1/16	3/16	3/32	3/8	2	.060
GMF22937	1/16	3/16	3/32	1/2	2	.060
GMF22938	1/16	3/16	3/32	9/16	2	.060
GMF22939	1/16	3/16	3/32	5/8	2	.060
GMF22940	1/16	3/16	3/32	3/4	2	.060
GMF22005	5/64	3/16	1/8	1/4	2	.076
GMF22941	5/64	3/16	1/8	5/16	2	.076
GMF22942	5/64	3/16	1/8	3/8	2	.076
GMF22943	5/64	3/16	1/8	1/2	2	.076
GMF22944	5/64	3/16	1/8	9/16	2	.076
GMF22945	5/64	3/16	1/8	5/8	2	.076
GMF22946	5/64	3/16	1/8	3/4	2	.076
GMF22006	3/32	3/16	5/32	5/16	2	.089
GMF22947	3/32	3/16	5/32	1/2	2	.089
GMF22948	3/32	3/16	5/32	5/8	2	.089
GMF22949	3/32	3/16	5/32	3/4	2	.089
GMF22008	1/8	1/4	3/16	5/16	2	.119
GMF22950	1/8	1/4	3/16	3/8	2	.119
GMF22951	1/8	1/4	3/16	1/2	2	.119
GMF22952	1/8	1/4	3/16	9/16	2-3/8	.119
GMF22953	1/8	1/4	3/16	5/8	2-3/8	.119
GMF22954	1/8	1/4	3/16	11/16	2-3/8	.119

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◎ : Excellent ○ : Good

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron	Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRC	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron								
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRC	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	40	55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	◎	○

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron	Nodular cast iron		Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRC	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron								
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRC	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	40	55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	◎	○

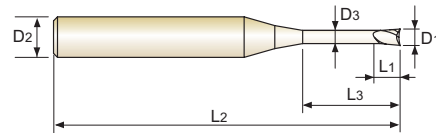
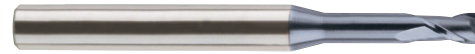


# YG 4G MILL END MILLS

PLAIN SHANK **GMF22** SERIES

## CARBIDE, 2 FLUTE WITH NECK

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRC55
- ▶ Due to Multiple Helix on 1/8" and over diameter end mills, vibration is minimized and tool life increased.
- ▶ For 1/32" and under 1/32" diameter sizes, double neck increases tool rigidity and minimizes vibration.
- ▶ Excellent for Rib Processing of various depths



CARBIDE 2 30° PLAIN p.C286-C291

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D1	D2	L1	L3	L2	D3
GMF22955	1/8	1/4	3/16	3/4	2-3/8	.119
GMF22956	1/8	1/4	3/16	1	2-3/4	.119
GMF22012	3/16	1/4	1/4	3/8	2	.181
GMF22957	3/16	1/4	1/4	1/2	2	.181
GMF22958	3/16	1/4	1/4	5/8	2-3/8	.181
GMF22959	3/16	1/4	1/4	11/16	2-3/8	.181
GMF22960	3/16	1/4	1/4	3/4	2-3/8	.181
GMF22961	3/16	1/4	1/4	1	2-3/4	.181
GMF22962	3/16	1/4	1/4	1-3/16	2-3/4	.181
GMF22013	13/64	1/4	5/16	3/4	2-3/8	.197
GMF22963	13/64	1/4	5/16	1-3/16	2-3/4	.197
GMF22964	13/64	1/4	5/16	1-3/8	3	.197
GMF22965	13/64	1/4	5/16	1-1/2	3-1/8	.197
GMF22966	13/64	1/4	5/16	2	3-1/2	.197
GMF22016	1/4	1/4	3/8	5/8	2-3/8	.244
GMF22967	1/4	1/4	3/8	3/4	2-3/8	.244
GMF22968	1/4	1/4	3/8	1-3/16	2-3/4	.244
GMF22020	5/16	5/16	1/2	1	2-3/4	.300
GMF22024	3/8	3/8	5/8	1-3/16	3	.363
GMF22969	3/8	3/8	5/8	1-3/4	4	.363
GMF22032	1/2	1/2	3/4	1-3/8	3-1/8	.488
GMF22970	1/2	1/2	3/4	2	4-1/4	.488

Size	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	0~-0.0005	h5
over Ø1/4	0~-0.0006	

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323																				
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

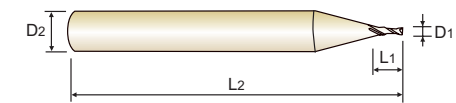
ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323																					
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

# YG 4G MILL END MILLS

PLAIN SHANK **GMF23** SERIES

## CARBIDE, 2 FLUTE

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRC55
- ▶ Sharp End tooth geometry allows more efficient cutting



CARBIDE 2 30° PLAIN p.C292-C293

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
GMF23901	.004	3/16	.008	1-1/2
GMF23902	.008	3/16	1/64	1-1/2
GMF23903	.012	3/16	1/32	1-1/2
GMF23904	.015	3/16	1/32	1-1/2
GMF23905	.020	3/16	3/64	1-1/2
GMF23906	.024	3/16	3/64	1-1/2
GMF23907	.028	3/16	1/16	1-1/2
GMF23908	.031	3/16	1/16	1-1/2
GMF23909	.035	3/16	5/64	1-1/2
GMF23910	.040	1/4	3/32	2
GMF23911	.047	1/4	1/8	2
GMF23004	1/16	1/4	5/32	2
GMF23005	5/64	1/4	1/4	2
GMF23006	3/32	1/4	1/4	2
GMF23008	1/8	1/4	5/16	2
GMF23009	9/64	1/4	3/8	2
GMF23012	3/16	1/4	3/8	2
GMF23013	13/64	1/4	5/8	2-3/8
GMF23016	1/4	1/4	5/8	2-3/8
GMF23017	17/64	5/16	11/16	2-3/8
GMF23018	9/32	5/16	3/4	2-3/8
GMF23020	5/16	5/16	3/4	2-3/4
GMF23022	11/32	3/8	7/8	2-3/4
GMF23023	23/64	3/8	7/8	2-3/4
GMF23024	3/8	3/8	1	3
GMF23026	13/32	1/2	1	3
GMF23028	7/16	1/2	1-3/16	3
GMF23032	1/2	1/2	1-3/16	3-1/8
GMF23036	9/16	9/16	1-3/8	4
GMF23912	9/16	5/8	1-3/8	4
GMF23040	5/8	5/8	1-1/2	4
GMF23048	3/4	3/4	1-3/4	4

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◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323																				
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323																					
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

HSS

HSS

**YG 4G MILL END MILLS**

**YG 4G MILL END MILLS**

PLAIN SHANK **GMF23** SERIES

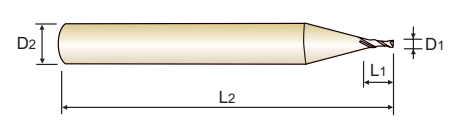
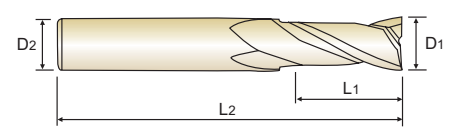
PLAIN SHANK **GMF23** SERIES

**CARBIDE, 2 FLUTE (3/16 SHANK)**

**CARBIDE, 2 FLUTE (1/8 Shank)**

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRC55
- ▶ Sharp End tooth geometry allows more efficient cutting

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRC55
- ▶ Sharp End tooth geometry allows more efficient cutting



CARBIDE 2 30° PLAIN p.C292-C293

CARBIDE 2 30° PLAIN p.C292-C293

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
GMF23913	.040	3/16	3/32	2
GMF23914	.047	3/16	1/8	2
GMF23915	.050	3/16	1/8	2
GMF23916	.055	3/16	5/32	2
GMF23917	.060	3/16	5/32	2
GMF23918	.063	3/16	5/32	2
GMF23919	.070	3/16	3/16	2
GMF23920	.079	3/16	1/4	2
GMF23921	.087	3/16	1/4	2
GMF23922	.094	3/16	1/4	2
GMF23923	.098	3/16	5/16	2
GMF23924	.102	3/16	5/16	2
GMF23925	.106	3/16	5/16	2
GMF23926	.110	3/16	5/16	2
GMF23927	.120	3/16	5/16	2

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
GMF23928	.004	1/8	.008	1-1/2
GMF23929	.008	1/8	1/64	1-1/2
GMF23930	.012	1/8	1/32	1-1/2
GMF23931	.015	1/8	1/32	1-1/2
GMF23932	.020	1/8	3/64	1-1/2
GMF23933	.024	1/8	3/64	1-1/2
GMF23934	.028	1/8	1/16	1-1/2
GMF23935	.031	1/8	1/16	1-1/2
GMF23936	.035	1/8	5/64	1-1/2
GMF23937	.040	1/8	3/32	2
GMF23938	.047	1/8	1/8	2
GMF23939	.060	1/8	5/32	2
GMF23940	.079	1/8	1/4	2
GMF23941	.098	1/8	1/4	2
GMF23942	.120	1/8	5/16	2

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Size	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	0~- .0005	h5
over Ø1/4	0~- .0006	

Size	Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
up to Ø1/4	0~- .0005	h5
over Ø1/4	0~- .0006	

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	35	10	29	32	38	15	35	15	23	10	10	26	3	25	3	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	◎	○	◎	◎	◎	○	○	○	○	○	○

ISO	N				S					H											
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	◎	○

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	35	10	29	32	38	15	35	15	23	10	10	26	3	25	3	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	◎	○	◎	◎	◎	○	○	○	○	○	○

ISO	N				S					H											
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	◎	○

# YG 4G MILL END MILLS

PLAIN SHANK **GMF24** SERIES

## CARBIDE, 2 FLUTE LONG LENGTH

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRc55
- ▶ Various length of cut and overall length end mills.



Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
GMF24003	3/64	1/4	1/8	2-3/8
GMF24901	3/64	1/4	5/32	2-3/8
GMF24902	3/64	1/4	1/4	2-3/8
GMF24903	3/64	1/4	5/16	2-3/8
GMF24904	3/64	1/4	3/8	2-3/8
GMF24004	1/16	1/4	1/4	2-3/8
GMF24905	1/16	1/4	5/16	2-3/8
GMF24906	1/16	1/4	3/8	2-3/8
GMF24907	1/16	1/4	1/2	2-3/8
GMF24908	1/16	1/4	5/8	2-3/8
GMF24005	5/64	1/4	5/16	2-3/8
GMF24909	5/64	1/4	3/8	2-3/8
GMF24910	5/64	1/4	1/2	2-3/8
GMF24911	5/64	1/4	5/8	2-3/8
GMF24006	3/32	1/4	5/8	2-3/8
GMF24008	1/8	1/4	3/8	2-3/4
GMF24912	1/8	1/4	1/2	2-3/4
GMF24913	1/8	1/4	5/8	2-3/4
GMF24914	1/8	1/4	3/4	2-3/4
GMF24915	1/8	1/4	1	2-3/4
GMF24012	3/16	1/4	1/2	2-3/4
GMF24916	3/16	1/4	5/8	2-3/4
GMF24917	3/16	1/4	3/4	2-3/4
GMF24918	3/16	1/4	1	2-3/4
GMF24919	3/16	1/4	1-3/16	2-3/4
GMF24013	13/64	1/4	3/4	2-3/4
GMF24920	13/64	1/4	1	2-3/4
GMF24921	13/64	1/4	1-3/16	3-1/8

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◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron								
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34		55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

# YG 4G MILL END MILLS

PLAIN SHANK **GMF24** SERIES

## CARBIDE, 2 FLUTE LONG LENGTH

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRc55
- ▶ Various length of cut and overall length end mills.



Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
GMF24922	13/64	1/4	1-1/2	4
GMF24016	1/4	1/4	5/8	2-3/8
GMF24923	1/4	1/4	5/8	3-1/8
GMF24924	1/4	1/4	3/4	2-3/4
GMF24925	1/4	1/4	3/4	3-1/2
GMF24926	1/4	1/4	1	3
GMF24927	1/4	1/4	1-3/16	3-1/8
GMF24928	1/4	1/4	1-3/16	4
GMF24929	1/4	1/4	1-3/16	6
GMF24930	1/4	1/4	1-3/8	3-1/2
GMF24931	1/4	1/4	1-1/2	3-1/2
GMF24932	1/4	1/4	1-3/4	6
GMF24020	5/16	5/16	1	3-1/8
GMF24933	5/16	5/16	1-3/16	3-1/8
GMF24934	5/16	5/16	1-3/8	3-1/2
GMF24935	5/16	5/16	1-1/2	3-1/2
GMF24936	5/16	5/16	1-1/2	4-1/2
GMF24937	5/16	5/16	1-3/4	4
GMF24938	5/16	5/16	2	4
GMF24024	3/8	3/8	1-3/16	3-1/8
GMF24939	3/8	3/8	1-3/16	4
GMF24940	3/8	3/8	1-3/8	3-1/2
GMF24941	3/8	3/8	1-1/2	3-1/2
GMF24942	3/8	3/8	1-1/2	4-1/2
GMF24943	3/8	3/8	1-3/4	4
GMF24944	3/8	3/8	2	4
GMF24945	3/8	3/8	2-3/8	4-1/4
GMF24032	1/2	1/2	1-3/8	3-1/2

▶ NEXT PAGE

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron								
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34		55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



**YG 4G MILL END MILLS**

PLAIN SHANK **GMF24 SERIES**

**CARBIDE, 2 FLUTE LONG LENGTH**

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRc55
- ▶ Various length of cut and overall length end mills.



CARBIDE 2 30° PLAIN p.C294-C297

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
GMF24946	1/2	1/2	1-1/2	4
GMF24947	1/2	1/2	1-1/2	4-1/2
GMF24948	1/2	1/2	1-3/4	5
GMF24949	1/2	1/2	2	4
GMF24950	1/2	1/2	2-1/8	4-1/4
GMF24951	1/2	1/2	2-3/8	4-1/4
GMF24952	1/2	1/2	2-3/8	6
GMF24040	5/8	5/8	1-1/2	6
GMF24048	3/4	3/4	3-1/2	8
GMF24953	3/4	3/4	4-1/4	8

Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
0~-0.0012	h5

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel	Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron				
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	◎	○	◎	◎	◎	○	○	○	○	○	○

ISO	N				S					H											
	Aluminum-wrought alloy	Aluminum-cast, alloyed	Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials	Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron										
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

**YG 4G MILL END MILLS**

PLAIN SHANK **GMF25 SERIES**

**CARBIDE, 4 FLUTE**

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRc55
- ▶ Due to Multiple Helix on 1/8" and over diameter end mills, vibration will be minimized and tool life increased.



CARBIDE 4 27°/30° PLAIN p.C298-C299

D1<D1/8, 30° Helix

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
GMF25003	3/64	1/4	3/32	2
GMF25004	1/16	1/4	5/32	2
GMF25005	5/64	1/4	1/4	2
GMF25006	3/32	1/4	1/4	2
GMF25008	1/8	1/4	5/16	2
GMF25009	9/64	1/4	3/8	2
GMF25012	3/16	1/4	3/8	2
GMF25013	13/64	1/4	5/8	2-3/8
GMF25014	7/32	1/4	5/8	2-3/8
GMF25016	1/4	1/4	5/8	2-3/8
GMF25017	17/64	5/16	11/16	2-3/8
GMF25018	9/32	5/16	3/4	2-3/8
GMF25019	19/64	5/16	3/4	2-3/8
GMF25020	5/16	5/16	3/4	2-3/4
GMF25022	11/32	3/8	7/8	2-3/4
GMF25023	23/64	3/8	7/8	2-3/4
GMF25024	3/8	3/8	1	3
GMF25028	7/16	1/2	1-3/16	3
GMF25032	1/2	1/2	1-3/16	3-1/8
GMF25036	9/16	9/16	1-3/8	4
GMF25901	9/16	5/8	1-3/8	4
GMF25040	5/8	5/8	1-1/2	4
GMF25044	11/16	5/8	1-3/4	4
GMF25048	3/4	3/4	1-3/4	4

Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
0~-0.0012	h5

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel	Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron				
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	◎	○	◎	◎	◎	○	○	○	○	○	○

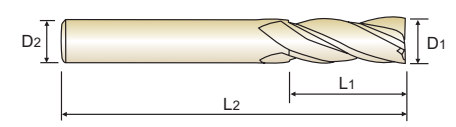
ISO	N				S					H											
	Aluminum-wrought alloy	Aluminum-cast, alloyed	Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials	Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron										
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

# YG 4G MILL END MILLS

PLAIN SHANK **GMF26** SERIES

## CARBIDE, 4 FLUTE

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
  - ▶ Excellent performance when cutting steels, up to HRC55
  - ▶ Due to Multiple Helix on 1/8" and over diameter end mills, vibration will be minimized and tool life increased.
  - ▶ Due to gash land geometry used at end tooth, heavy duty cutting can be achieved.
- Various length products Available

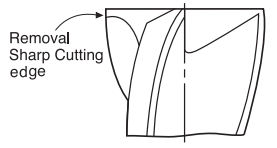


CARBIDE 4 35°/38° PLAIN p.C298-C299

D1<math>\phi</math>1/8, 38° Helix Unit : Inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF26003	3/64	1/4	3/32	2
GMF26004	1/16	1/4	5/32	2
GMF26005	5/64	1/4	1/4	2
GMF26006	3/32	1/4	1/4	2
GMF26008	1/8	1/4	5/16	2
GMF26012	3/16	1/4	3/8	2
GMF26013	13/64	1/4	5/8	2-3/8
GMF26016	1/4	1/4	5/8	2-3/8
GMF26020	5/16	5/16	3/4	2-3/4
GMF26024	3/8	3/8	1	3
GMF26032	1/2	1/2	1-3/16	3-1/8
GMF26040	5/8	5/8	1-1/4	4
GMF26048	3/4	3/4	1-3/4	4

Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
0--.0012	h5



◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	130	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	

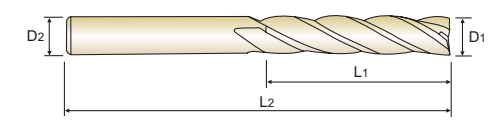
ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	55	60	42	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	○	○	○	◎	○	○

# YG 4G MILL END MILLS

PLAIN SHANK **GMF27** SERIES

## CARBIDE, 4 FLUTE LONG LENGTH

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRC55
- ▶ Various length of cut and overall length products available



CARBIDE 4 30° PLAIN p.C300-C303

Unit : Inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GMF27003	3/64	1/4	1/8	2-3/8
GMF27901	3/64	1/4	5/32	2-3/8
GMF27902	3/64	1/4	3/16	2-3/8
GMF27903	3/64	1/4	1/4	2-3/8
GMF27004	1/16	1/4	1/4	2-3/8
GMF27005	5/64	1/4	5/16	2-3/8
GMF27904	5/64	1/4	3/8	2-3/8
GMF27905	5/64	1/4	1/2	2-3/8
GMF27906	5/64	1/4	9/16	2-3/8
GMF27006	3/32	1/4	3/8	2-3/8
GMF27907	3/32	1/4	1/2	2-3/8
GMF27008	1/8	1/4	3/8	2-3/4
GMF27908	1/8	1/4	1/2	2-3/4
GMF27909	1/8	1/4	5/8	2-3/4
GMF27910	1/8	1/4	3/4	2-3/4
GMF27911	1/8	1/4	1	2-3/4
GMF27912	1/8	1/4	1-3/16	2-3/4
GMF27012	3/16	1/4	1/2	2-3/4
GMF27913	3/16	1/4	5/8	2-3/4
GMF27914	3/16	1/4	3/4	2-3/4
GMF27915	3/16	1/4	1	2-3/4
GMF27916	3/16	1/4	1-3/16	2-3/4
GMF27013	13/64	1/4	3/4	2-3/4
GMF27917	13/64	1/4	1	2-3/4
GMF27918	13/64	1/4	1-3/16	3-1/8
GMF27016	1/4	1/4	5/8	2-3/8
GMF27919	1/4	1/4	3/4	2-3/4
GMF27920	1/4	1/4	3/4	3-1/2

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◎ : Excellent ○ : Good

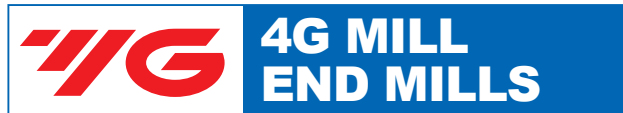
ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	130	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	55	60	42	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	○	○	○	◎	○	○

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PLAIN SHANK **GMF27** SERIES



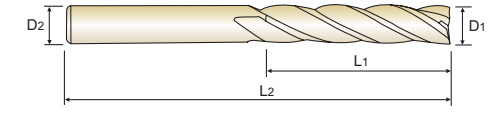
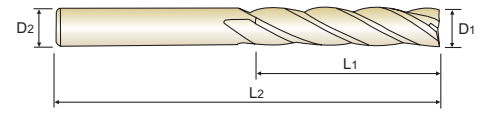
PLAIN SHANK **GMF27** SERIES

**CARBIDE, 4 FLUTE LONG LENGTH**

**CARBIDE, 4 FLUTE LONG LENGTH**

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRC55
- ▶ Various length of cut and overall length products available

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRC55
- ▶ Various length of cut and overall length products available



CARBIDE 4 30° PLAIN p.C300-C303

CARBIDE 4 30° PLAIN p.C300-C303

Unit : Inch

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
GMF27921	1/4	1/4	1	3
GMF27922	1/4	1/4	1-3/16	3-1/8
GMF27923	1/4	1/4	1-3/16	4
GMF27924	1/4	1/4	1-3/8	3-1/2
GMF27925	1/4	1/4	1-1/2	3-1/2
GMF27926	1/4	1/4	1-1/2	4-1/2
GMF27927	1/4	1/4	1-3/4	6
GMF27020	5/16	5/16	1	3-1/8
GMF27928	5/16	5/16	1-3/16	3-1/8
GMF27929	5/16	5/16	1-3/8	3-1/2
GMF27930	5/16	5/16	1-1/2	3-1/2
GMF27931	5/16	5/16	1-3/4	4
GMF27932	5/16	5/16	2	4
GMF27933	5/16	5/16	2	6
GMF27024	3/8	3/8	1-3/16	3-1/8
GMF27934	3/8	3/8	1-3/16	4
GMF27935	3/8	3/8	1-3/8	3-1/2
GMF27936	3/8	3/8	1-1/2	3-1/2
GMF27937	3/8	3/8	1-3/4	4
GMF27938	3/8	3/8	2	4
GMF27032	1/2	1/2	1-3/8	3-1/2
GMF27939	1/2	1/2	1-1/2	4
GMF27940	1/2	1/2	1-3/4	5
GMF27941	1/2	1/2	2	4
GMF27942	1/2	1/2	2-1/8	4-1/4
GMF27943	1/2	1/2	2-3/8	4-1/4
GMF27944	1/2	1/2	2-3/8	6
GMF27036	9/16	5/8	2	4-1/4

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
GMF27040	5/8	5/8	2	4-1/4
GMF27945	5/8	5/8	2-3/8	4-1/2
GMF27946	5/8	5/8	2-3/4	5
GMF27947	5/8	5/8	2-3/4	6
GMF27048	3/4	3/4	2-3/8	5
GMF27948	3/4	3/4	3-1/2	8
GMF27064	1	1	3-1/2	6

Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
0~- .0012	h5

▶ NEXT PAGE

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	29	32	38	35	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	◎	○	○	○	○	○	○	○

ISO	N				S						H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	29	32	38	35	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	◎	○	○	○	○	○	○	○

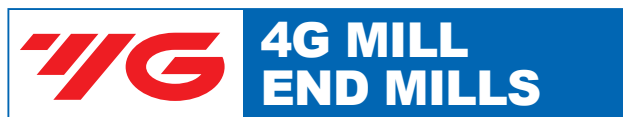
  

ISO	N				S						H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

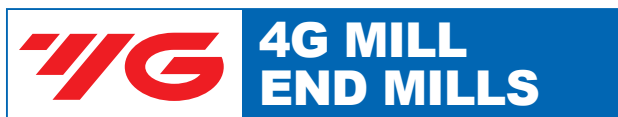


HSS

HSS



PLAIN SHANK **GMF28** SERIES



PLAIN SHANK **GMF28** SERIES

**CARBIDE, 4 FLUTE WITH NECK**

**CARBIDE, 4 FLUTE WITH NECK**

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRC55
- ▶ Many more various effective lengths and overall lengths than previous standard products.

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRC55
- ▶ Many more various effective lengths and overall lengths than previous standard products.



CARBIDE 4 30° PLAIN p.C304-C305

CARBIDE 4 30° PLAIN p.C304-C305

Unit : Inch

EDP No.	Mill Diameter D <sub>1</sub>	Shank Diameter D <sub>2</sub>	Length of Cut L <sub>1</sub>	Length Below Shank L <sub>3</sub>	Overall Length L <sub>2</sub>	Neck Diameter D <sub>3</sub>
GMF28003	3/64	3/16	1/16	5/32	2	.044
GMF28901	3/64	3/16	1/16	3/16	2	.044
GMF28902	3/64	3/16	1/16	1/4	2	.044
GMF28903	3/64	3/16	1/16	5/16	2	.044
GMF28004	1/16	3/16	3/32	1/4	2	.060
GMF28904	1/16	3/16	3/32	5/16	2	.060
GMF28905	1/16	3/16	3/32	3/8	2	.060
GMF28906	1/16	3/16	3/32	1/2	2	.060
GMF28907	1/16	3/16	3/32	5/8	2	.060
GMF28005	5/64	3/16	1/8	5/16	2	.076
GMF28908	5/64	3/16	1/8	3/8	2	.076
GMF28909	5/64	3/16	1/8	1/2	2	.076
GMF28910	5/64	3/16	1/8	5/8	2	.076
GMF28008	1/8	1/4	3/16	3/8	2	.119
GMF28911	1/8	1/4	3/16	1/2	2	.119
GMF28912	1/8	1/4	3/16	5/8	2-3/8	.119
GMF28913	1/8	1/4	3/16	3/4	2-3/8	.119
GMF28914	1/8	1/4	3/16	1-3/16	2-3/4	.119
GMF28012	3/16	1/4	1/4	1/2	2	.181
GMF28915	3/16	1/4	1/4	5/8	2-3/8	.181
GMF28916	3/16	1/4	1/4	3/4	2-3/8	.181
GMF28917	3/16	1/4	1/4	1-3/16	2-3/4	.181
GMF28918	3/16	1/4	1/4	1-1/2	3-1/8	.181
GMF28013	13/64	1/4	5/16	3/4	2-3/8	.197
GMF28919	13/64	1/4	5/16	1-1/2	3-1/8	.197
GMF28016	1/4	1/4	3/8	5/8	2-3/8	.244
GMF28920	1/4	1/4	3/8	1-3/16	2-3/4	.244
GMF28020	5/16	5/16	1/2	1	2-3/4	.300

Unit : Inch

EDP No.	Mill Diameter D <sub>1</sub>	Shank Diameter D <sub>2</sub>	Length of Cut L <sub>1</sub>	Length Below Shank L <sub>3</sub>	Overall Length L <sub>2</sub>	Neck Diameter D <sub>3</sub>
GMF28921	5/16	5/16	1/2	1-5/8	4	.300
GMF28024	3/8	3/8	5/8	1-3/16	3	.363
GMF28922	3/8	3/8	5/8	1-3/4	4	.363
GMF28032	1/2	1/2	3/4	1-3/8	3-1/8	.488
GMF28923	1/2	1/2	3/4	2	4-1/4	.488

Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
0~-.0012	h5

▶ NEXT PAGE

◎ : Excellent ○ : Good

ISO	P										M				K			H			
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○

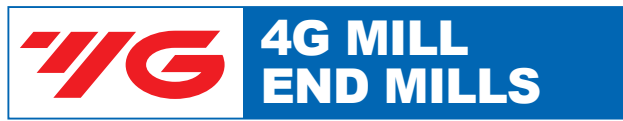
ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○

◎ : Excellent ○ : Good

ISO	P										M				K			H			
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○



PLAIN SHANK **GMF29** SERIES

**CARBIDE, 6 FLUTE 45° HELIX**

- ▶ New coating and new tool geometry gives outstanding cutting performance and wear resistance.
- ▶ Excellent performance when cutting steels, up to HRc55
- ▶ Due to 45 helix angle, better surface finish can be achieved when side cutting.
- ▶ Various effective length and overall length products.



Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
GMF29016	1/4	1/4	5/8	2-3/8
GMF29901	1/4	1/4	1-3/16	3-1/8
GMF29020	5/16	5/16	3/4	2-3/4
GMF29902	5/16	5/16	1-1/2	3-1/2
GMF29024	3/8	3/8	1	3
GMF29903	3/8	3/8	1-1/2	3-1/2
GMF29032	1/2	1/2	1-3/16	3-1/8
GMF29904	1/2	1/2	2	4
GMF29040	5/8	5/8	1-1/2	4
GMF29905	5/8	5/8	2-3/8	4-1/2
GMF29048	3/4	3/4	1-3/4	4
GMF29906	3/4	3/4	2-3/8	4-1/2

Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
0~-.0012	h5

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	35	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

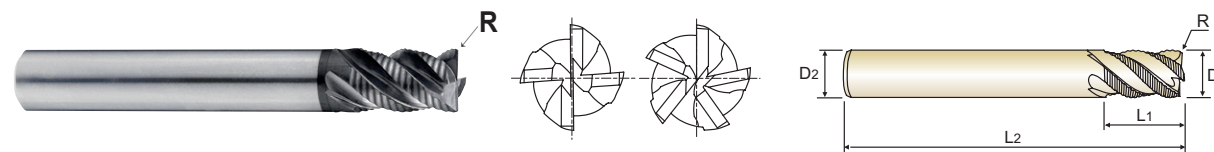
ISO	N					S					H											
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	40	55	60	42	55	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



PLAIN SHANK **G907** SERIES  
FLAT SHANK **G928** SERIES

**CARBIDE, 4&5 FLUTE STUB LENGTH ROUGHING CORNER RADIUS - FINE**

- ▶ Unique flute design for excellent chip evacuation and vibration reduction.
- ▶ Optimal roughing tooth profile to reduce cutting forces.
- ▶ Special tool geometry for high feed rate and heavy cutting.
- ▶ Strong end tooth design for plunge and pocket milling.
- ▶ Custom engineered coating to allow long tool life and excellent chip evacuation.



Unit : Inch

EDP No.	Corner Radius		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
	PLAIN	FLAT	D1	D2	L1	L2	
G90716	-	R.020	1/4	1/4	3/8	2	4
G90720	-	R.020	5/16	5/16	7/16	2	4
G90724	G92824	R.020	3/8	3/8	1/2	2-1/4	4
G90732	G92832	R.020	1/2	1/2	5/8	2-1/2	4
G90740	G92840	R.040	5/8	5/8	3/4	3	5
G90748	G92848	R.040	3/4	3/4	1	3-1/4	5
G90764	G92864	R.040	1	1	1-1/4	4	5

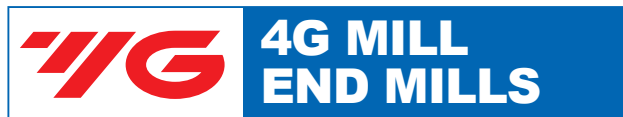
Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
0~-.002	h5

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	35	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	◎	◎	◎	◎	◎	◎

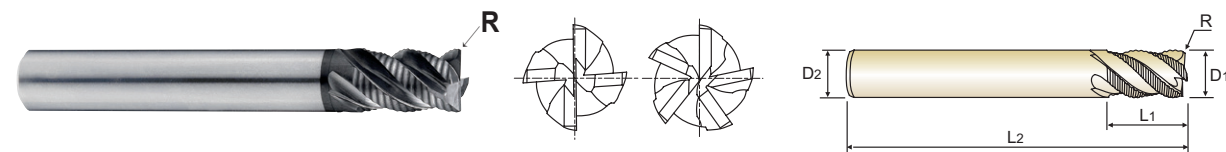
ISO	N					S					H											
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	40	55	60	42	55	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



PLAIN SHANK **G908** SERIES  
FLAT SHANK **G929** SERIES

**CARBIDE, 4&5 FLUTE REGULAR LENGTH ROUGHING CORNER RADIUS - FINE**

- ▶ Unique flute design for excellent chip evacuation and vibration reduction.
- ▶ Optimal roughing tooth profile to reduce cutting forces.
- ▶ Special tool geometry for high feed rate and heavy cutting.
- ▶ Strong end tooth design for plunge and pocket milling.
- ▶ Custom engineered coating to all ng tool life and excellent chip evacuation.



p.C308-C309

5 Flute, 44°/44.5°/45°

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	1/4	1/4	5/8	2-1/2		4
<b>G90820</b>	-	R.020	5/16	5/16	3/4	2-1/2		4
<b>G90824</b>	<b>G92924</b>	R.020	3/8	3/8	7/8	2-1/2		4
<b>G90832</b>	<b>G92932</b>	R.020	1/2	1/2	1	3		4
<b>G90840</b>	<b>G92940</b>	R.040	5/8	5/8	1-1/4	3-1/2		5
<b>G90848</b>	<b>G92948</b>	R.040	3/4	3/4	1-5/8	4		5
<b>G90864</b>	<b>G92964</b>	R.040	1	1	1-3/4	4-1/4		5

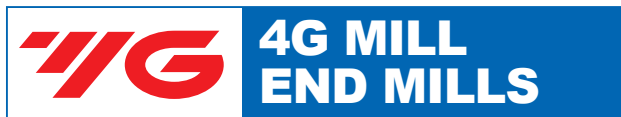
Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
0~- .002	h5

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	3	25	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	◎	◎	◎	◎	◎	◎	

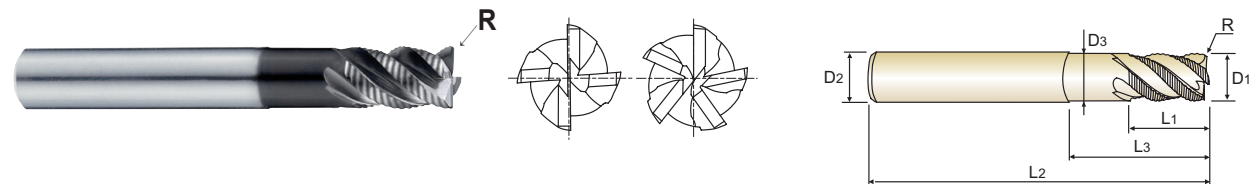
ISO Material Description	N					S					H									
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
HRc	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	55	60	42	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400
Recommend						○	○	○										◎		



PLAIN SHANK **G909** SERIES  
FLAT SHANK **G930** SERIES

**CARBIDE, MULTI FLUTE EXTENDED REACH ROUGHING CORNER RADIUS - FINE**

- ▶ Unique flute design for excellent chip evacuation and vibration reduction.
- ▶ Optimal roughing tooth profile to reduce cutting forces.
- ▶ Special tool geometry for high feed rate and heavy cutting.
- ▶ Strong end tooth design for plunge and pocket milling.
- ▶ Custom engineered coating to allow long tool life and excellent chip evacuation.



p.C308-C309

5 Flute, 44°/44.5°/45°

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	No. of Flute
PLAIN	FLAT	R	D1	D2	L1	L3	L2	D3	
<b>G90916</b>	-	R.020	1/4	1/4	3/8	7/8	2-1/2	.230	4
<b>G90920</b>	-	R.020	5/16	5/16	7/16	1	2-1/2	.292	4
<b>G90924</b>	<b>G93024</b>	R.020	3/8	3/8	1/2	1	2-3/4	.355	4
<b>G90932</b>	<b>G93032</b>	R.020	1/2	1/2	5/8	1-1/4	3-1/4	.480	4
<b>G90940</b>	<b>G93040</b>	R.040	5/8	5/8	3/4	2	4	.605	5
<b>G90948</b>	<b>G93048</b>	R.040	3/4	3/4	1	2-3/8	4-1/2	.718	5

Mill Dia. Tolerance (Inch)	Shank Dia. Tolerance
0~- .002	h5

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	3	25	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	◎	◎	◎	◎	◎	◎	

ISO Material Description	N					S					H									
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
HRc	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	55	60	42	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400
Recommend						○	○	○										◎		



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# YG 4G MILL END MILLS

# YG 4G MILL END MILLS

PLAIN SHANK SEMD98 SERIES

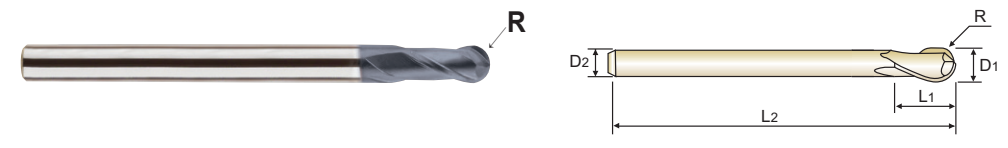
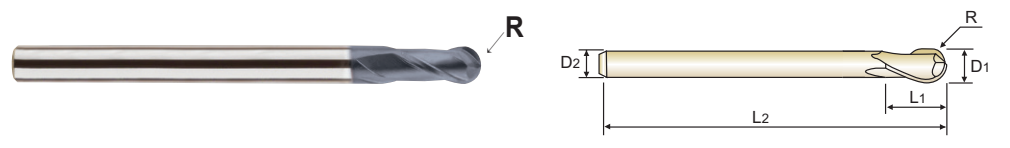
PLAIN SHANK SEMD98 SERIES

## CARBIDE, 2 FLUTE BALL NOSE (Short, Regular, Long Shank)

## CARBIDE, 2 FLUTE BALL NOSE (Short, Regular, Long Shank)

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Due to unique ball nose geometry and cutting edges, cutting force decreased, and wear resistance increased.
- ▶ Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.

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CARBIDE 2 30° R ±0.005 R ±0.010 PLAIN p.C310-C312

CARBIDE 2 30° R ±0.005 R ±0.010 PLAIN p.C310-C312

Call for Availability

Call for Availability

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Remark
	R	D1	D2	L1	L2	
SEMD98001S	R0.05	0.1	4	0.1	40	Short
SEMD98001	R0.05	0.1	4	0.2	40	Regular
SEMD980013S	R0.05	0.1	3	0.2	40	3mm Shank
SEMD980015S	R0.075	0.15	4	0.15	40	Short
SEMD980015	R0.075	0.15	4	0.3	40	Regular
SEMD9800153S	R0.075	0.15	3	0.3	40	3mm Shank
SEMD98002S	R0.1	0.2	4	0.2	40	Short
SEMD98002	R0.1	0.2	4	0.4	40	Regular
SEMD980023S	R0.1	0.2	3	0.4	40	3mm Shank
SEMD98003S	R0.15	0.3	4	0.3	40	Short
SEMD98003	R0.15	0.3	4	0.6	40	Regular
SEMD980033S	R0.15	0.3	3	0.6	40	3mm Shank
SEMD98004S	R0.2	0.4	4	0.4	40	Short
SEMD98004	R0.2	0.4	4	0.8	40	Regular
SEMD980043S	R0.2	0.4	3	0.8	40	3mm Shank
SEMD98005S	R0.25	0.5	4	0.5	40	Short
SEMD98005	R0.25	0.5	4	1.0	40	Regular
SEMD980053S	R0.25	0.5	3	1.0	40	3mm Shank
SEMD98006S	R0.3	0.6	4	0.6	40	Short
SEMD98006	R0.3	0.6	4	1.2	40	Regular
SEMD980063S	R0.3	0.6	3	1.2	40	3mm Shank
SEMD98007S	R0.35	0.7	4	0.7	40	Short
SEMD98007	R0.35	0.7	4	1.4	40	Regular
SEMD980073S	R0.35	0.7	3	1.4	40	3mm Shank
SEMD98008S	R0.4	0.8	4	0.8	40	Short
SEMD98008	R0.4	0.8	4	1.6	40	Regular
SEMD980083S	R0.4	0.8	3	1.6	40	3mm Shank
SEMD98009S	R0.45	0.9	4	0.9	40	Short

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Remark
	R	D1	D2	L1	L2	
SEMD98009	R0.45	0.9	4	1.8	40	Regular
SEMD980093S	R0.45	0.9	3	1.8	40	3mm Shank
SEMD98010040	R0.5	1.0	6	1.5	40	Short
SEMD980103S	R0.5	1.0	3	2.5	50	3mm Shank
SEMD980104S	R0.5	1.0	4	2.5	50	Regular
SEMD98010	R0.5	1.0	6	2.5	50	Regular
SEMD98010070	R0.5	1.0	6	2.5	70	Long Shank
SEMD98010100	R0.5	1.0	6	2.5	100	Long Shank
SEMD98012040	R0.6	1.2	6	2	40	Short
SEMD980123S	R0.6	1.2	3	3	50	3mm Shank
SEMD980124S	R0.6	1.2	4	3	50	Regular
SEMD98012	R0.6	1.2	6	3	50	Regular
SEMD98012070	R0.6	1.2	6	3	70	Long Shank
SEMD98012100	R0.6	1.2	6	3	100	Long Shank
SEMD98015040	R0.75	1.5	6	2.5	40	Short
SEMD980153S	R0.75	1.5	3	4	50	3mm Shank
SEMD980154S	R0.75	1.5	4	4	50	Regular
SEMD98015	R0.75	1.5	6	4	50	Regular
SEMD98015070	R0.75	1.5	6	4	70	Long Shank
SEMD98015100	R0.75	1.5	6	4	100	Long Shank
SEMD98020040	R1.0	2.0	6	3	40	Short
SEMD980203S	R1.0	2.0	3	5	50	3mm Shank
SEMD980204S	R1.0	2.0	4	5	50	Regular
SEMD98020	R1.0	2.0	6	5	50	Regular
SEMD98020080	R1.0	2.0	6	5	80	Long Shank
SEMD98020100	R1.0	2.0	6	5	100	Long Shank
SEMD98025040	R1.25	2.5	6	4	40	Short
SEMD980253S	R1.25	2.5	3	6	60	3mm Shank

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◎ : Excellent ○ : Good

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323																				
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	○	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron								
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323																					
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	○	○	○	○	◎	○

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323																					
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	○	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron								
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323																					
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	○	○	○	○	◎	○

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PLAIN SHANK SEMD98 SERIES



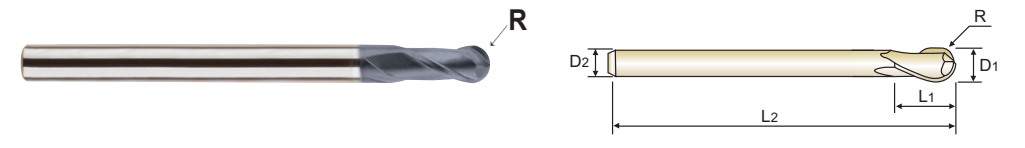
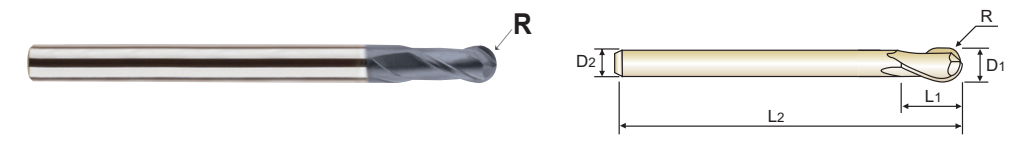
PLAIN SHANK SEMD98 SERIES

CARBIDE, 2 FLUTE BALL NOSE (Short, Regular, Long Shank)

CARBIDE, 2 FLUTE BALL NOSE (Short, Regular, Long Shank)

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
Due to unique ball nose geometry and cutting edges, cutting force decreased, and wear resistance increased.
Excellent performance when cutting prehardened steels, up to HRC55 which are used for molds & dies.

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p.C310-C312 Call for Availability

p.C310-C312 Call for Availability

Table with 7 columns: EDP No., Radius of Ball Nose (R), Mill Diameter (D1), Shank Diameter (D2), Length of Cut (L1), Overall Length (L2), Remark. Lists various end mill models and their specifications.

Table with 7 columns: EDP No., Radius of Ball Nose (R), Mill Diameter (D1), Shank Diameter (D2), Length of Cut (L1), Overall Length (L2), Remark. Lists various end mill models and their specifications.

Next Page

Next Page

ISO material compatibility chart for SEMD98 series end mills, showing suitability for various materials like Non-alloy steel, Low alloy steel, Stainless steel, etc.

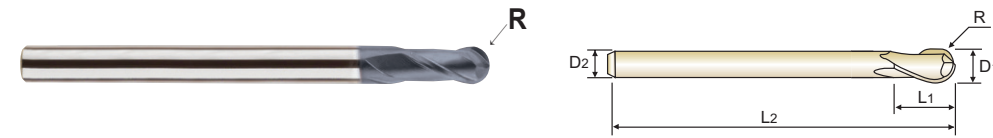
ISO material compatibility chart for SEMD98 series end mills, showing suitability for various materials like Non-alloy steel, Low alloy steel, Stainless steel, etc.

# YG 4G MILL END MILLS

PLAIN SHANK **SEMD98** SERIES

## CARBIDE, 2 FLUTE BALL NOSE (Short, Regular, Long Shank)

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Due to unique ball nose geometry and cutting edges, cutting force decreased, and wear resistance increased.
- ▶ Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.



CARBIDE 2 30° R ±0.005 R ±0.010 PLAIN p.C310-C312

◇ Call for Availability

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Remark
	R	D1	D2	L1	L2	
SEMD98120130	R6.0	12.0	12	22	130	Long Shank
SEMD98120150	R6.0	12.0	12	22	150	Long Shank
SEMD98120180	R6.0	12.0	12	22	180	Long Shank
SEMD98120220	R6.0	12.0	12	22	200	Long Shank
SEMD98130	R6.5	13.0	12	24	100	-
SEMD98140	R7.0	14.0	12	26	100	Regular
SEMD9814014S	R7.0	14.0	14	26	100	-
SEMD9814016S	R7.0	14.0	16	26	100	-
SEMD98150	R7.5	15.0	16	28	140	-
SEMD98160100	R8.0	16.0	16	24	100	Short
SEMD98160130	R8.0	16.0	16	24	130	Short
SEMD98160	R8.0	16.0	16	30	150	Regular
SEMD98160180	R8.0	16.0	16	30	180	Long Shank
SEMD98160200	R8.0	16.0	16	30	200	Long Shank
SEMD98180	R9.0	18.0	16	34	150	Regular
SEMD9818018S	R9.0	18.0	18	34	150	-
SEMD98200100	R10.0	20.0	20	30	100	Short
SEMD98200130	R10.0	20.0	20	30	130	Short
SEMD98200	R10.0	20.0	20	38	150	Regular
SEMD98200200	R10.0	20.0	20	38	200	Long Shank
SEMD98250120	R12.5	25.0	25	50	120	Short
SEMD98250	R12.5	25.0	25	50	180	Regular

Size	Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to R3	±0.005	0~-0.012	h5
over R3	±0.010	0~-0.015	

◎: Excellent ○: Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron	Nodular cast iron		Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	○	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

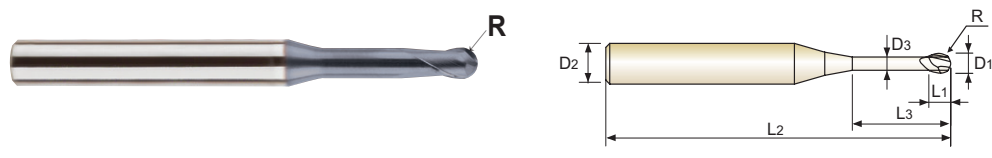
ISO Material Description	N										S					H					
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)					Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	◎	○

# YG 4G MILL END MILLS

PLAIN SHANK **SEM846** SERIES

## CARBIDE, 2 FLUTE LONG NECK BALL NOSE

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Due to unique ball nose geometry and cutting edges, cutting force decreased, and wear resistance increased.
- ▶ Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.



CARBIDE 2 30° R ±0.005 R ±0.010 PLAIN p.C313-C323

◇ Call for Availability

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
SEM846001002	R0.05	0.1	4	0.1	0.2	40	0.085
SEM846001003	R0.05	0.1	4	0.1	0.3	40	0.085
SEM846001005	R0.05	0.1	4	0.1	0.5	40	0.085
SEM84600101	R0.05	0.1	4	0.1	1	40	0.085
SEM846002005	R0.1	0.2	4	0.2	0.5	40	0.17
SEM84600201	R0.1	0.2	4	0.2	1	40	0.17
SEM846002015	R0.1	0.2	4	0.2	1.5	40	0.17
SEM84600202	R0.1	0.2	4	0.2	2	40	0.17
SEM84600203	R0.1	0.2	4	0.2	3	40	0.17
SEM84600301	R0.15	0.3	4	0.3	1	40	0.27
SEM846003015	R0.15	0.3	4	0.3	1.5	40	0.27
SEM84600302	R0.15	0.3	4	0.3	2	40	0.27
SEM846003025	R0.15	0.3	4	0.3	2.5	40	0.27
SEM84600303	R0.15	0.3	4	0.3	3	40	0.27
SEM84600304	R0.15	0.3	4	0.3	4	40	0.27
SEM84600305	R0.15	0.3	4	0.3	5	40	0.27
SEM84600401	R0.2	0.4	4	0.4	1	40	0.37
SEM846004015	R0.2	0.4	4	0.4	1.5	40	0.37
SEM84600402	R0.2	0.4	4	0.4	2	40	0.37
SEM846004025	R0.2	0.4	4	0.4	2.5	40	0.37
SEM84600403	R0.2	0.4	4	0.4	3	40	0.37
SEM84600404	R0.2	0.4	4	0.4	4	40	0.37
SEM84600405	R0.2	0.4	4	0.4	5	40	0.37
SEM84600406	R0.2	0.4	4	0.4	6	40	0.37
SEM84600408	R0.2	0.4	4	0.4	8	40	0.37
SEM84600410	R0.2	0.4	4	0.4	10	40	0.37
SEM84600501	R0.25	0.5	4	0.5	1	45	0.45
SEM846005015	R0.25	0.5	4	0.5	1.5	45	0.45

▶ NEXT PAGE

◎: Excellent ○: Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron	Nodular cast iron		Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	○	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

ISO Material Description	N										S					H					
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)					Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	◎	○



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# YG 4G MILL END MILLS

PLAIN SHANK SEM846 SERIES

# YG 4G MILL END MILLS

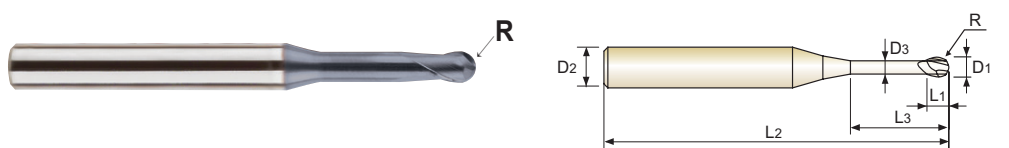
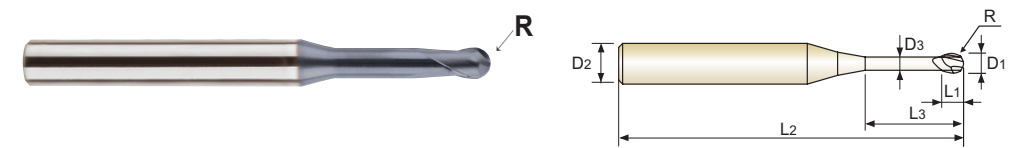
PLAIN SHANK SEM846 SERIES

## CARBIDE, 2 FLUTE LONG NECK BALL NOSE

## CARBIDE, 2 FLUTE LONG NECK BALL NOSE

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Due to unique ball nose geometry and cutting edges, cutting force decreased, and wear resistance increased.
- ▶ Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.

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CARBIDE 2 30° ±0.005 ±0.010 PLAIN p.C313-C323

CARBIDE 2 30° ±0.005 ±0.010 PLAIN p.C313-C323

Call for Availability

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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
SEM84600502	R0.25	0.5	4	0.5	2	45	0.45
SEM846005025	R0.25	0.5	4	0.5	2.5	45	0.45
SEM84600503	R0.25	0.5	4	0.5	3	45	0.45
SEM84600504	R0.25	0.5	4	0.5	4	45	0.45
SEM84600505	R0.25	0.5	4	0.5	5	45	0.45
SEM84600506	R0.25	0.5	4	0.5	6	45	0.45
SEM84600508	R0.25	0.5	4	0.5	8	45	0.45
SEM84600510	R0.25	0.5	4	0.5	10	45	0.45
SEM84600512	R0.25	0.5	4	0.5	12	45	0.45
SEM84600514	R0.25	0.5	4	0.5	14	45	0.45
SEM84600516	R0.25	0.5	4	0.5	16	45	0.45
SEM84600601	R0.3	0.6	4	0.6	1	45	0.55
SEM84600602	R0.3	0.6	4	0.6	2	45	0.55
SEM84600603	R0.3	0.6	4	0.6	3	45	0.55
SEM84600604	R0.3	0.6	4	0.6	4	45	0.55
SEM84600605	R0.3	0.6	4	0.6	5	45	0.55
SEM84600606	R0.3	0.6	4	0.6	6	45	0.55
SEM84600608	R0.3	0.6	4	0.6	8	45	0.55
SEM84600610	R0.3	0.6	4	0.6	10	45	0.55
SEM84600612	R0.3	0.6	4	0.6	12	45	0.55
SEM84600614	R0.3	0.6	4	0.6	14	45	0.55
SEM84600616	R0.3	0.6	4	0.6	16	45	0.55
SEM84600702	R0.35	0.7	4	0.7	2	45	0.65
SEM84600704	R0.35	0.7	4	0.7	4	45	0.65
SEM84600706	R0.35	0.7	4	0.7	6	45	0.65
SEM84600708	R0.35	0.7	4	0.7	8	45	0.65
SEM84600710	R0.35	0.7	4	0.7	10	45	0.65
SEM84600712	R0.35	0.7	4	0.7	12	45	0.65

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
SEM84600801	R0.4	0.8	4	0.8	1	45	0.75
SEM84600802	R0.4	0.8	4	0.8	2	45	0.75
SEM84600803	R0.4	0.8	4	0.8	3	45	0.75
SEM84600804	R0.4	0.8	4	0.8	4	45	0.75
SEM84600805	R0.4	0.8	4	0.8	5	45	0.75
SEM84600806	R0.4	0.8	4	0.8	6	45	0.75
SEM84600808	R0.4	0.8	4	0.8	8	45	0.75
SEM84600810	R0.4	0.8	4	0.8	10	45	0.75
SEM84600812	R0.4	0.8	4	0.8	12	45	0.75
SEM84600814	R0.4	0.8	4	0.8	14	45	0.75
SEM84600816	R0.4	0.8	4	0.8	16	45	0.75
SEM84600820	R0.4	0.8	4	0.8	20	45	0.75
SEM84600904	R0.45	0.9	4	0.9	4	45	0.85
SEM84600906	R0.45	0.9	4	0.9	6	45	0.85
SEM84600908	R0.45	0.9	4	0.9	8	45	0.85
SEM84600910	R0.45	0.9	4	0.9	10	45	0.85
SEM84601002	R0.5	1.0	4	1	2	50	0.95
SEM84601003	R0.5	1.0	4	1	3	50	0.95
SEM84601004	R0.5	1.0	4	1	4	50	0.95
SEM84601005	R0.5	1.0	4	1	5	50	0.95
SEM84601006	R0.5	1.0	4	1	6	50	0.95
SEM84601007	R0.5	1.0	4	1	7	50	0.95
SEM84601008	R0.5	1.0	4	1	8	50	0.95
SEM84601009	R0.5	1.0	4	1	9	50	0.95
SEM84601010	R0.5	1.0	4	1	10	50	0.95
SEM84601012	R0.5	1.0	4	1	12	50	0.95
SEM84601014	R0.5	1.0	4	1	14	50	0.95
SEM84601016	R0.5	1.0	4	1	16	50	0.95

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◎: Excellent ○: Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	○	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34		55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	◎	○

◎: Excellent ○: Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron		
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	○	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34		55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	◎	○

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# YG 4G MILL END MILLS

PLAIN SHANK SEM846 SERIES

# YG 4G MILL END MILLS

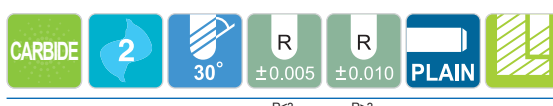
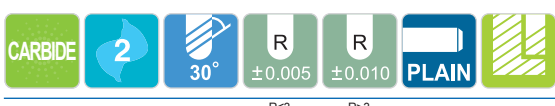
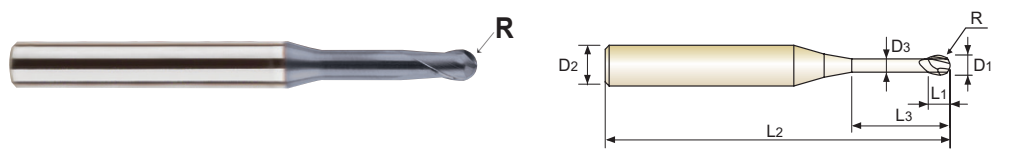
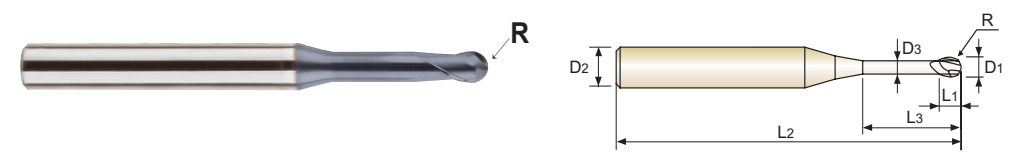
PLAIN SHANK SEM846 SERIES

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p.C313-C323

p.C313-C323

◇ Call for Availability

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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
SEM84601018	R0.5	1.0	4	1	18	50	0.95
SEM84601020	R0.5	1.0	4	1	20	50	0.95
SEM84601022	R0.5	1.0	4	1	22	60	0.95
SEM84601026	R0.5	1.0	4	1	26	60	0.95
SEM84601030	R0.5	1.0	4	1	30	70	0.95
SEM84601040	R0.5	1.0	4	1	40	80	0.95
SEM84601050	R0.5	1.0	4	1	50	100	0.95
SEM84601204	R0.6	1.2	4	1.2	4	50	1.15
SEM84601206	R0.6	1.2	4	1.2	6	50	1.15
SEM84601208	R0.6	1.2	4	1.2	8	50	1.15
SEM84601210	R0.6	1.2	4	1.2	10	50	1.15
SEM84601212	R0.6	1.2	4	1.2	12	50	1.15
SEM84601216	R0.6	1.2	4	1.2	16	50	1.15
SEM84601220	R0.6	1.2	4	1.2	20	50	1.15
SEM84601226	R0.6	1.2	4	1.2	26	60	1.15
SEM84601406	R0.7	1.4	4	1.4	6	50	1.35
SEM84601408	R0.7	1.4	4	1.4	8	50	1.35
SEM84601410	R0.7	1.4	4	1.4	10	50	1.35
SEM84601412	R0.7	1.4	4	1.4	12	50	1.35
SEM84601416	R0.7	1.4	4	1.4	16	50	1.35
SEM84601503	R0.75	1.5	4	1.5	3	50	1.45
SEM84601504	R0.75	1.5	4	1.5	4	50	1.45
SEM84601505	R0.75	1.5	4	1.5	5	50	1.45
SEM84601506	R0.75	1.5	4	1.5	6	50	1.45
SEM84601507	R0.75	1.5	4	1.5	7	50	1.45
SEM84601508	R0.75	1.5	4	1.5	8	50	1.45
SEM84601510	R0.75	1.5	4	1.5	10	50	1.45
SEM84601512	R0.75	1.5	4	1.5	12	50	1.45

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
SEM84601514	R0.75	1.5	4	1.5	14	50	1.45
SEM84601516	R0.75	1.5	4	1.5	16	50	1.45
SEM84601518	R0.75	1.5	4	1.5	18	50	1.45
SEM84601520	R0.75	1.5	4	1.5	20	50	1.45
SEM84601522	R0.75	1.5	4	1.5	22	60	1.45
SEM84601526	R0.75	1.5	4	1.5	26	60	1.45
SEM84601530	R0.75	1.5	4	1.5	30	70	1.45
SEM84601535	R0.75	1.5	4	1.5	35	70	1.45
SEM84601540	R0.75	1.5	4	1.5	40	80	1.45
SEM84601604	R0.8	1.6	4	1.6	4	50	1.55
SEM84601606	R0.8	1.6	4	1.6	6	50	1.55
SEM84601608	R0.8	1.6	4	1.6	8	50	1.55
SEM84601610	R0.8	1.6	4	1.6	10	50	1.55
SEM84601612	R0.8	1.6	4	1.6	12	50	1.55
SEM84601616	R0.8	1.6	4	1.6	16	50	1.55
SEM84601620	R0.8	1.6	4	1.6	20	50	1.55
SEM84601804	R0.9	1.8	4	1.8	4	50	1.75
SEM84601806	R0.9	1.8	4	1.8	6	50	1.75
SEM84601808	R0.9	1.8	4	1.8	8	50	1.75
SEM84601810	R0.9	1.8	4	1.8	10	50	1.75
SEM84601812	R0.9	1.8	4	1.8	12	50	1.75
SEM84601816	R0.9	1.8	4	1.8	16	50	1.75
SEM84601820	R0.9	1.8	4	1.8	20	50	1.75
SEM84602004	R1.0	2.0	4	2	4	50	1.95
SEM84602006	R1.0	2.0	4	2	6	50	1.95
SEM84602008	R1.0	2.0	4	2	8	50	1.95
SEM84602010	R1.0	2.0	4	2	10	50	1.95
SEM84602012	R1.0	2.0	4	2	12	50	1.95

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◎: Excellent ○: Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron	Nodular cast iron		Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	○	◎	◎	○	◎	◎	◎	○	◎	○	◎	○	○	○	○	○	○	○

ISO Material Description	N										S					H					
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○

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ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron	Nodular cast iron		Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	○	◎	◎	○	◎	◎	◎	○	◎	○	◎	○	○	○	○	○	○	○

ISO Material Description	N										S					H					
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○

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# YG 4G MILL END MILLS

PLAIN SHANK SEM846 SERIES

# YG 4G MILL END MILLS

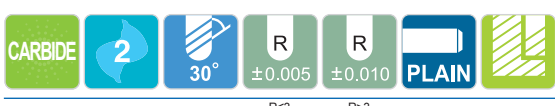
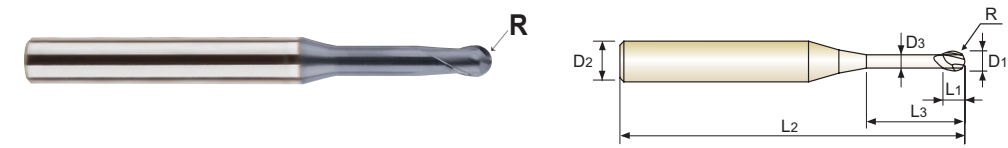
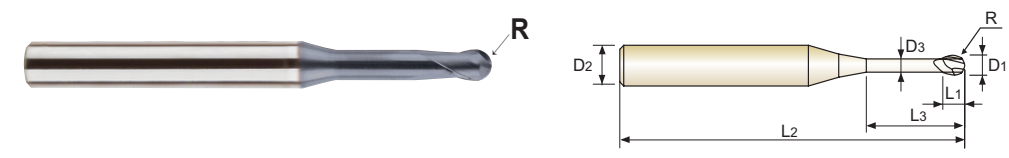
PLAIN SHANK SEM846 SERIES

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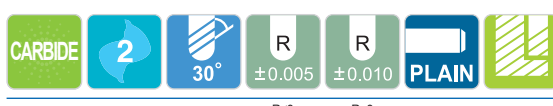
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EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R	D1	D2	L1	L3	L2	D3
SEM84602014	R1.0	2.0	4	2	14	50	1.95
SEM84602016	R1.0	2.0	4	2	16	50	1.95
SEM84602018	R1.0	2.0	4	2	18	50	1.95
SEM84602020	R1.0	2.0	4	2	20	50	1.95
SEM84602022	R1.0	2.0	4	2	22	60	1.95
SEM84602026	R1.0	2.0	4	2	26	60	1.95
SEM84602030	R1.0	2.0	4	2	30	70	1.95
SEM84602035	R1.0	2.0	4	2	35	70	1.95
SEM84602040	R1.0	2.0	4	2	40	80	1.95
SEM84602045	R1.0	2.0	4	2	45	90	1.95
SEM84602050	R1.0	2.0	4	2	50	100	1.95
SEM84602060	R1.0	2.0	4	2	60	110	1.95
SEM84602508	R1.25	2.5	4	2.5	8	50	2.40
SEM84602510	R1.25	2.5	4	2.5	10	50	2.40
SEM84602512	R1.25	2.5	4	2.5	12	50	2.40
SEM84602516	R1.25	2.5	4	2.5	16	50	2.40
SEM84602520	R1.25	2.5	4	2.5	20	50	2.40
SEM84602522	R1.25	2.5	4	2.5	22	60	2.40
SEM84602526	R1.25	2.5	4	2.5	26	60	2.40
SEM84602530	R1.25	2.5	4	2.5	30	70	2.40
SEM84602535	R1.25	2.5	4	2.5	35	70	2.40
SEM84602540	R1.25	2.5	4	2.5	40	80	2.40
SEM84602545	R1.25	2.5	4	2.5	45	90	2.40
SEM84602550	R1.25	2.5	4	2.5	50	100	2.40
SEM84603006	R1.5	3.0	6	3	6	50	2.85
SEM84603008	R1.5	3.0	6	3	8	50	2.85
SEM84603010	R1.5	3.0	6	3	10	50	2.85
SEM84603012	R1.5	3.0	6	3	12	50	2.85

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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
SEM84603014	R1.5	3.0	6	3	14	60	2.85
SEM84603016	R1.5	3.0	6	3	16	60	2.85
SEM84603018	R1.5	3.0	6	3	18	60	2.85
SEM84603020	R1.5	3.0	6	3	20	60	2.85
SEM84603022	R1.5	3.0	6	3	22	65	2.85
SEM84603026	R1.5	3.0	6	3	26	65	2.85
SEM84603030	R1.5	3.0	6	3	30	70	2.85
SEM84603035	R1.5	3.0	6	3	35	70	2.85
SEM84603040	R1.5	3.0	6	3	40	80	2.85
SEM84603045	R1.5	3.0	6	3	45	90	2.85
SEM84603050	R1.5	3.0	6	3	50	100	2.85
SEM84603060	R1.5	3.0	6	3	60	100	2.85
SEM84604008	R2.0	4.0	6	4	8	50	3.85
SEM84604010	R2.0	4.0	6	4	10	50	3.85
SEM84604012	R2.0	4.0	6	4	12	50	3.85
SEM84604014	R2.0	4.0	6	4	14	60	3.85
SEM84604016	R2.0	4.0	6	4	16	60	3.85
SEM84604018	R2.0	4.0	6	4	18	60	3.85
SEM84604020	R2.0	4.0	6	4	20	60	3.85
SEM84604022	R2.0	4.0	6	4	22	65	3.85
SEM84604026	R2.0	4.0	6	4	26	65	3.85
SEM84604030	R2.0	4.0	6	4	30	70	3.85
SEM84604035	R2.0	4.0	6	4	35	70	3.85
SEM84604040	R2.0	4.0	6	4	40	80	3.85
SEM84604045	R2.0	4.0	6	4	45	90	3.85
SEM84604050	R2.0	4.0	6	4	50	100	3.85
SEM84604055	R2.0	4.0	6	4	55	100	3.85
SEM84604060	R2.0	4.0	6	4	60	100	3.85

▶ NEXT PAGE

◎: Excellent ○: Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron		
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	○	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○

ISO	N										S					H					
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34		55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○

◎: Excellent ○: Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron		
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	○	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○

ISO	N										S					H					
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34		55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○

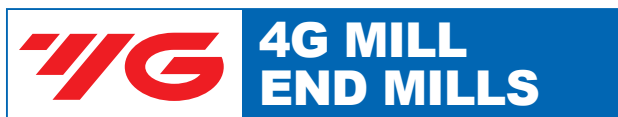


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PLAIN SHANK SEM846 SERIES



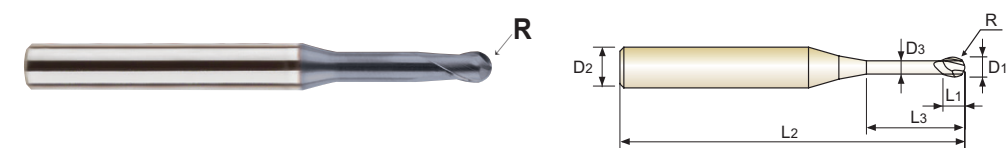
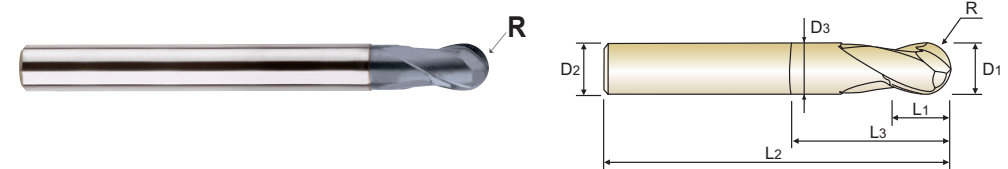
PLAIN SHANK SEM846 SERIES

CARBIDE, 2 FLUTE LONG NECK BALL NOSE

CARBIDE, 2 FLUTE LONG NECK BALL NOSE (6mm shank)

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Due to unique ball nose geometry and cutting edges, cutting force decreased, and wear resistance increased.
- ▶ Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.

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CARBIDE 2 30° ±0.005 ±0.010 PLAIN p.C313-C323

CARBIDE 2 30° ±0.005 PLAIN p.C313-C323

Call for Availability

Call for Availability

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
SEM84605015	R2.5	5.0	6	6	15	60	4.85
SEM84605020	R2.5	5.0	6	6	20	60	4.85
SEM84605026	R2.5	5.0	6	6	26	65	4.85
SEM84605030	R2.5	5.0	6	6	30	70	4.85
SEM84605035	R2.5	5.0	6	6	35	70	4.85
SEM84605040	R2.5	5.0	6	6	40	80	4.85
SEM84605045	R2.5	5.0	6	6	45	90	4.85
SEM84605050	R2.5	5.0	6	6	50	100	4.85
SEM84605055	R2.5	5.0	6	6	55	100	4.85
SEM84605060	R2.5	5.0	6	6	60	100	4.85
SEM84606020	R3.0	6.0	6	8	20	60	5.85
SEM84606030	R3.0	6.0	6	8	30	60	5.85
SEM84606020090	R3.0	6.0	6	12	20	90	5.85
SEM84606030090	R3.0	6.0	6	12	30	90	5.85
SEM84608025	R4.0	8.0	8	10	25	70	7.70
SEM84608035	R4.0	8.0	8	10	35	70	7.70
SEM84608025100	R4.0	8.0	8	14	25	100	7.70
SEM84608035100	R4.0	8.0	8	14	35	100	7.70
SEM84610030	R5.0	10.0	10	12	30	75	9.70
SEM84610040	R5.0	10.0	10	12	40	75	9.70
SEM84610030100	R5.0	10.0	10	18	30	100	9.70
SEM84610040100	R5.0	10.0	10	18	40	100	9.70
SEM84612032	R6.0	12.0	12	14	32	80	11.70
SEM84612045	R6.0	12.0	12	14	45	80	11.70
SEM84612032110	R6.0	12.0	12	22	32	110	11.70
SEM84612045110	R6.0	12.0	12	22	45	110	11.70

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
SEM846005016S	R0.25	0.5	6	0.5	1	45	0.45
SEM846005026S	R0.25	0.5	6	0.5	2	45	0.45
SEM846005046S	R0.25	0.5	6	0.5	4	45	0.45
SEM846006016S	R0.3	0.6	6	0.6	1	45	0.55
SEM846006026S	R0.3	0.6	6	0.6	2	45	0.55
SEM846006036S	R0.3	0.6	6	0.6	3	45	0.55
SEM846006046S	R0.3	0.6	6	0.6	4	45	0.55
SEM846006056S	R0.3	0.6	6	0.6	5	45	0.55
SEM846006066S	R0.3	0.6	6	0.6	6	45	0.55
SEM846006086S	R0.3	0.6	6	0.6	8	45	0.55
SEM846006106S	R0.3	0.6	6	0.6	10	45	0.55
SEM846006126S	R0.3	0.6	6	0.6	12	45	0.55
SEM846006146S	R0.3	0.6	6	0.6	14	45	0.55
SEM846006166S	R0.3	0.6	6	0.6	16	45	0.55
SEM846008016S	R0.4	0.8	6	0.8	1	45	0.75
SEM846008026S	R0.4	0.8	6	0.8	2	45	0.75
SEM846008036S	R0.4	0.8	6	0.8	3	45	0.75
SEM846008046S	R0.4	0.8	6	0.8	4	45	0.75
SEM846008056S	R0.4	0.8	6	0.8	5	45	0.75
SEM846008066S	R0.4	0.8	6	0.8	6	45	0.75
SEM846008086S	R0.4	0.8	6	0.8	8	45	0.75
SEM846008106S	R0.4	0.8	6	0.8	10	45	0.75
SEM846008126S	R0.4	0.8	6	0.8	12	45	0.75
SEM846008146S	R0.4	0.8	6	0.8	14	45	0.75
SEM846008166S	R0.4	0.8	6	0.8	16	45	0.75
SEM846008206S	R0.4	0.8	6	0.8	20	45	0.75
SEM846010026S	R0.5	1.0	6	1	2	50	0.95
SEM846010036S	R0.5	1.0	6	1	3	50	0.95

Size	Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to R3	±0.005	0~-0.012	h5
over R3	±0.010	0~-0.015	

▶ NEXT PAGE

ISO	P										M				K			H			
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	○	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○

ISO	P										M				K			H			
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	○	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○

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**YG 4G MILL END MILLS**

**YG 4G MILL END MILLS**

PLAIN SHANK **SEM846** SERIES

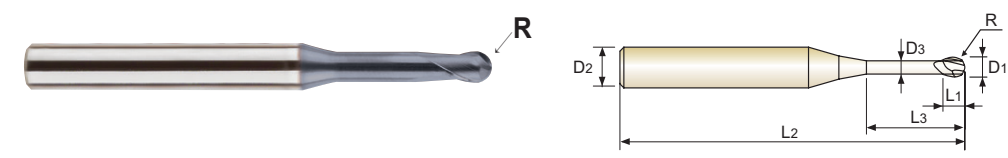
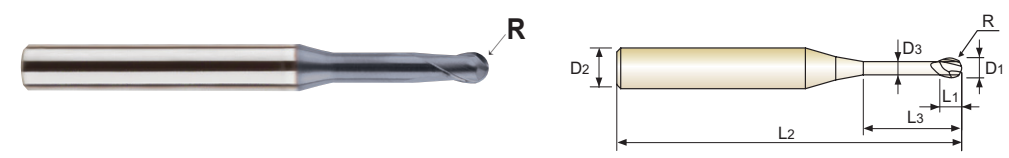
PLAIN SHANK **SEM846** SERIES

**CARBIDE, 2 FLUTE LONG NECK BALL NOSE (6mm shank)**

**CARBIDE, 2 FLUTE LONG NECK BALL NOSE (6mm shank)**

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
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CARBIDE 2 30° ±0.005 PLAIN p.C313-C323

CARBIDE 2 30° ±0.005 PLAIN p.C313-C323

◇ Call for Availability

◇ Call for Availability

Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R	D1	D2	L1	L3	L2	D3
SEM846010046S	R0.5	1.0	6	1	4	50	0.95
SEM846010056S	R0.5	1.0	6	1	5	50	0.95
SEM846010066S	R0.5	1.0	6	1	6	50	0.95
SEM846010076S	R0.5	1.0	6	1	7	50	0.95
SEM846010086S	R0.5	1.0	6	1	8	50	0.95
SEM846010096S	R0.5	1.0	6	1	9	50	0.95
SEM846010106S	R0.5	1.0	6	1	10	50	0.95
SEM846010126S	R0.5	1.0	6	1	12	50	0.95
SEM846010146S	R0.5	1.0	6	1	14	50	0.95
SEM846010166S	R0.5	1.0	6	1	16	50	0.95
SEM846010186S	R0.5	1.0	6	1	18	50	0.95
SEM846010206S	R0.5	1.0	6	1	20	50	0.95
SEM846010226S	R0.5	1.0	6	1	22	60	0.95
SEM846010266S	R0.5	1.0	6	1	26	60	0.95
SEM846010306S	R0.5	1.0	6	1	30	70	0.95
SEM846015036S	R0.75	1.5	6	1.5	3	50	1.45
SEM846015046S	R0.75	1.5	6	1.5	4	50	1.45
SEM846015066S	R0.75	1.5	6	1.5	6	50	1.45
SEM846015086S	R0.75	1.5	6	1.5	8	50	1.45
SEM846015106S	R0.75	1.5	6	1.5	10	50	1.45
SEM846015126S	R0.75	1.5	6	1.5	12	50	1.45
SEM846015146S	R0.75	1.5	6	1.5	14	50	1.45
SEM846015166S	R0.75	1.5	6	1.5	16	50	1.45
SEM846015186S	R0.75	1.5	6	1.5	18	50	1.45
SEM846015206S	R0.75	1.5	6	1.5	20	50	1.45
SEM846015226S	R0.75	1.5	6	1.5	22	60	1.45
SEM846015266S	R0.75	1.5	6	1.5	26	60	1.45
SEM846015306S	R0.75	1.5	6	1.5	30	70	1.45

Unit : mm

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
SEM846015356S	R0.75	1.5	6	1.5	35	70	1.45
SEM846015406S	R0.75	1.5	6	1.5	40	80	1.45
SEM846020046S	R1.0	2.0	6	2	4	50	1.95
SEM846020066S	R1.0	2.0	6	2	6	50	1.95
SEM846020086S	R1.0	2.0	6	2	8	50	1.95
SEM846020106S	R1.0	2.0	6	2	10	50	1.95
SEM846020126S	R1.0	2.0	6	2	12	50	1.95
SEM846020146S	R1.0	2.0	6	2	14	50	1.95
SEM846020166S	R1.0	2.0	6	2	16	50	1.95
SEM846020186S	R1.0	2.0	6	2	18	50	1.95
SEM846020206S	R1.0	2.0	6	2	20	50	1.95
SEM846020226S	R1.0	2.0	6	2	22	60	1.95
SEM846020266S	R1.0	2.0	6	2	26	60	1.95
SEM846020306S	R1.0	2.0	6	2	30	70	1.95
SEM846020356S	R1.0	2.0	6	2	35	70	1.95
SEM846020406S	R1.0	2.0	6	2	40	80	1.95
SEM846020456S	R1.0	2.0	6	2	45	90	1.95
SEM846020506S	R1.0	2.0	6	2	50	100	1.95

Mill Dia. Tolerance (mm)	Radius Tolerance (mm)	Shank Dia. Tolerance
0~-0.012	±0.005	h5

▶ NEXT PAGE  
◎ : Excellent ○ : Good

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	○	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	55	60	42	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	○	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	55	60	42	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○

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# YG 4G MILL END MILLS

PLAIN SHANK SEMD99 SERIES

# YG 4G MILL END MILLS

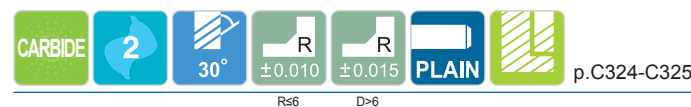
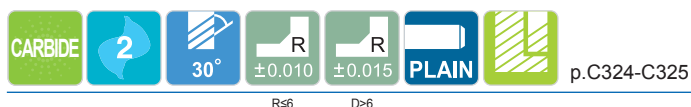
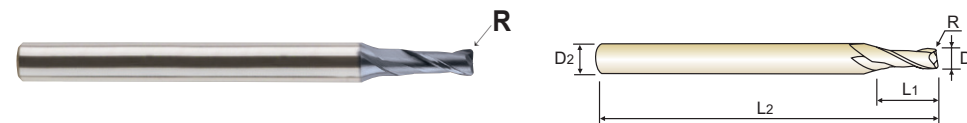
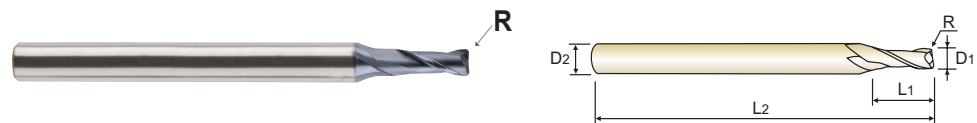
PLAIN SHANK SEMD99 SERIES

## CARBIDE, 2 FLUTE CORNER RADIUS (Short, Regular, Long Shank)

## CARBIDE, 2 FLUTE CORNER RADIUS (Short, Regular, Long Shank)

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- ▶ Available aashort, regular and long shank end mills.
- ▶ Available various corner radius end mills, from 0.02 mm to 5.0mm corner radius.

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◇ Call for Availability

◇ Call for Availability

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Remark
	R	D1	D2	L1	L2	
SEMD99002002	R0.02	0.2	4	0.4	40	-
SEMD99002005	R0.05	0.2	4	0.4	40	-
SEMD99003002	R0.02	0.3	4	0.6	40	-
SEMD99003005	R0.05	0.3	4	0.6	40	-
SEMD99004005	R0.05	0.4	4	0.8	40	-
SEMD9900401	R0.1	0.4	4	0.8	40	-
SEMD99005005	R0.05	0.5	4	1.0	40	-
SEMD9900501	R0.1	0.5	4	1.0	40	-
SEMD99006005	R0.05	0.6	4	1.2	40	-
SEMD9900601	R0.1	0.6	4	1.2	40	-
SEMD9900602	R0.2	0.6	4	1.2	40	-
SEMD99007005	R0.05	0.7	4	1.4	40	-
SEMD9900701	R0.1	0.7	4	1.4	40	-
SEMD9900702	R0.2	0.7	4	1.4	40	-
SEMD99008005	R0.05	0.8	4	1.6	40	-
SEMD9900801	R0.1	0.8	4	1.6	40	-
SEMD9900802	R0.2	0.8	4	1.6	40	-
SEMD99009005	R0.05	0.9	4	1.8	40	-
SEMD9900901	R0.1	0.9	4	1.8	40	-
SEMD99010005	R0.05	1.0	6	2.5	50	-
SEMD9901001	R0.1	1.0	6	2.5	50	-
SEMD9901002	R0.2	1.0	6	2.5	50	-
SEMD9901003	R0.3	1.0	6	2.5	50	-
SEMD99012005	R0.05	1.2	6	3	50	-
SEMD9901201	R0.1	1.2	6	3	50	-
SEMD9901202	R0.2	1.2	6	3	50	-
SEMD9901203	R0.3	1.2	6	3	50	-
SEMD99015005	R0.05	1.5	6	4	50	-

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Remark
	R	D1	D2	L1	L2	
SEMD9901501	R0.1	1.5	6	4	50	-
SEMD9901502	R0.2	1.5	6	4	50	-
SEMD9901503	R0.3	1.5	6	4	50	-
SEMD9901505	R0.5	1.5	6	4	50	-
SEMD9902001	R0.1	2.0	6	6	50	-
SEMD9902002	R0.2	2.0	6	6	50	-
SEMD9902003	R0.3	2.0	6	6	50	-
SEMD9902005	R0.5	2.0	6	6	50	-
SEMD9902501	R0.1	2.5	6	7	60	-
SEMD9902502	R0.2	2.5	6	7	60	-
SEMD9902503	R0.3	2.5	6	7	60	-
SEMD9902505	R0.5	2.5	6	7	60	-
SEMD9903001	R0.1	3.0	6	8	60	-
SEMD9903002	R0.2	3.0	6	8	60	-
SEMD9903003	R0.3	3.0	6	8	60	-
SEMD9903005	R0.5	3.0	6	8	60	-
SEMD9903010	R1.0	3.0	6	8	60	-
SEMD9903501	R0.1	3.5	6	10	70	-
SEMD9903502	R0.2	3.5	6	10	70	-
SEMD9903503	R0.3	3.5	6	10	70	-
SEMD9903505	R0.5	3.5	6	10	70	-
SEMD99040014S	R0.1	4.0	4	10	70	4mm Shank
SEMD99040024S	R0.2	4.0	4	10	70	4mm Shank
SEMD99040034S	R0.3	4.0	4	10	70	4mm Shank
SEMD99040054S	R0.5	4.0	4	10	70	4mm Shank
SEMD99040104S	R1.0	4.0	4	10	70	4mm Shank
SEMD99040011004S	R0.1	4.0	4	10	100	4mm Shank
SEMD99040021004S	R0.2	4.0	4	10	100	4mm Shank

▶ NEXT PAGE

▶ NEXT PAGE

◎: Excellent ○: Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323																				
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323																					
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	◎	○

◎: Excellent ○: Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323																					
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323																					
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	◎	○

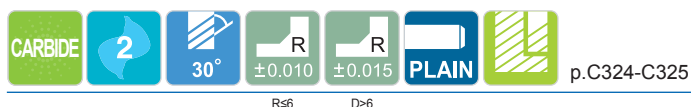
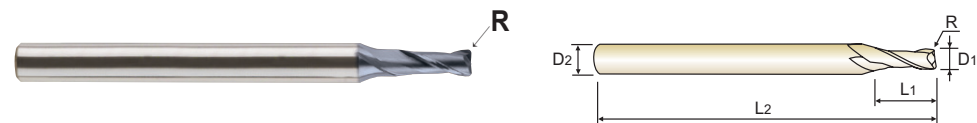


# YG 4G MILL END MILLS

PLAIN SHANK SEMD99 SERIES

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◇ Call for Availability

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Remark
	R	D1	D2	L1	L2	
SEMD99040031004S	R0.3	4.0	4	10	100	4mm Shank
SEMD99040051004S	R0.5	4.0	4	10	100	4mm Shank
SEMD99040101004S	R1.0	4.0	4	10	100	4mm Shank
SEMD9904001	R0.1	4.0	6	10	70	Regular
SEMD9904002	R0.2	4.0	6	10	70	Regular
SEMD9904003	R0.3	4.0	6	10	70	Regular
SEMD9904005	R0.5	4.0	6	10	70	Regular
SEMD9904010	R1.0	4.0	6	10	70	Regular
SEMD9904501	R0.1	4.5	6	11	80	-
SEMD9904502	R0.2	4.5	6	11	80	-
SEMD9904503	R0.3	4.5	6	11	80	-
SEMD9904505	R0.5	4.5	6	11	80	-
SEMD9905001	R0.1	5.0	6	13	90	-
SEMD9905002	R0.2	5.0	6	13	90	-
SEMD9905003	R0.3	5.0	6	13	90	-
SEMD9905005	R0.5	5.0	6	13	90	-
SEMD9905010	R1.0	5.0	6	13	90	-
SEMD9905501	R0.1	5.5	6	13	90	-
SEMD9905502	R0.2	5.5	6	13	90	-
SEMD9905503	R0.3	5.5	6	13	90	-
SEMD9905505	R0.5	5.5	6	13	90	-
SEMD9905510	R1.0	5.5	6	13	90	-
SEMD9906002060	R0.2	6.0	6	15	60	Short
SEMD9906003060	R0.3	6.0	6	15	60	Short
SEMD9906005060	R0.5	6.0	6	15	60	Short
SEMD9906010060	R1.0	6.0	6	15	60	Short
SEMD9906001	R0.1	6.0	6	15	90	Regular
SEMD9906002	R0.2	6.0	6	15	90	Regular

▶ NEXT PAGE

◎: Excellent ○: Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

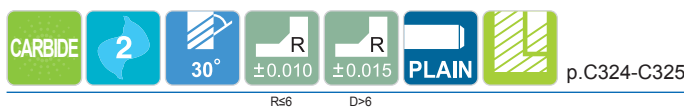
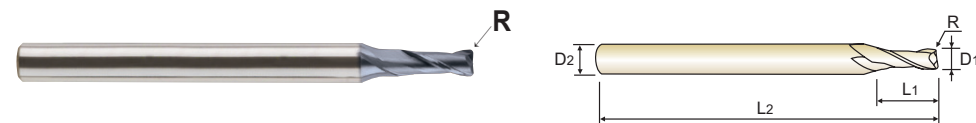
ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

# YG 4G MILL END MILLS

PLAIN SHANK SEMD99 SERIES

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◇ Call for Availability

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Remark
	R	D1	D2	L1	L2	
SEMD9906003	R0.3	6.0	6	15	90	Regular
SEMD9906005	R0.5	6.0	6	15	90	Regular
SEMD9906010	R1.0	6.0	6	15	90	Regular
SEMD9906015	R1.5	6.0	6	15	90	Regular
SEMD9906020	R2.0	6.0	6	15	90	Regular
SEMD9906005110	R0.5	6.0	6	15	110	Long Shank
SEMD9906010110	R1.0	6.0	6	15	110	Long Shank
SEMD9906005130	R0.5	6.0	6	15	130	Long Shank
SEMD9906010130	R1.0	6.0	6	15	130	Long Shank
SEMD9907001	R0.1	7.0	8	16	90	-
SEMD9907002	R0.2	7.0	8	16	90	-
SEMD9907003	R0.3	7.0	8	16	90	-
SEMD9907005	R0.5	7.0	8	16	90	-
SEMD9907010	R1.0	7.0	8	16	90	-
SEMD9907020	R2.0	7.0	8	16	90	-
SEMD9908003070	R0.3	8.0	8	20	70	Short
SEMD9908005070	R0.5	8.0	8	20	70	Short
SEMD9908010070	R1.0	8.0	8	20	70	Short
SEMD9908001	R0.1	8.0	8	20	100	Regular
SEMD9908002	R0.2	8.0	8	20	100	Regular
SEMD9908003	R0.3	8.0	8	20	100	Regular
SEMD9908005	R0.5	8.0	8	20	100	Regular
SEMD9908010	R1.0	8.0	8	20	100	Regular
SEMD9908015	R1.5	8.0	8	20	100	Regular
SEMD9908020	R2.0	8.0	8	20	100	Regular
SEMD9908025	R2.5	8.0	8	20	100	Regular
SEMD9908030	R3.0	8.0	8	20	100	Regular
SEMD9908005120	R0.5	8.0	8	20	120	Long Shank

▶ NEXT PAGE

◎: Excellent ○: Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

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# YG 4G MILL END MILLS

# YG 4G MILL END MILLS

PLAIN SHANK SEMD99 SERIES

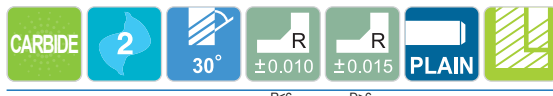
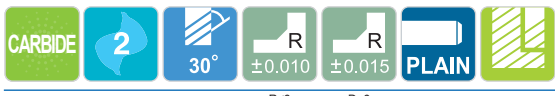
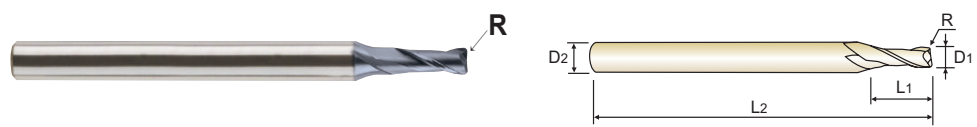
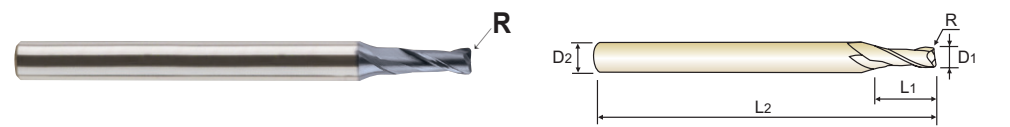
PLAIN SHANK SEMD99 SERIES

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p.C324-C325

p.C324-C325

◇ Call for Availability

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EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Remark
	R	D1	D2	L1	L2	
SEMD9908010120	R1.0	8.0	8	20	120	Long Shank
SEMD9908015150	R0.5	8.0	8	20	150	Long Shank
SEMD9908010150	R1.0	8.0	8	20	150	Long Shank
SEMD9910003075	R0.3	10.0	10	25	75	Short
SEMD9910005075	R0.5	10.0	10	25	75	Short
SEMD9910010075	R1.0	10.0	10	25	75	Short
SEMD9910001	R0.1	10.0	10	25	100	Regular
SEMD9910002	R0.2	10.0	10	25	100	Regular
SEMD9910003	R0.3	10.0	10	25	100	Regular
SEMD9910005	R0.5	10.0	10	25	100	Regular
SEMD9910010	R1.0	10.0	10	25	100	Regular
SEMD9910015	R1.5	10.0	10	25	100	Regular
SEMD9910020	R2.0	10.0	10	25	100	Regular
SEMD9910025	R2.5	10.0	10	25	100	Regular
SEMD9910030	R3.0	10.0	10	25	100	Regular
SEMD9910040	R4.0	10.0	10	25	100	Regular
SEMD9910005130	R0.5	10.0	10	25	130	Long Shank
SEMD9910010130	R1.0	10.0	10	25	130	Long Shank
SEMD9910005150	R0.5	10.0	10	25	150	Long Shank
SEMD9910010150	R1.0	10.0	10	25	150	Long Shank
SEMD9911002	R0.2	11.0	12	25	110	-
SEMD9911003	R0.3	11.0	12	25	110	-
SEMD9911005	R0.5	11.0	12	25	110	-
SEMD9911010	R1.0	11.0	12	25	110	-
SEMD9911020	R2.0	11.0	12	25	110	-
SEMD9912003080	R0.3	12.0	12	30	80	Short
SEMD9912005080	R0.5	12.0	12	30	80	Short
SEMD9912010080	R1.0	12.0	12	30	80	Short

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Remark
	R	D1	D2	L1	L2	
SEMD9912001	R0.1	12.0	12	30	110	Regular
SEMD9912002	R0.2	12.0	12	30	110	Regular
SEMD9912003	R0.3	12.0	12	30	110	Regular
SEMD9912005	R0.5	12.0	12	30	110	Regular
SEMD9912010	R1.0	12.0	12	30	110	Regular
SEMD9912015	R1.5	12.0	12	30	110	Regular
SEMD9912020	R2.0	12.0	12	30	110	Regular
SEMD9912025	R2.5	12.0	12	30	110	Regular
SEMD9912030	R3.0	12.0	12	30	110	Regular
SEMD9912040	R4.0	12.0	12	30	110	Regular
SEMD9912050	R5.0	12.0	12	30	110	Regular
SEMD9912005130	R0.5	12.0	12	30	130	Long Shank
SEMD9912010130	R1.0	12.0	12	30	130	Long Shank
SEMD9912005150	R0.5	12.0	12	30	150	Long Shank
SEMD9912010150	R1.0	12.0	12	30	150	Long Shank
SEMD9914005	R0.5	14.0	16	35	150	-
SEMD9914010	R1.0	14.0	16	35	150	-
SEMD9914020	R2.0	14.0	16	35	150	-
SEMD9916005	R0.5	16.0	16	32	150	-
SEMD9916010	R1.0	16.0	16	32	150	-
SEMD9916015	R1.5	16.0	16	32	150	-
SEMD9916020	R2.0	16.0	16	32	150	-
SEMD9920005	R0.5	20.0	20	38	150	-
SEMD9920010	R1.0	20.0	20	38	150	-
SEMD9920015	R1.5	20.0	20	38	150	-
SEMD9920020	R2.0	20.0	20	38	150	-

Size	Corner Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	±0.010	0~-0.012	h5
over Ø6	±0.015	0~-0.015	

▶ NEXT PAGE

◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323																					
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323																					
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○

HSS

HSS

# YG 4G MILL END MILLS

PLAIN SHANK SEME61 SERIES

# YG 4G MILL END MILLS

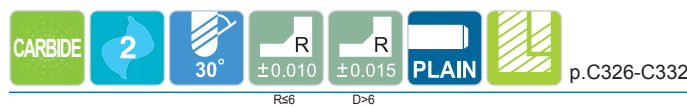
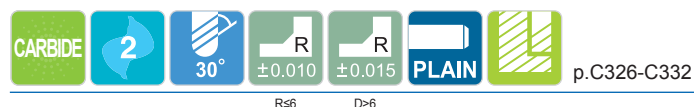
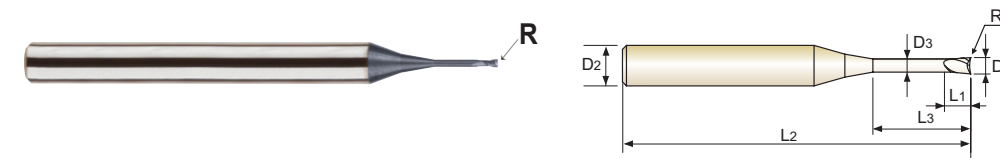
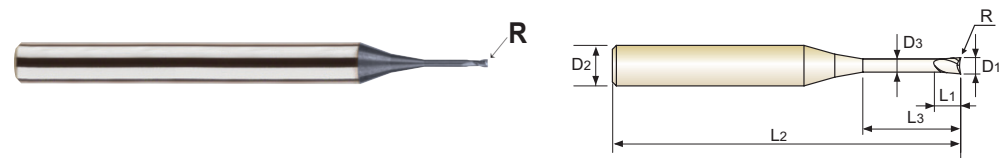
PLAIN SHANK SEME61 SERIES

## CARBIDE, 2 FLUTE LONG NECK CORNER RADIUS

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- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- ▶ Available various products like regular length and long shank end mills etc.
- ▶ Available various corner radius end mills, from min. 0.02mm corner radius to max. 2.0 mm corner radius.
- ▶ Available more various effective length and overall length end mills than previous standard products.

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p.C326-C332

Call for Availability

Call for Availability

Unit : mm

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Remark
SEME61002002005	R0.02	0.2	4	0.3	0.5	40	0.17	-
SEME6100200201	R0.02	0.2	4	0.3	1	40	0.17	-
SEME61002002015	R0.02	0.2	4	0.3	1.5	40	0.17	-
SEME6100200202	R0.02	0.2	4	0.3	2	40	0.17	-
SEME61002005005	R0.05	0.2	4	0.3	0.5	40	0.17	-
SEME6100200501	R0.05	0.2	4	0.3	1	40	0.17	-
SEME61002005015	R0.05	0.2	4	0.3	1.5	40	0.17	-
SEME6100200502	R0.05	0.2	4	0.3	2	40	0.17	-
SEME6100300201	R0.02	0.3	4	0.5	1	40	0.27	-
SEME6100300202	R0.02	0.3	4	0.5	2	40	0.27	-
SEME6100300203	R0.02	0.3	4	0.5	3	40	0.27	-
SEME6100300501	R0.05	0.3	4	0.5	1	40	0.27	-
SEME6100300502	R0.05	0.3	4	0.5	2	40	0.27	-
SEME6100300503	R0.05	0.3	4	0.5	3	40	0.27	-
SEME6100400501	R0.05	0.4	4	0.6	1	40	0.37	-
SEME61004005015	R0.05	0.4	4	0.6	1.5	40	0.37	-
SEME6100400502	R0.05	0.4	4	0.6	2	40	0.37	-
SEME61004005025	R0.05	0.4	4	0.6	2.5	40	0.37	-
SEME6100400503	R0.05	0.4	4	0.6	3	40	0.37	-
SEME6100400504	R0.05	0.4	4	0.6	4	40	0.37	-
SEME610040101	R0.1	0.4	4	0.6	1	40	0.37	-
SEME6100401015	R0.1	0.4	4	0.6	1.5	40	0.37	-
SEME610040102	R0.1	0.4	4	0.6	2	40	0.37	-
SEME6100401025	R0.1	0.4	4	0.6	2.5	40	0.37	-
SEME610040103	R0.1	0.4	4	0.6	3	40	0.37	-
SEME610040104	R0.1	0.4	4	0.6	4	40	0.37	-
SEME6100500501	R0.05	0.5	4	0.7	1	45	0.45	-
SEME61005005015	R0.05	0.5	4	0.7	1.5	45	0.45	-

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Remark
SEME6100500502	R0.05	0.5	4	0.7	2	45	0.45	-
SEME61005005025	R0.05	0.5	4	0.7	2.5	45	0.45	-
SEME6100500503	R0.05	0.5	4	0.7	3	45	0.45	-
SEME6100500504	R0.05	0.5	4	0.7	4	45	0.45	-
SEME6100500505	R0.05	0.5	4	0.7	5	45	0.45	-
SEME6100500506	R0.05	0.5	4	0.7	6	45	0.45	-
SEME610050101	R0.1	0.5	4	0.7	1	45	0.45	-
SEME6100501015	R0.1	0.5	4	0.7	1.5	45	0.45	-
SEME610050102	R0.1	0.5	4	0.7	2	45	0.45	-
SEME6100501025	R0.1	0.5	4	0.7	2.5	45	0.45	-
SEME610050103	R0.1	0.5	4	0.7	3	45	0.45	-
SEME610050104	R0.1	0.5	4	0.7	4	45	0.45	-
SEME610050105	R0.1	0.5	4	0.7	5	45	0.45	-
SEME610050106	R0.1	0.5	4	0.7	6	45	0.45	-
SEME6100600502	R0.05	0.6	4	0.9	2	45	0.55	-
SEME6100600503	R0.05	0.6	4	0.9	3	45	0.55	-
SEME6100600504	R0.05	0.6	4	0.9	4	45	0.55	-
SEME6100600506	R0.05	0.6	4	0.9	6	45	0.55	-
SEME6100600508	R0.05	0.6	4	0.9	8	45	0.55	-
SEME6100600510	R0.05	0.6	4	0.9	10	45	0.55	-
SEME610060102	R0.1	0.6	4	0.9	2	45	0.55	-
SEME610060103	R0.1	0.6	4	0.9	3	45	0.55	-
SEME610060104	R0.1	0.6	4	0.9	4	45	0.55	-
SEME610060106	R0.1	0.6	4	0.9	6	45	0.55	-
SEME610060108	R0.1	0.6	4	0.9	8	45	0.55	-
SEME610060110	R0.1	0.6	4	0.9	10	45	0.55	-
SEME610060202	R0.2	0.6	4	0.9	2	45	0.55	-
SEME610060203	R0.2	0.6	4	0.9	3	45	0.55	-

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◎ : Excellent ○ : Good

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○

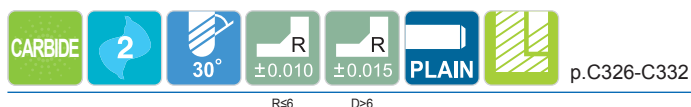
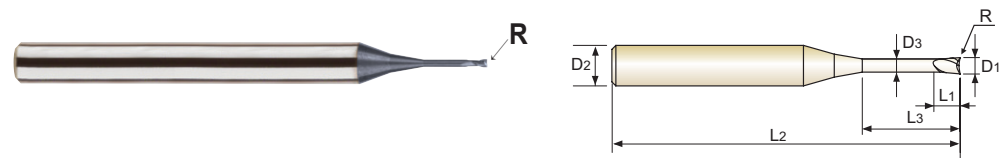
  

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



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◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Remark
	R	D1	D2	L1	L3	L2	D3	
SEME610060204	R0.2	0.6	4	0.9	4	45	0.55	-
SEME610060206	R0.2	0.6	4	0.9	6	45	0.55	-
SEME610060208	R0.2	0.6	4	0.9	8	45	0.55	-
SEME610060210	R0.2	0.6	4	0.9	10	45	0.55	-
SEME6100700502	R0.05	0.7	4	1.2	2	45	0.65	-
SEME6100700504	R0.05	0.7	4	1.2	4	45	0.65	-
SEME6100700506	R0.05	0.7	4	1.2	6	45	0.65	-
SEME6100700508	R0.05	0.7	4	1.2	8	45	0.65	-
SEME6100700510	R0.05	0.7	4	1.2	10	45	0.65	-
SEME610070102	R0.1	0.7	4	1.2	2	45	0.65	-
SEME610070104	R0.1	0.7	4	1.2	4	45	0.65	-
SEME610070106	R0.1	0.7	4	1.2	6	45	0.65	-
SEME610070108	R0.1	0.7	4	1.2	8	45	0.65	-
SEME610070110	R0.1	0.7	4	1.2	10	45	0.65	-
SEME610070202	R0.2	0.7	4	1.2	2	45	0.65	-
SEME610070204	R0.2	0.7	4	1.2	4	45	0.65	-
SEME610070206	R0.2	0.7	4	1.2	6	45	0.65	-
SEME610070208	R0.2	0.7	4	1.2	8	45	0.65	-
SEME610070210	R0.2	0.7	4	1.2	10	45	0.65	-
SEME6100800502	R0.05	0.8	4	1.2	2	45	0.75	-
SEME6100800503	R0.05	0.8	4	1.2	3	45	0.75	-
SEME6100800504	R0.05	0.8	4	1.2	4	45	0.75	-
SEME6100800506	R0.05	0.8	4	1.2	6	45	0.75	-
SEME6100800508	R0.05	0.8	4	1.2	8	45	0.75	-
SEME6100800510	R0.05	0.8	4	1.2	10	45	0.75	-
SEME610080102	R0.1	0.8	4	1.2	2	45	0.75	-
SEME610080103	R0.1	0.8	4	1.2	3	45	0.75	-
SEME610080104	R0.1	0.8	4	1.2	4	45	0.75	-

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◎ : Excellent ○ : Good

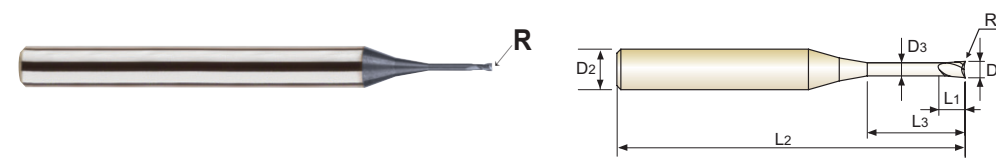
ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron	Nodular cast iron		Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRC	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○

ISO	N					S					H											
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Heat Resistant Super Alloys			Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron								
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRC	60	100	75	90	130	110	90	100			15	30	25	38	34	40	60	60	42	55	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

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◇ Call for Availability

Unit : mm

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Remark
	R	D1	D2	L1	L3	L2	D3	
SEME610080106	R0.1	0.8	4	1.2	6	45	0.75	-
SEME610080108	R0.1	0.8	4	1.2	8	45	0.75	-
SEME610080110	R0.1	0.8	4	1.2	10	45	0.75	-
SEME610080202	R0.2	0.8	4	1.2	2	45	0.75	-
SEME610080203	R0.2	0.8	4	1.2	3	45	0.75	-
SEME610080204	R0.2	0.8	4	1.2	4	45	0.75	-
SEME610080206	R0.2	0.8	4	1.2	6	45	0.75	-
SEME610080208	R0.2	0.8	4	1.2	8	45	0.75	-
SEME610080210	R0.2	0.8	4	1.2	10	45	0.75	-
SEME6101000503	R0.05	1.0	4	1.5	3	50	0.95	-
SEME6101000504	R0.05	1.0	4	1.5	4	50	0.95	-
SEME6101000506	R0.05	1.0	4	1.5	6	50	0.95	-
SEME6101000508	R0.05	1.0	4	1.5	8	50	0.95	-
SEME6101000510	R0.05	1.0	4	1.5	10	50	0.95	-
SEME6101000512	R0.05	1.0	4	1.5	12	50	0.95	-
SEME6101000514	R0.05	1.0	4	1.5	14	50	0.95	-
SEME6101000516	R0.05	1.0	4	1.5	16	50	0.95	-
SEME6101000520	R0.05	1.0	4	1.5	20	50	0.95	-
SEME610100103	R0.1	1.0	4	1.5	3	50	0.95	-
SEME610100104	R0.1	1.0	4	1.5	4	50	0.95	-
SEME610100106	R0.1	1.0	4	1.5	6	50	0.95	-
SEME610100108	R0.1	1.0	4	1.5	8	50	0.95	-
SEME610100110	R0.1	1.0	4	1.5	10	50	0.95	-
SEME610100112	R0.1	1.0	4	1.5	12	50	0.95	-
SEME610100114	R0.1	1.0	4	1.5	14	50	0.95	-
SEME610100116	R0.1	1.0	4	1.5	16	50	0.95	-
SEME610100120	R0.1	1.0	4	1.5	20	50	0.95	-
SEME610100203	R0.2	1.0	4	1.5	3	50	0.95	-

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◎ : Excellent ○ : Good

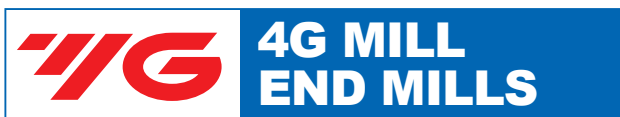
ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron	Nodular cast iron		Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRC	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○

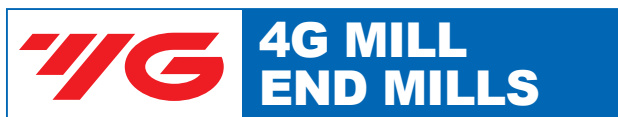
ISO	N					S					H											
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Heat Resistant Super Alloys			Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron								
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRC	60	100	75	90	130	110	90	100			15	30	25	38	34	40	60	60	42	55	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

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PLAIN SHANK SEME61 SERIES



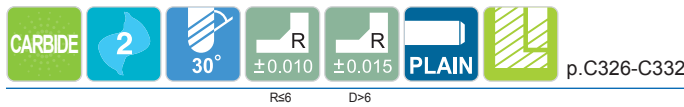
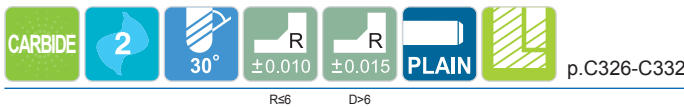
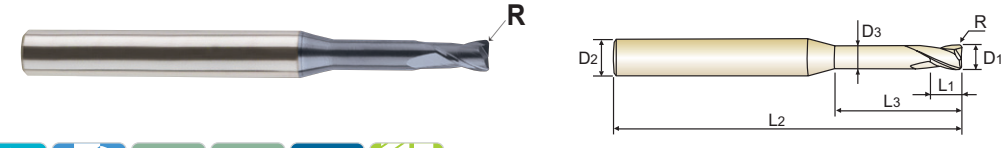
PLAIN SHANK SEME61 SERIES

CARBIDE, 2 FLUTE LONG NECK CORNER RADIUS

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Call for Availability

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EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Remark
	R	D1	D2	L1	L3	L2	D3	
SEME610100204	R0.2	1.0	4	1.5	4	50	0.95	-
SEME610100206	R0.2	1.0	4	1.5	6	50	0.95	-
SEME610100208	R0.2	1.0	4	1.5	8	50	0.95	-
SEME610100210	R0.2	1.0	4	1.5	10	50	0.95	-
SEME610100212	R0.2	1.0	4	1.5	12	50	0.95	-
SEME610100214	R0.2	1.0	4	1.5	14	50	0.95	-
SEME610100216	R0.2	1.0	4	1.5	16	50	0.95	-
SEME610100220	R0.2	1.0	4	1.5	20	50	0.95	-
SEME610100303	R0.3	1.0	4	1.5	3	50	0.95	-
SEME610100304	R0.3	1.0	4	1.5	4	50	0.95	-
SEME610100306	R0.3	1.0	4	1.5	6	50	0.95	-
SEME610100308	R0.3	1.0	4	1.5	8	50	0.95	-
SEME610100310	R0.3	1.0	4	1.5	10	50	0.95	-
SEME610100312	R0.3	1.0	4	1.5	12	50	0.95	-
SEME610100314	R0.3	1.0	4	1.5	14	50	0.95	-
SEME610100316	R0.3	1.0	4	1.5	16	50	0.95	-
SEME610100320	R0.3	1.0	4	1.5	20	50	0.95	-
SEME6101200503	R0.05	1.2	4	1.8	3	50	1.15	-
SEME6101200504	R0.05	1.2	4	1.8	4	50	1.15	-
SEME6101200506	R0.05	1.2	4	1.8	6	50	1.15	-
SEME6101200508	R0.05	1.2	4	1.8	8	50	1.15	-
SEME6101200510	R0.05	1.2	4	1.8	10	50	1.15	-
SEME6101200512	R0.05	1.2	4	1.8	12	50	1.15	-
SEME6101200516	R0.05	1.2	4	1.8	16	50	1.15	-
SEME6101200520	R0.05	1.2	4	1.8	20	50	1.15	-
SEME610120103	R0.1	1.2	4	1.8	3	50	1.15	-
SEME610120104	R0.1	1.2	4	1.8	4	50	1.15	-
SEME610120106	R0.1	1.2	4	1.8	6	50	1.15	-

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Remark
	R	D1	D2	L1	L3	L2	D3	
SEME610120108	R0.1	1.2	4	1.8	8	50	1.15	-
SEME610120110	R0.1	1.2	4	1.8	10	50	1.15	-
SEME610120112	R0.1	1.2	4	1.8	12	50	1.15	-
SEME610120116	R0.1	1.2	4	1.8	16	50	1.15	-
SEME610120120	R0.1	1.2	4	1.8	20	50	1.15	-
SEME610120203	R0.2	1.2	4	1.8	3	50	1.15	-
SEME610120204	R0.2	1.2	4	1.8	4	50	1.15	-
SEME610120206	R0.2	1.2	4	1.8	6	50	1.15	-
SEME610120208	R0.2	1.2	4	1.8	8	50	1.15	-
SEME610120210	R0.2	1.2	4	1.8	10	50	1.15	-
SEME610120212	R0.2	1.2	4	1.8	12	50	1.15	-
SEME610120216	R0.2	1.2	4	1.8	16	50	1.15	-
SEME610120220	R0.2	1.2	4	1.8	20	50	1.15	-
SEME610120303	R0.3	1.2	4	1.8	3	50	1.15	-
SEME610120304	R0.3	1.2	4	1.8	4	50	1.15	-
SEME610120306	R0.3	1.2	4	1.8	6	50	1.15	-
SEME610120308	R0.3	1.2	4	1.8	8	50	1.15	-
SEME610120310	R0.3	1.2	4	1.8	10	50	1.15	-
SEME610120312	R0.3	1.2	4	1.8	12	50	1.15	-
SEME610120316	R0.3	1.2	4	1.8	16	50	1.15	-
SEME610120320	R0.3	1.2	4	1.8	20	50	1.15	-
SEME6101500504	R0.05	1.5	4	2.3	4	50	1.45	-
SEME6101500506	R0.05	1.5	4	2.3	6	50	1.45	-
SEME6101500508	R0.05	1.5	4	2.3	8	50	1.45	-
SEME6101500510	R0.05	1.5	4	2.3	10	50	1.45	-
SEME6101500512	R0.05	1.5	4	2.3	12	50	1.45	-
SEME6101500514	R0.05	1.5	4	2.3	14	50	1.45	-
SEME6101500516	R0.05	1.5	4	2.3	16	50	1.45	-

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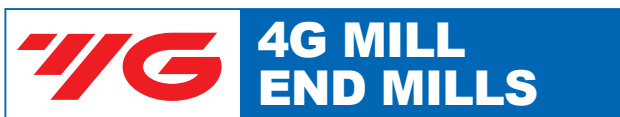
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◎: Excellent ○: Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○

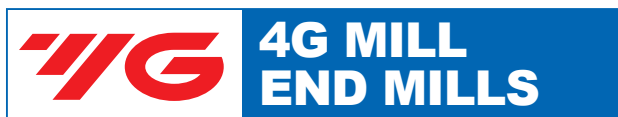
ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○

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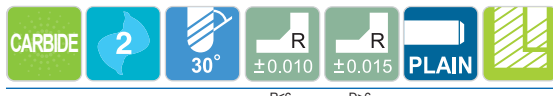
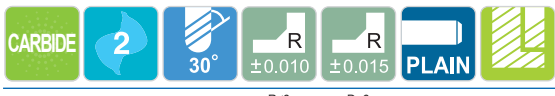
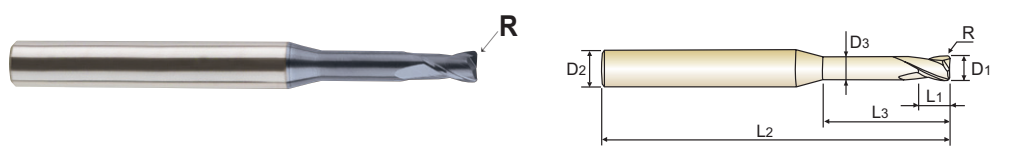
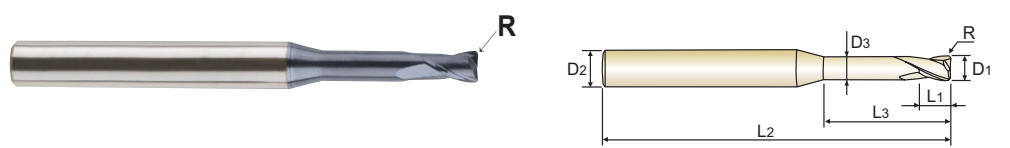
PLAIN SHANK SEME61 SERIES

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p.C326-C332

p.C326-C332

Call for Availability

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Table with 9 columns: EDP No., Corner Radius, Mill Diameter, Shank Diameter, Length of Cut, Length Below Shank, Overall Length, Neck Diameter, Remark. Lists various SEME61 series end mill models and their specifications.

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Next Page

Next Page

ISO material compatibility chart for SEME61 series end mills, showing suitability for various materials like non-alloy steel, stainless steel, cast iron, etc.

ISO material compatibility chart for SEME61 series end mills, showing suitability for various materials like non-alloy steel, stainless steel, cast iron, etc.



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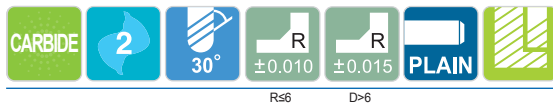
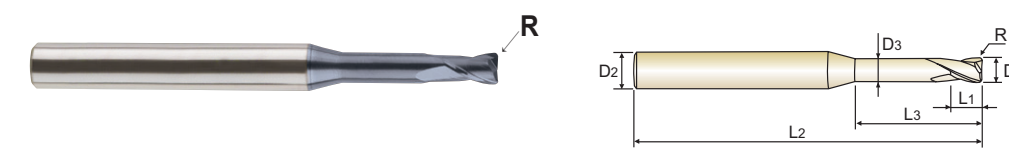
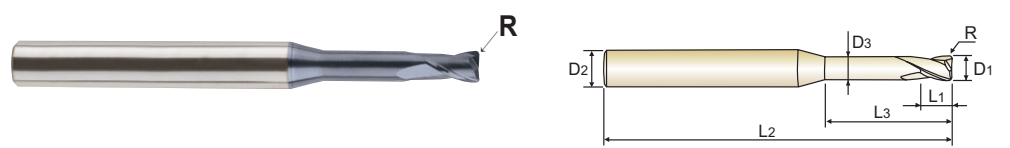
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p.C326-C332

p.C326-C332

Call for Availability

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EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Remark
	R	D1	D2	L1	L3	L2	D3	
SEME610200212	R0.2	2.0	4	3	12	50	1.95	-
SEME610200214	R0.2	2.0	4	3	14	50	1.95	-
SEME610200216	R0.2	2.0	4	3	16	50	1.95	-
SEME610200220	R0.2	2.0	4	3	20	50	1.95	-
SEME610200222	R0.2	2.0	4	3	22	60	1.95	-
SEME610200226	R0.2	2.0	4	3	26	60	1.95	-
SEME610200230	R0.2	2.0	4	3	30	70	1.95	-
SEME610200306	R0.3	2.0	4	3	6	50	1.95	-
SEME610200308	R0.3	2.0	4	3	8	50	1.95	-
SEME610200310	R0.3	2.0	4	3	10	50	1.95	-
SEME610200312	R0.3	2.0	4	3	12	50	1.95	-
SEME610200314	R0.3	2.0	4	3	14	50	1.95	-
SEME610200316	R0.3	2.0	4	3	16	50	1.95	-
SEME610200320	R0.3	2.0	4	3	20	50	1.95	-
SEME610200322	R0.3	2.0	4	3	22	60	1.95	-
SEME610200326	R0.3	2.0	4	3	26	60	1.95	-
SEME610200330	R0.3	2.0	4	3	30	70	1.95	-
SEME610200506	R0.5	2.0	4	3	6	50	1.95	-
SEME610200508	R0.5	2.0	4	3	8	50	1.95	-
SEME610200510	R0.5	2.0	4	3	10	50	1.95	-
SEME610200512	R0.5	2.0	4	3	12	50	1.95	-
SEME610200514	R0.5	2.0	4	3	14	50	1.95	-
SEME610200516	R0.5	2.0	4	3	16	50	1.95	-
SEME610200520	R0.5	2.0	4	3	20	50	1.95	-
SEME610200522	R0.5	2.0	4	3	22	60	1.95	-
SEME610200526	R0.5	2.0	4	3	26	60	1.95	-
SEME610200530	R0.5	2.0	4	3	30	70	1.95	-
SEME610250108	R0.1	2.5	4	4	8	50	2.40	-

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Remark
	R	D1	D2	L1	L3	L2	D3	
SEME610250110	R0.1	2.5	4	4	10	50	2.40	-
SEME610250112	R0.1	2.5	4	4	12	50	2.40	-
SEME610250114	R0.1	2.5	4	4	14	50	2.40	-
SEME610250116	R0.1	2.5	4	4	16	50	2.40	-
SEME610250120	R0.1	2.5	4	4	20	50	2.40	-
SEME610250126	R0.1	2.5	4	4	26	60	2.40	-
SEME610250130	R0.1	2.5	4	4	30	70	2.40	-
SEME610250208	R0.2	2.5	4	4	8	50	2.40	-
SEME610250210	R0.2	2.5	4	4	10	50	2.40	-
SEME610250212	R0.2	2.5	4	4	12	50	2.40	-
SEME610250214	R0.2	2.5	4	4	14	50	2.40	-
SEME610250216	R0.2	2.5	4	4	16	50	2.40	-
SEME610250220	R0.2	2.5	4	4	20	50	2.40	-
SEME610250226	R0.2	2.5	4	4	26	60	2.40	-
SEME610250230	R0.2	2.5	4	4	30	70	2.40	-
SEME610250308	R0.3	2.5	4	4	8	50	2.40	-
SEME610250310	R0.3	2.5	4	4	10	50	2.40	-
SEME610250312	R0.3	2.5	4	4	12	50	2.40	-
SEME610250314	R0.3	2.5	4	4	14	50	2.40	-
SEME610250316	R0.3	2.5	4	4	16	50	2.40	-
SEME610250320	R0.3	2.5	4	4	20	50	2.40	-
SEME610250326	R0.3	2.5	4	4	26	60	2.40	-
SEME610250330	R0.3	2.5	4	4	30	70	2.40	-
SEME610250508	R0.5	2.5	6	4	8	50	2.40	-
SEME610250510	R0.5	2.5	6	4	10	50	2.40	-
SEME610250512	R0.5	2.5	6	4	12	50	2.40	-
SEME610250514	R0.5	2.5	6	4	14	50	2.40	-
SEME610250516	R0.5	2.5	6	4	16	50	2.40	-

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◎ : Excellent ○ : Good

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ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323																				
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323																				
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

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PLAIN SHANK SEME61 SERIES



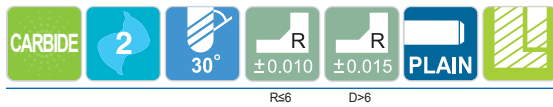
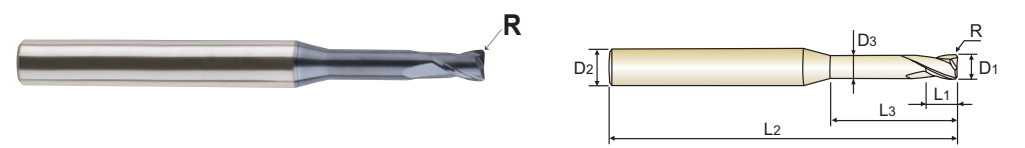
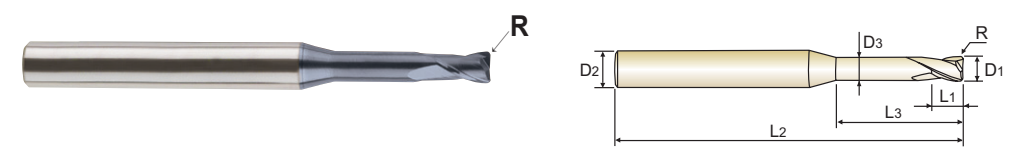
PLAIN SHANK SEME61 SERIES

CARBIDE, 2 FLUTE LONG NECK CORNER RADIUS

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- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRC55 and machine parts.
Available various products like regular length and long shank end mills etc.
Available various corner radius end mills, from min. 0.02mm corner radius to max. 2.0 mm corner radius.
Available more various effective length and overall length end mills than previous standard products.

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p.C326-C332

p.C326-C332

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Table with 9 columns: EDP No., Corner Radius, Mill Diameter, Shank Diameter, Length of Cut, Length Below Shank, Overall Length, Neck Diameter, Remark. Lists various SEME61 series end mill specifications.

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NEXT PAGE

NEXT PAGE

ISO material compatibility chart for SEME61 series end mills, showing suitability for various materials like Non-alloy steel, Low alloy steel, Stainless steel, etc.

ISO material compatibility chart for SEME61 series end mills, showing suitability for various materials like Non-alloy steel, Low alloy steel, Stainless steel, etc.

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# YG 4G MILL END MILLS

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PLAIN SHANK SEME61 SERIES

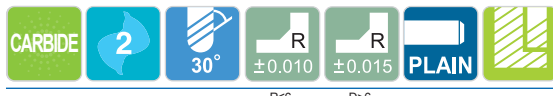
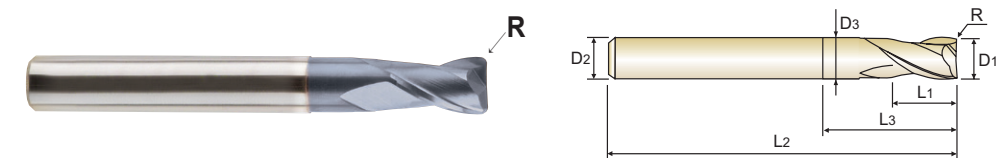
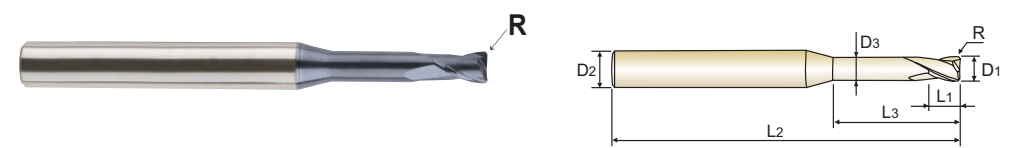
PLAIN SHANK SEME61 SERIES

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EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Remark
	R	D1	D2	L1	L3	L2	D3	
SEME610400116	R0.1	4.0	6	6	16	60	3.85	-
SEME610400120	R0.1	4.0	6	6	20	60	3.85	-
SEME610400126	R0.1	4.0	6	6	26	65	3.85	-
SEME610400130	R0.1	4.0	6	6	30	70	3.85	-
SEME610400135	R0.1	4.0	6	6	35	70	3.85	-
SEME610400140	R0.1	4.0	6	6	40	80	3.85	-
SEME610400145	R0.1	4.0	6	6	45	90	3.85	-
SEME610400150	R0.1	4.0	6	6	50	100	3.85	-
SEME610400210	R0.2	4.0	6	6	10	50	3.85	-
SEME610400212	R0.2	4.0	6	6	12	50	3.85	-
SEME610400214	R0.2	4.0	6	6	14	60	3.85	-
SEME610400216	R0.2	4.0	6	6	16	60	3.85	-
SEME610400220	R0.2	4.0	6	6	20	60	3.85	-
SEME610400226	R0.2	4.0	6	6	26	65	3.85	-
SEME610400230	R0.2	4.0	6	6	30	70	3.85	-
SEME610400235	R0.2	4.0	6	6	35	70	3.85	-
SEME610400240	R0.2	4.0	6	6	40	80	3.85	-
SEME610400245	R0.2	4.0	6	6	45	90	3.85	-
SEME610400250	R0.2	4.0	6	6	50	100	3.85	-
SEME610400310	R0.3	4.0	6	6	10	50	3.85	-
SEME610400312	R0.3	4.0	6	6	12	50	3.85	-
SEME610400314	R0.3	4.0	6	6	14	50	3.85	-
SEME610400316	R0.3	4.0	6	6	16	50	3.85	-
SEME610400320	R0.3	4.0	6	6	20	50	3.85	-
SEME610400326	R0.3	4.0	6	6	26	65	3.85	-
SEME610400330	R0.3	4.0	6	6	30	70	3.85	-
SEME610400335	R0.3	4.0	6	6	35	70	3.85	-
SEME610400340	R0.3	4.0	6	6	40	80	3.85	-

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Remark
	R	D1	D2	L1	L3	L2	D3	
SEME610400345	R0.3	4.0	6	6	45	90	3.85	-
SEME610400350	R0.3	4.0	6	6	50	100	3.85	-
SEME610400510	R0.5	4.0	6	6	10	50	3.85	-
SEME610400512	R0.5	4.0	6	6	12	50	3.85	-
SEME610400514	R0.5	4.0	6	6	14	60	3.85	-
SEME610400516	R0.5	4.0	6	6	16	60	3.85	-
SEME610400520	R0.5	4.0	6	6	20	60	3.85	-
SEME610400526	R0.5	4.0	6	6	26	65	3.85	-
SEME610400530	R0.5	4.0	6	6	30	70	3.85	-
SEME610400535	R0.5	4.0	6	6	35	70	3.85	-
SEME610400540	R0.5	4.0	6	6	40	80	3.85	-
SEME610400545	R0.5	4.0	6	6	45	90	3.85	-
SEME610400550	R0.5	4.0	6	6	50	100	3.85	-
SEME610401010	R1.0	4.0	6	6	10	50	3.85	-
SEME610401012	R1.0	4.0	6	6	12	50	3.85	-
SEME610401014	R1.0	4.0	6	6	14	60	3.85	-
SEME610401016	R1.0	4.0	6	6	16	60	3.85	-
SEME610401020	R1.0	4.0	6	6	20	60	3.85	-
SEME610401026	R1.0	4.0	6	6	26	65	3.85	-
SEME610401030	R1.0	4.0	6	6	30	70	3.85	-
SEME610401035	R1.0	4.0	6	6	35	70	3.85	-
SEME610401040	R1.0	4.0	6	6	40	80	3.85	-
SEME610401045	R1.0	4.0	6	6	45	90	3.85	-
SEME610401050	R1.0	4.0	6	6	50	100	3.85	-
SEME6105001	R0.1	5.0	6	8	15	60	4.85	-
SEME6105002	R0.2	5.0	6	8	15	60	4.85	-
SEME6105003	R0.3	5.0	6	8	15	60	4.85	-
SEME6105005	R0.5	5.0	6	8	15	60	4.85	-

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◎: Excellent ○: Good

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ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323																				
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323																					
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323																					
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○

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	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
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VDI 3323																					
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○



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PLAIN SHANK SEME61 SERIES



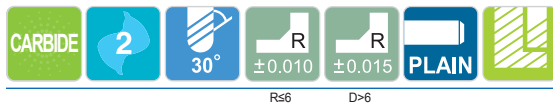
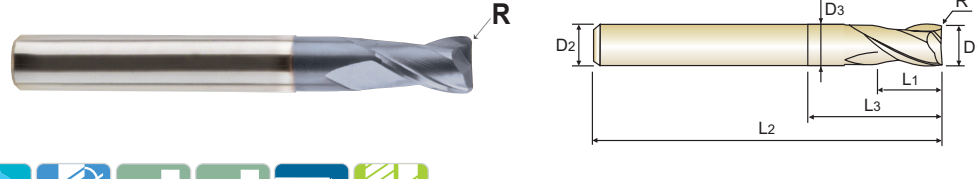
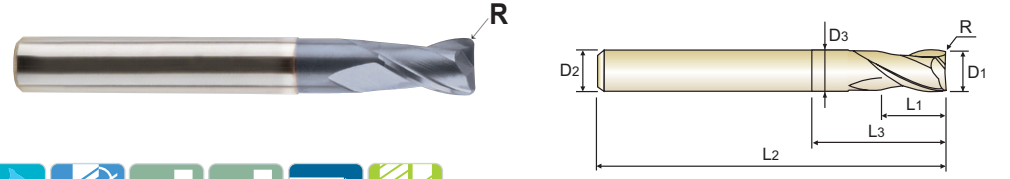
PLAIN SHANK SEME61 SERIES

CARBIDE, 2 FLUTE LONG NECK CORNER RADIUS

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p.C326-C332 [Call for Availability](#)

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EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Remark
	R	D1	D2	L1	L3	L2	D3	
SEME6105010	R1.0	5.0	6	8	15	60	4.85	-
SEME6105015	R1.5	5.0	6	8	15	60	4.85	-
SEME6105020	R2.0	5.0	6	8	15	60	4.85	-
SEME6106001	R0.1	6.0	6	9	20	60	5.85	Regular
SEME6106002	R0.2	6.0	6	9	20	60	5.85	Regular
SEME6106003	R0.3	6.0	6	9	20	60	5.85	Regular
SEME6106005	R0.5	6.0	6	9	20	60	5.85	Regular
SEME6106010	R1.0	6.0	6	9	20	60	5.85	Regular
SEME6106015	R1.5	6.0	6	9	20	60	5.85	Regular
SEME6106020	R2.0	6.0	6	9	20	60	5.85	Regular
SEME6106003090	R0.3	6.0	6	15	30	90	5.85	Long Shank
SEME6106005090	R0.5	6.0	6	15	30	90	5.85	Long Shank
SEME6106010090	R1.0	6.0	6	15	30	90	5.85	Long Shank
SEME6108001	R0.1	8.0	8	12	25	70	7.70	Regular
SEME6108002	R0.2	8.0	8	12	25	70	7.70	Regular
SEME6108003	R0.3	8.0	8	12	25	70	7.70	Regular
SEME6108005	R0.5	8.0	8	12	25	70	7.70	Regular
SEME6108010	R1.0	8.0	8	12	25	70	7.70	Regular
SEME6108015	R1.5	8.0	8	12	25	70	7.70	Regular
SEME6108020	R2.0	8.0	8	12	25	70	7.70	Regular
SEME6108003100	R0.3	8.0	8	20	35	100	7.70	Long Shank
SEME6108005100	R0.5	8.0	8	20	35	100	7.70	Long Shank
SEME6108010100	R1.0	8.0	8	20	35	100	7.70	Long Shank
SEME6110001	R0.1	10.0	10	15	30	75	9.70	Regular
SEME6110002	R0.2	10.0	10	15	30	75	9.70	Regular
SEME6110003	R0.3	10.0	10	15	30	75	9.70	Regular
SEME6110005	R0.5	10.0	10	15	30	75	9.70	Regular
SEME6110010	R1.0	10.0	10	15	30	75	9.70	Regular

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Remark
	R	D1	D2	L1	L3	L2	D3	
SEME6110015	R1.5	10.0	10	15	30	75	9.70	Regular
SEME6110020	R2.0	10.0	10	15	30	75	9.70	Regular
SEME6110003100	R0.3	10.0	10	25	40	100	9.70	Long Shank
SEME6110005100	R0.5	10.0	10	25	40	100	9.70	Long Shank
SEME6110010100	R1.0	10.0	10	25	40	100	9.70	Long Shank
SEME6112002	R0.2	12.0	12	18	32	80	11.70	Regular
SEME6112003	R0.3	12.0	12	18	32	80	11.70	Regular
SEME6112005	R0.5	12.0	12	18	32	80	11.70	Regular
SEME6112010	R1.0	12.0	12	18	32	80	11.70	Regular
SEME6112015	R1.5	12.0	12	18	32	80	11.70	Regular
SEME6112020	R2.0	12.0	12	18	32	80	11.70	Regular
SEME6112003110	R0.3	12.0	12	30	50	110	11.70	Long Shank
SEME6112005110	R0.5	12.0	12	30	50	110	11.70	Long Shank
SEME6112010110	R1.0	12.0	12	30	50	110	11.70	Long Shank
SEME6116005	R0.5	16.0	16	20	35	100	15.70	Regular
SEME6116010	R1.0	16.0	16	20	35	100	15.70	Regular
SEME6116005150	R0.5	16.0	16	35	50	150	15.70	Long Shank
SEME6116010150	R1.0	16.0	16	35	50	150	15.70	Long Shank
SEME6120005	R0.5	20.0	20	25	40	100	19.70	Regular
SEME6120010	R1.0	20.0	20	25	40	100	19.70	Regular
SEME6120005150	R0.5	20.0	20	40	55	150	19.70	Long Shank
SEME6120010150	R1.0	20.0	20	40	55	150	19.70	Long Shank

Size	Corner Radius Tolerance (mm)	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	±0.010	0~-0.012	h5
over Ø6	±0.015	0~-0.015	

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◎: Excellent ○: Good

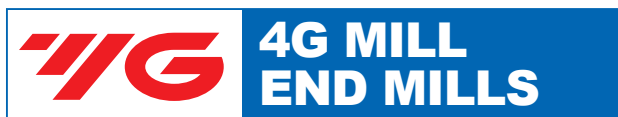
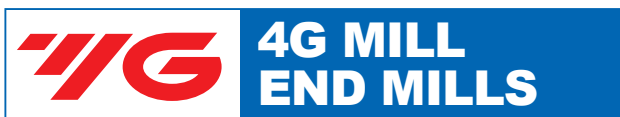
◎: Excellent ○: Good

ISO Material Description	P										M				K			H		
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel		Grey cast iron	Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	◎	○	◎	◎	◎	○	○	○	○	○	○

ISO Material Description	P										M				K			H		
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel		Grey cast iron	Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	◎	○	◎	◎	◎	○	○	○	○	○	○

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PLAIN SHANK SEME01 SERIES

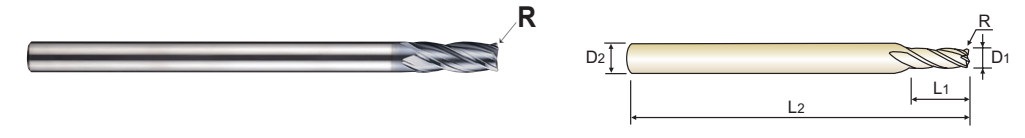
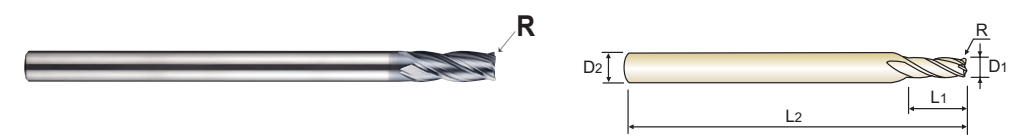
PLAIN SHANK SEME01 SERIES

CARBIDE, 4 FLUTE CORNER RADIUS (Short, Regular, Long Shank)

CARBIDE, 4 FLUTE CORNER RADIUS (Short, Regular, Long Shank)

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent performance when cutting prehardened steels, up to HRC55 which are used for molds & dies.
- ▶ Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.
- ▶ Available various products like short, regular and long shank end mills etc.

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Call for Availability

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EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Remark
	R	D1	D2	L1	L2	
SEME01010005	R0.05	1.0	6	2.5	50	-
SEME01010001	R0.1	1.0	6	2.5	50	-
SEME01010002	R0.2	1.0	6	2.5	50	-
SEME01010003	R0.3	1.0	6	2.5	50	-
SEME01012005	R0.05	1.2	6	3	50	-
SEME01012001	R0.1	1.2	6	3	50	-
SEME01012002	R0.2	1.2	6	3	50	-
SEME01012003	R0.3	1.2	6	3	50	-
SEME01015005	R0.05	1.5	6	4	50	-
SEME01015001	R0.1	1.5	6	4	50	-
SEME01015002	R0.2	1.5	6	4	50	-
SEME01015003	R0.3	1.5	6	4	50	-
SEME01015005	R0.5	1.5	6	4	50	-
SEME0102001	R0.1	2.0	6	6	50	-
SEME0102002	R0.2	2.0	6	6	50	-
SEME0102003	R0.3	2.0	6	6	50	-
SEME0102005	R0.5	2.0	6	6	50	-
SEME0102501	R0.1	2.5	6	7	60	-
SEME0102502	R0.2	2.5	6	7	60	-
SEME0102503	R0.3	2.5	6	7	60	-
SEME0102505	R0.5	2.5	6	7	60	-
SEME0103001	R0.1	3.0	6	8	60	-
SEME0103002	R0.2	3.0	6	8	60	-
SEME0103003	R0.3	3.0	6	8	60	-
SEME0103005	R0.5	3.0	6	8	60	-
SEME0103010	R1.0	3.0	6	8	60	-
SEME0103501	R0.1	3.5	6	10	70	-
SEME0103502	R0.2	3.5	6	10	70	-

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Remark
	R	D1	D2	L1	L2	
SEME0103503	R0.3	3.5	6	10	70	-
SEME0103505	R0.5	3.5	6	10	70	-
SEME01040014S	R0.1	4.0	4	10	70	4mm Shank
SEME01040024S	R0.2	4.0	4	10	70	4mm Shank
SEME01040034S	R0.3	4.0	4	10	70	4mm Shank
SEME01040054S	R0.5	4.0	4	10	70	4mm Shank
SEME01040104S	R1.0	4.0	4	10	70	4mm Shank
SEME01040011004S	R0.1	4.0	4	10	100	4mm Shank
SEME01040021004S	R0.2	4.0	4	10	100	4mm Shank
SEME01040031004S	R0.3	4.0	4	10	100	4mm Shank
SEME01040051004S	R0.5	4.0	4	10	100	4mm Shank
SEME01040101004S	R1.0	4.0	4	10	100	4mm Shank
SEME0104001	R0.1	4.0	6	10	70	Regular
SEME0104002	R0.2	4.0	6	10	70	Regular
SEME0104003	R0.3	4.0	6	10	70	Regular
SEME0104005	R0.5	4.0	6	10	70	Regular
SEME0104010	R1.0	4.0	6	10	70	Regular
SEME0104501	R0.1	4.5	6	11	80	-
SEME0104502	R0.2	4.5	6	11	80	-
SEME0104503	R0.3	4.5	6	11	80	-
SEME0104505	R0.5	4.5	6	11	80	-
SEME0105001	R0.1	5.0	6	13	90	-
SEME0105002	R0.2	5.0	6	13	90	-
SEME0105003	R0.3	5.0	6	13	90	-
SEME0105005	R0.5	5.0	6	13	90	-
SEME0105010	R1.0	5.0	6	13	90	-
SEME0105501	R0.1	5.5	6	13	90	-
SEME0105502	R0.2	5.5	6	13	90	-

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◎: Excellent ○: Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRC	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRC	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	40	40	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

◎: Excellent ○: Good

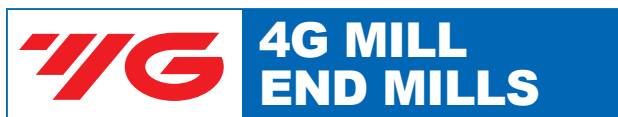
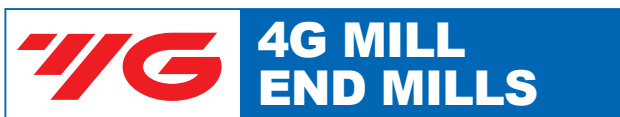
ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron		
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRC	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRC	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	40	40	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

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PLAIN SHANK SEME01 SERIES

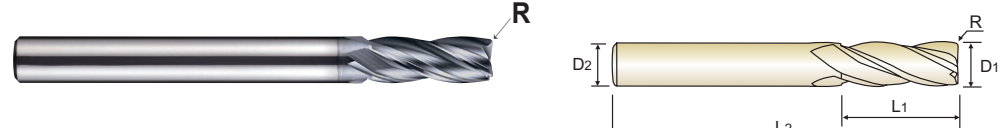
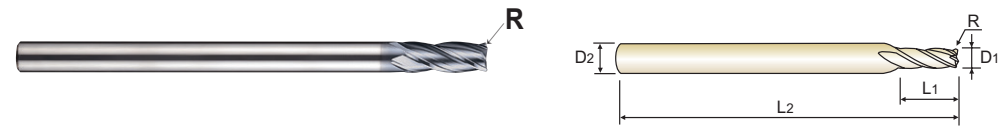
PLAIN SHANK SEME01 SERIES

CARBIDE, 4 FLUTE CORNER RADIUS (Short, Regular, Long Shank)

CARBIDE, 4 FLUTE CORNER RADIUS (Short, Regular, Long Shank)

- Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
Excellent performance when cutting prehardened steels, up to HRC55 which are used for molds & dies.
Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.
Available various products like short, regular and long shank end mills etc.

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Call for Availability

Call for Availability

Table with 7 columns: EDP No., Corner Radius (R), Mill Diameter (D1), Shank Diameter (D2), Length of Cut (L1), Overall Length (L2), Remark. Lists various SEME01 series end mill models and their specifications.

Table with 7 columns: EDP No., Corner Radius (R), Mill Diameter (D1), Shank Diameter (D2), Length of Cut (L1), Overall Length (L2), Remark. Lists various SEME01 series end mill models and their specifications.

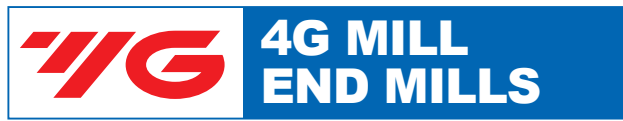
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ISO material compatibility chart for SEME01 series end mills, showing suitability for various materials like Non-alloy steel, Low alloy steel, High alloyed steel, etc.

ISO material compatibility chart for SEME01 series end mills, showing suitability for various materials like Non-alloy steel, Low alloy steel, High alloyed steel, etc.

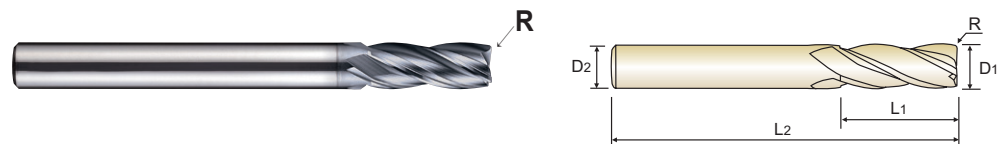




PLAIN SHANK SEME01 SERIES

**CARBIDE, 4 FLUTE CORNER RADIUS (Short, Regular, Long Shank)**

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent performance when cutting prehardened steels, up to HRC55 which are used for molds & dies.
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◇ Call for Availability

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Remark
	R	D1	D2	L1	L2	
SEME0111003	R0.3	11.0	12	25	110	-
SEME0111005	R0.5	11.0	12	25	110	-
SEME0111010	R1.0	11.0	12	25	110	-
SEME0111020	R2.0	11.0	12	25	110	-
SEME0112003080	R0.3	12.0	12	30	80	Short
SEME0112005080	R0.5	12.0	12	30	80	Short
SEME0112010080	R1.0	12.0	12	30	80	Short
SEME0112001	R0.1	12.0	12	30	110	Regular
SEME0112002	R0.2	12.0	12	30	110	Regular
SEME0112003	R0.3	12.0	12	30	110	Regular
SEME0112005	R0.5	12.0	12	30	110	Regular
SEME0112010	R1.0	12.0	12	30	110	Regular
SEME0112015	R1.5	12.0	12	30	110	Regular
SEME0112020	R2.0	12.0	12	30	110	Regular
SEME0112025	R2.5	12.0	12	30	110	Regular
SEME0112030	R3.0	12.0	12	30	110	Regular
SEME0112040	R4.0	12.0	12	30	110	Regular
SEME0112050	R5.0	12.0	12	30	110	Regular
SEME0112005130	R0.5	12.0	12	30	130	Long Shank
SEME0112010130	R1.0	12.0	12	30	130	Long Shank
SEME0112005150	R0.5	12.0	12	30	130	Long Shank
SEME0112010150	R1.0	12.0	12	30	130	Long Shank
SEME0114005	R0.5	14.0	16	35	150	-
SEME0114010	R1.0	14.0	16	35	150	-
SEME0114020	R2.0	14.0	16	35	150	-
SEME0116005	R0.5	16.0	16	32	150	-
SEME0116010	R1.0	16.0	16	32	150	-
SEME0116015	R1.5	16.0	16	32	150	-

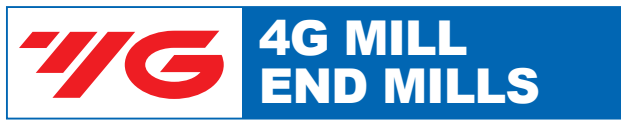
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◎: Excellent ○: Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRC		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	○	○	◎	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	

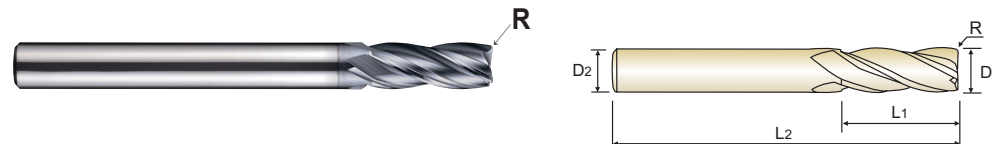
ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRC											15	30	25	38	34		55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	○	○	◎	○	○	○



PLAIN SHANK SEME01 SERIES

**CARBIDE, 4 FLUTE CORNER RADIUS (Short, Regular, Long Shank)**

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent performance when cutting prehardened steels, up to HRC55 which are used for molds & dies.
- ▶ Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.
- ▶ Available various products like short, regular and long shank end mills etc.



◇ Call for Availability

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Remark
	R	D1	D2	L1	L2	
SEME0116020	R2.0	16.0	16	32	150	-
SEME0120005	R0.5	20.0	20	38	150	-
SEME0120010	R1.0	20.0	20	38	150	-
SEME0120015	R1.5	20.0	20	38	150	-
SEME0120020	R2.0	20.0	20	38	150	-

Mill Dia. Tolerance (mm)	Corner Radius Tolerance (mm)	Shank Dia. Tolerance
0~-0.03	±0.02	h5

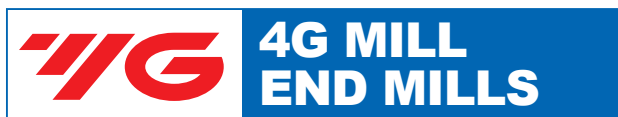
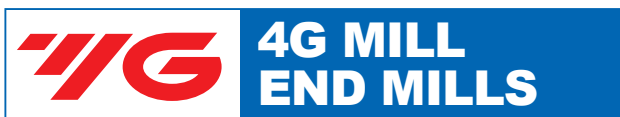
ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRC		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRC											15	30	25	38	34		55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	○	○	◎	○	○	○

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PLAIN SHANK SEME64 SERIES

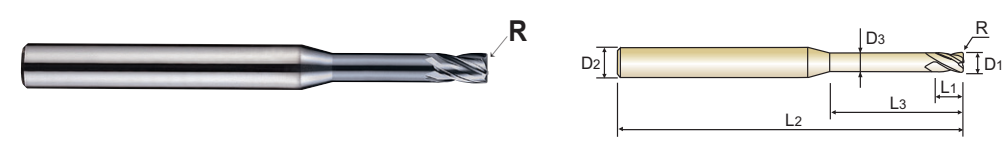
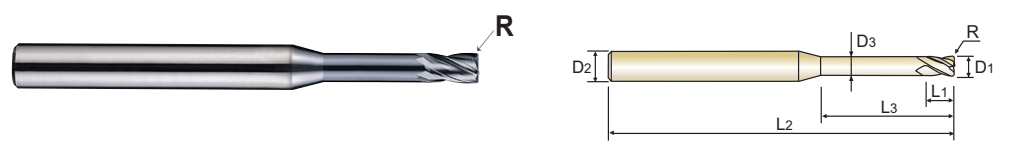
PLAIN SHANK SEME64 SERIES

CARBIDE, 4 FLUTE LONG NECK CORNER RADIUS

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Call for Availability

Call for Availability

Table with 9 columns: EDP No., Corner Radius, Mill Diameter, Shank Diameter, Length of Cut, Length Below Shank, Overall Length, Neck Diameter, Remark. Lists various SEME6401000503 to SEME640100303 models.

Table with 9 columns: EDP No., Corner Radius, Mill Diameter, Shank Diameter, Length of Cut, Length Below Shank, Overall Length, Neck Diameter, Remark. Lists various SEME640100304 to SEME640120208 models.

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Material compatibility table with columns for ISO, Material Description, P (Non-alloy steel, Low alloy steel, High alloyed steel, Stainless steel, Grey cast iron, Nodular cast iron, Malleable cast iron), M, K, S, H (Hardened steel, Chilled Cast Iron, Hardened Cast Iron).

Material compatibility table with columns for ISO, Material Description, P (Non-alloy steel, Low alloy steel, High alloyed steel, Stainless steel, Grey cast iron, Nodular cast iron, Malleable cast iron), M, K, S, H (Hardened steel, Chilled Cast Iron, Hardened Cast Iron).

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PLAIN SHANK SEME64 SERIES

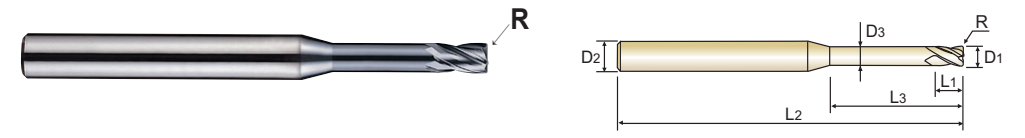
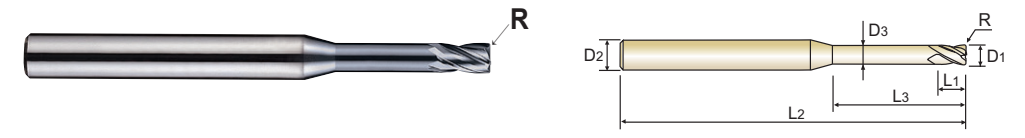
PLAIN SHANK SEME64 SERIES

CARBIDE, 4 FLUTE LONG NECK CORNER RADIUS

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Call for Availability

Call for Availability

Table with 9 columns: EDP No., Corner Radius, Mill Diameter, Shank Diameter, Length of Cut, Length Below Shank, Overall Length, Neck Diameter, Remark. Lists various SEME64 series end mill models.

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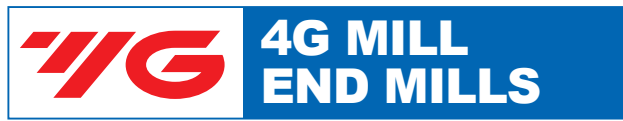
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Material compatibility table with columns for ISO, Material Description, P (Non-alloy steel, Low alloy steel, High alloyed steel, tool steel), M (Stainless steel, Grey cast iron, Nodular cast iron, Malleable cast iron), K, N (Aluminum-wrought alloy, Aluminum-cast, alloyed, Copper and Copper Alloys, Non Metallic Materials), S (Heat Resistant Super Alloys, Titanium Alloys), H (Hardened steel, Chilled Cast Iron, Hardened Cast Iron).

Material compatibility table with columns for ISO, Material Description, P (Non-alloy steel, Low alloy steel, High alloyed steel, tool steel), M (Stainless steel, Grey cast iron, Nodular cast iron, Malleable cast iron), K, N (Aluminum-wrought alloy, Aluminum-cast, alloyed, Copper and Copper Alloys, Non Metallic Materials), S (Heat Resistant Super Alloys, Titanium Alloys), H (Hardened steel, Chilled Cast Iron, Hardened Cast Iron).

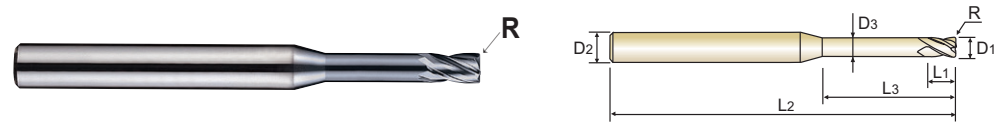




PLAIN SHANK SEME64 SERIES

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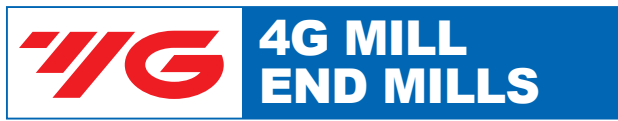
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EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Remark
SEME640150512	R0.5	1.5	4	2.3	12	50	1.45	-
SEME640150514	R0.5	1.5	4	2.3	14	50	1.45	-
SEME640150516	R0.5	1.5	4	2.3	16	50	1.45	-
SEME640150520	R0.5	1.5	4	2.3	20	50	1.45	-
SEME640150522	R0.5	1.5	4	2.3	22	60	1.45	-
SEME640150526	R0.5	1.5	4	2.3	26	60	1.45	-
SEME640200106	R0.1	2.0	4	3	6	50	1.95	-
SEME640200108	R0.1	2.0	4	3	8	50	1.95	-
SEME640200110	R0.1	2.0	4	3	10	50	1.95	-
SEME640200112	R0.1	2.0	4	3	12	50	1.95	-
SEME640200114	R0.1	2.0	4	3	14	50	1.95	-
SEME640200116	R0.1	2.0	4	3	16	50	1.95	-
SEME640200120	R0.1	2.0	4	3	20	50	1.95	-
SEME640200122	R0.1	2.0	4	3	22	60	1.95	-
SEME640200126	R0.1	2.0	4	3	26	60	1.95	-
SEME640200130	R0.1	2.0	4	3	30	70	1.95	-
SEME640200206	R0.2	2.0	4	3	6	50	1.95	-
SEME640200208	R0.2	2.0	4	3	8	50	1.95	-
SEME640200210	R0.2	2.0	4	3	10	50	1.95	-
SEME640200212	R0.2	2.0	4	3	12	50	1.95	-
SEME640200214	R0.2	2.0	4	3	14	50	1.95	-
SEME640200216	R0.2	2.0	4	3	16	50	1.95	-
SEME640200220	R0.2	2.0	4	3	20	50	1.95	-
SEME640200222	R0.2	2.0	4	3	22	60	1.95	-
SEME640200226	R0.2	2.0	4	3	26	60	1.95	-
SEME640200230	R0.2	2.0	4	3	30	70	1.95	-
SEME640200306	R0.3	2.0	4	3	6	50	1.95	-
SEME640200308	R0.3	2.0	4	3	8	50	1.95	-

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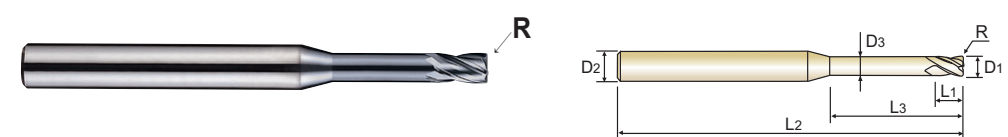
ISO Material Description	P										M				K			H		
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron	Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRC	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	◎	◎	◎	◎	○	◎	◎	◎	○	◎	○	◎	○	○	○	○	○	○	○



PLAIN SHANK SEME64 SERIES

CARBIDE, 4 FLUTE LONG NECK CORNER RADIUS

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent performance when cutting prehardened steels, up to HRC55 which are used for molds & dies.
- ▶ Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.



Call for Availability

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Remark
SEME640200310	R0.3	2.0	4	3	10	50	1.95	-
SEME640200312	R0.3	2.0	4	3	12	50	1.95	-
SEME640200314	R0.3	2.0	4	3	14	50	1.95	-
SEME640200316	R0.3	2.0	4	3	16	50	1.95	-
SEME640200320	R0.3	2.0	4	3	20	50	1.95	-
SEME640200322	R0.3	2.0	4	3	22	60	1.95	-
SEME640200326	R0.3	2.0	4	3	26	60	1.95	-
SEME640200330	R0.3	2.0	4	3	30	70	1.95	-
SEME640200506	R0.5	2.0	4	3	6	50	1.95	-
SEME640200508	R0.5	2.0	4	3	8	50	1.95	-
SEME640200510	R0.5	2.0	4	3	10	50	1.95	-
SEME640200512	R0.5	2.0	4	3	12	50	1.95	-
SEME640200514	R0.5	2.0	4	3	14	50	1.95	-
SEME640200516	R0.5	2.0	4	3	16	50	1.95	-
SEME640200520	R0.5	2.0	4	3	20	50	1.95	-
SEME640200522	R0.5	2.0	4	3	22	60	1.95	-
SEME640200526	R0.5	2.0	4	3	26	60	1.95	-
SEME640200530	R0.5	2.0	4	3	30	70	1.95	-
SEME640250108	R0.1	2.5	4	4	8	50	2.40	-
SEME640250110	R0.1	2.5	4	4	10	50	2.40	-
SEME640250112	R0.1	2.5	4	4	12	50	2.40	-
SEME640250114	R0.1	2.5	4	4	14	50	2.40	-
SEME640250116	R0.1	2.5	4	4	16	50	2.40	-
SEME640250120	R0.1	2.5	4	4	20	50	2.40	-
SEME640250126	R0.1	2.5	4	4	26	60	2.40	-
SEME640250130	R0.1	2.5	4	4	30	70	2.40	-
SEME640250208	R0.2	2.5	4	4	8	50	2.40	-
SEME640250210	R0.2	2.5	4	4	10	50	2.40	-

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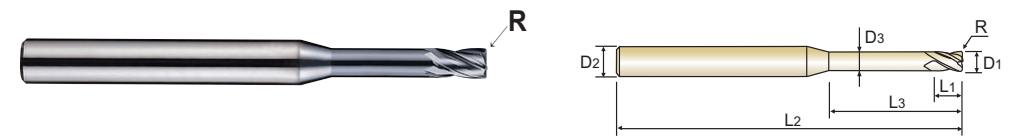
ISO Material Description	P										M				K			H		
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron	Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRC	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	◎	◎	◎	◎	○	◎	◎	◎	○	◎	○	◎	○	○	○	○	○	○	○

# YG 4G MILL END MILLS

PLAIN SHANK SEME64 SERIES

## CARBIDE, 4 FLUTE LONG NECK CORNER RADIUS

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent performance when cutting prehardened steels, up to HRC55 which are used for molds & dies.
- ▶ Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.



CARBIDE 4 27°/30° ±0.02 PLAIN p.C335-C339

◇ Call for Availability

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Remark
	R	D1	D2	L1	L3	L2	D3	
SEME640250212	R0.2	2.5	4	4	12	50	2.40	-
SEME640250214	R0.2	2.5	4	4	14	50	2.40	-
SEME640250216	R0.2	2.5	4	4	16	50	2.40	-
SEME640250220	R0.2	2.5	4	4	20	50	2.40	-
SEME640250226	R0.2	2.5	4	4	26	60	2.40	-
SEME640250230	R0.2	2.5	4	4	30	70	2.40	-
SEME640250308	R0.3	2.5	4	4	8	50	2.40	-
SEME640250310	R0.3	2.5	4	4	10	50	2.40	-
SEME640250312	R0.3	2.5	4	4	12	50	2.40	-
SEME640250314	R0.3	2.5	4	4	14	50	2.40	-
SEME640250316	R0.3	2.5	4	4	16	50	2.40	-
SEME640250320	R0.3	2.5	4	4	20	50	2.40	-
SEME640250326	R0.3	2.5	4	4	26	60	2.40	-
SEME640250330	R0.3	2.5	4	4	30	70	2.40	-
SEME640250508	R0.5	2.5	4	4	8	50	2.40	-
SEME640250510	R0.5	2.5	4	4	10	50	2.40	-
SEME640250512	R0.5	2.5	4	4	12	50	2.40	-
SEME640250514	R0.5	2.5	4	4	14	50	2.40	-
SEME640250516	R0.5	2.5	4	4	16	50	2.40	-
SEME640250520	R0.5	2.5	4	4	20	50	2.40	-
SEME640250526	R0.5	2.5	4	4	26	60	2.40	-
SEME640250530	R0.5	2.5	4	4	30	70	2.40	-
SEME640300108	R0.1	3.0	6	4.5	8	50	2.85	-
SEME640300110	R0.1	3.0	6	4.5	10	50	2.85	-
SEME640300112	R0.1	3.0	6	4.5	12	50	2.85	-
SEME640300114	R0.1	3.0	6	4.5	14	60	2.85	-
SEME640300116	R0.1	3.0	6	4.5	16	60	2.85	-
SEME640300120	R0.1	3.0	6	4.5	20	60	2.85	-

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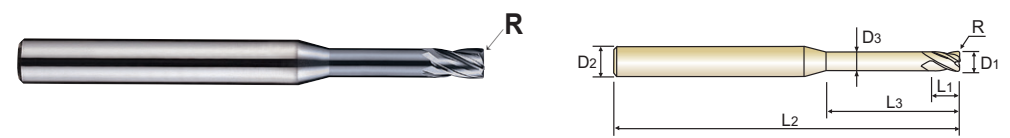
ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRC	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	◎	◎	◎	○	◎	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	

# YG 4G MILL END MILLS

PLAIN SHANK SEME64 SERIES

## CARBIDE, 4 FLUTE LONG NECK CORNER RADIUS

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent performance when cutting prehardened steels, up to HRC55 which are used for molds & dies.
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CARBIDE 4 27°/30° ±0.02 PLAIN p.C335-C339

◇ Call for Availability

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Remark
	R	D1	D2	L1	L3	L2	D3	
SEME640300126	R0.1	3.0	6	4.5	26	65	2.85	-
SEME640300130	R0.1	3.0	6	4.5	30	70	2.85	-
SEME640300135	R0.1	3.0	6	4.5	35	70	2.85	-
SEME640300140	R0.1	3.0	6	4.5	40	80	2.85	-
SEME640300208	R0.2	3.0	6	4.5	8	50	2.85	-
SEME640300210	R0.2	3.0	6	4.5	10	50	2.85	-
SEME640300212	R0.2	3.0	6	4.5	12	50	2.85	-
SEME640300214	R0.2	3.0	6	4.5	14	60	2.85	-
SEME640300216	R0.2	3.0	6	4.5	16	60	2.85	-
SEME640300220	R0.2	3.0	6	4.5	20	60	2.85	-
SEME640300226	R0.2	3.0	6	4.5	26	65	2.85	-
SEME640300230	R0.2	3.0	6	4.5	30	70	2.85	-
SEME640300235	R0.2	3.0	6	4.5	35	70	2.85	-
SEME640300240	R0.2	3.0	6	4.5	40	80	2.85	-
SEME640300308	R0.3	3.0	6	4.5	8	50	2.85	-
SEME640300310	R0.3	3.0	6	4.5	10	50	2.85	-
SEME640300312	R0.3	3.0	6	4.5	12	50	2.85	-
SEME640300314	R0.3	3.0	6	4.5	14	60	2.85	-
SEME640300316	R0.3	3.0	6	4.5	16	60	2.85	-
SEME640300320	R0.3	3.0	6	4.5	20	60	2.85	-
SEME640300326	R0.3	3.0	6	4.5	26	65	2.85	-
SEME640300330	R0.3	3.0	6	4.5	30	70	2.85	-
SEME640300335	R0.3	3.0	6	4.5	35	70	2.85	-
SEME640300340	R0.3	3.0	6	4.5	40	80	2.85	-
SEME640300508	R0.5	3.0	6	4.5	8	50	2.85	-
SEME640300510	R0.5	3.0	6	4.5	10	50	2.85	-
SEME640300512	R0.5	3.0	6	4.5	12	50	2.85	-
SEME640300514	R0.5	3.0	6	4.5	14	60	2.85	-

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ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRC	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	◎	◎	◎	○	◎	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	

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# YG 4G MILL END MILLS

# YG 4G MILL END MILLS

PLAIN SHANK SEME64 SERIES

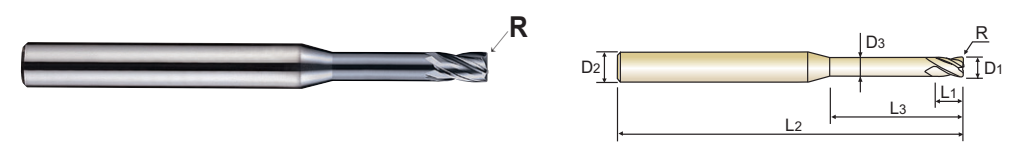
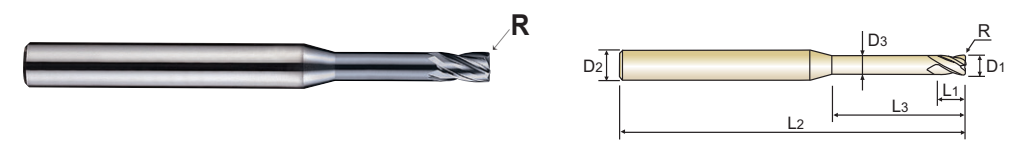
PLAIN SHANK SEME64 SERIES

## CARBIDE, 4 FLUTE LONG NECK CORNER RADIUS

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CARBIDE 4 27°/30° ±0.02 PLAIN p.C335-C339

CARBIDE 4 27°/30° ±0.02 PLAIN p.C335-C339

Call for Availability

Call for Availability

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Remark
SEME640300516	R0.5	3.0	6	4.5	16	60	2.85	-
SEME640300520	R0.5	3.0	6	4.5	20	60	2.85	-
SEME640300526	R0.5	3.0	6	4.5	26	65	2.85	-
SEME640300530	R0.5	3.0	6	4.5	30	70	2.85	-
SEME640300535	R0.5	3.0	6	4.5	35	70	2.85	-
SEME640300540	R0.5	3.0	6	4.5	40	80	2.85	-
SEME640301008	R1.0	3.0	6	4.5	8	50	2.85	-
SEME640301010	R1.0	3.0	6	4.5	10	50	2.85	-
SEME640301012	R1.0	3.0	6	4.5	12	50	2.85	-
SEME640301014	R1.0	3.0	6	4.5	14	60	2.85	-
SEME640301016	R1.0	3.0	6	4.5	16	60	2.85	-
SEME640301020	R1.0	3.0	6	4.5	20	60	2.85	-
SEME640301026	R1.0	3.0	6	4.5	26	65	2.85	-
SEME640301030	R1.0	3.0	6	4.5	30	70	2.85	-
SEME640301035	R1.0	3.0	6	4.5	35	70	2.85	-
SEME640301040	R1.0	3.0	6	4.5	40	80	2.85	-
SEME640400110	R0.1	4.0	6	6	10	50	3.85	-
SEME640400112	R0.1	4.0	6	6	12	50	3.85	-
SEME640400114	R0.1	4.0	6	6	14	60	3.85	-
SEME640400116	R0.1	4.0	6	6	16	60	3.85	-
SEME640400120	R0.1	4.0	6	6	20	60	3.85	-
SEME640400126	R0.1	4.0	6	6	26	65	3.85	-
SEME640400130	R0.1	4.0	6	6	30	70	3.85	-
SEME640400135	R0.1	4.0	6	6	35	70	3.85	-
SEME640400140	R0.1	4.0	6	6	40	80	3.85	-
SEME640400145	R0.1	4.0	6	6	45	90	3.85	-
SEME640400150	R0.1	4.0	6	6	50	100	3.85	-
SEME640400210	R0.2	4.0	6	6	10	50	3.85	-

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Remark
SEME640400212	R0.2	4.0	6	6	12	50	3.85	-
SEME640400214	R0.2	4.0	6	6	14	60	3.85	-
SEME640400216	R0.2	4.0	6	6	16	60	3.85	-
SEME640400220	R0.2	4.0	6	6	20	60	3.85	-
SEME640400226	R0.2	4.0	6	6	26	65	3.85	-
SEME640400230	R0.2	4.0	6	6	30	70	3.85	-
SEME640400235	R0.2	4.0	6	6	35	70	3.85	-
SEME640400240	R0.2	4.0	6	6	40	80	3.85	-
SEME640400245	R0.2	4.0	6	6	45	90	3.85	-
SEME640400250	R0.2	4.0	6	6	50	100	3.85	-
SEME640400310	R0.3	4.0	6	6	10	50	3.85	-
SEME640400312	R0.3	4.0	6	6	12	50	3.85	-
SEME640400314	R0.3	4.0	6	6	14	60	3.85	-
SEME640400316	R0.3	4.0	6	6	16	60	3.85	-
SEME640400320	R0.3	4.0	6	6	20	60	3.85	-
SEME640400326	R0.3	4.0	6	6	26	65	3.85	-
SEME640400330	R0.3	4.0	6	6	30	70	3.85	-
SEME640400335	R0.3	4.0	6	6	35	70	3.85	-
SEME640400340	R0.3	4.0	6	6	40	80	3.85	-
SEME640400345	R0.3	4.0	6	6	45	90	3.85	-
SEME640400350	R0.3	4.0	6	6	50	100	3.85	-
SEME640400510	R0.5	4.0	6	6	10	50	3.85	-
SEME640400512	R0.5	4.0	6	6	12	50	3.85	-
SEME640400514	R0.5	4.0	6	6	14	60	3.85	-
SEME640400516	R0.5	4.0	6	6	16	60	3.85	-
SEME640400520	R0.5	4.0	6	6	20	60	3.85	-
SEME640400526	R0.5	4.0	6	6	26	65	3.85	-
SEME640400530	R0.5	4.0	6	6	30	70	3.85	-

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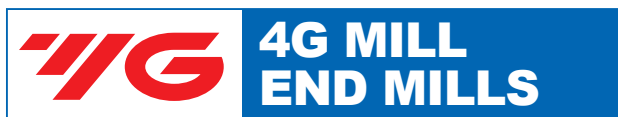
ISO Material Description	P										M				K				H				
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
HRc	13	25	28	32	30	29	32	38	35	20	25	23	10	10	26	3	25	130	230	130	230	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	130	230	
Recommend	○	◎	◎	◎	◎	○	◎	◎	◎	◎	○	◎	◎	◎	○	◎	○	◎	○	◎	○	◎	◎

ISO Material Description	P										M				K				H				
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
HRc	13	25	28	32	30	29	32	38	35	20	25	23	10	10	26	3	25	130	230	130	230	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	130	230	
Recommend	○	◎	◎	◎	◎	○	◎	◎	◎	◎	○	◎	◎	◎	○	◎	○	◎	○	◎	○	◎	◎



HSS

HSS



PLAIN SHANK SEME64 SERIES

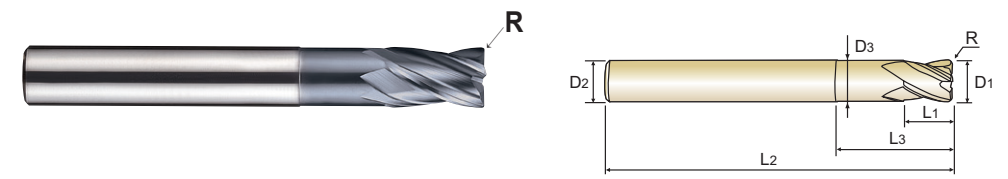
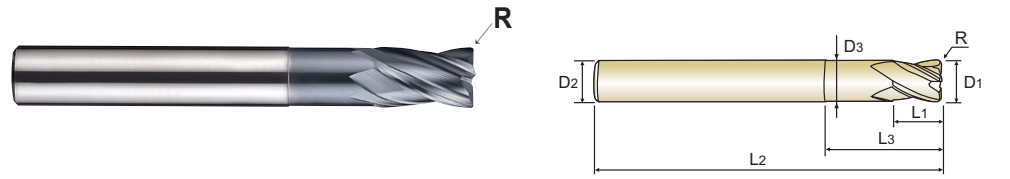
PLAIN SHANK SEME64 SERIES

### CARBIDE, 4 FLUTE LONG NECK CORNER RADIUS

### CARBIDE, 4 FLUTE LONG NECK CORNER RADIUS

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent performance when cutting prehardened steels, up to HRC55 which are used for molds & dies.
- ▶ Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent performance when cutting prehardened steels, up to HRC55 which are used for molds & dies.
- ▶ Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.



Call for Availability

Call for Availability

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Remark
	R	D1	D2	L1	L3	L2	D3	
SEME640400535	R0.5	4.0	6	6	35	70	3.85	-
SEME640400540	R0.5	4.0	6	6	40	80	3.85	-
SEME640400545	R0.5	4.0	6	6	45	90	3.85	-
SEME640400550	R0.5	4.0	6	6	50	100	3.85	-
SEME640401010	R1.0	4.0	6	6	10	50	3.85	-
SEME640401012	R1.0	4.0	6	6	12	50	3.85	-
SEME640401014	R1.0	4.0	6	6	14	60	3.85	-
SEME640401016	R1.0	4.0	6	6	16	60	3.85	-
SEME640401020	R1.0	4.0	6	6	20	60	3.85	-
SEME640401026	R1.0	4.0	6	6	26	65	3.85	-
SEME640401030	R1.0	4.0	6	6	30	70	3.85	-
SEME640401035	R1.0	4.0	6	6	35	70	3.85	-
SEME640401040	R1.0	4.0	6	6	40	80	3.85	-
SEME640401045	R1.0	4.0	6	6	45	90	3.85	-
SEME640401050	R1.0	4.0	6	6	50	100	3.85	-
SEME6405001	R0.1	5.0	6	8	15	60	4.85	-
SEME6405002	R0.2	5.0	6	8	15	60	4.85	-
SEME6405003	R0.3	5.0	6	8	15	60	4.85	-
SEME6405005	R0.5	5.0	6	8	15	60	4.85	-
SEME6405010	R1.0	5.0	6	8	15	60	4.85	-
SEME6405015	R1.5	5.0	6	8	15	60	4.85	-
SEME6405020	R2.0	5.0	6	8	15	60	4.85	-
SEME6406001	R0.1	6.0	6	9	20	60	5.85	Regular
SEME6406002	R0.2	6.0	6	9	20	60	5.85	Regular
SEME6406003	R0.3	6.0	6	9	20	60	5.85	Regular
SEME6406005	R0.5	6.0	6	9	20	60	5.85	Regular
SEME6406010	R1.0	6.0	6	9	20	60	5.85	Regular
SEME6406015	R1.5	6.0	6	9	20	60	5.85	Regular

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	Remark
	R	D1	D2	L1	L3	L2	D3	
SEME6406020	R2.0	6.0	6	9	20	60	5.85	Regular
SEME6406003090	R0.3	6.0	6	15	30	90	5.85	Long Shank
SEME6406005090	R0.5	6.0	6	15	30	90	5.85	Long Shank
SEME6406010090	R1.0	6.0	6	15	30	90	5.85	Long Shank
SEME6408001	R0.1	8.0	8	12	25	70	7.70	Regular
SEME6408002	R0.2	8.0	8	12	25	70	7.70	Regular
SEME6408003	R0.3	8.0	8	12	25	70	7.70	Regular
SEME6408005	R0.5	8.0	8	12	25	70	7.70	Regular
SEME6408010	R1.0	8.0	8	12	25	70	7.70	Regular
SEME6408015	R1.5	8.0	8	12	25	70	7.70	Regular
SEME6408020	R2.0	8.0	8	12	25	70	7.70	Regular
SEME6408003100	R0.3	8.0	8	20	35	100	7.70	Long Shank
SEME6408005100	R0.5	8.0	8	20	35	100	7.70	Long Shank
SEME6408010100	R1.0	8.0	8	20	35	100	8.70	Long Shank
SEME6410001	R0.1	10.0	10	15	30	75	9.70	Regular
SEME6410002	R0.2	10.0	10	15	30	75	9.70	Regular
SEME6410003	R0.3	10.0	10	15	30	75	9.70	Regular
SEME6410005	R0.5	10.0	10	15	30	75	9.70	Regular
SEME6410010	R1.0	10.0	10	15	30	75	9.70	Regular
SEME6410015	R1.5	10.0	10	15	30	75	9.70	Regular
SEME6410020	R2.0	10.0	10	15	30	75	9.70	Regular
SEME6410003100	R0.3	10.0	10	25	40	100	9.70	Long Shank
SEME6410005100	R0.5	10.0	10	25	40	100	9.70	Long Shank
SEME6410010100	R1.0	10.0	10	25	40	100	9.70	Long Shank
SEME6412002	R0.2	12.0	12	18	32	80	11.70	Regular
SEME6412003	R0.3	12.0	12	18	32	80	11.70	Regular
SEME6412005	R0.5	12.0	12	18	32	80	11.70	Regular
SEME6412010	R1.0	12.0	12	18	32	80	11.70	Regular

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◎: Excellent ○: Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323																					
HRC	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	◎	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323																					
HRC											15	30	25	38	34	36	37	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○

◎: Excellent ○: Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323																					
HRC	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	◎	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	

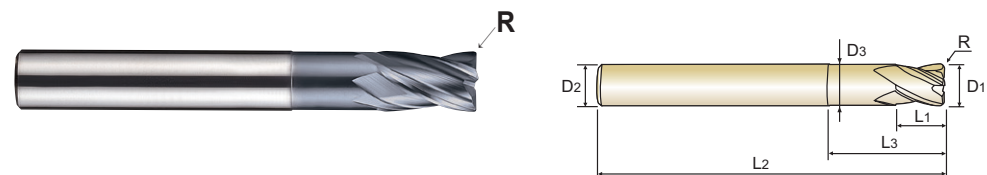
ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323																					
HRC											15	30	25	38	34	36	37	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○

# YG 4G MILL END MILLS

PLAIN SHANK SEME64 SERIES

## CARBIDE, 4 FLUTE LONG NECK CORNER RADIUS

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent performance when cutting prehardened steels, up to HRC55 which are used for molds & dies.
- ▶ Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.



◇ Call for Availability

D1<D3.0, 30° Helix

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Remark
SEME6412015	R1.5	12.0	12	18	32	80	11.70	Regular
SEME6412020	R2.0	12.0	12	18	32	80	11.70	Regular
SEME6412003110	R0.3	12.0	12	30	50	110	11.70	Long Shank
SEME6412005110	R0.5	12.0	12	30	50	110	11.70	Long Shank
SEME6412010110	R1.0	12.0	12	30	50	110	11.70	Long Shank
SEME6416005	R0.5	16.0	16	20	35	100	15.70	Regular
SEME6416010	R1.0	16.0	16	20	35	100	15.70	Regular
SEME6416005150	R0.5	16.0	20	35	50	150	15.70	Long Shank
SEME6416010150	R1.0	16.0	20	35	50	150	15.70	Long Shank
SEME641600515020	R0.5	16.0	20	35	50	150	15.70	Long Shank
SEME641601015020	R1.0	16.0	20	35	50	150	15.70	Long Shank
SEME6420005	R0.5	20.0	20	25	40	100	19.70	Regular
SEME6420010	R1.0	20.0	20	25	40	100	19.70	Regular
SEME6420005150	R0.5	20.0	20	40	55	150	19.70	Long Shank
SEME6420010150	R1.0	20.0	20	40	55	150	19.70	Long Shank

Mill Dia. Tolerance (mm)	Corner Radius Tolerance (mm)	Shank Dia. Tolerance
0~-0.03	±0.02	h5

◎ : Excellent ○ : Good

ISO	P										M				K									
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron			
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	3	25	3	25	3	25
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	130	230	130	230
Recommend	○	◎	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○	○	○	○

ISO	N					S					H													
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron				
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	55	60	42	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

# YG 4G MILL END MILLS

PLAIN SHANK SEME35 SERIES

## CARBIDE, 2 FLUTE

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent performance when cutting prehardened steels, up to HRC55 which are used for molds & dies.
- ▶ Due to sharp edge geometry at end tooth, cutting ability at working is increased.



◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
SEME35001	0.1	4	0.2	40
SEME350015	0.15	4	0.3	40
SEME35002	0.2	4	0.4	40
SEME350025	0.25	4	0.5	40
SEME35003	0.3	4	0.6	40
SEME350035	0.35	4	0.7	40
SEME35004	0.4	4	0.8	40
SEME350045	0.45	4	0.9	40
SEME35005	0.5	4	1.0	40
SEME350055	0.55	4	1.1	40
SEME35006	0.6	4	1.2	40
SEME350065	0.65	4	1.3	40
SEME35007	0.7	4	1.4	40
SEME350075	0.75	4	1.5	40
SEME35008	0.8	4	1.6	40
SEME350085	0.85	4	1.7	40
SEME35009	0.9	4	1.8	40
SEME350095	0.95	4	2	40
SEME35010	1.0	6	2.5	50
SEME35012	1.2	6	3	50

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◎ : Excellent ○ : Good

ISO	P										M				K									
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron			
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	3	25	3	25	3	25
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	130	230	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○	○	○	○

ISO	N					S					H													
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron				
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	55	60	42	55	60	42	55
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	55	60	42	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

# YG 4G MILL END MILLS

PLAIN SHANK SEME35 SERIES

## CARBIDE, 2 FLUTE

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent performance when cutting prehardened steels, up to HRC55 which are used for molds & dies.
- ▶ Due to sharp edge geometry at end tooth, cutting ability at working is increased.



Call for Availability

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
SEME35015	1.5	6	4	50
SEME35020	2.0	6	6	50
SEME35025	2.5	6	7	50
SEME35030	3.0	6	8	50
SEME35035	3.5	6	10	50
SEME35040	4.0	6	10	50
SEME35045	4.5	6	14	50
SEME35050	5.0	6	15	60
SEME35055	5.5	6	15	60
SEME35060	6.0	6	15	60
SEME35065	6.5	8	18	60
SEME35070	7.0	8	20	60
SEME35075	7.5	8	20	60
SEME35080	8.0	8	20	70
SEME35085	8.5	10	22	70
SEME35090	9.0	10	22	70
SEME35095	9.5	10	24	70
SEME35100	10.0	10	25	75
SEME35105	10.5	12	26	75
SEME35110	11.0	12	30	75
SEME35115	11.5	12	30	80
SEME35120	12.0	12	30	80
SEME35130	13.0	12	35	100
SEME3514012S	14.0	12	35	100
SEME3514014S	14.0	14	35	100
SEME35140	14.0	16	35	100
SEME35150	15.0	16	38	100

▶ NEXT PAGE

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	

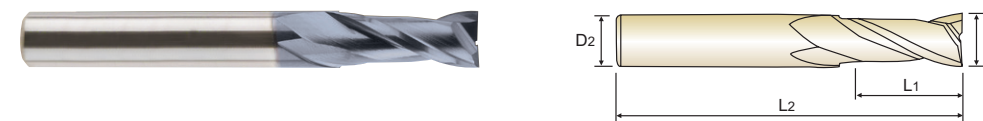
ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34	36	37	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○

# YG 4G MILL END MILLS

PLAIN SHANK SEME35 SERIES

## CARBIDE, 2 FLUTE

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent performance when cutting prehardened steels, up to HRC55 which are used for molds & dies.
- ▶ Due to sharp edge geometry at end tooth, cutting ability at working is increased.



Call for Availability

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
SEME35160	16.0	16	40	100
SEME35170	17.0	16	42	100
SEME35180	18.0	16	45	100
SEME3518018S	18.0	18	45	100
SEME35190	19.0	20	45	100
SEME35200	20.0	20	45	100
SEME35210	21.0	20	45	100
SEME35220	22.0	20	45	100
SEME35230	23.0	25	50	120
SEME35240	24.0	25	50	120
SEME35250	25.0	25	50	120

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Size	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	0~-0.012	h5
over Ø6	0~-0.015	

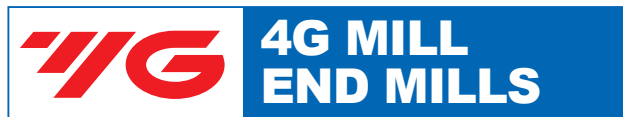
◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34	36	37	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○





PLAIN SHANK SEME35 SERIES

CARBIDE, 2 FLUTE (0.1mm a Unit / 4mm Shank)

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent performance when cutting prehardened steels, up to HRC55 which are used for molds & dies.
- ▶ Due to sharp edge geometry at end tooth, cutting ability at working is increased.



Call for Availability

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
SEME350104S	1.0	1.0	2.5	50
SEME350114S	1.1	1.1	3	50
SEME350124S	1.2	1.2	3	50
SEME350134S	1.3	1.3	3	50
SEME350144S	1.4	1.4	4	50
SEME350154S	1.5	1.5	4	50
SEME350164S	1.6	1.6	4	50
SEME350174S	1.7	1.7	4	50
SEME350184S	1.8	1.8	5	50
SEME350194S	1.9	1.9	5	50
SEME350204S	2.0	2.0	6	50
SEME350214S	2.1	2.1	6	50
SEME350224S	2.2	2.2	6	50
SEME350234S	2.3	2.3	6	50
SEME350244S	2.4	2.4	6	50
SEME350254S	2.5	2.5	8	50
SEME350264S	2.6	2.6	8	50
SEME350274S	2.7	2.7	8	50
SEME350284S	2.8	2.8	8	50
SEME350294S	2.9	2.9	8	50
SEME350304S	3.0	3.0	8	50
SEME350354S	3.5	3.5	10	50
SEME350404S	4.0	4.0	10	50
SEME350404S080	4.0	4.0	10	80

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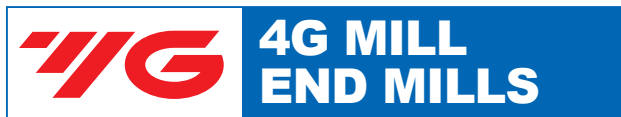
Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.012	h5

◎ : Excellent ○ : Good

ISO Material Description	P										M				K			H		
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	◎	○	○	○	○	○	○	○

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34	36	37	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○



PLAIN SHANK SEME35 SERIES

CARBIDE, 2 FLUTE (3mm Shank)

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent performance when cutting prehardened steels, up to HRC55 which are used for molds & dies.
- ▶ Due to sharp edge geometry at end tooth, cutting ability at working is increased.



Call for Availability

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
SEME350013S	0.1	3	0.2	40
SEME350023S	0.2	3	0.4	40
SEME350033S	0.3	3	0.6	40
SEME350043S	0.4	3	0.8	40
SEME350053S	0.5	3	1.0	40
SEME350063S	0.6	3	1.2	40
SEME350073S	0.7	3	1.4	40
SEME350083S	0.8	3	1.6	40
SEME350093S	0.9	3	1.8	40
SEME350103S	1.0	3	2.5	50
SEME350123S	1.2	3	3	50
SEME350153S	1.5	3	4	50
SEME350203S	2.0	3	6	50
SEME350253S	2.5	3	7	50
SEME350303S	3.0	3	8	50

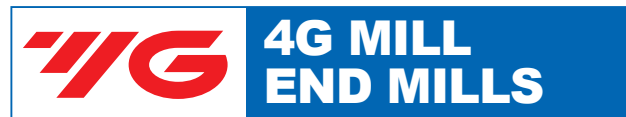
Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.012	h5

◎ : Excellent ○ : Good

ISO Material Description	P										M				K			H		
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	◎	○	○	○	○	○	○	○

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34	36	37	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○



PLAIN SHANK SEME70 SERIES

CARBIDE, 2 FLUTE LONG LENGTH

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- ▶ Available various length of cut and overall length end mills.



Call for Availability

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
SEME7001003	1.0	6	3	60
SEME7001004	1.0	6	4	60
SEME7001005	1.0	6	5	60
SEME7001006	1.0	6	6	60
SEME7001007	1.0	6	7	60
SEME7001008	1.0	6	8	60
SEME7001010	1.0	6	10	60
SEME7001012	1.0	6	12	60
SEME7001204	1.2	6	4	60
SEME7001206	1.2	6	6	60
SEME7001208	1.2	6	8	60
SEME7001210	1.2	6	10	60
SEME7001212	1.2	6	12	60
SEME7001506	1.5	6	6	60
SEME7001508	1.5	6	8	60
SEME7001510	1.5	6	10	60
SEME7001512	1.5	6	12	60
SEME7001514	1.5	6	14	60
SEME7001516	1.5	6	16	60
SEME7002008	2.0	6	8	60
SEME7002010	2.0	6	10	60
SEME7002012	2.0	6	12	60
SEME7002014	2.0	6	14	60
SEME7002016	2.0	6	16	60
SEME7002510	2.5	6	10	60
SEME7002512	2.5	6	12	60
SEME7002516	2.5	6	16	60
SEME7002520	2.5	6	20	60

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◎ : Excellent ○ : Good

ISO Material Description	P										M				K			H		
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34	36	37	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○



PLAIN SHANK SEME70 SERIES

CARBIDE, 2 FLUTE LONG LENGTH

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- ▶ Available various length of cut and overall length end mills.



Call for Availability

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
SEME7002526	2.5	6	26	60
SEME70030163S	3.0	3	16	100
SEME7003010	3.0	6	10	70
SEME7003012	3.0	6	12	70
SEME7003014	3.0	6	14	70
SEME7003016	3.0	6	16	70
SEME7003020	3.0	6	20	70
SEME7003026	3.0	6	26	70
SEME7003030	3.0	6	30	70
SEME70040204S	4.0	4	20	100
SEME7004012	4.0	6	12	70
SEME7004016	4.0	6	16	70
SEME7004020	4.0	6	20	70
SEME7004026	4.0	6	26	70
SEME7004030	4.0	6	30	70
SEME7005020	5.0	6	20	70
SEME7005025	5.0	6	25	70
SEME7005025100	5.0	6	25	100
SEME7005030	5.0	6	30	80
SEME7005035	5.0	6	35	90
SEME7005040	5.0	6	40	100
SEME7006015	6.0	6	15	60
SEME7006015080	6.0	6	15	80
SEME7006020	6.0	6	20	70
SEME7006020090	6.0	6	20	90
SEME7006025	6.0	6	25	75
SEME7006030	6.0	6	30	80
SEME7006030100	6.0	6	30	100

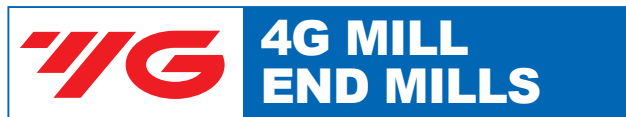
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◎ : Excellent ○ : Good

ISO Material Description	P										M				K			H		
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34	36	37	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○



PLAIN SHANK SEME70 SERIES

CARBIDE, 2 FLUTE LONG LENGTH

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- ▶ Available various length of cut and overall length end mills.



Call for Availability

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
SEME7006030150	6.0	6	30	150
SEME7006035	6.0	6	35	90
SEME7006040	6.0	6	40	90
SEME7006040120	6.0	6	40	120
SEME7006045	6.0	6	45	150
SEME7008025	8.0	8	25	80
SEME7008030	8.0	8	30	80
SEME7008030100	8.0	8	30	100
SEME7008035	8.0	8	35	90
SEME7008040	8.0	8	40	90
SEME7008040120	8.0	8	40	120
SEME7008040150	8.0	8	40	150
SEME7008045	8.0	8	45	100
SEME7008050	8.0	8	50	100
SEME7008050150	8.0	8	50	150
SEME7010030	10.0	10	30	80
SEME7010030100	10.0	10	30	100
SEME7010035	10.0	10	35	90
SEME7010040	10.0	10	40	90
SEME7010040120	10.0	10	40	120
SEME7010045	10.0	10	45	100
SEME7010050	10.0	10	50	100
SEME7010050150	10.0	10	50	150
SEME7010050200	10.0	10	50	200
SEME7010055	10.0	10	55	150
SEME7010060	10.0	10	60	110
SEME7010060200	10.0	10	60	200
SEME7012035	12.0	12	35	90

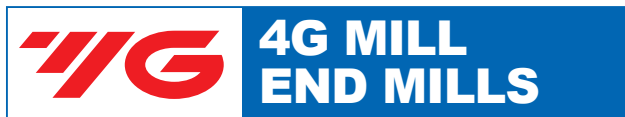
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◎ : Excellent ○ : Good

ISO Material Description	P										M				K				H				
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25					
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230			
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎				○	○	○	○	○	○			

ISO Material Description	N					S					H												
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41		
HRc											15	30	25	38	34			55	60	42	55		
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550		
Recommend																		○	◎	◎	○		



PLAIN SHANK SEME70 SERIES

CARBIDE, 2 FLUTE LONG LENGTH

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- ▶ Available various length of cut and overall length end mills.



Call for Availability

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
SEME7012040	12.0	12	40	100
SEME7012040120	12.0	12	40	120
SEME7012045	12.0	12	45	130
SEME7012050	12.0	12	50	100
SEME7012050150	12.0	12	50	150
SEME7012055	12.0	12	55	110
SEME7012060	12.0	12	60	110
SEME7012060150	12.0	12	60	150
SEME7012060200	12.0	12	60	200
SEME7012065	12.0	12	65	150
SEME7012070	12.0	12	70	120
SEME7012070200	12.0	12	70	200
SEME7014050	14.0	16	50	110
SEME7014060	14.0	16	60	150
SEME7016040	16.0	16	40	150
SEME7016050	16.0	16	50	110
SEME7016050150	16.0	16	50	150
SEME7016060	16.0	16	60	120
SEME7016070	16.0	16	70	130
SEME7016070150	16.0	16	70	150
SEME7016070200	16.0	16	70	200
SEME7016080	16.0	16	80	150
SEME7016090	16.0	16	90	150
SEME70160110	16.0	16	110	200
SEME70160120	16.0	16	120	250
SEME7018050	18.0	20	50	120
SEME7018070	18.0	20	70	130
SEME70180100	18.0	20	100	200

▶ NEXT PAGE

◎ : Excellent ○ : Good

ISO Material Description	P										M				K				H				
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25					
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230			
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎				○	○	○	○	○	○			

ISO Material Description	N					S					H												
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41		
HRc											15	30	25	38	34			55	60	42	55		
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550		
Recommend																		○	◎	◎	○		



# YG 4G MILL END MILLS

PLAIN SHANK SEME70 SERIES

## CARBIDE, 2 FLUTE LONG LENGTH

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent performance when cutting prehardened steels, up to HRC55 which are used for molds & dies.
- ▶ Available various length of cut and overall length end mills.



Call for Availability

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
SEME7020050	20.0	20	50	110
SEME7020050150	20.0	20	50	150
SEME7020060	20.0	20	60	130
SEME7020070	20.0	20	70	130
SEME7020080	20.0	20	80	150
SEME7020090	20.0	20	90	150
SEME7020090200	20.0	20	90	200
SEME70200110	20.0	20	110	200
SEME70200120	20.0	20	120	250
SEME7022075	22.0	20	75	150
SEME70220110	22.0	20	110	200
SEME7025070	25.0	25	70	150
SEME7025090	25.0	25	90	150
SEME70250110	25.0	25	110	200
SEME70250120	25.0	25	120	250

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.03	h5

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	35	10	29	32	38	42	15	35	38	42	10	26	3	25	3	25	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	◎	○	◎	◎	◎	○	○	○	○	○	○	

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

# YG 4G MILL END MILLS

PLAIN SHANK SEM845 SERIES

## CARBIDE, 2 FLUTE LONG NECK

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRC55 and machine parts.
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- ▶ Available various rib processing due to supplying various effective length and overall length products.



Call for Availability

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D1	D2	L1	L3	L2	D3
SEM845001003	0.1	4	0.15	0.3	40	0.085
SEM845001005	0.1	4	0.15	0.5	40	0.085
SEM84500101	0.1	4	0.15	1	40	0.085
SEM845002005	0.2	4	0.3	0.5	40	0.17
SEM84500201	0.2	4	0.3	1	40	0.17
SEM845002015	0.2	4	0.3	1.5	40	0.17
SEM84500202	0.2	4	0.3	2	40	0.17
SEM84500301	0.3	4	0.5	1	40	0.27
SEM845003015	0.3	4	0.5	1.5	40	0.27
SEM84500302	0.3	4	0.5	2	40	0.27
SEM845003025	0.3	4	0.5	2.5	40	0.27
SEM84500303	0.3	4	0.5	3	40	0.27
SEM84500304	0.3	4	0.5	4	40	0.27
SEM84500305	0.3	4	0.5	5	40	0.27
SEM84500401	0.4	4	0.6	1	40	0.37
SEM845004015	0.4	4	0.6	1.5	40	0.37
SEM84500402	0.4	4	0.6	2	40	0.37
SEM845004025	0.4	4	0.6	2.5	40	0.37
SEM84500403	0.4	4	0.6	3	40	0.37
SEM84500404	0.4	4	0.6	4	40	0.37
SEM84500405	0.4	4	0.6	5	40	0.37
SEM84500406	0.4	4	0.6	6	40	0.37
SEM84500408	0.4	4	0.6	8	40	0.37
SEM84500410	0.4	4	0.6	10	40	0.37
SEM84500501	0.5	4	0.7	1	45	0.45
SEM845005015	0.5	4	0.7	1.5	45	0.45
SEM84500502	0.5	4	0.7	2	45	0.45
SEM845005025	0.5	4	0.7	2.5	45	0.45

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◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	35	10	29	32	38	42	15	35	38	42	10	26	3	25	3	25	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	◎	○	◎	◎	◎	○	○	○	○	○	○	

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

# YG 4G MILL END MILLS

PLAIN SHANK SEM845 SERIES

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- ▶ Available various rib processing due to supplying various effective length and overall length products.



p.C351-C362

Call for Availability

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D1	D2	L1	L3	L2	D3
SEM84500503	0.5	4	0.7	3	45	0.45
SEM84500504	0.5	4	0.7	4	45	0.45
SEM84500505	0.5	4	0.7	5	45	0.45
SEM84500506	0.5	4	0.7	6	45	0.45
SEM84500508	0.5	4	0.7	8	45	0.45
SEM84500510	0.5	4	0.7	10	45	0.45
SEM84500512	0.5	4	0.7	12	45	0.45
SEM84500514	0.5	4	0.7	14	45	0.45
SEM84500516	0.5	4	0.7	16	45	0.45
SEM84500602	0.6	4	0.9	2	45	0.55
SEM84500603	0.6	4	0.9	3	45	0.55
SEM84500604	0.6	4	0.9	4	45	0.55
SEM84500605	0.6	4	0.9	5	45	0.55
SEM84500606	0.6	4	0.9	6	45	0.55
SEM84500608	0.6	4	0.9	8	45	0.55
SEM84500610	0.6	4	0.9	10	45	0.55
SEM84500612	0.6	4	0.9	12	45	0.55
SEM84500614	0.6	4	0.9	14	45	0.55
SEM84500616	0.6	4	0.9	16	45	0.55
SEM84500702	0.7	4	1.2	2	45	0.65
SEM84500704	0.7	4	1.2	4	45	0.65
SEM84500706	0.7	4	1.2	6	45	0.65
SEM84500708	0.7	4	1.2	8	45	0.65
SEM84500710	0.7	4	1.2	10	45	0.65
SEM84500712	0.7	4	1.2	12	45	0.65
SEM84500802	0.8	4	1.2	2	45	0.75
SEM84500803	0.8	4	1.2	3	45	0.75
SEM84500804	0.8	4	1.2	4	45	0.75

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◎ : Excellent ○ : Good

ISO Material Description	P										M				K			H		
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	130	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	36	37	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

# YG 4G MILL END MILLS

PLAIN SHANK SEM845 SERIES

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p.C351-C362

Call for Availability

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D1	D2	L1	L3	L2	D3
SEM84500805	0.8	4	1.2	5	45	0.75
SEM84500806	0.8	4	1.2	6	45	0.75
SEM84500808	0.8	4	1.2	8	45	0.75
SEM84500810	0.8	4	1.2	10	45	0.75
SEM84500812	0.8	4	1.2	12	45	0.75
SEM84500814	0.8	4	1.2	14	45	0.75
SEM84500816	0.8	4	1.2	16	45	0.75
SEM84500820	0.8	4	1.2	20	45	0.75
SEM84500906	0.9	4	1.3	6	45	0.85
SEM84500908	0.9	4	1.3	8	45	0.85
SEM84500910	0.9	4	1.3	10	45	0.85
SEM84501002	1.0	4	1.5	2	50	0.95
SEM84501003	1.0	4	1.5	3	50	0.95
SEM84501004	1.0	4	1.5	4	50	0.95
SEM84501005	1.0	4	1.5	5	50	0.95
SEM84501006	1.0	4	1.5	6	50	0.95
SEM84501007	1.0	4	1.5	7	50	0.95
SEM84501008	1.0	4	1.5	8	50	0.95
SEM84501010	1.0	4	1.5	10	50	0.95
SEM84501012	1.0	4	1.5	12	50	0.95
SEM84501014	1.0	4	1.5	14	50	0.95
SEM84501016	1.0	4	1.5	16	50	0.95
SEM84501018	1.0	4	1.5	18	50	0.95
SEM84501020	1.0	4	1.5	20	50	0.95
SEM84501022	1.0	4	1.5	22	60	0.95
SEM84501026	1.0	4	1.5	26	60	0.95
SEM84501030	1.0	4	1.5	30	70	0.95
SEM84501040	1.0	4	1.5	40	80	0.95

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◎ : Excellent ○ : Good

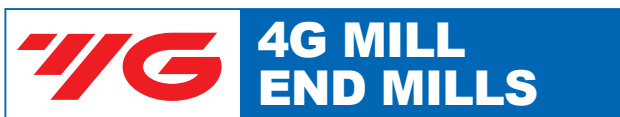
ISO Material Description	P										M				K			H		
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	130	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

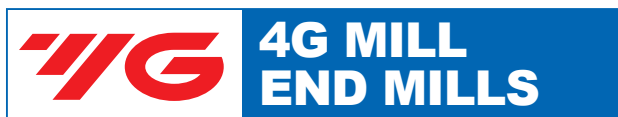
ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	36	37	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

HSS

HSS



PLAIN SHANK SEM845 SERIES



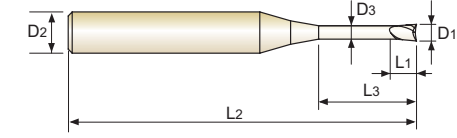
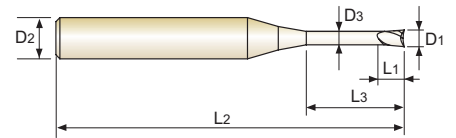
PLAIN SHANK SEM845 SERIES

CARBIDE, 2 FLUTE LONG NECK

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Call for Availability



Call for Availability

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D1	D2	L1	L3	L2	D3
SEM84501050	1.0	4	1.5	50	100	0.95
SEM84501204	1.2	4	1.8	4	50	1.15
SEM84501206	1.2	4	1.8	6	50	1.15
SEM84501208	1.2	4	1.8	8	50	1.15
SEM84501210	1.2	4	1.8	10	50	1.15
SEM84501212	1.2	4	1.8	12	50	1.15
SEM84501214	1.2	4	1.8	14	50	1.15
SEM84501216	1.2	4	1.8	16	50	1.15
SEM84501220	1.2	4	1.8	20	50	1.15
SEM84501226	1.2	4	1.8	26	60	1.15
SEM84501230	1.2	4	1.8	30	70	1.15
SEM84501406	1.4	4	2.1	6	50	1.35
SEM84501408	1.4	4	2.1	8	50	1.35
SEM84501410	1.4	4	2.1	10	50	1.35
SEM84501414	1.4	4	2.1	14	50	1.35
SEM84501416	1.4	4	2.1	16	50	1.35
SEM84501420	1.4	4	2.1	20	50	1.35
SEM84501504	1.5	4	2.3	4	50	1.45
SEM84501505	1.5	4	2.3	5	50	1.45
SEM84501506	1.5	4	2.3	6	50	1.45
SEM84501507	1.5	4	2.3	7	50	1.45
SEM84501508	1.5	4	2.3	8	50	1.45
SEM84501510	1.5	4	2.3	10	50	1.45
SEM84501512	1.5	4	2.3	12	50	1.45
SEM84501514	1.5	4	2.3	14	50	1.45
SEM84501516	1.5	4	2.3	16	50	1.45
SEM84501518	1.5	4	2.3	18	50	1.45
SEM84501520	1.5	4	2.3	20	50	1.45

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D1	D2	L1	L3	L2	D3
SEM84501522	1.5	4	2.3	22	60	1.45
SEM84501526	1.5	4	2.3	26	60	1.45
SEM84501530	1.5	4	2.3	30	70	1.45
SEM84501608	1.6	4	2.3	8	50	1.55
SEM84501610	1.6	4	2.3	10	50	1.55
SEM84501612	1.6	4	2.3	12	50	1.55
SEM84501616	1.6	4	2.3	16	50	1.55
SEM84501620	1.6	4	2.3	20	50	1.55
SEM84501808	1.8	4	2.7	8	50	1.75
SEM84501810	1.8	4	2.7	10	50	1.75
SEM84501812	1.8	4	2.7	12	50	1.75
SEM84501816	1.8	4	2.7	16	50	1.75
SEM84501820	1.8	4	2.7	20	50	1.75
SEM84502006	2.0	4	3	6	50	1.95
SEM84502008	2.0	4	3	8	50	1.95
SEM84502010	2.0	4	3	10	50	1.95
SEM84502012	2.0	4	3	12	50	1.95
SEM84502014	2.0	4	3	14	50	1.95
SEM84502016	2.0	4	3	16	50	1.95
SEM84502018	2.0	4	3	18	50	1.95
SEM84502020	2.0	4	3	20	50	1.95
SEM84502022	2.0	4	3	22	60	1.95
SEM84502026	2.0	4	3	26	60	1.95
SEM84502030	2.0	4	3	30	70	1.95
SEM84502035	2.0	4	3	35	70	1.95
SEM84502040	2.0	4	3	40	80	1.95
SEM84502045	2.0	4	3	45	90	1.95
SEM84502050	2.0	4	3	50	100	1.95

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◎: Excellent ○: Good

◎: Excellent ○: Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323																				
HRC	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323																					
HRC											15	30	25	38	34	36	37	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron		
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323																					
HRC	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323																					
HRC											15	30	25	38	34	36	37	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○



# YG 4G MILL END MILLS

PLAIN SHANK SEM845 SERIES

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CARBIDE 2 30° PLAIN p.C351-C362

◇ Call for Availability

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D1	D2	L1	L3	L2	D3
SEM84502060	2.0	4	3	60	110	1.95
SEM84502508	2.5	4	4	8	50	2.40
SEM84502510	2.5	4	4	10	50	2.40
SEM84502512	2.5	4	4	12	50	2.40
SEM84502514	2.5	4	4	14	50	2.40
SEM84502516	2.5	4	4	16	50	2.40
SEM84502518	2.5	4	4	18	50	2.40
SEM84502520	2.5	4	4	20	50	2.40
SEM84502522	2.5	4	4	22	60	2.40
SEM84502526	2.5	4	4	26	60	2.40
SEM84502530	2.5	4	4	30	70	2.40
SEM84502535	2.5	4	4	35	70	2.40
SEM84502540	2.5	4	4	40	80	2.40
SEM84502545	2.5	4	4	45	90	2.40
SEM84502550	2.5	4	4	50	100	2.40
SEM84503006	3.0	6	4.5	6	50	2.85
SEM84503008	3.0	6	4.5	8	50	2.85
SEM84503010	3.0	6	4.5	10	50	2.85
SEM84503012	3.0	6	4.5	12	50	2.85
SEM84503014	3.0	6	4.5	14	60	2.85
SEM84503016	3.0	6	4.5	16	60	2.85
SEM84503018	3.0	6	4.5	18	60	2.85
SEM84503020	3.0	6	4.5	20	60	2.85
SEM84503022	3.0	6	4.5	22	65	2.85
SEM84503026	3.0	6	4.5	26	65	2.85
SEM84503030	3.0	6	4.5	30	70	2.85
SEM84503035	3.0	6	4.5	35	70	2.85
SEM84503040	3.0	6	4.5	40	80	2.85

▶ NEXT PAGE

◎: Excellent ○: Good

ISO Material Description	P										M				K				H				
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25					
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230			
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○	○	○

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34	36	37	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○

# YG 4G MILL END MILLS

PLAIN SHANK SEM845 SERIES

## CARBIDE, 2 FLUTE LONG NECK

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRC55 and machine parts.
- ▶ For 1.0mm and under 1.0mm diameter sizes, designed double neck for increasing tool rigidity and minimizing vibration at working.
- ▶ Available various rib processing due to supplying various effective length and overall length products.



CARBIDE 2 30° PLAIN p.C351-C362

◇ Call for Availability

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D1	D2	L1	L3	L2	D3
SEM84503045	3.0	6	4.5	45	90	2.85
SEM84503050	3.0	6	4.5	50	100	2.85
SEM84503060	3.0	6	4.5	60	100	2.85
SEM84504008	4.0	6	6	8	50	3.85
SEM84504010	4.0	6	6	10	50	3.85
SEM84504012	4.0	6	6	12	50	3.85
SEM84504014	4.0	6	6	14	60	3.85
SEM84504016	4.0	6	6	16	60	3.85
SEM84504018	4.0	6	6	18	60	3.85
SEM84504020	4.0	6	6	20	60	3.85
SEM84504022	4.0	6	6	22	65	3.85
SEM84504026	4.0	6	6	26	65	3.85
SEM84504030	4.0	6	6	30	70	3.85
SEM84504035	4.0	6	6	35	70	3.85
SEM84504040	4.0	6	6	40	80	3.85
SEM84504045	4.0	6	6	45	90	3.85
SEM84504050	4.0	6	6	50	100	3.85
SEM84504060	4.0	6	6	60	100	3.85
SEM84505016	5.0	6	8	16	60	4.85
SEM84505020	5.0	6	8	20	60	4.85
SEM84505026	5.0	6	8	26	65	4.85
SEM84505030	5.0	6	8	30	70	4.85
SEM84505035	5.0	6	8	35	75	4.85
SEM84505040	5.0	6	8	40	80	4.85
SEM84505050	5.0	6	8	50	90	4.85
SEM84505060	5.0	6	8	60	100	4.85
SEM84506015	6.0	6	9	15	60	5.85
SEM84506020	6.0	6	9	20	60	5.85

▶ NEXT PAGE

◎: Excellent ○: Good

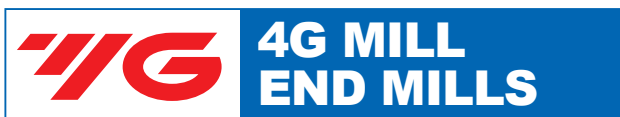
ISO Material Description	P										M				K				H				
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25					
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230			
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○	○	○

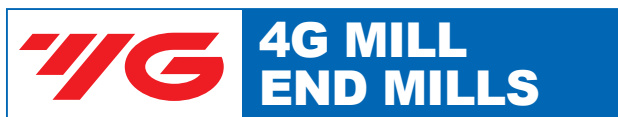
ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34	36	37	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○

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PLAIN SHANK SEM845 SERIES



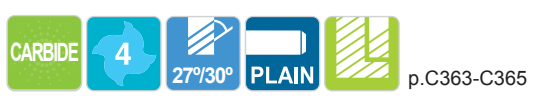
PLAIN SHANK SEME36 SERIES

**CARBIDE, 2 FLUTE LONG NECK**

**CARBIDE, 4 FLUTE**

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRC55 and machine parts.
- ▶ For 1.0mm and under 1.0mm diameter sizes, designed double neck for increasing tool rigidity and minimizing vibration at working.
- ▶ Available various rib processing due to supplying various effective length and overall length products.

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRC55 and machine parts.
- ▶ Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.



◇ Call for Availability

◇ Call for Availability

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D1	D2	L1	L3	L2	D3
SEM84506030	6.0	6	9	30	70	5.85
SEM84506032	6.0	6	9	32	90	5.85
SEM84508025	8.0	8	12	25	70	7.70
SEM84508030	8.0	8	12	30	80	7.70
SEM84508042	8.0	8	12	42	100	7.70
SEM84510030	10.0	10	15	30	75	9.70
SEM84510035	10.0	10	15	35	80	9.70
SEM84510045	10.0	10	15	45	100	9.70
SEM84512035	12.0	12	20	35	80	11.70
SEM84512040	12.0	12	20	40	90	11.70
SEM84512050	12.0	12	20	50	110	11.70

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
SEME36008	0.8	4	1.6	40
SEME36009	0.9	4	1.8	40
SEME36010	1.0	6	2.5	50
SEME36012	1.2	6	3	50
SEME36015	1.5	6	4	50
SEME36020	2.0	6	6	50
SEME36025	2.5	6	7	50
SEME36030	3.0	6	8	50
SEME36035	3.5	6	10	50
SEME36040	4.0	6	10	50
SEME36045	4.5	6	14	50
SEME36050	5.0	6	15	60
SEME36055	5.5	6	15	60
SEME36060	6.0	6	15	60
SEME36065	6.5	8	18	60
SEME36070	7.0	8	20	60
SEME36075	7.5	8	20	60
SEME36080	8.0	8	20	70
SEME36085	8.5	10	22	70
SEME36090	9.0	10	22	70
SEME36095	9.5	10	24	70
SEME36100	10.0	10	25	75
SEME36105	10.5	12	26	75
SEME36110	11.0	12	30	75

Size	Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
up to Ø6	0~-0.012	h5
over Ø6	0~-0.015	

ISO	P										M				K				H																						
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel				Grey cast iron		Nodular cast iron		Malleable cast iron																		
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	3	25	15	35	15	23	10	10	26	3	25	25	15	30	25	38	34	55	60	40	42	55	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	200	240	200	240	180	180	260	160	250	130	200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○	◎	◎	◎	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	

ISO	P										M				K				H																						
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel				Grey cast iron		Nodular cast iron		Malleable cast iron																		
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	3	25	15	35	15	23	10	10	26	3	25	25	15	30	25	38	34	55	60	40	42	55	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	200	240	200	240	180	180	260	160	250	130	200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○	◎	◎	◎	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	

# YG 4G MILL END MILLS

PLAIN SHANK SEME36 SERIES

## CARBIDE, 4 FLUTE

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- ▶ Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.



◇ Call for Availability

D1<Ø3.0, 30° Helix

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
SEME36115	11.5	12	30	80
SEME36120	12.0	12	30	80
SEME36130	13.0	12	35	100
SEME3614012S	14.0	12	35	100
SEME3614014S	14.0	14	35	100
SEME36140	14.0	16	35	100
SEME36150	15.0	16	38	100
SEME36160	16.0	16	40	100
SEME36170	17.0	16	42	100
SEME36180	18.0	16	45	100
SEME3618018S	18.0	18	45	100
SEME36190	19.0	20	45	100
SEME36200	20.0	20	45	100
SEME36210	21.0	20	45	100
SEME36220	22.0	20	45	100
SEME36230	23.0	25	50	120
SEME36240	24.0	25	50	120
SEME36250	25.0	25	50	120

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0~-0.03	h5

◎ : Excellent ○ : Good

ISO Material Description	P										M				K				H			
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	3	25	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○	

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys			Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	36	37	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○

# YG 4G MILL END MILLS

PLAIN SHANK SEME71 SERIES

## CARBIDE, 4 FLUTE

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRc55 and machine parts.
- ▶ Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.
- Designed equal index flute for long length end mills.
- ▶ Due to gash land geometry used at end tooth, heavy duty cutting can be achieved.
- ▶ Available various length products like short, regular and long length end mills etc.

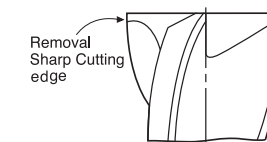


◇ Call for Availability

D1<Ø3.0, Long Length 38° Helix

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Remark
	D1	D2	L1	L2	
SEME7101001	1.0	6	1	40	Short
SEME7101002	1.0	6	2	40	Short
SEME71010	1.0	6	2.5	50	Regular
SEME7101003	1.0	6	3	50	Long
SEME7101004	1.0	6	4	50	Long
SEME7101006	1.0	6	6	50	Long
SEME7101202	1.2	6	2	40	Short
SEME71012	1.2	6	3	50	Regular
SEME7101204	1.2	6	4	50	Long
SEME7101206	1.2	6	6	50	Long
SEME71015015	1.5	6	1.5	40	Short
SEME7101503	1.5	6	3	40	Short
SEME71015	1.5	6	4	50	Regular
SEME7101506	1.5	6	6	50	Long
SEME7101508	1.5	6	8	50	Long
SEME7101510	1.5	6	10	50	Long
SEME7102002	2.0	6	2	40	Short
SEME7102004	2.0	6	4	40	Short
SEME71020	2.0	6	6	50	Regular
SEME7102008	2.0	6	8	50	Long
SEME7102010	2.0	6	10	50	Long
SEME7102012	2.0	6	12	50	Long
SEME71025025	2.5	6	2.5	40	Short
SEME7102505	2.5	6	5	40	Short



▶ NEXT PAGE

◎ : Excellent ○ : Good

ISO Material Description	P										M				K				H			
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	3	25	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○	

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys			Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	36	37	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○



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# YG 4G MILL END MILLS

PLAIN SHANK SEME71 SERIES

# YG 4G MILL END MILLS

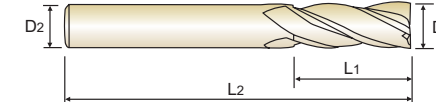
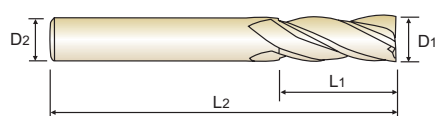
PLAIN SHANK SEME71 SERIES

## CARBIDE, 4 FLUTE

## CARBIDE, 4 FLUTE

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent for cutting prehardened steels, carbon steels, alloy steels of molds and dies, up to HRC55 and machine parts.
- ▶ Due to Multiple Helix for 3.0mm and over 3.0mm diameter end mills, vibration can be minimized at cutting, and wear of cutting tool can be decreased too.
  - Designed equal index flute for long length end mills.
- ▶ Due to gash land geometry used at end tooth, heavy duty cutting can be achieved.
- ▶ Available various length products like short, regular and long length end mills etc.

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◇ Call for Availability

◇ Call for Availability

D1<Ø3.0, Long Length  
38° Helix

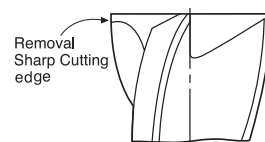
D1<Ø3.0, Long Length  
38° Helix

Unit : mm

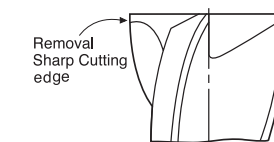
Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Remark
	D1	D2	L1	L2	
SEME71025	2.5	6	7	50	Regular
SEME7102510	2.5	6	10	50	Long
SEME7102512	2.5	6	12	50	Long
SEME7103003	3.0	6	3	40	Short
SEME7103006	3.0	6	6	40	Short
SEME71030	3.0	6	8	50	Regular
SEME7103010	3.0	6	10	50	Long
SEME7103012	3.0	6	12	50	Long
SEME7103014	3.0	6	14	50	Long
SEME7104004	4.0	6	4	40	Short
SEME7104008	4.0	6	8	40	Short
SEME71040	4.0	6	10	50	Regular
SEME7104012	4.0	6	12	50	Long
SEME7104014	4.0	6	14	50	Long
SEME7104016	4.0	6	16	50	Long
SEME7105005	5.0	6	5	50	Short
SEME7105010	5.0	6	10	50	Short
SEME71050	5.0	6	15	60	Regular
SEME7105020	5.0	6	20	60	Long
SEME7105025	5.0	6	25	60	Long
SEME7106006	6.0	6	6	50	Short
SEME7106012	6.0	6	12	50	Short

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Remark
	D1	D2	L1	L2	
SEME71060	6.0	6	15	60	Regular
SEME7106020	6.0	6	20	60	Long
SEME7106025	6.0	6	25	60	Long
SEME7108016	8.0	8	16	60	Short
SEME71080	8.0	8	20	70	Regular
SEME7108025	8.0	8	25	70	Long
SEME7108030	8.0	8	30	70	Long
SEME7110022	10.0	10	22	65	Short
SEME71100	10.0	10	25	75	Regular
SEME7110030	10.0	10	30	75	Long
SEME7110035	10.0	10	35	75	Long
SEME7112026	12.0	12	26	70	Short
SEME71120	12.0	12	30	80	Regular
SEME7112035	12.0	12	35	80	Long
SEME7112040	12.0	12	40	80	Long
SEME71140	14.0	16	35	100	Regular
SEME7116032	16.0	16	32	100	Short
SEME71160	16.0	16	40	100	Regular
SEME71180	18.0	20	45	100	Regular
SEME71200	20.0	20	45	100	Regular



▶ NEXT PAGE



Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.03	h5

◎ : Excellent ○ : Good

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323																				
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323																					
HRc	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	36	55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	○	○	○	○	◎	○

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323																				
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323																					
HRc	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	36	55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	○	○	○	○	◎	○

HSS

HSS

# YG 4G MILL END MILLS

# YG 4G MILL END MILLS

PLAIN SHANK SEME72 SERIES

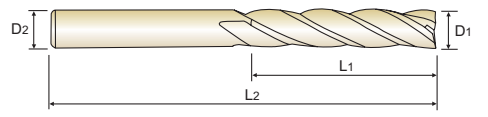
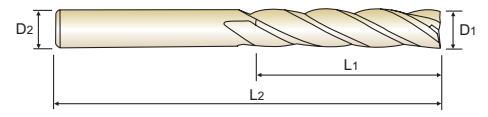
PLAIN SHANK SEME72 SERIES

## CARBIDE, 4 FLUTE LONG LENGTH

## CARBIDE, 4 FLUTE LONG LENGTH

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- ▶ Available various length of cut and overall length products.

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- ▶ Available various length of cut and overall length products.



CARBIDE 4 30° PLAIN p.C366-C373

CARBIDE 4 30° PLAIN p.C366-C373

Call for Availability

Call for Availability

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
SEME7201003	1.0	6	3	60
SEME7201004	1.0	6	4	60
SEME7201005	1.0	6	5	60
SEME7201006	1.0	6	6	60
SEME7201007	1.0	6	7	60
SEME7201008	1.0	6	8	60
SEME7201010	1.0	6	10	60
SEME7201012	1.0	6	12	60
SEME7201204	1.2	6	4	60
SEME7201206	1.2	6	6	60
SEME7201208	1.2	6	8	60
SEME7201210	1.2	6	10	60
SEME7201212	1.2	6	12	60
SEME7201506	1.5	6	6	60
SEME7201508	1.5	6	8	60
SEME7201510	1.5	6	10	60
SEME7201512	1.5	6	12	60
SEME7201514	1.5	6	14	60
SEME7201516	1.5	6	16	60
SEME7202008	2.0	6	8	60
SEME7202010	2.0	6	10	60
SEME7202012	2.0	6	12	60
SEME7202014	2.0	6	14	60
SEME7202016	2.0	6	16	60
SEME7202510	2.5	6	10	60
SEME7202512	2.5	6	12	60
SEME7202516	2.5	6	16	60
SEME7202520	2.5	6	20	60

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
SEME7202526	2.5	6	26	60
SEME72030163S	3.0	3	16	100
SEME7203010	3.0	6	10	70
SEME7203012	3.0	6	12	70
SEME7203014	3.0	6	14	70
SEME7203016	3.0	6	16	70
SEME7203020	3.0	6	20	70
SEME7203026	3.0	6	26	70
SEME7203030	3.0	6	30	70
SEME72040204S	4.0	4	20	100
SEME7204012	4.0	6	12	70
SEME7204016	4.0	6	16	70
SEME7204020	4.0	6	20	70
SEME7204026	4.0	6	26	70
SEME7204030	4.0	6	30	70
SEME7205020	5.0	6	20	70
SEME7205025	5.0	6	25	70
SEME7205025100	5.0	6	25	100
SEME7205030	5.0	6	30	80
SEME7205035	5.0	6	35	90
SEME7205040	5.0	6	40	100
SEME7206015	6.0	6	15	60
SEME7206015080	6.0	6	15	80
SEME7206020	6.0	6	20	70
SEME7206020090	6.0	6	20	90
SEME7206025	6.0	6	25	75
SEME7206030	6.0	6	30	80
SEME7206030100	6.0	6	30	100

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◎: Excellent ○: Good

◎: Excellent ○: Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323																					
HRc	13	25	28	32	30	29	32	38	35	20	15	23	10	10	26	3	25	3	21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323																					
HRc	13	25	28	32	30	29	32	38	35	20	15	23	10	10	26	3	25	3	21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	

HSS

HSS

**YG 4G MILL END MILLS**

**YG 4G MILL END MILLS**

PLAIN SHANK **SEME72** SERIES

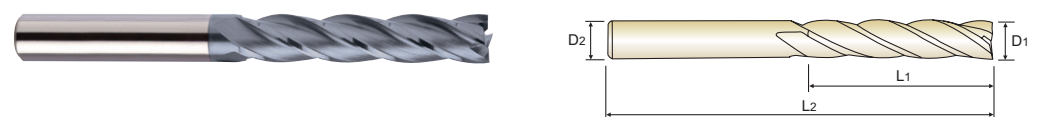
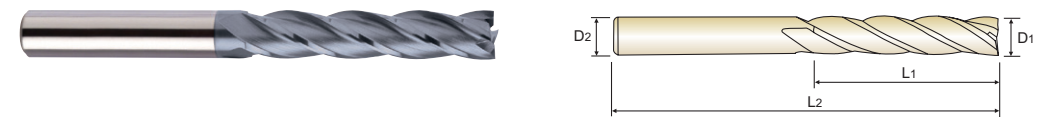
PLAIN SHANK **SEME72** SERIES

**CARBIDE, 4 FLUTE LONG LENGTH**

**CARBIDE, 4 FLUTE LONG LENGTH**

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- ▶ Available various length of cut and overall length products.

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- ▶ Available various length of cut and overall length products.



CARBIDE 4 30° PLAIN p.C366-C373

CARBIDE 4 30° PLAIN p.C366-C373

Call for Availability

Call for Availability

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
SEME7206030150	6.0	6	30	150
SEME7206035	6.0	6	35	90
SEME7206040	6.0	6	40	90
SEME7206040120	6.0	6	40	120
SEME7206045	6.0	6	45	150
SEME7208025	8.0	8	25	80
SEME7208030	8.0	8	30	80
SEME7208030100	8.0	8	30	100
SEME7208035	8.0	8	35	90
SEME7208040	8.0	8	40	90
SEME7208040120	8.0	8	40	120
SEME7208040150	8.0	8	40	150
SEME7208045	8.0	8	45	100
SEME7208050	8.0	8	50	100
SEME7208050150	8.0	8	50	150
SEME7210030	10.0	10	30	80
SEME7210030100	10.0	10	30	100
SEME7210035	10.0	10	35	90
SEME7210040	10.0	10	40	90
SEME7210040120	10.0	10	40	120
SEME7210045	10.0	10	45	100
SEME7210050	10.0	10	50	100
SEME7210050150	10.0	10	50	150
SEME7210050200	10.0	10	50	200
SEME7210055	10.0	10	55	150
SEME7210060	10.0	10	60	110
SEME7210060200	10.0	10	60	200
SEME7212035	12.0	12	35	90

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
SEME7212040	12.0	12	40	100
SEME7212040120	12.0	12	40	120
SEME7212045	12.0	12	45	130
SEME7212050	12.0	12	50	100
SEME7212050150	12.0	12	50	150
SEME7212055	12.0	12	55	110
SEME7212060	12.0	12	60	110
SEME7212060150	12.0	12	60	150
SEME7212060200	12.0	12	60	200
SEME7212065	12.0	12	65	150
SEME7212070	12.0	12	70	120
SEME7212070200	12.0	12	70	200
SEME7214050	14.0	16	50	110
SEME7214060	14.0	16	60	150
SEME7216040	16.0	16	40	150
SEME7216050	16.0	16	50	110
SEME7216050150	16.0	16	50	150
SEME7216060	16.0	16	60	120
SEME7216070	16.0	16	70	130
SEME7216070150	16.0	16	70	150
SEME7216070200	16.0	16	70	200
SEME7216080	16.0	16	80	150
SEME7216090	16.0	16	90	150
SEME72160110	16.0	16	110	200
SEME72160120	16.0	16	120	250
SEME7218050	18.0	20	50	120
SEME7218070	18.0	20	70	130
SEME72180100	18.0	20	100	200

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◎: Excellent ○: Good

ISO	P										M				K			H		
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323																				
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

ISO	N					S					H											
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
VDI 3323																						
HRc	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	36	37	55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

◎: Excellent ○: Good

ISO	P										M				K			H			
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323																					
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○

ISO	N					S					H											
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
VDI 3323																						
HRc	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	36	37	55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



# YG 4G MILL END MILLS

PLAIN SHANK SEME72 SERIES

## CARBIDE, 4 FLUTE LONG LENGTH

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- ▶ Available various length of cut and overall length products.



Call for Availability

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
SEME7220050	20.0	20	50	110
SEME7220050150	20.0	20	50	150
SEME7220060	20.0	20	60	130
SEME7220070	20.0	20	70	130
SEME7220080	20.0	20	80	150
SEME7220090	20.0	20	90	150
SEME7220090200	20.0	20	90	200
SEME72200110	20.0	20	110	200
SEME72200120	20.0	20	120	250
SEME7222075	22.0	20	75	150
SEME72220110	22.0	20	110	200
SEME7225070	25.0	25	70	150
SEME7225090	25.0	25	90	150
SEME72250110	25.0	25	110	200
SEME72250120	25.0	25	120	250

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.03	h5

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron							
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34	36	37	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○

# YG 4G MILL END MILLS

PLAIN SHANK SEME73 SERIES

## CARBIDE, 4 FLUTE LONG NECK

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- ▶ Available various length of cut and overall length products.



Call for Availability

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D1	D2	L1	L3	L2	D3
SEME7301002	1.0	4	1.5	2	50	0.95
SEME7301003	1.0	4	1.5	3	50	0.95
SEME7301004	1.0	4	1.5	4	50	0.95
SEME7301005	1.0	4	1.5	5	50	0.95
SEME7301006	1.0	4	1.5	6	50	0.95
SEME7301007	1.0	4	1.5	7	50	0.95
SEME7301008	1.0	4	1.5	8	50	0.95
SEME7301010	1.0	4	1.5	10	50	0.95
SEME7301012	1.0	4	1.5	12	50	0.95
SEME7301014	1.0	4	1.5	14	50	0.95
SEME7301016	1.0	4	1.5	16	50	0.95
SEME7301018	1.0	4	1.5	18	50	0.95
SEME7301020	1.0	4	1.5	20	50	0.95
SEME7301022	1.0	4	1.5	22	60	0.95
SEME7301026	1.0	4	1.5	26	60	0.95
SEME7301030	1.0	4	1.5	30	70	0.95
SEME7301040	1.0	4	1.5	40	80	0.95
SEME7301050	1.0	4	1.5	50	100	0.95
SEME7301204	1.2	4	1.8	4	50	1.15
SEME7301206	1.2	4	1.8	6	50	1.15
SEME7301208	1.2	4	1.8	8	50	1.15
SEME7301210	1.2	4	1.8	10	50	1.15
SEME7301212	1.2	4	1.8	12	50	1.15
SEME7301214	1.2	4	1.8	14	50	1.15
SEME7301216	1.2	4	1.8	16	50	1.15
SEME7301220	1.2	4	1.8	20	50	1.15

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◎ : Excellent ○ : Good

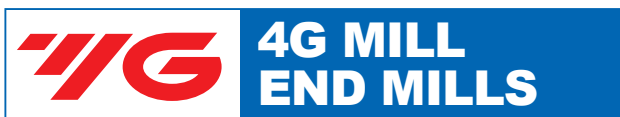
ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

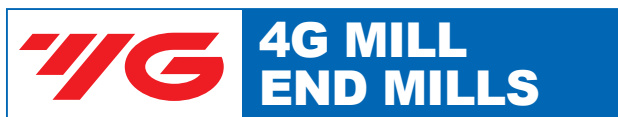
ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron							
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34	36	37	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○

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PLAIN SHANK SEME73 SERIES



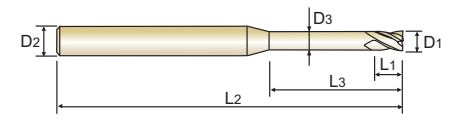
PLAIN SHANK SEME73 SERIES

CARBIDE, 4 FLUTE LONG NECK

CARBIDE, 4 FLUTE LONG NECK

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent performance when cutting prehardened steels, up to HRC55 which are used for molds & dies.
- ▶ Available various length of cut and overall length products.

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Call for Availability

Call for Availability

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D1	D2	L1	L3	L2	D3
SEME7301226	1.2	4	1.8	26	60	1.15
SEME7301230	1.2	4	1.8	30	70	1.15
SEME7301504	1.5	4	2.3	4	50	1.45
SEME7301505	1.5	4	2.3	5	50	1.45
SEME7301506	1.5	4	2.3	6	50	1.45
SEME7301507	1.5	4	2.3	7	50	1.45
SEME7301508	1.5	4	2.3	8	50	1.45
SEME7301510	1.5	4	2.3	10	50	1.45
SEME7301512	1.5	4	2.3	12	50	1.45
SEME7301514	1.5	4	2.3	14	50	1.45
SEME7301516	1.5	4	2.3	16	50	1.45
SEME7301518	1.5	4	2.3	18	50	1.45
SEME7301520	1.5	4	2.3	20	50	1.45
SEME7301522	1.5	4	2.3	22	60	1.45
SEME7301526	1.5	4	2.3	26	60	1.45
SEME7301530	1.5	4	2.3	30	70	1.45
SEME7302006	2.0	4	3	6	50	1.95
SEME7302008	2.0	4	3	8	50	1.95
SEME7302010	2.0	4	3	10	50	1.95
SEME7302012	2.0	4	3	12	50	1.95
SEME7302014	2.0	4	3	14	50	1.95
SEME7302016	2.0	4	3	16	50	1.95
SEME7302018	2.0	4	3	18	50	1.95
SEME7302020	2.0	4	3	20	50	1.95
SEME7302022	2.0	4	3	22	60	1.95
SEME7302026	2.0	4	3	26	60	1.95

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D1	D2	L1	L3	L2	D3
SEME7302030	2.0	4	3	30	70	1.95
SEME7302035	2.0	4	3	35	70	1.95
SEME7302040	2.0	4	3	40	80	1.95
SEME7302045	2.0	4	3	45	90	1.95
SEME7302050	2.0	4	3	50	100	1.95
SEME7302060	2.0	4	3	60	110	1.95
SEME7302508	2.5	4	4	8	50	2.40
SEME7302510	2.5	4	4	10	50	2.40
SEME7302512	2.5	4	4	12	50	2.40
SEME7302514	2.5	4	4	14	50	2.40
SEME7302516	2.5	4	4	16	50	2.40
SEME7302518	2.5	4	4	18	50	2.40
SEME7302520	2.5	4	4	20	50	2.40
SEME7302522	2.5	4	4	22	60	2.40
SEME7302526	2.5	4	4	26	60	2.40
SEME7302530	2.5	4	4	30	70	2.40
SEME7302535	2.5	4	4	35	70	2.40
SEME7302540	2.5	4	4	40	80	2.40
SEME7302545	2.5	4	4	45	90	2.40
SEME7302550	2.5	4	4	50	100	2.40
SEME7303006	3.0	6	4.5	6	50	2.85
SEME7303008	3.0	6	4.5	8	50	2.85
SEME7303010	3.0	6	4.5	10	50	2.85
SEME7303012	3.0	6	4.5	12	50	2.85
SEME7303014	3.0	6	4.5	14	60	2.85
SEME7303016	3.0	6	4.5	16	60	2.85

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◎: Excellent ○: Good

ISO	P										M				K			H		
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323																				
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323																					
HRc	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	36	37	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○

◎: Excellent ○: Good

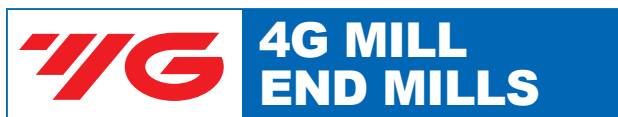
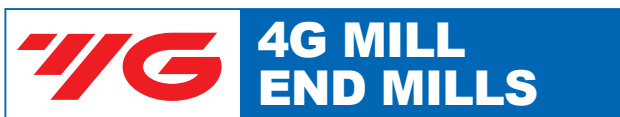
ISO	P										M				K			H			
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323																					
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323																					
HRc	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	36	37	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○

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PLAIN SHANK SEME73 SERIES

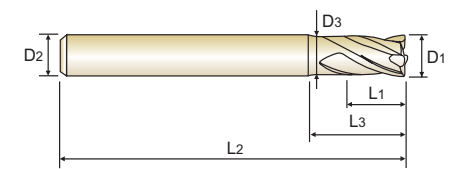
PLAIN SHANK SEME73 SERIES

CARBIDE, 4 FLUTE LONG NECK

CARBIDE, 4 FLUTE LONG NECK

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- ▶ Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- ▶ Available various length of cut and overall length products.

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- ▶ Excellent performance when cutting prehardened steels, up to HRc55 which are used for molds & dies.
- ▶ Available various length of cut and overall length products.



Call for Availability

Call for Availability

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D1	D2	L1	L3	L2	D3
SEME7303018	3.0	6	4.5	18	60	2.85
SEME7303020	3.0	6	4.5	20	60	2.85
SEME7303022	3.0	6	4.5	22	65	2.85
SEME7303026	3.0	6	4.5	26	65	2.85
SEME7303030	3.0	6	4.5	30	70	2.85
SEME7303035	3.0	6	4.5	35	70	2.85
SEME7303040	3.0	6	4.5	40	80	2.85
SEME7303045	3.0	6	4.5	45	90	2.85
SEME7303050	3.0	6	4.5	50	100	2.85
SEME7303060	3.0	6	4.5	60	100	2.85
SEME7304008	4.0	6	6	8	50	3.85
SEME7304010	4.0	6	6	10	50	3.85
SEME7304012	4.0	6	6	12	50	3.85
SEME7304014	4.0	6	6	14	60	3.85
SEME7304016	4.0	6	6	16	60	3.85
SEME7304018	4.0	6	6	18	60	3.85
SEME7304020	4.0	6	6	20	60	3.85
SEME7304022	4.0	6	6	22	65	3.85
SEME7304026	4.0	6	6	26	65	3.85
SEME7304030	4.0	6	6	30	70	3.85
SEME7304035	4.0	6	6	35	70	3.85
SEME7304040	4.0	6	6	40	80	3.85
SEME7304045	4.0	6	6	45	90	3.85
SEME7304050	4.0	6	6	50	100	3.85
SEME7304060	4.0	6	6	60	100	3.85
SEME7305016	5.0	6	8	16	60	4.85

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D1	D2	L1	L3	L2	D3
SEME7305020	5.0	6	8	20	60	4.85
SEME7305026	5.0	6	8	26	65	4.85
SEME7305030	5.0	6	8	30	70	4.85
SEME7305035	5.0	6	8	35	75	4.85
SEME7305040	5.0	6	8	40	80	4.85
SEME7305050	5.0	6	8	50	90	4.85
SEME7305060	5.0	6	8	60	100	4.85
SEME7306015	6.0	6	9	15	60	5.85
SEME7306020	6.0	6	9	20	60	5.85
SEME7306030	6.0	6	9	30	70	5.85
SEME7306032	6.0	6	9	32	90	5.85
SEME7308025	8.0	8	12	25	70	7.70
SEME7308030	8.0	8	12	30	80	7.70
SEME7308042	8.0	8	12	42	100	7.70
SEME7310030	10.0	10	15	30	75	9.70
SEME7310035	10.0	10	15	35	80	9.70
SEME7310045	10.0	10	15	45	100	9.70
SEME7312035	12.0	12	20	35	80	11.70
SEME7312040	12.0	12	20	40	90	11.70
SEME7312050	12.0	12	20	50	110	11.70

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.03	h5

▶ NEXT PAGE

◎: Excellent ○: Good

ISO	P										M				K			H		
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323																				
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323																					
HRc	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	36	37	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	◎	○

◎: Excellent ○: Good

ISO	P										M				K			H			
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323																					
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○

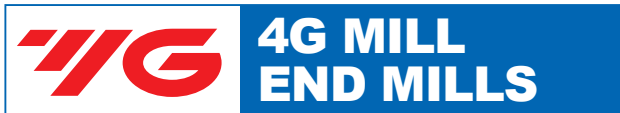
  

ISO	N					S					H											
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
VDI 3323																						
HRc	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	36	37	55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommend																		○	◎	◎	○	



HSS

HSS



PLAIN SHANK SEME75 SERIES



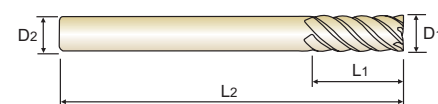
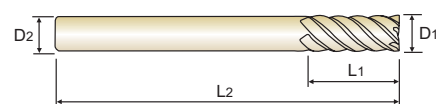
PLAIN SHANK SEME75 SERIES

**CARBIDE, 6 FLUTE 45° HELIX (Regular, Long Shank)**

**CARBIDE, 6 FLUTE 45° HELIX (Regular, Long Shank)**

- ▶ Due to new coating and new tool geometry, outstanding cutting ability and wear resistance.
- ▶ Excellent performance when cutting prehardened steels, up to HRC55 which are used for molds & dies.
- ▶ Due to 45 helix angle, better surface roughness can be achieved at side cutting.
- ▶ Available various effective length and overall length products.

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- ▶ Excellent performance when cutting prehardened steels, up to HRC55 which are used for molds & dies.
- ▶ Due to 45 helix angle, better surface roughness can be achieved at side cutting.
- ▶ Available various effective length and overall length products.



Call for Availability

Call for Availability

Unit : mm

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Remark
	D1	D2	L1	L2	
SEME75060	6.0	6	15	60	Regular
SEME7506020	6.0	6	20	70	Long
SEME7506030	6.0	6	30	80	Long
SEME7506030110	6.0	6	30	110	Long
SEME75080	8.0	8	20	70	Regular
SEME7508030	8.0	8	30	80	Long
SEME7508035	8.0	8	35	90	Long
SEME7508040	8.0	8	40	90	Long
SEME7508040130	8.0	8	40	130	Long
SEME75100	10.0	10	25	75	Regular
SEME7510030	10.0	10	30	80	Long
SEME7510040	10.0	10	40	90	Long
SEME7510050	10.0	10	50	100	Long
SEME7510050150	10.0	10	50	150	Long
SEME75120	12.0	12	30	80	Regular
SEME7512040	12.0	12	40	90	Long
SEME7512050	12.0	12	50	100	Long
SEME7512060	12.0	12	60	110	Long
SEME7512060150	12.0	12	60	150	Long
SEME75160	16.0	16	40	100	Regular
SEME7516050	16.0	16	50	110	Long
SEME7516060	16.0	16	60	120	Long
SEME7516090	16.0	16	90	150	Long
SEME75160110	16.0	16	110	200	Long
SEME75160110250	16.0	16	110	250	Long
SEME75200	20.0	20	45	100	Regular

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Remark
	D1	D2	L1	L2	
SEME7520060	20.0	20	60	120	Long
SEME7520070	20.0	20	70	130	Long
SEME75200110	20.0	20	110	200	Long
SEME75200110250	20.0	20	110	250	Long
SEME75200110300	20.0	20	110	300	Long

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.03	h5

▶ NEXT PAGE

◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	

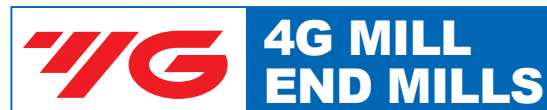
ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron				
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	36	37	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	◎	○

◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron				
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	36	37	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	◎	○



PLAIN SHANK

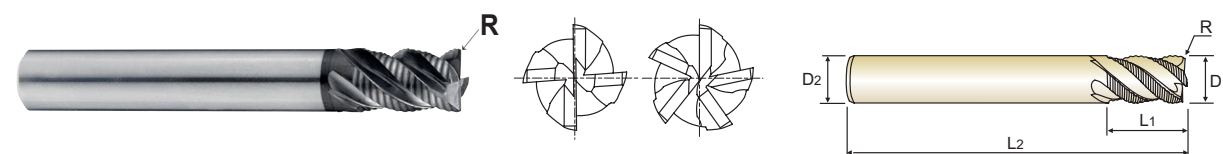
G9D75 SERIES

FLAT SHANK

G9D67 SERIES

### CARBIDE, 4&5 FLUTE MULTIPLE HELIX SHORT LENGTH ROUGHING CORNER RADIUS

- ▶ Unique flute design for excellent chip evacuation and vibration reduction.
- ▶ Optimal roughing tooth profile to reduce cutting forces.
- ▶ Special tool geometry for high feed rate and heavy cutting.
- ▶ Strong end tooth design for plunge and pocket milling.
- ▶ Custom engineered coating to allow long tool life and excellent chip evacuation.



◇ Call for Availability

5 Flute, 44°/44.5°/45°

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
PLAIN	FLAT	R	D1	D2	L1	L2	
G9D75060	G9D67060	R0.5	6.0	6	9	57	4
G9D75080	G9D67080	R0.5	8.0	8	12	63	4
G9D75100	G9D67100	R0.5	10.0	10	15	72	4
G9D75120	G9D67120	R0.5	12.0	12	18	83	4
G9D75160	G9D67160	R1.0	16.0	16	24	92	5
G9D75200	G9D67200	R1.0	20.0	20	30	104	5

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.05	h5

◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	3	25	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	◎	◎	◎	◎	◎	◎	

ISO	N				S						H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	36	37	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○			○	○	○	○	○	○	○	○	○	○	○



PLAIN SHANK

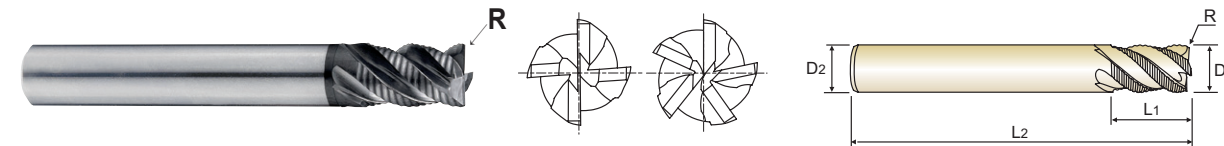
G9D76 SERIES

FLAT SHANK

G9D68 SERIES

### CARBIDE, 4&5 FLUTE MULTIPLE HELIX LONG LENGTH ROUGHING CORNER RADIUS

- ▶ Unique flute design for excellent chip evacuation and vibration reduction.
- ▶ Optimal roughing tooth profile to reduce cutting forces.
- ▶ Special tool geometry for high feed rate and heavy cutting.
- ▶ Strong end tooth design for plunge and pocket milling.
- ▶ Custom engineered coating to allow long tool life and excellent chip evacuation.



◇ Call for Availability

5 Flute, 44°/44.5°/45°

Unit : mm

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
PLAIN	FLAT	R	D1	D2	L1	L2	
G9D76060	G9D68060	R0.5	6.0	6	12	57	4
G9D76080	G9D68080	R0.5	8.0	8	16	63	4
G9D76100	G9D68100	R0.5	10.0	10	20	72	4
G9D76120	G9D68120	R0.5	12.0	12	24	83	4
G9D76160	G9D68160	R1.0	16.0	16	32	92	5
G9D76200	G9D68200	R1.0	20.0	20	40	104	5

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.05	h5

◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	3	25	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	◎	◎	◎	◎	◎	◎	

ISO	N				S						H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	36	37	55	60	42	55
HRc	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	36	37	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○			○	○	○	○	○	○	○	○	○	○	○



PLAIN SHANK

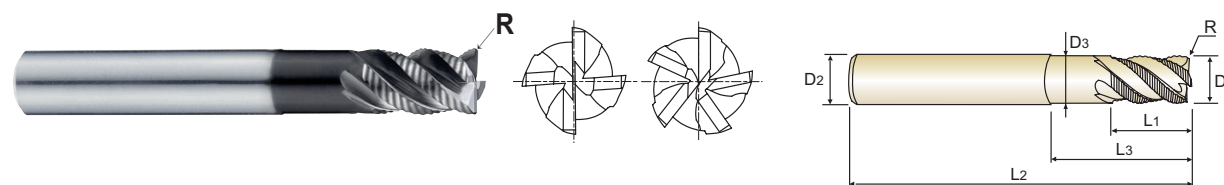
G9D77 SERIES

FLAT SHANK

G9D69 SERIES

### CARBIDE, 4&5 FLUTE MULTIPLE HELIX LONG REACH ROUGHING CORNER RADIUS

- ▶ Unique flute design for excellent chip evacuation and vibration reduction.
- ▶ Optimal roughing tooth profile to reduce cutting forces.
- ▶ Special tool geometry for high feed rate and heavy cutting.
- ▶ Strong end tooth design for plunge and pocket milling.
- ▶ Custom engineered coating to allow long tool life and excellent chip evacuation.



p.C388-C389

Call for Availability

5 Flute, 44°/44.5°/45°

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	No. of Flute
		Metric	Inch						
	R	D1(js12)		D2(h5)	L1	L3	L2	D3	
<b>G9D77060</b>	R0.5	<b>6.0</b>	<b>.2362</b>	<b>6</b>	<b>13</b>	<b>18</b>	<b>57</b>	<b>5.50</b>	<b>4</b>
<b>G9D77080</b>	R0.5	<b>8.0</b>	<b>.2756</b>	<b>8</b>	<b>16</b>	<b>24</b>	<b>63</b>	<b>7.50</b>	<b>4</b>
<b>G9D77100</b>	R0.5	<b>10.0</b>	<b>.3150</b>	<b>10</b>	<b>19</b>	<b>30</b>	<b>72</b>	<b>9.50</b>	<b>4</b>
<b>G9D77120</b>	R0.5	<b>12.0</b>	<b>.3937</b>	<b>12</b>	<b>22</b>	<b>36</b>	<b>83</b>	<b>11.50</b>	<b>4</b>
<b>G9D77160</b>	R1.0	<b>16.0</b>	<b>.5512</b>	<b>16</b>	<b>26</b>	<b>48</b>	<b>100</b>	<b>15.50</b>	<b>5</b>
<b>G9D77200</b>	R1.0	<b>20.0</b>	<b>.7874</b>	<b>20</b>	<b>32</b>	<b>60</b>	<b>110</b>	<b>19.20</b>	<b>5</b>

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.05	h5

◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	3	25	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	◎	◎	◎	◎	◎	◎	

ISO	N				S						H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	55	60	42	55
HB	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○			○	○	○	○	○	○	○	○	○	○	○

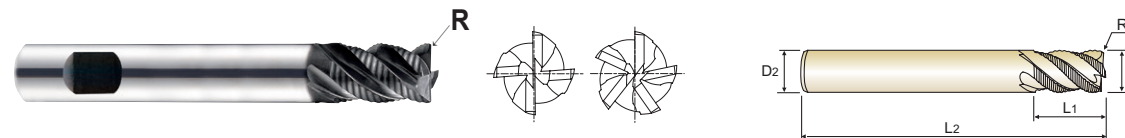


FLAT SHANK

GAE53 SERIES

### HSS-PM, 4&5 FLUTE MULTIPLE HELIX SHORT LENGTH ROUGHING CORNER RADIUS

- ▶ Unique flute design for excellent chip evacuation and vibration reduction.
- ▶ Optimal roughing tooth profile to reduce cutting forces.
- ▶ Special tool geometry for high feed rate and heavy cutting.
- ▶ Strong end tooth design for plunge and pocket milling.
- ▶ Custom engineered coating to allow long tool life and excellent chip evacuation.



p.C388-C389

Call for Availability

5 Flute, 44°/44.5°/45°

Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	No. of Flute
		Metric	Inch				
	R	D1(js12)		D2(h5)	L1	L2	
<b>GAE53060</b>	R0.5	<b>6.0</b>	<b>.2362</b>	<b>6</b>	<b>13</b>	<b>57</b>	<b>4</b>
<b>GAE53070</b>	R0.5	<b>7.0</b>	<b>.2756</b>	<b>10</b>	<b>16</b>	<b>66</b>	<b>4</b>
<b>GAE53080</b>	R0.5	<b>8.0</b>	<b>.3150</b>	<b>10</b>	<b>19</b>	<b>69</b>	<b>4</b>
<b>GAE53090</b>	R0.5	<b>9.0</b>	<b>.3543</b>	<b>10</b>	<b>19</b>	<b>69</b>	<b>4</b>
<b>GAE53100</b>	R0.5	<b>10.0</b>	<b>.3937</b>	<b>10</b>	<b>22</b>	<b>72</b>	<b>4</b>
<b>GAE53120</b>	R0.5	<b>12.0</b>	<b>.4724</b>	<b>12</b>	<b>26</b>	<b>83</b>	<b>4</b>
<b>GAE53140</b>	R1.0	<b>14.0</b>	<b>.5512</b>	<b>16</b>	<b>26</b>	<b>83</b>	<b>5</b>
<b>GAE53160</b>	R1.0	<b>16.0</b>	<b>.6299</b>	<b>16</b>	<b>32</b>	<b>92</b>	<b>5</b>
<b>GAE53180</b>	R1.0	<b>18.0</b>	<b>.7087</b>	<b>20</b>	<b>32</b>	<b>92</b>	<b>5</b>
<b>GAE53200</b>	R1.0	<b>20.0</b>	<b>.7874</b>	<b>20</b>	<b>38</b>	<b>104</b>	<b>5</b>

#### Tolerances according to DIN 7160 & 7161

Tolerance range in μm						
Nominal-Diameter in mm						
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30	over 30 to 50
<b>js12</b>	± 50	± 60	± 75	± 90	± 105	± 125
<b>h5</b>	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13	0 - 16

◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	3	25	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	○	○	◎	◎	◎	◎	◎	◎	◎	◎	

ISO	N				S						H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	55	60	42	55
HB	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○			○	○	○	○	○	○	○	○	○	○	○



HSS

HSS



RECOMMENDED CUTTING CONDITIONS

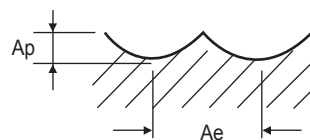


RECOMMENDED CUTTING CONDITIONS

GMF15 SERIES 2FLUTE BALL NOSE - PLANE

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)														
						.004	.008	.012	.015	.020	.024	.028	.031	.035	3/64	1/16	5/64			
P	1-8	Non-alloy steel Low alloy steel	0.08D	0.05D	SFM(Vc)	40	60	95	115	155	185	215	245	280	370	465	615			
					IPT(fz)	.0003	.0005	.0006	.0007	.0009	.0011	.0013	.0015	.0017	.0020	.0021	.0023			
		RPM			39400	29530	29530	29490	29530	29530	30480	30370	30240	28350	30050					
		IPM(FEED)			21	28	35	44	56	68	79	94	104	122	121	136				
		SFM(Vc)			40	60	95	125	155	185	215	245	280	355	445	590				
		IPT(fz)			.0002	.0004	.0005	.0007	.0008	.0010	.0011	.0013	.0015	.0018	.0018	.0020				
	9	Low alloy steel	0.08D	0.05D	RPM	39370	29530	29530	31500	29530	29530	30480	30370	29030	27210	28910				
					IPM(FEED)	19	24	31	42	49	58	68	79	90	102	100	114			
		SFM(Vc)			40	60	95	115	155	185	215	245	280	370	465	615				
		IPT(fz)			.0003	.0005	.0006	.0007	.0009	.0011	.0013	.0015	.0017	.0020	.0021	.0023				
		RPM			39400	29530	29530	29490	29530	29530	30480	30370	30240	28350	30050					
		IPM(FEED)			21	28	35	44	56	68	79	94	104	122	121	136				
10-11.1	High alloyed steel, and tool steel	0.08D	0.05D	SFM(Vc)	40	60	95	125	155	185	215	245	280	355	445	590				
				IPT(fz)	.0002	.0004	.0005	.0007	.0008	.0010	.0011	.0013	.0015	.0018	.0018	.0020				
	RPM			39370	29530	29530	31500	29530	29530	30480	30370	29030	27210	28910						
	IPM(FEED)			19	24	31	42	49	58	68	79	90	102	100	114					
	SFM(Vc)			40	60	95	125	155	185	215	245	280	355	445	590					
	IPT(fz)			.0002	.0004	.0005	.0007	.0008	.0010	.0011	.0013	.0015	.0018	.0018	.0020					
11.2	High alloyed steel, and tool steel	0.08D	0.05D	RPM	39370	29530	29530	31500	29530	29530	30480	30370	29030	27210	28910					
				IPM(FEED)	19	24	31	42	49	58	68	79	90	102	100	114				
	SFM(Vc)			40	60	95	125	155	185	215	245	280	355	445	590					
	IPT(fz)			.0002	.0004	.0005	.0007	.0008	.0010	.0011	.0013	.0015	.0018	.0018	.0020					
	RPM			39370	29530	29530	31500	29530	29530	30480	30370	29030	27210	28910						
	IPM(FEED)			19	24	31	42	49	58	68	79	90	102	100	114					
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.08D	0.05D	SFM(Vc)	40	60	95	115	155	185	215	245	280	370	465	615			
					IPT(fz)	.0003	.0005	.0006	.0007	.0009	.0011	.0013	.0015	.0017	.0020	.0021	.0023			
	RPM	39400			29530	29530	29490	29530	29530	30480	30370	30240	28350	30050						
	IPM(FEED)	21			28	35	44	56	68	79	94	104	122	121	136					
	SFM(Vc)	35			55	85	110	140	165	195	225	250	320	400	495					
	IPT(fz)	.0002			.0004	.0005	.0007	.0008	.0010	.0011	.0013	.0015	.0018	.0018	.0020					
H	38.1-38.2	Hardened steel	0.08D	0.05D	RPM	32480	26570	26570	28350	26570	26570	27430	27330	26000	24380	24190				
					IPM(FEED)	16	22	28	37	44	51	60	72	81	92	89	95			
	SFM(Vc)	40			60	95	125	155	185	215	245	280	355	445	590					
	IPT(fz)	.0002			.0004	.0005	.0007	.0008	.0010	.0011	.0013	.0015	.0018	.0018	.0020					
	RPM	39370			29530	29530	31500	29530	29530	30480	30370	29030	27210	28910						
	IPM(FEED)	19			24	31	42	49	58	68	79	90	102	100	114					
40	Chilled Cast Iron	0.08D	0.05D	SFM(Vc)	35	55	85	110	140	165	195	225	250	320	400	495				
				IPT(fz)	.0002	.0004	.0005	.0007	.0008	.0010	.0011	.0013	.0015	.0018	.0018	.0020				
	RPM			32480	26570	26570	28350	26570	26570	27430	27330	26000	24380	24190						
	IPM(FEED)			16	22	28	37	44	51	60	72	81	92	89	95					
	SFM(Vc)			40	60	95	125	155	185	215	245	280	355	445	590					
	IPT(fz)			.0002	.0004	.0005	.0007	.0008	.0010	.0011	.0013	.0015	.0018	.0018	.0020					
41	Hardened Cast Iron	0.08D	0.05D	RPM	32480	26570	26570	28350	26570	26570	27430	27330	26000	24380	24190					
				IPM(FEED)	16	22	28	37	44	51	60	72	81	92	89	95				
	SFM(Vc)			40	60	95	125	155	185	215	245	280	355	445	590					
	IPT(fz)			.0002	.0004	.0005	.0007	.0008	.0010	.0011	.0013	.0015	.0018	.0018	.0020					
	RPM			32480	26570	26570	28350	26570	26570	27430	27330	26000	24380	24190						
	IPM(FEED)			16	22	28	37	44	51	60	72	81	92	89	95					

SFM = Surface Feet per Minute  
RPM = Revolutions Per Minute  
IPT = Inches Per Tooth  
IPM = Inches Per Minute  
Ap : Inch (Axial Depth of Cut)  
Ae : Inch (Radial Depth of Cut)



GMF15 SERIES 2FLUTE BALL NOSE - PLANE

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)														
						3/32	1/8	3/16	13/64	1/4	9/32	5/16	3/8	1/2	9/16	5/8	3/4			
P	1-8	Non-alloy steel Low alloy steel	0.08D	0.05D	SFM(Vc)	615	615	605	575	515	520	550	575	515	540	550	550			
					IPT(fz)	.0029	.0036	.0053	.0061	.0069	.0072	.0075	.0078	.0084	.0088	.0094	.0104			
		RPM			24990	18770	12310	10820	7880	7070	6710	5860	3940	3670	3370	2800				
		IPM(FEED)			145	134	132	133	108	102	100	92	66	65	63	58				
		SFM(Vc)			590	590	580	550	495	500	530	550	495	520	530	530				
		IPT(fz)			.0026	.0033	.0048	.0054	.0060	.0063	.0064	.0069	.0074	.0082	.0081	.0089				
	9	Low alloy steel	0.08D	0.05D	RPM	24040	18030	11820	10350	7600	6820	6470	5610	3780	3530	3240	2710			
					IPM(FEED)	125	118	114	112	92	86	83	77	56	58	52	48			
		SFM(Vc)			615	615	605	575	515	520	550	575	515	540	550	550				
		IPT(fz)			.0029	.0036	.0053	.0061	.0069	.0072	.0075	.0078	.0084	.0088	.0094	.0104				
		RPM			24990	18770	12310	10820	7880	7070	6710	5860	3940	3670	3370	2800				
		IPM(FEED)			145	134	132	133	108	102	100	92	66	65	63	58				
10-11.1	High alloyed steel, and tool steel	0.08D	0.05D	SFM(Vc)	590	590	580	550	495	500	530	550	495	520	530	530				
				IPT(fz)	.0026	.0033	.0048	.0054	.0060	.0063	.0064	.0069	.0074	.0082	.0081	.0089				
	RPM			24040	18030	11820	10350	7600	6820	6470	5610	3780	3530	3240	2710					
	IPM(FEED)			125	118	114	112	92	86	83	77	56	58	52	48					
	SFM(Vc)			590	590	580	550	495	500	530	550	495	520	530	530					
	IPT(fz)			.0026	.0033	.0048	.0054	.0060	.0063	.0064	.0069	.0074	.0082	.0081	.0089					
11.2	High alloyed steel, and tool steel	0.08D	0.05D	RPM	24040	18030	11820	10350	7600	6820	6470	5610	3780	3530	3240	2710				
				IPM(FEED)	125	118	114	112	92	86	83	77	56	58	52	48				
	SFM(Vc)			615	615	605	575	515	520	550	575	515	540	550	550					
	IPT(fz)			.0029	.0036	.0053	.0061	.0069	.0072	.0075	.0078	.0084	.0088	.0094	.0104					
	RPM			24990	18770	12310	10820	7880	7070	6710	5860	3940	3670	3370	2800					
	IPM(FEED)			145	134	132	133	108	102	100	92	66	65	63	58					
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.08D	0.05D	SFM(Vc)	615	615	605	575	515	520	550	575	515	540	550	550			
					IPT(fz)	.0029	.0036	.0053	.0061	.0069	.0072	.0075	.0078	.0084	.0088	.0094	.0104			
	RPM	24990			18770	12310	10820	7880	7070	6710	5860	3940	3670	3370	2800					
	IPM(FEED)	145			134	132	133	108	102	100	92	66	65	63	58					
	SFM(Vc)	495			495	485	465	410	420	445	465	415	435	445	445					
	IPT(fz)	.0025			.0030	.0044	.0049	.0055	.0058	.0059	.0063	.0067	.0070	.0075	.0082					
H	38.1-38.2	Hardened steel	0.08D	0.05D	RPM	20160	15120	9920	8720	6240	5680	5440	4720	3170	2970	2720	2270			
					IPM(FEED)	99	89	86	86	69	66	64	60	42	42	41	37			
	SFM(Vc)	590			590	580	550	495	500	530	550	495	520	530	530					
	IPT(fz)	.0026			.0033	.0048	.0054	.0060	.0063	.0064	.0069	.0074	.0082	.0081	.0089					
	RPM	24040			18030	11820	10350	7600	6820	6470	5610	3780	3530	3240	2710					
	IPM(FEED)	125			118	114	112	92	86	83	77	56	58	52	48					
40	Chilled Cast Iron	0.08D	0.05D	SFM(Vc)	495	495	485	465	410	420	445	465	415	435	445	445				
				IPT(fz)	.0025	.0030	.0044	.0049	.0055	.0058	.0059	.0063	.0067	.0070	.0075	.0082				
	RPM			20160	15120	9920	8720	6240	5680	5440	4720	3170	2970	2720	2270					
	IPM(FEED)			99	89	86	86	69	66	64	60	42	42	41	37					
	SFM(Vc)			495	495	485	465	410	42											

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# YG 4G MILL END MILLS

## RECOMMENDED CUTTING CONDITIONS

# YG 4G MILL END MILLS

## RECOMMENDED CUTTING CONDITIONS

### GMF16 SERIES 2FLUTE BALL NOSE - SLOTTING

### GMF16 SERIES 2FLUTE BALL NOSE - SLOTTING

DIA. = Diameter  
LBS = Length Below Shank  
RPM = rev./min.  
FEED = inch/min.

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)															
				.008		.012		.015		.020		.025		.030		.035			
				LBS	1/64	3/64	5/64	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	7/8	1		
P	1-8	Non-alloy steel Low alloy steel	SFM(Vc)	105	95	155	140	125	170	150	150	135	175	175	160	160	160	140	
			IPT(fz)	.0001	.0001	.0002	.0002	.0001	.0002	.0002	.0002	.0002	.0002	.0004	.0004	.0004	.0004	.0004	.0003
			RPM	49210	44290	49210	44290	39370	43040	38740	38740	34440	33660	33660	30300	30300	30300	30300	26930
			IPM(FEED)	13	10	19	15	12	20	16	16	13	27	27	22	22	22	22	17
			Ap	.0007	.0003	.0007	.0004	.0003	.0009	.0006	.0004	.0004	.0018	.0013	.0007	.0007	.0004	.0004	.0004
			9	Low alloy steel	SFM(Vc)	105	95	155	140	125	160	145	145	130	165	165	150	150	150
	IPT(fz)	.0001			.0001	.0002	.0002	.0001	.0002	.0002	.0002	.0002	.0004	.0004	.0003	.0003	.0003	.0003	.0003
	RPM	49210			44290	49210	44290	39370	40730	36660	36660	32590	31790	31790	28610	28610	28610	25430	25430
	IPM(FEED)	12			10	17	14	11	18	14	14	11	22	22	18	18	18	14	14
	Ap	.0006			.0002	.0006	.0004	.0002	.0008	.0004	.0003	.0003	.0015	.0011	.0006	.0006	.0004	.0004	.0004
	10-11.1	High alloyed steel, and tool steel			SFM(Vc)	105	95	155	140	125	170	150	150	135	175	175	160	160	160
			IPT(fz)	.0001	.0001	.0002	.0002	.0001	.0002	.0002	.0002	.0002	.0004	.0004	.0004	.0004	.0004	.0004	.0003
RPM			49210	44290	49210	44290	39370	43040	38740	38740	34440	33660	33660	30300	30300	30300	26930	26930	
IPM(FEED)			13	10	19	15	12	20	16	16	13	27	27	22	22	22	22	17	
Ap			.0007	.0003	.0007	.0004	.0003	.0009	.0006	.0004	.0004	.0018	.0013	.0007	.0007	.0004	.0004	.0004	
11.2			High alloyed steel, and tool steel	SFM(Vc)	105	95	155	140	125	160	145	145	130	165	165	150	150	150	135
	IPT(fz)	.0001		.0001	.0002	.0002	.0001	.0002	.0002	.0002	.0002	.0004	.0004	.0003	.0003	.0003	.0003	.0003	
	RPM	49210		44290	49210	44290	39370	40730	36660	36660	32590	31790	31790	28610	28610	28610	25430	25430	
	IPM(FEED)	12		10	17	14	11	18	14	14	11	22	22	18	18	18	14	14	
	Ap	.0006		.0002	.0006	.0004	.0002	.0008	.0004	.0003	.0003	.0015	.0011	.0006	.0006	.0004	.0004	.0004	
	K	15-20		Grey cast iron Nodular cast iron Malleable cast iron	SFM(Vc)	105	95	155	140	125	170	150	150	135	175	175	160	160	160
IPT(fz)			.0001		.0001	.0002	.0002	.0001	.0002	.0002	.0002	.0002	.0004	.0004	.0004	.0004	.0004	.0004	.0003
RPM			49210		44290	49210	44290	39370	43040	38740	38740	34440	33660	33660	30300	30300	30300	26930	26930
IPM(FEED)			13		10	19	15	12	20	16	16	13	27	27	22	22	22	22	17
Ap			.0007		.0003	.0007	.0004	.0003	.0009	.0006	.0004	.0004	.0018	.0013	.0007	.0007	.0004	.0004	.0004
H			38.1-38.2		Hardened steel	SFM(Vc)	90	80	130	120	105	140	125	125	115	145	145	130	130
	IPT(fz)	.0001		.0001		.0002	.0002	.0001	.0002	.0002	.0002	.0002	.0004	.0004	.0003	.0003	.0003	.0003	.0003
	RPM	42520		38270		42130	37910	33700	35910	32310	32310	28720	28050	28050	25250	25250	25250	22440	22440
	IPM(FEED)	10		8		14	11	9	14	11	11	9	20	20	16	16	16	13	13
	Ap	.0004		.0002		.0004	.0002	.0002	.0005	.0003	.0002	.0002	.0010	.0007	.0004	.0004	.0002	.0002	.0002
	40	Chilled Cast Iron		SFM(Vc)		105	95	155	140	125	160	145	145	130	165	165	150	150	150
			IPT(fz)	.0001	.0001	.0002	.0002	.0001	.0002	.0002	.0002	.0002	.0004	.0004	.0003	.0003	.0003	.0003	.0003
			RPM	49210	44290	49210	44290	39370	40730	36660	36660	32590	31790	31790	28610	28610	28610	25430	25430
			IPM(FEED)	12	10	17	14	11	18	14	14	11	22	22	18	18	18	14	14
			Ap	.0006	.0002	.0006	.0004	.0002	.0008	.0004	.0003	.0003	.0015	.0011	.0006	.0006	.0004	.0004	.0004
			41	Hardened Cast Iron	SFM(Vc)	90	80	130	120	105	140	125	125	115	145	145	130	130	130
	IPT(fz)	.0001			.0001	.0002	.0002	.0001	.0002	.0002	.0002	.0002	.0004	.0004	.0003	.0003	.0003	.0003	.0003
	RPM	42520			38270	42130	37910	33700	35910	32310	32310	28720	28050	28050	25250	25250	25250	22440	22440
	IPM(FEED)	10			8	14	11	9	14	11	11	9	20	20	16	16	16	13	13
	Ap	.0004			.0002	.0004	.0002	.0002	.0005	.0003	.0002	.0002	.0010	.0007	.0004	.0004	.0002	.0002	.0002

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)															
				.020		.025		.030		.035		.040		.045		.050			
				LBS	5/16	3/8	5/8	1	1 1/8	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3		
P	1-8	Non-alloy steel Low alloy steel	SFM(Vc)	105	105	210	190	190	190	170	170	125	65	280	280	280	255	255	
			IPT(fz)	.0003	.0003	.0006	.0005	.0005	.0005	.0005	.0005	.0004	.0004	.0007	.0007	.0007	.0006	.0006	
			RPM	20200	20200	33660	30300	30300	30300	26930	26930	20200	10100	34470	34470	34470	31020	31020	
			IPM(FEED)	11	11	40	32	32	32	25	25	17	7	49	49	49	40	40	
			Ap	.0003	.0002	.0015	.0009	.0009	.0009	.0006	.0003	.0003	.0002	.0028	.0020	.0020	.0011	.0011	
			9	Low alloy steel	SFM(Vc)	100	100	200	180	180	180	160	160	120	60	265	265	265	240
	IPT(fz)	.0002			.0002	.0005	.0005	.0005	.0005	.0004	.0004	.0004	.0003	.0006	.0006	.0006	.0006	.0006	
	RPM	19070			19070	31790	28610	28610	28610	25430	25430	19070	9540	32550	32550	32550	29300	29300	
	IPM(FEED)	10			10	33	26	26	26	21	21	14	6	41	41	41	33	33	
	Ap	.0002			.0002	.0013	.0007	.0007	.0007	.0004	.0003	.0003	.0002	.0024	.0017	.0017	.0009	.0009	
	10-11.1	High alloyed steel, and tool steel			SFM(Vc)	105	105	210	190	190	190	170	170	125	65	280	280	280	255
			IPT(fz)	.0003	.0003	.0006	.0005	.0005	.0005	.0005	.0004	.0004	.0007	.0007	.0007	.0006	.0006		
RPM			20200	20200	33660	30300	30300	30300	26930	26930	20200	10100	34470	34470	34470	31020	31020		
IPM(FEED)			11	11	40	32	32	32	25	25	17	7	49	49	49	40	40		
Ap			.0003	.0002	.0015	.0009	.0009	.0009	.0006	.0003	.0003	.0002	.0028	.0020	.0020	.0011	.0011		
11.2			High alloyed steel, and tool steel	SFM(Vc)	100	100	200	180	180	180	160	160	120	60	265	265	265	240	240
	IPT(fz)	.0002		.0002	.0005	.0005	.0005	.0005	.0004	.0004	.0004	.0003	.0006	.0006	.0006	.0006	.0006		
	RPM	19070		19070	31790	28610	28610	28610	25430	25430	19070	9540	32550	32550	32550	29300	29300		
	IPM(FEED)	10		10	33	26	26	26	21	21	14	6	41	41	41	33	33		
	Ap	.0002		.0002	.0013	.0007	.0007	.0007	.0004	.0003	.0003	.0002	.0024	.0017	.0017	.0009	.0009		
	K	15-20		Grey cast iron Nodular cast iron Malleable cast iron	SFM(Vc)	105	105	210	190	190	190	170	170	125	65	280	280	280	255
IPT(fz)			.0003		.0003	.0006	.0005	.0005	.0005	.0005	.0004	.0004	.0007	.0007	.0007	.0006	.0006		
RPM			20200		20200	33660	30300	30300	30300	26930	26930	20200	10100	34470	34470	34470	31020	31020	
IPM(FEED)			11		11	40	32	32	32	25	25	17	7	49	49	49	40	40	
Ap			.0003		.0002	.0015	.0009	.0009	.0009	.0006	.0003	.0003	.0002	.0028	.0020	.0020	.0011	.0011	
H			38.1-38.2		Hardened steel	SFM(Vc)	90	90	175	160	160	160	140	140	105	55	235	235	235
	IPT(fz)	.0003		.0003		.0005	.0004	.0004	.0004	.0004	.0003	.0003	.0006	.0006	.0006	.0005	.0005		
	RPM	16830		16830		28050	25250	25250	25250	22440	22440	16830	8420	28720	28720	28720	25850	25850	
	IPM(FEED)	9		9		27	22	22	22	17	17	11	5	34	34	34	28	28	
	Ap	.0002		.0000		.0008	.0005	.0005	.0005	.0003	.0002	.0002	.0001	.0016	.0011	.0011	.0006	.0006	
	40	Chilled Cast Iron		SFM(Vc)		100	100	200	180	180	180	160	160	120	60	265	265	265	240
			IPT(fz)	.0002	.0002	.0005	.0005	.0005	.0005	.0004	.0004	.0004	.0003	.0006	.0006	.0006	.0006	.0006	
			RPM	19070	19070	31790	28610	28610	28										

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# YG 4G MILL END MILLS

## RECOMMENDED CUTTING CONDITIONS

# YG 4G MILL END MILLS

## RECOMMENDED CUTTING CONDITIONS

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### GMF16 SERIES 2FLUTE BALL NOSE - SLOTTING

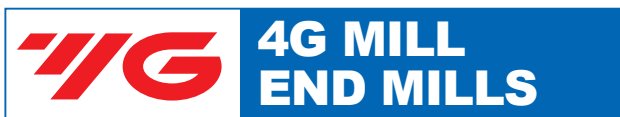
### GMF16 SERIES 2FLUTE BALL NOSE - SLOTTING

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)															
				1/32	1/32	3/64	3/64	3/64	3/64	3/64	3/64	3/64	3/64	1/16	1/16	1/16			
				LBS	5/16	3/8	1/8	5/32	3/16	1/4	5/16	3/8	1/2	9/16	5/8	3/4	5/32	1/4	5/16
P	1-8	Non-alloy steel Low alloy steel	SFM(Vc)	255	225	325	325	325	295	295	295	260	260	260	195	370	370	370	
			IPT(fz)	.0006	.0006	.0010	.0010	.0010	.0009	.0009	.0009	.0008	.0008	.0008	.0007	.0013	.0013	.0013	
			RPM	31020	27580	26510	26510	26510	23860	23860	23860	21210	21210	21210	15900	22580	22580	22580	
			IPM(FEED)	40	31	55	55	55	44	44	44	35	35	35	23	59	59	59	
	Ap	.0007	.0007	.0042	.0030	.0030	.0017	.0017	.0017	.0011	.0011	.0006	.0006	.0056	.0039	.0039			
	9	Low alloy steel	SFM(Vc)	240	215	305	305	305	275	275	275	245	245	245	185	350	350	350	
			IPT(fz)	.0006	.0005	.0009	.0009	.0009	.0008	.0008	.0008	.0007	.0007	.0007	.0006	.0012	.0012	.0012	
			RPM	29300	26040	25000	25000	25000	22500	22500	22500	20000	20000	20000	15000	21350	21350	21350	
			IPM(FEED)	33	26	46	46	46	37	37	37	29	29	29	19	50	50	50	
	Ap	.0006	.0006	.0035	.0025	.0025	.0014	.0014	.0014	.0009	.0009	.0005	.0005	.0047	.0033	.0033			
	10-11.1	High alloyed steel, and tool steel	SFM(Vc)	255	225	325	325	325	295	295	295	260	260	260	195	370	370	370	
			IPT(fz)	.0006	.0006	.0010	.0010	.0010	.0009	.0009	.0009	.0008	.0008	.0008	.0007	.0013	.0013	.0013	
RPM			31020	27580	26510	26510	26510	23860	23860	23860	21210	21210	21210	15900	22580	22580	22580		
IPM(FEED)			40	31	55	55	55	44	44	44	35	35	35	23	59	59	59		
Ap	.0007	.0007	.0042	.0030	.0030	.0017	.0017	.0017	.0011	.0011	.0006	.0006	.0056	.0039	.0039				
11.2	High alloyed steel, and tool steel	SFM(Vc)	240	215	305	305	305	275	275	275	245	245	245	185	350	350	350		
		IPT(fz)	.0006	.0005	.0009	.0009	.0009	.0008	.0008	.0008	.0007	.0007	.0007	.0006	.0012	.0012	.0012		
		RPM	29300	26040	25000	25000	25000	22500	22500	22500	20000	20000	20000	15000	21350	21350	21350		
		IPM(FEED)	33	26	46	46	46	37	37	37	29	29	29	19	50	50	50		
Ap	.0006	.0006	.0035	.0025	.0025	.0014	.0014	.0014	.0009	.0009	.0005	.0005	.0047	.0033	.0033				
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	SFM(Vc)	255	225	325	325	325	295	295	295	260	260	260	195	370	370	370	
			IPT(fz)	.0006	.0006	.0010	.0010	.0010	.0009	.0009	.0009	.0008	.0008	.0008	.0007	.0013	.0013	.0013	
			RPM	31020	27580	26510	26510	26510	23860	23860	23860	21210	21210	21210	15900	22580	22580	22580	
			IPM(FEED)	40	31	55	55	55	44	44	44	35	35	35	23	59	59	59	
Ap	.0007	.0007	.0042	.0030	.0030	.0017	.0017	.0017	.0011	.0011	.0006	.0006	.0056	.0039	.0039				
H	38.1-38.2	Hardened steel	SFM(Vc)	210	190	270	270	270	245	245	245	215	215	215	160	310	310	310	
			IPT(fz)	.0005	.0005	.0009	.0009	.0009	.0008	.0008	.0008	.0007	.0007	.0007	.0006	.0011	.0011	.0011	
			RPM	25850	22980	22070	22070	22070	19870	19870	19870	17660	17660	17660	13240	18900	18900	18900	
			IPM(FEED)	28	22	38	38	38	31	31	31	24	24	24	16	40	40	40	
	Ap	.0004	.0004	.0024	.0017	.0017	.0009	.0009	.0009	.0006	.0006	.0004	.0004	.0031	.0022	.0022			
	40	Chilled Cast Iron	SFM(Vc)	240	215	305	305	305	275	275	275	245	245	245	185	350	350	350	
			IPT(fz)	.0006	.0005	.0009	.0009	.0009	.0008	.0008	.0008	.0007	.0007	.0007	.0006	.0012	.0012	.0012	
			RPM	29300	26040	25000	25000	25000	22500	22500	22500	20000	20000	20000	15000	21350	21350	21350	
			IPM(FEED)	33	26	46	46	46	37	37	37	29	29	29	19	50	50	50	
	Ap	.0006	.0006	.0035	.0025	.0025	.0014	.0014	.0014	.0009	.0009	.0005	.0005	.0047	.0033	.0033			
	41	Hardened Cast Iron	SFM(Vc)	210	190	270	270	270	245	245	245	215	215	215	160	310	310	310	
			IPT(fz)	.0005	.0005	.0009	.0009	.0009	.0008	.0008	.0008	.0007	.0007	.0007	.0006	.0011	.0011	.0011	
RPM			25850	22980	22070	22070	22070	19870	19870	19870	17660	17660	17660	13240	18900	18900	18900		
IPM(FEED)			28	22	38	38	38	31	31	31	24	24	24	16	40	40	40		
Ap	.0004	.0004	.0024	.0017	.0017	.0009	.0009	.0009	.0006	.0006	.0004	.0004	.0031	.0022	.0022				

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)															
				1/16	1/16	1/16	1/16	1/16	1/16	5/64	5/64	5/64	5/64	5/64	5/64	5/64	5/64		
				LBS	3/8	1/2	9/16	5/8	3/4	1/4	5/16	3/8	1/2	9/16	5/8	11/16	3/4	1	1-3/16
P	1-8	Non-alloy steel Low alloy steel	SFM(Vc)	330	330	330	330	295	370	370	370	335	335	335	335	295	225		
			IPT(fz)	.0012	.0012	.0012	.0012	.0010	.0020	.0020	.0020	.0018	.0018	.0018	.0018	.0018	.0016	.0014	
			RPM	20320	20320	20320	20320	18070	18140	18140	16330	16330	16330	16330	16330	16330	14510	10890	
			IPM(FEED)	48	48	48	48	38	71	71	58	58	58	58	58	58	46	30	
	Ap	.0022	.0022	.0014	.0014	.0014	.0049	.0049	.0049	.0028	.0028	.0028	.0018	.0018	.0018	.0011			
	9	Low alloy steel	SFM(Vc)	315	315	315	315	280	350	350	350	315	315	315	315	280	210		
			IPT(fz)	.0011	.0011	.0011	.0011	.0009	.0018	.0018	.0018	.0016	.0016	.0016	.0016	.0016	.0014	.0012	
			RPM	19220	19220	19220	19220	17080	17130	17130	15420	15420	15420	15420	15420	15420	13710	10280	
			IPM(FEED)	41	41	41	41	32	60	60	49	49	49	49	49	49	39	25	
	Ap	.0019	.0019	.0012	.0012	.0012	.0041	.0041	.0041	.0024	.0024	.0024	.0015	.0015	.0015	.0009			
	10-11.1	High alloyed steel, and tool steel	SFM(Vc)	330	330	330	330	295	370	370	370	335	335	335	335	295	225		
			IPT(fz)	.0012	.0012	.0012	.0012	.0010	.0020	.0020	.0020	.0018	.0018	.0018	.0018	.0018	.0016	.0014	
RPM			20320	20320	20320	20320	18070	18140	18140	16330	16330	16330	16330	16330	16330	14510	10890		
IPM(FEED)			48	48	48	48	38	71	71	58	58	58	58	58	58	46	30		
Ap	.0022	.0022	.0014	.0014	.0014	.0049	.0049	.0049	.0028	.0028	.0028	.0018	.0018	.0018	.0011				
11.2	High alloyed steel, and tool steel	SFM(Vc)	315	315	315	315	280	350	350	350	315	315	315	315	280	210			
		IPT(fz)	.0011	.0011	.0011	.0011	.0009	.0018	.0018	.0018	.0016	.0016	.0016	.0016	.0016	.0014	.0012		
		RPM	19220	19220	19220	19220	17080	17130	17130	15420	15420	15420	15420	15420	15420	13710	10280		
		IPM(FEED)	41	41	41	41	32	60	60	49	49	49	49	49	49	39	25		
Ap	.0019	.0019	.0012	.0012	.0012	.0041	.0041	.0041	.0024	.0024	.0024	.0015	.0015	.0015	.0009				
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	SFM(Vc)	330	330	330	330	295	370	370	370	335	335	335	335	295	225		
			IPT(fz)	.0012	.0012	.0012	.0012	.0010	.0020	.0020	.0020	.0018	.0018	.0018	.0018	.0018	.0016	.0014	
			RPM	20320	20320	20320	20320	18070	18140	18140	16330	16330	16330	16330	16330	16330	14510	10890	
			IPM(FEED)	48	48	48	48	38	71	71	58	58	58	58	58	58	46	30	
Ap	.0022	.0022	.0014	.0014	.0014	.0049	.0049	.0049	.0028	.0028	.0028	.0018	.0018	.0018	.0011				
H	38.1-38.2	Hardened steel	SFM(Vc)	280	280	280	280	245	310	310	310	280	280	280	280	245	185		
			IPT(fz)	.0010	.0010	.0010	.0010	.0008	.0017	.0017	.0017	.0015	.0015	.0015	.0015	.0015	.0014	.0012	
			RPM	17010	17010	17010	17010	15120	15120	15120	13610	13610	13610	13610	13610	13610	12090	9070	
			IPM(FEED)	33	33	33	33	26	51	51	41	41	41	41	41	41	33	22	
	Ap	.0013	.0013	.0008	.0008	.0008	.0027	.0027	.0027	.0016	.0016	.0016	.0010	.0010	.0010	.0006			
	40	Chilled Cast Iron	SFM(Vc)	315	315	315	315	280	350	350	350	315	315	315	315	280	210		
			IPT(fz)	.0011	.0011	.0011	.0011	.0009	.0018	.0018	.0018	.0016	.0016	.0016	.0016	.0016	.0014	.0012	
			RPM	19220	19220	19220	19220	17080	17130	17130	15420	15420	15420	15420	15420	15420	13710	10280	
			IPM(FEED)	41	41	41	41	32	60	60	49	49	49	49	49	49	39	25	
	Ap	.0019	.0019	.0012	.001														



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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

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GMF16 SERIES 2FLUTE BALL NOSE - SLOTTING

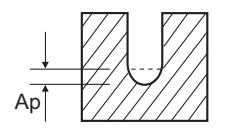
GMF16 SERIES 2FLUTE BALL NOSE - SLOTTING

Table with columns for ISO, VDI 3323, Material Description, Parameter (LBS), and Diameter (Ø) with sub-columns for various diameters (3/32 to 3/16). Rows include P (Non-alloy steel, Low alloy steel, High alloyed steel, and tool steel), K (Grey cast iron, Nodular cast iron, Malleable cast iron), and H (Hardened steel, Chilled Cast Iron).

Table with columns for ISO, VDI 3323, Material Description, Parameter (LBS), and Diameter (Ø) with sub-columns for various diameters (3/16 to 1/2). Rows include P (Non-alloy steel, Low alloy steel, High alloyed steel, and tool steel), K (Grey cast iron, Nodular cast iron, Malleable cast iron), and H (Hardened steel, Chilled Cast Iron).

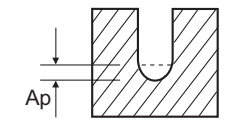
SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

(Depth of Cut per one pass)



SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

(Depth of Cut per one pass)



**YG 4G MILL END MILLS**

**RECOMMENDED CUTTING CONDITIONS**

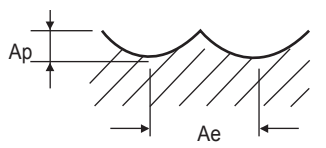
**YG 4G MILL END MILLS**

**RECOMMENDED CUTTING CONDITIONS**

**GMF17 SERIES 4FLUTE BALL NOSE - PLANE**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)					
						1/8	3/16	1/4	5/16	3/8	1/2
P	1-8	Non-alloy steel Low alloy steel	0.05D	0.02D	SFM(Vc)	745	865	940	935	940	940
					IPT(fz)	.0022	.0032	.0040	.0046	.0049	.0055
					RPM	22700	17600	14400	11400	9600	7200
					IPM(FEED)	202	224	231	208	190	159
					SFM(Vc)	540	640	755	760	760	760
					IPT(fz)	.0022	.0029	.0036	.0043	.0046	.0051
	9	Low alloy steel	0.05D	0.02D	SFM(Vc)	745	865	940	935	940	940
					IPT(fz)	.0022	.0032	.0040	.0046	.0049	.0055
					RPM	22700	17600	14400	11400	9600	7200
					IPM(FEED)	202	224	231	208	190	159
					SFM(Vc)	540	640	755	760	760	760
					IPT(fz)	.0022	.0029	.0036	.0043	.0046	.0051
10-11.1	High alloyed steel, and tool steel	0.08D	0.02D	SFM(Vc)	745	865	940	935	940	940	
				IPT(fz)	.0022	.0032	.0040	.0046	.0049	.0055	
				RPM	22700	17600	14400	11400	9600	7200	
				IPM(FEED)	202	224	231	208	190	159	
				SFM(Vc)	540	640	755	760	760	760	
				IPT(fz)	.0022	.0029	.0036	.0043	.0046	.0051	
11.2	High alloyed steel, and tool steel	0.05D	0.02D	SFM(Vc)	745	865	940	935	940	940	
				IPT(fz)	.0022	.0032	.0040	.0046	.0049	.0055	
				RPM	22700	17600	14400	11400	9600	7200	
				IPM(FEED)	202	224	231	208	190	159	
				SFM(Vc)	540	640	755	760	760	760	
				IPT(fz)	.0022	.0029	.0036	.0043	.0046	.0051	
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.05D	0.02D	SFM(Vc)	745	865	940	935	940	940
					IPT(fz)	.0022	.0032	.0040	.0046	.0049	.0055
					RPM	22700	17600	14400	11400	9600	7200
					IPM(FEED)	202	224	231	208	190	159
					SFM(Vc)	495	600	685	685	685	685
					IPT(fz)	.0022	.0029	.0034	.0040	.0042	.0043
H	38.1-38.2	Hardened steel	0.05D	0.02D	SFM(Vc)	495	600	685	685	685	685
					IPT(fz)	.0022	.0029	.0034	.0040	.0042	.0043
					RPM	15120	12250	10490	8390	6990	5230
					IPM(FEED)	136	144	143	133	119	89
					SFM(Vc)	540	640	755	760	760	760
					IPT(fz)	.0022	.0029	.0036	.0043	.0046	.0051
	40	Chilled Cast Iron	0.05D	0.02D	SFM(Vc)	495	600	685	685	685	685
					IPT(fz)	.0022	.0029	.0034	.0040	.0042	.0043
					RPM	15120	12250	10490	8390	6990	5230
					IPM(FEED)	136	144	143	133	119	89
					SFM(Vc)	540	640	755	760	760	760
					IPT(fz)	.0022	.0029	.0036	.0043	.0046	.0051
41	Hardened Cast Iron	0.05D	0.02D	SFM(Vc)	495	600	685	685	685	685	
				IPT(fz)	.0022	.0029	.0034	.0040	.0042	.0043	
				RPM	15120	12250	10490	8390	6990	5230	
				IPM(FEED)	136	144	143	133	119	89	
				SFM(Vc)	495	600	685	685	685	685	
				IPT(fz)	.0022	.0029	.0034	.0040	.0042	.0043	

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)

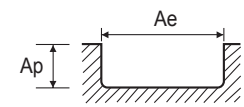


**GMF18 SERIES 2FLUTE CORNER RADIUS - SLOTTING**

DIA. = Diameter  
 LBS = Length Below Shank  
 RPM = rev./min.  
 FEED = inch/min.

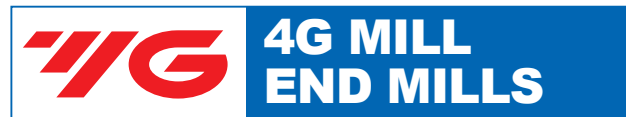
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)															
						3/64	1/16	5/64	1/8	9/64	13/64	1/4	5/16	3/8	1/2	9/16	5/8	3/4			
P	1-8	Non-alloy steel Low alloy steel	1.0D	0.2D	SFM(Vc)	305	340	370	410	430	475	490	490	520	510	515	505	510			
					IPT(fz)	.0002	.0002	.0003	.0004	.0005	.0009	.0012	.0018	.0021	.0020	.0023	.0022				
					RPM	25000	20800	18100	12500	11700	8900	7500	6000	5300	3900	3500	3100	2600			
					IPM(FEED)	10	9	10	10	12	16	19	22	22	16	15	14	12			
					SFM(Vc)	195	210	240	265	280	300	310	315	340	345	350	345	340			
					IPT(fz)	.0001	.0002	.0002	.0003	.0004	.0007	.0010	.0013	.0015	.0016	.0016	.0016	.0014			
	9	Low alloy steel	1.0D	0.2D	SFM(Vc)	305	340	370	410	430	475	490	490	520	510	515	505	510			
					IPT(fz)	.0002	.0002	.0003	.0004	.0005	.0009	.0012	.0018	.0021	.0020	.0023	.0022				
					RPM	25000	20800	18100	12500	11700	8900	7500	6000	5300	3900	3500	3100	2600			
					IPM(FEED)	10	9	10	10	12	16	19	22	22	16	15	14	12			
					SFM(Vc)	195	210	240	265	280	300	310	315	340	345	350	345	340			
					IPT(fz)	.0001	.0002	.0002	.0003	.0004	.0007	.0010	.0013	.0015	.0016	.0016	.0016	.0014			
10-11.1	High alloyed steel, and tool steel	1.0D	0.2D	SFM(Vc)	305	340	370	410	430	475	490	490	520	510	515	505	510				
				IPT(fz)	.0002	.0002	.0003	.0004	.0005	.0009	.0012	.0018	.0021	.0020	.0023	.0022					
				RPM	25000	20800	18100	12500	11700	8900	7500	6000	5300	3900	3500	3100	2600				
				IPM(FEED)	10	9	10	10	12	16	19	22	22	16	15	14	12				
				SFM(Vc)	195	210	240	265	280	300	310	315	340	345	350	345	340				
				IPT(fz)	.0001	.0002	.0002	.0003	.0004	.0007	.0010	.0013	.0015	.0016	.0016	.0016	.0014				
11.2	High alloyed steel, and tool steel	1.0D	0.2D	SFM(Vc)	305	340	370	410	430	475	490	490	520	510	515	505	510				
				IPT(fz)	.0002	.0002	.0003	.0004	.0005	.0009	.0012	.0018	.0021	.0020	.0023	.0022					
				RPM	25000	20800	18100	12500	11700	8900	7500	6000	5300	3900	3500	3100	2600				
				IPM(FEED)	10	9	10	10	12	16	19	22	22	16	15	14	12				
				SFM(Vc)	195	210	240	265	280	300	310	315	340	345	350	345	340				
				IPT(fz)	.0001	.0002	.0002	.0003	.0004	.0007	.0010	.0013	.0015	.0016	.0016	.0016	.0014				
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	0.2D	SFM(Vc)	305	340	370	410	430	475	490	490	520	510	515	505	510			
					IPT(fz)	.0002	.0002	.0003	.0004	.0005	.0009	.0012	.0018	.0021	.0020	.0023	.0022				
					RPM	25000	20800	18100	12500	11700	8900	7500	6000	5300	3900	3500	3100	2600			
					IPM(FEED)	10	9	10	10	12	16	19	22	22	16	15	14	12			
					SFM(Vc)	120	130	150	165	175	195	205	210	210	215	210	205				
					IPT(fz)	.0001	.0001	.0002	.0003	.0003	.0005	.0007	.0009	.0012	.0012	.0012	.0012				
H	38.1-38.2	Hardened steel	1.0D	0.2D	SFM(Vc)	120	130	150	165	175	195	205	210	210	215	210	205				
					IPT(fz)	.0001	.0001	.0002	.0003	.0003	.0005	.0007	.0009	.0012	.0012	.0012	.0012				
					RPM	9830	8030	7260	4990	4690	3680	3100	2540	2120	1590	1450	1290				
					IPM(FEED)	2	2	3	3	3	4	5	5	5	4	4	3				
					SFM(Vc)	195	210	240	265	280	300	310	315	340	345	350	345	340			
					IPT(fz)	.0001	.0002	.0002	.0003	.0004	.0007	.0010	.0013	.0015	.0016	.0016	.0016	.0014			
40	Chilled Cast Iron	1.0D	0.2D	SFM(Vc)	120	130	150	165	175	195	205	210	210	215	210	205					
				IPT(fz)	.0001	.0001	.0002	.0003	.0003	.0005	.0007	.0009	.0012	.0012	.0012	.0012					
				RPM	9830	8030	7260	4990	4690	3680	3100	2540	2120	1590	1450	1290					
				IPM(FEED)	2	2	3	3	3	4	5	5	5	4	4	3					
				SFM(Vc)	195	210	240	265	280	300	310	315	340	345	350	345	340				
				IPT(fz)	.0001	.0002	.0002	.0003	.0004	.0007	.0010	.0013	.0015	.0016	.0016	.0016	.0014				
41	Hardened Cast Iron	1.0D	0.2D	SFM(Vc)	120	130	150	165	175	195	205	210	210	215	210	205					
				IPT(fz)	.0001	.0001	.0002	.0003	.0003	.0005	.0007	.0009	.0012	.0012	.0012	.0012					
				RPM	9830	8030	7260	4990	4690	3680	3100	2540	2120	1590	1450	1290					
				IPM(FEED)	2	2	3	3	3	4	5	5	5	4	4	3					
				SFM(Vc)	120	130	150	165	175	195	205	210	210	215	210	205					
				IPT(fz)	.0001	.0001	.0002	.0003	.0003	.0005	.0007	.0009	.0012	.0012	.0012	.0012					

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)

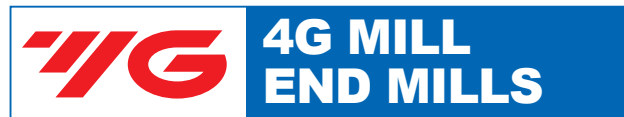








RECOMMENDED CUTTING CONDITIONS

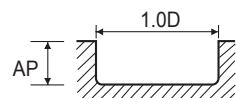


RECOMMENDED CUTTING CONDITIONS

**GMF19 SERIES** 2FLUTE CORNER RADIUS - **SLOTTING**

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)													
				1/16	1/16	5/64	5/64	5/64	5/64	5/64	1/8	1/8	1/8	1/8	1/8	1/8	
				LBS	3/8	1/2	1/4	5/16	3/8	1/2	9/16	5/8	5/16	3/8	1/2	5/8	3/4
<b>P</b>	<b>1-8</b>	Non-alloy steel Low alloy steel	SFM(Vc)	365	365	445	445	445	400	400	400	490	490	490	490	440	440
			IPT(fz)	.0002	.0002	.0003	.0003	.0003	.0003	.0003	.0003	.0004	.0004	.0004	.0004	.0004	.0004
			RPM	22450	22450	21770	21770	21770	19590	19590	19590	15020	15020	15020	15020	13520	13520
			IPM(FEED)	9	9	12	12	12	10	10	10	12	12	12	12	10	10
			Ap	.0050	.0050	.0109	.0109	.0109	.0063	.0063	.0063	.0250	.0250	.0175	.0175	.0100	.0100
			SFM(Vc)	225	225	285	285	285	255	255	255	320	320	320	320	285	285
	<b>9</b>	Low alloy steel	IPT(fz)	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0003	.0003	.0003	
			RPM	13780	13780	13910	13910	13910	12520	12520	12520	9730	9730	9730	9730	8760	8760
			IPM(FEED)	4	4	6	6	6	5	5	5	6	6	6	6	5	5
			Ap	.0037	.0037	.0082	.0082	.0082	.0047	.0047	.0047	.0187	.0187	.0131	.0131	.0075	.0075
			SFM(Vc)	365	365	445	445	445	400	400	400	490	490	490	490	440	440
			IPT(fz)	.0002	.0002	.0003	.0003	.0003	.0003	.0003	.0003	.0004	.0004	.0004	.0004	.0004	.0004
<b>10-11.1</b>	High alloyed steel, and tool steel	RPM	22450	22450	21770	21770	21770	19590	19590	19590	15020	15020	15020	15020	13520	13520	
		IPM(FEED)	9	9	12	12	12	10	10	10	12	12	12	12	10	10	
		Ap	.0050	.0050	.0109	.0109	.0109	.0063	.0063	.0063	.0250	.0250	.0175	.0175	.0100	.0100	
		SFM(Vc)	225	225	285	285	285	255	255	255	320	320	320	320	285	285	
		IPT(fz)	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0003	.0003	.0003	
		RPM	13780	13780	13910	13910	13910	12520	12520	12520	9730	9730	9730	9730	8760	8760	
<b>11.2</b>	High alloyed steel, and tool steel	IPM(FEED)	4	4	6	6	6	5	5	5	6	6	6	6	5	5	
		Ap	.0037	.0037	.0082	.0082	.0082	.0047	.0047	.0047	.0187	.0187	.0131	.0131	.0075	.0075	
		SFM(Vc)	365	365	445	445	445	400	400	400	490	490	490	490	440	440	
		IPT(fz)	.0002	.0002	.0003	.0003	.0003	.0003	.0003	.0003	.0004	.0004	.0004	.0004	.0004	.0004	
		RPM	22450	22450	21770	21770	21770	19590	19590	19590	15020	15020	15020	15020	13520	13520	
		IPM(FEED)	9	9	12	12	12	10	10	10	12	12	12	12	10	10	
<b>K</b>	<b>15-20</b>	Grey cast iron Nodular cast iron Malleable cast iron	SFM(Vc)	365	365	445	445	445	400	400	400	490	490	490	490	440	440
			IPT(fz)	.0002	.0002	.0003	.0003	.0003	.0003	.0003	.0003	.0004	.0004	.0004	.0004	.0004	.0004
			RPM	22450	22450	21770	21770	21770	19590	19590	19590	15020	15020	15020	15020	13520	13520
			IPM(FEED)	9	9	12	12	12	10	10	10	12	12	12	12	10	10
			Ap	.0050	.0050	.0109	.0109	.0109	.0063	.0063	.0063	.0250	.0250	.0175	.0175	.0100	.0100
			SFM(Vc)	140	140	180	180	180	160	160	160	195	195	195	195	175	175
<b>H</b>	<b>38.1-38.2</b>	Hardened steel	IPT(fz)	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0003	.0002	.0002	
			RPM	8670	8670	8710	8710	8710	7840	7840	7840	5950	5950	5950	5950	5360	5360
			IPM(FEED)	2	2	3	3	3	3	3	3	3	3	3	3	2	2
			Ap	.0030	.0030	.0066	.0066	.0066	.0037	.0037	.0037	.0150	.0150	.0105	.0105	.0060	.0060
			SFM(Vc)	225	225	285	285	285	255	255	255	320	320	320	320	285	285
			IPT(fz)	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0003	.0003	.0003
	<b>40</b>	Chilled Cast Iron	RPM	13780	13780	13910	13910	13910	12520	12520	12520	9730	9730	9730	9730	8760	8760
			IPM(FEED)	4	4	6	6	6	5	5	5	6	6	6	6	5	5
			Ap	.0037	.0037	.0082	.0082	.0082	.0047	.0047	.0047	.0187	.0187	.0131	.0131	.0075	.0075
			SFM(Vc)	140	140	180	180	180	160	160	160	195	195	195	195	175	175
			IPT(fz)	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0003	.0002	.0002
			RPM	8670	8670	8710	8710	8710	7840	7840	7840	5950	5950	5950	5950	5360	5360
<b>41</b>	Hardened Cast Iron	IPM(FEED)	2	2	3	3	3	3	3	3	3	3	3	2	2		
		Ap	.0030	.0030	.0066	.0066	.0066	.0037	.0037	.0037	.0150	.0150	.0105	.0105	.0060	.0060	
		SFM(Vc)	235	235	235	235	235	210	210	210	245	245	250	250	245	245	
		IPT(fz)	.0005	.0005	.0005	.0005	.0005	.0005	.0005	.0005	.0007	.0007	.0009	.0009	.0011	.0011	
		RPM	4790	4790	4790	4790	4790	4310	4310	4310	3710	3710	3040	2540	1890	1550	1260
		IPM(FEED)	5	5	5	5	5	4	4	4	5	5	6	6	5	4	3

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)

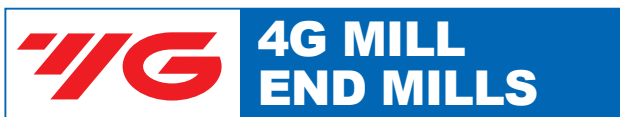


**GMF19 SERIES** 2FLUTE CORNER RADIUS - **SLOTTING**

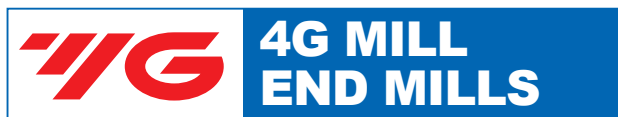
ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)															
				3/16	3/16	3/16	3/16	3/16	3/16	1/4	1/4	5/16	3/8	1/2	5/8	3/4			
				3/8	1/2	5/8	3/4	1	1-3/16	3/4	1-3/16	1	1-3/16	1-1/4	1-3/8	1-1/2			
<b>P</b>	<b>1-8</b>	Non-alloy steel Low alloy steel	SFM(Vc)	565	565	565	565	510	510	590	590	595	620	620	615	620			
			IPT(fz)	.0009	.0009	.0009	.0009	.0008	.0008	.0012	.0012	.0017	.0021	.0020	.0024	.0022			
			RPM	11550	11550	11550	11550	10390	10390	8980	8980	7260	6300	4720	3750	3150			
			IPM(FEED)	21	21	21	21	17	17	22	22	25	26	19	18	14			
			Ap	.0375	.0375	.0263	.0263	.0150	.0150	.0500	.0350	.0437	.0525	.1000	.1250	.1500			
			SFM(Vc)	360	360	360	360	325	325	370	370	375	410	415	415	400			
	<b>9</b>	Low alloy steel	IPT(fz)	.0007	.0007	.0007	.0007	.0006	.0006	.0010	.0010	.0013	.0015	.0016	.0016	.0014			
			RPM	7350	7350	7350	7350	6610	6610	5670	5670	4590	4200	3160	2540	2050			
			IPM(FEED)	10	10	10	10	8	8	11	11	12	12	10	8	6			
			Ap	.0281	.0281	.0197	.0197	.0113	.0113	.0375	.0263	.0328	.0394	.0750	.0937	.1125			
			SFM(Vc)	565	565	565	565	510	510	590	590	595	620	620	615	620			
			IPT(fz)	.0009	.0009	.0009	.0009	.0008	.0008	.0012	.0012	.0017	.0021	.0020	.0024	.0022			
<b>10-11.1</b>	High alloyed steel, and tool steel	RPM	11550	11550	11550	11550	10390	10390	8980	8980	7260	6300	4720	3750	3150				
		IPM(FEED)	21	21	21	21	17	17	22	22	25	26	19	18	14				
		Ap	.0375	.0375	.0263	.0263	.0150	.0150	.0500	.0350	.0437	.0525	.1000	.1250	.1500				
		SFM(Vc)	360	360	360	360	325	325	370	370	375	410	415	415	400				
		IPT(fz)	.0007	.0007	.0007	.0007	.0006	.0006	.0010	.0010	.0013	.0015	.0016	.0016	.0014				
		RPM	7350	7350	7350	7350	6610	6610	5670	5670	4590	4200	3160	2540	2050				
<b>11.2</b>	High alloyed steel, and tool steel	IPM(FEED)	10	10	10	10	8	8	11	11	12	12	10	8	6				
		Ap	.0281	.0281	.0197	.0197	.0113	.0113	.0375	.0263	.0328	.0394	.0750	.0937	.1125				
		SFM(Vc)	565	565	565	565	510	510	590	590	595	620	620	615	620				
		IPT(fz)	.0009	.0009	.0009	.0009	.0008	.0008	.0012	.0012	.0017	.0021	.0020	.0024	.0022				
		RPM	11550	11550	11550	11550	10390	10390	8980	8980	7260	6300	4720	3750	3150				
		IPM(FEED)	21	21	21	21	17	17	22	22	25	26	19	18	14				
<b>K</b>	<b>15-20</b>	Grey cast iron Nodular cast iron Malleable cast iron	SFM(Vc)	565	565	565	565	510	510	590	590	595	620	620	615	620			
			IPT(fz)	.0009	.0009	.0009	.0009	.0008	.0008	.0012	.0012	.0017	.0021	.0020	.0024	.0022			
			RPM	11550	11550	11550	11550	10390	10390	8980	8980	7260	6300	4720	3750	3150			
			IPM(FEED)	21	21	21	21	17	17	22	22	25	26	19	18	14			
			Ap	.0375	.0375	.0263	.0263	.0150	.0150	.0500	.0350	.0437	.0525	.1000	.1250	.1500			
			SFM(Vc)	235	235	235	235	210	210	245	245	250	250	245	255	245			
<b>H</b>	<b>38.1-38.2</b>	Hardened steel	IPT(fz)	.0005	.0005	.0005	.0005	.0005	.0005	.0007	.0007	.0009	.0011	.0012	.0012	.0012			
			RPM	4790	4790	4790	4790	4310	4310	3710	3710	3040	2540	1890	1550	1260			
			IPM(FEED)	5	5	5	5	4	4	5	5	6	6	5	4	3			
			Ap	.0225	.0225	.0157	.0157	.0090	.0090	.0300	.0210	.0263	.03						

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RECOMMENDED CUTTING CONDITIONS

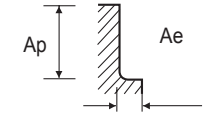


RECOMMENDED CUTTING CONDITIONS

**GMF20 SERIES** 4FLUTE CORNER RADIUS - **SIDE CUTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)												
						3/64	5/64	1/8	3/16	13/64	1/4	5/16	3/8	1/2	5/8	3/4		
<b>P</b>	1-8	Non-alloy steel Low alloy steel	0.05D	2.0D	SFM(Vc)	305	370	410	460	475	490	490	520	510	505	510		
					IPT(fz)	.0001	.0002	.0003	.0004	.0005	.0005	.0008	.0009	.0009	.0009	.0009		
					RPM	25000	18100	12500	9400	8900	7500	6000	5300	3900	3100	2600		
	9	Low alloy steel	0.05D	2.0D	SFM(Vc)	195	240	265	295	300	310	315	340	345	345	340		
					IPT(fz)	.0001	.0002	.0003	.0005	.0006	.0007	.0009	.0011	.0011	.0011	.0011		
					RPM	15870	11650	8090	5960	5620	4760	3830	3440	2630	2120	1720		
	10-11.1	High alloyed steel, and tool steel	0.05D	2.0D	SFM(Vc)	305	370	410	460	475	490	490	520	510	505	510		
					IPT(fz)	.0001	.0002	.0003	.0004	.0005	.0005	.0008	.0009	.0009	.0009	.0009		
					RPM	25000	18100	12500	9400	8900	7500	6000	5300	3900	3100	2600		
	11.2	High alloyed steel, and tool steel	0.05D	2.0D	SFM(Vc)	195	240	265	295	300	310	315	340	345	345	340		
					IPT(fz)	.0001	.0002	.0003	.0005	.0006	.0007	.0009	.0011	.0011	.0011	.0011		
					RPM	15870	11650	8090	5960	5620	4760	3830	3440	2630	2120	1720		
<b>K</b>	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.05D	2.0D	SFM(Vc)	305	370	410	460	475	490	490	520	510	505	510		
					IPT(fz)	.0001	.0002	.0003	.0004	.0005	.0005	.0008	.0009	.0009	.0009	.0009		
					RPM	25000	18100	12500	9400	8900	7500	6000	5300	3900	3100	2600		
<b>H</b>	38.1-38.2	Hardened steel	0.02D	2.0D	SFM(Vc)	120	150	165	190	195	205	210	210	210	210	205		
					IPT(fz)	.0001	.0002	.0002	.0004	.0004	.0005	.0007	.0008	.0008	.0009	.0009		
					RPM	9830	7260	4990	3830	3680	3100	2540	2120	1590	1290	1050		
	40	Chilled Cast Iron	0.05D	2.0D	SFM(Vc)	195	240	265	295	300	310	315	340	345	345	340		
					IPT(fz)	.0001	.0002	.0003	.0005	.0006	.0007	.0009	.0011	.0011	.0011	.0011		
					RPM	15870	11650	8090	5960	5620	4760	3830	3440	2630	2120	1720		
	41	Hardened Cast Iron	0.02D	2.0D	SFM(Vc)	120	150	165	190	195	205	210	210	210	210	205		
					IPT(fz)	.0001	.0002	.0002	.0004	.0004	.0005	.0007	.0008	.0008	.0009	.0009		
					RPM	9830	7260	4990	3830	3680	3100	2540	2120	1590	1290	1050		

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)

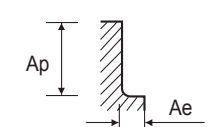


\* 1.5XD Axial cutting depth should be for DIA over 5/8 inch

**GAE53 SERIES** 4&5 FLUTE CORNER RADIUS - **SIDE CUTTING**

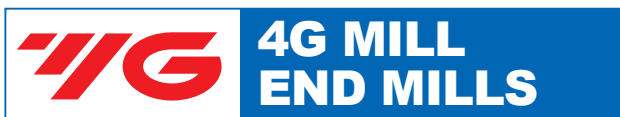
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)									
						6	8	10	12	14	16	18	20		
<b>P</b>	1	Non-alloy steel	0.5D	1.5D	SFM(Vc)	200	225	220	225	225	230	225	225		
					IPT(fz)	.0007	.0011	.0020	.0024	.0022	.0024	.0028	.0032		
					RPM	3250	2750	2150	1800	1550	1400	1200	1100		
	2	Non-alloy steel	0.5D	1.5D	SFM(Vc)	155	175	175	175	175	180	185	175		
					IPT(fz)	.0007	.0011	.0019	.0025	.0023	.0025	.0028	.0032		
					RPM	2500	2150	1700	1400	1200	1100	1000	850		
	3-4	Non-alloy steel	0.5D	1.5D	SFM(Vc)	110	130	125	125	125	125	130	125		
					IPT(fz)	.0007	.0011	.0017	.0024	.0022	.0025	.0027	.0031		
					RPM	1800	1550	1200	1000	850	750	700	600		
	5	Non-alloy steel	0.5D	1.5D	SFM(Vc)	95	100	105	105	100	100	100	105		
					IPT(fz)	.0007	.0011	.0017	.0022	.0021	.0025	.0027	.0030		
					RPM	1500	1200	1000	850	700	600	550	500		
6	Low alloy steel	0.5D	1.5D	SFM(Vc)	155	175	175	175	175	180	185	175			
				IPT(fz)	.0007	.0011	.0019	.0025	.0023	.0025	.0028	.0032			
				RPM	2500	2150	1700	1400	1200	1100	1000	850			
7	Low alloy steel	0.5D	1.5D	SFM(Vc)	110	130	125	125	125	125	130	125			
				IPT(fz)	.0007	.0011	.0017	.0024	.0022	.0025	.0027	.0031			
				RPM	1800	1550	1200	1000	850	750	700	600			
8-9	Low alloy steel	0.5D	1.5D	SFM(Vc)	95	100	105	105	100	100	100	105			
				IPT(fz)	.0007	.0011	.0017	.0022	.0021	.0025	.0027	.0030			
				RPM	1500	1200	1000	850	700	600	550	500			
10	High alloyed steel, and tool steel	0.5D	1.5D	SFM(Vc)	155	175	175	175	175	180	185	175			
				IPT(fz)	.0007	.0011	.0019	.0025	.0023	.0025	.0028	.0032			
				RPM	2500	2150	1700	1400	1200	1100	1000	850			
11.1	High alloyed steel, and tool steel	0.5D	1.5D	SFM(Vc)	95	100	105	105	100	100	100	105			
				IPT(fz)	.0007	.0011	.0017	.0022	.0021	.0025	.0027	.0030			
				RPM	1500	1200	1000	850	700	600	550	500			
<b>M</b>	14.1-14.2	Stainless steel	0.5D	1.5D	SFM(Vc)	110	120	120	115	125	115	120	125		
					IPT(fz)	.0007	.0012	.0017	.0025	.0023	.0028	.0030	.0032		
					RPM	1750	1450	1150	950	850	700	650	600		
<b>K</b>	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.5D	1.5D	SFM(Vc)	155	175	175	175	175	180	185	175		
					IPT(fz)	.0007	.0011	.0019	.0025	.0023	.0025	.0028	.0032		
					RPM	2500	2150	1700	1400	1200	1100	1000	850		

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)

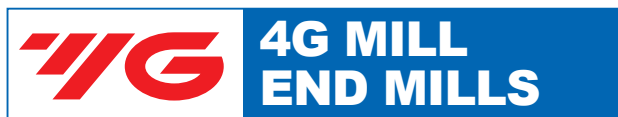


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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

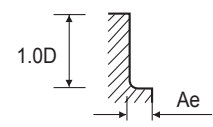
GMF21 SERIES 4FLUTE CORNER RADIUS - SIDE CUTTING

GMF21 SERIES 4FLUTE CORNER RADIUS - SIDE CUTTING

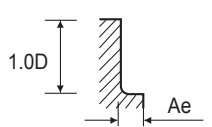
Table with columns for ISO, VDI 3323, Material Description, Parameter, and Diameter (Ø) / LBS. Rows include P (1-8, 9, 10, 11.1-11.2) and K (15-20) series.

Table with columns for ISO, VDI 3323, Parameter, and Diameter (Ø) / LBS. Rows include P (1-8, 9, 10, 11.1-11.2) and K (15-20) series.

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)



SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)





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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

GMF22 SERIES 2FLUTE SQUARE - SLOTTING

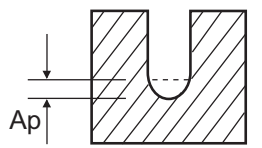
GMF22 SERIES 2FLUTE SQUARE - SLOTTING

Table with columns: ISO, VDI 3323, Material Description, Parameter, Diameter (Ø) / LBS (sub-columns: .008, .015, .015, .015, .015, .015, .020, .020, .020, .020, .020, .024, .024, .024). Rows include P (1-8, 9, 10, 11.1-11.2) and K (15-20) series.

Table with columns: ISO, VDI 3323, Parameter, Diameter (Ø) / LBS (sub-columns: .024, .024, .024, .024, .024, 1/32, 1/32, 1/32, 1/32, 1/32, 1/32, 3/64, 3/64, 3/64). Rows include P (1-8, 9, 10, 11.1-11.2) and K (15-20) series.

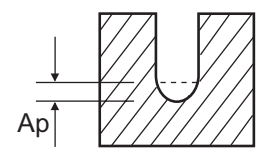
SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

(Depth of Cut per one pass)



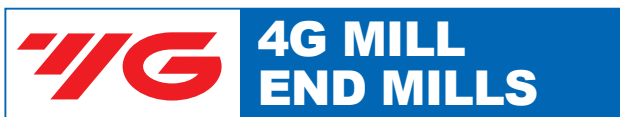
SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

(Depth of Cut per one pass)

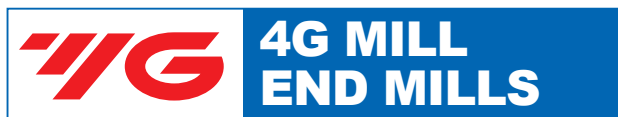


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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

GMF22 SERIES 2FLUTE SQUARE - SLOTTING

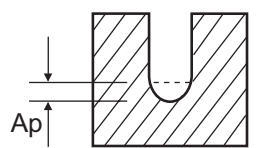
GMF22 SERIES 2FLUTE SQUARE - SLOTTING

Table with columns: ISO, VDI 3323, Material Description, Parameter, Diameter (Ø) / LBS (3/64 to 1/16), SFM(Vc), IPT(fz), RPM, IPM(FEED), Ap. Rows include P (1-8, 9, 10, 11.1-11.2), K (15-20), and H (38.1-38.2, 40, 41).

Table with columns: ISO, VDI 3323, Material Description, Parameter, Diameter (Ø) / LBS (1/16 to 1/8), SFM(Vc), IPT(fz), RPM, IPM(FEED), Ap. Rows include P (1-8, 9, 10, 11.1-11.2), K (15-20), and H (38.1-38.2, 40, 41).

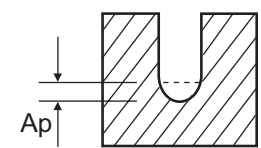
SFM = Surface Feet per Minute
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Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

(Depth of Cut per one pass)



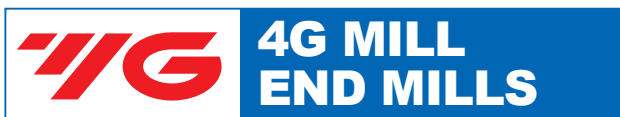
SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

(Depth of Cut per one pass)

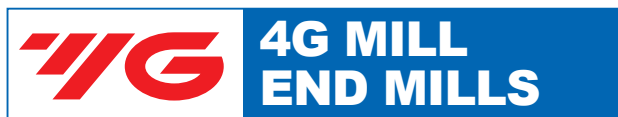


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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

GMF22 SERIES 2FLUTE SQUARE - SLOTTING

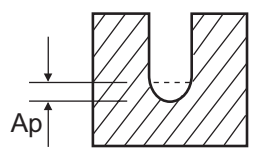
GMF22 SERIES 2FLUTE SQUARE - SLOTTING

Table with columns: ISO, VDI 3323, Material Description, Parameter, Diameter (Ø) / LBS (1/8, 1/8, 1/8, 1/8, 1/8, 1/8, 3/16, 3/16, 3/16, 3/16, 3/16, 3/16, 3/16, 13/64), SFM(Vc), IPT(fz), RPM, IPM(FEED), Ap. Rows include materials like Non-alloy steel, Low alloy steel, High alloyed steel, Grey cast iron, Hardened steel, and Chilled Cast Iron.

Table with columns: ISO, VDI 3323, Material Description, Parameter, Diameter (Ø) / LBS (13/64, 13/64, 13/64, 13/64, 1/4, 1/4, 1/4, 5/16, 3/8, 3/8, 1/2, 1/2), SFM(Vc), IPT(fz), RPM, IPM(FEED), Ap. Rows include materials like Non-alloy steel, Low alloy steel, High alloyed steel, Grey cast iron, Hardened steel, and Chilled Cast Iron.

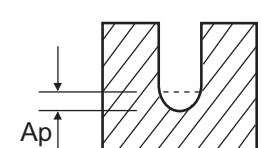
SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

(Depth of Cut per one pass)



SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

(Depth of Cut per one pass)





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RECOMMENDED CUTTING CONDITIONS



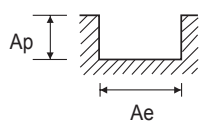
RECOMMENDED CUTTING CONDITIONS

GMF23 SERIES 2FLUTE SQUARE - SLOTTING

GMF23 SERIES 2FLUTE SQUARE - SLOTTING

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) (sub-columns: .004, .008, .012, .015, .020, .024, .028, .031, .035, .040, .047, 1/16, 5/64, 3/32). Rows include P (1-8, 9, 10, 11.1-11.2), M (14.1), K (15-20), and H (38.1-38.2, 40, 41).

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)



CBN END MILLS

i-Xmill END MILLS

i-SMART MODULAR END MILLS

X5070 END MILLS

4G MILL END MILLS

X-POWER PRO END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

V7 PLUS A END MILLS

V7 MILL INOX

ALU-POWER HPC END MILLS

ALU-POWER END MILLS

D-POWER GRAPHITE END MILLS

STANDARD CARBIDE

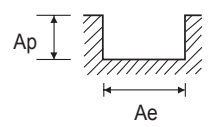
ONLY ONE COATED PM60 END MILLS

SINE-POWER

TANK-POWER END MILLS

STANDARD COBALT & HSS

TECHNICAL DATA



HSS

HSS

**YG 4G MILL END MILLS**

**RECOMMENDED CUTTING CONDITIONS**

**YG 4G MILL END MILLS**

**RECOMMENDED CUTTING CONDITIONS**

**GMF24 SERIES 2FLUTE SQUARE - SLOTTING**

**GMF24 SERIES 2FLUTE SQUARE - SLOTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø) / LOC																																																							
						3/64		3/64		3/64		3/64		1/16		1/16		1/16		1/16		5/64		5/64																																					
						LOC	1/8	5/32	1/4	5/16	3/8	1/4	5/16	3/8	1/2	5/8	5/16	3/8	1/2	5/8	5/16	3/8	1/2																																						
P	1-8	Non-alloy steel Low alloy steel	1.0D	0.3D (Up to Ø1/8 : 0.2D)	SFM(Vc)	170	170	150	150	150	165	165	145	145	145	190	190	170	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	RPM	13710	13710	12340	12340	12340	10000	10000	9000	9000	9000	9210	9210	8290	IPM(FEED)	3	3	3	2	2	3	3	2	2	3	3	3			
					SFM(Vc)	135	135	120	120	120	130	130	120	120	120	150	150	135	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0001	.0001	.0001	.0002	.0002	.0002	RPM	10970	10970	9870	9870	9870	8000	8000	7200	7200	7200	7370	7370	6640	IPM(FEED)	3	3	2	2	2	2	2	2	2	3	3	2		
					SFM(Vc)	170	170	150	150	150	165	165	145	145	145	190	190	170	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	RPM	13710	13710	12340	12340	12340	10000	10000	9000	9000	9210	9210	8290	IPM(FEED)	3	3	3	2	2	3	3	2	2	3	3	3			
					SFM(Vc)	135	135	120	120	120	130	130	120	120	120	150	150	135	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0001	.0001	.0001	.0002	.0002	.0002	RPM	10970	10970	9870	9870	9870	8000	8000	7200	7200	7200	7370	7370	6640	IPM(FEED)	3	3	2	2	2	2	2	2	2	3	3	2		
					SFM(Vc)	170	170	150	150	150	165	165	145	145	145	190	190	170	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	RPM	13710	13710	12340	12340	12340	10000	10000	9000	9000	9210	9210	8290	IPM(FEED)	3	3	3	2	2	3	3	2	2	3	3	3			
					SFM(Vc)	135	135	120	120	120	130	130	120	120	120	150	150	135	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0001	.0001	.0001	.0002	.0002	.0002	RPM	10970	10970	9870	9870	9870	8000	8000	7200	7200	7200	7370	7370	6640	IPM(FEED)	3	3	2	2	2	2	2	2	2	3	3	2		
	K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	0.3D (Up to Ø1/8 : 0.2D)	SFM(Vc)	170	170	150	150	150	165	165	145	145	145	190	190	170	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	RPM	13710	13710	12340	12340	12340	10000	10000	9000	9000	9210	9210	8290	IPM(FEED)	3	3	3	2	2	3	3	2	2	3	3	3			
						SFM(Vc)	85	85	75	75	75	80	80	75	75	75	95	95	85	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0001	RPM	6860	6860	6170	6170	6170	5000	5000	4500	4500	4500	4610	4610	4150	IPM(FEED)	1.2	1.2	1.0	1.0	0.8	1.0	1.0	0.8	0.8	0.8	1.4	1.4	1.2
						SFM(Vc)	135	135	120	120	120	130	130	120	120	120	150	150	135	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0001	.0001	.0001	.0002	.0002	.0002	RPM	10970	10970	9870	9870	9870	8000	8000	7200	7200	7200	7370	7370	6640	IPM(FEED)	3	3	2	2	2	2	2	2	2	3	3	2	
						SFM(Vc)	85	85	75	75	75	80	80	75	75	75	95	95	85	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0001	RPM	6860	6860	6170	6170	6170	5000	5000	4500	4500	4500	4610	4610	4150	IPM(FEED)	1.2	1.2	1.0	1.0	0.8	1.0	1.0	0.8	0.8	0.8	1.4	1.4	1.2
						SFM(Vc)	170	170	150	150	150	165	165	145	145	145	190	190	170	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	RPM	13710	13710	12340	12340	12340	10000	10000	9000	9000	9210	9210	8290	IPM(FEED)	3	3	3	2	2	3	3	2	2	3	3	3		
						SFM(Vc)	135	135	120	120	120	130	130	120	120	120	150	150	135	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0001	.0001	.0001	.0002	.0002	.0002	RPM	10970	10970	9870	9870	9870	8000	8000	7200	7200	7200	7370	7370	6640	IPM(FEED)	3	3	2	2	2	2	2	2	2	3	3	2	
H	38.1-38.2	Hardened steel	1.0D	0.05D	SFM(Vc)	85	85	75	75	75	80	80	75	75	75	95	95	85	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0001	RPM	6860	6860	6170	6170	6170	5000	5000	4500	4500	4500	4610	4610	4150	IPM(FEED)	1.2	1.2	1.0	1.0	0.8	1.0	1.0	0.8	0.8	0.8	1.4	1.4	1.2		
					SFM(Vc)	135	135	120	120	120	130	130	120	120	120	150	150	135	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0001	.0001	.0001	.0002	.0002	.0002	RPM	10970	10970	9870	9870	9870	8000	8000	7200	7200	7200	7370	7370	6640	IPM(FEED)	3	3	2	2	2	2	2	2	2	3	3	2		
					SFM(Vc)	85	85	75	75	75	80	80	75	75	75	95	95	85	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0001	RPM	6860	6860	6170	6170	6170	5000	5000	4500	4500	4500	4610	4610	4150	IPM(FEED)	1.2	1.2	1.0	1.0	0.8	1.0	1.0	0.8	0.8	0.8	1.4	1.4	1.2	

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø) / LOC																																																					
						5/64		3/32		1/8		1/8		1/8		1/8		3/16		3/16		3/16		13/64																																			
						LOC	5/8	5/8	3/8	1/2	5/8	3/4	1	1/2	5/8	3/4	1	13/16	3/4																																								
P	1-8	Non-alloy steel Low alloy steel	1.0D	0.3D (Up to Ø1/8 : 0.2D)	SFM(Vc)	170	190	185	185	185	165	165	180	180	160	160	220	IPT(fz)	.0001	.0002	.0003	.0003	.0003	.0003	.0003	.0005	.0005	.0005	.0004	.0007	RPM	8290	7640	5670	5670	5670	5100	5100	3630	3630	3630	3270	3270	4130	IPM(FEED)	2	3	4	4	4	3	3	3	3	3	3	3	3	6
					SFM(Vc)	135	150	150	150	150	135	135	140	140	140	130	130	175	IPT(fz)	.0002	.0002	.0003	.0003	.0003	.0003	.0005	.0005	.0005	.0005	.0004	.0007	RPM	6640	6150	4600	4600	4600	4140	4140	2890	2890	2890	2600	2600	3270	IPM(FEED)	2	3	3	3	3	2	2	3	3	3	3	2	5
					SFM(Vc)	170	190	185	185	185	165	165	180	180	160	160	220	IPT(fz)	.0001	.0002	.0003	.0003	.0003	.0003	.0005	.0005	.0005	.0005	.0004	.0007	RPM	8290	7640	5670	5670	5670	5100	5100	3630	3630	3630	3270	3270	4130	IPM(FEED)	2	3	4	4	4	3	3	3	3	3	3	3	3	6
					SFM(Vc)	135	150	150	150	150	135	135	140	140	140	130	130	175	IPT(fz)	.0002	.0002	.0003	.0003	.0003	.0003	.0005	.0005	.0005	.0005	.0004	.0007	RPM	6640	6150	4600	4600	4600	4140	4140	2890	2890	2890	2600	2600	3270	IPM(FEED)	2	3	3	3	3	2	2	3	3	3	3	2	5
					SFM(Vc)	170	190	185	185	185	165	165	180	180	160	160	220	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	RPM	13710	13710	12340	12340	12340	10000	10000	9000	9000	9210	9210	8290	IPM(FEED)	3	3	3	2	2	3	3	2	2	3	3	3	3	
					SFM(Vc)	135	150	150	150	150	135	135	140	140	140	130	130	175	IPT(fz)	.0002	.0002	.0003	.0003	.0003	.0003	.0005	.0005	.0005	.0005	.0004	.0007	RPM	6640	6150	4600	4600	4600	4140	4140	2890	2890	2890	2600	2600	3270	IPM(FEED)	2	3	3	3	3	2	2	3	3	3	3	2	5
	K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	0.3D (Up to Ø1/8 : 0.2D)	SFM(Vc)	170	170	190	185	185	185	165	165	180	180	160	160	IPT(fz)	.0002	.0001	.0002	.0003	.0003	.0003	.0003	.0005	.0005	.0005	.0005	.0004	RPM	8290	8290	7640	5670	5670	5100	5100	3630	3630	3630	3270	3270	IPM(FEED)	3	2	3	4	4	3	3	3	3	3	3	3	3	
						SFM(Vc)	85	85	95	95	95	85	85	90	90	90	80	80	IPT(fz)	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0004	.0004	.0004	.0004	.0004	RPM	4150	4150	3820	2830	2830	2830	2550	2550	1820	1820	1820	1640	1640	IPM(FEED)	1.2	1.0	1.4	1.4	1.4	1.4	1.2	1.0	1.4	1.4	1.4	1.2	1.2
						SFM(Vc)	135	150	150	150	150	135	135	140	140	140	130	130	175	IPT(fz)	.0002																																						

HSS

# YG 4G MILL END MILLS

## RECOMMENDED CUTTING CONDITIONS

# YG 4G MILL END MILLS

## RECOMMENDED CUTTING CONDITIONS

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### GMF24 SERIES 2FLUTE SQUARE - SLOTTING

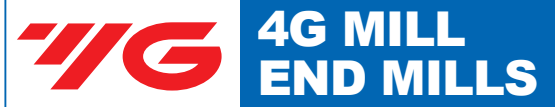
### GMF24 SERIES 2FLUTE SQUARE - SLOTTING

ISO	VDI 3323	Ae	Ap	Parameter	Diameter (Ø) / LOC																					
					13/64		13/64		13/64		1/4		1/4		1/4		1/4		5/16		5/16		5/16		5/16	
					LOC	1	1 3/16	1 1/2	5/8	3/4	1	1 3/16	1 3/8	1 1/2	1 3/4	1	1 3/16	1 3/8	1 1/2	1 3/4	2					
P	1-8	1.0D	0.3D (Up to Ø1/8 : 0.2D)	SFM(Vc)	220	200	200	220	220	220	220	200	200	200	240	240	240	240	215	215						
				IPT(fz)	.0007	.0006	.0006	.0009	.0009	.0009	.0008	.0008	.0007	.0007	.0013	.0013	.0013	.0011	.0011	.0010						
				RPM	4130	3720	3720	3390	3390	3390	3390	3050	3050	3050	2930	2930	2930	2930	2630	2630						
				IPM(FEED)	6	5	5	6	6	6	5	5	4	4	8	8	8	7	6	5						
	9	1.0D	0.3D (Up to Ø1/8 : 0.2D)	SFM(Vc)	175	155	155	180	180	180	180	160	160	160	190	190	190	190	170	170						
				IPT(fz)	.0007	.0006	.0006	.0010	.0010	.0010	.0008	.0008	.0007	.0007	.0013	.0013	.0013	.0011	.0011	.0010						
				RPM	3270	2940	2940	2720	2720	2720	2720	2450	2450	2450	2320	2320	2320	2320	2080	2080						
				IPM(FEED)	5	4	4	5	5	5	5	4	4	4	6	6	6	5	5	4						
	10	1.0D	0.3D (Up to Ø1/8 : 0.2D)	SFM(Vc)	220	200	200	220	220	220	220	200	200	200	240	240	240	240	215	215						
				IPT(fz)	.0007	.0006	.0006	.0009	.0009	.0009	.0008	.0008	.0007	.0007	.0013	.0013	.0013	.0011	.0011	.0010						
				RPM	4130	3720	3720	3390	3390	3390	3390	3050	3050	3050	2930	2930	2930	2930	2630	2630						
				IPM(FEED)	6	5	5	6	6	6	5	5	4	4	8	8	8	7	6	5						
	11.1-11.2	1.0D	0.3D (Up to Ø1/8 : 0.2D)	SFM(Vc)	175	155	155	180	180	180	180	160	160	160	190	190	190	190	170	170						
				IPT(fz)	.0007	.0006	.0006	.0010	.0010	.0010	.0008	.0008	.0007	.0007	.0013	.0013	.0013	.0011	.0011	.0010						
				RPM	3270	2940	2940	2720	2720	2720	2720	2450	2450	2450	2320	2320	2320	2320	2080	2080						
				IPM(FEED)	5	4	4	5	5	5	5	4	4	4	6	6	6	5	5	4						
K	15-20	1.0D	0.3D (Up to Ø1/8 : 0.2D)	SFM(Vc)	220	200	200	220	220	220	220	200	200	200	240	240	240	240	215	215						
				IPT(fz)	.0007	.0006	.0006	.0009	.0009	.0009	.0008	.0008	.0007	.0007	.0013	.0013	.0013	.0011	.0011	.0010						
				RPM	4130	3720	3720	3390	3390	3390	3390	3050	3050	3050	2930	2930	2930	2930	2630	2630						
				IPM(FEED)	6	5	5	6	6	6	5	5	4	4	8	8	8	7	6	5						
H	38.1-38.2	1.0D	0.05D	SFM(Vc)	115	105	105	115	115	115	115	105	105	105	125	125	125	125	115	115						
				IPT(fz)	.0005	.0004	.0004	.0007	.0007	.0007	.0006	.0006	.0005	.0005	.0009	.0009	.0009	.0008	.0008	.0007						
				RPM	2140	1930	1930	1760	1760	1760	1760	1580	1580	1580	1530	1530	1530	1530	1380	1380						
				IPM(FEED)	2.0	1.6	1.6	2.4	2.4	2.4	2.2	2.0	1.6	1.6	2.8	2.8	2.8	2.4	2.2	2.0						
	40	1.0D	0.3D (Up to Ø1/8 : 0.2D)	SFM(Vc)	175	155	155	180	180	180	180	160	160	160	190	190	190	190	170	170						
				IPT(fz)	.0007	.0006	.0006	.0010	.0010	.0010	.0008	.0008	.0007	.0007	.0013	.0013	.0013	.0011	.0011	.0010						
				RPM	3270	2940	2940	2720	2720	2720	2720	2450	2450	2450	2320	2320	2320	2320	2080	2080						
				IPM(FEED)	5	4	4	5	5	5	5	4	4	4	6	6	6	5	5	4						
	41	1.0D	0.05D	SFM(Vc)	115	105	105	115	115	115	115	105	105	105	125	125	125	125	115	115						
				IPT(fz)	.0005	.0004	.0004	.0007	.0007	.0007	.0006	.0006	.0005	.0005	.0009	.0009	.0009	.0008	.0008	.0007						
				RPM	2140	1930	1930	1760	1760	1760	1760	1580	1580	1580	1530	1530	1530	1530	1380	1380						
				IPM(FEED)	2.0	1.6	1.6	2.4	2.4	2.4	2.2	2.0	1.6	1.6	2.8	2.8	2.8	2.4	2.2	2.0						

ISO	VDI 3323	Ae	Ap	Parameter	Diameter (Ø) / LOC																					
					3/8		3/8		3/8		3/8		3/8		1/2		1/2		1/2		5/8		3/4		3/4	
					LOC	1 3/16	1 3/8	1 1/2	1 3/4	2	2 3/8	1 3/8	1 1/2	1 3/4	2	2 1/8	2 3/8	1 1/2	3 1/2	4 1/4						
P	1-8	1.0D	0.3D (Up to Ø1/8 : 0.2D)	SFM(Vc)	265	265	265	265	240	240	235	235	235	235	235	235	235	235	235	235	235	235	235	240		
				IPT(fz)	.0015	.0015	.0015	.0013	.0013	.0013	.0011	.0015	.0015	.0015	.0013	.0013	.0013	.0016	.0013	.0013	.0016	.0013	.0013	.0016	.0012	
				RPM	2700	2700	2700	2700	2430	2430	2430	2430	1980	1980	1980	1980	1490	1490	1490	1490	1490	1490	1490	1490	1490	1210
				IPM(FEED)	8	8	8	7	6	6	5	5	4	4	5	5	5	4	4	4	4	4	4	4	4	3
	9	1.0D	0.3D (Up to Ø1/8 : 0.2D)	SFM(Vc)	215	215	215	215	195	195	195	195	195	195	195	195	195	195	195	195	195	195	195	185		
				IPT(fz)	.0015	.0015	.0015	.0013	.0012	.0011	.0016	.0016	.0016	.0013	.0013	.0013	.0016	.0011	.0011	.0011	.0013	.0013	.0013	.0016	.0011	
				RPM	2200	2200	2200	2200	1980	1980	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	940
				IPM(FEED)	7	7	7	6	5	4	5	5	5	4	4	4	4	4	4	4	4	4	4	4	2	2
	10	1.0D	0.3D (Up to Ø1/8 : 0.2D)	SFM(Vc)	265	265	265	265	240	240	235	235	235	235	235	235	235	235	235	235	235	235	235	240		
				IPT(fz)	.0015	.0015	.0015	.0013	.0013	.0013	.0011	.0015	.0015	.0015	.0013	.0013	.0013	.0016	.0013	.0013	.0016	.0013	.0013	.0016	.0012	
				RPM	2700	2700	2700	2700	2430	2430	1980	1980	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1210
				IPM(FEED)	8	8	8	7	6	6	5	5	4	4	5	5	5	4	4	4	4	4	4	4	4	3
	11.1-11.2	1.0D	0.3D (Up to Ø1/8 : 0.2D)	SFM(Vc)	215	215	215	215	195	195	195	195	195	195	195	195	195	195	195	195	195	195	195	185		
				IPT(fz)	.0015	.0015	.0015	.0013	.0012	.0011	.0016	.0016	.0016	.0013	.0013	.0013	.0016	.0011	.0011	.0011	.0013	.0013	.0013	.0016	.0011	
				RPM	2200	2200	2200	2200	1980	1980	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	940
				IPM(FEED)	7	7	7	6	5	4	5	5	5	4	4	4	4	4	4	4	4	4	4	4	2	2
K	15-20	1.0D	0.3D (Up to Ø1/8 : 0.2D)	SFM(Vc)	265	265	265	265	240	240	235	235	235	235	235	235	235	235	235	235	235	235	240			
				IPT(fz)	.0015	.0015	.0015	.0013	.0013	.0013	.0011	.0015	.0015	.0015	.0013	.0013	.0013	.0016	.0013	.0013	.0016	.0013	.0013	.0016	.0012	
				RPM	2700	2700	2700	2700	2430	2430	1980	1980	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1210
				IPM(FEED)	8	8	8	7	6	6	5	5	4	4	5	5	5	4	4	4	4	4	4	4	4	3
H	38.1-38.2	1.0D	0.05D	SFM(Vc)	130	130	130	130	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120		
				IPT(fz)	.0011	.0011	.0011	.0010	.0010	.0010	.0008	.0011	.0011	.0011	.0009	.0009	.0009	.0012	.0009	.0009	.0012	.0009	.0009	.0012	.0008	
				RPM	1330	1330	1330	1330	1200	1200	900	900	900	900	900	900	900	900	900	900	900	900	900	900	900	
				IPM(FEED)	3.0	3.0	3.0	2.6	2.4	2.0	2.0	2.0	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.0
	40	1.0D	0.3D (Up to Ø1/8 : 0.2D)	SFM(Vc)	215	215	215	215	195	195	195	195	195	195	195	195	195	195	195	195	195	195	195	185		
				IPT(fz)	.0015	.0015	.0015	.0013	.0012	.0011	.0016	.0016	.0016	.0013	.0013	.0013	.0016	.0011	.0011	.0011	.0013	.0013	.0013	.0016	.0011	
				RPM	2200	2200	2200	2200	1980	1980	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	940
				IPM(FEED)	7	7	7	6	5	4	5	5	5	4	4	4	4	4	4	4	4	4	4	4	2	2
	41	1.0D	0.05D	SFM(Vc)	130	130	130	130	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120		
				IPT(fz)	.0011	.0011	.0011	.0010	.0010	.0010	.0008	.0011	.													



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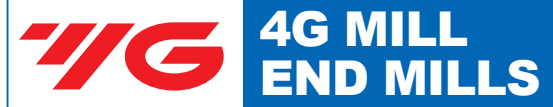
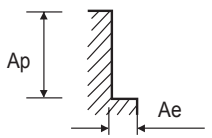


RECOMMENDED CUTTING CONDITIONS

GMF25, 26 SERIES 4FLUTE SQUARE - SIDE CUTTING

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) [3/64, 1/16, 5/16, 3/32, 1/8, 9/64, 3/16, 13/64, 7/32, 1/4]. Rows include P (1-8, 9, 10, 11.1-11.2), M (14.1), K (15-20), and H (38.1-38.2, 40, 41).

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

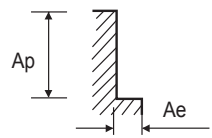


RECOMMENDED CUTTING CONDITIONS

GMF25, 26 SERIES 4FLUTE SQUARE - SIDE CUTTING

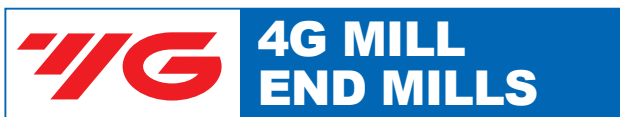
Table with columns: ISO, VDI 3323, Ae, Ap, Parameter, Diameter (Ø) [17/64, 9/32, 19/64, 5/16, 11/32, 23/64, 3/8, 7/16, 1/2, 9/16, 5/8, 3/4]. Rows include P (1-8, 9, 10, 11.1-11.2), M (14.1), K (15-20), and H (38.1-38.2, 40, 41).

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

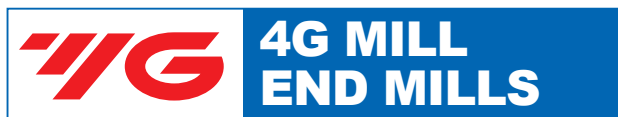


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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

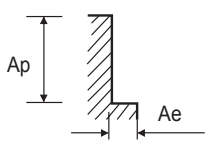
GMF27 SERIES 4FLUTE SQUARE - SIDE CUTTING

GMF27 SERIES 4FLUTE SQUARE - SIDE CUTTING

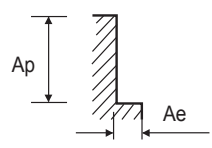
Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter (LOC), and Diameter (Ø) with sub-columns for various diameters (3/64 to 1/8).

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter (LOC), and Diameter (Ø) with sub-columns for various diameters (1/8 to 1/4).

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)



SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)







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**YG 4G MILL END MILLS**

**RECOMMENDED CUTTING CONDITIONS**

**YG 4G MILL END MILLS**

**RECOMMENDED CUTTING CONDITIONS**

**GMF28 SERIES 4FLUTE SQUARE - SIDE CUTTING**

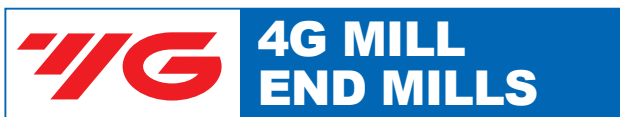
**GMF28 SERIES 4FLUTE SQUARE - SIDE CUTTING**

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø) / LBS																																																																																				
				3/64		3/64		3/64		1/16		1/16		1/16		5/64		5/64		1/8		1/8																																																																		
				LBS	5/32	3/16	1/4	5/16	1/4	5/16	3/8	1/2	5/8	5/16	3/8	1/2	5/8	3/8	1/2	5/8	3/8	1/2																																																																		
P	1-8	Non-alloy steel Low alloy steel	SFM(Vc)	240	240	215	215	265	265	235	235	235	285	285	260	260	330	330	IPT(fz)	.0002	.0002	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0004	.0004	RPM	19650	19650	17690	17690	16060	16060	14460	14460	14460	14010	14010	12610	12610	10110	10110	IPM(FEED)	12	12	10	10	12	12	10	10	10	13	13	11	11	14	14	Ae	.0007	.0007	.0004	.0004	.0009	.0009	.0005	.0005	.0003	.0011	.0011	.0007	.0007	.0026	.0019								
			9	Low alloy steel	SFM(Vc)	150	150	135	135	165	165	150	150	150	185	185	170	170	205	205	IPT(fz)	.0002	.0002	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0004	.0004	RPM	12200	12200	10980	10980	10110	10110	9100	9100	9100	9140	9140	8230	8230	6300	6300	IPM(FEED)	7	7	6	6	7	7	6	6	6	8	8	7	7	9	9	Ae	.0005	.0005	.0003	.0003	.0007	.0007	.0004	.0004	.0002	.0009	.0009	.0005	.0005	.002	.0014							
					10	High alloyed steel, and tool steel	SFM(Vc)	240	240	215	215	265	265	235	235	235	285	285	260	260	330	330	IPT(fz)	.0002	.0002	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0004	.0004	RPM	19650	19650	17690	17690	16060	16060	14460	14460	14460	14010	14010	12610	12610	10110	10110	IPM(FEED)	12	12	10	10	12	12	10	10	10	13	13	11	11	14	14	Ae	.0007	.0007	.0004	.0004	.0009	.0009	.0005	.0005	.0003	.0011	.0011	.0007	.0007	.0026	.0019					
							11.1-11.2	High alloyed steel, and tool steel	SFM(Vc)	150	150	135	135	165	165	150	150	150	185	185	170	170	205	205	IPT(fz)	.0002	.0002	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0004	.0004	RPM	12200	12200	10980	10980	10110	10110	9100	9100	9100	9140	9140	8230	8230	6300	6300	IPM(FEED)	7	7	6	6	7	7	6	6	6	8	8	7	7	9	9	Ae	.0005	.0005	.0003	.0003	.0007	.0007	.0004	.0004	.0002	.0009	.0009	.0005	.0005	.002	.0014			
									K 15-20	Grey cast iron Nodular cast iron Malleable cast iron	SFM(Vc)	240	240	215	215	265	265	235	235	235	285	285	260	260	330	330	IPT(fz)	.0002	.0002	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0004	.0004	RPM	19650	19650	17690	17690	16060	16060	14460	14460	14460	14010	14010	12610	12610	10110	10110	IPM(FEED)	12	12	10	10	12	12	10	10	10	13	13	11	11	14	14	Ae	.0007	.0007	.0004	.0004	.0009	.0009	.0005	.0005	.0003	.0011	.0011	.0007	.0007	.0026	.0019	
											H 38.1-38.2	Hardened steel	SFM(Vc)	95	95	85	85	100	100	90	90	90	125	125	110	110	125	125	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	RPM	7560	7560	6800	6800	6140	6140	5530	5530	5530	6050	6050	5440	5440	3810	3810	IPM(FEED)	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	Ae	.004	.004	.002	.002	.006	.006	.003	.003	.002	.007	.007	.004	.004
	H 40	Chilled Cast Iron											SFM(Vc)	150	150	135	135	165	165	150	150	150	185	185	170	170	205	205	IPT(fz)	.0002	.0002	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0004	.0004	RPM	12200	12200	10980	10980	10110	10110	9100	9100	9100	9140	9140	8230	8230	6300	6300	IPM(FEED)	7	7	6	6	7	7	6	6	6	8	8	7	7	9	9	Ae	.0005	.0005	.0003	.0003	.0007	.0007	.0004	.0004	.0002	.0009	.0009	.0005	.0005	.002
			H 41	Hardened Cast Iron									SFM(Vc)	95	95	85	85	100	100	90	90	90	125	125	110	110	125	125	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	RPM	7560	7560	6800	6800	6140	6140	5530	5530	5530	6050	6050	5440	5440	3810	3810	IPM(FEED)	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	Ae	.004	.004	.002	.002	.006	.006	.003	.003	.002	.007	.007	.004	.004

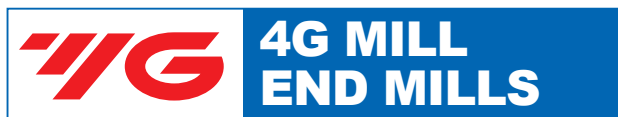
ISO	VDI 3323	Material Description	Parameter	Diameter (Ø) / LBS																																																																																																							
				1/8		1/8		1/8		3/16		3/16		3/16		3/16		13/64		13/64		1/4		5/16		5/16		3/8		3/8		1/2		1/2																																																																									
				LBS	5/8	3/4	1-3/16	1/2	5/8	3/4	1-3/16	1-1/2	3/4	1-1/2	5/8	1-3/16	1-1/2	3/4	1-1/2	5/8	1-3/16	1-1/2	3/4	1-1/2	5/8	1-3/16	1-1/2	3/4	1-1/2	5/8	1-3/16	1-1/2	3/4	1-1/2																																																																									
P	1-8	Non-alloy steel Low alloy steel	SFM(Vc)	330	300	300	375	375	375	375	375	375	335	335	390	350	410	410	IPT(fz)	.0004	.0003	.0003	.0007	.0007	.0007	.0007	.0007	.0009	.0008	.0012	.0012	.0017	.0015	.0018	.0018	.0018	.0018	RPM	10110	9100	9100	7620	7620	7620	6860	6860	7330	6590	6300	6300	5080	4570	4100	4100	3120	3120	IPM(FEED)	14	11	11	22	22	22	18	18	28	22	29	29	34	27	30	30	23	23	Ae	.0019	.0011	.0007	.0039	.0028	.0028	.0016	.0016	.003	.0017	.0052	.0037	.0046	.0026	.0055	.0055	.0105	.0074													
			9	Low alloy steel	SFM(Vc)	205	185	185	230	230	230	205	205	205	235	210	250	250	250	225	245	245	250	250	IPT(fz)	.0004	.0003	.0003	.0008	.0008	.0008	.0007	.0007	.0009	.0009	.0012	.0012	.0015	.0013	.0015	.0015	.0015	.0015	RPM	6300	5670	5670	4650	4650	4650	4190	4190	4390	3950	3810	3810	3040	2740	2520	2520	1900	1900	IPM(FEED)	9	7	7	14	14	14	11	11	16	13	18	18	18	14	15	15	11	11	Ae	.0014	.0008	.0005	.003	.0021	.0021	.0012	.0012	.0022	.0013	.0039	.0028	.0035	.002	.0041	.0041	.0079	.0055							
					10	High alloyed steel, and tool steel	SFM(Vc)	330	300	300	375	375	375	335	335	390	350	410	410	415	375	400	400	410	410	IPT(fz)	.0004	.0003	.0003	.0007	.0007	.0007	.0007	.0007	.0009	.0008	.0012	.0012	.0017	.0015	.0018	.0018	.0018	.0018	RPM	10110	9100	9100	7620	7620	7620	6860	6860	7330	6590	6300	6300	5080	4570	4100	4100	3120	3120	IPM(FEED)	14	11	11	22	22	22	18	18	28	22	29	29	34	27	30	30	23	23	Ae	.0019	.0011	.0007	.0039	.0028	.0028	.0016	.0016	.003	.0017	.0052	.0037	.0046	.0026	.0055	.0055	.0105	.0074						
							11.1-11.2	High alloyed steel, and tool steel	SFM(Vc)	205	185	185	230	230	230	205	205	205	235	210	250	250	250	225	245	245	250	250	IPT(fz)	.0004	.0003	.0003	.0008	.0008	.0008	.0007	.0007	.0009	.0009	.0012	.0012	.0015	.0013	.0015	.0015	.0015	.0015	RPM	6300	5670	5670	4650	4650	4650	4190	4190	4390	3950	3810	3810	3040	2740	2520	2520	1900	1900	IPM(FEED)	9	7	7	14	14	14	11	11	16	13	18	18	18	14	15	15	11	11	Ae	.0014	.0008	.0005	.003	.0021	.0021	.0012	.0012	.0022	.0013	.0039	.0028	.0035	.002	.0041	.0041	.0079	.0055			
									K 15-20	Grey cast iron Nodular cast iron Malleable cast iron	SFM(Vc)	330	300	300	375	375	375	335	335	390	350	410	410	415	375	400	400	410	410	IPT(fz)	.0004	.0003	.0003	.0007	.0007	.0007	.0007	.0007	.0009	.0008	.0012	.0012	.0017	.0015	.0018	.0018	.0018	.0018	RPM	10110	9100	9100	7620	7620	7620	6860	6860	7330	6590	6300	6300	5080	4570	4100	4100	3120	3120	IPM(FEED)	14	11	11	22	22	22	18	18	28	22	29	29	34	27	30	30	23	23	Ae	.0019	.0011	.0007	.0039	.0028	.0028	.0016	.0016	.003	.0017	.0052	.0037	.0046	.0026	.0055	.0055	.0105	.0074		
											H 38.1-38.2	Hardened steel	SFM(Vc)	125	110	110	145	145	145	130	130	130	145	130	150	150	165	150	170	170	175	175	IPT(fz)	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0004	.0004	.0006	.0006	.0006	.0006	.0006	.0007	.0007	RPM	3810	3430	3430	2960	2960	2960	2670	2670	2690	2420	2270	2270	2030	1820	1710	1710	1320	1320	IPM(FEED)	3	2	2	2	2	2	2	2	3	3	4	4	5	4	4	4	4	4	Ae	.011	.006	.004	.024	.017	.017	.009	.009	.018	.010	.031	.022	.028	.016	.033	.033
	H 40	Chilled Cast Iron											SFM(Vc)	205	185	185	230	230	230	205	205	205	235	210	250	250	225	245	245	250	250	IPT(fz)	.0004	.0003	.0003	.0008	.0008	.0008	.0007	.0007	.0009	.0009	.0012	.0012	.0015	.0013	.0015	.001																																																											

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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

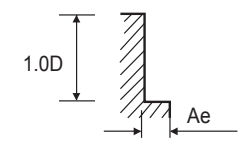
**GMF29 SERIES** 6FLUTE 45° HELIX - **SIDE CUTTING (NORMAL SPEED)**

**GMF29 SERIES** 6FLUTE 45° HELIX - **SIDE CUTTING (HIGH SPEED)**

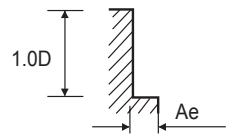
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)															
						1/4		5/16		3/8		1/2		5/8		3/4		3/4			
						LOC	5/8	1-3/16	3/4	1-1/2	1	1-1/2	1-3/16	2	1-1/2	2-3/8	1-3/4	2-3/8			
<b>P</b>	1-8	Non-alloy steel	0.1D	1.5D	SFM(Vc)	380	380	365	365	365	365	385	385	365	365	365	365	365	365		
					IPT(fz)	.0024	.0020	.0031	.0027	.0039	.0039	.0039	.0033	.0039	.0034	.0040	.0034				
					RPM	5775	5775	4440	4440	3705	3705	2950	2950	2225	2225	1850	1850				
					IPM(FEED)	82	70	83	71	87	87	69	59	53	45	44	37				
					SFM(Vc)	265	265	255	255	250	250	270	270	255	255	250	250				
					IPT(fz)	.0023	.0020	.0031	.0026	.0039	.0039	.0038	.0032	.0039	.0033	.0039	.0033				
	9	Low alloy steel	0.05D	1.5D	SFM(Vc)	4035	4035	3110	3110	2560	2560	2080	2080	1565	1565	1280	1280				
					IPT(fz)	56	48	57	49	60	60	47	40	37	31	30	25				
					RPM	56	48	57	49	60	60	47	40	37	31	30	25				
					IPM(FEED)	56	48	57	49	60	60	47	40	37	31	30	25				
					SFM(Vc)	380	380	365	365	365	365	385	385	365	365	365	365				
					IPT(fz)	.0024	.0020	.0031	.0027	.0039	.0039	.0039	.0033	.0039	.0034	.0040	.0034				
10	High alloyed steel, and tool steel	0.1D	1.5D	SFM(Vc)	5775	5775	4440	4440	3705	3705	2950	2950	2225	2225	1850	1850					
				IPT(fz)	.0024	.0020	.0031	.0026	.0039	.0039	.0038	.0032	.0039	.0033	.0039	.0033					
				RPM	82	70	83	71	87	87	69	59	53	45	44	37					
				IPM(FEED)	82	70	83	71	87	87	69	59	53	45	44	37					
				SFM(Vc)	265	265	255	255	250	250	270	270	255	255	250	250					
				IPT(fz)	.0023	.0020	.0031	.0026	.0039	.0039	.0038	.0032	.0039	.0033	.0039	.0033					
11.1-11.2	High alloyed steel, and tool steel	0.05D	1.5D	SFM(Vc)	4035	4035	3110	3110	2560	2560	2080	2080	1565	1565	1280	1280					
				IPT(fz)	56	48	57	49	60	60	47	40	37	31	30	25					
				RPM	56	48	57	49	60	60	47	40	37	31	30	25					
				IPM(FEED)	56	48	57	49	60	60	47	40	37	31	30	25					
				SFM(Vc)	380	380	365	365	365	365	385	385	365	365	365	365					
				IPT(fz)	.0024	.0020	.0031	.0027	.0039	.0039	.0039	.0033	.0039	.0034	.0040	.0034					
<b>K</b>	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.1D	1.5D	SFM(Vc)	5775	5775	4440	4440	3705	3705	2950	2950	2225	2225	1850	1850				
					IPT(fz)	.0024	.0020	.0031	.0027	.0039	.0039	.0039	.0033	.0039	.0034	.0040	.0034				
					RPM	82	70	83	71	87	87	69	59	53	45	44	37				
					IPM(FEED)	82	70	83	71	87	87	69	59	53	45	44	37				
					SFM(Vc)	105	105	100	100	110	110	115	115	110	110	105	105				
					IPT(fz)	.0009	.0008	.0012	.0010	.0014	.0014	.0014	.0012	.0013	.0011	.0015	.0013				
<b>H</b>	38.1-38.2	Hardened steel	0.05D	1.0D	SFM(Vc)	1640	1640	1230	1230	1105	1105	870	870	685	685	545	545				
					IPT(fz)	9	7	9	7	9	9	7	6	5	5	5	4				
					RPM	9	7	9	7	9	9	7	6	5	5	5	4				
					IPM(FEED)	9	7	9	7	9	9	7	6	5	5	5	4				
					SFM(Vc)	265	265	255	255	250	250	270	270	255	255	250	250				
					IPT(fz)	.0023	.0020	.0031	.0026	.0039	.0039	.0038	.0032	.0039	.0033	.0039	.0033				
	40	Chilled Cast Iron	0.05D	1.5D	SFM(Vc)	4035	4035	3110	3110	2560	2560	2080	2080	1565	1565	1280	1280				
					IPT(fz)	56	48	57	49	60	60	47	40	37	31	30	25				
					RPM	56	48	57	49	60	60	47	40	37	31	30	25				
					IPM(FEED)	56	48	57	49	60	60	47	40	37	31	30	25				
					SFM(Vc)	105	105	100	100	110	110	115	115	110	110	105	105				
					IPT(fz)	.0009	.0008	.0012	.0010	.0014	.0014	.0014	.0012	.0013	.0011	.0015	.0013				
	41	Hardened Cast Iron	0.05D	1.0D	SFM(Vc)	1640	1640	1230	1230	1105	1105	870	870	685	685	545	545				
					IPT(fz)	9	7	9	7	9	9	7	6	5	5	5	4				
					RPM	9	7	9	7	9	9	7	6	5	5	5	4				
					IPM(FEED)	9	7	9	7	9	9	7	6	5	5	5	4				
					SFM(Vc)	105	105	100	100	110	110	115	115	110	110	105	105				
					IPT(fz)	.0009	.0008	.0012	.0010	.0014	.0014	.0014	.0012	.0013	.0011	.0015	.0013				

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)															
						1/4		5/16		3/8		1/2		5/8		3/4		3/4			
						LOC	5/8	1-3/16	3/4	1-1/2	1	1-1/2	1-3/16	2	1-1/2	2-3/8	1-3/4	2-3/8			
<b>P</b>	9	Non-alloy steel	0.05D	1.5D	SFM(Vc)	1140	1140	1090	1090	1080	1080	1145	1145	1090	1090	1090	1090				
					IPT(fz)	.0024	.0020	.0032	.0027	.0039	.0039	.0039	.0034	.0039	.0034	.0040	.0034				
					RPM	17455	17455	13335	13335	11005	11005	8735	8735	6670	6670	5555	5555				
					IPM(FEED)	249	212	254	216	260	260	206	175	158	134	132	112				
					SFM(Vc)	1140	1140	1090	1090	1080	1080	1145	1145	1090	1090	1090	1090				
					IPT(fz)	.0024	.0020	.0032	.0027	.0039	.0039	.0039	.0034	.0039	.0034	.0040	.0034				
11.1-11.2	High alloyed steel, and tool steel	0.05D	1.5D	SFM(Vc)	17455	17455	13335	13335	11005	11005	8735	8735	6670	6670	5555	5555					
				IPT(fz)	.0024	.0020	.0032	.0027	.0039	.0039	.0039	.0034	.0039	.0034	.0040	.0034					
				RPM	249	212	254	216	260	260	206	175	158	134	132	112					
				IPM(FEED)	249	212	254	216	260	260	206	175	158	134	132	112					
				SFM(Vc)	570	570	545	545	545	545	570	570	545	545	545	545					
				IPT(fz)	.0024	.0020	.0032	.0027	.0040	.0040	.0039	.0034	.0039	.0033	.0038	.0032					
<b>H</b>	38.1-38.2	Hardened steel	0.05D	1.0D	SFM(Vc)	8735	8735	6670	6670	5555	5555	4365	4365	3340	3340	2785	2785				
					IPT(fz)	125	106	127	108	132	132	103	88	79	67	64	54				
					RPM	125	106	127	108	132	132	103	88	79	67	64	54				
					IPM(FEED)	125	106	127	108	132	132	103	88	79	67	64	54				
					SFM(Vc)	1140	1140	1090	1090	1080	1080	1145	1145	1090	1090	1090	1090				
					IPT(fz)	.0024	.0020	.0032	.0027	.0039	.0039	.0039	.0034	.0039	.0034	.0040	.0034				
40	Chilled Cast Iron	0.05D	1.5D	SFM(Vc)	17455	17455	13335	13335	11005	11005	8735	8735	6670	6670	5555	5555					
				IPT(fz)	.0024	.0020	.0032	.0027	.0039	.0039	.0039	.0034	.0039	.0034	.0040	.0034					
				RPM	249	212	254	216	260	260	206	175	158	134	132	112					
				IPM(FEED)	249	212	254	216	260	260	206	175	158	134	132	112					
				SFM(Vc)	570	570	545	545	545	545	570	570	545	545	545	545					
				IPT(fz)	.0024	.0020	.0032	.0027	.0040	.0040	.0039	.0034	.0039	.0033	.0038	.0032					
41	Hardened Cast Iron	0.05D	1.0D	SFM(Vc)	8735	8735	6670	6670	5555	5555	4365	4365	3340	3340	2785	2785					
				IPT(fz)	125	106	127	108	132	132	103	88	79	67	64	54					
				RPM	125	106	127	108	132	132	103	88	79	67	64	54					
				IPM(FEED)	125	106	127	108	132	132	103	88	79	67	64	54					
				SFM(Vc)	105	105	100	100	110	110	115	115	110	110	105	105					
				IPT(fz)	.0009	.0008	.0012	.0010	.0014	.0014	.0014	.0012	.0013	.0011	.0015	.0013					

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)

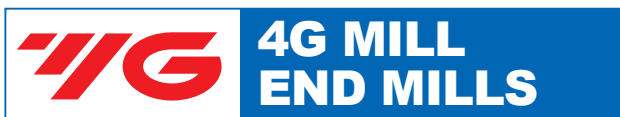


SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)

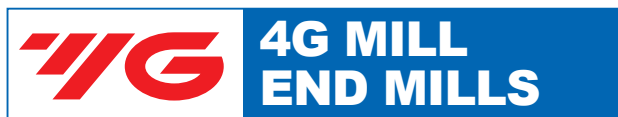


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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

G907, G928, G908, G929, G909, G930 SERIES

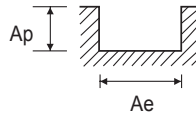
G907, G928, G908, G929, G909, G930 SERIES

4&5FLUTE MULTIPLE HELIX CORNER RADIUS - **SLOTTING**

4&5FLUTE MULTIPLE HELIX CORNER RADIUS - **SIDE CUTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)						
						1/4	5/16	3/8	1/2	5/8	3/4	1
P	1-2	Non-alloy steel	1.0D	1.0D	SFM(Vc)	785	735	705	785	735	705	760
					IPT(fz)	.0013	.0018	.0023	.0025	.0026	.0029	.0032
					RPM	12000	9000	7200	6000	4500	3600	2900
					IPM(FEED)	61	65	65	61	59	52	46
					SFM(Vc)	695	665	630	705	670	630	680
					IPT(fz)	.0010	.0014	.0018	.0021	.0020	.0022	.0025
	3-5	Non-alloy steel	1.0D	0.8D	SFM(Vc)	785	735	705	785	735	705	760
					IPT(fz)	.0013	.0018	.0023	.0025	.0026	.0029	.0032
					RPM	12000	9000	7200	6000	4500	3600	2900
					IPM(FEED)	61	65	65	61	59	52	46
					SFM(Vc)	695	665	630	705	670	630	680
					IPT(fz)	.0010	.0014	.0018	.0021	.0020	.0022	.0025
6	Low alloy steel	1.0D	1.0D	SFM(Vc)	785	735	705	785	735	705	760	
				IPT(fz)	.0013	.0018	.0023	.0025	.0026	.0029	.0032	
				RPM	12000	9000	7200	6000	4500	3600	2900	
				IPM(FEED)	61	65	65	61	59	52	46	
				SFM(Vc)	695	665	630	705	670	630	680	
				IPT(fz)	.0010	.0014	.0018	.0021	.0020	.0022	.0025	
7-9	Low alloy steel	1.0D	0.8D	SFM(Vc)	785	735	705	785	735	705	760	
				IPT(fz)	.0013	.0018	.0023	.0025	.0026	.0029	.0032	
				RPM	12000	9000	7200	6000	4500	3600	2900	
				IPM(FEED)	61	65	65	61	59	52	46	
				SFM(Vc)	695	665	630	705	670	630	680	
				IPT(fz)	.0010	.0014	.0018	.0021	.0020	.0022	.0025	
10	High alloyed steel, and tool steel	1.0D	1.0D	SFM(Vc)	785	735	705	785	735	705	760	
				IPT(fz)	.0013	.0018	.0023	.0025	.0026	.0029	.0032	
				RPM	12000	9000	7200	6000	4500	3600	2900	
				IPM(FEED)	61	65	65	61	59	52	46	
				SFM(Vc)	695	665	630	705	670	630	680	
				IPT(fz)	.0010	.0014	.0018	.0021	.0020	.0022	.0025	
11.1-11.2	High alloyed steel, and tool steel	1.0D	0.8D	SFM(Vc)	785	735	705	785	735	705	760	
				IPT(fz)	.0013	.0018	.0023	.0025	.0026	.0029	.0032	
				RPM	12000	9000	7200	6000	4500	3600	2900	
				IPM(FEED)	61	65	65	61	59	52	46	
				SFM(Vc)	695	665	630	705	670	630	680	
				IPT(fz)	.0010	.0014	.0018	.0021	.0020	.0022	.0025	
K	15	Grey cast iron	1.0D	1.0D	SFM(Vc)	785	735	705	785	735	705	760
					IPT(fz)	.0013	.0018	.0023	.0025	.0026	.0029	.0032
					RPM	12000	9000	7200	6000	4500	3600	2900
					IPM(FEED)	61	65	65	61	59	52	46
					SFM(Vc)	695	665	630	705	670	630	680
					IPT(fz)	.0010	.0014	.0018	.0021	.0020	.0022	.0025
	16	Grey cast iron	1.0D	1.0D	SFM(Vc)	785	735	705	785	735	705	760
					IPT(fz)	.0013	.0018	.0023	.0025	.0026	.0029	.0032
					RPM	12000	9000	7200	6000	4500	3600	2900
					IPM(FEED)	61	65	65	61	59	52	46
					SFM(Vc)	695	665	630	705	670	630	680
					IPT(fz)	.0010	.0014	.0018	.0021	.0020	.0022	.0025
17	Nodular cast iron	1.0D	1.0D	SFM(Vc)	785	735	705	785	735	705	760	
				IPT(fz)	.0013	.0018	.0023	.0025	.0026	.0029	.0032	
				RPM	12000	9000	7200	6000	4500	3600	2900	
				IPM(FEED)	61	65	65	61	59	52	46	
				SFM(Vc)	695	665	630	705	670	630	680	
				IPT(fz)	.0010	.0014	.0018	.0021	.0020	.0022	.0025	
18	Nodular cast iron	1.0D	1.0D	SFM(Vc)	785	735	705	785	735	705	760	
				IPT(fz)	.0013	.0018	.0023	.0025	.0026	.0029	.0032	
				RPM	12000	9000	7200	6000	4500	3600	2900	
				IPM(FEED)	61	65	65	61	59	52	46	
				SFM(Vc)	695	665	630	705	670	630	680	
				IPT(fz)	.0010	.0014	.0018	.0021	.0020	.0022	.0025	
19-20	Malleable cast iron	1.0D	1.0D	SFM(Vc)	785	735	705	785	735	705	760	
				IPT(fz)	.0013	.0018	.0023	.0025	.0026	.0029	.0032	
				RPM	12000	9000	7200	6000	4500	3600	2900	
				IPM(FEED)	61	65	65	61	59	52	46	
				SFM(Vc)	695	665	630	705	670	630	680	
				IPT(fz)	.0010	.0014	.0018	.0021	.0020	.0022	.0025	
H	40		1.0D	0.8D	SFM(Vc)	695	665	630	705	670	630	680
					IPT(fz)	.0010	.0014	.0018	.0021	.0020	.0022	.0025
					RPM	10600	8100	6400	5400	4100	3200	2600
					IPM(FEED)	43	47	47	45	41	35	33

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)

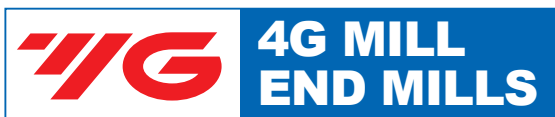


ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)						
						1/4	5/16	3/8	1/2	5/8	3/4	1
P	1-2	Non-alloy steel	0.5D	1.0D	SFM(Vc)	1035	975	935	1045	980	940	995
					IPT(fz)	.0016	.0022	.0028	.0032	.0032	.0035	.0040
					RPM	15800	11900	9500	8000	6000	4800	3800
					IPM(FEED)	101	106	106	101	97	84	75
					SFM(Vc)	935	875	835	930	885	845	890
					IPT(fz)	.0013	.0018	.0023	.0026	.0026	.0028	.0029
	3-5	Non-alloy steel	0.35D	1.0D	SFM(Vc)	1035	975	935	1045	980	940	995
					IPT(fz)	.0016	.0022	.0028	.0032	.0032	.0035	.0040
					RPM	15800	11900	9500	8000	6000	4800	3800
					IPM(FEED)	101	106	106	101	97	84	75
					SFM(Vc)	935	875	835	930	885	845	890
					IPT(fz)	.0013	.0018	.0023	.0026	.0026	.0028	.0029
6	Low alloy steel	0.5D	1.0D	SFM(Vc)	1035	975	935	1045	980	940	995	
				IPT(fz)	.0016	.0022	.0028	.0032	.0032	.0035	.0040	
				RPM	15800	11900	9500	8000	6000	4800	3800	
				IPM(FEED)	101	106	106	101	97	84	75	
				SFM(Vc)	935	875	835	930	885	845	890	
				IPT(fz)	.0013	.0018	.0023	.0026	.0026	.0028	.0029	
7-9	Low alloy steel	0.35D	1.0D	SFM(Vc)	1035	975	935	1045	980	940	995	
				IPT(fz)	.0016	.0022	.0028	.0032	.0032	.0035	.0040	
				RPM	15800	11900	9500	8000	6000	4800	3800	
				IPM(FEED)	101	106	106	101	97	84	75	
				SFM(Vc)	935	875	835	930	885	845	890	
				IPT(fz)	.0013	.0018	.0023	.0026	.0026	.0028	.0029	
10	High alloyed steel, and tool steel	0.5D	1.0D	SFM(Vc)	1035	975	935	1045	980	940	995	
				IPT(fz)	.0016	.0022	.0028	.0032	.0032	.0035	.0040	
				RPM	15800	11900	9500	8000	6000	4800	3800	
				IPM(FEED)	101	106	106	101	97	84	75	
				SFM(Vc)	935	875	835	930	885	845	890	
				IPT(fz)	.0013	.0018	.0023	.0026	.0026	.0028	.0029	
11.1-11.2	High alloyed steel, and tool steel	0.35D	1.0D	SFM(Vc)	1035	975	935	1045	980	940	995	
				IPT(fz)	.0016	.0022	.0028	.0032	.0032	.0035	.0040	
				RPM	15800	11900	9500	8000	6000	4800	3800	
				IPM(FEED)	101	106	106	101	97	84	75	
				SFM(Vc)	935	875	835	930	885	845	890	
				IPT(fz)	.0013	.0018	.0023	.0026	.0026	.0028	.0029	
K	15	Grey cast iron	0.5D	1.0D	SFM(Vc)	1035	975	935	1045	980	940	995
					IPT(fz)	.0016	.0022	.0028	.0032	.0032	.0035	.0040
					RPM	15800	11900	9500	8000	6000	4800	3800
					IPM(FEED)	101	106	106	101	97	84	75
					SFM(Vc)	935	875	835	930	885	845	890
					IPT(fz)	.0013	.0018	.0023	.0026	.0026	.0028	.0029
	16	Grey cast iron	0.35D	1.0D	SFM(Vc)	1035	975	935	1045	980	940	995
					IPT(fz)	.0016	.0022	.0028	.0032	.0032	.0035	.0040
					RPM	15800	11900	9500	8000	6000	4800	3800
					IPM(FEED)	101	106	106	101	97	84	75
					SFM(Vc)	935	875	835	930	885	845	890
					IPT(fz)	.0013	.0018	.0023	.0026	.0026	.0028	.0029
17	Nodular cast iron	0.5D	1.0D	SFM(Vc)	1035	975	935	1045	980	940	995	
				IPT(fz)	.0016	.0022	.0028	.0032	.0032	.0035	.0040	
				RPM	15800	11900	9500	8000	6000	4800	3800	
				IPM(FEED)	101	106	106	101	97	84		

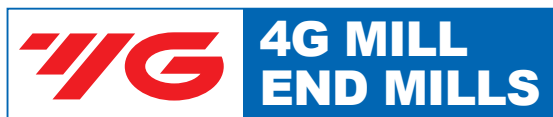


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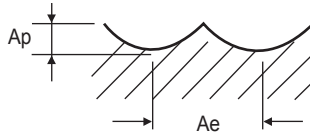
SEMD98 SERIES 2FLUTE BALL NOSE - PLANE

SEMD98 SERIES 2FLUTE BALL NOSE - PLANE

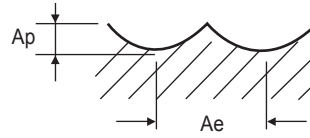
Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) [0.1 to 2.5]. Rows include P (1-8, 9, 10-11.1, 11.2), K (15), and H (38.1-38.2, 40, 41).

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) [3.0 to 10.0]. Rows include P (1-8, 9, 10-11.1, 11.2), K (15), and H (38.1-38.2, 40, 41).

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

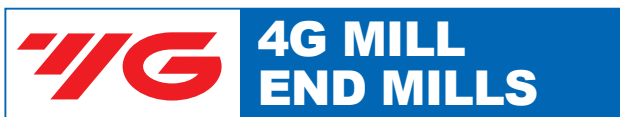


SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

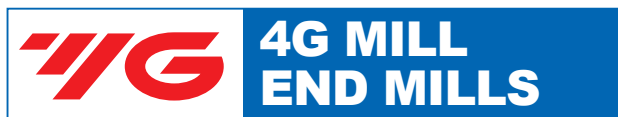


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RECOMMENDED CUTTING CONDITIONS



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**SEMD98** SERIES 2FLUTE BALL NOSE - PLANE

**SEM846** SERIES 2FLUTE BALL NOSE - SLOTTING

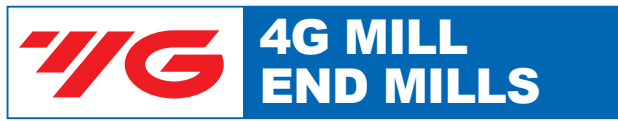
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)									
						11.0	12.0	13.0	14.0	15.0	16.0	18.0	20.0	25.0	
P	1-8	Non-alloy steel	0.08D	0.05D	SFM(Vc)	555	515	530	540	550	550	555	550	550	
					IPT(fz)	.0081	.0084	.0086	.0088	.0091	.0094	.0098	.0104	.0106	
					RPM	4875	4170	3960	3750	3550	3340	3005	2670	2130	
					IPM(FEED)	79	70	68	66	64	63	59	56	45	
					SFM(Vc)	530	495	510	520	525	530	535	530	530	
					IPT(fz)	.0071	.0074	.0078	.0082	.0087	.0081	.0085	.0089	.0091	
	9	Low alloy steel	0.08D	0.05D	SFM(Vc)	555	515	530	540	550	550	555	550	550	
					IPT(fz)	.0081	.0084	.0086	.0088	.0091	.0094	.0098	.0104	.0106	
					RPM	4875	4170	3960	3750	3550	3340	3005	2670	2130	
					IPM(FEED)	79	70	68	66	64	63	59	56	45	
					SFM(Vc)	530	495	510	520	525	530	535	530	530	
					IPT(fz)	.0071	.0074	.0078	.0082	.0087	.0081	.0085	.0089	.0091	
10-11.1	High alloyed steel, and tool steel	0.08D	0.05D	SFM(Vc)	555	515	530	540	550	550	555	550	550		
				IPT(fz)	.0081	.0084	.0086	.0088	.0091	.0094	.0098	.0104	.0106		
				RPM	4875	4170	3960	3750	3550	3340	3005	2670	2130		
				IPM(FEED)	79	70	68	66	64	63	59	56	45		
				SFM(Vc)	530	495	510	520	525	530	535	530	530		
				IPT(fz)	.0071	.0074	.0078	.0082	.0087	.0081	.0085	.0089	.0091		
11.2	High alloyed steel, and tool steel	0.08D	0.05D	SFM(Vc)	530	495	510	520	525	530	535	530	530		
				IPT(fz)	.0071	.0074	.0078	.0082	.0087	.0081	.0085	.0089	.0091		
				RPM	4670	4000	3800	3600	3400	3210	2895	2580	2060		
				IPM(FEED)	66	59	59	59	59	52	49	46	37		
				SFM(Vc)	555	515	530	540	550	550	555	550	550		
				IPT(fz)	.0081	.0084	.0086	.0088	.0091	.0094	.0098	.0104	.0106		
K	15	Grey cast iron Nodular cast iron Malleable cast iron	0.08D	0.05D	SFM(Vc)	555	515	530	540	550	550	555	550	550	
					IPT(fz)	.0081	.0084	.0086	.0088	.0091	.0094	.0098	.0104	.0106	
					RPM	4875	4170	3960	3750	3550	3340	3005	2670	2130	
					IPM(FEED)	79	70	68	66	64	63	59	56	45	
					SFM(Vc)	445	415	430	435	445	445	450	445	445	
					IPT(fz)	.0065	.0067	.0068	.0070	.0072	.0074	.0078	.0082	.0083	
H	38.1-38.2	Hardened steel	0.08D	0.05D	SFM(Vc)	445	415	430	435	445	445	450	445	445	
					IPT(fz)	.0065	.0067	.0068	.0070	.0072	.0074	.0078	.0082	.0083	
					RPM	3930	3360	3200	3030	2870	2700	2430	2160	1730	
					IPM(FEED)	51	45	44	43	41	40	38	35	29	
					SFM(Vc)	530	495	510	520	525	530	535	530	530	
					IPT(fz)	.0071	.0074	.0078	.0082	.0087	.0081	.0085	.0089	.0091	
	40	Chilled Cast Iron	0.08D	0.05D	SFM(Vc)	530	495	510	520	525	530	535	530	530	
					IPT(fz)	.0071	.0074	.0078	.0082	.0087	.0081	.0085	.0089	.0091	
					RPM	4670	4000	3800	3600	3400	3210	2895	2580	2060	
					IPM(FEED)	66	59	59	59	59	52	49	46	37	
					SFM(Vc)	445	415	430	435	445	445	450	445	445	
					IPT(fz)	.0065	.0067	.0068	.0070	.0072	.0074	.0078	.0082	.0083	
41	Hardened Cast Iron	0.08D	0.05D	SFM(Vc)	445	415	430	435	445	445	450	445	445		
				IPT(fz)	.0065	.0067	.0068	.0070	.0072	.0074	.0078	.0082	.0083		
				RPM	3930	3360	3200	3030	2870	2700	2430	2160	1730		
				IPM(FEED)	51	45	44	43	41	40	38	35	29		

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)																			
				0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4			
				LBS	0.2	0.3	0.5	1	0.5	1	1.5	2	3	1	1.5	2	2.5	3	4	5	1		
P	1-8	Non-alloy steel	SFM(Vc)	50	50	50	45	105	105	95	95	95	155	155	140	140	140	125	95	170			
			IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0001	.0001	.0002				
			RPM	50000	50000	50000	45000	50000	50000	45000	45000	50000	50000	45000	45000	40000	30000	41000					
			IPM(FEED)	9	9	9	8	13	13	11	11	11	19	19	15	15	15	12	8	19			
			Ap	.0004	.0004	.0002	.0001	.0007	.0005	.0003	.0002	.0001	.0007	.0007	.0004	.0003	.0003	.0002	.0001	.0014			
			SFM(Vc)	50	50	50	45	105	105	95	95	95	155	155	140	140	140	125	95	160			
	9	Low alloy steel	SFM(Vc)	50	50	50	45	105	105	95	95	95	155	155	140	140	140	125	95	160			
			IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0001	.0001	.0002					
			RPM	50000	50000	50000	45000	50000	50000	45000	45000	50000	50000	45000	45000	40000	30000	38800					
			IPM(FEED)	8	8	8	7	12	12	10	10	10	17	17	14	14	14	11	7	17			
			Ap	.0003	.0003	.0002	.0001	.0006	.0004	.0002	.0002	.0001	.0006	.0006	.0003	.0003	.0002	.0001	.0011				
			10-11.1	High alloyed steel, and tool steel	SFM(Vc)	50	50	50	45	105	105	95	95	95	155	155	140	140	140	125	95	170	
IPT(fz)	.0001	.0001			.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0001	.0001	.0002						
RPM	50000	50000			50000	45000	50000	50000	45000	45000	50000	50000	45000	45000	40000	30000	41000						
IPM(FEED)	9	9			9	8	13	13	11	11	11	19	19	15	15	15	12	8	19				
Ap	.0004	.0004			.0002	.0001	.0007	.0005	.0003	.0002	.0001	.0007	.0007	.0004	.0003	.0003	.0002	.0001	.0014				
11.2	High alloyed steel, and tool steel	SFM(Vc)			50	50	50	45	105	105	95	95	95	155	155	140	140	140	125	95	160		
		IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0001	.0001	.0002						
		RPM	50000	50000	50000	45000	50000	50000	45000	45000	50000	50000	45000	45000	40000	30000	38800						
		IPM(FEED)	8	8	8	7	12	12	10	10	10	17	17	14	14	14	11	7	17				
		Ap	.0003	.0003	.0002	.0001	.0006	.0004	.0002	.0002	.0001	.0006	.0006	.0003	.0003	.0002	.0001	.0011					
		K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	SFM(Vc)	50	50	50	45	105	105	95	95	95	155	155	140	140	140	125	95	170	
IPT(fz)	.0001				.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0001	.0001	.0002					
RPM	50000				50000	50000	45000	50000	50000	45000	45000	50000	50000	45000	45000	40000	30000	41000					
IPM(FEED)	9				9	9	8	13	13	11	11	11	19	19	15	15	15	12	8	19			
Ap	.0004				.0004	.0002	.0001	.0007	.0005	.0003	.0002	.0001	.0007	.0007	.0004	.0003	.0003	.0002	.0001	.0014			
H	38.1-38.2				Hardened steel	SFM(Vc)	50	50	50	45	90	90	80	80	80	130	130	120	120	120	105	80	140
		IPT(fz)	.0001	.0001		.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0001	.0001	.0001	.0001	.0001	.0002				
		RPM	50000	50000		50000	45000	43200	43200	38880	38880	38880	42800	42800	38520	38520	38520	34240	25680	34200			
		IPM(FEED)	7.5	7.5		7.5	6.1	10.2	10.2	8.3	8.3	8.3	14.4	14.4	11.6	11.6	11.6	9.3	6.1	13.4			
		Ap	.0002	.0002		.0002	.0000	.0004	.0003	.0002	.0001	.0001	.0004	.0004	.0002	.0002	.0002	.0001	.0001	.0008			
		40	Chilled Cast Iron	SFM(Vc)		50	50	50	45	105	105	95	95	95	155	155	140	140	140	125	95	160	
	IPT(fz)			.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0001	.0001	.0002					
	RPM			50000	50000	50000	45000	50000	50000	45000	45000	50000	50000	45000	45000	40000	30000	38800					
	IPM(FEED)			8	8	8	7	12	12	10	10	10	17	17	14	14	14	11	7	17			
	Ap			.0003	.0003	.0002	.0001	.0006	.0004	.0002	.0002	.0001	.0006	.0006	.0003	.0003	.0002	.0001	.0011				
	41			Hardened Cast Iron	SFM(Vc)	50	50	50	45	90	90	80	80	80	130	130	120	120	120	105	80	140	
		IPT(fz)	.0001		.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0001	.0001	.0001	.0001	.0001	.0002				
RPM		50000	50000		50000	45000	43200	43200	38880	38880	38880	42800	42800	38520	38520	38520	34240	25680	34200				
IPM(FEED)		7.5	7.5		7.5	6.1	10.2	10.2	8.3	8.3	8.3	14.4	14.4	11.6	11.6	11.6	9.3	6.1	13.4				
Ap		.0002	.0002		.0002	.0000	.0004	.0003	.0002	.0001	.0001	.0004	.0004	.0002	.0002	.0002	.0001	.0001	.0008				

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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

SEM846 SERIES 2FLUTE BALL NOSE - SLOTTING

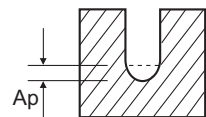
SEM846 SERIES 2FLUTE BALL NOSE - SLOTTING

Table with columns for ISO, VDI 3323, Material Description, Parameter, and Diameter (Ø) ranging from 0.4 to 0.5 inches. Rows include P (Non-alloy steel, Low alloy steel, High alloyed steel, and tool steel), K (Grey cast iron, Nodular cast iron, Malleable cast iron), and H (Hardened steel, Chilled Cast Iron, Hardened Cast Iron).

Table with columns for ISO, VDI 3323, Parameter, and Diameter (Ø) ranging from 0.5 to 0.7 inches. Rows include P (Non-alloy steel, Low alloy steel, High alloyed steel, and tool steel), K (Grey cast iron, Nodular cast iron, Malleable cast iron), and H (Hardened steel, Chilled Cast Iron, Hardened Cast Iron).

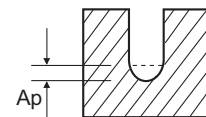
SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : mm (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

(Depth of Cut per one pass)



SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : mm (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

(Depth of Cut per one pass)





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SEM846 SERIES 2FLUTE BALL NOSE - SLOTTING

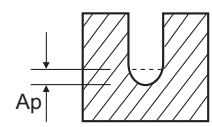
SEM846 SERIES 2FLUTE BALL NOSE - SLOTTING

Table with columns for ISO, VDI 3323, Material Description, Parameter, and Diameter (Ø) with sub-columns for various diameters (0.7 to 0.9 inches).

Table with columns for ISO, VDI 3323, Material Description, Parameter, and Diameter (Ø) with sub-columns for various diameters (1.0 to 1.2 inches).

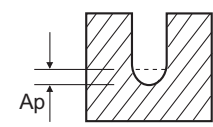
SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : mm (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

(Depth of Cut per one pass)



SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : mm (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

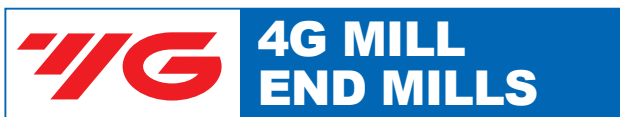
(Depth of Cut per one pass)



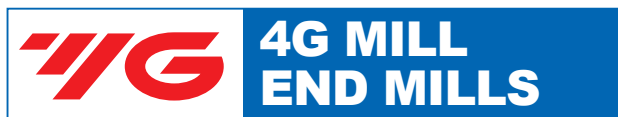
TECHNICAL DATA

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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

SEM846 SERIES 2FLUTE BALL NOSE - SLOTTING

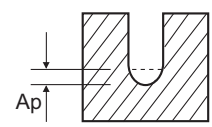
SEM846 SERIES 2FLUTE BALL NOSE - SLOTTING

Table with columns for ISO, VDI 3323, Material Description, Parameter, and Diameter (Ø) with sub-columns for various diameters (1.2 to 1.5 inches).

Table with columns for ISO, VDI 3323, Material Description, Parameter, and Diameter (Ø) with sub-columns for various diameters (1.5 to 1.8 inches).

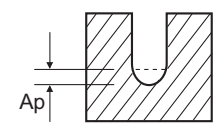
SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : mm (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

(Depth of Cut per one pass)



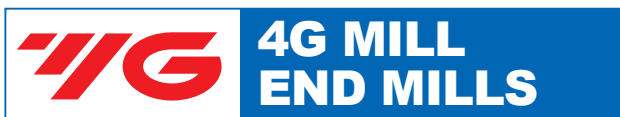
SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
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Ap : mm (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

(Depth of Cut per one pass)

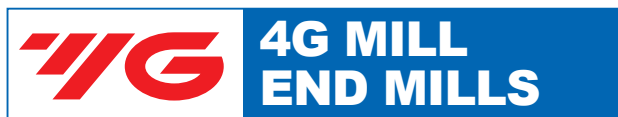


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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

SEM846 SERIES 2FLUTE BALL NOSE - SLOTTING

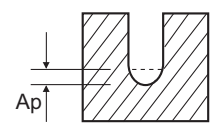
SEM846 SERIES 2FLUTE BALL NOSE - SLOTTING

Table with columns for ISO, VDI 3323, Material Description, Parameter, and Diameter (Ø) from 1.8 to 2.0. Rows include P (Non-alloy steel, Low alloy steel, High alloyed steel, and tool steel), K (Grey cast iron, Nodular cast iron, Malleable cast iron), and H (Hardened steel, Chilled Cast Iron, Hardened Cast Iron).

Table with columns for ISO, VDI 3323, Parameter, and Diameter (Ø) from 2.0 to 3.0. Rows include P (Non-alloy steel, Low alloy steel, High alloyed steel, and tool steel), K (Grey cast iron, Nodular cast iron, Malleable cast iron), and H (Hardened steel, Chilled Cast Iron, Hardened Cast Iron).

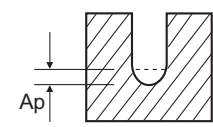
SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : mm (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

(Depth of Cut per one pass)



SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : mm (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

(Depth of Cut per one pass)



TECHNICAL DATA

TECHNICAL DATA



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# YG 4G MILL END MILLS

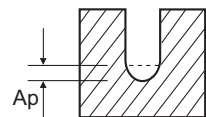
## RECOMMENDED CUTTING CONDITIONS

### SEM846 SERIES 2FLUTE BALL NOSE - SLOTTING

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)																			
				3.0		3.0		3.0		3.0		3.0		4.0		4.0		4.0		4.0			
				LBS	18	20	22	26	30	35	40	45	50	60	8	10	12	14	16	18	20	22	26
P	1-8	Non-alloy steel	SFM(Vc)	380	380	380	380	380	340	340	340	340	255	255	405	405	405	405	405	405	365	365	
			IPT(fz)	.0026	.0026	.0026	.0026	.0026	.0024	.0024	.0024	.0024	.0021	.0021	.0039	.0039	.0039	.0039	.0039	.0039	.0039	.0035	.0035
			RPM	12330	12330	12330	12330	12330	10960	10960	10960	8220	8220	9800	9800	9800	9800	9800	9800	9800	9800	8820	8820
			IPM(FEED)	65	65	65	65	65	52	52	52	34	34	77	77	77	77	77	77	77	77	63	63
			Ap	.0043	.0043	.0043	.0027	.0027	.0027	.0016	.0016	.0011	.0011	.0142	.0142	.0142	.0099	.0099	.0099	.0099	.0099	.0057	.0057
			9	Low alloy steel	SFM(Vc)	360	360	360	360	360	320	320	320	240	240	385	385	385	385	385	385	385	345
	IPT(fz)	.0024			.0024	.0024	.0024	.0024	.0021	.0021	.0021	.0018	.0018	.0035	.0035	.0035	.0035	.0035	.0035	.0035	.0032	.0032	
	RPM	11610			11610	11610	11610	11610	10320	10320	10320	7740	7740	9300	9300	9300	9300	9300	9300	9300	8370	8370	
	IPM(FEED)	55			55	55	55	55	44	44	44	29	29	66	66	66	66	66	66	66	66	53	53
	Ap	.0033			.0033	.0033	.0021	.0021	.0021	.0013	.0013	.0008	.0008	.0110	.0110	.0110	.0077	.0077	.0077	.0077	.0077	.0044	.0044
	10-11.1	High alloyed steel, and tool steel			SFM(Vc)	380	380	380	380	380	340	340	340	255	255	405	405	405	405	405	405	405	365
			IPT(fz)	.0026	.0026	.0026	.0026	.0026	.0024	.0024	.0024	.0021	.0021	.0039	.0039	.0039	.0039	.0039	.0039	.0039	.0035	.0035	
RPM			12330	12330	12330	12330	12330	10960	10960	10960	8220	8220	9800	9800	9800	9800	9800	9800	9800	8820	8820		
IPM(FEED)			65	65	65	65	65	52	52	52	34	34	77	77	77	77	77	77	77	77	63	63	
Ap			.0043	.0043	.0043	.0027	.0027	.0027	.0016	.0016	.0011	.0011	.0142	.0142	.0142	.0099	.0099	.0099	.0099	.0099	.0057	.0057	
11.2			High alloyed steel, and tool steel	SFM(Vc)	360	360	360	360	360	320	320	320	240	240	385	385	385	385	385	385	385	345	345
	IPT(fz)	.0024		.0024	.0024	.0024	.0024	.0021	.0021	.0021	.0018	.0018	.0035	.0035	.0035	.0035	.0035	.0035	.0035	.0032	.0032		
	RPM	11610		11610	11610	11610	11610	10320	10320	10320	7740	7740	9300	9300	9300	9300	9300	9300	9300	8370	8370		
	IPM(FEED)	55		55	55	55	55	44	44	44	29	29	66	66	66	66	66	66	66	66	53	53	
	Ap	.0033		.0033	.0033	.0021	.0021	.0021	.0013	.0013	.0008	.0008	.0110	.0110	.0110	.0077	.0077	.0077	.0077	.0077	.0044	.0044	
	K	15-20		Grey cast iron Nodular cast iron Malleable cast iron	SFM(Vc)	380	380	380	380	380	340	340	340	255	255	405	405	405	405	405	405	365	365
IPT(fz)			.0026		.0026	.0026	.0026	.0026	.0024	.0024	.0024	.0021	.0021	.0039	.0039	.0039	.0039	.0039	.0039	.0039	.0035	.0035	
RPM			12330		12330	12330	12330	12330	10960	10960	10960	8220	8220	9800	9800	9800	9800	9800	9800	9800	8820	8820	
IPM(FEED)			65		65	65	65	65	52	52	52	34	34	77	77	77	77	77	77	77	77	63	63
Ap			.0043		.0043	.0043	.0027	.0027	.0027	.0016	.0016	.0011	.0011	.0142	.0142	.0142	.0099	.0099	.0099	.0099	.0099	.0057	.0057
H			38.1-38.2		Hardened steel	SFM(Vc)	315	315	315	315	315	280	280	280	210	210	340	340	340	340	340	340	305
	IPT(fz)	.0022		.0022		.0022	.0022	.0022	.0020	.0020	.0020	.0017	.0017	.0034	.0034	.0034	.0034	.0034	.0034	.0030	.0030		
	RPM	10260		10260		10260	10260	10260	9120	9120	9120	6840	6840	8200	8200	8200	8200	8200	8200	8200	7380	7380	
	IPM(FEED)	45.7		45.7		45.7	45.7	45.7	36.2	36.2	36.2	23.8	23.8	54.9	54.9	54.9	54.9	54.9	54.9	54.9	44.5	44.5	
	Ap	.0024		.0024		.0024	.0015	.0015	.0015	.0009	.0009	.0006	.0006	.0079	.0079	.0079	.0055	.0055	.0055	.0055	.0031	.0031	
	40	Chilled Cast Iron		SFM(Vc)		360	360	360	360	360	320	320	320	240	240	385	385	385	385	385	385	385	345
			IPT(fz)	.0024	.0024	.0024	.0024	.0024	.0021	.0021	.0021	.0018	.0018	.0035	.0035	.0035	.0035	.0035	.0035	.0035	.0032	.0032	
			RPM	11610	11610	11610	11610	11610	10320	10320	10320	7740	7740	9300	9300	9300	9300	9300	9300	9300	8370	8370	
			IPM(FEED)	55	55	55	55	55	44	44	44	29	29	66	66	66	66	66	66	66	53	53	
			Ap	.0033	.0033	.0033	.0021	.0021	.0021	.0013	.0013	.0008	.0008	.0110	.0110	.0110	.0077	.0077	.0077	.0077	.0044	.0044	
			41	Hardened Cast Iron	SFM(Vc)	315	315	315	315	315	280	280	280	210	210	340	340	340	340	340	340	340	305
	IPT(fz)	.0022			.0022	.0022	.0022	.0022	.0020	.0020	.0020	.0017	.0017	.0034	.0034	.0034	.0034	.0034	.0034	.0030	.0030		
	RPM	10260			10260	10260	10260	10260	9120	9120	9120	6840	6840	8200	8200	8200	8200	8200	8200	8200	7380	7380	
	IPM(FEED)	45.7			45.7	45.7	45.7	45.7	36.2	36.2	36.2	23.8	23.8	54.9	54.9	54.9	54.9	54.9	54.9	54.9	44.5	44.5	
	Ap	.0024			.0024	.0024	.0015	.0015	.0015	.0009	.0009	.0006	.0006	.0079	.0079	.0079	.0055	.0055	.0055	.0055	.0031	.0031	

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : mm (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)

(Depth of Cut per one pass)



# YG 4G MILL END MILLS

## RECOMMENDED CUTTING CONDITIONS

### SEM846 SERIES 2FLUTE BALL NOSE - SLOTTING

ISO	VDI 3323	Parameter	Diameter (Ø)																																					
			4.0		4.0		4.0		4.0		4.0		4.0		5.0		5.0		5.0		5.0		5.0		6.0		6.0		8.0		8.0		10.0		10.0		12.0		12.0	
			LBS	30	35	40	45	50	60	15	20	26	30	35	40	50	60	20	26	30	35	40	50	60	20	30	25	30	30	40	30	40	32	45						
P	1-8	Non-alloy steel	SFM(Vc)	365	365	365	325	325	325	395	395	355	355	355	355	355	315	400	400	400	400	395	395	395	395															
			IPT(fz)	.0035	.0035	.0035	.0032	.0032	.0032	.0047	.0047	.0042	.0042	.0042	.0042	.0042	.0038	.0058	.0058	.0073	.0073	.0084	.0084	.0094	.0094															
			RPM	8820	8820	8820	7840	7840	7840	7700	7700	6930	6930	6930	6930	6930	6160	6500	6500	4850	4850	3850	3850	3200	3200															
			IPM(FEED)	63	63	63	50	50	50	73	73	59	59	59	59	59	46	75	75	71	71	65	65	60	60															
			Ap	.0057	.0035	.0035	.0035	.0035	.0021	.0124	.0124	.0071	.0071	.0071	.0071	.0071	.0044	.0044	.0149	.0149	.0198	.0198	.0354	.0248	.0425	.0298														
			9	Low alloy steel	SFM(Vc)	345	345	345	305	305	305	375	375	340	340	340	340	340	300	385	385	380	380	380	380	375	375													
	IPT(fz)	.0032			.0032	.0032	.0028	.0028	.0028	.0039	.0039	.0035	.0035	.0035	.0035	.0035	.0031	.0051	.0051	.0064	.0064	.0075	.0075	.0084	.0084															
	RPM	8370			8370	8370	7440	7440	7440	7300	7300	6570	6570	6570	6570	6570	5840	6200	6200	4600	4600	3680	3680	3050	3050															
	IPM(FEED)	53			53	53	42	42	42	57	57	46	46	46	46	46	37	63	63	59	59	55	55	51	51															
	Ap	.0044			.0028	.0028	.0028	.0028	.0017	.0096	.0096	.0055	.0055	.0055	.0055	.0055	.0035	.0035	.0116	.0116	.0154	.0154	.0276	.0193	.0331	.0231														
	10-11.1	High alloyed steel, and tool steel			SFM(Vc)	365	365	365	325	325	325	395	395	355	355	355	355	355	315	400	400	400	400	395	395	395	395													
			IPT(fz)	.0035	.0035	.0035	.0032	.0032	.0032	.0047	.0047	.0042	.0042	.0042	.0042	.0042	.0038	.0058	.0058	.0073	.0073	.0084	.0084	.0094	.0094															
RPM			8820	8820	8820	7840	7840	7840	7700	7700	6930	6930	6930	6930	6930	6160	6500	6500	4850	4850	3850	3850	3200	3200																
IPM(FEED)			63	63	63	50	50	50	73	73	59	59	59	59	59	46	75	75	71	71	65	65	60	60																
Ap			.0057	.0035	.0035	.0035	.0035	.0021	.0124	.0124	.0071	.0071	.0071	.0071	.0071	.0044	.0044	.0149	.0149	.0198	.0198	.0354	.0248	.0425	.0298															
11.2			High alloyed steel, and tool steel	SFM(Vc)	345	345	345	305	305	305	375	375	340	340	340	340	3																							

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**YG 4G MILL END MILLS**

**RECOMMENDED CUTTING CONDITIONS**

**YG 4G MILL END MILLS**

**RECOMMENDED CUTTING CONDITIONS**

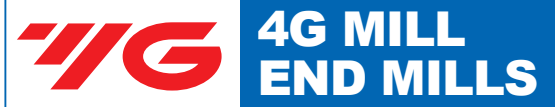
**SEMD99 SERIES 2FLUTE CORNER RADIUS - SLOTTING**

**SEMD99 SERIES 2FLUTE CORNER RADIUS - SLOTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)															
						0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.5	2.0	2.5			
P	1-8	Non-alloy steel	1.0D	0.2D	SFM(Vc)	90	125	170	185	185	215	245	280	285	305	340	370	385			
					IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0003	.0004			
					RPM	44000	41000	41000	36000	30000	30000	30000	30000	27600	24800	22000	18000	15000			
					IPM(FEED)	6	7	7	7	8	8	8	9	9	10	10	10	11			
					SFM(Vc)	60	85	110	120	120	145	165	175	185	195	210	240	245			
					IPT(fz)	.00004	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0003	.0003		
	9	Low alloy steel	1.0D	0.2D	SFM(Vc)	60	85	110	120	120	145	165	175	185	195	210	240	245			
					IPT(fz)	.00004	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0003	.0003		
					RPM	28800	27000	27000	23400	19800	19800	19800	18900	18000	15750	13500	11560	9500			
					IPM(FEED)	2	3	3	3	4	4	4	4	4	4	4	5	5			
					SFM(Vc)	90	125	170	185	185	215	245	280	285	305	340	370	385			
					IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0003	.0004			
10-11.1	High alloyed steel, and tool steel	1.0D	0.2D	SFM(Vc)	90	125	170	185	185	215	245	280	285	305	340	370	385				
				IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0003	.0004				
				RPM	44000	41000	41000	36000	30000	30000	30000	30000	27600	24800	22000	18000	15000				
				IPM(FEED)	6	7	7	7	8	8	8	9	9	10	10	10	11				
				SFM(Vc)	60	85	110	120	120	145	165	175	185	195	210	240	245				
				IPT(fz)	.00004	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0003	.0003			
11.2	High alloyed steel, and tool steel	1.0D	0.2D	SFM(Vc)	60	85	110	120	120	145	165	175	185	195	210	240	245				
				IPT(fz)	.00004	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0003	.0003			
				RPM	28800	27000	27000	23400	19800	19800	19800	18900	18000	15750	13500	11560	9500				
				IPM(FEED)	2	3	3	3	4	4	4	4	4	4	4	5	5				
				SFM(Vc)	90	125	170	185	185	215	245	280	285	305	340	370	385				
				IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0003	.0004				
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	0.2D	SFM(Vc)	90	125	170	185	185	215	245	280	285	305	340	370	385			
					IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0003	.0004			
					RPM	44000	41000	41000	36000	30000	30000	30000	30000	27600	24800	22000	18000	15000			
					IPM(FEED)	6	7	7	7	8	8	8	9	9	10	10	10	11			
					SFM(Vc)	35	50	70	75	75	85	100	105	115	120	130	150	155			
					IPT(fz)	.00004	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002		
H	38.1-38.2	Hardened steel	1.0D	0.2D	SFM(Vc)	17600	16500	16500	14300	12100	12100	12100	11000	9750	8500	7200	6100				
					IPT(fz)	.00004	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002			
					RPM	17600	16500	16500	14300	12100	12100	12100	11000	9750	8500	7200	6100				
					IPM(FEED)	2	2	2	2	2	2	2	2	2	2	2	3	3			
					SFM(Vc)	60	85	110	120	120	145	165	175	185	195	210	240	245			
					IPT(fz)	.00004	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0003	.0003		
	40	Chilled Cast Iron	1.0D	0.2D	SFM(Vc)	28800	27000	27000	23400	19800	19800	19800	18900	18000	15750	13500	11560	9500			
					IPT(fz)	.00004	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0003	.0003		
					RPM	28800	27000	27000	23400	19800	19800	19800	18900	18000	15750	13500	11560	9500			
					IPM(FEED)	2	3	3	3	4	4	4	4	4	4	4	5	5			
					SFM(Vc)	35	50	70	75	75	85	100	105	115	120	130	150	155			
					IPT(fz)	.00004	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002		
41	Hardened Cast Iron	1.0D	0.2D	SFM(Vc)	17600	16500	16500	14300	12100	12100	12100	11000	9750	8500	7200	6100					
				IPT(fz)	.00004	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002				
				RPM	17600	16500	16500	14300	12100	12100	12100	11000	9750	8500	7200	6100					
				IPM(FEED)	2	2	2	2	2	2	2	2	2	2	2	3	3				
				SFM(Vc)	35	50	70	75	75	85	100	105	115	120	130	150	155				
				IPT(fz)	.00004	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002			

ISO	VDI 3323	Ae	Ap	Parameter	Diameter (Ø)																
					3.0	3.5	4.0	4.5	5.0	5.5	6.0	7.0	8.0	10.0	11.0	12.0	14.0	16.0	20.0		
P	1-8	1.0D	0.2D	SFM(Vc)	410	430	440	460	470	485	490	500	495	520	520	510	520	510	520		
				IPT(fz)	.0004	.0005	.0006	.0008	.0009	.0011	.0012	.0015	.0018	.0021	.0021	.0020	.0021	.0023	.0022		
				RPM	13240	11980	10720	9940	9160	8530	7900	6950	6000	5040	4580	4120	3610	3100	2520		
				IPM(FEED)	11	12	13	15	17	18	20	20	21	21	19	17	15	14	11		
				SFM(Vc)	265	275	280	295	300	305	310	320	315	340	345	345	350	345	340		
				IPT(fz)	.0003	.0004	.0005	.0006	.0007	.0008	.0010	.0011	.0013	.0015	.0016	.0016	.0016	.0016	.0014		
	9	1.0D	0.2D	SFM(Vc)	410	430	440	460	470	485	490	500	495	520	520	510	520	510	520		
				IPT(fz)	.0004	.0005	.0006	.0008	.0009	.0011	.0012	.0015	.0018	.0021	.0021	.0020	.0021	.0023	.0022		
				RPM	13240	11980	10720	9940	9160	8530	7900	6950	6000	5040	4580	4120	3610	3100	2520		
				IPM(FEED)	11	12	13	15	17	18	20	20	21	21	19	17	15	14	11		
				SFM(Vc)	265	275	280	295	300	305	310	320	315	340	345	345	350	345	340		
				IPT(fz)	.0003	.0004	.0005	.0006	.0007	.0008	.0010	.0011	.0013	.0015	.0016	.0016	.0016	.0016	.0014		
10-11.1	1.0D	0.2D	SFM(Vc)	410	430	440	460	470	485	490	500	495	520	520	510	520	510	520			
			IPT(fz)	.0004	.0005	.0006	.0008	.0009	.0011	.0012	.0015	.0018	.0021	.0021	.0020	.0021	.0023	.0022			
			RPM	13240	11980	10720	9940	9160	8530	7900	6950	6000	5040	4580	4120	3610	3100	2520			
			IPM(FEED)	11	12	13	15	17	18	20	20	21	21	19	17	15	14	11			
			SFM(Vc)	265	275	280	295	300	305	310	320	315	340	345	345	350	345	340			
			IPT(fz)	.0003	.0004	.0005	.0006	.0007	.0008	.0010	.0011	.0013	.0015	.0016	.0016	.0016	.0016	.0014			
11.2	1.0D	0.2D	SFM(Vc)	265	275	280	295	300	305	310	320	315	340	345	345	350	345	340			
			IPT(fz)	.0003	.0004	.0005	.0006	.0007	.0008	.0010	.0011	.0013	.0015	.0016	.0016	.0016	.0016	.0014			
			RPM	8560	7690	6820	6310	5800	5420	5040	4420	3800	3280	3030	2780	2440	2100	1640			
			IPM(FEED)	6	6	7	7	8	9	10	10	10	10	9	9	8	7	5			
			SFM(Vc)	410	430	440	460	470	485	490	500	495	520	520	510	520	510	520			
			IPT(fz)	.0004	.0005	.0006	.0008	.0009	.0011	.0012	.0015	.0018	.0021	.0021	.0020	.0021	.0023	.0022			
K	15-20	1.0D	0.2D	SFM(Vc)	410	430	440	460	470	485	490	500	495	520	520	510	520	510	520		
				IPT(fz)	.0004	.0005	.0006	.0008	.0009	.0011	.0012	.0015	.0018	.0021	.0021	.0020	.0021	.0023	.0022		
				RPM	13240	11980	10720	9940	9160	8530	7900	6950	6000	5040	4580	4120	3610	3100	2520		
				IPM(FEED)	11	12	13	15	17	18	20	20	21	21	19	17	15	14	11		
				SFM(Vc)	165	175	175	200	195	200	205	210	210	210	210	210	210	215	210	205	
				IPT(fz)	.0003	.0003	.0004	.0004	.0005	.0006	.0007	.0008	.0009	.0012	.0012	.0012	.0012	.0012	.0012	.0012	
	H	38.1-38.2	1.0D	0.2D	SFM(Vc)	5280	4790	4300	4300	3800	3540	3280	2900	2520	2020	1850	1680	1480	1280	1000	
					IPT(fz)	.0003	.0004	.0004	.0004	.0005	.0006	.0007	.0008	.0009	.0012	.0012	.0012	.0012	.0012	.0012	.0012
					RPM	5280	4790	4300	4300	3800	3540	3280</									

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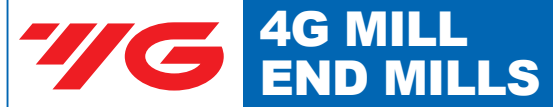
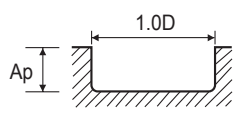


RECOMMENDED CUTTING CONDITIONS

SEME61 SERIES 2FLUTE CORNER RADIUS - SLOTTING

Table with columns for ISO, VDI 3323, Material Description, Parameter, and Diameter (Ø) ranging from 0.2 to 0.5. Rows include P (Non-alloy steel, Low alloy steel, High alloyed steel, and tool steel) and K (Grey cast iron, Nodular cast iron, Malleable cast iron).

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : mm (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

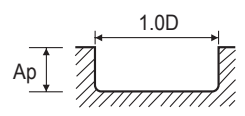


RECOMMENDED CUTTING CONDITIONS

SEME61 SERIES 2FLUTE CORNER RADIUS - SLOTTING

Table with columns for ISO, VDI 3323, Parameter, and Diameter (Ø) ranging from 0.5 to 0.8. Rows include P (Non-alloy steel, Low alloy steel, High alloyed steel, and tool steel) and K (Grey cast iron, Nodular cast iron, Malleable cast iron).

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : mm (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)





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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

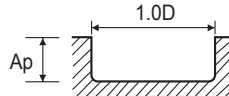
SEME61 SERIES 2FLUTE CORNER RADIUS - SLOTTING

SEME61 SERIES 2FLUTE CORNER RADIUS - SLOTTING

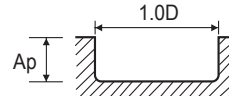
Table with columns for ISO, VDI 3323, Material Description, Parameter, and Diameter (Ø) ranging from 0.8 to 1.2. Rows include P (Non-alloy steel, Low alloy steel, High alloyed steel, and tool steel) and K (Grey cast iron, Nodular cast iron, Malleable cast iron).

Table with columns for ISO, VDI 3323, Parameter, and Diameter (Ø) ranging from 1.2 to 2.0. Rows include P (Non-alloy steel, Low alloy steel, High alloyed steel, and tool steel) and K (Grey cast iron, Nodular cast iron, Malleable cast iron).

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : mm (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)



SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : mm (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)



TECHNICAL DATA

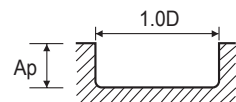
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# YG 4G MILL END MILLS

## RECOMMENDED CUTTING CONDITIONS

### SEME61 SERIES 2FLUTE CORNER RADIUS - **SLOTTING**

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)																	
				2.0		2.0		2.0		2.0		2.0		2.5		2.5		2.5		3.0	
				LBS	12	14	16	20	22	26	30	8	10	12	14	16	20	26	30	8	
P	1-8	Non-alloy steel	SFM(Vc)	400	400	400	400	355	355	355	465	465	465	415	415	415	370	370	490		
			IPT(fz)	.0003	.0003	.0003	.0003	.0002	.0002	.0002	.0004	.0004	.0004	.0003	.0003	.0003	.0003	.0003	.0004		
			RPM	19440	19440	19440	19440	17280	17280	17280	18000	18000	18000	16200	16200	16200	14400	14400	15900		
			IPM(FEED)	10	10	10	10	8	8	8	13	13	13	10	10	10	8	8	13		
			Ap	.0063	.0063	.0063	.0039	.0039	.0039	.0024	.0138	.0138	.0138	.0079	.0079	.0079	.0049	.0049	.0236		
			9	Low alloy steel	SFM(Vc)	255	255	255	255	230	230	230	295	295	295	265	265	265	235	235	320
	IPT(fz)	.0002			.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0002	.0002	.0002	.0002	.0002	.0003		
	RPM	12420			12420	12420	12420	11040	11040	11040	11400	11400	11400	10260	10260	10260	9120	9120	10300		
	IPM(FEED)	4.5			4.5	4.5	4.5	3.5	3.5	3.5	5.9	5.9	5.9	4.7	4.7	4.7	3.7	3.7	6.3		
	Ap	.0047			.0047	.0047	.0030	.0030	.0030	.0018	.0104	.0104	.0104	.0059	.0059	.0059	.0037	.0037	.0177		
	10-11.1	High alloyed steel, and tool steel			SFM(Vc)	400	400	400	400	355	355	355	465	465	465	415	415	415	370	370	490
			IPT(fz)	.0003	.0003	.0003	.0003	.0002	.0002	.0002	.0004	.0004	.0004	.0003	.0003	.0003	.0003	.0003	.0004		
RPM			19440	19440	19440	19440	17280	17280	17280	18000	18000	18000	16200	16200	16200	14400	14400	15900			
IPM(FEED)			10	10	10	10	8	8	8	13	13	13	10	10	10	8	8	13			
Ap			.0063	.0063	.0063	.0039	.0039	.0039	.0024	.0138	.0138	.0138	.0079	.0079	.0079	.0049	.0049	.0236			
11.2			High alloyed steel, and tool steel	SFM(Vc)	255	255	255	255	230	230	230	295	295	295	265	265	265	235	235	320	
	IPT(fz)	.0002		.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0002	.0002	.0002	.0002	.0002	.0003			
	RPM	12420		12420	12420	12420	11040	11040	11040	11400	11400	11400	10260	10260	10260	9120	9120	10300			
	IPM(FEED)	4.5		4.5	4.5	4.5	3.5	3.5	3.5	5.9	5.9	5.9	4.7	4.7	4.7	3.7	3.7	6.3			
	Ap	.0047		.0047	.0047	.0030	.0030	.0030	.0018	.0104	.0104	.0104	.0059	.0059	.0059	.0037	.0037	.0177			
	K	15-20		Grey cast iron Nodular cast iron Malleable cast iron	SFM(Vc)	400	400	400	400	355	355	355	465	465	465	415	415	415	370	370	490
IPT(fz)			.0003		.0003	.0003	.0003	.0002	.0002	.0002	.0004	.0004	.0004	.0003	.0003	.0003	.0003	.0003	.0004		
RPM			19440		19440	19440	19440	17280	17280	17280	18000	18000	18000	16200	16200	16200	14400	14400	15900		
IPM(FEED)			10		10	10	10	8	8	8	13	13	13	10	10	10	8	8	13		
Ap			.0063		.0063	.0063	.0039	.0039	.0039	.0024	.0138	.0138	.0138	.0079	.0079	.0079	.0049	.0049	.0236		
H			38.1-38.2		Hardened steel	SFM(Vc)	160	160	160	160	140	140	140	190	190	190	170	170	170	150	150
	IPT(fz)	.0002		.0002		.0002	.0002	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002		
	RPM	7780		7780		7780	7780	6910	6910	6910	7320	7320	7320	6590	6590	6590	5860	5860	6300		
	IPM(FEED)	3		3		3	3	2	2	2	3	3	3	3	3	3	2	2	3		
	Ap	.0038		.0038		.0038	.0024	.0024	.0024	.0014	.0083	.0083	.0083	.0047	.0047	.0047	.0030	.0030	.0142		
	40	Chilled Cast Iron		SFM(Vc)		255	255	255	255	230	230	230	295	295	295	265	265	265	235	235	320
			IPT(fz)	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0002	.0002	.0002	.0002	.0002	.0003		
			RPM	12420	12420	12420	12420	11040	11040	11040	11400	11400	11400	10260	10260	10260	9120	9120	10300		
			IPM(FEED)	4.5	4.5	4.5	4.5	3.5	3.5	3.5	5.9	5.9	5.9	4.7	4.7	4.7	3.7	3.7	6.3		
			Ap	.0047	.0047	.0047	.0030	.0030	.0030	.0018	.0104	.0104	.0104	.0059	.0059	.0059	.0037	.0037	.0177		
			41	Hardened Cast Iron	SFM(Vc)	160	160	160	160	140	140	140	190	190	190	170	170	170	150	150	195
	IPT(fz)	.0002			.0002	.0002	.0002	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002		
	RPM	7780			7780	7780	7780	6910	6910	6910	7320	7320	7320	6590	6590	6590	5860	5860	6300		
	IPM(FEED)	3			3	3	3	2	2	2	3	3	3	3	3	3	2	2	3		
	Ap	.0038			.0038	.0038	.0024	.0024	.0024	.0014	.0083	.0083	.0083	.0047	.0047	.0047	.0030	.0030	.0142		



SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : mm (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)

# YG 4G MILL END MILLS

## RECOMMENDED CUTTING CONDITIONS

### SEME61 SERIES 2FLUTE CORNER RADIUS - **SLOTTING**

ISO	VDI 3323	Parameter	Diameter (Ø)																		
			3.0		3.0		3.0		3.0		3.0		3.0		4.0		4.0		4.0		
			LBS	10	12	14	16	20	26	30	35	40	10	12	14	16	20	26	30	35	40
P	1-8	Non-alloy steel	SFM(Vc)	490	490	490	440	440	440	440	395	395	530	530	530	530	530	475	475	475	475
			IPT(fz)	.0004	.0004	.0004	.0004	.0004	.0004	.0004	.0003	.0003	.0006	.0006	.0006	.0006	.0006	.0006	.0006	.0006	.0006
			RPM	15900	15900	15900	14310	14310	14310	14310	12720	12720	12800	12800	12800	12800	12800	11520	11520	11520	11520
			IPM(FEED)	13	13	13	10	10	10	10	8	8	16	16	16	16	16	13	13	13	13
			Ap	.0165	.0165	.0165	.0094	.0094	.0059	.0059	.0059	.0035	.0315	.0315	.0220	.0220	.0220	.0126	.0126	.0079	.0079
			9	Low alloy steel	SFM(Vc)	320	320	320	285	285	285	285	255	255	340	340	340	340	340	305	305
	IPT(fz)	.0003			.0003	.0003	.0003	.0003	.0003	.0003	.0002	.0002	.0005	.0005	.0005	.0005	.0005	.0004	.0004	.0004	.0004
	RPM	10300			10300	10300	9270	9270	9270	9270	8240	8240	8200	8200	8200	8200	8200	7380	7380	7380	7380
	IPM(FEED)	6.3			6.3	6.3	5.1	5.1	5.1	5.1	3.9	3.9	7.9	7.9	7.9	7.9	7.9	6.3	6.3	6.3	6.3
	Ap	.0124			.0124	.0124	.0071	.0071	.0044	.0044	.0044	.0027	.0236	.0236	.0165	.0165	.0165	.0094	.0094	.0059	.0059
	10-11.1	High alloyed steel, and tool steel			SFM(Vc)	490	490	490	440	440	440	440	395	395	530	530	530	530	530	475	475
			IPT(fz)	.0004	.0004	.0004	.0004	.0004	.0004	.0004	.0003	.0003	.0006	.0006	.0006	.0006	.0006	.0006	.0006	.0006	.0006
RPM			15900	15900	15900	14310	14310	14310	14310	12720	12720	12800	12800	12800	12800	12800	11520	11520	11520	11520	
IPM(FEED)			13	13	13	10	10	10	10	8	8	16	16	16	16	16	13	13	13	13	
Ap			.0165	.0165	.0165	.0094	.0094	.0059	.0059	.0059	.0035	.0315	.0315	.0220	.0220	.0220	.0126	.0126	.0079	.0079	
11.2			High alloyed steel, and tool steel	SFM(Vc)	320	320	320	285	285	285	285	255	255	340	340	340	340	340	305	305	305
	IPT(fz)	.0003		.0003	.0003	.0003	.0003	.0003	.0003	.0002	.0002	.0005	.0005	.0005	.0005	.0005	.0004	.0004	.0004	.0004	
	RPM	10300		10300	10300	9270	9270	9270	9270	8240	8240	8200	8200	8200	8200	8200	7380	7380	7380	7380	
	IPM(FEED)	6.3		6.3	6.3	5.1	5.1	5.1	5.1	3.9	3.9	7.9	7.9	7.9	7.9	7.9	6.3	6.3	6.3	6.3	
	Ap	.0124		.0124	.0124	.0071	.0071	.0044	.0044	.0044	.0027	.0236	.0236	.0165	.0165	.0165	.0094	.0094	.0059	.0059	
	K	15-20		Grey cast iron Nodular cast iron Malleable cast iron	SFM(Vc)	490	490	490	440	440	440	440	395	395	530	530	530	530	475	475	475
IPT(fz)			.0004		.0004	.0004	.0004	.0004	.0004	.0004	.0003	.0003	.0006	.0006	.0006	.0006	.0006	.0006	.0006	.0006	.0006
RPM			15900		15900	15900	14310	14310	14310	14310	12720	12720	12800	12800	12800	12800	12800	11520	11520	11520	11520
IPM(FEED)			13		13	13	10	10	10	10	8	8	16	16	16	16	16	13	13	13	13
Ap			.0165		.0165	.0165	.0094	.0094	.0059	.0059	.0059	.0035	.0315	.0315	.0220	.0220	.0220	.0126	.0126	.0079	.0079
H			38.1-38.2		Hardened steel	SFM(Vc)	195	195	195	175	175	175	175	155	155						

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**YG 4G MILL END MILLS**

**RECOMMENDED CUTTING CONDITIONS**

**YG 4G MILL END MILLS**

**RECOMMENDED CUTTING CONDITIONS**

**SEME61 SERIES 2FLUTE CORNER RADIUS - SLOTTING**

**SEME01 SERIES 4FLUTE CORNER RADIUS - SIDE CUTTING**

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)															
				4.0		5.0	6.0		8.0		10.0		12.0		16.0		20.0		
				LBS	45	50	15	20	30	25	35	30	40	32	45	35	50	40	55
P	1-8	Non-alloy steel	SFM(Vc)	420	420	565	585	585	595	595	620	620	620	620	615	615	620	620	
			IPT(fz)	.0005	.0005	.0009	.0012	.0012	.0017	.0017	.0021	.0021	.0020	.0020	.0024	.0024	.0022	.0022	
			RPM	10240	10240	11000	9500	9500	7200	7200	6000	6000	5000	5000	3720	3720	3000	3000	
			IPM(FEED)	10	10	20	24	24	25	25	25	25	20	20	18	18	13	13	
			Ap	.0079	.0079	.0394	.0331	.0331	.0441	.0441	.0787	.0551	.0945	.0661	.1260	.0882	.1575	.1575	
			SFM(Vc)	270	270	360	370	370	375	375	410	410	415	415	415	415	400	400	
	9	Low alloy steel	IPT(fz)	.0004	.0004	.0007	.0010	.0010	.0013	.0013	.0015	.0015	.0016	.0016	.0016	.0016	.0014	.0014	
			RPM	6560	6560	7000	6000	6000	4550	4550	4000	4000	3340	3340	2520	2520	1950	1950	
			IPM(FEED)	5.1	5.1	9.4	11.8	11.8	11.8	11.8	11.8	10.6	10.6	8.3	8.3	5.5	5.5		
			Ap	.0059	.0059	.0295	.0248	.0248	.0331	.0331	.0591	.0413	.0709	.0496	.0945	.0661	.1181	.1181	
			SFM(Vc)	420	420	565	585	585	595	595	620	620	620	620	615	615	620	620	
			IPT(fz)	.0005	.0005	.0009	.0012	.0012	.0017	.0017	.0021	.0021	.0020	.0020	.0024	.0024	.0022	.0022	
10-11.1	High alloyed steel, and tool steel	RPM	10240	10240	11000	9500	9500	7200	7200	6000	6000	5000	5000	3720	3720	3000	3000		
		IPM(FEED)	10	10	20	24	24	25	25	25	25	20	20	18	18	13	13		
		Ap	.0079	.0079	.0394	.0331	.0331	.0441	.0441	.0787	.0551	.0945	.0661	.1260	.0882	.1575	.1575		
		SFM(Vc)	270	270	360	370	370	375	375	410	410	415	415	415	415	400	400		
		IPT(fz)	.0004	.0004	.0007	.0010	.0010	.0013	.0013	.0015	.0015	.0016	.0016	.0016	.0016	.0014	.0014		
		RPM	6560	6560	7000	6000	6000	4550	4550	4000	4000	3340	3340	2520	2520	1950	1950		
11.2		IPM(FEED)	5.1	5.1	9.4	11.8	11.8	11.8	11.8	11.8	10.6	10.6	8.3	8.3	5.5	5.5			
		Ap	.0059	.0059	.0295	.0248	.0248	.0331	.0331	.0591	.0413	.0709	.0496	.0945	.0661	.1181	.1181		
		SFM(Vc)	420	420	565	585	585	595	595	620	620	620	620	615	615	620	620		
		IPT(fz)	.0005	.0005	.0009	.0012	.0012	.0017	.0017	.0021	.0021	.0020	.0020	.0024	.0024	.0022	.0022		
		RPM	10240	10240	11000	9500	9500	7200	7200	6000	6000	5000	5000	3720	3720	3000	3000		
		IPM(FEED)	10	10	20	24	24	25	25	25	25	20	20	18	18	13	13		
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	SFM(Vc)	420	420	565	585	585	595	595	620	620	620	620	615	615	620	620	
			IPT(fz)	.0005	.0005	.0009	.0012	.0012	.0017	.0017	.0021	.0021	.0020	.0020	.0024	.0024	.0022	.0022	
			RPM	10240	10240	11000	9500	9500	7200	7200	6000	6000	5000	5000	3720	3720	3000	3000	
			IPM(FEED)	10	10	20	24	24	25	25	25	25	20	20	18	18	13	13	
			Ap	.0079	.0079	.0394	.0331	.0331	.0441	.0441	.0787	.0551	.0945	.0661	.1260	.0882	.1575	.1575	
			SFM(Vc)	170	170	235	245	245	250	250	250	250	245	245	255	255	245	245	
H	38.1-38.2	Hardened steel	IPT(fz)	.0003	.0003	.0005	.0007	.0007	.0009	.0009	.0011	.0011	.0012	.0012	.0012	.0011	.0011		
			RPM	4120	4120	4560	3930	3930	3020	3020	2420	2420	2000	2000	1540	1540	1200	1200	
			IPM(FEED)	2	2	5	6	6	6	6	6	6	5	5	4	4	3	3	
			Ap	.0047	.0047	.0236	.0198	.0198	.0265	.0265	.0472	.0331	.0567	.0397	.0756	.0529	.0945	.0945	
			SFM(Vc)	270	270	360	370	370	375	375	410	410	415	415	415	415	400	400	
			IPT(fz)	.0004	.0004	.0007	.0010	.0010	.0013	.0013	.0015	.0015	.0016	.0016	.0016	.0016	.0014	.0014	
	40	Chilled Cast Iron	RPM	6560	6560	7000	6000	6000	4550	4550	4000	4000	3340	3340	2520	2520	1950	1950	
			IPM(FEED)	5.1	5.1	9.4	11.8	11.8	11.8	11.8	11.8	10.6	10.6	8.3	8.3	5.5	5.5		
			Ap	.0059	.0059	.0295	.0248	.0248	.0331	.0331	.0591	.0413	.0709	.0496	.0945	.0661	.1181	.1181	
			SFM(Vc)	170	170	235	245	245	250	250	250	250	245	245	255	255	245	245	
			IPT(fz)	.0003	.0003	.0005	.0007	.0007	.0009	.0009	.0011	.0011	.0012	.0012	.0012	.0012	.0011	.0011	
			RPM	4120	4120	4560	3930	3930	3020	3020	2420	2420	2000	2000	1540	1540	1200	1200	
41	Hardened Cast Iron	IPM(FEED)	2	2	5	6	6	6	6	6	5	5	4	4	3	3			
		Ap	.0047	.0047	.0236	.0198	.0198	.0265	.0265	.0472	.0331	.0567	.0397	.0756	.0529	.0945	.0945		
		SFM(Vc)	170	170	235	245	245	250	250	250	250	245	245	255	255	245	245		
		IPT(fz)	.0003	.0003	.0005	.0007	.0007	.0009	.0009	.0011	.0011	.0012	.0012	.0012	.0012	.0011	.0011		
		RPM	4120	4120	4560	3930	3930	3020	3020	2420	2420	2000	2000	1540	1540	1200	1200		
		IPM(FEED)	2	2	5	6	6	6	6	6	6	5	5	4	4	3	3		

ISO	VDI 3323	Ae	Ap	Parameter	Diameter (Ø)										
					1.0	1.2	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	
					1.0	1.2	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	
P	1-8	0.05D	2.0D	SFM(Vc)	285	305	340	370	385	410	430	440	460	470	
				IPT(fz)	.0001	.0001	.0001	.0002	.0002	.0003	.0003	.0004	.0004	.0005	
				RPM	27600	24800	22000	18000	15000	13240	11980	10720	9940	9160	
				IPM(FEED)	12	12	12	13	13	13	15	17	17	17	
				SFM(Vc)	185	195	210	240	245	265	275	280	295	300	
				IPT(fz)	.0001	.0001	.0002	.0002	.0003	.0003	.0004	.0004	.0005	.0006	
	9	0.05D	2.0D	RPM	18000	15750	13500	11560	9500	8560	7690	6820	6310	5800	
				IPM(FEED)	9	9	9	9	10	10	11	12	13	14	
				SFM(Vc)	285	305	340	370	385	410	430	440	460	470	
				IPT(fz)	.0001	.0001	.0001	.0002	.0002	.0003	.0003	.0004	.0004	.0005	
				RPM	27600	24800	22000	18000	15000	13240	11980	10720	9940	9160	
				IPM(FEED)	12	12	12	13	13	13	15	17	17	17	
10-11.1	0.05D	2.0D	SFM(Vc)	185	195	210	240	245	265	275	280	295	300		
			IPT(fz)	.0001	.0001	.0002	.0002	.0003	.0003	.0004	.0004	.0005	.0006		
			RPM	18000	15750	13500	11560	9500	8560	7690	6820	6310	5800		
			IPM(FEED)	9	9	9	9	10	10	11	12	13	14		
			SFM(Vc)	185	195	210	240	245	265	275	280	295	300		
			IPT(fz)	.0001	.0001	.0002	.0002	.0003	.0003	.0004	.0004	.0005	.0006		
11.2	0.05D	2.0D	RPM	18000	15750	13500	11560	9500	8560	7690	6820	6310	5800		
			IPM(FEED)	9	9	9	9	10	10	11	12	13	14		
			SFM(Vc)	285	305	340	370	385	410	430	440	460	470		
			IPT(fz)	.0001	.0001	.0001	.0002	.0002	.0003	.0003	.0004	.0004	.0005		
			RPM	27600	24800	22000	18000	15000	13240	11980	10720	9940	9160		
			IPM(FEED)	12	12	12	13	13	13	15	17	17	17		
K	15-20	0.05D	2.0D	SFM(Vc)	285	305	340	370	385	410	430	440	460	470	
				IPT(fz)	.0001	.0001	.0001	.0002	.0002	.0003	.0003	.0004	.0004	.0005	
				RPM	27600	24800	22000	18000	15000	13240	11980	10720	9940	9160	
				IPM(FEED)	12	12	12	13	13	13	15	17	17	17	
				SFM(Vc)	115	120	130	150	155	165	175	175	190	195	
				IPT(fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0003	.0003	.0004	.0004	
H	38.1-38.2	0.02D	2.0D	RPM	11000	9750	8500	7200	6100	5280	4790	4300	4050	3800	
				IPM(FEED)	5	5	5	5	5	5	5	6	6	7	
				SFM(Vc)	185	195	210	240	245	265	275	280	295	300	
				IPT(fz)	.0001	.0001	.0002	.0002	.0003	.0003	.0004	.0004	.0005	.0006	
				RPM	18000	15750	13500	11560	9500	8560	7690	6820	6310	5800	
				IPM(FEED)	9	9	9	9	10	10	11	12	13	14	
40	0.05D	2.0D	SFM(Vc)	115	120	130	150	155	165	175	175	190	195		
			IPT(fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0003	.0003	.0004	.0004		
			RPM	11000	9750	8500	7200	6100	5280	4790	4300	405			



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RECOMMENDED CUTTING CONDITIONS



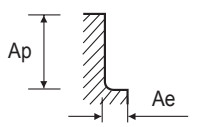
RECOMMENDED CUTTING CONDITIONS

**SEME01** SERIES 4FLUTE CORNER RADIUS - SIDE CUTTING

**SEME64** SERIES 4FLUTE CORNER RADIUS - SIDE CUTTING

ISO	VDI 3323	Ae	Ap	Parameter	Diameter (Ø)									
					5.5	6.0	7.0	8.0	10.0	11.0	12.0	14.0	16.0	20.0
P	1-8	0.05D	2.0D	SFM(Vc)	485	490	500	495	520	520	510	520	510	520
				IPT(fz)	.0005	.0005	.0006	.0008	.0009	.0009	.0009	.0009	.0009	.0009
				RPM	8530	7900	6950	6000	5040	4580	4120	3610	3100	2520
				IPM(FEED)	17	17	18	18	18	16	14	13	11	9
	9	0.05D	2.0D	SFM(Vc)	305	310	320	315	340	345	345	350	345	340
				IPT(fz)	.0007	.0007	.0008	.0009	.0011	.0011	.0011	.0011	.0011	.0011
				RPM	5420	5040	4420	3800	3280	3030	2780	2440	2100	1640
				IPM(FEED)	14	14	14	14	14	13	13	11	9	7
	10-11.1	0.05D	2.0D	SFM(Vc)	485	490	500	495	520	520	510	520	510	520
				IPT(fz)	.0005	.0005	.0006	.0008	.0009	.0009	.0009	.0009	.0009	.0009
				RPM	8530	7900	6950	6000	5040	4580	4120	3610	3100	2520
				IPM(FEED)	17	17	18	18	18	16	14	13	11	9
11.2	0.05D	2.0D	SFM(Vc)	305	310	320	315	340	345	345	350	345	340	
			IPT(fz)	.0007	.0007	.0008	.0009	.0011	.0011	.0011	.0011	.0011	.0011	
			RPM	5420	5040	4420	3800	3280	3030	2780	2440	2100	1640	
			IPM(FEED)	14	14	14	14	14	13	13	11	9	7	
K	15-20	0.05D	2.0D	SFM(Vc)	485	490	500	495	520	520	510	520	510	520
				IPT(fz)	.0005	.0005	.0006	.0008	.0009	.0009	.0009	.0009	.0009	.0009
				RPM	8530	7900	6950	6000	5040	4580	4120	3610	3100	2520
				IPM(FEED)	17	17	18	18	18	16	14	13	11	9
H	38.1-38.2	0.02D	2.0D	SFM(Vc)	200	205	210	210	210	210	215	210	205	
				IPT(fz)	.0005	.0005	.0006	.0007	.0008	.0008	.0008	.0009	.0009	
				RPM	3540	3280	2900	2520	2020	1850	1680	1480	1280	1000
				IPM(FEED)	7	7	7	7	7	6	6	5	5	4
	40	0.05D	2.0D	SFM(Vc)	305	310	320	315	340	345	345	350	345	340
				IPT(fz)	.0007	.0007	.0008	.0009	.0011	.0011	.0011	.0011	.0011	.0011
				RPM	5420	5040	4420	3800	3280	3030	2780	2440	2100	1640
				IPM(FEED)	14	14	14	14	14	13	13	11	9	7
	41	0.02D	2.0D	SFM(Vc)	200	205	210	210	210	210	215	210	205	
				IPT(fz)	.0005	.0005	.0006	.0007	.0008	.0008	.0008	.0009	.0009	
				RPM	3540	3280	2900	2520	2020	1850	1680	1480	1280	1000
				IPM(FEED)	7	7	7	7	7	6	6	5	5	4

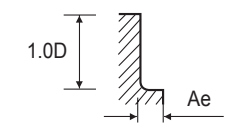
SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)



\* 16mm, axial cutting depth should be 1.5xD

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)																			
				1		1		1		1		1		1		1.2		1.2		1.2		1.2	
				LBS	4	6	8	10	12	16	20	22	26	3	4	6	8	10	12	16			
P	1-8	Non-alloy steel	SFM(Vc)	340	305	305	305	275	205	205	100	100	370	370	370	330	330	330	295				
			IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001				
			RPM	33100	29790	29790	29790	26480	19860	19860	9930	9930	29750	29750	29750	26780	26780	26780	23800				
			IPM(FEED)	14	11	11	11	9	6	6	3	3	14	14	14	12	12	12	9				
	9	Low alloy steel	SFM(Vc)	225	200	200	200	180	135	135	65	65	235	235	235	210	210	210	185				
			IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001				
			RPM	21600	19440	19440	19440	17280	12960	12960	6480	6480	18900	18900	18900	17010	17010	17010	15120				
			IPM(FEED)	10	8	8	8	7	4	4	2	2	10	10	10	9	9	9	7				
	10	High alloyed steel, and tool steel	SFM(Vc)	340	305	305	305	275	205	205	100	100	370	370	370	330	330	330	295				
			IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001				
			RPM	33100	29790	29790	29790	26480	19860	19860	9930	9930	29750	29750	29750	26780	26780	26780	23800				
			IPM(FEED)	14	11	11	11	9	6	6	3	3	14	14	14	12	12	12	9				
11.1-11.2	High alloyed steel, and tool steel	SFM(Vc)	225	200	200	200	180	135	135	65	65	235	235	235	210	210	210	185					
		IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001					
		RPM	21600	19440	19440	19440	17280	12960	12960	6480	6480	18900	18900	18900	17010	17010	17010	15120					
		IPM(FEED)	10	8	8	8	7	4	4	2	2	10	10	10	9	9	9	7					
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	SFM(Vc)	340	305	305	305	275	205	205	100	100	370	370	370	330	330	330	295				
			IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001				
			RPM	33100	29790	29790	29790	26480	19860	19860	9930	9930	29750	29750	29750	26780	26780	26780	23800				
			IPM(FEED)	14	11	11	11	9	6	6	3	3	14	14	14	12	12	12	9				
H	38.1-38.2	Hardened steel	SFM(Vc)	135	120	120	120	110	80	80	40	40	145	145	145	130	130	130	115				
			IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001				
			RPM	13200	11880	11880	11880	10560	7920	7920	3960	3960	11700	11700	11700	10530	10530	10530	9360				
			IPM(FEED)	6	5	5	5	4	2	2	1	1	6	6	6	5	5	5	4				
	40	Chilled Cast Iron	SFM(Vc)	225	200	200	200	180	135	135	65	65	235	235	235	210	210	210	185				
			IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001				
			RPM	21600	19440	19440	19440	17280	12960	12960	6480	6480	18900	18900	18900	17010	17010	17010	15120				
			IPM(FEED)	10	8	8	8	7	4	4	2	2	10	10	10	9	9	9	7				
	41	Hardened Cast Iron	SFM(Vc)	135	120	120	120	110	80	80	40	40	145	145	145	130	130	130	115				
			IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001				
			RPM	13200	11880	11880	11880	10560	7920	7920	3960	3960	11700	11700	11700	10530	10530	10530	9360				
			IPM(FEED)	6	5	5	5	4	2	2	1	1	6	6	6	5	5	5	4				

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : mm (Radial Depth of Cut)



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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

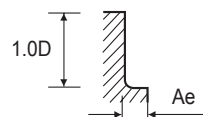
SEME64 SERIES 4FLUTE CORNER RADIUS - SIDE CUTTING

SEME64 SERIES 4FLUTE CORNER RADIUS - SIDE CUTTING

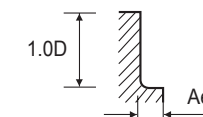
Table with columns for ISO, VDI 3323, Material Description, Parameter (SFM, IPT, RPM, IPM, Ae), and Diameter (Ø) for various materials like Non-alloy steel, Low alloy steel, High alloyed steel, and Grey cast iron.

Table with columns for ISO, VDI 3323, Material Description, Parameter (SFM, IPT, RPM, IPM, Ae), and Diameter (Ø) for various materials like Non-alloy steel, Low alloy steel, High alloyed steel, and Grey cast iron.

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
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Ap : Inch (Axial Depth of Cut)
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SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : mm (Radial Depth of Cut)







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# YG 4G MILL END MILLS

## RECOMMENDED CUTTING CONDITIONS

# YG 4G MILL END MILLS

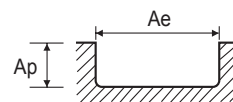
## RECOMMENDED CUTTING CONDITIONS

### SEME35 SERIES 2FLUTE SQUARE - SLOTTING

### SEME35 SERIES 2FLUTE SQUARE - SLOTTING

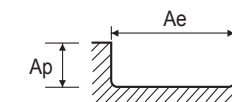
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)															
						0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1	1.2	1.5	2			
P	1-8	Non-alloy steel	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	45	85	120	160	185	200	200	205	220	220	225	230	240			
					IPT(fz)	.00004	.00004	.00004	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0003	
					RPM	42000	42000	39000	39000	36000	32000	28000	25000	23500	21500	18000	15000	11560			
					IPM(FEED)	3	3	4	4	4	5	6	6	7	7	7	7	8			
P	9	Low alloy steel	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	25	50	70	95	110	120	120	125	130	135	135	140	155			
					IPT(fz)	.00004	.00004	.00004	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0003	
					RPM	25200	25200	23400	23400	21600	19200	16800	15000	14100	12900	10800	9000	7560			
					IPM(FEED)	2	2	2	2	3	3	3	4	4	4	4	4	5			
P	10	High alloyed steel, and tool steel	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	45	85	120	160	185	200	200	205	220	220	225	230	240			
					IPT(fz)	.00004	.00004	.00004	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0003	
					RPM	42000	42000	39000	39000	36000	32000	28000	25000	23500	21500	18000	15000	11560			
					IPM(FEED)	3	3	4	4	4	5	6	6	7	7	7	7	8			
P	11.1-11.2	High alloyed steel, and tool steel	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	25	50	70	95	110	120	120	125	130	135	135	140	155			
					IPT(fz)	.00004	.00004	.00004	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0003	
					RPM	25200	25200	23400	23400	21600	19200	16800	15000	14100	12900	10800	9000	7560			
					IPM(FEED)	2	2	2	2	3	3	3	4	4	4	4	4	5			
M	14.1	Stainless steel	1D	0.05D (Up to Ø1 : 0.02D)	SFM(Vc)	20	45	60	80	95	100	100	105	110	110	110	115	130			
					IPT(fz)	.00004	.00004	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0003	
					RPM	21000	21000	19500	19500	18000	16000	14000	12500	11750	10750	9000	7500	6300			
					IPM(FEED)	2	2	2	2	2	3	3	3	3	3	3	4	4			
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	45	85	120	160	185	200	200	205	220	220	225	230	240			
					IPT(fz)	.00004	.00004	.00004	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0003	
					RPM	42000	42000	39000	39000	36000	32000	28000	25000	23500	21500	18000	15000	11560			
					IPM(FEED)	3	3	4	4	4	5	6	6	7	7	7	7	8			
H	38.1-38.2	Hardened steel	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	15	35	50	65	75	80	80	80	85	90	90	95	105			
					IPT(fz)	.00002	.00002	.00002	.00002	.00003	.00004	.00005	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	
					RPM	16800	16800	15600	15600	14400	12800	11200	10000	9400	8600	7200	6000	5040			
					IPM(FEED)	1	1	1	1	1	1	1	1	1	1	1	1	2			
H	40	Chilled Cast Iron	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	25	50	70	95	110	120	120	125	130	135	135	140	155			
					IPT(fz)	.00004	.00004	.00004	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0003	
					RPM	25200	25200	23400	23400	21600	19200	16800	15000	14100	12900	10800	9000	7560			
					IPM(FEED)	2	2	2	2	3	3	3	4	4	4	4	4	5			
H	41	Hardened Cast Iron	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	15	35	50	65	75	80	80	80	85	90	90	95	105			
					IPT(fz)	.00002	.00002	.00002	.00002	.00003	.00004	.00005	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	
					RPM	16800	16800	15600	15600	14400	12800	11200	10000	9400	8600	7200	6000	5040			
					IPM(FEED)	1	1	1	1	1	1	1	1	1	1	1	1	2			

SFM = Surface Feet per Minute  
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 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
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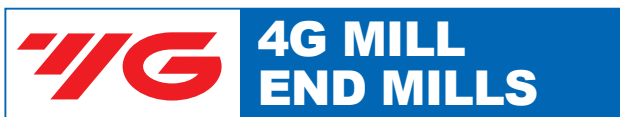
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)															
						2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9		
P	1-8	Non-alloy steel	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	265	275	295	310	320	325	335	345	350	350	350	345	345	345		
					IPT(fz)	.0004	.0005	.0006	.0008	.0009	.0010	.0012	.0013	.0014	.0016	.0017	.0019	.0019	.0020		
					RPM	10240	8920	8240	7560	6930	6300	5930	5560	5220	4880	4540	4200	3965	3730		
					IPM(FEED)	8	9	11	12	13	13	14	15	15	15	16	16	15	15		
P	9	Low alloy steel	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	170	170	185	190	195	195	200	210	210	210	210	210	210	210		
					IPT(fz)	.0004	.0005	.0007	.0008	.0009	.0010	.0012	.0014	.0014	.0015	.0016	.0016	.0017	.0017		
					RPM	6560	5560	5090	4620	4200	3780	3570	3360	3150	2940	2730	2520	2390	2260		
					IPM(FEED)	5	6	7	8	8	8	9	9	9	9	9	8	8	8		
P	10	High alloyed steel, and tool steel	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	265	275	295	310	320	325	335	345	350	350	350	345	345	345		
					IPT(fz)	.0004	.0005	.0006	.0008	.0009	.0010	.0012	.0013	.0014	.0016	.0017	.0019	.0019	.0020		
					RPM	10240	8920	8240	7560	6930	6300	5930	5560	5220	4880	4540	4200	3965	3730		
					IPM(FEED)	8	9	11	12	13	13	14	15	15	15	16	16	15	15		
P	11.1-11.2	High alloyed steel, and tool steel	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	170	170	185	190	195	195	200	210	210	210	210	210	210	210		
					IPT(fz)	.0004	.0005	.0007	.0008	.0009	.0010	.0012	.0014	.0014	.0015	.0016	.0016	.0017	.0017		
					RPM	6560	5560	5090	4620	4200	3780	3570	3360	3150	2940	2730	2520	2390	2260		
					IPM(FEED)	5	6	7	8	8	8	9	9	9	9	9	8	8	8		
M	14.1	Stainless steel	1D	0.05D (Up to Ø1 : 0.02D)	SFM(Vc)	140	145	155	160	165	165	170	175	180	180	175	175	175			
					IPT(fz)	.0004	.0005	.0006	.0008	.0009	.0011	.0012	.0013	.0014	.0015	.0016	.0018	.0018	.0019		
					RPM	5460	4620	4250	3880	3520	3160	3000	2840	2655	2470	2285	2100	1995	1890		
					IPM(FEED)	4	5	6	6	7	7	7	8	8	8	8	8	7	7		
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	265	275	295	310	320	325	335	345	350	350	350	345	345	345		
					IPT(fz)	.0004	.0005	.0006	.0008	.0009	.0010	.0012	.0013	.0014	.0016	.0017	.0019	.0019	.0020		
					RPM	10240	8920	8240	7560	6930	6300	5930	5560	5220	4880	4540	4200	3965	3730		
					IPM(FEED)	8	9	11	12	13	13	14	15	15	15	16	16	15	15		
H	38.1-38.2	Hardened steel	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	110	105	115	120	120	120	120	125	130	135	135	140	140	140		
					IPT(fz)	.0002	.0003	.0003	.0003	.0004	.0005	.0005	.0006	.0007	.0007	.0008	.0009	.0009	.0009	.0009	
					RPM	4200	3360	3150	2940	2630	2320	2160	2000	1920	1840	1760	1680	1600	1520		
					IPM(FEED)	2	2	2	2	2	2	2	2	2	2	3	3	3	3		
H	40	Chilled Cast Iron	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	170	170	185	190	195	195	200	210	210	210	210	210	210	210		
					IPT(fz)	.0004	.0005	.0007	.0008	.0009	.0010	.0012	.0014	.0014	.0015	.0016	.0016	.0017	.0017		
					RPM	6560	5560	5090	4620	4200	3780	3570	3360	3150	2940	2730	2520	2390	2260		
					IPM(FEED)	5	6	7	8	8	8	9	9	9	9	9	8	8	8		
H	41	Hardened Cast Iron	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	110	105	115	120	120	120	120	125	130	135	140	140	140			
					IPT(fz)	.0002	.0003	.0003	.0003	.0004	.0005	.0005	.0006	.0007	.0007	.0008	.0009	.0009	.0009		
					RPM	4200	3360	3150	2940	2630	2320	2160	2000	1920	1840	1760	1680	1600	1520		
					IPM(FEED)	2	2	2	2	2	2	2	2	2	2	3	3	3	3		

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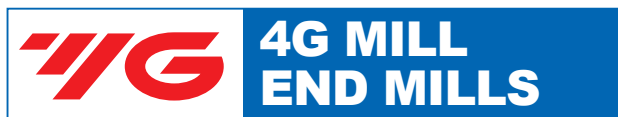


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RECOMMENDED CUTTING CONDITIONS



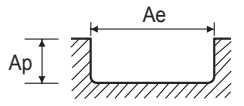
RECOMMENDED CUTTING CONDITIONS

**SEME35** SERIES 2FLUTE SQUARE - **SLOTING**

**SEME35** SERIES 2FLUTE SQUARE - **SLOTING**

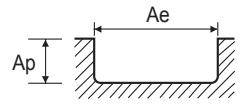
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)										
						9.5	10	10.5	11	11.5	12	13	14	15	16	
<b>P</b>	1-8	Non-alloy steel	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	340	335	340	340	340	340	350	355	360	365	
					IPT(fz)	.0020	.0021	.0021	.0021	.0021	.0021	.0021	.0021	.0021	.0021	
	RPM	3495	3260	3130	3000	2870	2740	2605	2470	2335	2200					
	IPM(FEED)	14	14	13	13	12	12	11	10	10	9					
<b>P</b>	9	Low alloy steel	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	210	205	210	210	210	210	215	220	225	225	
					IPT(fz)	.0017	.0017	.0016	.0016	.0016	.0016	.0016	.0016	.0016	.0017	
	RPM	2130	2000	1920	1840	1760	1680	1600	1520	1440	1360					
	IPM(FEED)	7	7	6	6	6	5	5	5	5	5					
<b>P</b>	10	High alloyed steel, and tool steel	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	340	335	340	340	340	340	350	355	360	365	
					IPT(fz)	.0020	.0021	.0021	.0021	.0021	.0021	.0021	.0021	.0021	.0021	
	RPM	3495	3260	3130	3000	2870	2740	2605	2470	2335	2200					
	IPM(FEED)	14	14	13	13	12	12	11	10	10	9					
<b>P</b>	11.1-11.2	High alloyed steel, and tool steel	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	210	205	210	210	210	210	215	220	225	225	
					IPT(fz)	.0017	.0017	.0016	.0016	.0016	.0016	.0016	.0016	.0016	.0017	
	RPM	2130	2000	1920	1840	1760	1680	1600	1520	1440	1360					
	IPM(FEED)	7	7	6	6	6	5	5	5	5	5					
<b>M</b>	14.1	Stainless steel	1D	0.05D (Up to Ø1 : 0.02D)	SFM(Vc)	175	175	175	170	170	170	170	175	175	175	
					IPT(fz)	.0019	.0020	.0020	.0019	.0019	.0019	.0020	.0020	.0021	.0021	
	RPM	1785	1680	1600	1520	1440	1360	1285	1210	1135	1060					
	IPM(FEED)	7	7	6	6	6	5	5	5	5	5					
<b>K</b>	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	340	335	340	340	340	340	350	355	360	365	
					IPT(fz)	.0020	.0021	.0021	.0021	.0021	.0021	.0021	.0021	.0021	.0021	
	RPM	3495	3260	3130	3000	2870	2740	2605	2470	2335	2200					
	IPM(FEED)	14	14	13	13	12	12	11	10	10	9					
<b>H</b>	38.1-38.2	Hardened steel	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	140	140	140	145	145	145	145	150	150	150	
					IPT(fz)	.0009	.0009	.0009	.0009	.0010	.0010	.0010	.0009	.0009	.0009	
	RPM	1440	1360	1310	1260	1210	1160	1095	1030	965	900					
	IPM(FEED)	3	3	2	2	2	2	2	2	2	2					
<b>H</b>	40	Chilled Cast Iron	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	210	205	210	210	210	210	215	220	225	225	
					IPT(fz)	.0017	.0017	.0016	.0016	.0016	.0016	.0016	.0016	.0016	.0017	
	RPM	2130	2000	1920	1840	1760	1680	1600	1520	1440	1360					
	IPM(FEED)	7	7	6	6	6	5	5	5	5	5					
<b>H</b>	41	Hardened Cast Iron	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	140	140	140	145	145	145	145	150	150	150	
					IPT(fz)	.0009	.0009	.0009	.0009	.0010	.0010	.0010	.0009	.0009	.0009	
	RPM	1440	1360	1310	1260	1210	1160	1095	1030	965	900					
	IPM(FEED)	3	3	2	2	2	2	2	2	2	2					

SFM = Surface Feet per Minute  
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 Ap : Inch (Axial Depth of Cut)  
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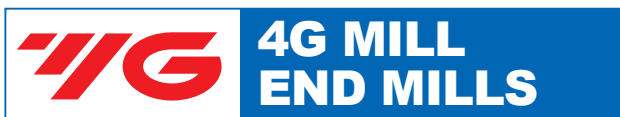
ISO	VDI 3323	Ae	Ap	Parameter	Diameter (Ø)									
					17	18	19	20	21	22	23	24	25	
<b>P</b>	1-8	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	365	360	355	345	350	350	350	350	350	
				IPT(fz)	.0021	.0021	.0021	.0021	.0021	.0021	.0020	.0019	.0019	
	RPM	2070	1940	1810	1680	1615	1550	1480	1425	1360				
	IPM(FEED)	9	8	8	7	7	7	6	6	5				
<b>P</b>	9	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	225	225	220	220	220	220	220	220	215	
				IPT(fz)	.0016	.0016	.0015	.0016	.0016	.0016	.0017	.0017	.0017	
	RPM	1285	1210	1135	1060	1015	970	925	885	840				
	IPM(FEED)	4	4	4	3	3	3	3	3	3				
<b>P</b>	10	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	365	360	355	345	350	350	350	350	350	
				IPT(fz)	.0021	.0021	.0021	.0021	.0021	.0021	.0020	.0019	.0019	
	RPM	2070	1940	1810	1680	1615	1550	1480	1425	1360				
	IPM(FEED)	9	8	8	7	7	7	6	6	5				
<b>P</b>	11.1-11.2	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	225	225	220	220	220	220	220	220	215	
				IPT(fz)	.0016	.0016	.0015	.0016	.0016	.0016	.0017	.0017	.0017	
	RPM	1285	1210	1135	1060	1015	970	925	885	840				
	IPM(FEED)	4	4	4	3	3	3	3	3	3				
<b>M</b>	14.1	1D	0.05D (Up to Ø1 : 0.02D)	SFM(Vc)	175	175	175	175	175	175	175	175	175	
				IPT(fz)	.0020	.0021	.0020	.0020	.0019	.0019	.0019	.0018	.0018	
	RPM	1005	950	895	840	800	775	745	715	680				
	IPM(FEED)	4	4	4	3	3	3	3	3	3				
<b>K</b>	15-20	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	365	360	355	345	350	350	350	350	350	
				IPT(fz)	.0021	.0021	.0021	.0021	.0021	.0021	.0020	.0019	.0019	
	RPM	2070	1940	1810	1680	1615	1550	1480	1425	1360				
	IPM(FEED)	9	8	8	7	7	7	6	6	5				
<b>H</b>	38.1-38.2	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	150	145	145	140	140	140	140	140	140	
				IPT(fz)	.0009	.0009	.0009	.0010	.0008	.0009	.0008	.0008	.0007	
	RPM	845	790	735	680	650	620	600	570	540				
	IPM(FEED)	2	2	1	1	1	1	1	1	1				
<b>H</b>	40	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	225	225	220	220	220	220	220	220	215	
				IPT(fz)	.0016	.0016	.0015	.0016	.0016	.0016	.0017	.0017	.0017	
	RPM	1285	1210	1135	1060	1015	970	925	885	840				
	IPM(FEED)	4	4	4	3	3	3	3	3	3				
<b>H</b>	41	1D	0.5D (Up to Ø3 : 0.2D) (Up to Ø1 : 0.15D)	SFM(Vc)	150	145	145	140	140	140	140	140	140	
				IPT(fz)	.0009	.0009	.0009	.0010	.0008	.0009	.0008	.0008	.0007	
	RPM	845	790	735	680	650	620	600	570	540				
	IPM(FEED)	2	2	1	1	1	1	1	1	1				

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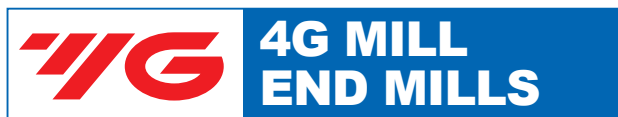


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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

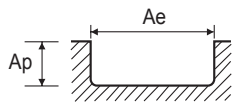
SEME70 SERIES 2FLUTE SQUARE - SLOTTING

SEME70 SERIES 2FLUTE SQUARE - SLOTTING

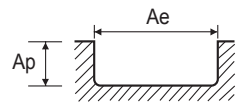
Table with columns for ISO, VDI, Material Description, Ae, Ap, Parameter, and Diameter (Ø) with sub-columns for diameters 1, 1.2, 1.5, 2, 2.5, 3.

Table with columns for ISO, VDI, Ae, Ap, Parameter, and Diameter (Ø) with sub-columns for diameters .5, 1.5, 1.5, 1.5, 1.5, 2, 2, 2, 2, 2.5, 2.5, 2.5, 2.5, 2.5, 3.

SFM = Surface Feet per Minute
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Ap : Inch (Axial Depth of Cut)
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Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)





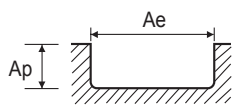
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# YG 4G MILL END MILLS

## RECOMMENDED CUTTING CONDITIONS

### SEME70 SERIES 2FLUTE SQUARE - SLOTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)														
						3			4			5			6			8		
						LOC	12	14	16	20	26	30	12	16	20	26	30	20	25	30
P	1-8	Non-alloy steel	1D	0.3D (Up to Ø3 : 0.4mm)	SFM(Vc)	195	195	175	175	175	175	210	210	210	190	190	225	225	205	
					IPT(fz)	.0003	.0003	.0003	.0003	.0002	.0002	.0005	.0005	.0005	.0004	.0004	.0007	.0007	.0006	
					RPM	6350	6350	5720	5720	5720	5720	5150	5150	5150	4640	4640	4400	4400	3960	
					IPM(FEED)	4	4	4	3	3	3	5	5	5	4	4	6	6	5	
	9	Low alloy steel	1D	0.3D (Up to Ø3 : 0.4mm)	SFM(Vc)	160	160	145	145	145	145	170	170	170	150	150	180	180	160	
					IPT(fz)	.0003	.0003	.0003	.0003	.0003	.0003	.0005	.0005	.0005	.0004	.0004	.0007	.0007	.0006	
					RPM	5150	5150	4640	4640	4640	4640	4100	4100	4100	3690	3690	3480	3480	3130	
					IPM(FEED)	3	3	3	3	2	2	4	4	4	3	3	5	5	4	
	10	High alloyed steel, and tool steel	1D	0.3D (Up to Ø3 : 0.4mm)	SFM(Vc)	195	195	175	175	175	175	210	210	210	190	190	225	225	205	
					IPT(fz)	.0003	.0003	.0003	.0003	.0002	.0002	.0005	.0005	.0005	.0004	.0004	.0007	.0007	.0006	
					RPM	6350	6350	5720	5720	5720	5720	5150	5150	5150	4640	4640	4400	4400	3960	
					IPM(FEED)	4	4	4	3	3	3	5	5	5	4	4	6	6	5	
11.1-11.2	High alloyed steel, and tool steel	1D	0.3D (Up to Ø3 : 0.4mm)	SFM(Vc)	160	160	145	145	145	145	170	170	170	150	150	180	180	160		
				IPT(fz)	.0003	.0003	.0003	.0003	.0003	.0003	.0005	.0005	.0005	.0004	.0004	.0007	.0007	.0006		
				RPM	5150	5150	4640	4640	4640	4640	4100	4100	4100	3690	3690	3480	3480	3130		
				IPM(FEED)	3	3	3	3	2	2	4	4	4	3	3	5	5	4		
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1D	0.3D (Up to Ø3 : 0.4mm)	SFM(Vc)	195	195	175	175	175	175	210	210	210	190	190	225	225	205	
					IPT(fz)	.0003	.0003	.0003	.0003	.0002	.0002	.0005	.0005	.0005	.0004	.0004	.0007	.0007	.0006	
					RPM	6350	6350	5720	5720	5720	5720	5150	5150	5150	4640	4640	4400	4400	3960	
					IPM(FEED)	4	4	4	3	3	3	5	5	5	4	4	6	6	5	
H	38.1-38.2	Hardened steel	1D	0.05D	SFM(Vc)	100	100	90	90	90	90	105	105	105	95	95	115	115	105	
					IPT(fz)	.0021	.0017	.0012	.0012	.0005	.0005	.0002	.0042	.0042	.0037	.0037	.0038	.0030	.0022	
					RPM	3170	3170	2850	2850	2850	2850	2580	2580	2580	2320	2320	2280	2280	2050	
					IPM(FEED)	14	11	7	7	3	3	1	22	22	17	17	17	14	9	
	40	Chilled Cast Iron	1D	0.3D (Up to Ø3 : 0.4mm)	SFM(Vc)	160	160	145	145	145	145	170	170	170	150	150	180	180	160	
					IPT(fz)	.0003	.0003	.0003	.0003	.0003	.0003	.0005	.0005	.0005	.0004	.0004	.0007	.0007	.0006	
					RPM	5150	5150	4640	4640	4640	4640	4100	4100	4100	3690	3690	3480	3480	3130	
					IPM(FEED)	3	3	3	3	2	2	4	4	4	3	3	5	5	4	
	41	Hardened Cast Iron	1D	0.05D	SFM(Vc)	100	100	90	90	90	90	105	105	105	95	95	115	115	105	
					IPT(fz)	.0021	.0017	.0012	.0012	.0005	.0005	.0002	.0042	.0042	.0037	.0037	.0038	.0030	.0022	
					RPM	3170	3170	2850	2850	2850	2850	2580	2580	2580	2320	2320	2280	2280	2050	
					IPM(FEED)	14	11	7	7	3	3	1	22	22	17	17	17	14	9	



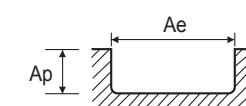
SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)

# YG 4G MILL END MILLS

## RECOMMENDED CUTTING CONDITIONS

### SEME70 SERIES 2FLUTE SQUARE - SLOTTING

ISO	VDI 3323	Ae	Ap	Parameter	Diameter (Ø)															
					5			6			8			10						
					35	40	15	20	25	30	35	40	45	25	30	35	40	45	50	30
P	1-8	1D	0.3D (Up to Ø3 : 0.4mm)	SFM(Vc)	205	205	235	235	235	235	210	210	210	235	235	235	215	215	255	
				IPT(fz)	.0006	.0005	.0009	.0009	.0009	.0008	.0008	.0007	.0007	.0013	.0013	.0013	.0011	.0011	.0010	.0015
				RPM	3960	3960	3800	3800	3800	3800	3420	3420	3420	2880	2880	2880	2880	2590	2590	2450
				IPM(FEED)	5	4	7	7	7	6	6	5	5	8	8	8	6	6	5	8
	9	1D	0.3D (Up to Ø3 : 0.4mm)	SFM(Vc)	160	160	190	190	190	190	170	170	170	190	190	190	170	170	205	
				IPT(fz)	.0006	.0006	.0010	.0010	.0010	.0008	.0008	.0007	.0007	.0013	.0013	.0013	.0011	.0011	.0010	.0015
				RPM	3130	3130	3050	3050	3050	3050	2750	2750	2750	2280	2280	2280	2280	2050	2050	2000
				IPM(FEED)	4	4	6	6	6	5	5	4	4	6	6	6	5	5	4	6
	10	1D	0.3D (Up to Ø3 : 0.4mm)	SFM(Vc)	205	205	235	235	235	235	210	210	210	235	235	235	215	215	255	
				IPT(fz)	.0006	.0005	.0009	.0009	.0009	.0008	.0008	.0007	.0007	.0013	.0013	.0013	.0011	.0011	.0010	.0015
				RPM	3960	3960	3800	3800	3800	3800	3420	3420	3420	2880	2880	2880	2880	2590	2590	2450
				IPM(FEED)	5	4	7	7	7	6	6	5	5	8	8	8	6	6	5	8
11.1-11.2	1D	0.3D (Up to Ø3 : 0.4mm)	SFM(Vc)	160	160	190	190	190	190	170	170	170	190	190	190	170	170	205		
			IPT(fz)	.0006	.0006	.0010	.0010	.0010	.0008	.0008	.0007	.0007	.0013	.0013	.0013	.0011	.0011	.0010	.0015	
			RPM	3130	3130	3050	3050	3050	3050	2750	2750	2750	2280	2280	2280	2280	2050	2050	2000	
			IPM(FEED)	4	4	6	6	6	5	5	4	4	6	6	6	5	5	4	6	
K	15-20	1D	0.3D (Up to Ø3 : 0.4mm)	SFM(Vc)	205	205	235	235	235	235	210	210	210	235	235	235	215	215	255	
				IPT(fz)	.0006	.0005	.0009	.0009	.0009	.0008	.0008	.0007	.0007	.0013	.0013	.0013	.0011	.0011	.0010	.0015
				RPM	3960	3960	3800	3800	3800	3800	3420	3420	3420	2880	2880	2880	2880	2590	2590	2450
				IPM(FEED)	5	4	7	7	7	6	6	5	5	8	8	8	6	6	5	8
H	38.1-38.2	1D	0.05D	SFM(Vc)	105	105	120	120	120	120	110	110	110	125	125	125	110	110	125	
				IPT(fz)	.0022	.0010	.0010	.0055	.0044	.0044	.0039	.0039	.0026	.0079	.0079	.0079	.0064	.0071	.0071	.0063
				RPM	2050	2050	1970	1970	1970	1970	1770	1770	1770	1510	1510	1510	1510	1360	1360	1210
				IPM(FEED)	9	4	4	22	17	17	14	14	9	24	24	24	19	19	19	15
	40	1D	0.3D (Up to Ø3 : 0.4mm)	SFM(Vc)	160	160	190	190	190	190	170	170	170	190	190	190	170	170	205	
				IPT(fz)	.0006	.0006	.0010	.0010	.0010	.0008	.0008	.0007	.0007	.0013	.0013	.0013	.0011	.0011	.0010	.0015
				RPM	3130	3130	3050	3050	3050	3050	2750	2750	2750	2280	2280	2280	2280	2050	2050	2000
				IPM(FEED)	4	4	6	6	6	5	5	4	4	6	6	6	5	5	4	6
	41	1D	0.05D	SFM(Vc)	105	105	120	120	120	120	110	110	110	125	125	125	110	110	125	
				IPT(fz)	.0022	.0010	.0010	.0055	.0044	.0044	.0039	.0039	.0026	.0079	.0079	.0079	.0064	.0071	.0071	.0063
				RPM	2050	2050	1970	1970	1970	1970	1770	1770	1770	1510	1510	1510	1510	1360	1360	1210
				IPM(FEED)	9	4	4	22	17	17	14	14	9	24	24	24	19	19	19	15



SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)

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**YG 4G MILL END MILLS**

**RECOMMENDED CUTTING CONDITIONS**

**YG 4G MILL END MILLS**

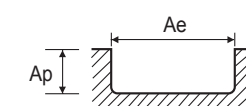
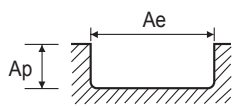
**RECOMMENDED CUTTING CONDITIONS**

**SEME70 SERIES 2FLUTE SQUARE - SLOTTING**

**SEME70 SERIES 2FLUTE SQUARE - SLOTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)													
						LOC													
						10	10	10	10	10	10	12	12	12	12	12	12		
<b>P</b>	1-8	Non-alloy steel	1D	0.3D (Up to Ø3 : 0.4mm)	SFM(Vc)	255	255	255	255	230	230	245	245	245	245	245	225	225	
					IPT(fz)	.0015	.0015	.0013	.0013	.0013	.0012	.0015	.0013	.0013	.0013	.0011	.0011	.0011	
					RPM	2450	2450	2450	2450	2210	2210	2000	2000	2000	2000	2000	1800	1800	
					IPM(FEED)	8	8	6	6	6	5	6	6	5	5	5	4	4	4
	9	Low alloy steel	1D	0.3D (Up to Ø3 : 0.4mm)	SFM(Vc)	205	205	205	205	185	185	205	205	205	205	205	185	185	
					IPT(fz)	.0015	.0015	.0012	.0012	.0013	.0011	.0016	.0016	.0013	.0013	.0012	.0012	.0012	
					RPM	2000	2000	2000	2000	1800	1800	1670	1670	1670	1670	1670	1500	1500	
					IPM(FEED)	6	6	5	5	5	4	5	5	5	5	5	4	4	4
	10	High alloyed steel, and tool steel	1D	0.3D (Up to Ø3 : 0.4mm)	SFM(Vc)	255	255	255	255	230	230	245	245	245	245	245	225	225	
					IPT(fz)	.0015	.0015	.0013	.0013	.0013	.0012	.0015	.0015	.0013	.0013	.0011	.0011	.0011	
					RPM	2450	2450	2450	2450	2210	2210	2000	2000	2000	2000	2000	1800	1800	
					IPM(FEED)	8	8	6	6	6	5	6	6	5	5	5	4	4	4
11.1-11.2	High alloyed steel, and tool steel	1D	0.3D (Up to Ø3 : 0.4mm)	SFM(Vc)	205	205	205	205	185	185	205	205	205	205	205	185	185		
				IPT(fz)	.0015	.0015	.0012	.0012	.0013	.0011	.0016	.0016	.0013	.0013	.0012	.0012	.0012		
				RPM	2000	2000	2000	2000	1800	1800	1670	1670	1670	1670	1670	1500	1500		
				IPM(FEED)	6	6	5	5	5	4	5	5	5	5	5	4	4	4	
<b>K</b>	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1D	0.3D (Up to Ø3 : 0.4mm)	SFM(Vc)	255	255	255	255	230	230	245	245	245	245	245	225	225	
					IPT(fz)	.0015	.0015	.0013	.0013	.0013	.0012	.0015	.0015	.0013	.0013	.0011	.0011	.0011	
					RPM	2450	2450	2450	2450	2210	2210	2000	2000	2000	2000	2000	1800	1800	
					IPM(FEED)	8	8	6	6	6	5	6	6	5	5	5	4	4	4
<b>H</b>	38.1-38.2	Hardened steel	1D	0.05D	SFM(Vc)	125	125	125	125	110	110	125	125	125	125	125	115	115	
					IPT(fz)	.0063	.0041	.0041	.0018	.0079	.0079	.0068	.0173	.0173	.0173	.0173	.0140	.0155	.0155
					RPM	1210	1210	1210	1210	1090	1090	1010	1010	1010	1010	1010	910	910	
					IPM(FEED)	15	10	10	4	17	17	14	35	35	35	35	28	28	28
	40	Chilled Cast Iron	1D	0.3D (Up to Ø3 : 0.4mm)	SFM(Vc)	205	205	205	205	185	185	205	205	205	205	205	185	185	
					IPT(fz)	.0015	.0015	.0012	.0012	.0013	.0011	.0016	.0016	.0013	.0013	.0012	.0012	.0012	
					RPM	2000	2000	2000	2000	1800	1800	1670	1670	1670	1670	1670	1500	1500	
					IPM(FEED)	6	6	5	5	5	4	5	5	5	5	5	4	4	4
	41	Hardened Cast Iron	1D	0.05D	SFM(Vc)	125	125	125	125	110	110	125	125	125	125	125	115	115	
					IPT(fz)	.0063	.0041	.0041	.0018	.0079	.0079	.0068	.0173	.0173	.0173	.0173	.0140	.0155	.0155
					RPM	1210	1210	1210	1210	1090	1090	1010	1010	1010	1010	1010	910	910	
					IPM(FEED)	15	10	10	4	17	17	14	35	35	35	35	28	28	28

ISO	VDI 3323	Ae	Ap	Parameter	Diameter (Ø)																	
					LOC																	
					14	14	16	16	16	16	16	16	16	16	18	18	18	20	20	20		
<b>P</b>	1-8	1D	0.3D (Up to Ø3 : 0.4mm)	SFM(Vc)	265	265	280	280	280	280	280	280	280	250	250	250	270	270	245	250	250	250
				IPT(fz)	.0013	.0013	.0016	.0016	.0014	.0014	.0012	.0012	.0012	.0016	.0013	.0012	.0016	.0016	.0014	.0016	.0016	.0014
				RPM	1850	1850	1700	1700	1700	1700	1700	1530	1530	1530	1450	1450	1310	1220	1220	1220		
				IPM(FEED)	5	5	6	6	5	5	4	4	4	4	5	4	3	4	4	3		
	9	1D	0.3D (Up to Ø3 : 0.4mm)	SFM(Vc)	215	215	210	210	210	210	210	190	190	190	210	210	185	195	195	195		
				IPT(fz)	.0013	.0013	.0016	.0016	.0014	.0014	.0012	.0012	.0012	.0016	.0013	.0012	.0016	.0016	.0014			
				RPM	1480	1480	1280	1280	1280	1280	1280	1150	1150	1150	1120	1120	1000	950	950	950		
				IPM(FEED)	4	4	4	4	4	4	3	3	3	3	4	3	2	3	3	3		
	10	1D	0.3D (Up to Ø3 : 0.4mm)	SFM(Vc)	265	265	280	280	280	280	280	250	250	250	270	270	245	250	250	250		
				IPT(fz)	.0013	.0013	.0016	.0016	.0014	.0014	.0012	.0012	.0012	.0016	.0013	.0012	.0016	.0016	.0014			
				RPM	1850	1850	1700	1700	1700	1700	1530	1530	1530	1450	1450	1310	1220	1220	1220			
				IPM(FEED)	5	5	6	6	5	5	4	4	4	5	4	3	4	4	3			
11.1-11.2	1D	0.3D (Up to Ø3 : 0.4mm)	SFM(Vc)	215	215	210	210	210	210	190	190	190	210	210	185	195	195	195				
			IPT(fz)	.0013	.0013	.0016	.0016	.0014	.0014	.0012	.0012	.0012	.0016	.0013	.0012	.0016	.0016	.0014				
			RPM	1480	1480	1280	1280	1280	1280	1150	1150	1150	1120	1120	1000	950	950	950				
			IPM(FEED)	4	4	4	4	4	4	3	3	3	3	4	3	2	3	3	3			
<b>K</b>	15-20	1D	0.3D (Up to Ø3 : 0.4mm)	SFM(Vc)	265	265	280	280	280	280	280	280	250	250	250	270	270	245	250	250	250	
				IPT(fz)	.0013	.0013	.0016	.0016	.0014	.0014	.0012	.0012	.0012	.0016	.0013	.0012	.0016	.0016	.0014			
				RPM	1850	1850	1700	1700	1700	1700	1530	1530	1530	1450	1450	1310	1220	1220	1220			
				IPM(FEED)	5	5	6	6	5	5	4	4	4	5	4	3	4	4	3			
<b>H</b>	38.1-38.2	1D	0.05D	SFM(Vc)	130	130	130	130	130	130	130	120	120	120	130	130	115	125	125	125		
				IPT(fz)	.0155	.0123	.0140	.0093	.0093	.0093	.0039	.0044	.0044	.0013	.0013	.0202	.0225	.0192	.0192	.0192		
				RPM	910	910	800	800	800	800	800	720	720	720	700	700	630	600	600	600		
				IPM(FEED)	28	22	22	15	15	15	6	6	6	2	2	28	28	23	23	23		
	40	1D	0.3D (Up to Ø3 : 0.4mm)	SFM(Vc)	215	215	210	210	210	210	190	190	190	210	210	185	195	195	195			
				IPT(fz)	.0013	.0013	.0016	.0016	.0014	.0014	.0012	.0012	.0012	.0016	.0013	.0012	.0016	.0016	.0014			
				RPM	1480	1480	1280	1280	1280	1280	1150	1150	1150	1120	1120	1000	950	950	950			
				IPM(FEED)	4	4	4	4	4	4	3	3	3	3	4	3	2	3	3	3		
	41	1D	0.05D	SFM(Vc)	130	130	130	130	130	130	130	120	120	120	130	130	115	125	125	125		
				IPT(fz)	.0155	.0123	.0140	.0093	.0093	.0093	.0039	.0044	.0044	.0013	.0013	.0202	.0225	.0192	.0192	.0192		
				RPM	910	910	800	800	800	800	720	720	720	700	700	630	600	600	600			
				IPM(FEED)	28	22	22	15	15	15	6	6	6	2	2	28	28	23	23	23		



SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)

SFM = Surface Feet per Minute  
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 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)

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**YG 4G MILL END MILLS**

**RECOMMENDED CUTTING CONDITIONS**

**YG 4G MILL END MILLS**

**RECOMMENDED CUTTING CONDITIONS**

**SEME70 SERIES 2FLUTE SQUARE - SLOTTING**

**SEM845 SERIES 2FLUTE SQUARE - SLOTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)																																												
						20				22				25																																				
						80	90	110	120	75	110	70	90	110	120	75	110	70	90	110	120																													
P	1-8	Non-alloy steel	1D	0.3D (Up to Ø3 : 0.4mm)	SFM(Vc)	250	250	225	225	250	250	255	255	255	255	IPT(fz)	.0014	.0012	.0013	.0013	.0014	.0013	.0016	.0014	.0014	.0012	RPM	1220	1220	1100	1100	1100	1100	980	980	980	980	IPM(FEED)	3	3	3	3	3	3	3	3	3	3	2	
					SFM(Vc)	195	195	175	175	190	190	195	195	195	195	195	IPT(fz)	.0014	.0012	.0012	.0012	.0013	.0012	.0016	.0013	.0013	.0012	RPM	950	950	860	860	840	840	750	750	750	750	IPM(FEED)	3	2	2	2	2	2	2	2	2	2	2
					SFM(Vc)	250	250	225	225	250	250	255	255	255	255	255	IPT(fz)	.0014	.0012	.0013	.0013	.0014	.0013	.0016	.0014	.0014	.0012	RPM	1220	1220	1100	1100	1100	1100	980	980	980	980	IPM(FEED)	3	3	3	3	3	3	3	3	3	2	
					SFM(Vc)	195	195	175	175	190	190	195	195	195	195	195	IPT(fz)	.0014	.0012	.0012	.0012	.0013	.0012	.0016	.0013	.0013	.0012	RPM	950	950	860	860	840	840	750	750	750	750	IPM(FEED)	3	2	2	2	2	2	2	2	2	2	
	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1D	0.3D (Up to Ø3 : 0.4mm)	SFM(Vc)	250	250	225	225	250	250	255	255	255	255	IPT(fz)	.0014	.0012	.0013	.0013	.0014	.0013	.0016	.0014	.0014	.0012	RPM	1220	1220	1100	1100	1100	1100	980	980	980	980	IPM(FEED)	3	3	3	3	3	3	3	3	3	2		
					SFM(Vc)	125	125	110	110	125	125	125	125	125	125	125	IPT(fz)	.0151	.0151	.0109	.0047	.0046	.0204	.0189	.0189	.0189	.0150	RPM	600	600	540	540	550	550	480	480	480	480	IPM(FEED)	18	18	12	5	5	22	18	18	18	14	
					SFM(Vc)	195	195	175	175	190	190	195	195	195	195	195	IPT(fz)	.0014	.0012	.0012	.0012	.0013	.0012	.0016	.0013	.0013	.0012	RPM	950	950	860	860	840	840	750	750	750	750	IPM(FEED)	3	2	2	2	2	2	2	2	2	2	
					SFM(Vc)	125	125	110	110	125	125	125	125	125	125	125	IPT(fz)	.0151	.0151	.0109	.0047	.0046	.0204	.0189	.0189	.0189	.0150	RPM	600	600	540	540	550	550	480	480	480	480	IPM(FEED)	18	18	12	5	5	22	18	18	18	14	
	H	38.1-38.2	Hardened steel	1D	0.05D	SFM(Vc)	125	125	110	110	125	125	125	125	125	125	IPT(fz)	.0151	.0151	.0109	.0047	.0046	.0204	.0189	.0189	.0189	.0150	RPM	600	600	540	540	550	550	480	480	480	480	IPM(FEED)	18	18	12	5	5	22	18	18	18	14	
						SFM(Vc)	195	195	175	175	190	190	195	195	195	195	195	IPT(fz)	.0014	.0012	.0012	.0012	.0013	.0012	.0016	.0013	.0013	.0012	RPM	950	950	860	860	840	840	750	750	750	750	IPM(FEED)	3	2	2	2	2	2	2	2	2	2
		40	Chilled Cast Iron	1D	0.3D (Up to Ø3 : 0.4mm)	SFM(Vc)	125	125	110	110	125	125	125	125	125	125	IPT(fz)	.0151	.0151	.0109	.0047	.0046	.0204	.0189	.0189	.0189	.0150	RPM	600	600	540	540	550	550	480	480	480	480	IPM(FEED)	18	18	12	5	5	22	18	18	18	14	
	SFM(Vc)					195	195	175	175	190	190	195	195	195	195	195	IPT(fz)	.0014	.0012	.0012	.0012	.0013	.0012	.0016	.0013	.0013	.0012	RPM	950	950	860	860	840	840	750	750	750	750	IPM(FEED)	3	2	2	2	2	2	2	2	2	2	
41	Hardened Cast Iron	1D	0.05D	SFM(Vc)	125	125	110	110	125	125	125	125	125	125	IPT(fz)	.0151	.0151	.0109	.0047	.0046	.0204	.0189	.0189	.0189	.0150	RPM	600	600	540	540	550	550	480	480	480	480	IPM(FEED)	18	18	12	5	5	22	18	18	18	14			
				SFM(Vc)	195	195	175	175	190	190	195	195	195	195	195	IPT(fz)	.0014	.0012	.0012	.0012	.0013	.0012	.0016	.0013	.0013	.0012	RPM	950	950	860	860	840	840	750	750	750	750	IPM(FEED)	3	2	2	2	2	2	2	2	2	2		

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)																																																																																									
				0.1						0.1						0.2						0.3																																																																							
				LBS	0.3	0.5	1	0.5	1	1.5	2	1	1.5	2	2.5	3	4	5	1	1.5	2	2.5	3	4	5	1	1.5	2																																																																	
P	1-8	Non-alloy steel	SFM(Vc)	50	50	45	80	80	70	70	105	105	95	95	95	85	65	115	115	115	IPT(fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0004	.0004	.0004	RPM	50000	50000	45000	38500	38500	34650	34650	34200	34200	30780	30780	30780	27360	20520	27400	27400	27400	IPM(FEED)	12	12	10	15	15	12	12	15	15	12	12	12	10	7	21	21	21	Ap	0.009	0.006	0.002	0.018	0.013	0.007	0.005	0.019	0.019	0.011	0.007	0.007	0.004	0.003	0.036	0.025	0.025			
			SFM(Vc)	50	50	45	75	75	65	65	100	100	90	90	90	80	60	105	105	105	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0001	.0001	.0001	.0001	.0001	.0003	.0003	.0003	RPM	46200	46200	41580	36300	36300	32670	32670	32300	32300	29070	29070	29070	25840	19380	25800	25800	25800	IPM(FEED)	9	9	7	11	11	9	9	11	11	9	9	9	7	5	15	15	15	Ap	0.007	0.005	0.002	0.014	0.011	0.006	0.004	0.015	0.015	0.008	0.005	0.005	0.003	0.002	0.028	0.02	0.02	
			SFM(Vc)	50	50	45	80	80	70	70	105	105	95	95	95	85	65	115	115	115	IPT(fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0004	.0004	.0004	RPM	50000	50000	45000	38500	38500	34650	34650	34200	34200	30780	30780	30780	27360	20520	27400	27400	27400	IPM(FEED)	12	12	10	15	15	12	12	15	15	12	12	12	10	7	21	21	21	Ap	0.009	0.006	0.002	0.018	0.013	0.007	0.005	0.019	0.019	0.011	0.007	0.007	0.004	0.003	0.036	0.025	0.025	
			SFM(Vc)	50	50	45	75	75	65	65	100	100	90	90	90	80	60	105	105	105	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0001	.0001	.0001	.0001	.0001	.0003	.0003	.0003	RPM	46200	46200	41580	36300	36300	32670	32670	32300	32300	29070	29070	29070	25840	19380	25800	25800	25800	IPM(FEED)	9	9	7	11	11	9	9	11	11	9	9	9	7	5	15	15	15	Ap	0.007	0.005	0.002	0.014	0.011	0.006	0.004	0.015	0.015	0.008	0.005	0.005	0.003	0.002	0.028	0.02	0.02	
	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1D	SFM(Vc)	50	50	45	80	80	70	70	105	105	95	95	95	85	65	115	115	115	IPT(fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0001	.0001	.0001	.0001	.0001	.0003	.0003	.0003	RPM	50000	50000	45000	38500	38500	34650	34650	34200	34200	30780	30780	30780	27360	20520	27400	27400	27400	IPM(FEED)	12	12	10	15	15	12	12	15	15	12	12	12	10	7	21	21	21	Ap	0.009	0.006	0.002	0.018	0.013	0.007	0.005	0.019	0.019	0.011	0.007	0.007	0.004	0.003	0.036	0.025	0.025
				SFM(Vc)	50	50	45	75	75	65	65	100	100	90	90	90	80	60	105	105	105	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0001	.0001	.0001	.0001	.0001	.0003	.0003	.0003	RPM	46200	46200	41580	36300	36300	32670	32670	32300	32300	29070	29070	29070	25840	19380	25800	25800	25800	IPM(FEED)	9	9	7	11	11	9	9	11	11	9	9	9	7	5	15	15	15	Ap	0.007	0.005	0.002	0.014	0.011	0.006	0.004	0.015	0.015	0.008	0.005	0.005	0.003	0.002	0.028	0.02	0.02
				SFM(Vc)	40	40	40	65	65	60	60	90	90	80	80	80	70	55	95	95	95	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	RPM	40600	40600	36540	32100	32100	28890	28890	28500	28500	25650	25650	25650	22800	17100	22800	22800	22800	IPM(FEED)	7	7	6	8	8	6	6	9	9	7	7	7	6	4	11	11	11	Ap	0.005	0.004	0.001	0.01	0.007	0.004	0.003	0.011	0.011	0.006	0.004	0.004	0.002	0.002	0.02	0.014	0.014
				SFM(Vc)	50	50	45	75	75	65	65	100	100	90	90	90	80	60	105	105	105	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0001	.0001	.0001	.0001	.0001	.0003	.0003	.0003	RPM	46200	46200	41580	36300	36300</																																																



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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

SEM845 SERIES 2FLUTE SQUARE - SLOTTING

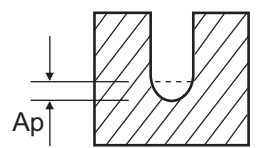
SEM845 SERIES 2FLUTE SQUARE - SLOTTING

Table with columns: ISO, VDI 3323, Material Description, Parameter, Diameter (Ø) (0.4 to 10), SFM(Vc), IPT(fz), RPM, IPM(FEED), Ap. Rows include P (Non-alloy steel, Low alloy steel, High alloyed steel, and tool steel) and K (Grey cast iron, Nodular cast iron, Malleable cast iron).

Table with columns: ISO, VDI 3323, Material Description, Parameter, Diameter (Ø) (0.5 to 0.8), SFM(Vc), IPT(fz), RPM, IPM(FEED), Ap. Rows include P (Non-alloy steel, Low alloy steel, High alloyed steel, and tool steel) and K (Grey cast iron, Nodular cast iron, Malleable cast iron).

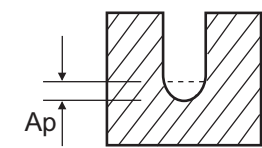
SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : mm (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

(Depth of Cut per one pass)

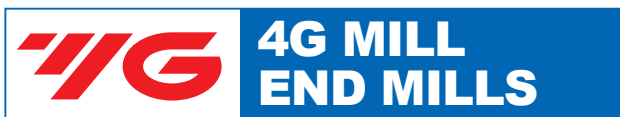


SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : mm (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

(Depth of Cut per one pass)



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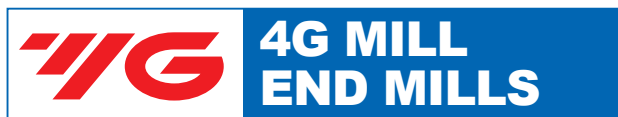
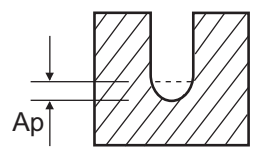
RECOMMENDED CUTTING CONDITIONS

SEM845 SERIES 2FLUTE SQUARE - SLOTTING

Table with columns for ISO, VDI 3323, Material Description, Parameter, and Diameter (Ø) for various materials and sizes.

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : mm (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

(Depth of Cut per one pass)



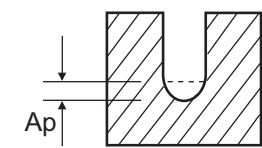
RECOMMENDED CUTTING CONDITIONS

SEM845 SERIES 2FLUTE SQUARE - SLOTTING

Table with columns for ISO, VDI 3323, Parameter, and Diameter (Ø) for various materials and sizes.

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : mm (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

(Depth of Cut per one pass)



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# YG 4G MILL END MILLS

## RECOMMENDED CUTTING CONDITIONS

# YG 4G MILL END MILLS

## RECOMMENDED CUTTING CONDITIONS

### SEM845 SERIES 2FLUTE SQUARE - SLOTTING

### SEM845 SERIES 2FLUTE SQUARE - SLOTTING

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)																			
				1.2		1.2		1.2		1.4		1.4		1.4		1.5		1.5		1.5		1.5	
				LBS	16	20	26	30	6	8	10	14	16	20	4	5	6	7	8	10	12		
P	1-8	Non-alloy steel	SFM(Vc)	215	165	80	80	275	250	250	250	220	220	295	295	295	295	265	265	265			
			IPT(fz)	.0007	.0006	.0005	.0005	.0008	.0008	.0008	.0008	.0007	.0007	.0009	.0009	.0009	.0009	.0008	.0008	.0008			
			RPM	17520	13140	6570	6570	19200	17280	17280	17280	15360	15360	19200	19200	19200	19200	17280	17280	17280			
			IPM(FEED)	23	15	7	7	32	26	26	26	21	21	36	36	36	36	29	29	29			
			Ap	0.016	0.011	0.011	0.011	0.088	0.05	0.05	0.032	0.032	0.019	0.135	0.095	0.095	0.095	0.054	0.054	0.054			
			9	Low alloy steel	SFM(Vc)	205	155	75	75	260	235	235	235	210	210	280	280	280	280	250	250	250	
	IPT(fz)	.0005			.0005	.0004	.0004	.0006	.0006	.0006	.0006	.0005	.0005	.0007	.0007	.0007	.0007	.0006	.0006	.0006			
	RPM	16560			12420	6210	6210	18100	16290	16290	16290	14480	14480	18100	18100	18100	18100	16290	16290	16290			
	IPM(FEED)	18			12	5	5	22	18	18	18	14	14	25	25	25	25	20	20	20			
	Ap	0.013			0.008	0.008	0.008	0.069	0.039	0.039	0.025	0.025	0.015	0.105	0.074	0.074	0.074	0.042	0.042	0.042			
	10-11.1	High alloyed steel, and tool steel			SFM(Vc)	215	165	80	80	275	250	250	250	220	220	295	295	295	295	265	265	265	
			IPT(fz)	.0007	.0006	.0005	.0005	.0008	.0008	.0008	.0008	.0007	.0007	.0009	.0009	.0009	.0009	.0008	.0008	.0008			
RPM			17520	13140	6570	6570	19200	17280	17280	17280	15360	15360	19200	19200	19200	19200	17280	17280	17280				
IPM(FEED)			23	15	7	7	32	26	26	26	21	21	36	36	36	36	29	29	29				
Ap			0.016	0.011	0.011	0.011	0.088	0.05	0.05	0.032	0.032	0.019	0.135	0.095	0.095	0.095	0.054	0.054	0.054				
11.2			High alloyed steel, and tool steel	SFM(Vc)	205	155	75	75	260	235	235	235	210	210	280	280	280	280	250	250	250		
	IPT(fz)	.0005		.0005	.0004	.0004	.0006	.0006	.0006	.0006	.0005	.0005	.0007	.0007	.0007	.0007	.0006	.0006	.0006				
	RPM	16560		12420	6210	6210	18100	16290	16290	16290	14480	14480	18100	18100	18100	18100	16290	16290	16290				
	IPM(FEED)	18		12	5	5	22	18	18	18	14	14	25	25	25	25	20	20	20				
	Ap	0.013		0.008	0.008	0.008	0.069	0.039	0.039	0.025	0.025	0.015	0.105	0.074	0.074	0.074	0.042	0.042	0.042				
	K	15-20		Grey cast iron Nodular cast iron Malleable cast iron	SFM(Vc)	215	165	80	80	275	250	250	250	220	220	295	295	295	295	265	265	265	
IPT(fz)			.0007		.0006	.0005	.0005	.0008	.0008	.0008	.0008	.0007	.0007	.0009	.0009	.0009	.0009	.0008	.0008	.0008			
RPM			17520		13140	6570	6570	19200	17280	17280	17280	15360	15360	19200	19200	19200	19200	17280	17280	17280			
IPM(FEED)			23		15	7	7	32	26	26	26	21	21	36	36	36	36	29	29	29			
Ap			0.016		0.011	0.011	0.011	0.088	0.05	0.05	0.032	0.032	0.019	0.135	0.095	0.095	0.095	0.054	0.054	0.054			
H			38.1-38.2		Hardened steel	SFM(Vc)	180	135	70	70	230	210	210	210	185	185	245	245	245	245	225	225	225
	IPT(fz)	.0004		.0004		.0003	.0003	.0005	.0005	.0005	.0005	.0004	.0004	.0006	.0006	.0006	.0006	.0005	.0005	.0005			
	RPM	14560		10920		5460	5460	16000	14400	14400	14400	12800	12800	16000	16000	16000	16000	14400	14400	14400			
	IPM(FEED)	12		8		3	3	17	14	14	14	11	11	19	19	19	19	15	15	15			
	Ap	0.009		0.006		0.006	0.006	0.049	0.028	0.028	0.018	0.018	0.011	0.075	0.053	0.053	0.053	0.03	0.03	0.03			
	40	Chilled Cast Iron		SFM(Vc)		205	155	75	75	260	235	235	235	210	210	280	280	280	280	250	250	250	
			IPT(fz)	.0005	.0005	.0004	.0004	.0006	.0006	.0006	.0006	.0005	.0005	.0007	.0007	.0007	.0007	.0006	.0006	.0006			
			RPM	16560	12420	6210	6210	18100	16290	16290	16290	14480	14480	18100	18100	18100	18100	16290	16290	16290			
			IPM(FEED)	18	12	5	5	22	18	18	18	14	14	25	25	25	25	20	20	20			
			Ap	0.013	0.008	0.008	0.008	0.069	0.039	0.039	0.025	0.025	0.015	0.105	0.074	0.074	0.074	0.042	0.042	0.042			
			41	Hardened Cast Iron	SFM(Vc)	180	135	70	70	230	210	210	210	185	185	245	245	245	245	225	225	225	
	IPT(fz)	.0004			.0004	.0003	.0003	.0005	.0005	.0005	.0005	.0004	.0004	.0006	.0006	.0006	.0006	.0005	.0005	.0005			
	RPM	14560			10920	5460	5460	16000	14400	14400	14400	12800	12800	16000	16000	16000	16000	14400	14400	14400			
	IPM(FEED)	12			8	3	3	17	14	14	14	11	11	19	19	19	19	15	15	15			
	Ap	0.009			0.006	0.006	0.006	0.049	0.028	0.028	0.018	0.018	0.011	0.075	0.053	0.053	0.053	0.03	0.03	0.03			

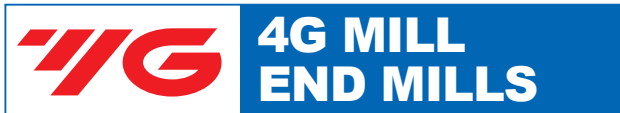
ISO	VDI 3323	Parameter	Diameter (Ø)																																
			1.5			1.5			1.5			1.5			1.6			1.6			1.8			1.8			2			2			2		
			LBS	14	16	18	20	22	26	30	8	10	12	16	20	8	10	12	16	20	8	10	12	16	20	6	8	10	6	8	10				
P	1-8	Non-alloy steel	SFM(Vc)	265	235	235	235	235	180	180	295	265	265	235	330	295	295	295	265	295	295	295	265	295	295	295	295	295	295	295					
			IPT(fz)	.0008	.0007	.0007	.0007	.0007	.0007	.0007	.0009	.0008	.0008	.0008	.0007	.0009	.0008	.0008	.0008	.0007	.0009	.0008	.0008	.0007	.0009	.0011	.0011	.0011	.0011	.0011	.0011				
			RPM	17280	15360	15360	15360	15360	11520	11520	17800	16020	16020	16020	14240	17800	16020	16020	16020	14240	17800	16020	16020	16020	14240	14400	14400	14400	14400	14400	14400				
			IPM(FEED)	29	23	23	23	23	15	15	33	27	27	27	21	33	27	27	27	21	33	27	27	27	21	32	32	32	32	32	32				
			Ap	0.034	0.034	0.034	0.02	0.02	0.014	0.014	0.101	0.058	0.058	0.036	0.036	0.113	0.065	0.065	0.041	0.041	0.18	0.126	0.126	0.126	0.18	0.126	0.126	0.126	0.126	0.126	0.126				
			9	Low alloy steel	SFM(Vc)	250	225	225	225	225	170	170	275	250	250	250	220	310	280	280	280	250	280	280	280	250	280	280	280	280	280	280			
	IPT(fz)	.0006			.0005	.0005	.0005	.0005	.0005	.0005	.0008	.0007	.0007	.0007	.0006	.0008	.0007	.0007	.0007	.0006	.0009	.0009	.0009	.0006	.0009	.0009	.0009	.0009	.0009	.0009	.0009				
	RPM	16290			14480	14480	14480	14480	10860	10860	16800	15120	15120	15120	13440	16800	15120	15120	15120	13440	16800	15120	15120	15120	13440	13600	13600	13600	13600	13600	13600				
	IPM(FEED)	20			16	16	16	16	10	10	26	21	21	21	17	26	21	21	21	17	26	21	21	21	17	24	24	24	24	24	24				
	Ap	0.026			0.026	0.026	0.016	0.016	0.011	0.011	0.078	0.045	0.045	0.028	0.028	0.088	0.05	0.05	0.032	0.032	0.14	0.098	0.098	0.098	0.14	0.098	0.098	0.098	0.098	0.098	0.098				
	10-11.1	High alloyed steel, and tool steel			SFM(Vc)	265	235	235	235	235	180	180	295	265	265	235	330	295	295	295	265	295	295	295	265	295	295	295	295	295	295	295			
			IPT(fz)	.0008	.0007	.0007	.0007	.0007	.0007	.0007	.0009	.0008	.0008	.0008	.0007	.0009	.0008	.0008	.0008	.0007	.0009	.0008	.0008	.0007	.0009	.0011	.0011	.0011	.0011	.0011	.0011				
RPM			17280	15360	15360	15360	15360	11520	11520	17800	16020	16020	16020	14240	17800	16020	16020	16020	14240	17800	16020	16020	16020	14240	14400	14400	14400	14400	14400	14400					
IPM(FEED)			29	23	23	23	23	15	15	33	27	27	27	21	33	27	27	27	21	33	27	27	27	21	32	32	32	32	32	32					
Ap			0.034	0.034	0.034	0.02	0.02	0.014	0.014	0.101	0.058	0.058	0.036	0.036	0.113	0.065	0.065	0.041	0.041	0.18	0.126	0.126	0.126	0.18	0.126	0.126	0.126	0.126	0.126	0.126					
11.2			High alloyed steel, and tool steel	SFM(Vc)	250	225	225	225	225	170	170	275	250	250	250	220	310	280	280	280	250	280	280	280	250	280	280	280	280	280	280				
	IPT(fz)	.0006		.0005	.0005	.0005	.0005	.0005	.0005	.0008	.0007	.0007	.0007	.0006	.0008	.0007	.0007	.0007	.00																



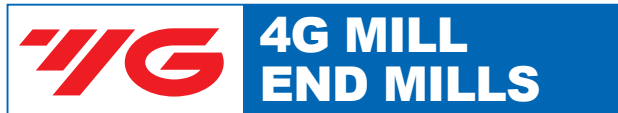


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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

SEM845 SERIES 2FLUTE SQUARE - SLOTTING

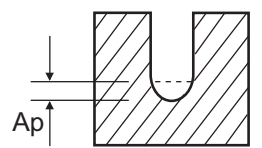
SEM845 SERIES 2FLUTE SQUARE - SLOTTING

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)																	
				3		3		3		3		4		4		4		4		4	
				LBS	30	35	40	45	50	60	8	10	12	14	16	18	20	22	26	30	35
P	1-8	Non-alloy steel	SFM(Vc)	305	270	270	270	200	200	330	330	330	330	330	330	295	295	295	295		
			IPT(fz)	.0014	.0012	.0012	.0012	.0011	.0011	.0032	.0032	.0032	.0032	.0032	.0032	.0029	.0029	.0029	.0029		
			RPM	9810	8720	8720	8720	6540	6540	8000	8000	8000	8000	8000	8000	8000	7200	7200	7200	7200	
			IPM(FEED)	27	22	22	22	14	14	51	51	51	51	51	51	51	42	42	42	42	
	9	Low alloy steel	SFM(Vc)	285	255	255	255	190	190	315	315	315	315	315	315	280	280	280	280		
			IPT(fz)	.0010	.0009	.0009	.0009	.0008	.0008	.0030	.0030	.0030	.0030	.0030	.0030	.0027	.0027	.0027	.0027		
			RPM	9270	8240	8240	8240	6180	6180	7600	7600	7600	7600	7600	7600	7600	6840	6840	6840	6840	
			IPM(FEED)	19	15	15	15	10	10	46	46	46	46	46	46	46	37	37	37	37	
	10-11.1	High alloyed steel, and tool steel	SFM(Vc)	305	270	270	270	200	200	330	330	330	330	330	330	295	295	295	295		
			IPT(fz)	.0014	.0012	.0012	.0012	.0011	.0011	.0032	.0032	.0032	.0032	.0032	.0032	.0029	.0029	.0029	.0029		
			RPM	9810	8720	8720	8720	6540	6540	8000	8000	8000	8000	8000	8000	8000	7200	7200	7200	7200	
			IPM(FEED)	27	22	22	22	14	14	51	51	51	51	51	51	51	42	42	42	42	
11.2	High alloyed steel, and tool steel	SFM(Vc)	285	255	255	255	190	190	315	315	315	315	315	315	280	280	280	280			
		IPT(fz)	.0010	.0009	.0009	.0009	.0008	.0008	.0030	.0030	.0030	.0030	.0030	.0030	.0027	.0027	.0027	.0027			
		RPM	9270	8240	8240	8240	6180	6180	7600	7600	7600	7600	7600	7600	7600	6840	6840	6840	6840		
		IPM(FEED)	19	15	15	15	10	10	46	46	46	46	46	46	46	37	37	37	37		
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	SFM(Vc)	305	270	270	270	200	200	330	330	330	330	330	330	295	295	295	295		
			IPT(fz)	.0014	.0012	.0012	.0012	.0011	.0011	.0032	.0032	.0032	.0032	.0032	.0032	.0029	.0029	.0029	.0029		
			RPM	9810	8720	8720	8720	6540	6540	8000	8000	8000	8000	8000	8000	8000	7200	7200	7200	7200	
			IPM(FEED)	27	22	22	22	14	14	51	51	51	51	51	51	51	42	42	42	42	
H	38.1-38.2	Hardened steel	SFM(Vc)	185	165	165	165	120	120	275	275	275	275	275	275	250	250	250	250		
			IPT(fz)	.0012	.0011	.0011	.0011	.0009	.0009	.0023	.0023	.0023	.0023	.0023	.0023	.0020	.0020	.0020	.0020		
			RPM	5940	5280	5280	5280	3960	3960	6700	6700	6700	6700	6700	6700	6030	6030	6030	6030		
			IPM(FEED)	14	11	11	11	8	8	30	30	30	30	30	30	30	25	25	25	25	
	40	Chilled Cast Iron	SFM(Vc)	285	255	255	255	190	190	315	315	315	315	315	315	280	280	280	280		
			IPT(fz)	.0010	.0009	.0009	.0009	.0008	.0008	.0030	.0030	.0030	.0030	.0030	.0030	.0027	.0027	.0027	.0027		
			RPM	9270	8240	8240	8240	6180	6180	7600	7600	7600	7600	7600	7600	6840	6840	6840	6840		
			IPM(FEED)	19	15	15	15	10	10	46	46	46	46	46	46	46	37	37	37	37	
	41	Hardened Cast Iron	SFM(Vc)	185	165	165	165	120	120	275	275	275	275	275	275	250	250	250	250		
			IPT(fz)	.0012	.0011	.0011	.0011	.0009	.0009	.0023	.0023	.0023	.0023	.0023	.0023	.0020	.0020	.0020	.0020		
			RPM	5940	5280	5280	5280	3960	3960	6700	6700	6700	6700	6700	6700	6030	6030	6030	6030		
			IPM(FEED)	14	11	11	11	8	8	30	30	30	30	30	30	30	25	25	25	25	

ISO	VDI 3323	Parameter	Diameter (Ø)																	
			4		4		4		4		5		5		5		5		6	
			LBS	40	45	50	60	16	20	26	30	35	40	50	60	15	20			
P	1-8	Non-alloy steel	SFM(Vc)	295	265	265	265	330	330	295	295	295	295	295	265	330	330			
			IPT(fz)	.0029	.0026	.0026	.0026	.0036	.0036	.0032	.0032	.0032	.0032	.0032	.0028	.0039	.0039			
			RPM	7200	6400	6400	6400	6400	6400	5760	5760	5760	5760	5760	5120	5300	5300			
			IPM(FEED)	42	33	33	33	46	46	37	37	37	37	37	29	42	42			
	9	Low alloy steel	SFM(Vc)	280	250	250	250	315	315	285	285	285	285	285	250	310	310			
			IPT(fz)	.0027	.0024	.0024	.0024	.0029	.0029	.0026	.0026	.0026	.0026	.0026	.0023	.0032	.0032			
			RPM	6840	6080	6080	6080	6100	6100	5490	5490	5490	5490	5490	4880	5000	5000			
			IPM(FEED)	37	29	29	29	35	35	29	29	29	29	29	23	32	32			
	10-11.1	High alloyed steel, and tool steel	SFM(Vc)	295	265	265	265	330	330	295	295	295	295	295	265	330	330			
			IPT(fz)	.0029	.0026	.0026	.0026	.0036	.0036	.0032	.0032	.0032	.0032	.0032	.0028	.0039	.0039			
			RPM	7200	6400	6400	6400	6400	6400	5760	5760	5760	5760	5760	5120	5300	5300			
			IPM(FEED)	42	33	33	33	46	46	37	37	37	37	37	29	42	42			
11.2	High alloyed steel, and tool steel	SFM(Vc)	280	250	250	250	315	315	285	285	285	285	285	250	310	310				
		IPT(fz)	.0027	.0024	.0024	.0024	.0029	.0029	.0026	.0026	.0026	.0026	.0026	.0023	.0032	.0032				
		RPM	6840	6080	6080	6080	6100	6100	5490	5490	5490	5490	5490	4880	5000	5000				
		IPM(FEED)	37	29	29	29	35	35	29	29	29	29	29	23	32	32				
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	SFM(Vc)	295	265	265	265	330	330	295	295	295	295	295	265	330	330			
			IPT(fz)	.0029	.0026	.0026	.0026	.0036	.0036	.0032	.0032	.0032	.0032	.0032	.0028	.0039	.0039			
			RPM	7200	6400	6400	6400	6400	6400	5760	5760	5760	5760	5760	5120	5300	5300			
			IPM(FEED)	42	33	33	33	46	46	37	37	37	37	37	29	42	42			
H	38.1-38.2	Hardened steel	SFM(Vc)	250	220	220	220	280	280	250	250	250	250	225	270	270				
			IPT(fz)	.0020	.0018	.0018	.0018	.0022	.0022	.0020	.0020	.0020	.0020	.0018	.0025	.0025				
			RPM	6030	5360	5360	5360	5400	5400	4860	4860	4860	4860	4860	4320	4400	4400			
			IPM(FEED)	25	20	20	20	24	24	19	19	19	19	19	15	22	22			
	40	Chilled Cast Iron	SFM(Vc)	280	250	250	250	315	315	285	285	285	285	285	250	310	310			
			IPT(fz)	.0027	.0024	.0024	.0024	.0029	.0029	.0026	.0026	.0026	.0026	.0026	.0023	.0032	.0032			
			RPM	6840	6080	6080	6080	6100	6100	5490	5490	5490	5490	5490	4880	5000	5000			
			IPM(FEED)	37	29	29	29	35	35	29	29	29	29	29	23	32	32			
	41	Hardened Cast Iron	SFM(Vc)	250	220	220	220	280	280	250	250	250	250	225	270	270				
			IPT(fz)	.0020	.0018	.0018	.0018	.0022	.0022	.0020	.0020	.0020	.0020	.0018	.0025	.0025				
			RPM	6030	5360	5360	5360	5400	5400	4860	4860	4860	4860	4860	4320	4400	4400			
			IPM(FEED)	25	20	20	20	24	24	19	19	19	19	19	15	22	22			

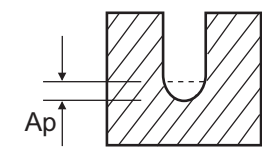
SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : mm (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)

(Depth of Cut per one pass)



SFM = Surface Feet per Minute  
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(Depth of Cut per one pass)



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# YG 4G MILL END MILLS

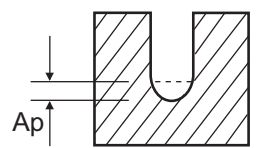
## RECOMMENDED CUTTING CONDITIONS

### SEM845 SERIES 2FLUTE SQUARE - SLOTTING

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)																																																																		
				6		8		10		12		12		12																																																								
				LBS	30	32	25	30	42	30	35	45	35	40	50																																																							
P	1-8	Non-alloy steel	SFM(Vc)	330	295	330	330	295	330	330	330	330	330	330	IPT(fz)	.0039	.0035	.0047	.0047	.0042	.0055	.0055	.0055	.0059	.0059	.0059	RPM	5300	4770	4000	4000	3600	3200	3200	3200	2650	2650	2650	IPM(FEED)	42	34	37	37	30	35	35	35	32	32	32	Ap	0.378	0.216	0.504	0.504	0.288	0.9	0.63	0.63	1.08	0.756	0.756								
			9	Low alloy steel	SFM(Vc)	310	280	315	315	280	315	315	315	310	310	310	IPT(fz)	.0032	.0029	.0039	.0039	.0035	.0044	.0044	.0044	.0047	.0047	.0047	RPM	5000	4500	3800	3800	3400	3050	3050	3050	2520	2520	2520	IPM(FEED)	32	26	30	30	24	27	27	27	24	24	24	Ap	0.294	0.168	0.392	0.392	0.224	0.7	0.49	0.49	0.84	0.588	0.588						
					10-11.1	High alloyed steel, and tool steel	SFM(Vc)	330	295	330	330	295	330	330	330	330	330	IPT(fz)	.0039	.0035	.0047	.0047	.0042	.0055	.0055	.0055	.0059	.0059	.0059	RPM	5300	4770	4000	4000	3600	3200	3200	3200	2650	2650	2650	IPM(FEED)	42	34	37	37	30	35	35	35	32	32	32	Ap	0.378	0.216	0.504	0.504	0.288	0.9	0.63	0.63	1.08	0.756	0.756					
							11.2	High alloyed steel, and tool steel	SFM(Vc)	310	280	315	315	280	315	315	315	310	310	310	IPT(fz)	.0032	.0029	.0039	.0039	.0035	.0044	.0044	.0044	.0047	.0047	.0047	RPM	5000	4500	3800	3800	3400	3050	3050	3050	2520	2520	2520	IPM(FEED)	32	26	30	30	24	27	27	27	24	24	24	Ap	0.294	0.168	0.392	0.392	0.224	0.7	0.49	0.49	0.84	0.588	0.588		
									K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	SFM(Vc)	330	295	330	330	295	330	330	330	330	330	IPT(fz)	.0039	.0035	.0047	.0047	.0042	.0055	.0055	.0055	.0059	.0059	.0059	RPM	5300	4770	4000	4000	3600	3200	3200	3200	2650	2650	2650	IPM(FEED)	42	34	37	37	30	35	35	35	32	32	32	Ap	0.378	0.216	0.504	0.504	0.288	0.9	0.63	0.63	1.08	0.756	0.756
												H	38.1-38.2	Hardened steel	SFM(Vc)	270	245	270	270	245	270	270	270	270	270	IPT(fz)	.0025	.0022	.0030	.0030	.0027	.0030	.0030	.0030	.0032	.0032	.0032	RPM	4400	3960	3300	3300	2950	2630	2630	2630	2180	2180	2180	IPM(FEED)	22	18	20	20	16	16	16	16	14	14	14	Ap	0.21	0.12	0.28	0.28	0.16	0.5	0.35	0.35
	40	Chilled Cast Iron			SFM(Vc)	310									280	315	315	280	315	315	315	310	310	310	IPT(fz)	.0032	.0029	.0039	.0039	.0035	.0044	.0044	.0044	.0047	.0047	.0047	RPM	5000	4500	3800	3800	3400	3050	3050	3050	2520	2520	2520	IPM(FEED)	32	26	30	30	24	27	27	27	24	24	24	Ap	0.294	0.168	0.392	0.392	0.224	0.7	0.49	0.49	0.84
			41	Hardened Cast Iron	SFM(Vc)	270	245	270							270	245	270	270	270	270	270	270	IPT(fz)	.0025	.0022	.0030	.0030	.0027	.0030	.0030	.0030	.0032	.0032	.0032	RPM	4400	3960	3300	3300	2950	2630	2630	2630	2180	2180	2180	IPM(FEED)	22	18	20	20	16	16	16	16	14	14	14	Ap	0.21	0.12	0.28	0.28	0.16	0.5	0.35	0.35	0.6	0.42	0.42

SFM = Surface Feet per Minute  
RPM = Revolutions Per Minute  
IPT = Inches Per Tooth  
IPM = Inches Per Minute  
Ap : mm (Axial Depth of Cut)  
Ae : Inch (Radial Depth of Cut)

(Depth of Cut per one pass)



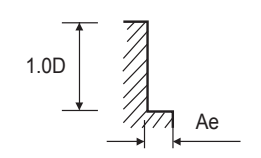
# YG 4G MILL END MILLS

## RECOMMENDED CUTTING CONDITIONS

### SEME36, SEME71 SERIES 4FLUTE SQUARE - SIDE CUTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)																																																														
						0.8		0.9		1		1.2		1.5		2		2.5		3		3.5		4		4.5		5		5.5																																						
						0.8	0.9	1	1.2	1.5	2	2.5	3	3.5	4	4.5	5	5.5																																																		
P	1-8	Non-alloy steel	0.05D	1D	SFM(Vc)	260	270	275	280	290	300	330	345	370	390	400	405	420	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0003	.0004	.0006	.0007	.0008	.0009	RPM	31250	29300	26800	22500	18750	14450	12800	11150	10300	9450	8660	7880	7410	IPM(FEED)	9	10	10	10	11	12	12	13	18	24	24	25	26								
					9	Low alloy steel	SFM(Vc)	155	165	165	165	175	195	210	215	230	240	245	255	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0003	.0004	.0006	.0007	.0008	.0009	RPM	18750	17580	16080	13500	11250	9450	8200	6950	6360	5780	5250	4730	4460	IPM(FEED)	6	6	6	6	7	7	8	8	11	15	15	15	16							
							10-	High alloyed steel, and tool steel	SFM(Vc)	260	270	275	280	290	300	330	345	370	390	400	405	420	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0003	.0004	.0006	.0007	.0008	.0009	RPM	31250	29300	26800	22500	18750	14450	12800	11150	10300	9450	8660	7880	7410	IPM(FEED)	9	10	10	10	11	12	12	13	18	24	24	25	26				
									11.1-11.2	High alloyed steel, and tool steel	SFM(Vc)	155	165	165	165	175	195	210	215	230	240	245	255	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0003	.0004	.0006	.0007	.0008	.0009	RPM	18750	17580	16080	13500	11250	9450	8200	6950	6360	5780	5250	4730	4460	IPM(FEED)	6	6	6	6	7	7	8	8	11	15	15	15	16			
											M	14.1	Stainless steel	SFM(Vc)	130	135	140	140	145	160	175	180	190	200	205	215	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0003	.0004	.0006	.0007	.0008	.0009	RPM	15630	14650	13400	11250	9380	7880	6830	5780	5310	4850	4400	3950	3750	IPM(FEED)	5	5	5	5	5	6	7	7	9	12	12	12	13
														K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	SFM(Vc)	260	270	275	280	290	300	330	345	370	390	400	405	420	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0003	.0004	.0006	.0007	.0008	.0009	RPM	31250	29300	26800	22500	18750	14450	12800	11150	10300	9450	8660	7880	7410	IPM(FEED)	9	10	10	10	11	12	12	13	18
	H	38.1-38.2	Hardened steel	SFM(Vc)			105	110									110	110	115	130	135	130	140	150	155	150	155	IPT(fz)	.00003	.00004	.00004	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0003	.0003	.0003	RPM	12500	11720	10720	9000	7500	6300	5250	4200	3940	3680	3290	2900	2700	IPM(FEED)	2	2	2	2	2	2	2	3	3	3	3	3
				40	Chilled Cast Iron	SFM(Vc)	155	165	165	165							175	195	210	215	230	240	245	255	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0003	.0004	.0006	.0007	.0008	.0009	RPM	18750	17580	16080	13500	11250	9450	8200	6950	6360	5780	5250	4730	4460	IPM(FEED)	6	6	6	6	7	7	8	8	11	15	15	15	16		
						41	Hardened Cast Iron	SFM(Vc)	105	110							110	110	115	130	135	130	140	150	155	150	155	IPT(fz)	.00003	.00004	.00004	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0003	.0003	.0003	RPM	12500	11720	10720	9000	7500	6300	5250	4200	3940	3680	3290	2900	2700	IPM(FEED)	2	2	2	2	2	2	2	3	3	3	3	3

SFM = Surface Feet per Minute  
RPM = Revolutions Per Minute  
IPT = Inches Per Tooth  
IPM = Inches Per Minute  
Ap : Inch (Axial Depth of Cut)  
Ae : Inch (Radial Depth of Cut)





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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

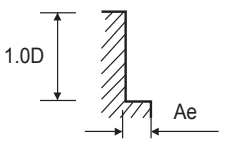
SEME36, SEME71 SERIES 4FLUTE SQUARE - SIDE CUTTING

SEME36, SEME71 SERIES 4FLUTE SQUARE - SIDE CUTTING

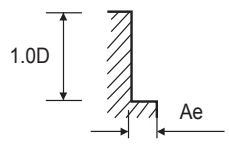
Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) (6-12), SFM(Vc), IPT(fz), RPM, IPM(FEED)

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) (13-25), SFM(Vc), IPT(fz), RPM, IPM(FEED)

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

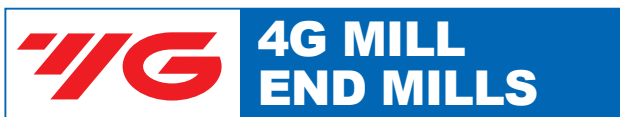


SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

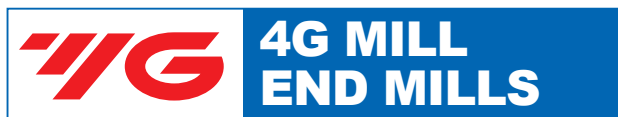


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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

**SEME72** SERIES 4FLUTE SQUARE - SIDE CUTTING

**SEME72** SERIES 4FLUTE SQUARE - SIDE CUTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)																										
						1		1		1		1		1		1.2		1.2		1.2												
						LOC	3	4	5	6	7	8	10	12	4	6	8	10														
P	1-8	Non-alloy steel	0.05D	2.5D	SFM(Vc)	200	200	200	180	180	180	180	160	200	200	180	180	SFM(Vc)	115	115	115	100	100	100	100	90	115	115	105	105		
					IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001				
					RPM	19200	19200	19200	17280	17280	17280	17280	15360	16200	16200	14580	14580	RPM	10940	10940	10940	9850	9850	9850	9850	8760	9230	9230	8310	8310		
					IPM(FEED)	7	7	7	6	6	5	5	4	8	8	7	6	IPM(FEED)	3	3	3	2	2	2	2	2	3	3	3	2		
	9	Low alloy steel	0.05D	2.5D	SFM(Vc)	200	200	200	180	180	180	180	160	200	200	180	180	SFM(Vc)	115	115	115	100	100	100	100	90	115	115	105	105		
					IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001					
					RPM	19200	19200	19200	17280	17280	17280	17280	15360	16200	16200	14580	14580	RPM	10940	10940	10940	9850	9850	9850	9850	8760	9230	9230	8310	8310		
					IPM(FEED)	7	7	7	6	6	5	5	4	8	8	7	6	IPM(FEED)	3	3	3	2	2	2	2	2	3	3	3	2		
	10-	High alloyed steel, and tool steel	0.05D	2.5D	SFM(Vc)	200	200	200	180	180	180	180	160	200	200	180	180	SFM(Vc)	115	115	115	100	100	100	100	90	115	115	105	105		
					IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001					
					RPM	19200	19200	19200	17280	17280	17280	17280	15360	16200	16200	14580	14580	RPM	10940	10940	10940	9850	9850	9850	9850	8760	9230	9230	8310	8310		
					IPM(FEED)	7	7	7	6	6	5	5	4	8	8	7	6	IPM(FEED)	3	3	3	2	2	2	2	2	3	3	3	2		
11.1-11.2	High alloyed steel, and tool steel	0.05D	2.5D	SFM(Vc)	200	200	200	180	180	180	180	160	200	200	180	180	SFM(Vc)	115	115	115	100	100	100	100	90	115	115	105	105			
				IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001						
				RPM	19200	19200	19200	17280	17280	17280	17280	15360	16200	16200	14580	14580	RPM	10940	10940	10940	9850	9850	9850	9850	8760	9230	9230	8310	8310			
				IPM(FEED)	7	7	7	6	6	5	5	4	8	8	7	6	IPM(FEED)	3	3	3	2	2	2	2	2	3	3	3	2			
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.05D	2.5D	SFM(Vc)	200	200	200	180	180	180	180	160	200	200	180	180	SFM(Vc)	115	115	115	100	100	100	100	90	115	115	105	105		
					IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001					
					RPM	19200	19200	19200	17280	17280	17280	17280	15360	16200	16200	14580	14580	RPM	10940	10940	10940	9850	9850	9850	9850	8760	9230	9230	8310	8310		
					IPM(FEED)	7	7	7	6	6	5	5	4	8	8	7	6	IPM(FEED)	3	3	3	2	2	2	2	2	3	3	3	2		
H	38.1-38.2	Hardened steel	0.02D	2.0D	SFM(Vc)	70	70	70	60	60	60	60	55	70	70	65	65	SFM(Vc)	65	75	65	65	65	65	65	60	80	80	70	70	85	
					IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001				
					RPM	6720	6720	6720	6050	6050	6050	6050	5380	5670	5670	5100	5100	RPM	5100	4830	4350	4350	4350	4350	4350	3860	3780	3780	3400	3400	3400	3210
					IPM(FEED)	1	1	1	1	1	1	1	1	2	2	1	1	IPM(FEED)	1	2	2	1	1	1	1	2	2	2	2	2	2	2
	40	Chilled Cast Iron	0.05D	2.5D	SFM(Vc)	115	115	115	100	100	100	100	90	115	115	105	105	SFM(Vc)	105	120	110	110	110	110	95	125	125	110	110	110	135	
					IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001					
					RPM	10940	10940	10940	9850	9850	9850	9850	8760	9230	9230	8310	8310	RPM	8310	7870	7080	7080	7080	7080	6290	6050	6050	5440	5440	5440	5170	
					IPM(FEED)	3	3	3	2	2	2	2	2	3	3	3	2	IPM(FEED)	2	3	3	3	2	2	2	4	4	3	3	3	4	
	41	Hardened Cast Iron	0.02D	2.0D	SFM(Vc)	70	70	70	60	60	60	60	55	70	70	65	65	SFM(Vc)	65	75	65	65	65	65	60	80	80	70	70	85		
					IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001					
					RPM	6720	6720	6720	6050	6050	6050	6050	5380	5670	5670	5100	5100	RPM	5100	4830	4350	4350	4350	4350	3860	3780	3780	3400	3400	3400	3210	
					IPM(FEED)	1	1	1	1	1	1	1	1	2	2	1	1	IPM(FEED)	1	2	2	1	1	1	1	2	2	2	2	2	2	

ISO	VDI 3323	Ae	Ap	Parameter	Diameter (Ø)																											
					1.2		1.5		1.5		1.5		1.5		1.5		2		2		2.5											
					LOC	12	6	8	10	12	14	16	8	10	12	14	16	10														
P	1-8	0.05D	2.5D	SFM(Vc)	180	215	190	190	190	190	190	170	220	220	195	195	195	230	SFM(Vc)	105	120	110	110	110	110	95	125	125	110	110	110	135
				IPT(fz)	.0001	.0002	.0002	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001					
				RPM	14580	13800	12420	12420	12420	12420	11040	10580	10580	9530	9530	8990	RPM	8310	7870	7080	7080	7080	7080	6290	6050	6050	5440	5440	5440	5170		
				IPM(FEED)	6	9	8	7	6	6	5	9	9	8	8	7	10	IPM(FEED)	2	3	3	3	2	2	2	4	4	3	3	3	4	
	9	0.05D	2.5D	SFM(Vc)	180	215	190	190	190	190	190	170	220	220	195	195	195	230	SFM(Vc)	105	120	110	110	110	110	95	125	125	110	110	110	135
				IPT(fz)	.0001	.0002	.0002	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001						
				RPM	14580	13800	12420	12420	12420	12420	11040	10580	10580	9530	9530	8990	RPM	8310	7870	7080	7080	7080	7080	6290	6050	6050	5440	5440	5440	5170		
				IPM(FEED)	6	9	8	7	6	6	5	9	9	8	8	7	10	IPM(FEED)	2	3	3	3	2	2	2	4	4	3	3	3	4	
	10-	0.05D	2.5D	SFM(Vc)	180	215	190	190	190	190	190	170	220	220	195	195	195	230	SFM(Vc)	105	120	110	110	110	110	95	125	125	110	110	110	135
				IPT(fz)	.0001	.0002	.0002	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001						
				RPM	14580	13800	12420	12420	12420	12420	11040	10580	10580	9530	9530	8990	RPM	8310	7870	7080	7080	7080	7080	6290	6050	6050	5440	5440	5440	5170		
				IPM(FEED)	6	9	8	7	6	6	5	9	9	8	8	7	10	IPM(FEED)	2	3	3	3	2	2	2	4	4	3	3	3	4	
11.1-11.2	0.05D	2.5D	SFM(Vc)	180	215	190	190	190	190	190	170	220	220	195	195	195	230	SFM(Vc)	105	120	110	110	110	110	95	125	125	110	110	110	135	
			IPT(fz)	.0001	.0002	.0002	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001							
			RPM	14580	13800	12420	12420	12420	12420	11040	10580	10580	9530	9530	8990	RPM	8310	7870	7080	7080	7080	7080	6290	6050	6050	5440	5440	5440	5170			
			IPM(FEED)	6	9	8	7	6	6	5	9	9	8	8	7	10	IPM(FEED)	2	3	3	3	2	2	2	4	4	3	3	3	4		
K	15-20	0.05D	2.5D	SFM(Vc)	180	215	190	190	190																							

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**YG** **4G MILL END MILLS**

**RECOMMENDED CUTTING CONDITIONS**

**YG** **4G MILL END MILLS**

**RECOMMENDED CUTTING CONDITIONS**

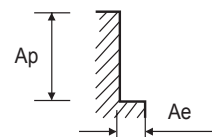
**SEME72** SERIES **4FLUTE SQUARE - SIDE CUTTING**

**SEME72** SERIES **4FLUTE SQUARE - SIDE CUTTING**

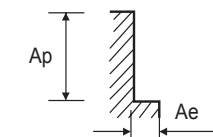
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)															
						2.5		2.5		2.5		3		3		3		3		4	
						12	16	20	26	10	12	14	16	20	26	30	12	12	12	12	
<b>P</b>	1-8	Non-alloy steel	0.05D	2.5D	SFM(Vc)	230	210	210	185	230	230	230	205	205	205	205	245				
					IPT(fz)	.0003	.0003	.0002	.0002	.0004	.0004	.0004	.0004	.0003	.0003	.0003	.0006				
					RPM	8990	8090	8090	7200	7400	7400	7400	6660	6660	6660	6660	6000				
					IPM(FEED)	10	8	7	6	11	11	11	10	9	8	8	13				
	9	Low alloy steel	0.05D	2.5D	SFM(Vc)	135	120	120	105	130	130	130	120	120	120	140					
					IPT(fz)	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0003	.0002	.0002	.0002	.0004				
					RPM	5170	4650	4650	4130	4280	4280	4280	3860	3860	3860	3860	3410				
					IPM(FEED)	4	3	3	2	5	5	5	4	4	3	3	6				
	10-	High alloyed steel, and tool steel	0.05D	2.5D	SFM(Vc)	230	210	210	185	230	230	230	205	205	205	245					
					IPT(fz)	.0003	.0003	.0002	.0002	.0004	.0004	.0004	.0004	.0003	.0003	.0003	.0006				
					RPM	8990	8090	8090	7200	7400	7400	7400	6660	6660	6660	6660	6000				
					IPM(FEED)	10	8	7	6	11	11	11	10	9	8	8	13				
11.1-11.2	High alloyed steel, and tool steel	0.05D	2.5D	SFM(Vc)	135	120	120	105	130	130	130	120	120	120	140						
				IPT(fz)	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0003	.0002	.0002	.0002	.0004					
				RPM	5170	4650	4650	4130	4280	4280	4280	3860	3860	3860	3860	3410					
				IPM(FEED)	4	3	3	2	5	5	5	4	4	3	3	6					
<b>K</b>	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.05D	2.5D	SFM(Vc)	230	210	210	185	230	230	230	205	205	205	245					
					IPT(fz)	.0003	.0003	.0002	.0002	.0004	.0004	.0004	.0004	.0003	.0003	.0003	.0006				
					RPM	8990	8090	8090	7200	7400	7400	7400	6660	6660	6660	6660	6000				
					IPM(FEED)	10	8	7	6	11	11	11	10	9	8	8	13				
<b>H</b>	38.1-38.2	Hardened steel	0.02D	2.0D	SFM(Vc)	85	75	75	65	80	80	80	75	75	75	90					
					IPT(fz)	.0002	.0002	.0002	.0001	.0003	.0003	.0003	.0003	.0002	.0002	.0002	.0003				
					RPM	3210	2890	2890	2570	2640	2640	2640	2380	2380	2380	2380	2150				
					IPM(FEED)	2	2	2	1	3	3	3	2	2	2	2	3				
	40	Chilled Cast Iron	0.05D	2.5D	SFM(Vc)	135	120	120	105	130	130	130	120	120	120	140					
					IPT(fz)	.0002	.0002	.0002	.0002	.0003	.0003	.0003	.0003	.0002	.0002	.0002	.0004				
					RPM	5170	4650	4650	4130	4280	4280	4280	3860	3860	3860	3860	3410				
					IPM(FEED)	4	3	3	2	5	5	5	4	4	3	3	6				
	41	Hardened Cast Iron	0.02D	2.0D	SFM(Vc)	85	75	75	65	80	80	80	75	75	75	90					
					IPT(fz)	.0002	.0002	.0002	.0001	.0003	.0003	.0003	.0003	.0002	.0002	.0002	.0003				
					RPM	3210	2890	2890	2570	2640	2640	2640	2380	2380	2380	2380	2150				
					IPM(FEED)	2	2	2	1	3	3	3	2	2	2	2	3				

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)															
						1.5		1.5		1.5		1.5		2		2		2		2	
						18	20	22	26	30	6	8	10	12	16	18	20	22			
<b>P</b>	1-8	Non-alloy steel	0.05D	2.5D	SFM(Vc)	245	245	225	225	265	265	240	240	240	275	275	275	275			
					IPT(fz)	.0006	.0006	.0005	.0005	.0008	.0008	.0008	.0008	.0007	.0012	.0012	.0012	.001			
					RPM	6000	6000	5400	5400	5120	5120	4610	4610	4610	4420	4420	4420	4420			
					IPM(FEED)	13	13	11	11	17	17	14	14	12	20	20	20	17			
	9	Low alloy steel	0.05D	2.5D	SFM(Vc)	140	140	125	125	150	150	135	135	135	155	155	155	155			
					IPT(fz)	.0004	.0004	.0004	.0004	.0006	.0006	.0005	.0005	.0005	.0008	.0008	.0008	.0007			
					RPM	3410	3410	3070	3070	2900	2900	2610	2610	2610	2520	2520	2520	2520			
					IPM(FEED)	6	6	4	4	7	7	5	5	5	9	9	9	7			
	10-	High alloyed steel, and tool steel	0.05D	2.5D	SFM(Vc)	245	245	225	225	265	265	240	240	240	275	275	275	275			
					IPT(fz)	.0006	.0006	.0005	.0005	.0008	.0008	.0008	.0008	.0007	.0012	.0012	.0012	.001			
					RPM	6000	6000	5400	5400	5120	5120	4610	4610	4610	4420	4420	4420	4420			
					IPM(FEED)	13	13	11	11	17	17	14	14	12	20	20	20	17			
11.1-11.2	High alloyed steel, and tool steel	0.05D	2.5D	SFM(Vc)	140	140	125	125	150	150	135	135	135	155	155	155	155				
				IPT(fz)	.0004	.0004	.0004	.0004	.0006	.0006	.0005	.0005	.0005	.0008	.0008	.0008	.0007				
				RPM	3410	3410	3070	3070	2900	2900	2610	2610	2610	2520	2520	2520	2520				
				IPM(FEED)	6	6	4	4	7	7	5	5	5	9	9	9	7				
<b>K</b>	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.05D	2.5D	SFM(Vc)	245	245	225	225	265	265	240	240	240	275	275	275	275			
					IPT(fz)	.0006	.0006	.0005	.0005	.0008	.0008	.0008	.0008	.0007	.0012	.0012	.0012	.001			
					RPM	6000	6000	5400	5400	5120	5120	4610	4610	4610	4420	4420	4420	4420			
					IPM(FEED)	13	13	11	11	17	17	14	14	12	20	20	20	17			
<b>H</b>	38.1-38.2	Hardened steel	0.02D	2.0D	SFM(Vc)	90	90	80	80	100	100	90	90	90	100	100	100	100			
					IPT(fz)	.0003	.0003	.0003	.0003	.0004	.0004	.0004	.0004	.0004	.0007	.0007	.0007	.0005			
					RPM	2150	2150	1930	1930	1900	1900	1710	1710	1710	1640	1640	1640	1640			
					IPM(FEED)	3	3	2	2	3	3	3	3	2	4	4	4	4			
	40	Chilled Cast Iron	0.05D	2.5D	SFM(Vc)	140	140	125	125	150	150	135	135	135	155	155	155	155			
					IPT(fz)	.0004	.0004	.0004	.0004	.0006	.0006	.0005	.0005	.0005	.0008	.0008	.0008	.0007			
					RPM	3410	3410	3070	3070	2900	2900	2610	2610	2610	2520	2520	2520	2520			
					IPM(FEED)	6	6	4	4	7	7	5	5	5	9	9	9	7			
	41	Hardened Cast Iron	0.02D	2.0D	SFM(Vc)	90	90	80	80	100	100	90	90	90	100	100	100	100			
					IPT(fz)	.0003	.0003	.0003	.0003	.0004	.0004	.0004	.0004	.0004	.0007	.0007	.0007	.0005			
					RPM	2150	2150	1930	1930	1900	1900	1710	1710	1710	1640	1640	1640	1640			
					IPM(FEED)	3	3	2	2	3	3	3	3	2	4	4	4	4			

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)



SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)



HSS

CBN END MILLS

i-Xmill END MILLS

i-SMART MODULAR END MILLS

X5070 END MILLS

4G MILL END MILLS

X-POWER PRO END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

V7 PLUS A END MILLS

V7 MILL INOX

ALU-POWER HPC END MILLS

ALU-POWER END MILLS

D-POWER GRAPHITE END MILLS

STANDARD CARBIDE

ONLY ONE COATED PM60 END MILLS

SINE-POWER

TANK-POWER END MILLS

STANDARD COBALT & HSS

TECHNICAL DATA





HSS

HSS

**YG 4G MILL END MILLS**

**RECOMMENDED CUTTING CONDITIONS**

**YG 4G MILL END MILLS**

**RECOMMENDED CUTTING CONDITIONS**

**SEME72 SERIES 4FLUTE SQUARE - SIDE CUTTING**

**SEME72 SERIES 4FLUTE SQUARE - SIDE CUTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)																					
						14		16		16		16		16		16		18		18							
						LOC	60	40	50	60	70	80	90	110	120	50	70	100	18	18							
P	1-8	Non-alloy steel	0.05D	2.5D	SFM(Vc)	305	320	320	320	320	320	290	290	290	310	310	280										
					IPT(fz)	.0016	.002	.002	.0017	.0017	.0015	.0015	.0015	.0015	.0019	.0016	.0015										
					RPM	2120	1940	1940	1940	1940	1940	1750	1750	1750	1680	1680	1510										
					IPM(FEED)	14	15	15	13	13	11	10	10	10	13	11	9										
					SFM(Vc)	175	175	175	175	175	175	160	160	160	175	175	160										
					IPT(fz)	.0012	.0014	.0014	.0012	.0012	.0011	.001	.001	.001	.0014	.0011	.001										
	9	Low alloy steel	0.05D	2.5D	SFM(Vc)	175	175	175	175	175	175	160	160	160	175	175	160										
					IPT(fz)	.0012	.0014	.0014	.0012	.0012	.0011	.001	.001	.001	.0014	.0011	.001										
					RPM	1230	1070	1070	1070	1070	1070	960	960	960	940	940	850										
					IPM(FEED)	6	6	6	5	5	5	4	4	4	5	4	3										
					SFM(Vc)	305	320	320	320	320	320	290	290	290	310	310	280										
					IPT(fz)	.0016	.002	.002	.0017	.0017	.0015	.0015	.0015	.0015	.0019	.0016	.0015										
10-	High alloyed steel, and tool steel	0.05D	2.5D	SFM(Vc)	305	320	320	320	320	320	290	290	290	310	310	280											
				IPT(fz)	.0016	.002	.002	.0017	.0017	.0015	.0015	.0015	.0019	.0016	.0015												
				RPM	2120	1940	1940	1940	1940	1940	1750	1750	1750	1680	1680	1510											
				IPM(FEED)	14	15	15	13	13	11	10	10	10	13	11	9											
				SFM(Vc)	175	175	175	175	175	175	160	160	160	175	175	160											
				IPT(fz)	.0012	.0014	.0014	.0012	.0012	.0011	.001	.001	.001	.0014	.0011	.001											
11.1-11.2	High alloyed steel, and tool steel	0.05D	2.5D	SFM(Vc)	175	175	175	175	175	175	160	160	160	175	175	160											
				IPT(fz)	.0012	.0014	.0014	.0012	.0012	.0011	.001	.001	.001	.0014	.0011	.001											
				RPM	1230	1070	1070	1070	1070	1070	960	960	960	940	940	850											
				IPM(FEED)	6	6	6	5	5	5	4	4	4	5	4	3											
				SFM(Vc)	305	320	320	320	320	320	290	290	290	310	310	280											
				IPT(fz)	.0016	.002	.002	.0017	.0017	.0015	.0015	.0015	.0015	.0019	.0016	.0015											
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.05D	2.5D	SFM(Vc)	305	320	320	320	320	320	290	290	290	310	310	280										
					IPT(fz)	.0016	.002	.002	.0017	.0017	.0015	.0015	.0015	.0015	.0019	.0016	.0015										
					RPM	2120	1940	1940	1940	1940	1940	1750	1750	1750	1680	1680	1510										
					IPM(FEED)	14	15	15	13	13	11	10	10	10	13	11	9										
					SFM(Vc)	110	110	110	110	110	110	100	100	100	110	110	100										
					IPT(fz)	.0009	.001	.001	.0009	.0009	.0008	.0008	.0008	.0008	.0011	.0009	.0009										
H	38.1-38.2	Hardened steel	0.02D	2.0D	SFM(Vc)	110	110	110	110	110	110	100	100	100	110	110	100										
					IPT(fz)	.0009	.001	.001	.0009	.0009	.0008	.0008	.0008	.0008	.0011	.0009	.0009										
					RPM	760	670	670	670	670	670	600	600	600	590	590	530										
					IPM(FEED)	3	3	3	2	2	2	2	2	2	3	2	2										
					SFM(Vc)	175	175	175	175	175	175	160	160	160	175	175	160										
					IPT(fz)	.0012	.0014	.0014	.0012	.0012	.0011	.001	.001	.001	.0014	.0011	.001										
	40	Chilled Cast Iron	0.05D	2.5D	SFM(Vc)	175	175	175	175	175	175	160	160	160	175	175	160										
					IPT(fz)	.0012	.0014	.0014	.0012	.0012	.0011	.001	.001	.001	.0014	.0011	.001										
					RPM	1230	1070	1070	1070	1070	1070	960	960	960	940	940	850										
					IPM(FEED)	6	6	6	5	5	5	4	4	4	5	4	3										
					SFM(Vc)	110	110	110	110	110	110	100	100	100	110	110	100										
					IPT(fz)	.0009	.001	.001	.0009	.0009	.0008	.0008	.0008	.0008	.0011	.0009	.0009										
41	Hardened Cast Iron	0.02D	2.0D	SFM(Vc)	110	110	110	110	110	110	100	100	100	110	110	100											
				IPT(fz)	.0009	.001	.001	.0009	.0009	.0008	.0008	.0008	.0008	.0011	.0009	.0009											
				RPM	760	670	670	670	670	670	600	600	600	590	590	530											
				IPM(FEED)	3	3	3	2	2	2	2	2	2	3	2	2											
				SFM(Vc)	105	105	105	105	105	105	95	95	95	105	105	95											
				IPT(fz)	.0011	.0011	.0009	.0009	.0009	.0008	.0008	.0008	.0008	.0011	.0009	.0009											

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)																							
						20		20		20		20		20		20		22		22		25		25					
						LOC	50	60	70	80	90	110	120	75	110	70	90	110	120	75	110	70	90	110	120				
P	1-8	Non-alloy steel	0.05D	2.5D	SFM(Vc)	295	295	295	295	295	295	260	260	285	285	285	285	285	285										
					IPT(fz)	.0019	.0019	.0016	.0016	.0014	.0014	.0014	.0014	.0016	.0014	.0019	.0017	.0017	.0014										
					RPM	1420	1420	1420	1420	1420	1270	1270	1260	1260	1100	1100	1100	1100											
					IPM(FEED)	11	11	9	9	8	7	7	8	7	9	7	7	6											
					SFM(Vc)	170	170	170	170	170	150	150	185	185	210	210	210	210											
					IPT(fz)	.0013	.0013	.0011	.0011	.001	.001	.001	.001	.0011	.001	.0013	.0011	.0011	.001										
	9	Low alloy steel	0.05D	2.5D	SFM(Vc)	170	170	170	170	170	170	150	150	185	185	210	210	210	210										
					IPT(fz)	.0013	.0013	.0011	.0011	.001	.001	.001	.001	.0011	.001	.0013	.0011	.0011	.001										
					RPM	820	820	820	820	820	730	730	820	820	820	820	820	820	820										
					IPM(FEED)	4	4	4	4	4	3	3	4	3	4	4	4	3											
					SFM(Vc)	295	295	295	295	295	260	260	285	285	285	285	285	285											
					IPT(fz)	.0019	.0019	.0016	.0016	.0014	.0014	.0014	.0014	.0016	.0014	.0019	.0017	.0017	.0014										
10-	High alloyed steel, and tool steel	0.05D	2.5D	SFM(Vc)	295	295	295	295	295	295	260	260	285	285	285	285	285												
				IPT(fz)	.0019	.0019	.0016	.0016	.0014	.0014	.0014	.0014	.0016	.0014	.0019	.0017	.0017	.0014											
				RPM	1420	1420	1420	1420	1420	1270	1270	1260	1260	1100	1100	1100	1100												
				IPM(FEED)	11	11	9	9	8	7	7	8	7	9	7	7	6												
				SFM(Vc)	170	170	170	170	170	150	150	185	185	210	210	210	210												
				IPT(fz)	.0013	.0013	.0011	.0011	.001	.001	.001	.001	.0011	.001	.0013	.0011	.0011	.001											
11.1-11.2	High alloyed steel, and tool steel	0.05D	2.5D	SFM(Vc)	170	170	170	170	170	170	150	150	185	185	210	210	210	210											
				IPT(fz)	.0013	.0013	.0011	.0011	.001	.001	.001	.001	.0011	.001	.0013	.0011	.0011	.001											
				RPM	820	820	820	820	820	730	730	820	820	820	820	820	820	820											
				IPM(FEED)	4	4	4	4	4	3	3	4	3	4	4	4	3												
				SFM(Vc)	295	295	295	295	295	260	260	285	285	285	285	285	285												
				IPT(fz)	.0019	.0019	.0016	.0016	.0014	.0014	.0014	.0014	.0016	.0014	.0019	.0017	.0017	.0014											
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.05D	2.5D	SFM(Vc)	295	295	295	295	295	295	260	260	285	285	285	285	285											
					IPT(fz)	.0019	.0019	.0016	.0016	.0014	.0014	.0014	.0014	.0016	.0014	.0019	.0017	.0017	.0014										
					RPM	1420	1420	1420	1420	1420	1270	1270	1260	1260	1100	1100	1100	1100											
					IPM(FEED)	11	11	9	9	8	7	7	8	7	9	7	7	6											
					SFM(Vc)	105	105	105	105	105	95	95	115	115	130	130	130	130											
					IPT(fz)	.0011	.0011	.0009	.0009	.0008	.0008	.0008	.0008	.0009	.0008	.0011	.0009	.0009	.0008										
H	38.1-38.2	Hardened steel	0.02D	2.0D	SFM(Vc)	105	105	105	105	105	105	95	95	115	115	130	130	130	130										
					IPT(fz)	.0011	.0011	.0009	.0009	.0008	.0008	.0008	.0008	.0009	.0008	.0011	.0009	.0009	.0008										
					RPM	500	500	500	500	500	500	450																	

HSS

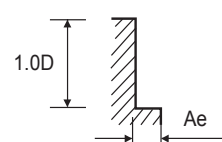


RECOMMENDED CUTTING CONDITIONS

SEME73 SERIES 4FLUTE SQUARE - SIDE CUTTING

Table with columns for ISO, VDI 3323, Material Description, Parameter, and Diameter (Ø) with sub-columns for 1-18. Rows include P (Non-alloy steel, Low alloy steel, High alloyed steel, and tool steel) and K (Grey cast iron, Nodular cast iron, Malleable cast iron).

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : mm (Radial Depth of Cut)

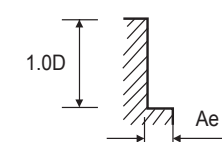


RECOMMENDED CUTTING CONDITIONS

SEME73 SERIES 4FLUTE SQUARE - SIDE CUTTING

Table with columns for ISO, VDI 3323, Material Description, Parameter, and Diameter (Ø) with sub-columns for 1-16. Rows include P (Non-alloy steel, Low alloy steel, High alloyed steel, and tool steel) and K (Grey cast iron, Nodular cast iron, Malleable cast iron).

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : mm (Radial Depth of Cut)





HSS

HSS



RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

SEME73 SERIES 4FLUTE SQUARE - SIDE CUTTING

SEME73 SERIES 4FLUTE SQUARE - SIDE CUTTING

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)													
				1.2		1.2		1.5		1.5		1.5		1.5		1.5	
				LBS	20	26	30	4	5	6	7	8	10	12	14	16	
P	1-8	Non-alloy steel	SFM(Vc)	145	70	70	265	265	265	265	235	235	235	235	210		
			IPT(fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002		
			RPM	11700	5850	5850	17000	17000	17000	17000	15300	15300	15300	15300	13600		
			IPM(FEED)	5	2	2	13	13	13	13	10	10	10	10	8		
			Ae	0.003	0.003	0.003	0.032	0.022	0.022	0.022	0.013	0.013	0.013	0.008	0.008		
			SFM(Vc)	90	45	45	165	165	165	165	150	150	150	150	130		
	9	Low alloy steel	IPT(fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0001			
			RPM	7260	3630	3630	10700	10700	10700	10700	9630	9630	9630	9630	8560		
			IPM(FEED)	3	1	1	8	8	8	8	6	6	6	6	5		
			Ae	0.002	0.002	0.002	0.024	0.017	0.017	0.017	0.009	0.009	0.009	0.006	0.006		
			SFM(Vc)	145	70	70	265	265	265	265	235	235	235	235	210		
			IPT(fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002		
10-	High alloyed steel, and tool steel	RPM	11700	5850	5850	17000	17000	17000	17000	15300	15300	15300	13600				
		IPM(FEED)	5	2	2	13	13	13	13	10	10	10	10	8			
		Ae	0.003	0.003	0.003	0.032	0.022	0.022	0.022	0.013	0.013	0.013	0.008	0.008			
		SFM(Vc)	90	45	45	165	165	165	165	150	150	150	150	130			
		IPT(fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0001			
		RPM	7260	3630	3630	10700	10700	10700	10700	9630	9630	9630	9630	8560			
11.1-11.2	High alloyed steel, and tool steel	IPM(FEED)	3	1	1	8	8	8	8	6	6	6	6	5			
		Ae	0.002	0.002	0.002	0.024	0.017	0.017	0.017	0.009	0.009	0.009	0.006	0.006			
		SFM(Vc)	145	70	70	265	265	265	265	235	235	235	235	210			
		IPT(fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002			
		RPM	11700	5850	5850	17000	17000	17000	17000	15300	15300	15300	15300	13600			
		IPM(FEED)	5	2	2	13	13	13	13	10	10	10	10	8			
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	Ae	0.003	0.003	0.003	0.032	0.022	0.022	0.022	0.013	0.013	0.013	0.008	0.008		
			SFM(Vc)	145	70	70	265	265	265	265	235	235	235	235	210		
			IPT(fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002		
			RPM	11700	5850	5850	17000	17000	17000	17000	15300	15300	15300	15300	13600		
			IPM(FEED)	5	2	2	13	13	13	13	10	10	10	10	8		
			Ae	0.003	0.003	0.003	0.032	0.022	0.022	0.022	0.013	0.013	0.013	0.008	0.008		
H	38.1-38.2	Hardened steel	SFM(Vc)	55	30	30	100	100	100	100	90	90	90	90	80		
			IPT(fz)	.	.	.	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001		
			RPM	4500	2250	2250	6500	6500	6500	6500	5850	5850	5850	5850	5200		
			IPM(FEED)	0.8	0.4	0.4	2	2	2	2	1.6	1.6	1.6	1.6	1.2		
			Ae	0.002	0.002	0.002	0.019	0.013	0.013	0.013	0.008	0.008	0.008	0.005	0.005		
			SFM(Vc)	90	45	45	165	165	165	165	150	150	150	150	130		
	40	Chilled Cast Iron	IPT(fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0001			
			RPM	7260	3630	3630	10700	10700	10700	10700	9630	9630	9630	9630	8560		
			IPM(FEED)	3	1	1	8	8	8	8	6	6	6	6	5		
			Ae	0.002	0.002	0.002	0.024	0.017	0.017	0.017	0.009	0.009	0.009	0.006	0.006		
			SFM(Vc)	55	30	30	100	100	100	100	90	90	90	90	80		
			IPT(fz)	.	.	.	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001		
41	Hardened Cast Iron	RPM	4500	2250	2250	6500	6500	6500	6500	5850	5850	5850	5200				
		IPM(FEED)	0.8	0.4	0.4	2	2	2	2	1.6	1.6	1.6	1.6	1.2			
		Ae	0.002	0.002	0.002	0.019	0.013	0.013	0.013	0.008	0.008	0.008	0.005	0.005			
		SFM(Vc)	80	40	40	130	130	130	130	100	100	100	100	80			
		IPT(fz)	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0001			
		RPM	5200	2600	2600	3900	3900	3900	3900	3000	3000	3000	3000	2400			

ISO	VDI 3323	Parameter	Diameter (Ø)													
			1.5		1.5		1.5		1.5		2		2		2	
			LBS	18	20	22	26	30	6	8	10	12	16	18	20	22
P	1-8	Non-alloy steel	SFM(Vc)	210	210	210	160	160	285	285	285	260	260	260	230	
			IPT(fz)	.0002	.0002	.0002	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	
			RPM	13600	13600	13600	10200	10200	13900	13900	13900	12510	12510	12510	11120	
			IPM(FEED)	8	8	8	5	5	13	13	13	10	10	10	8	
			Ae	0.008	0.005	0.005	0.003	0.003	0.042	0.029	0.029	0.017	0.017	0.011	0.011	
			SFM(Vc)	130	130	130	100	100	185	185	185	170	170	170	150	
	9	Low alloy steel	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002		
			RPM	8560	8560	8560	6420	6420	9070	9070	9070	8160	8160	8160	7260	
			IPM(FEED)	5	5	5	3	3	8	8	8	6	6	6	5	
			Ae	0.006	0.004	0.004	0.002	0.002	0.032	0.022	0.022	0.013	0.013	0.008	0.008	
			SFM(Vc)	210	210	210	160	160	285	285	285	260	260	260	230	
			IPT(fz)	.0002	.0002	.0002	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	
10-	High alloyed steel, and tool steel	RPM	13600	13600	13600	10200	10200	13900	13900	13900	12510	12510	12510	11120		
		IPM(FEED)	8	8	8	5	5	13	13	13	10	10	10	8		
		Ae	0.008	0.005	0.005	0.003	0.003	0.042	0.029	0.029	0.017	0.017	0.011	0.011		
		SFM(Vc)	130	130	130	100	100	185	185	185	170	170	170	150		
		IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002		
		RPM	8560	8560	8560	6420	6420	9070	9070	9070	8160	8160	8160	7260		
11.1-11.2	High alloyed steel, and tool steel	IPM(FEED)	5	5	5	3	3	8	8	8	6	6	6	5		
		Ae	0.006	0.004	0.004	0.002	0.002	0.032	0.022	0.022	0.013	0.013	0.008	0.008		
		SFM(Vc)	210	210	210	160	160	285	285	285	260	260	260	230		
		IPT(fz)	.0002	.0002	.0002	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002		
		RPM	13600	13600	13600	10200	10200	13900	13900	13900	12510	12510	12510	11120		
		IPM(FEED)	8	8	8	5	5	13	13	13	10	10	10	8		
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	Ae	0.008	0.005	0.005	0.003	0.003	0.042	0.029	0.029	0.017	0.017	0.011	0.011	
			SFM(Vc)	210	210	210	160	160	285	285	285	260	260	260	230	
			IPT(fz)	.0002	.0002	.0002	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002	.0002	
			RPM	13600	13600	13600	10200	10200	13900	13900	13900	12510	12510	12510	11120	
			IPM(FEED)	8	8	8	5	5	13	13	13	10	10	10	8	
			Ae	0.008	0.005	0.005	0.003	0.003	0.042	0.029	0.029	0.017	0.017	0.011	0.011	
H	38.1-38.2	Hardened steel	SFM(Vc)	80	80	80	60	60	125	125	125	110	110	110	100	
			IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	
			RPM	5200	5200	5200	3900	3900	6000	6000	6000	5400	5400	5400	4800	
			IPM(FEED)	1.2	1.2	1.2	0.8	0.8	2.4	2.4	2.4	2	2	2	1.6	
			Ae	0.005	0.003	0.003	0.002	0.002	0.025	0.018	0.018	0.01	0.01	0.006	0.006	
			SFM(Vc)	130	130	130	100	100	185	185	185	170	170	170	150	
	40	Chilled Cast Iron	IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0002		
			RPM	8560	8560	8560	6420	6420	9070	9070	9070	8160	8160	8160	7260	
			IPM(FEED)	5	5	5	3	3	8	8	8	6	6	6	5	
			Ae	0.006	0.004	0.004	0.002	0.002	0.032	0.022	0.022	0.013	0.013	0.008	0.008	
			SFM(Vc)	80	80	80	60	60	125	125	125	110	110	110	100	
			IPT(fz)	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001	
41	Hardened Cast Iron	RPM	5200	5200	5200	3900	3900	6000	6000	6000	5400	5400	4800			
		IPM(FEED)	1.2	1.2	1.2	0.8	0.8	2								

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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

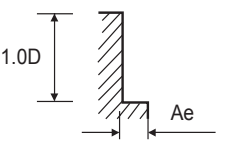
SEME73 SERIES 4FLUTE SQUARE - SIDE CUTTING

SEME73 SERIES 4FLUTE SQUARE - SIDE CUTTING

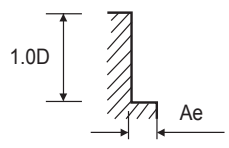
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Table with columns for ISO, VDI 3323, Material Description, Parameter, and Diameter (Ø) with sub-columns for various diameters (2.5, 3, 3.5, 4, 5, 6, 8, 10, 12). Rows include P (Non-alloy steel, Low alloy steel, High alloyed steel, and tool steel) and K (Grey cast iron, Nodular cast iron, Malleable cast iron).

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : mm (Radial Depth of Cut)



SFM = Surface Feet per Minute
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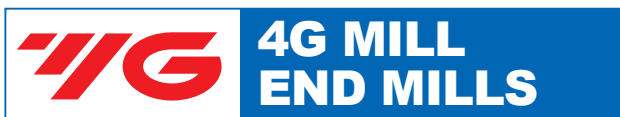


TECHNICAL DATA

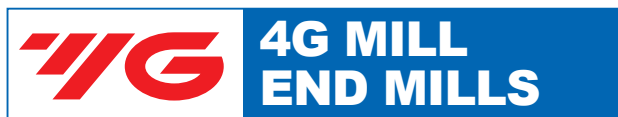
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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

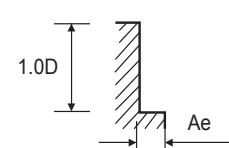
SEME73 SERIES 4FLUTE SQUARE - SIDE CUTTING

SEME73 SERIES 4FLUTE SQUARE - SIDE CUTTING

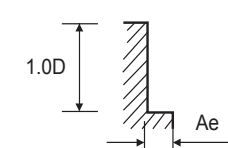
Table with columns: ISO, VDI 3323, Material Description, Ap, Parameter (LBS), Diameter (Ø) (3, 14, 16, 18, 20, 22, 26, 30, 35, 40, 45, 50, 60). Rows include P (Non-alloy steel, Low alloy steel, High alloyed steel, and tool steel), K (Grey cast iron, Nodular cast iron, Malleable cast iron), and H (Hardened steel, Chilled Cast Iron, Hardened Cast Iron).

Table with columns: ISO, VDI 3323, Material Description, Ap, Parameter (LBS), Diameter (Ø) (4, 8, 10, 12, 14, 16, 18, 20, 22, 26, 30, 35, 40, 45). Rows include P (Non-alloy steel, Low alloy steel, High alloyed steel, and tool steel), K (Grey cast iron, Nodular cast iron, Malleable cast iron), and H (Hardened steel, Chilled Cast Iron, Hardened Cast Iron).

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
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Ap : Inch (Axial Depth of Cut)
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IPT = Inches Per Tooth
IPM = Inches Per Minute
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Ae : mm (Radial Depth of Cut)





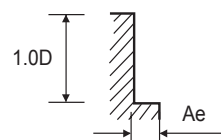
**YG 4G MILL END MILLS**

**RECOMMENDED CUTTING CONDITIONS**

**SEME73 SERIES 4FLUTE SQUARE - SIDE CUTTING**

ISO	VDI 3323	Material Description	Ap	Parameter	Diameter (Ø)											
					4		5		5		5		5		6	
					LBS	50	60	16	20	26	30	35	40	50	60	15
P	1-8	Non-alloy steel	1.0D	SFM(Vc)	300	300	390	390	350	350	350	350	350	310	410	410
				IPT(fz)	.0006	.0006	.0009	.0009	.0009	.0009	.0009	.0009	.0009	.0008	.0012	.0012
				RPM	7260	7260	7560	7560	6800	6800	6800	6800	6800	6050	6670	6670
				IPM(FEED)	17	17	28	28	23	23	23	23	23	18	31	31
				Ae	0.021	0.013	0.074	0.074	0.042	0.042	0.042	0.042	0.026	0.026	0.126	0.088
	9	Low alloy steel	1.0D	SFM(Vc)	185	185	235	235	210	210	210	210	210	185	250	250
				IPT(fz)	.0006	.0006	.0009	.0009	.0009	.0009	.0009	.0009	.0009	.0008	.0012	.0012
				RPM	4430	4430	4530	4530	4080	4080	4080	4080	4080	3620	4030	4030
				IPM(FEED)	11	11	17	17	14	14	14	14	14	11	19	19
				Ae	0.016	0.009	0.055	0.055	0.032	0.032	0.032	0.032	0.02	0.02	0.095	0.066
	10-	High alloyed steel, and tool steel	1.0D	SFM(Vc)	300	300	390	390	350	350	350	350	350	310	410	410
				IPT(fz)	.0006	.0006	.0009	.0009	.0009	.0009	.0009	.0009	.0009	.0008	.0012	.0012
				RPM	7260	7260	7560	7560	6800	6800	6800	6800	6800	6050	6670	6670
				IPM(FEED)	17	17	28	28	23	23	23	23	23	18	31	31
				Ae	0.021	0.013	0.074	0.074	0.042	0.042	0.042	0.042	0.026	0.026	0.126	0.088
	11.1-11.2	High alloyed steel, and tool steel	1.0D	SFM(Vc)	185	185	235	235	210	210	210	210	210	185	250	250
IPT(fz)				.0006	.0006	.0009	.0009	.0009	.0009	.0009	.0009	.0009	.0008	.0012	.0012	
RPM				4430	4430	4530	4530	4080	4080	4080	4080	4080	3620	4030	4030	
IPM(FEED)				11	11	17	17	14	14	14	14	14	11	19	19	
Ae				0.016	0.009	0.055	0.055	0.032	0.032	0.032	0.032	0.02	0.02	0.095	0.066	
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	SFM(Vc)	300	300	390	390	350	350	350	350	350	310	410	410
				IPT(fz)	.0006	.0006	.0009	.0009	.0009	.0009	.0009	.0009	.0009	.0008	.0012	.0012
				RPM	7260	7260	7560	7560	6800	6800	6800	6800	6800	6050	6670	6670
				IPM(FEED)	17	17	28	28	23	23	23	23	23	18	31	31
				Ae	0.021	0.013	0.074	0.074	0.042	0.042	0.042	0.042	0.026	0.026	0.126	0.088
H	38.1-38.2	Hardened steel	1.0D	SFM(Vc)	115	115	145	145	130	130	130	130	130	115	150	150
				IPT(fz)	.0002	.0002	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0004	.0004
				RPM	2820	2820	2780	2780	2500	2500	2500	2500	2500	2220	2400	2400
				IPM(FEED)	1.8	1.8	3.3	3.3	2.8	2.8	2.8	2.8	2.8	2.2	3.7	3.7
				Ae	0.013	0.008	0.044	0.044	0.025	0.025	0.025	0.025	0.016	0.016	0.076	0.053
	40	Chilled Cast Iron	1.0D	SFM(Vc)	185	185	235	235	210	210	210	210	210	185	250	250
				IPT(fz)	.0006	.0006	.0009	.0009	.0009	.0009	.0009	.0009	.0009	.0008	.0012	.0012
				RPM	4430	4430	4530	4530	4080	4080	4080	4080	4080	3620	4030	4030
				IPM(FEED)	11	11	17	17	14	14	14	14	14	11	19	19
				Ae	0.016	0.009	0.055	0.055	0.032	0.032	0.032	0.032	0.02	0.02	0.095	0.066
	41	Hardened Cast Iron	1.0D	SFM(Vc)	115	115	145	145	130	130	130	130	130	115	150	150
				IPT(fz)	.0002	.0002	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0004	.0004
				RPM	2820	2820	2780	2780	2500	2500	2500	2500	2500	2220	2400	2400
				IPM(FEED)	1.8	1.8	3.3	3.3	2.8	2.8	2.8	2.8	2.8	2.2	3.7	3.7
				Ae	0.013	0.008	0.044	0.044	0.025	0.025	0.025	0.025	0.016	0.016	0.076	0.053

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : mm (Radial Depth of Cut)



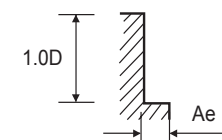
**YG 4G MILL END MILLS**

**RECOMMENDED CUTTING CONDITIONS**

**SEME73 SERIES 4FLUTE SQUARE - SIDE CUTTING**

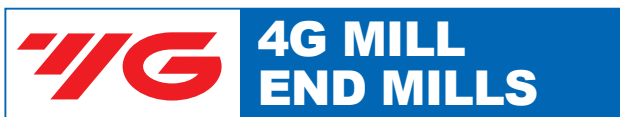
ISO	VDI 3323	Material Description	Ap	Parameter	Diameter (Ø)											
					6		8		8		10		10		12	
					LBS	30	32	25	30	42	30	35	45	35	40	50
P	1-8	Non-alloy steel	1.0D	SFM(Vc)	410	370	415	415	375	405	405	405	410	410	410	
				IPT(fz)	.0012	.0011	.0017	.0017	.0015	.0018	.0018	.0018	.0019	.0019	.0019	
				RPM	6670	6000	5040	5040	4540	3910	3910	3910	3300	3300	3300	
				IPM(FEED)	31	25	34	34	27	29	29	29	24	24	24	
				Ae	0.088	0.05	0.118	0.118	0.067	0.21	0.147	0.147	0.252	0.176	0.176	
	9	Low alloy steel	1.0D	SFM(Vc)	250	225	250	250	225	245	245	245	250	250	250	
				IPT(fz)	.0012	.0011	.0015	.0015	.0013	.0015	.0015	.0015	.0015	.0015	.0015	
				RPM	4030	3630	3020	3020	2720	2400	2400	2400	2010	2010	2010	
				IPM(FEED)	19	16	18	18	14	14	14	14	12	12	12	
				Ae	0.066	0.038	0.088	0.088	0.05	0.158	0.11	0.11	0.189	0.132	0.132	
	10-	High alloyed steel, and tool steel	1.0D	SFM(Vc)	410	370	415	415	375	405	405	405	410	410	410	
				IPT(fz)	.0012	.0011	.0017	.0017	.0015	.0018	.0018	.0018	.0019	.0019	.0019	
				RPM	6670	6000	5040	5040	4540	3910	3910	3910	3300	3300	3300	
				IPM(FEED)	31	25	34	34	27	29	29	29	24	24	24	
				Ae	0.088	0.05	0.118	0.118	0.067	0.21	0.147	0.147	0.252	0.176	0.176	
	11.1-11.2	High alloyed steel, and tool steel	1.0D	SFM(Vc)	250	225	250	250	225	245	245	245	250	250	250	
IPT(fz)				.0012	.0011	.0015	.0015	.0013	.0015	.0015	.0015	.0015	.0015	.0015		
RPM				4030	3630	3020	3020	2720	2400	2400	2400	2010	2010	2010		
IPM(FEED)				19	16	18	18	14	14	14	14	12	12	12		
Ae				0.066	0.038	0.088	0.088	0.05	0.158	0.11	0.11	0.189	0.132	0.132		
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	SFM(Vc)	410	370	415	415	375	405	405	405	410	410	410	
				IPT(fz)	.0012	.0011	.0017	.0017	.0015	.0018	.0018	.0018	.0019	.0019	.0019	
				RPM	6670	6000	5040	5040	4540	3910	3910	3910	3300	3300	3300	
				IPM(FEED)	31	25	34	34	27	29	29	29	24	24	24	
				Ae	0.088	0.05	0.118	0.118	0.067	0.21	0.147	0.147	0.252	0.176	0.176	
H	38.1-38.2	Hardened steel	1.0D	SFM(Vc)	150	135	165	165	150	170	170	170	175	175	175	
				IPT(fz)	.0004	.0004	.0006	.0006	.0006	.0006	.0006	.0006	.0007	.0007	.0007	
				RPM	2400	2160	2010	2010	1810	1630	1630	1630	1400	1400	1400	
				IPM(FEED)	3.7	3	5.1	5.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	
				Ae	0.053	0.03	0.071	0.071	0.04	0.126	0.088	0.088	0.151	0.106	0.106	
	40	Chilled Cast Iron	1.0D	SFM(Vc)	250	225	250	250	225	245	245	245	250	250	250	
				IPT(fz)	.0012	.0011	.0015	.0015	.0013	.0015	.0015	.0015	.0015	.0015	.0015	
				RPM	4030	3630	3020	3020	2720	2400	2400	2400	2010	2010	2010	
				IPM(FEED)	19	16	18	18	14	14	14	14	12	12	12	
				Ae	0.066	0.038	0.088	0.088	0.05	0.158	0.11	0.11	0.189	0.132	0.132	
	41	Hardened Cast Iron	1.0D	SFM(Vc)	150	135	165	165	150	170	170	170	175	175	175	
				IPT(fz)	.0004	.0004	.0006	.0006	.0006	.0006	.0006	.0006	.0007	.0007	.0007	
				RPM	2400	2160	2010	2010	1810	1630	1630	1630	1400	1400	1400	
				IPM(FEED)	3.7	3	5.1	5.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	
				Ae	0.053	0.03	0.071	0.071	0.04	0.126	0.088	0.088	0.151	0.106	0.106	

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : mm (Radial Depth of Cut)

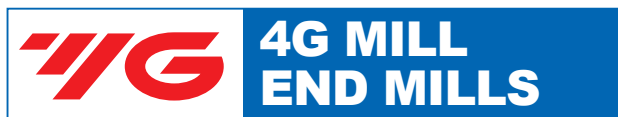


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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

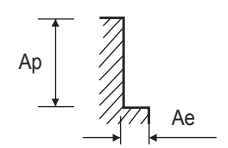
**SEME75** SERIES 6FLUTE 45° HELIX - SIDE CUTTING (NORMAL)

**SEME75** SERIES 6FLUTE 45° HELIX - SIDE CUTTING (NORMAL)

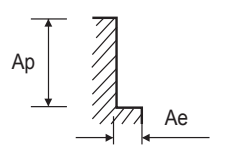
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)											
						6		8		10		10		10			
						15	20	30	20	30	35	40	25	30	40	50	
P	1-8	Non-alloy steel	0.1D	1.5D	SFM(Vc)	360	360	360	365	365	365	365	365	365	365	365	365
					IPT(fz)	.0024	.0024	.002	.0031	.0031	.0031	.0027	.0039	.0039	.0039	.0033	
					RPM	5840	5840	5840	4410	4410	4410	4410	3530	3530	3530	3530	
					IPM(FEED)	83	83	70	83	83	83	70	83	83	83	70	
	9	Low alloy steel	0.05D	1.5D	SFM(Vc)	250	250	250	255	255	255	255	250	250	250	250	
					IPT(fz)	.0023	.0023	.002	.0031	.0031	.0031	.0026	.0039	.0039	.0039	.0033	
					RPM	4075	4075	4075	3085	3085	3085	3085	2435	2435	2435	2435	
					IPM(FEED)	57	57	48	57	57	57	48	57	57	57	48	
	10-	High alloyed steel, and tool steel	0.1D	1.5D	SFM(Vc)	360	360	360	365	365	365	365	365	365	365	365	
					IPT(fz)	.0024	.0024	.002	.0031	.0031	.0031	.0027	.0039	.0039	.0039	.0033	
					RPM	5840	5840	5840	4410	4410	4410	4410	3530	3530	3530	3530	
					IPM(FEED)	83	83	70	83	83	83	70	83	83	83	70	
11.1-11.2	High alloyed steel, and tool steel	0.05D	1.5D	SFM(Vc)	250	250	250	255	255	255	255	250	250	250	250		
				IPT(fz)	.0023	.0023	.002	.0031	.0031	.0031	.0026	.0039	.0039	.0039	.0033		
				RPM	4075	4075	4075	3085	3085	3085	3085	2435	2435	2435	2435		
				IPM(FEED)	57	57	48	57	57	57	48	57	57	57	48		
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.1D	1.5D	SFM(Vc)	360	360	360	365	365	365	365	365	365	365	365	
					IPT(fz)	.0024	.0024	.002	.0031	.0031	.0031	.0027	.0039	.0039	.0039	.0033	
					RPM	5840	5840	5840	4410	4410	4410	4410	3530	3530	3530	3530	
					IPM(FEED)	83	83	70	83	83	83	70	83	83	83	70	
H	38.1-38.2	Hardened steel	0.05D	1.0D	SFM(Vc)	105	105	105	100	100	100	100	110	110	110	110	
					IPT(fz)	.0009	.0009	.0008	.0012	.0012	.0012	.001	.0014	.0014	.0014	.0012	
					RPM	1660	1660	1660	1220	1220	1220	1220	1050	1050	1050	1050	
					IPM(FEED)	9	9	8	9	9	9	8	9	9	9	8	
	40	Chilled Cast Iron	0.05D	1.5D	SFM(Vc)	250	250	250	255	255	255	255	250	250	250	250	
					IPT(fz)	.0023	.0023	.002	.0031	.0031	.0031	.0026	.0039	.0039	.0039	.0033	
					RPM	4075	4075	4075	3085	3085	3085	3085	2435	2435	2435	2435	
					IPM(FEED)	57	57	48	57	57	57	48	57	57	57	48	
	41	Hardened Cast Iron	0.05D	1.0D	SFM(Vc)	105	105	105	100	100	100	100	110	110	110	110	
					IPT(fz)	.0009	.0009	.0008	.0012	.0012	.0012	.001	.0014	.0014	.0014	.0012	
					RPM	1660	1660	1660	1220	1220	1220	1220	1050	1050	1050	1050	
					IPM(FEED)	9	9	8	9	9	9	8	9	9	9	8	

ISO	VDI 3323	Ae	Ap	Parameter	Diameter (Ø)													
					12		12		12		16		16		16		20	
					30	40	50	60	40	50	60	90	110	45	60	70	110	
P	1-8	0.1D	1.5D	SFM(Vc)	370	370	370	370	365	365	365	325	325	365	365	365	325	
				IPT(fz)	.0039	.0039	.0033	.0029	.004	.004	.0034	.003	.003	.0039	.0039	.0034	.003	
				RPM	2980	2980	2980	2980	2205	2205	2205	1985	1985	1765	1765	1765	1585	
				IPM(FEED)	70	70	59	52	52	52	44	35	35	42	42	36	28	
	9	0.05D	1.5D	SFM(Vc)	260	260	260	260	255	255	255	230	230	250	250	250	225	
				IPT(fz)	.0038	.0038	.0032	.0029	.0039	.0039	.0033	.0029	.0029	.0039	.0039	.0033	.003	
				RPM	2100	2100	2100	2100	1555	1555	1555	1395	1395	1220	1220	1220	1090	
				IPM(FEED)	48	48	41	36	36	36	31	25	25	29	29	24	19	
	10-	0.1D	1.5D	SFM(Vc)	370	370	370	370	365	365	365	325	325	365	365	365	325	
				IPT(fz)	.0039	.0039	.0033	.0029	.004	.004	.0034	.003	.003	.0039	.0039	.0034	.003	
				RPM	2980	2980	2980	2980	2205	2205	2205	1985	1985	1765	1765	1765	1585	
				IPM(FEED)	70	70	59	52	52	52	44	35	35	42	42	36	28	
11.1-11.2	0.05D	1.5D	SFM(Vc)	260	260	260	260	255	255	255	230	230	250	250	250	225		
			IPT(fz)	.0038	.0038	.0032	.0029	.0039	.0039	.0033	.0029	.0029	.0039	.0039	.0033	.003		
			RPM	2100	2100	2100	2100	1555	1555	1555	1395	1395	1220	1220	1220	1090		
			IPM(FEED)	48	48	41	36	36	36	31	25	25	29	29	24	19		
K	15-20	0.1D	1.5D	SFM(Vc)	370	370	370	370	365	365	365	325	325	365	365	365	325	
				IPT(fz)	.0039	.0039	.0033	.0029	.004	.004	.0034	.003	.003	.0039	.0039	.0034	.003	
				RPM	2980	2980	2980	2980	2205	2205	2205	1985	1985	1765	1765	1765	1585	
				IPM(FEED)	70	70	59	52	52	52	44	35	35	42	42	36	28	
H	38.1-38.2	0.05D	1.0D	SFM(Vc)	110	110	110	110	110	110	110	100	100	110	110	100		
				IPT(fz)	.0014	.0014	.0012	.001	.0013	.0013	.0011	.001	.001	.0014	.0014	.0012	.0011	
				RPM	880	880	880	880	670	670	670	610	610	525	525	525	475	
				IPM(FEED)	8	8	7	6	5	5	5	4	4	5	5	4	3	
	40	0.05D	1.5D	SFM(Vc)	260	260	260	260	255	255	255	230	230	250	250	250	225	
				IPT(fz)	.0038	.0038	.0032	.0029	.0039	.0039	.0033	.0029	.0029	.0039	.0039	.0033	.003	
				RPM	2100	2100	2100	2100	1555	1555	1555	1395	1395	1220	1220	1220	1090	
				IPM(FEED)	48	48	41	36	36	36	31	25	25	29	29	24	19	
	41	0.05D	1.0D	SFM(Vc)	110	110	110	110	110	110	110	100	100	110	110	100		
				IPT(fz)	.0014	.0014	.0012	.001	.0013	.0013	.0011	.001	.001	.0014	.0014	.0012	.0011	
				RPM	880	880	880	880	670	670	670	610	610	525	525	525	475	
				IPM(FEED)	8	8	7	6	5	5	5	4	4	5	5	4	3	

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)

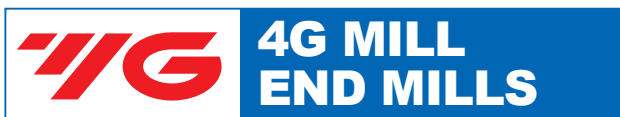


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 Ap : Inch (Axial Depth of Cut)  
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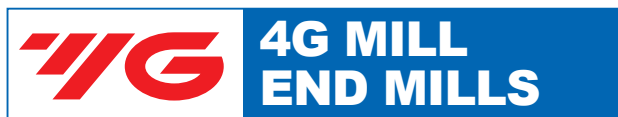


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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

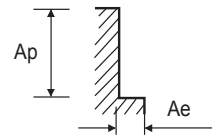
SEME75 SERIES 6FLUTE 45° HELIX - SIDE CUTTING (HIGH SPEED)

SEME75 SERIES 6FLUTE 45° HELIX - SIDE CUTTING (HIGH SPEED)

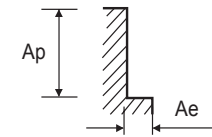
Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, LOC, and Diameter (Ø) with sub-columns for diameters 6, 8, 10, 12.

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, LOC, and Diameter (Ø) with sub-columns for diameters 12, 16, 20.

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)



SFM = Surface Feet per Minute
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Ae : Inch (Radial Depth of Cut)





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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

**G9D75, G9D67, G9D76, G9D68, G9D77, G9D69** SERIES

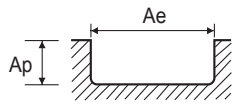
**G9D75, G9D67, G9D76, G9D68, G9D77, G9D69** SERIES

**4&5FLUTE MULTIPLE HELIX CORNER RADIUS - SLOTTING**

**4&5FLUTE MULTIPLE HELIX CORNER RADIUS - SIDE CUTTING**

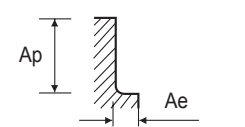
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)						
						6	8	10	12	16	20	
P	1-2	Non-alloy steel	0.5D	1.0D	SFM(Vc)	740	740	740	740	740	740	
					IPT(fz)	.0013	.0018	.0023	.0025	.0026	.0029	
					RPM	12000	9000	7200	6000	4500	3600	
						IPM(FEED)	61	65	65	61	59	52
	3-5	Low alloy steel	0.35D	1.0D	SFM(Vc)	655	670	660	670	675	660	
					IPT(fz)	.0006	.0008	.001	.0012	.0013	.0016	
					RPM	10600	8100	6400	5400	4100	3200	
						IPM(FEED)	26	26	26	26	27	26
	6		0.5D	1.0D	SFM(Vc)	740	740	740	740	740	740	
					IPT(fz)	.0013	.0018	.0023	.0025	.0026	.0029	
					RPM	12000	9000	7200	6000	4500	3600	
						IPM(FEED)	61	65	65	61	59	52
7-9		0.35D	1.0D	SFM(Vc)	655	670	660	670	675	660		
				IPT(fz)	.0006	.0008	.001	.0012	.0013	.0016		
				RPM	10600	8100	6400	5400	4100	3200		
					IPM(FEED)	26	26	26	26	27	26	
10		0.5D	1.0D	SFM(Vc)	740	740	740	740	740	740		
				IPT(fz)	.0013	.0018	.0023	.0025	.0026	.0029		
				RPM	12000	9000	7200	6000	4500	3600		
					IPM(FEED)	61	65	65	61	59	52	
11.1	High alloyed steel, and tool steel	0.35D	1.0D	SFM(Vc)	655	670	660	670	675	660		
				IPT(fz)	.0006	.0008	.001	.0012	.0013	.0016		
				RPM	10600	8100	6400	5400	4100	3200		
					IPM(FEED)	26	26	26	26	27	26	
15	Stainless steel	0.5D	1.0D	SFM(Vc)	740	740	740	740	740	740		
				IPT(fz)	.0013	.0018	.0023	.0025	.0026	.0029		
				RPM	12000	9000	7200	6000	4500	3600		
					IPM(FEED)	61	65	65	61	59	52	
16	Grey cast iron Nodular cast iron Malleable cast iron	0.35D	1.0D	SFM(Vc)	655	670	660	670	675	660		
				IPT(fz)	.0006	.0008	.001	.0012	.0013	.0016		
				RPM	10600	8100	6400	5400	4100	3200		
					IPM(FEED)	26	26	26	26	27	26	
17	Hardened steel	0.5D	1.0D	SFM(Vc)	740	740	740	740	740	740		
				IPT(fz)	.0013	.0018	.0023	.0025	.0026	.0029		
				RPM	12000	9000	7200	6000	4500	3600		
					IPM(FEED)	61	65	65	61	59	52	
18	Chilled Cast Iron	0.35D	1.0D	SFM(Vc)	655	670	660	670	675	660		
				IPT(fz)	.0006	.0008	.001	.0012	.0013	.0016		
				RPM	10600	8100	6400	5400	4100	3200		
					IPM(FEED)	26	26	26	26	27	26	
19-20	Hardened Cast Iron	0.5D	1.0D	SFM(Vc)	740	740	740	740	740	740		
				IPT(fz)	.0013	.0018	.0023	.0025	.0026	.0029		
				RPM	12000	9000	7200	6000	4500	3600		
					IPM(FEED)	61	65	65	61	59	52	

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)



ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)						
						6	8	10	12	16	20	
P	1-2	Non-alloy steel	0.5D	1.0D	SFM(Vc)	975	980	980	990	990	990	
					IPT(fz)	.0016	.0022	.0028	.0032	.0032	.0035	
					RPM	15800	11900	9500	8000	6000	4800	
						IPM(FEED)	101	106	106	101	97	84
	3-5	Low alloy steel	0.35D	1.0D	SFM(Vc)	885	880	875	880	890	885	
					IPT(fz)	.0013	.0018	.0023	.0026	.0026	.0028	
					RPM	14300	10700	8500	7100	5400	4300	
						IPM(FEED)	73	77	77	73	69	59
	6	Low alloy steel	0.5D	1.0D	SFM(Vc)	975	980	980	990	990	990	
					IPT(fz)	.0016	.0022	.0028	.0032	.0032	.0035	
					RPM	15800	11900	9500	8000	6000	4800	
						IPM(FEED)	101	106	106	101	97	84
7-9	Low alloy steel	0.35D	1.0D	SFM(Vc)	885	880	875	880	890	885		
				IPT(fz)	.0013	.0018	.0023	.0026	.0026	.0028		
				RPM	14300	10700	8500	7100	5400	4300		
					IPM(FEED)	73	77	77	73	69	59	
10	High alloyed steel, and tool steel	0.5D	1.0D	SFM(Vc)	975	980	980	990	990	990		
				IPT(fz)	.0016	.0022	.0028	.0032	.0032	.0035		
				RPM	15800	11900	9500	8000	6000	4800		
					IPM(FEED)	101.2	106.3	106.3	101.2	96.5	84.3	
11.1	High alloyed steel, and tool steel	0.35D	1.0D	SFM(Vc)	885	880	875	880	890	885		
				IPT(fz)	.0013	.0018	.0023	.0026	.0026	.0028		
				RPM	14300	10700	8500	7100	5400	4300		
					IPM(FEED)	73	77	77	73	69	59	
15	Grey cast iron	0.5D	1.0D	SFM(Vc)	975	980	980	990	990	990		
				IPT(fz)	.0016	.0022	.0028	.0032	.0032	.0035		
				RPM	15800	11900	9500	8000	6000	4800		
					IPM(FEED)	101	106	106	101	97	84	
16	Grey cast iron Nodular cast iron Malleable cast iron	0.35D	1.0D	SFM(Vc)	885	880	875	880	890	885		
				IPT(fz)	.0013	.0018	.0023	.0026	.0026	.0028		
				RPM	14300	10700	8500	7100	5400	4300		
					IPM(FEED)	73	77	77	73	69	59	
17	Nodular cast iron	0.5D	1.0D	SFM(Vc)	975	980	980	990	990	990		
				IPT(fz)	.0016	.0022	.0028	.0032	.0032	.0035		
				RPM	15800	11900	9500	8000	6000	4800		
					IPM(FEED)	101	106	106	101	97	84	
18	Nodular cast iron	0.35D	1.0D	SFM(Vc)	885	880	875	880	890	885		
				IPT(fz)	.0013	.0018	.0023	.0026	.0026	.0028		
				RPM	14300	10700	8500	7100	5400	4300		
					IPM(FEED)	73	77	77	73	69	59	
19-20	Malleable cast iron	0.5D	1.0D	SFM(Vc)	975	980	980	990	990	990		
				IPT(fz)	.0016	.0022	.0028	.0032	.0032	.0035		
				RPM	15800	11900	9500	8000	6000	4800		
					IPM(FEED)	101	106	106	101	97	84	

SFM = Surface Feet per Minute  
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 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)





Global Cutting Tool Leader **YG-1**



**MILLING**



Being the best through innovation

**CARBIDE**

# X-POWER PRO END MILLS

- for Pre-Hardened Steels up to HRc55, Mold & Die, Dry & Wet Cutting



SELECTION GUIDE



SERIES	Inch				
	GM153	GM207	GM639	GM649	GM212
FLUTE	4	4	4	4	4
HELIX ANGLE	30°	30°	30°	30°	30°
CUTTING EDGE SHAPE	SQUARE	SQUARE	CORNER RADIUS	CORNER RADIUS	CORNER RADIUS
SIZE MIN	D1/16	D1/8	D1/16	D1/16	D1/4
SIZE MAX	D1"	D1"	D1/2	D1/2	D1/2
PAGE	C396	C397	C398	C399	C400

**SOLID CARBIDE**  
**X-POWER PRO**  
**END MILLS**

for Pre-Hardened Steels up to HRc55,  
 Mold & Die, Dry & Wet Cutting

Please visit [globalyg1.com/mat](http://globalyg1.com/mat) for material search

⊙ : Excellent ○ : Good

Recommended cutting conditions : p. C431

	REGULAR LENGTH	LONG LENGTH	STUB LENGTH	REGULAR LENGTH	LONG LENGTH
	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating



ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc
P	1	Non-alloy steel	About 0.15% C Annealed	125	
	2		About 0.45% C Annealed	190	13
	3		About 0.45% C Quenched & Tempered	250	25
	4		About 0.75% C Annealed	270	28
	5		About 0.75% C Quenched & Tempered	300	32
	6	Low alloy steel	Annealed	180	10
	7		Quenched & Tempered	275	29
	8		Quenched & Tempered	300	32
	9		Quenched & Tempered	350	38
	10		High alloyed steel, and tool steel	Annealed	200
	11	Quenched & Tempered		325	35
M	12	Stainless steel	Ferritic / Martensitic Annealed	200	15
	13		Martensitic Quenched & Tempered	240	23
	14		Austenitic	180	10
K	15	Grey cast iron	Pearlitic / ferritic	180	10
	16		Pearlitic (Martensitic)	260	26
	17	Nodular cast iron	Ferritic	160	3
	18		Pearlitic	250	25
	19	Malleable cast iron	Ferritic	130	
	20		Pearlitic	230	21
N	21	Aluminum-wrought alloy	Not Curable	60	
	22		Curable Hardened	100	
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable	75	
	24		≤ 12% Si, Curable Hardened	90	
	25		> 12% Si, Not Curable	130	
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%	110	
	27		CuZn, CuSnZn (Brass)	90	
	28		CuSn, lead-free copper and electrolytic copper	100	
	29		Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic	
	30	Rubber, Wood, etc.			
S	31	Heat Resistant Super Alloys	Fe Based Annealed	200	15
	32		Cured	280	30
	33		Annealed	250	25
	34		Ni or Co Based Cured	350	38
	35		Cast	320	34
	36	Titanium Alloys	Pure Titanium	400 Rm	
	37		Alpha + Beta Alloys Hardened	1050 Rm	
H	38	Hardened steel	Hardened	550	55
	39		Hardened	630	60
	40	Hardened Cast Iron	Cast	400	42
	41		Hardened	550	55

SERIES	Inch												
	GM103	GM208	GM218	GM668	GM209	GM210	GM961	GM960	GM109	GM963	GM666	GM156	GM967
FLUTE	4	6&8	6&8	6&8	2	4	2	2	2	2	3~5	3~5	2
HELIX ANGLE	45°	45°	45°	45°	30°	30°	30°	30°	15°	30°	20°	20°	30°
CORNER RADIUS	SQUARE	SQUARE	SQUARE	CORNER RADIUS	BALL NOSE	BALL NOSE	BALL NOSE	BALL NOSE	BALL NOSE	BALL NOSE	ROUGHING	ROUGHING	BALL NOSE
SIZE MIN	D3/8	D1/4	D1/4	D1/4	R1/64	R1/16	R1/16	R.012	R1/64	R1/32	D1/4	D1/4	R1/64
SIZE MAX	D7/8	D1"	D1"	D3/4	R3/8	R3/8	R1/2	R.031	R1/4	R3/16	D1"	D1"	R1/16
PAGE	C401	C402		C403	C404	C405	C406	C407	C408	C409	C410		C411
	LONG REACH	LONG LENGTH	EXTRA LONG LENGTH	LONG LENGTH	LONG LENGTH	LONG LENGTH	MEDIUM LENGTH	MINIATURE	STUB CUT LENGTH	TAPER NECK	STUB LENGTH FINE PITCH	LONG LENGTH FINE PITCH	RIB PROCESSING
	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating



○	○	○	○	○	○	○	○	○	○	○	○	○	○	1
○	○	○	○	○	○	○	○	○	○	○	○	○	○	2
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	3
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	4
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	5
○	○	○	○	○	○	○	○	○	○	○	○	○	○	6
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	7
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	8
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	9
○	○	○	○	○	○	○	○	○	○	○	○	○	○	10
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	11
○														12
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○	○	○	○	○	○	○	○	○	○	○	○	○	○	39
⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	40
○	○	○	○	○	○	○	○	○	○	○	○	○	○	41

SELECTION GUIDE



SOLID CARBIDE X-POWER PRO END MILLS

for Pre-Hardened Steels up to HRc55, Mold & Die, Dry & Wet Cutting

Please visit globaly1.com/mat for material search

© : Excellent ○ : Good

Recommended cutting conditions : p. C431

Table with 4 columns: SERIES (GM876, GM813, GM886, GM902), FLUTE (2), HELIX ANGLE (30°), CUTTING EDGE SHAPE (BALL NOSE), SIZE MIN (R0.5, R0.5, R0.25, R0.5), SIZE MAX (R8.0, R10.0, R3.0, R4.0), PAGE (C412, C413, C414, C416)

Table with 4 columns: SHORT LENGTH, LONG LENGTH, RIB PROCESSING, TAPER NECK, Y-Coating



Main material selection table with columns: ISO, VDI 3323, Material Description, Composition / Structure / Heat Treatment, HB, HRc, and application suitability (circles) for each of the four end mill types.

Table with 13 columns: GM815, GM818, GM8A1, GM839, GM819, GM810, GM883, GM895, GM811, GM817, GM812, GM834, GM814. Includes flute counts and helix angles.

Table with 13 columns: LONG LENGTH, LONG LENGTH, RIB PROCESSING, STUB LENGTH, LONG LENGTH, SHORT LENGTH, RIB PROCESSING, SHORT LENGTH, SHORT LENGTH, LONG LENGTH, LONG LENGTH, EXTRA LONG LENGTH, LONG LENGTH FINE PITCH, Y-Coating



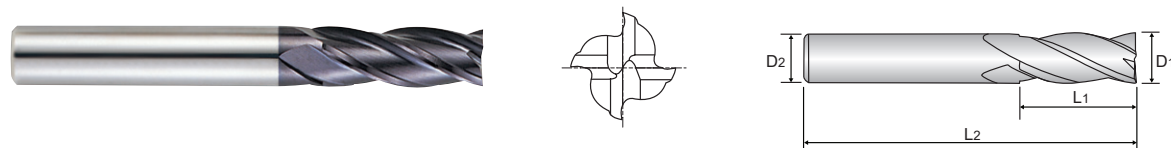
Main material selection table for the second set of end mills, with columns for ISO, VDI 3323, Material Description, Composition / Structure / Heat Treatment, HB, HRc, and application suitability for each of the 13 end mill types.

# YG X-POWER PRO END MILLS

PLAIN SHANK **GM153** SERIES

## CARBIDE, 4 FLUTE REGULAR LENGTH

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- ▶ 4 flute allows for better workpiece finishes.
- ▶ Increased production.



EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
GM153004	1/16	1/8	3/16	1-1/2
GM153008	1/8	1/8	1/2	1-1/2
GM153012	3/16	3/16	5/8	2
GM153016	1/4	1/4	3/4	2-1/2
GM153020	5/16	5/16	13/16	2-1/2
GM153024	3/8	3/8	1	2-1/2
GM153028	7/16	7/16	1	2-3/4
GM153032	1/2	1/2	1	3
GM153040	5/8	5/8	1-1/4	3-1/2
GM153048	3/4	3/4	1-1/2	4
GM153064	1	1	1-1/2	4

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0 ~ -.0012	0 ~ -.0003

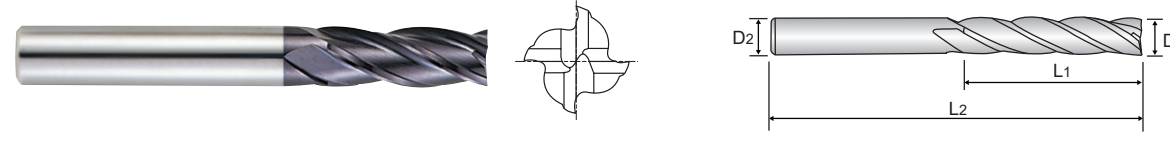
ISO Material Description	P										M			K											
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel			Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron				
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	130	21	130	21	130	21	130
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	130	230	130	230	130
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○	○	○	○	○

# YG X-POWER PRO END MILLS

PLAIN SHANK **GM207** SERIES

## CARBIDE, 4 FLUTE 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.



EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
GM207008	1/8	1/8	3/4	2-1/4
GM207012	3/16	3/16	3/4	2-1/2
GM207016	1/4	1/4	1-1/8	3
GM207020	5/16	5/16	1-1/8	3
GM207024	3/8	3/8	1-1/8	3
GM207032	1/2	1/2	2	4
GM207040	5/8	5/8	2-1/4	5
GM207048	3/4	3/4	2-1/4	5
GM207064	1	1	2-1/4	5

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0 ~ -.0012	0 ~ -.0003

ISO Material Description	P										M			K											
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel			Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron				
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	130	21	130	21	130	21	130
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	130	230	130	230	130
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○	○	○	○	○



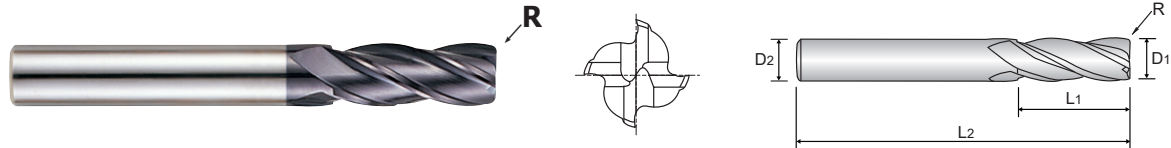
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# YG X-POWER PRO END MILLS

PLAIN SHANK **GM639** SERIES

## CARBIDE, 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 4 30° ±.001 PLAIN p.C433

Unit : inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R (±.001)	D1	D2	L1	L2
GM639004	R.008	1/16	1/4	1/8	2-1/4
GM639008	R.01	1/8	1/4	1/4	2-1/4
GM639901	R.02	1/8	1/4	1/4	2-1/4
GM639012	R.01	3/16	1/4	3/8	2-1/2
GM639903	R.02	3/16	1/4	3/8	2-1/2
GM639904	R.03	3/16	1/4	3/8	2-1/2
GM639016	R.01	1/4	1/4	1/2	3
GM639905	R.02	1/4	1/4	1/2	3
GM639906	R.03	1/4	1/4	1/2	3
GM639020	R.02	5/16	5/16	1/2	3
GM639907	R.03	5/16	5/16	1/2	3
GM639908	R.06	5/16	5/16	1/2	3
GM639024	R.02	3/8	3/8	5/8	3
GM639910	R.03	3/8	3/8	5/8	3
GM639911	R.06	3/8	3/8	5/8	3
GM639912	R.09	3/8	3/8	5/8	3
GM639032	R.02	1/2	1/2	5/8	4
GM639913	R.03	1/2	1/2	5/8	4
GM639914	R.06	1/2	1/2	5/8	4
GM639915	R.09	1/2	1/2	5/8	4

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0 ~ -.0012	0 ~ -.0003

◎ : Excellent ○ : Good

ISO Material Description	P											M			K																												
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel			Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron																					
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41		
HRc	125	13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	125	190	250	270	300	180	275	300	350	200	325	200	240	180	10	26	160	250	130	230			
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

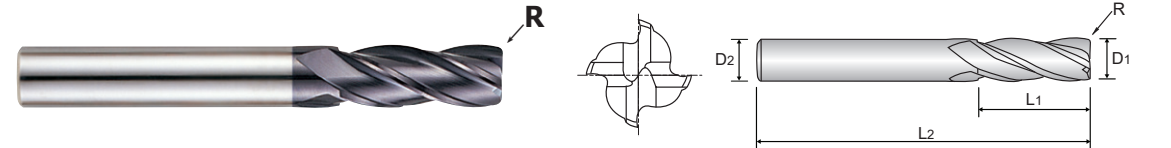
ISO Material Description	N										S										H																						
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys					Hardened steel	Chilled Cast Iron	Hardened Cast Iron																				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	31	32	33	34	35	36	37	38	39	40	41	42	43	44								
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55	15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55	42	43	44								
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	42	43	44								
Recommend	○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

# YG X-POWER PRO END MILLS

PLAIN SHANK **GM649** SERIES

## CARBIDE, 4 FLUTE REGULAR LENGTH CORNER RADIUS

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- ▶ Superior workpiece finishes.
- ▶ Increased feed rate.



MG 4 30° ±.001 PLAIN p.C433

Unit : inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R (±.001)	D1	D2	L1	L2
GM649004	R.008	1/16	1/4	3/16	2-1/4
GM649008	R.01	1/8	1/4	1/2	2-1/4
GM649901	R.02	1/8	1/4	1/2	2-1/4
GM649012	R.01	3/16	1/4	5/8	2-1/2
GM649903	R.02	3/16	1/4	5/8	2-1/2
GM649904	R.03	3/16	1/4	5/8	2-1/2
GM649016	R.01	1/4	1/4	3/4	3
GM649905	R.02	1/4	1/4	3/4	3
GM649906	R.03	1/4	1/4	3/4	3
GM649020	R.02	5/16	5/16	13/16	3
GM649907	R.03	5/16	5/16	13/16	3
GM649908	R.06	5/16	5/16	13/16	3
GM649024	R.02	3/8	3/8	1	3
GM649910	R.03	3/8	3/8	1	3
GM649911	R.06	3/8	3/8	1	3
GM649912	R.09	3/8	3/8	1	3
GM649028	R.02	7/16	7/16	1	4
GM649916	R.03	7/16	7/16	1	4
GM649917	R.06	7/16	7/16	1	4
GM649032	R.02	1/2	1/2	1	4
GM649913	R.03	1/2	1/2	1	4
GM649914	R.06	1/2	1/2	1	4
GM649915	R.09	1/2	1/2	1	4

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0 ~ -.0012	0 ~ -.0003

◎ : Excellent ○ : Good

ISO Material Description	P											M			K																											
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel			Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron																				
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc	125	13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	125	190	250	270	300	180	275	300	350	200	325	200	240	180	10	26	160	250	130	230		
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

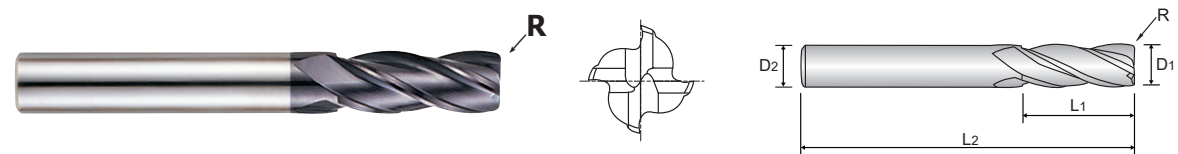
ISO Material Description	N										S										H																						
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys					Hardened steel	Chilled Cast Iron	Hardened Cast Iron																				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	31	32	33	34	35	36	37	38	39	40	41	42	43	44								
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55	15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55	42	43	44								
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	42	43	44								
Recommend	○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

**YG X-POWER PRO END MILLS**

PLAIN SHANK **GM212** SERIES

**CARBIDE, 4 FLUTE CORNER RADIUS LONG LENGTH**

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- ▶ Superior workpiece finishes.
- ▶ Increased feed rate.



Unit : inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R (±.001)	D1	D2	L1	L2
GM212016	R.02	1/4	1/4	1-1/8	3
GM212901	R.03	1/4	1/4	1-1/8	3
GM212020	R.02	5/16	5/16	1-1/8	3
GM212902	R.03	5/16	5/16	1-1/8	3
GM212903	R.06	5/16	5/16	1-1/8	3
GM212024	R.02	3/8	3/8	1-1/8	3
GM212905	R.03	3/8	3/8	1-1/8	3
GM212906	R.06	3/8	3/8	1-1/8	3
GM212032	R.02	1/2	1/2	2	4
GM212908	R.03	1/2	1/2	2	4
GM212909	R.06	1/2	1/2	2	4
GM212910	R.09	1/2	1/2	2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0 ~ -.0012	0 ~ -.0003

◎ : Excellent ○ : Good

ISO Material Description	P											M			K					
	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron	Nodular cast iron		Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	32	10	29	32	38	15	35	15	23	10	18	26	3	25	130	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎									

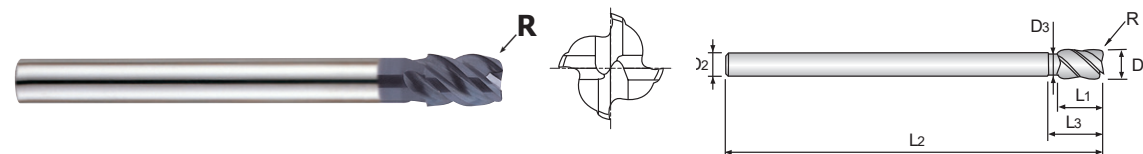
ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	◎	○

**YG X-POWER PRO END MILLS**

PLAIN SHANK **GM103** SERIES

**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.



Unit : inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length
	R (±.001)	D1	D2	L1	L3	L2
GM103024	R.02	3/8	5/16	5/8	3/4	5
GM103901	R.04	3/8	5/16	5/8	3/4	5
GM103032	R.02	1/2	3/8	3/4	7/8	6
GM103902	R.04	1/2	3/8	3/4	7/8	6
GM103040	R.02	5/8	1/2	7/8	1	6-1/2
GM103903	R.04	5/8	1/2	7/8	1	6-1/2
GM103048	R.02	3/4	5/8	1	1-1/8	7
GM103904	R.04	3/4	5/8	1	1-1/8	7
GM103056	R.02	7/8	3/4	1-1/4	1-3/8	8

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0 ~ -.0012	0 ~ -.0003

◎ : Excellent ○ : Good

ISO Material Description	P											M			K					
	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel		Stainless steel			Grey cast iron	Nodular cast iron		Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	32	10	29	32	38	15	35	15	23	10	18	26	3	25	130	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○						

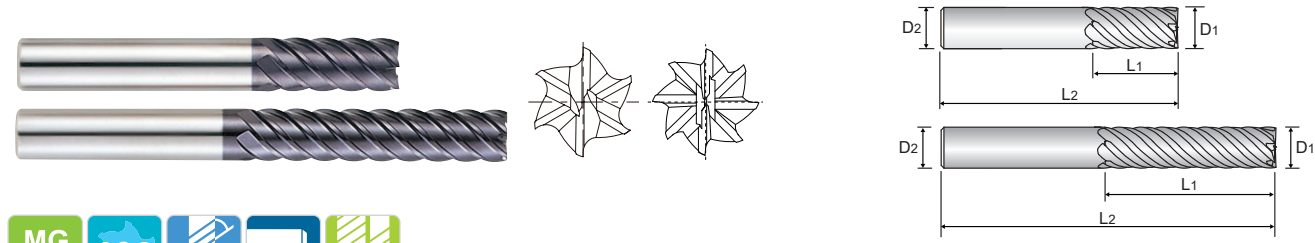
ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	◎	○



LONG LENGTH PLAIN SHANK **GM208** SERIES  
EXTRA LONG LENGTH PLAIN SHANK **GM218** SERIES

**CARBIDE, 6&8 FLUTE 45° HELIX LONG LENGTH & 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.



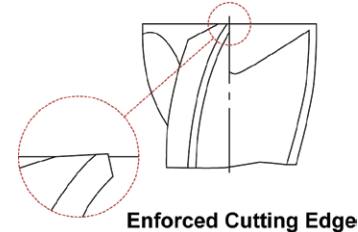
**GM208 series - LONG LENGTH** Unit : inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	No. of Flute
GM208016	1/4	1/4	1/2	2-1/4	6
GM208020	5/16	5/16	3/4	2-1/2	6
GM208024	3/8	3/8	7/8	2-7/8	6
GM208032	1/2	1/2	1	3-1/4	6
GM208040	5/8	5/8	1-1/4	3-5/8	6
GM208048	3/4	3/4	1-1/2	4-1/8	8
GM208064	1	1	1-3/4	4-1/4	8

**GM218 series - EXTRA LONG LENGTH** Unit : inch

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	No. of Flute
GM218016	1/4	1/4	1	2-3/4	6
GM218020	5/16	5/16	1-1/2	3-5/8	6
GM218024	3/8	3/8	1-3/4	4	6
GM218032	1/2	1/2	2-3/16	4-3/8	6
GM218040	5/8	5/8	2-5/8	5-1/8	6
GM218048	3/4	3/4	2-1/4	5	8
GM218901	3/4	3/4	3-1/4	6	8
GM218902	3/4	3/4	4-1/8	7	8
GM218064	1	1	4-1/8	7	8

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0 ~ -.0012	0 ~ -.0003



Enforced Cutting Edge ◎ : Excellent ○ : Good

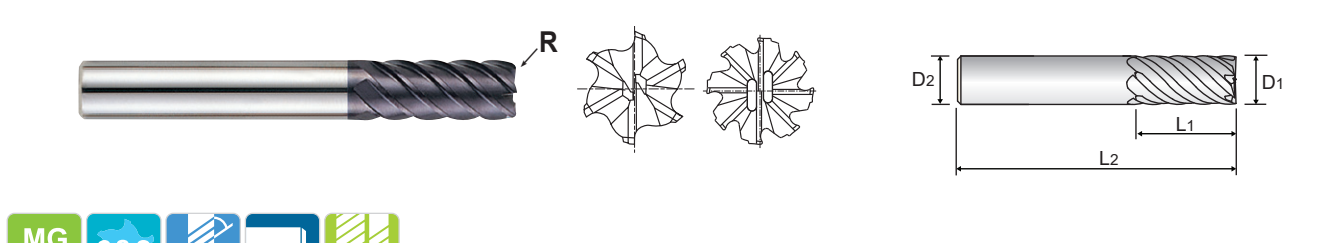
ISO Material Description	P											M			K																											
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel			Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron																				
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRC	13	19	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25	15	21	15	30	25	38	34	15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55	55	60	42	55		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	550	630	400	550	550	630	400	550			
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	◎	○	○	◎	◎	◎	○	◎	○	○	◎	◎	◎	○	◎	○	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎



PLAIN SHANK **GM668** SERIES

**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 rate.
- ▶ Superior workpiece finishes.
- ▶ Superior wear resistant.
- ▶ Suitable for dry milling.
- ▶ Corner Protection against chipping.



**GM668 series - LONG LENGTH** Unit : inch

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2
GM668016	R.02	1/4	1/4	1/2	2-1/4	6
GM668020	R.02	5/16	5/16	3/4	2-1/2	6
GM668024	R.02	3/8	3/8	7/8	2-7/8	6
GM668032	R.02	1/2	1/2	1	3-1/4	6
GM668040	R.03	5/8	5/8	1-1/4	3-5/8	6
GM668048	R.03	3/4	3/4	1-1/2	4-1/8	8
GM668901	R.03	3/8	3/8	7/8	2-7/8	6
GM668902	R.03	1/2	1/2	1	3-1/4	6
GM668904	R.06	3/4	3/4	1-1/2	4-1/8	8

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0 ~ -.0012	0 ~ -.0003

ISO Material Description	P											M			K																											
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel			Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron																				
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRC	13	19	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25	15	21	15	30	25	38	34	15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55	55	60	42	55		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	550	630	400	550	550	630	400	550			
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	◎	○	○	◎	◎	◎	○	◎	○	○	◎	◎	◎	○	◎	○	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎	○	◎

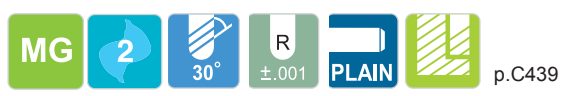
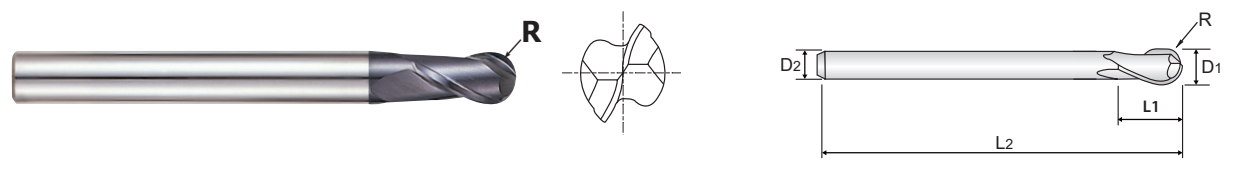


**YG X-POWER PRO END MILLS**

PLAIN SHANK **GM209** SERIES

**CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE**

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- ▶ For copy-milling machines.



Unit : inch

EDP No.	Radius of Ball Nose R(±.001)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
<b>GM209901</b>	R 1/64	1/32	1/4	1/32	2-1/2
<b>GM209902</b>	R 1/32	1/16	1/4	1/16	2-1/2
<b>GM209903</b>	R 3/64	3/32	1/4	3/32	2-1/2
<b>GM209008</b>	R 1/16	1/8	1/8	5/16	2-3/8
<b>GM209012</b>	R 3/32	3/16	3/16	3/8	3-1/8
<b>GM209016</b>	R 1/8	1/4	1/4	1/2	3-1/2
<b>GM209020</b>	R 5/32	5/16	5/16	9/16	4
<b>GM209024</b>	R 3/16	3/8	3/8	3/4	4
<b>GM209032</b>	R 1/4	1/2	1/2	7/8	4-1/4
<b>GM209048</b>	R 3/8	3/4	3/4	1-1/2	6-1/4

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0 ~ -.0012	0 ~ -.0003

◎ : Excellent ○ : Good

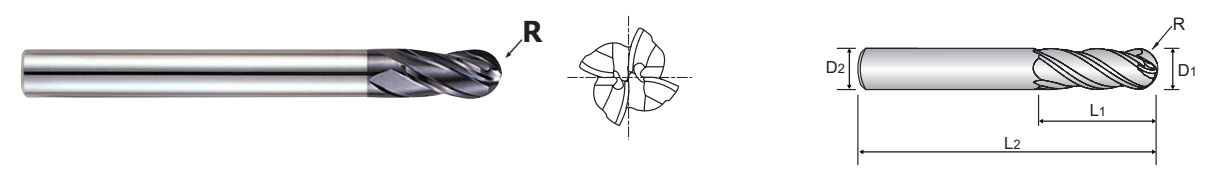
ISO Material Description	P											M			K																											
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel			Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron																				
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc	125	130	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	15	30	25	38	34	15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55	55	60	42	55	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	15	30	25	38	34	15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55	55	60	42	55		
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

**YG X-POWER PRO END MILLS**

PLAIN SHANK **GM210** SERIES

**CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE**

- ▶ Designed to machine tool steels, alloy steels, mold steels and other high hardened materials.
- ▶ For copy - milling machines.
- ▶ 4 Flute design - higher feed than GM209 series



Unit : inch

EDP No.	Radius of Ball Nose R(±.001)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
<b>GM210008</b>	R1/16	1/8	1/8	5/16	2-3/8
<b>GM210012</b>	R3/32	3/16	3/16	3/8	3-1/8
<b>GM210016</b>	R1/8	1/4	1/4	1/2	3-1/2
<b>GM210020</b>	R5/32	5/16	5/16	9/16	4
<b>GM210024</b>	R3/16	3/8	3/8	3/4	4
<b>GM210032</b>	R1/4	1/2	1/2	7/8	4-1/4
<b>GM210040</b>	R5/16	5/8	5/8	1-1/4	5-1/2
<b>GM210048</b>	R3/8	3/4	3/4	1-1/2	6-1/4

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0 ~ -.0012	0 ~ -.0003

◎ : Excellent ○ : Good

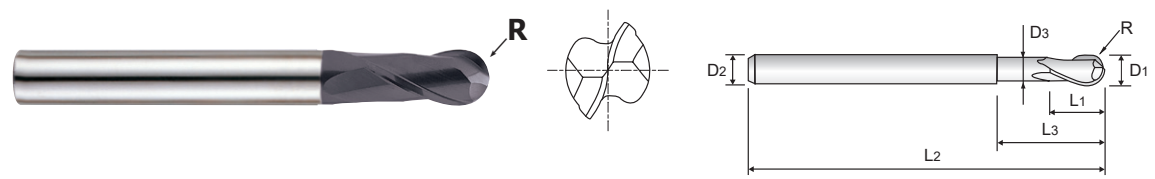
ISO Material Description	P											M			K																											
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel			Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron																				
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc	125	130	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	15	30	25	38	34	15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55	55	60	42	55	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	15	30	25	38	34	15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55	55	60	42	55		
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

**YG X-POWER PRO END MILLS**

PLAIN SHANK **GM961** SERIES

**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° ±.001 PLAIN p.C441

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
<b>GM961008</b>	R1/16	1/8	1/4	5/16	-	2-3/4	-
<b>GM961012</b>	R3/32	3/16	1/4	1/2	-	3-1/8	-
<b>GM961016</b>	R1/8	1/4	1/4	1/2	7/8	3-1/8	.242
<b>GM961020</b>	R5/32	5/16	5/16	9/16	1-1/16	3-1/2	.305
<b>GM961024</b>	R3/16	3/8	3/8	3/4	1-1/4	4	.367
<b>GM961032</b>	R1/4	1/2	1/2	7/8	1-3/8	4-1/4	.492
<b>GM961064</b>	R1/2	1	1	2-1/8	3	7	.992

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0 ~ -.0012	0 ~ -.0003

◎ : Excellent ○ : Good

ISO Material Description	P											M			K					
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel			Stainless steel			Grey cast iron	Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	125	13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25	15	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎									

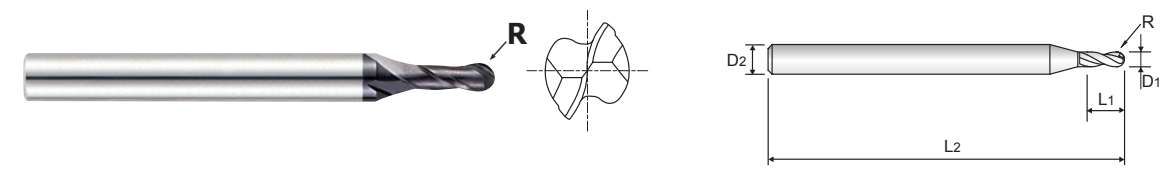
ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	

**YG X-POWER PRO END MILLS**

PLAIN SHANK **GM960** SERIES

**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 high hardened steel up to HRC70.



MG 2 30° ±.0005 PLAIN p.C442

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R (±.0005)	D1	D2	L1	L2
<b>GM960924</b>	R.0120	.024	1/8	.043	2-3/4
<b>GM960931</b>	R.0155	.031	1/8	.08	3-1/8
<b>GM960940</b>	R.0200	.040	1/8	.1	3-1/8
<b>GM960943</b>	R.0215	.043	1/8	.118	3-1/2
<b>GM960947</b>	R.0235	.047	1/8	.118	4
<b>GM960952</b>	R.0260	.052	1/8	.138	4-1/4
<b>GM960955</b>	R.0275	.055	1/8	.138	7
<b>GM960962</b>	R.0310	.062	1/8	.157	6-1/4

Mill Dia. Tolerance(inch)	Shank Dia. Tolerance
0 ~ -.0010	0 ~ -.0003

◎ : Excellent ○ : Good

ISO Material Description	P											M			K						
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel			Stainless steel			Grey cast iron	Nodular cast iron	Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	125	13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25	15	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend			◎	◎	◎			◎	◎	◎											

ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	

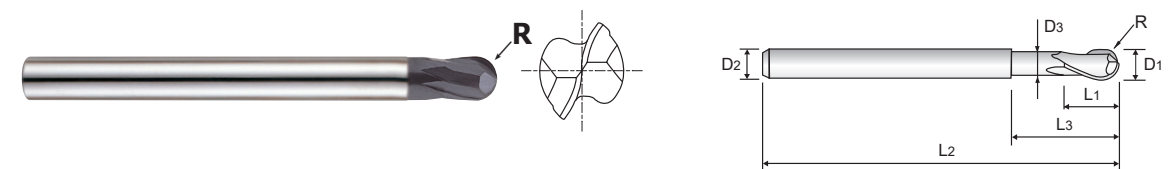
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**YG X-POWER PRO END MILLS**

PLAIN SHANK **GM109** SERIES

**CARBIDE, 2 FLUTE 15° HELIX STUB CUT 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 15° ±.0005 PLAIN p.C443

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
GM109002	R1/64	1/32	1/4	1/32	1/16	2	.029
GM109004	R1/32	1/16	1/4	1/16	1/8	2	.059
GM109006	R3/64	3/32	1/4	3/32	3/16	2	.090
GM109008	R1/16	1/8	1/4	1/8	1/4	2-1/2	.121
GM109012	R3/32	3/16	1/4	3/16	3/8	3	.184
GM109016	R1/8	1/4	1/4	1/4	1/2	3-1/2	.246
GM109020	R5/32	5/16	5/16	5/16	5/8	4	.309
GM109024	R3/16	3/8	3/8	3/8	3/4	4	.371
GM109032	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

ISO Material Description	P											M			K																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel			Stainless steel			Grey cast iron			Nodular cast iron			Malleable cast iron																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
HRc	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355	360	365	370	375	380	385	390	395	400	405	410	415	420	425	430	435	440	445	450	455	460	465	470	475	480	485	490	495	500	505	510	515	520	525	530	535	540	545	550	555	560	565	570	575	580	585	590	595	600	605	610	615	620	625	630	635	640	645	650	655	660	665	670	675	680	685	690	695	700	705	710	715	720	725	730	735	740	745	750	755	760	765	770	775	780	785	790	795	800	805	810	815	820	825	830	835	840	845	850	855	860	865	870	875	880	885	890	895	900	905	910	915	920	925	930	935	940	945	950	955	960	965	970	975	980	985	990	995	1000	1005	1010	1015	1020	1025	1030	1035	1040	1045	1050	1055	1060	1065	1070	1075	1080	1085	1090	1095	1100	1105	1110	1115	1120	1125	1130	1135	1140	1145	1150	1155	1160	1165	1170	1175	1180	1185	1190	1195	1200	1205	1210	1215	1220	1225	1230	1235	1240	1245	1250	1255	1260	1265	1270	1275	1280	1285	1290	1295	1300	1305	1310	1315	1320	1325	1330	1335	1340	1345	1350	1355	1360	1365	1370	1375	1380	1385	1390	1395	1400	1405	1410	1415	1420	1425	1430	1435	1440	1445	1450	1455	1460	1465	1470	1475	1480	1485	1490	1495	1500	1505	1510	1515	1520	1525	1530	1535	1540	1545	1550	1555	1560	1565	1570	1575	1580	1585	1590	1595	1600	1605	1610	1615	1620	1625	1630	1635	1640	1645	1650	1655	1660	1665	1670	1675	1680	1685	1690	1695	1700	1705	1710	1715	1720	1725	1730	1735	1740	1745	1750	1755	1760	1765	1770	1775	1780	1785	1790	1795	1800	1805	1810	1815	1820	1825	1830	1835	1840	1845	1850	1855	1860	1865	1870	1875	1880	1885	1890	1895	1900	1905	1910	1915	1920	1925	1930	1935	1940	1945	1950	1955	1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050	2055	2060	2065	2070	2075	2080	2085	2090	2095	2100	2105	2110	2115	2120	2125	2130	2135	2140	2145	2150	2155	2160	2165	2170	2175	2180	2185	2190	2195	2200	2205	2210	2215	2220	2225	2230	2235	2240	2245	2250	2255	2260	2265	2270	2275	2280	2285	2290	2295	2300	2305	2310	2315	2320	2325	2330	2335	2340	2345	2350	2355	2360	2365	2370	2375	2380	2385	2390	2395	2400	2405	2410	2415	2420	2425	2430	2435	2440	2445	2450	2455	2460	2465	2470	2475	2480	2485	2490	2495	2500	2505	2510	2515	2520	2525	2530	2535	2540	2545	2550	2555	2560	2565	2570	2575	2580	2585	2590	2595	2600	2605	2610	2615	2620	2625	2630	2635	2640	2645	2650	2655	2660	2665	2670	2675	2680	2685	2690	2695	2700	2705	2710	2715	2720	2725	2730	2735	2740	2745	2750	2755	2760	2765	2770	2775	2780	2785	2790	2795	2800	2805	2810	2815	2820	2825	2830	2835	2840	2845	2850	2855	2860	2865	2870	2875	2880	2885	2890	2895	2900	2905	2910	2915	2920	2925	2930	2935	2940	2945	2950	2955	2960	2965	2970	2975	2980	2985	2990	2995	3000	3005	3010	3015	3020	3025	3030	3035	3040	3045	3050	3055	3060	3065	3070	3075	3080	3085	3090	3095	3100	3105	3110	3115	3120	3125	3130	3135	3140	3145	3150	3155	3160	3165	3170	3175	3180	3185	3190	3195	3200	3205	3210	3215	3220	3225	3230	3235	3240	3245	3250	3255	3260	3265	3270	3275	3280	3285	3290	3295	3300	3305	3310	3315	3320	3325	3330	3335	3340	3345	3350	3355	3360	3365	3370	3375	3380	3385	3390	3395	3400	3405	3410	3415	3420	3425	3430	3435	3440	3445	3450	3455	3460	3465	3470	3475	3480	3485	3490	3495	3500	3505	3510	3515	3520	3525	3530	3535	3540	3545	3550	3555	3560	3565	3570	3575	3580	3585	3590	3595	3600	3605	3610	3615	3620	3625	3630	3635	3640	3645	3650	3655	3660	3665	3670	3675	3680	3685	3690	3695	3700	3705	3710	3715	3720	3725	3730	3735	3740	3745	3750	3755	3760	3765	3770	3775	3780	3785	3790	3795	3800	3805	3810	3815	3820	3825	3830	3835	3840	3845	3850	3855	3860	3865	3870	3875	3880	3885	3890	3895	3900	3905	3910	3915	3920	3925	3930	3935	3940	3945	3950	3955	3960	3965	3970	3975	3980	3985	3990	3995	4000	4005	4010	4015	4020	4025	4030	4035	4040	4045	4050	4055	4060	4065	4070	4075	4080	4085	4090	4095	4100	4105	4110	4115	4120	4125	4130	4135	4140	4145	4150	4155	4160	4165	4170	4175	4180	4185	4190	4195	4200	4205	4210	4215	4220	4225	4230	4235	4240	4245	4250	4255	4260	4265	4270	4275	4280	4285	4290	4295	4300	4305	4310	4315	4320	4325	4330	4335	4340	4345	4350	4355	4360	4365	4370	4375	4380	4385	4390	4395	4400	4405	4410	4415	4420	4425	4430	4435	4440	4445	4450	4455	4460	4465	4470	4475	4480	4485	4490	4495	4500	4505	4510	4515	4520	4525	4530	4535	4540	4545	4550	4555	4560	4565	4570	4575	4580	4585	4590	4595	4600	4605	4610	4615	4620	4625	4630	4635	4640	4645	4650	4655	4660	4665	4670	4675	4680	4685	4690	4695	4700	4705	4710	4715	4720	4725	4730	4735	4740	4745	4750	4755	4760	4765	4770	4775	4780	4785	4790	4795	4800	4805	4810	4815	4820	4825	4830	4835	4840	4845	4850	4855	4860	4865	4870	4875	4880	4885	4890	4895	4900	4905	4910	4915	4920	4925	4930	4935	4940	4945	4950	4955	4960	4965	4970	4975	4980	4985	4990	4995	5000	5005	5010	5015	5020	5025	5030	5035	5040	5045	5050	5055	5060	5065	5070	5075	5080	5085	5090	5095	5100	5105	5110	5115	5120	5125	5130	5135	5140	5145	5150	5155	5160	5165	5170	5175	5180	5185	5190	5195	5200	5205	5210	5215	5220	5225	5230	5235	5240	5245	5250	5255	5260	5265	5270	5275	5280	5285	5290	5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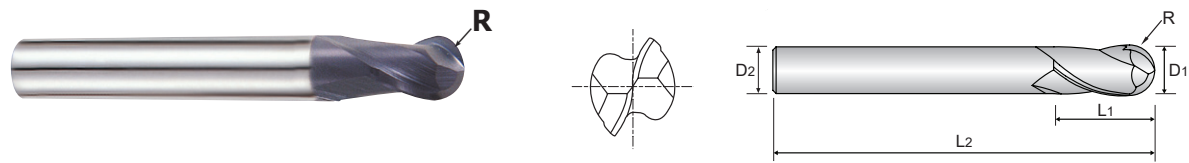


# YG X-POWER PRO END MILLS

PLAIN SHANK **GM876** SERIES

## CARBIDE, 2 FLUTE SHORT LENGTH BALL NOSE

- ▶ Economic type with short overall length
- ▶ Radius tolerance  $\pm 0.02\text{mm}$  & short length of cut



Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R( $\pm 0.02$ )	D1	D2	L1	L2
<b>GM876010</b>	R0.5	1.0	3	3	38
<b>GM876020</b>	R1.0	2.0	6	3	50
<b>GM876030</b>	R1.5	3.0	6	4	50
<b>GM876040</b>	R2.0	4.0	6	5	54
<b>GM876060</b>	R3.0	6.0	6	7	54
<b>GM876080</b>	R4.0	8.0	8	9	58
<b>GM876100</b>	R5.0	10.0	10	11	66
<b>GM876120</b>	R6.0	12.0	12	12	73
<b>GM876160</b>	R8.0	16.0	16	16	82

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0 ~ -0.03	h6

◎ : Excellent ○ : Good

ISO Material Description	P											M			K						
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel			Stainless steel			Grey cast iron	Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	10	29	32	38	15	35	15	23	10	18	26	3	25	130	21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	○	◎	◎	○	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	○

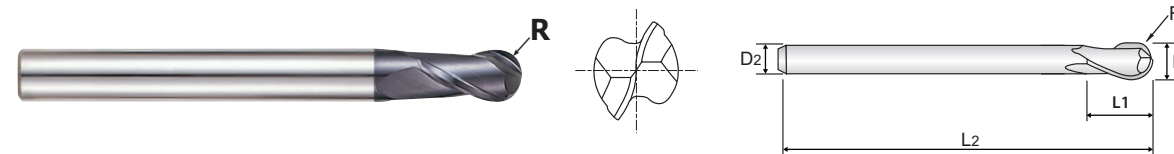
ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○

# YG X-POWER PRO END MILLS

PLAIN SHANK **GM813** SERIES

## CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials
- ▶ For copy - milling machines



Unit : mm

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R( $\pm 0.02$ )	D1	D2	L1	L2
<b>GM813010</b>	R0.5	1.0	4	2.5	50
<b>GM813020</b>	R1.0	2.0	6	5	50
<b>GM813030</b>	R1.5	3.0	6	8	60
<b>GM813040</b>	R2.0	4.0	6	8	70
<b>GM813050</b>	R2.5	5.0	6	10	80
<b>GM813060</b>	R3.0	6.0	6	12	90
<b>GM813080</b>	R4.0	8.0	8	14	100
<b>GM813100</b>	R5.0	10.0	10	18	100
<b>GM813120</b>	R6.0	12.0	12	22	110
<b>GM813160</b>	R8.0	16.0	16	30	140
<b>GM813200</b>	R10.0	20.0	20	38	160

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0 ~ -0.03	h6

◎ : Excellent ○ : Good

ISO Material Description	P											M			K						
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel			Stainless steel			Grey cast iron	Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	10	29	32	38	15	35	15	23	10	18	26	3	25	130	21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	○	◎	◎	○	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	○

ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○

HSS

HSS



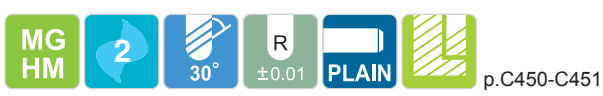
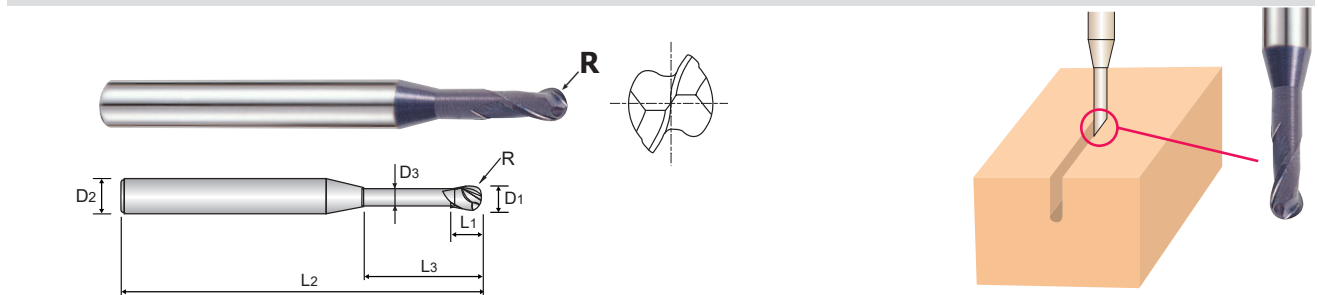
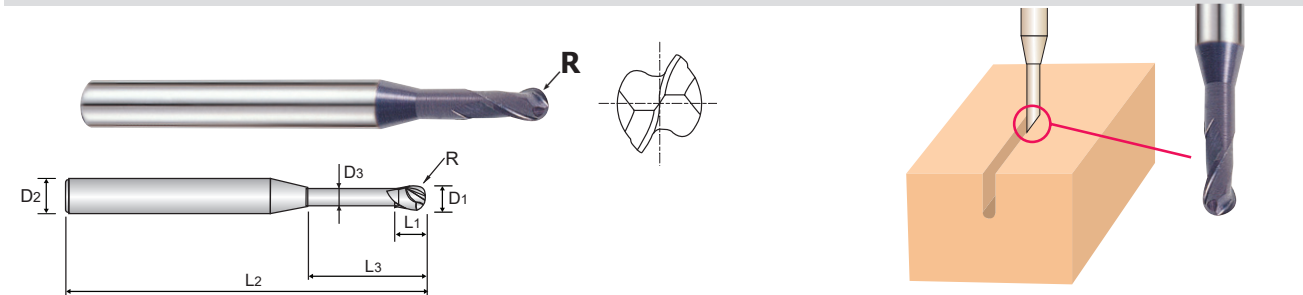
PLAIN SHANK GM886 SERIES



PLAIN SHANK GM886 SERIES

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING

CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING



Unit : mm							
EDP No.	Radius of Ball Nose R(±0.01)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
GM886005	R0.25	0.5	4	0.7	2	45	0.45
GM886962	R0.25	0.5	4	0.7	4	45	0.45
GM886957	R0.3	0.6	4	0.9	2	45	0.55
GM886915	R0.3	0.6	4	0.9	4	45	0.55
GM886916	R0.3	0.6	4	0.9	6	45	0.55
GM886919	R0.4	0.8	4	1.2	4	45	0.75
GM886008	R0.4	0.8	4	1.2	6	45	0.75
GM886921	R0.5	1.0	4	1.5	4	45	0.95
GM886923	R0.5	1.0	4	1.5	5	45	0.95
GM886010	R0.5	1.0	4	1.5	6	45	0.95
GM886902	R0.5	1.0	4	1.5	8	45	0.95
GM886903	R0.5	1.0	4	1.5	10	45	0.95
GM886904	R0.5	1.0	4	1.5	12	45	0.95
GM886927	R0.5	1.0	4	1.5	16	50	0.95
GM886012	R0.6	1.2	4	1.8	8	45	1.15
GM886930	R0.75	1.5	4	2.3	6	45	1.45
GM886015	R0.75	1.5	4	2.3	8	45	1.45
GM886931	R0.75	1.5	4	2.3	10	45	1.45
GM886906	R0.75	1.5	4	2.3	12	45	1.45
GM886940	R1.0	2.0	4	3	6	45	1.95
GM886020	R1.0	2.0	4	3	8	45	1.95
GM886941	R1.0	2.0	4	3	10	45	1.95
GM886942	R1.0	2.0	4	3	12	50	1.95
GM886909	R1.0	2.0	4	3	16	50	1.95

Unit : mm							
EDP No.	Radius of Ball Nose R(±0.01)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
GM886910	R1.0	2.0	4	3	20	55	1.95
GM886945	R1.0	2.0	4	3	25	60	1.95
GM886967	R1.0	2.0	4	3	30	70	1.95
GM886947	R1.5	3.0	6	4.5	10	50	2.85
GM886948	R1.5	3.0	6	4.5	12	50	2.85
GM886030	R1.5	3.0	6	4.5	16	55	2.85
GM886911	R1.5	3.0	6	4.5	20	60	2.85
GM886968	R1.5	3.0	6	4.5	25	65	2.85
GM886040	R2.0	4.0	6	6	16	60	3.85
GM886912	R2.0	4.0	6	6	20	65	3.85
GM886913	R2.0	4.0	6	6	25	70	3.85
GM886971	R2.0	4.0	6	6	30	70	3.85
GM886972	R2.0	4.0	6	6	35	80	3.85
GM886050	R2.5	5.0	6	7.5	16	60	4.85
GM886060	R3.0	6.0	6	9	20	80	5.85
GM886954	R3.0	6.0	6	9	30	90	5.85

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0 ~ -0.02	h6

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0 ~ -0.02	h6

▶ NEXT PAGE

◎ : Excellent ○ : Good

ISO Material Description	P											M			K						
	Non-alloy steel				Low alloy steel				High alloyed steel, and tool steel			Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	32	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	○	◎	◎	○	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	○

ISO Material Description	N					S							H								
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials			Heat Resistant Super Alloys				Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	◎	○

◎ : Excellent ○ : Good

ISO Material Description	P											M			K						
	Non-alloy steel				Low alloy steel				High alloyed steel, and tool steel			Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	32	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	○	◎	◎	○	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	○

ISO Material Description	N					S							H								
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials			Heat Resistant Super Alloys				Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	◎	○

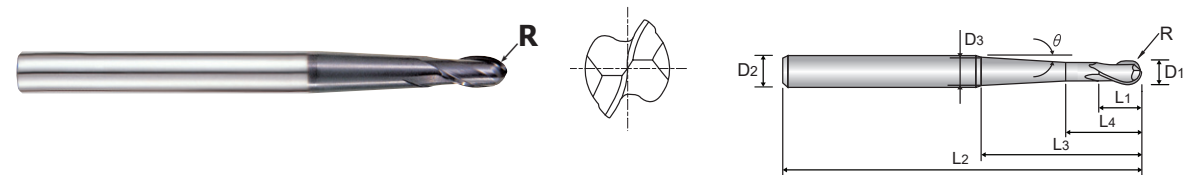


# YG X-POWER PRO END MILLS

PLAIN SHANK **GM902** SERIES

## CARBIDE, 2 FLUTE BALL NOSE with TAPER NECK

► High efficiency milling in deep slotting due to long projection of the end mills



EDP No.	Radius of Ball Nose R(±0.01)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Under Neck Parallel Length L4	Length Below Shank L3	Overall Length L2	Neck Diameter D3	Taper Neck Angle
									θ
GM902010	R0.5	1.0	6	2	4	23	60	2	1° 30'
GM902901	R0.5	1.0	6	2	4	23	60	4.3	5°
GM902902	R0.5	1.0	6	2	4	42	80	5	3°
GM902020	R1.0	2.0	6	4	6	23	60	2.9	1° 30'
GM902903	R1.0	2.0	6	4	6	23	60	5	5°
GM902904	R1.0	2.0	6	4	6	41	80	5.7	3°
GM902030	R1.5	3.0	6	6	8	32	70	5.6	3°
GM902905	R1.5	3.0	6	6	8	52	90	5.3	1° 30'
GM902040	R2.0	4.0	6	8	10	28	70	5.9	3°
GM902906	R2.0	4.0	6	8	10	49	90	6	1° 30'
GM902060	R3.0	6.0	8	12	15	34	90	8	3°
GM902908	R3.0	6.0	8	12	15	53	110	8	1° 30'
GM902080	R4.0	8.0	10	14	17	36	100	10	3°
GM902909	R4.0	8.0	10	14	17	55	120	10	1° 30'

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0 ~ -0.03	h6

◎ : Excellent ○ : Good

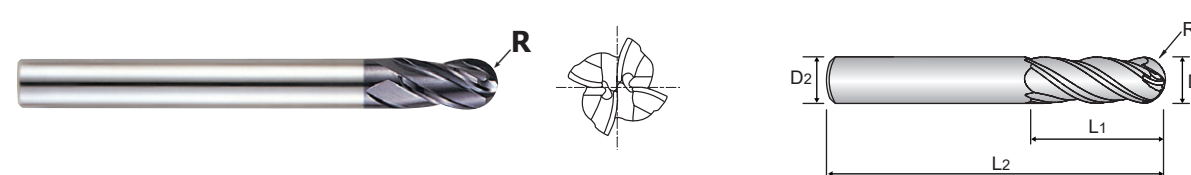
ISO Material Description	P											M			K																										
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel			Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron																			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	13	25	28	32	35	38	40	42	45	48	50	52	55	58	60	62	65	68	70	72	75	78	80	82	85	88	90	92	95	98	100	105	110	115	120	125	130	135	140		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	130	150	170	190	210	230	250	270	290	310	330	350	370	390	410	430	450	470	490		
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

# YG X-POWER PRO END MILLS

PLAIN SHANK **GM815** SERIES

## CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE

► Designed to machine tool steels, alloy steels, mold steels and other high hardened materials  
 ► For copy - milling machines  
 ► 4 Flute design - higher feed than GM813 series



EDP No.	Radius of Ball Nose R(±0.02)	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length
					L2
GM815020	R1.0	2.0	6	5	50
GM815030	R1.5	3.0	6	8	60
GM815040	R2.0	4.0	6	8	70
GM815050	R2.5	5.0	6	10	80
GM815060	R3.0	6.0	6	12	90
GM815080	R4.0	8.0	8	14	100
GM815100	R5.0	10.0	10	18	100
GM815120	R6.0	12.0	12	22	110
GM815160	R8.0	16.0	16	30	140

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0 ~ -0.03	h6

◎ : Excellent ○ : Good

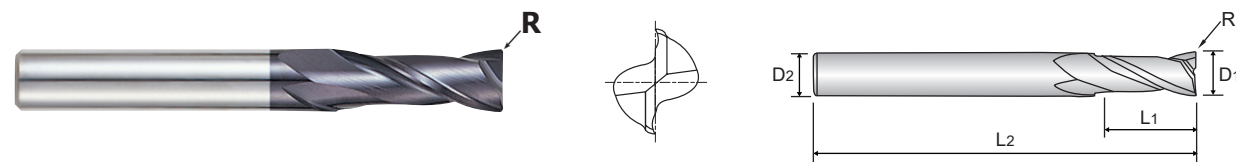
ISO Material Description	P											M			K																										
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel			Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron																			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	13	25	28	32	35	38	40	42	45	48	50	52	55	58	60	62	65	68	70	72	75	78	80	82	85	88	90	92	95	98	100	105	110	115	120	125	130	135	140		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	130	150	170	190	210	230	250	270	290	310	330	350	370	390	410	430	450	470	490		
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

**YG X-POWER PRO END MILLS**

PLAIN SHANK **GM818** SERIES

**CARBIDE, 2 FLUTE LONG LENGTH CORNER RADIUS**

- ▶ Designed to machine tool steels, alloy steels, mold steels and other hardened materials
- ▶ Superior workpiece finishes
- ▶ Increased feed rates



p.C456

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GM818911	R0.5	4.0	6	15	50
GM818060	R0.5	6.0	6	20	60
GM818901	R1.0	6.0	6	20	60
GM818080	R0.5	8.0	8	25	70
GM818902	R1.0	8.0	8	25	70
GM818100	R0.5	10.0	10	30	90
GM818905	R1.0	10.0	10	30	90
GM818908	R1.0	12.0	12	30	90

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0 ~ -0.03	h6

◎ : Excellent ○ : Good

ISO Material Description	P										M			K							
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel			Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	180	26	3	25	130	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	○	◎	◎	○	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	

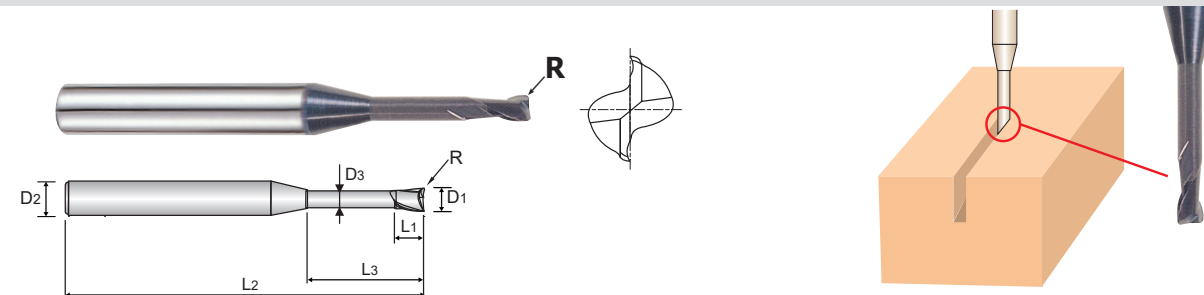
  

ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	◎	○

**YG X-POWER PRO END MILLS**

PLAIN SHANK **GM8A1** SERIES

**CARBIDE, 2 FLUTE CORNER RADIUS for RIB PROCESSING**



p.C457-C458

Unit : mm

EDP No.	Corner Radius R	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
GM8A1010	R0.1	1.0	4	1.5	6	45	0.95
GM8A1920	R0.1	1.0	4	1.5	8	45	0.95
GM8A1921	R0.1	1.0	4	1.5	10	45	0.95
GM8A1012	R0.2	1.2	4	1.8	6	45	1.15
GM8A1015	R0.2	1.5	4	2.3	6	45	1.45
GM8A1937	R0.2	1.5	4	2.3	8	45	1.45
GM8A1938	R0.2	1.5	4	2.3	10	45	1.45
GM8A1939	R0.2	1.5	4	2.3	12	45	1.45
GM8A1941	R0.2	1.5	4	2.3	16	50	1.45
GM8A1018	R0.2	1.8	4	2.7	6	45	1.75
GM8A1960	R0.2	2.0	4	3	6	45	1.95
GM8A1020	R0.2	2.0	4	3	8	45	1.95
GM8A1962	R0.2	2.0	4	3	12	45	1.95
GM8A1961	R0.2	2.0	4	3	10	45	1.95
GM8A1964	R0.2	2.0	4	3	16	50	1.95
GM8A1966	R0.2	2.0	4	3	20	55	1.95
GM8A1967	R0.2	2.0	4	3	25	60	1.95
GM8A1969	R0.2	2.5	4	3.7	12	45	2.40
GM8A1981	R0.3	3.0	6	4.5	16	55	2.85
GM8A1983	R0.3	3.0	6	4.5	20	60	2.85
GM8A1984	R0.3	3.0	6	4.5	25	65	2.85
GM8A1976	R0.3	3.0	6	4.5	30	70	2.85
GM8A1985	R0.3	3.0	6	4.5	40	90	2.85
GM8A1040	R0.3	4.0	6	6	12	50	3.85
GM8A1986	R0.3	4.0	6	6	16	60	3.85
GM8A1987	R0.3	4.0	6	6	20	60	3.85
GM8A1060	R0.5	6.0	6	9	20	80	5.85
GM8A1802	R0.5	6.0	6	9	40	100	5.85

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0 ~ -0.03	h6

◎ : Excellent ○ : Good

ISO Material Description	P										M			K							
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel			Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	180	26	3	25	130	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	○	◎	◎	○	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	

ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	◎	○

HSS

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# YG X-POWER PRO END MILLS

# YG X-POWER PRO END MILLS

PLAIN SHANK **GM839** SERIES

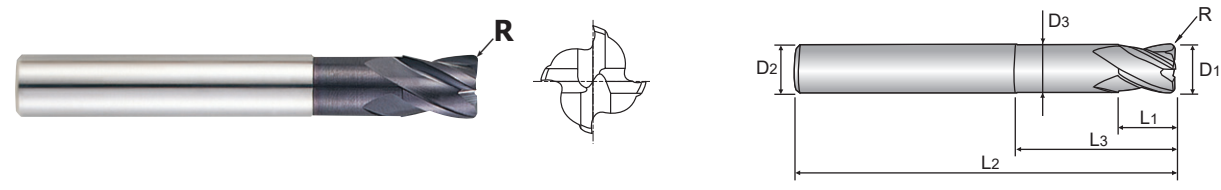
PLAIN SHANK **GM819** SERIES

## CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS

## CARBIDE, 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

- ▶ Designed to machine tool steels, alloy steels, mold steels and other hardened materials
- ▶ 4 flute allows for better workpiece finishes
- ▶ Increased production



MG HM 4 30° PLAIN p.C459

MG HM 4 30° PLAIN p.C460

Unit : mm

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>GM839020</b>	R0.2	2.0	6	2.5	5	50	1.9
<b>GM839030</b>	R0.3	3.0	6	4	7	50	2.8
<b>GM839040</b>	R0.4	4.0	6	5	9	50	3.7
<b>GM839060</b>	R0.6	6.0	6	7	14	55	5.6
<b>GM839080</b>	R0.8	8.0	8	10	18	60	7.4
<b>GM839100</b>	R1.0	10.0	10	12	25	70	9.4
<b>GM839120</b>	R1.2	12.0	12	15	30	80	11.4

Unit : mm

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D1	D2	L1	L2
<b>GM819030</b>	R0.3	3.0	6	12	50
<b>GM819040</b>	R0.3	4.0	6	15	50
<b>GM819911</b>	R0.5	4.0	6	15	50
<b>GM819912</b>	R0.5	5.0	6	20	60
<b>GM819060</b>	R0.5	6.0	6	20	60
<b>GM819901</b>	R1.0	6.0	6	20	60
<b>GM819080</b>	R0.5	8.0	8	25	70
<b>GM819902</b>	R1.0	8.0	8	25	70
<b>GM819904</b>	R2.0	8.0	8	25	70
<b>GM819100</b>	R0.5	10.0	10	30	90
<b>GM819905</b>	R1.0	10.0	10	30	90
<b>GM819906</b>	R1.5	10.0	10	30	90
<b>GM819907</b>	R2.0	10.0	10	30	90
<b>GM819120</b>	R0.5	12.0	12	30	90
<b>GM819908</b>	R1.0	12.0	12	30	90
<b>GM819909</b>	R1.5	12.0	12	30	90
<b>GM819910</b>	R2.0	12.0	12	30	90
<b>GM819160</b>	R0.5	16.0	16	50	110
<b>GM819916</b>	R1.0	16.0	16	50	110
<b>GM819918</b>	R2.0	16.0	16	50	110
<b>GM819921</b>	R2.0	20.0	20	55	110

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0 ~ -0.03	h6

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0 ~ -0.03	h6

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	32	10	29	32	38	15	35	15	23	10	26	3	25	25	130	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	○	◎	◎	○	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	

ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	32	10	29	32	38	15	35	15	23	10	26	3	25	25	130	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	○	◎	◎	○	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	

ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	○	○

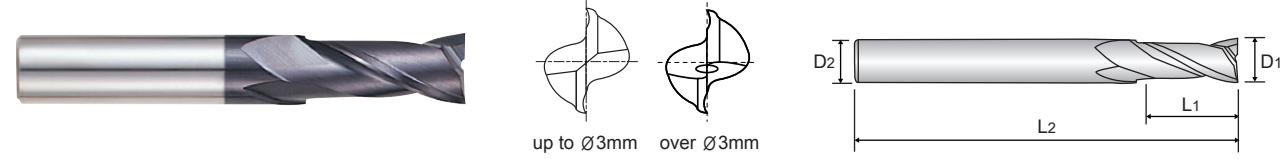


# YG X-POWER PRO END MILLS

PLAIN SHANK **GM810** SERIES

## CARBIDE, 2 FLUTE SHORT LENGTH

- ▶ High precision milling in medical, optical, electronics and aerospace industries
- ▶ Excellent performance on hardened steel



MG HM 2 30° PLAIN p.C461

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2
GM810004	0.4	3	0.8	40
GM810005	0.5	3	1	40
GM810006	0.6	3	1.2	40
GM810007	0.7	3	1.4	40
GM810008	0.8	3	1.6	40
GM810009	0.9	3	2	40
GM810010	1.0	4	2.5	40
GM810901	1.0	6	2.5	40
GM810012	1.2	4	4	40
GM810014	1.4	4	4	40
GM810015	1.5	4	4	40
GM810902	1.5	6	4	40
GM810020	2.0	4	6	40
GM810903	2.0	6	6	40
GM810025	2.5	4	8	40
GM810030	3.0	6	8	45
GM810035	3.5	6	10	45
GM810040	4.0	6	11	45
GM810050	5.0	6	13	50
GM810060	6.0	6	13	50
GM810070	7.0	8	16	60
GM810080	8.0	8	19	60
GM810090	9.0	10	19	70
GM810100	10.0	10	22	70
GM810110	11.0	12	22	75
GM810120	12.0	12	26	75
GM810140	14.0	14	26	85
GM810160	16.0	16	32	100
GM810180	18.0	18	32	100
GM810200	20.0	20	38	105

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0 ~ -0.03	h6

◎ : Excellent ○ : Good

ISO Material Description	P										M			K											
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel			Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron				
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
HRc	125	13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25	130	21	130	21	130	21	130
HB	125	190	250	270	300	180	275	300	350	200	200	240	180	180	160	260	160	250	130	230	130	230	130	230	130
Recommend	○	○	○	◎	◎	○	◎	◎	◎	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

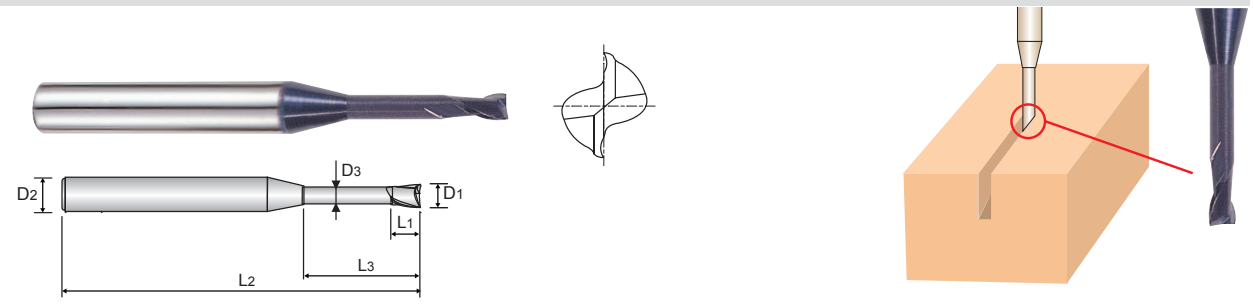
  

ISO Material Description	N										S						H							
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	400	550	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

# YG X-POWER PRO END MILLS

PLAIN SHANK **GM883** SERIES

## CARBIDE, 2 FLUTE for RIB PROCESSING



MG HM 2 30° PLAIN p.C462-C463

EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3
GM883004	0.4	4	0.6	2	45	0.37
GM883005	0.5	4	0.7	2	45	0.45
GM883988	0.5	4	0.7	4	45	0.45
GM883820	0.7	4	1	3	45	0.65
GM883008	0.8	4	1.2	4	45	0.75
GM883908	0.8	4	1.2	6	45	0.75
GM883996	1.0	4	1.5	4	45	0.95
GM883010	1.0	4	1.5	6	45	0.95
GM883912	1.0	4	1.5	8	45	0.95
GM883913	1.0	4	1.5	10	45	0.95
GM883914	1.0	4	1.5	12	45	0.95
GM883997	1.0	4	1.5	16	50	0.95
GM883998	1.0	4	1.5	20	55	0.95
GM883012	1.2	4	1.8	6	45	1.15
GM883015	1.5	4	2.3	6	45	1.45
GM883923	1.5	4	2.3	8	45	1.45
GM883924	1.5	4	2.3	10	45	1.45
GM883925	1.5	4	2.3	12	45	1.45
GM883927	1.5	4	2.3	16	50	1.45
GM883810	1.5	4	2.3	20	55	1.45
GM883946	1.8	4	2.7	12	45	1.75
GM883958	2.0	4	3	6	45	1.95
GM883020	2.0	4	3	8	45	1.95
GM883959	2.0	4	3	10	45	1.95
GM883960	2.0	4	3	12	45	1.95
GM883961	2.0	4	3	14	50	1.95

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0 ~ -0.015	h6

◎ : Excellent ○ : Good

ISO Material Description	P										M			K											
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel			Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron				
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
HRc	125	13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25	130	21	130	21	130	21	130
HB	125	190	250	270	300	180	275	300	350	200	200	240	180	180	160	260	160	250	130	230	130	230	130	230	130
Recommend	○	○	○	◎	◎	○	◎	◎	◎	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

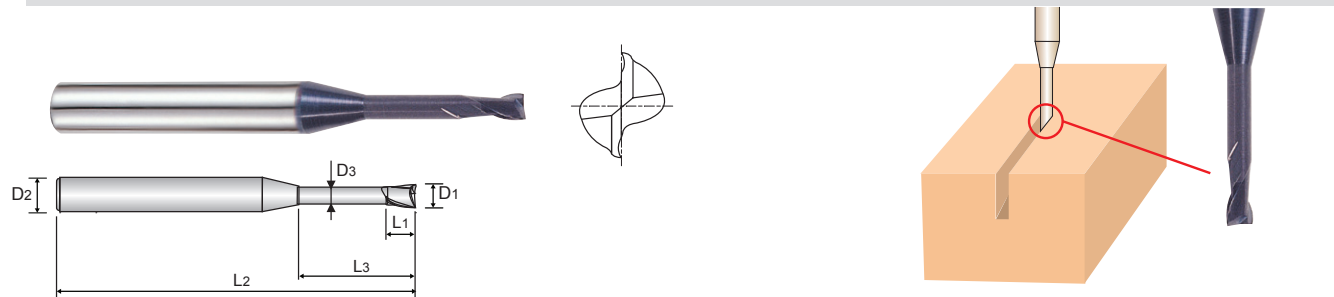
  

ISO Material Description	N										S						H							
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	400	550	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

**YG X-POWER PRO END MILLS**

PLAIN SHANK **GM883** SERIES

**CARBIDE, 2 FLUTE for RIB PROCESSING**



Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	D1	D2	L1	L3	L2	D3
GM883962	2.0	4	3	16	50	1.95
GM883964	2.0	4	3	20	55	1.95
GM883966	2.0	4	3	25	60	1.95
GM883814	2.0	4	3	30	70	1.95
GM883970	2.5	4	3.7	16	55	2.40
GM883975	3.0	6	4.5	10	45	2.85
GM883976	3.0	6	4.5	12	45	2.85
GM883978	3.0	6	4.5	16	55	2.85
GM883979	3.0	6	4.5	18	55	2.85
GM883980	3.0	6	4.5	20	60	2.85
GM883981	3.0	6	4.5	25	65	2.85
GM883832	3.0	6	4.5	30	70	2.85
GM883983	3.0	6	4.5	40	90	2.85
GM883801	4.0	6	6	16	60	3.85
GM883802	4.0	6	6	20	60	3.85
GM883803	4.0	6	6	25	70	3.85
GM883834	4.0	6	6	30	70	3.85
GM883836	4.0	6	6	40	90	3.85
GM883838	4.0	6	6	50	100	3.85
GM883807	6.0	6	9	30	90	5.85
GM883809	6.0	6	9	50	110	5.85

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0 ~ -0.015	h6

◎ : Excellent ○ : Good

ISO Material Description	P										M			K							
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel			Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25			
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	○	◎	◎	○	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	

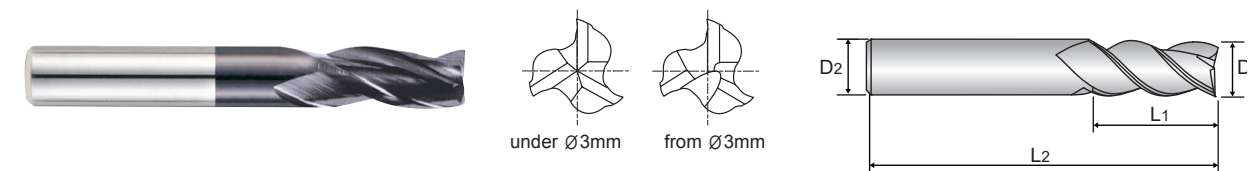
ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	◎	○

**YG X-POWER PRO END MILLS**

PLAIN SHANK **GM895** SERIES

**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



Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
GM895010	1.0	3	2.5	38
GM895015	1.5	4	5	50
GM895025	2.5	3	7	38
GM895030	3.0	3	10	38
GM895901	3.0	6	10	50
GM895040	4.0	4	12	50
GM895903	4.0	6	12	50
GM895050	5.0	5	14	50
GM895904	5.0	6	14	57
GM895060	6.0	6	16	57
GM895080	8.0	8	20	63
GM895100	10.0	10	22	72
GM895120	12.0	12	25	73
GM895160	16.0	16	32	82

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0 ~ -0.03	h6

◎ : Excellent ○ : Good

ISO Material Description	P										M			K							
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel			Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25			
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	○	◎	◎	○	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	

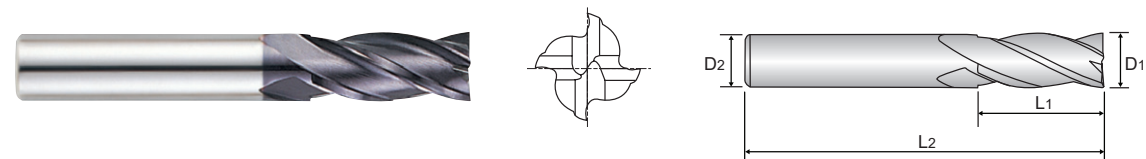
ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	◎	○

# YG X-POWER PRO END MILLS

PLAIN SHANK **GM811** SERIES

## 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



EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
GM811020	2.0	4	6	40
GM811901	2.0	6	6	40
GM811025	2.5	4	8	40
GM811902	2.5	6	8	40
GM811030	3.0	6	8	45
GM811035	3.5	6	10	45
GM811040	4.0	6	11	45
GM811045	4.5	6	11	45
GM811050	5.0	6	13	50
GM811060	6.0	6	13	50
GM811080	8.0	8	19	60
GM811100	10.0	10	22	70
GM811120	12.0	12	26	75
GM811140	14.0	14	26	85
GM811160	16.0	16	32	100
GM811200	20.0	20	38	105
GM811250	25.0	25	45	120

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0 ~ -0.03	h6

◎ : Excellent ○ : Good

ISO Material Description	P										M			K							
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel			Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	29	32	38	35	35	15	23	10	10	26	3	25	130	21		
HB	125	190	250	270	300	180	275	300	350	200	200	240	180	180	260	160	250	130	230		
Recommend	○	○	○	◎	◎	○	◎	◎	◎	○	○	○	○	○	○	○	○	○	○		

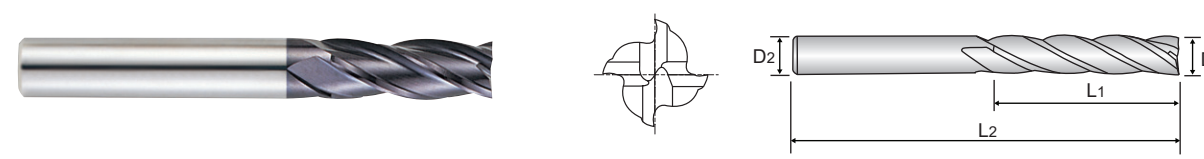
ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

# YG X-POWER PRO END MILLS

PLAIN SHANK **GM817** SERIES

## CARBIDE, 4 FLUTE LONG LENGTH

- ▶ Designed to machine tool steels, alloy steels, mold steels and other hardened materials
- ▶ 4 flute allows for better workpiece finishes
- ▶ Increased production



EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
GM817020	2.0	4	8	40
GM817030	3.0	6	12	50
GM817040	4.0	6	15	50
GM817050	5.0	6	20	60
GM817060	6.0	6	20	60
GM817080	8.0	8	25	70
GM817100	10.0	10	30	90
GM817120	12.0	12	30	90
GM817140	14.0	16	40	110
GM817160	16.0	16	50	110
GM817200	20.0	20	55	110

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0 ~ -0.03	h6

◎ : Excellent ○ : Good

ISO Material Description	P										M			K							
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel			Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	29	32	38	35	35	15	23	10	10	26	3	25	130	21		
HB	125	190	250	270	300	180	275	300	350	200	200	240	180	180	260	160	250	130	230		
Recommend	○	○	○	◎	◎	○	◎	◎	◎	○	○	○	○	○	○	○	○	○	○		

ISO Material Description	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

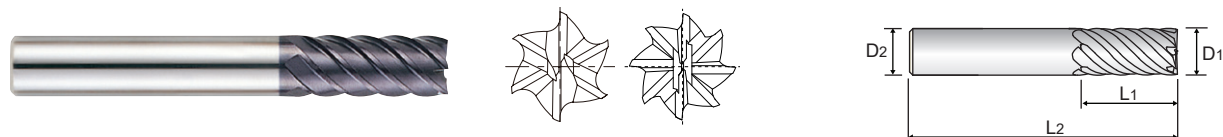


# YG X-POWER PRO END MILLS

PLAIN SHANK **GM812** SERIES

## CARBIDE, 6&8 FLUTE 45° HELIX 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

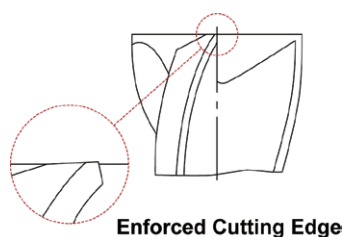


p.C468

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
	D1	D2	L1	L2	
<b>GM812060</b>	6.0	6	13	57	6
<b>GM812080</b>	8.0	8	19	63	6
<b>GM812100</b>	10.0	10	22	72	6
<b>GM812120</b>	12.0	12	26	83	6
<b>GM812160</b>	16.0	16	32	92	6
<b>GM812200</b>	20.0	20	38	104	8

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0 ~ -0.03	h6



Enforced Cutting Edge

◎ : Excellent ○ : Good

ISO Material Description	P											M			K					
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel			Stainless steel			Grey cast iron	Nodular cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	130	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	○	◎	◎	○	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○

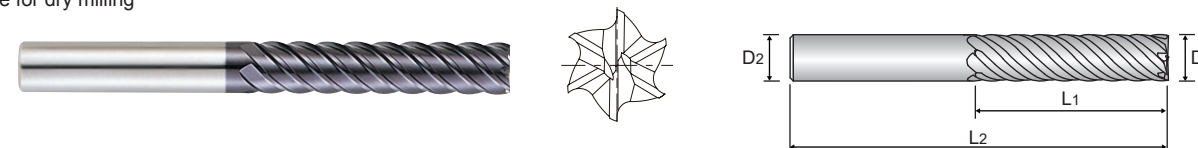
ISO Material Description	N				S										H						
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials			Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	◎	○

# YG X-POWER PRO END MILLS

PLAIN SHANK **GM834** SERIES

## CARBIDE, 6 FLUTE 45° HELIX 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

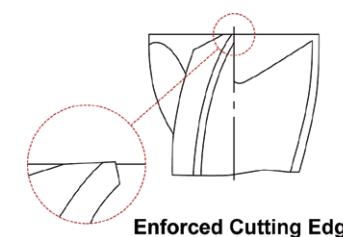


p.C469

Unit : mm

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
<b>GM834060</b>	6.0	6	26	70
<b>GM834080</b>	8.0	8	36	90
<b>GM834100</b>	10.0	10	46	100
<b>GM834120</b>	12.0	12	56	110
<b>GM834160</b>	16.0	16	66	130
<b>GM834200</b>	20.0	20	76	140
<b>GM834250</b>	25.0	25	92	180

Mill Dia. Tolerance(mm)	Shank Dia. Tolerance
0 ~ -0.03	h6



Enforced Cutting Edge

◎ : Excellent ○ : Good

ISO Material Description	P											M			K					
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel			Stainless steel			Grey cast iron	Nodular cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	130	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	○	◎	◎	○	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○

ISO Material Description	N				S										H						
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials			Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																		○	◎	◎	○

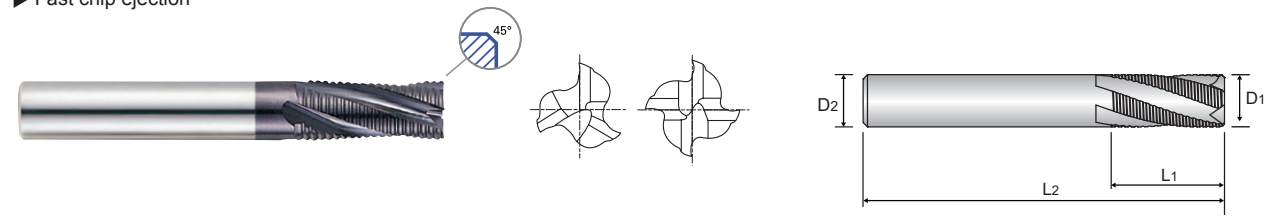
HSS

# YG X-POWER PRO END MILLS

PLAIN SHANK **GM814** SERIES

## CARBIDE, MULTI FLUTE 20° HELIX LONG LENGTH ROUGHING - FINE

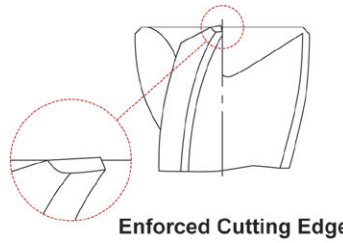
- Designed to machine tool steels, alloy steels, mold steels and other hardened materials
- High velocity milling of hardened steels
- For dry and wet milling
- Fast chip ejection



EDP No.	Mill Diameter D1	Shank Diameter D2	Length of Cut L1	Overall Length L2	No. of Flute	Chamfer
<b>GM814060</b>	6.0	6	16	57	3	0.38
<b>GM814080</b>	8.0	8	16	63	3	0.38
<b>GM814100</b>	10.0	10	22	72	4	0.6
<b>GM814120</b>	12.0	12	26	83	4	0.6
<b>GM814160</b>	16.0	16	32	92	4	0.6
<b>GM814200</b>	20.0	20	38	104	4	0.6

### Tolerances according to DIN 7160 & 7161

	Tolerance range in $\mu m$				
	Nominal-Diameter in $\mu m$				
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
h10	0 - 40	0 - 48	0 - 58	0 - 70	0 - 84
h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13



◎ : Excellent ○ : Good

ISO	P											M			K							
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel			Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
HRc	13	25	28	32	32	10	29	32	38	15	35	15	23	10	10	26	3	25				
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230		
Recommend	○	○	○	◎	◎	○	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	○	

ISO	N										S							H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34		55	60	42	55		
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

# YG X-POWER PRO END MILLS

## RECOMMENDED CUTTING CONDITIONS

### GM153 SERIES 4FLUTE SQUARE - SIDE CUTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)												
						1/16	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1			
P	1-4	Non-alloy steel	0.05D	1.0D	SFM(Vc)	210	320	340	400	380	350	395	395	365	395			
					IPT(fz)	.0002	.0004	.0009	.0012	.0017	.0019	.0019	.0018	.0019	.0018			
					RPM	12840	9780	6930	6110	4650	3570	3020	2410	1860	1510			
	5	Non-alloy steel	0.05D	1.0D	SFM(Vc)	135	200	205	240	225	215	240	245	230	240			
					IPT(fz)	.0002	.0004	.0009	.0012	.0015	.0015	.0015	.0015	.0015	.0015			
					RPM	8250	6110	4180	3670	2750	2190	1830	1500	1170	920			
	6-7	Low alloy steel	0.05D	1.0D	SFM(Vc)	210	320	340	400	380	350	395	395	365	395			
					IPT(fz)	.0002	.0004	.0009	.0012	.0017	.0019	.0019	.0018	.0019	.0018			
					RPM	12840	9780	6930	6110	4650	3570	3020	2410	1860	1510			
	8-9	Low alloy steel	0.05D	1.0D	SFM(Vc)	135	200	205	240	225	215	240	245	230	240			
					IPT(fz)	.0002	.0004	.0009	.0012	.0015	.0015	.0015	.0015	.0015	.0015			
					RPM	8250	6110	4180	3670	2750	2190	1830	1500	1170	920			
10	High alloyed steel, and tool steel	0.05D	1.0D	SFM(Vc)	210	320	340	400	380	350	395	395	365	395				
				IPT(fz)	.0002	.0004	.0009	.0012	.0017	.0019	.0019	.0018	.0019	.0018				
				RPM	12840	9780	6930	6110	4650	3570	3020	2410	1860	1510				
11.1-11.2	High alloyed steel, and tool steel	0.05D	1.0D	SFM(Vc)	135	200	205	240	225	215	240	245	230	240				
				IPT(fz)	.0002	.0004	.0009	.0012	.0015	.0015	.0015	.0015	.0015	.0015				
				RPM	8250	6110	4180	3670	2750	2190	1830	1500	1170	920				
M	12-14.2	Stainless steel	0.05D	1.0D	SFM(Vc)	115	165	170	205	190	180	195	190	180	195			
					IPT(fz)	.0002	.0004	.0009	.0011	.0016	.0018	.0018	.0019	.0018	.0017			
					RPM	7030	5040	3460	3130	2320	1830	1490	1160	920	750			
H	38.1-38.2	Hardened steel	0.05D	1.0D	SFM(Vc)	90	120	125	145	150	145	170	160	145	155			
					IPT(fz)	.0001	.0002	.0003	.0004	.0006	.0007	.0007	.0007	.0006	.0005			
					RPM	5500	3670	2550	2220	1830	1480	1300	980	740	590			
40	Chilled Cast Iron	0.05D	1.0D	SFM(Vc)	135	200	205	240	225	215	240	245	230	240				
				IPT(fz)	.0002	.0004	.0009	.0012	.0015	.0015	.0015	.0015	.0015	.0015				
				RPM	8250	6110	4180	3670	2750	2190	1830	1500	1170	920				
41	Hardened Cast Iron	0.05D	1.0D	SFM(Vc)	90	120	125	145	150	145	170	160	145	155				
				IPT(fz)	.0001	.0002	.0003	.0004	.0006	.0007	.0007	.0007	.0006	.0005				
				RPM	5500	3670	2550	2220	1830	1480	1300	980	740	590				

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)

HSS

CBN END MILLS

i-Xmill END MILLS

i-SMART MODULAR END MILLS

X5070 END MILLS

4G MILL END MILLS

X-POWER PRO END MILLS

TiTaNox-POWER END MILLS

JET-POWER END MILLS

V7 PLUS A END MILLS

V7 MILL INOX

ALU-POWER HPC END MILLS

ALU-POWER END MILLS

D-POWER GRAPHITE END MILLS

STANDARD CARBIDE

ONLY ONE COATED PM60 END MILLS

SINE-POWER

TANK-POWER END MILLS

STANDARD COBALT & HSS

TECHNICAL DATA

HSS



RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

HSS

**GM207 SERIES** 4FLUTE SQUARE - **SIDE CUTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)									
						1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1	
P	1-4	Non-alloy steel	0.05D	2.0D	SFM(Vc)	160	165	190	180	180	200	210	180	195	
					IPT(fz)	.0003	.0006	.0008	.0011	.0014	.0013	.0013	.0014	.0017	
					RPM	4890	3360	2900	2200	1830	1530	1280	920	750	
					IPM(FEED)	5	8	9	10	10	8	7	5	5	
					SFM(Vc)	130	130	150	140	150	170	160	145	155	
					IPT(fz)	.0003	.0006	.0009	.0011	.0013	.0013	.0014	.0013	.0016	
	5	Non-alloy steel	0.05D	2.0D	SFM(Vc)	160	165	190	180	180	200	210	180	195	
					IPT(fz)	.0003	.0006	.0008	.0011	.0014	.0013	.0013	.0014	.0017	
					RPM	4890	3360	2900	2200	1830	1530	1280	920	750	
					IPM(FEED)	5	8	9	10	10	8	7	5	5	
					SFM(Vc)	130	130	150	140	150	170	160	145	155	
					IPT(fz)	.0003	.0006	.0009	.0011	.0013	.0013	.0014	.0013	.0016	
6-7	Low alloy steel	0.05D	2.0D	SFM(Vc)	160	165	190	180	180	200	210	180	195		
				IPT(fz)	.0003	.0006	.0008	.0011	.0014	.0013	.0013	.0014	.0017		
				RPM	4890	3360	2900	2200	1830	1530	1280	920	750		
				IPM(FEED)	5	8	9	10	10	8	7	5	5		
				SFM(Vc)	130	130	150	140	150	170	160	145	155		
				IPT(fz)	.0003	.0006	.0009	.0011	.0013	.0013	.0014	.0013	.0016		
8-9	Low alloy steel	0.05D	2.0D	SFM(Vc)	160	165	190	180	180	200	210	180	195		
				IPT(fz)	.0003	.0006	.0008	.0011	.0014	.0013	.0013	.0014	.0017		
				RPM	4890	3360	2900	2200	1830	1530	1280	920	750		
				IPM(FEED)	5	8	9	10	10	8	7	5	5		
				SFM(Vc)	130	130	150	140	150	170	160	145	155		
				IPT(fz)	.0003	.0006	.0009	.0011	.0013	.0013	.0014	.0013	.0016		
10	High alloyed steel, and tool steel	0.05D	2.0D	SFM(Vc)	160	165	190	180	180	200	210	180	195		
				IPT(fz)	.0003	.0006	.0008	.0011	.0014	.0013	.0013	.0014	.0017		
				RPM	4890	3360	2900	2200	1830	1530	1280	920	750		
				IPM(FEED)	5	8	9	10	10	8	7	5	5		
				SFM(Vc)	130	130	150	140	150	170	160	145	155		
				IPT(fz)	.0003	.0006	.0009	.0011	.0013	.0013	.0014	.0013	.0016		
11.1-11.2	High alloyed steel, and tool steel	0.05D	2.0D	SFM(Vc)	130	130	150	140	150	170	160	145	155		
				IPT(fz)	.0003	.0006	.0009	.0011	.0013	.0013	.0014	.0013	.0016		
				RPM	3970	2650	2290	1710	1530	1300	980	740	590		
				IPM(FEED)	4	6	8	8	8	7	5	4	4		
				SFM(Vc)	80	85	100	95	90	100	100	90	95		
				IPT(fz)	.0002	.0004	.0006	.0008	.0011	.0010	.0011	.0011	.0014		
H	38.1-38.2	Hardened steel	0.02D	2.0D	SFM(Vc)	2450	1730	1530	1160	920	760	610	460	360	
					IPT(fz)	.0002	.0004	.0006	.0008	.0011	.0010	.0011	.0011	.0014	
					RPM	2	3	4	4	4	3	3	2	2	
					IPM(FEED)	2	3	4	4	4	3	3	2	2	
					SFM(Vc)	130	130	150	140	150	170	160	145	155	
					IPT(fz)	.0003	.0006	.0009	.0011	.0013	.0013	.0014	.0013	.0016	
	40	Chilled Cast Iron	0.05D	2.0D	SFM(Vc)	3970	2650	2290	1710	1530	1300	980	740	590	
					IPT(fz)	.0003	.0006	.0009	.0011	.0013	.0013	.0014	.0013	.0016	
					RPM	4	6	8	8	8	7	5	4	4	
					IPM(FEED)	4	6	8	8	8	7	5	4	4	
					SFM(Vc)	80	85	100	95	90	100	100	90	95	
					IPT(fz)	.0002	.0004	.0006	.0008	.0011	.0010	.0011	.0011	.0014	
41	Hardened Cast Iron	0.02D	2.0D	SFM(Vc)	2450	1730	1530	1160	920	760	610	460	360		
				IPT(fz)	.0002	.0004	.0006	.0008	.0011	.0010	.0011	.0011	.0014		
				RPM	2	3	4	4	4	3	3	2	2		
				IPM(FEED)	2	3	4	4	4	3	3	2	2		
				SFM(Vc)	100	95	100	95	90	100	100	90	95		
				IPT(fz)	.0006	.0008	.0010	.0010	.0010	.0011	.0011	.0010	.0010		

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)

**GM639, GM649, GM212 SERIES** 4FLUTE CORNER RADIUS - **SIDE CUTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)			
						1/4	5/16	3/8	1/2
P	1-4	Non-alloy steel	0.05D	2.5D	SFM(Vc)	190	180	180	200
					IPT(fz)	.0008	.0011	.0013	.0013
					RPM	2900	2200	1830	1530
					IPM(FEED)	9	10	10	8
					SFM(Vc)	150	140	150	170
					IPT(fz)	.0009	.0011	.0013	.0013
	5	Non-alloy steel	0.05D	2.5D	SFM(Vc)	190	180	180	200
					IPT(fz)	.0008	.0011	.0013	.0013
					RPM	2900	2200	1830	1530
					IPM(FEED)	9	10	10	8
					SFM(Vc)	150	140	150	170
					IPT(fz)	.0009	.0011	.0013	.0013
6-7	Low alloy steel	0.05D	2.5D	SFM(Vc)	190	180	180	200	
				IPT(fz)	.0008	.0011	.0013	.0013	
				RPM	2900	2200	1830	1530	
				IPM(FEED)	9	10	10	8	
				SFM(Vc)	150	140	150	170	
				IPT(fz)	.0009	.0011	.0013	.0013	
8-9	Low alloy steel	0.05D	2.5D	SFM(Vc)	190	180	180	200	
				IPT(fz)	.0008	.0011	.0013	.0013	
				RPM	2900	2200	1830	1530	
				IPM(FEED)	9	10	10	8	
				SFM(Vc)	150	140	150	170	
				IPT(fz)	.0009	.0011	.0013	.0013	
10	High alloyed steel, and tool steel	0.05D	2.5D	SFM(Vc)	190	180	180	200	
				IPT(fz)	.0008	.0011	.0013	.0013	
				RPM	2900	2200	1830	1530	
				IPM(FEED)	9	10	10	8	
				SFM(Vc)	150	140	150	170	
				IPT(fz)	.0009	.0011	.0013	.0013	
11.1-11.2	High alloyed steel, and tool steel	0.05D	2.5D	SFM(Vc)	150	140	150	170	
				IPT(fz)	.0009	.0011	.0013	.0013	
				RPM	2290	1710	1530	1300	
				IPM(FEED)	8	8	8	7	
				SFM(Vc)	150	140	150	170	
				IPT(fz)	.0009	.0011	.0013	.0013	
H	38.1	Hardened steel	0.05D	2.5D	SFM(Vc)	2290	1710	1530	1300
					IPT(fz)	.0009	.0011	.0013	.0013
					RPM	8	8	8	7
					IPM(FEED)	8	8	8	7
					SFM(Vc)	100	95	90	100
					IPT(fz)	.0006	.0008	.0010	.0010
	38.2	Hardened steel	0.02D	2.5D	SFM(Vc)	1530	1160	920	760
					IPT(fz)	.0006	.0008	.0010	.0010
					RPM	4	4	4	3
					IPM(FEED)	4	4	4	3
					SFM(Vc)	150	140	150	170
					IPT(fz)	.0009	.0011	.0013	.0013
40	Chilled Cast Iron	0.05D	2.5D	SFM(Vc)	2290	1710	1530	1300	
				IPT(fz)	.0009	.0011	.0013	.0013	
				RPM	8	8	8	7	
				IPM(FEED)	8	8	8	7	
				SFM(Vc)	100	95	90	100	
				IPT(fz)	.0006	.0008	.0010	.0010	
41	Hardened Cast Iron	0.02D	2.5D	SFM(Vc)	1530	1160	920	760	
				IPT(fz)	.0006	.0008	.0010	.0010	
				RPM	4	4	4	3	
				IPM(FEED)	4	4	4	3	
				SFM(Vc)	100	95	90	100	
				IPT(fz)	.0006	.0008	.0010	.0010	

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)

CBN END MILLS

i-Xmill END MILLS

i-SMART MODULAR END MILLS

X5070 END MILLS

4G MILL END MILLS

X-POWER PRO END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

V7 PLUS A END MILLS

V7 MILL INOX

ALU-POWER HPC END MILLS

ALU-POWER END MILLS

D-POWER GRAPHITE END MILLS

STANDARD CARBIDE

ONLY ONE COATED PM60 END MILLS

SINE-POWER

TANK-POWER END MILLS

STANDARD COBALT & HSS

TECHNICAL DATA



HSS



RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

HSS

GM103 SERIES 4FLUTE CORNER RADIUS - SIDE CUTTING

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) (3/8, 1/2, 5/8, 3/4, 7/8). Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and Hardened steel.

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

GM103 SERIES 4FLUTE CORNER RADIUS - CONTOURING

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) (3/8, 1/2, 5/8, 3/4, 7/8). Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and Hardened steel.

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)



RECOMMENDED CUTTING CONDITIONS

**GM208 SERIES** 6&8FLUTE SQUARE - SIDE CUTTING

(NORMAL SPEED)

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)						
						1/4	5/16	3/8	1/2	5/8	3/4	1
P	1-4	Non-alloy steel	0.1D	1.5D	SFM(Vc)	370	350	335	380	350	335	340
					IPT(fz)	.0024	.0031	.0039	.0039	.0040	.0030	.0025
	5	Non-alloy steel	0.05D	1.5D	SFM(Vc)	260	245	235	265	245	230	235
					IPT(fz)	.0023	.0031	.0038	.0039	.0040	.0029	.0025
	6-7	Low alloy steel	0.1D	1.5D	SFM(Vc)	370	350	335	380	350	335	340
					IPT(fz)	.0024	.0031	.0039	.0039	.0040	.0030	.0025
	8-9	Low alloy steel	0.05D	1.5D	SFM(Vc)	260	245	235	265	245	230	235
					IPT(fz)	.0023	.0031	.0038	.0039	.0040	.0029	.0025
	10	High alloyed steel, and tool steel	0.1D	1.5D	SFM(Vc)	370	350	335	380	350	335	340
					IPT(fz)	.0024	.0031	.0039	.0039	.0040	.0030	.0025
11.1-11.2	High alloyed steel, and tool steel	0.05D	1.5D	SFM(Vc)	260	245	235	265	245	230	235	
				IPT(fz)	.0023	.0031	.0038	.0039	.0040	.0029	.0025	
H	38.1	Hardened steel	0.05D	1.5D	SFM(Vc)	260	245	235	265	245	230	235
					IPT(fz)	.0023	.0031	.0038	.0039	.0040	.0029	.0025
	38.2	Hardened steel	0.05D	1.0D	SFM(Vc)	105	95	100	115	105	100	100
					IPT(fz)	.0009	.0012	.0014	.0014	.0011	.0010	.0010
40	Chilled Cast Iron	0.05D	1.5D	SFM(Vc)	260	245	235	265	245	230	235	
				IPT(fz)	.0023	.0031	.0038	.0039	.0040	.0029	.0025	
41	Hardened Cast Iron	0.05D	1.0D	SFM(Vc)	105	95	100	115	105	100	100	
				IPT(fz)	.0009	.0012	.0014	.0014	.0011	.0010	.0010	

(HIGH SPEED)

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)						
						1/4	5/16	3/8	1/2	5/8	3/4	1
P	1-11.2	Non-alloy steel Low alloy steel High alloyed steel, and tool steel	0.05D	1.5D	SFM(Vc)	1120	1050	1000	1120	1050	1010	1015
					IPT(fz)	.0024	.0032	.0039	.0040	.0039	.0030	.0025
					RPM	17110	12840	10190	8560	6420	5140	3880
					IPM(FEED)	245	245	240	203	152	122	77
H	38.1	Hardened steel	0.05D	1.5D	SFM(Vc)	1120	1050	1000	1120	1050	1010	1015
					IPT(fz)	.0024	.0032	.0039	.0040	.0039	.0030	.0025
					RPM	17110	12840	10190	8560	6420	5140	3880
					IPM(FEED)	245	245	240	203	152	122	77
H	38.2	Hardened steel	0.05D	1.0D	SFM(Vc)	560	525	505	560	525	505	505
					IPT(fz)	.0024	.0032	.0040	.0040	.0040	.0029	.0025
					RPM	8560	6420	5140	4280	3210	2570	1930
					IPM(FEED)	122	122	122	102	77	59	39
H	40	Chilled Cast Iron	0.05D	1.5D	SFM(Vc)	1120	1050	1000	1120	1050	1010	1015
					IPT(fz)	.0024	.0032	.0039	.0040	.0039	.0030	.0025
					RPM	17110	12840	10190	8560	6420	5140	3880
					IPM(FEED)	245	245	240	203	152	122	77
H	41	Hardened Cast Iron	0.05D	1.0D	SFM(Vc)	560	525	505	560	525	505	505
					IPT(fz)	.0024	.0032	.0040	.0040	.0040	.0029	.0025
					RPM	8560	6420	5140	4280	3210	2570	1930
					IPM(FEED)	122	122	122	102	77	59	39



RECOMMENDED CUTTING CONDITIONS

**GM218 SERIES** 6&8FLUTE SQUARE - SIDE CUTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)						
						1/4	5/16	3/8	1/2	5/8	3/4	1
P	1-9	Non-alloy steel Low alloy steel	0.01D	3.0D	SFM(Vc)	150	140	135	150	140	135	145
					IPT(fz)	.0014	.0018	.0021	.0024	.0026	.0020	.0022
					RPM	2290	1710	1380	1150	860	690	550
	10-11.1	High alloyed steel, and tool steel	0.05D	3.0D	SFM(Vc)	150	140	135	150	140	135	145
					IPT(fz)	.0014	.0018	.0021	.0024	.0026	.0020	.0022
					RPM	2290	1710	1380	1150	860	690	550
11.2	High alloyed steel, and tool steel	0.01D	3.0D	SFM(Vc)	110	105	100	115	105	100	105	
				IPT(fz)	.0014	.0017	.0020	.0021	.0024	.0020	.0021	
				RPM	1680	1280	1020	880	640	510	400	
H	38.1	Hardened steel	0.01D	3.0D	SFM(Vc)	110	105	100	115	105	100	105
					IPT(fz)	.0014	.0017	.0020	.0021	.0024	.0020	.0021
					RPM	1680	1280	1020	880	640	510	400
	38.2	Hardened steel	0.05D	3.0D	SFM(Vc)	95	90	85	90	90	85	90
					IPT(fz)	.0012	.0015	.0018	.0021	.0020	.0018	.0019
					RPM	1450	1100	870	690	550	430	340
40	Chilled Cast Iron	0.01D	3.0D	SFM(Vc)	110	105	100	115	105	100	105	
				IPT(fz)	.0014	.0017	.0020	.0021	.0024	.0020	.0021	
				RPM	1680	1280	1020	880	640	510	400	
41	Hardened Cast Iron	0.05D	3.0D	SFM(Vc)	95	90	85	90	90	85	90	
				IPT(fz)	.0012	.0015	.0018	.0021	.0020	.0018	.0019	
				RPM	1450	1100	870	690	550	430	340	

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)

HSS

HSS



RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

GM668 SERIES 6&8FLUTE CORNER RADIUS - SIDE CUTTING

GM209 SERIES 2FLUTE BALL NOSE - PROFILE

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) (1/4, 5/16, 3/8, 1/2, 5/8, 3/4). Rows include P (1-11.2) for Non-alloy steel, Low alloy steel, and High alloyed steel, and H (38.1, 38.2, 40, 41) for Hardened steel, Chilled Cast Iron, and Hardened Cast Iron.

Table with columns: ISO, VDI 3323, Material Description, Ae, Parameter, Diameter (Ø) (1/32, 1/16, 3/32, 1/8, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8, 3/4). Rows include P (1-4, 5, 6-7, 8-9, 10, 11.1-11.2) for Non-alloy steel, Low alloy steel, and High alloyed steel, and H (38.1-38.2, 40, 41) for Hardened steel, Chilled Cast Iron, and Hardened Cast Iron.

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

(HIGH SPEED)

Table with columns: ISO, VDI 3323, Material Description, Ae, Parameter, Diameter (Ø) (1/32, 1/16, 3/32, 1/8, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8, 3/4). Rows include P (1-11.2) for Non-alloy steel, Low alloy steel, and High alloyed steel, and H (38.1-38.2, 40-41) for Hardened steel and Chilled Cast Iron/Hardened Cast Iron.

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

Table with column: Ap. Values: D3/16~D1/4 = .008, D5/16~D3/4 = .012





RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

GM210 SERIES 4FLUTE BALL NOSE - PROFILE

(NORMAL SPEED)

Table with columns: ISO, VDI 3323, Material Description, Ae, Parameter, Diameter (Ø) [1/8, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8]. Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and Hardened steel.

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

(HIGH SPEED)

Table with columns: ISO, VDI 3323, Material Description, Ae, Parameter, Diameter (Ø) [1/8, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8]. Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and Hardened steel.

AP ~HRc45
D1/8 ~ D1/4 = .008
D5/16 ~ D5/8 = .012

GM961 SERIES 2FLUTE BALL NOSE - PROFILE

(NORMAL SPEED)

Table with columns: ISO, VDI 3323, Material Description, Ae, Parameter, Diameter (Ø) [1/8, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 1]. Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and tool steel, Hardened steel, Chilled Cast Iron, and Hardened Cast Iron.

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

AP ~HRc45
D1/8 ~ D1/4 = .008
D5/16 ~ D5/8 = .012
HRc45~55
D1/8 = .006
D3/16 ~ D5/16 = .010
D3/8 ~ D1 = .012

(HIGH SPEED)

Table with columns: ISO, VDI 3323, Material Description, Ae, Parameter, Diameter (Ø) [1/8, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 1]. Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and tool steel, Hardened steel, Chilled Cast Iron, and Hardened Cast Iron.

AP ~HRc45
D1/8 ~ D1/4 = .008
D5/16 ~ D5/8 = .012
HRc45~55
D1/8 = .006
D3/16 ~ D5/16 = .010
D3/8 ~ D1 = .012

HSS

HSS



RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

CBN END MILLS

CBN END MILLS

i-Xmill END MILLS

i-Xmill END MILLS

i-SMART MODULAR END MILLS

i-SMART MODULAR END MILLS

X5070 END MILLS

X5070 END MILLS

4G MILL END MILLS

4G MILL END MILLS

X-POWER PRO END MILLS

X-POWER PRO END MILLS

TitaNox-POWER END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

JET-POWER END MILLS

V7 PLUS A END MILLS

V7 PLUS A END MILLS

V7 MILL INOX

V7 MILL INOX

ALU-POWER HPC END MILLS

ALU-POWER HPC END MILLS

ALU-POWER END MILLS

ALU-POWER END MILLS

D-POWER GRAPHITE END MILLS

D-POWER GRAPHITE END MILLS

STANDARD CARBIDE

STANDARD CARBIDE

ONLY ONE COATED PM60 END MILLS

ONLY ONE COATED PM60 END MILLS

SINE-POWER

SINE-POWER

TANK-POWER END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS

STANDARD COBALT & HSS

TECHNICAL DATA

TECHNICAL DATA

**GM960** SERIES 2FLUTE BALL NOSE - PROFILE

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)				
				.024	.031	.040	.047	.062
<b>P</b>	5, 8-9, 11.1-11.2	Non-alloy steel Low alloy steel High alloyed steel, and tool steels	SFM(Vc)	200	230	275	310	390
			IPT(fz)	.0004	.0005	.0005	.0005	.0006
			RPM	31830	28340	26260	25200	24030
			IPM(FEED)	25	27	27	28	29
<b>H</b>	38.1-38.2	Hardened steel	SFM(Vc)	200	230	275	310	390
			IPT(fz)	.0002	.0003	.0003	.0003	.0004
			RPM	31830	28340	26260	25200	24030
			IPM(FEED)	12	16	17	17	18
	40	Chilled Cast Iron	SFM(Vc)	200	230	275	310	390
			IPT(fz)	.0004	.0005	.0005	.0005	.0006
			RPM	31830	28340	26260	25200	24030
			IPM(FEED)	25	27	27	28	29
	41	Hardened Cast Iron	SFM(Vc)	200	230	275	310	390
			IPT(fz)	.0002	.0003	.0003	.0003	.0004
			RPM	31830	28340	26260	25200	24030
			IPM(FEED)	12	16	17	17	18

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)

HRc30~HRc45		HRc45~HRc55	
D<.040	D≥.040	D<.040	D≥.040
<b>Ae</b> = 0.15xD	<b>Ae</b> = 0.15xD	<b>Ae</b> = 0.1xD	<b>Ae</b> = 0.15xD
<b>Ap</b> = 0.05xD	<b>Ap</b> = 0.75xD	<b>Ap</b> = 0.05xD	<b>Ap</b> = 0.05xD

**GM109** SERIES 2FLUTE BALL NOSE - PROFILE

(NORMAL SPEED)

ISO	VDI 3323	Material Description	Ae	Parameter	Diameter (Ø)									
					1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1	
<b>H</b>	38.1	Hardened steel	0.1D	SFM(Vc)	455	510	620	630	655	785	785	755	805	
				IPT(fz)	.0017	.0023	.0026	.0029	.0032	.0036	.0039	.0039	.0049	
				RPM	13910	10390	9470	7700	6670	6000	4800	3850	3080	
				IPM(FEED)	48	48	50	45	43	43	38	30	30	
	38.2	Hardened steel	0.1D	SFM(Vc)	445	490	595	605	625	750	750	715	765	
				IPT(fz)	.0017	.0023	.0026	.0029	.0033	.0036	.0039	.0039	.0048	
				RPM	13600	9980	9090	7400	6370	5730	4580	3640	2920	
				IPM(FEED)	45	45	48	43	42	42	36	28	28	
	41	Hardened Cast Iron	0.1D	SFM(Vc)	445	490	595	605	625	750	750	715	765	
				IPT(fz)	.0017	.0023	.0026	.0029	.0033	.0036	.0039	.0039	.0048	
				RPM	13600	9980	9090	7400	6370	5730	4580	3640	2920	
				IPM(FEED)	45	45	48	43	42	42	36	28	28	

(HIGH SPEED)

ISO	VDI 3323	Material Description	Ae	Parameter	Diameter (Ø)									
					1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1	
<b>H</b>	38.1	Hardened steel	0.05D	SFM(Vc)	455	510	620	630	655	785	785	755	805	
				IPT(fz)	.0027	.0034	.0040	.0044	.0047	.0051	.0055	.0056	.0070	
				RPM	13910	10390	9470	7700	6670	6000	4800	3850	3080	
				IPM(FEED)	76	72	76	67	63	62	53	43	43	
	38.2	Hardened steel	0.05D	SFM(Vc)	445	490	595	605	625	750	750	715	760	
				IPT(fz)	.0027	.0034	.0040	.0043	.0046	.0050	.0053	.0053	.0067	
				RPM	13600	9980	9090	7400	6370	5730	4580	3640	2900	
				IPM(FEED)	72	68	72	63	59	58	49	39	39	
	41	Hardened Cast Iron	0.05D	SFM(Vc)	445	490	595	605	625	750	750	715	760	
				IPT(fz)	.0027	.0034	.0040	.0043	.0046	.0050	.0053	.0053	.0067	
				RPM	13600	9980	9090	7400	6370	5730	4580	3640	2900	
				IPM(FEED)	72	68	72	63	59	58	49	39	39	

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)

Ap
D1/8 = .006
D3/16~D5/16 = .010
D3/8~D1 = .012



RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

**GM963 SERIES** 2FLUTE BALL NOSE - PROFILE

(NORMAL SPEED)

ISO	VDI 3323	Material Description	Ae	Parameter	Diameter (Ø)						
					1/16	1/8	3/16	1/4	5/16	3/8	1/2
P	1-11.2	Non-alloy steel Low alloy steel High alloyed steel, and tool steel	0.2D	SFM(Vc)	175	290	315	365	320	325	340
				IPT(fz)	.0004	.0009	.0016	.0019	.0029	.0037	.0044
				RPM	10700	8860	6420	5580	3910	3310	2600
				IPM(FEED)	9	16	20	22	23	25	23
H	38.1	Hardened steel	0.1D	SFM(Vc)	250	365	405	495	505	525	625
				IPT(fz)	.0007	.0017	.0023	.0026	.0029	.0032	.0036
				RPM	15280	11150	8250	7560	6170	5350	4780
				IPM(FEED)	22	38	38	40	36	35	35
H	38.2	Hardened steel	0.1D	SFM(Vc)	245	355	390	470	475	505	600
				IPT(fz)	.0007	.0017	.0023	.0027	.0030	.0032	.0036
				RPM	14970	10850	7950	7180	5810	5140	4580
				IPM(FEED)	20	37	37	38	35	33	33
H	40	Chilled Cast Iron	0.2D	SFM(Vc)	175	290	315	365	320	325	340
				IPT(fz)	.0004	.0009	.0016	.0019	.0029	.0037	.0044
				RPM	10700	8860	6420	5580	3910	3310	2600
				IPM(FEED)	9	16	20	22	23	25	23
H	41	Hardened Cast Iron	0.1D	SFM(Vc)	245	355	390	470	475	505	600
				IPT(fz)	.0007	.0017	.0023	.0027	.0030	.0032	.0036
				RPM	14970	10850	7950	7180	5810	5140	4580
				IPM(FEED)	20	37	37	38	35	33	33

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)

AP	~HRc45	HRc45~55
	D1/8 ~ D1/4 = .008 D5/16 ~ D5/8 = .012	D1/8 = .006 D3/16 ~ D5/16 = .010 D3/8 ~ D1 = .012

(HIGH SPEED)

ISO	VDI 3323	Material Description	Ae	Parameter	Diameter (Ø)						
					1/16	1/8	3/16	1/4	5/16	3/8	1/2
P	1-11.2	Non-alloy steel Low alloy steel High alloyed steel, and tool steel	0.05D	SFM(Vc)	330	605	905	1210	1135	1180	1210
				IPT(fz)	.0006	.0009	.0017	.0022	.0035	.0044	.0049
				RPM	20170	18490	18440	18490	13870	12020	9240
				IPM(FEED)	24	35	62	80	98	106	91
H	38.1	Hardened steel	0.05D	SFM(Vc)	250	365	405	495	505	525	625
				IPT(fz)	.0010	.0027	.0035	.0040	.0044	.0047	.0051
				RPM	15280	11150	8250	7560	6170	5350	4780
				IPM(FEED)	32	61	57	61	54	50	49
H	38.2	Hardened steel	0.05D	SFM(Vc)	245	355	390	470	475	505	600
				IPT(fz)	.0011	.0026	.0034	.0041	.0043	.0046	.0050
				RPM	14970	10850	7950	7180	5810	5140	4580
				IPM(FEED)	33	56	54	58	50	48	45
H	40	Chilled Cast Iron	0.05D	SFM(Vc)	330	605	905	1210	1135	1180	1210
				IPT(fz)	.0006	.0009	.0017	.0022	.0035	.0044	.0049
				RPM	20170	18490	18440	18490	13870	12020	9240
				IPM(FEED)	24	35	62	80	98	106	91
H	41	Hardened Cast Iron	0.05D	SFM(Vc)	245	355	390	470	475	505	600
				IPT(fz)	.0011	.0026	.0034	.0041	.0043	.0046	.0050
				RPM	14970	10850	7950	7180	5810	5140	4580
				IPM(FEED)	33	56	54	58	50	48	45

AP	~HRc45	HRc45~55
	D1/8 ~ D1/4 = .008 D5/16 ~ D5/8 = .012	D1/8 = .006 D3/16 ~ D5/16 = .010 D3/8 ~ D1 = .012

**GM666 SERIES** 3-5FLUTE Roughing - Side Cutting

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)						
						1/4	5/16	3/8	1/2	5/8	3/4	1
P	1-4	Non-alloy steel	0.3D	1.5D	SFM(Vc)	1105	1025	975	1130	1060	1105	1355
					IPT(fz)	.0019	.0026	.0033	.0030	.0039	.0044	.0036
					RPM	16880	12530	9930	8630	6480	5630	5180
					IPM(FEED)	99	99	99	102	102	99	92
					SFM(Vc)	875	815	805	850	850	935	1020
					IPT(fz)	.0009	.0012	.0015	.0013	.0016	.0016	.0012
	5	Non-alloy steel	0.3D	1.5D	SFM(Vc)	1105	1025	975	1130	1060	1105	1355
					IPT(fz)	.0019	.0026	.0033	.0030	.0039	.0044	.0036
					RPM	16880	12530	9930	8630	6480	5630	5180
					IPM(FEED)	99	99	99	102	102	99	92
					SFM(Vc)	875	815	805	850	850	935	1020
					IPT(fz)	.0009	.0012	.0015	.0013	.0016	.0016	.0012
6-7	Low alloy steel	0.3D	1.5D	SFM(Vc)	1105	1025	975	1130	1060	1105	1355	
				IPT(fz)	.0019	.0026	.0033	.0030	.0039	.0044	.0036	
				RPM	16880	12530	9930	8630	6480	5630	5180	
				IPM(FEED)	99	99	99	102	102	99	92	
				SFM(Vc)	875	815	805	850	850	935	1020	
				IPT(fz)	.0009	.0012	.0015	.0013	.0016	.0016	.0012	
8-9	Low alloy steel	0.3D	1.5D	SFM(Vc)	1105	1025	975	1130	1060	1105	1355	
				IPT(fz)	.0019	.0026	.0033	.0030	.0039	.0044	.0036	
				RPM	16880	12530	9930	8630	6480	5630	5180	
				IPM(FEED)	99	99	99	102	102	99	92	
				SFM(Vc)	875	815	805	850	850	935	1020	
				IPT(fz)	.0009	.0012	.0015	.0013	.0016	.0016	.0012	
10	High alloyed steel, and tool steel	0.3D	1.5D	SFM(Vc)	1105	1025	975	1130	1060	1105	1355	
				IPT(fz)	.0019	.0026	.0033	.0030	.0039	.0044	.0036	
				RPM	16880	12530	9930	8630	6480	5630	5180	
				IPM(FEED)	99	99	99	102	102	99	92	
				SFM(Vc)	875	815	805	850	850	935	1020	
				IPT(fz)	.0009	.0012	.0015	.0013	.0016	.0016	.0012	
11.1	High alloyed steel, and tool steel	0.3D	1.5D	SFM(Vc)	1105	1025	975	1130	1060	1105	1355	
				IPT(fz)	.0019	.0026	.0033	.0030	.0039	.0044	.0036	
				RPM	16880	12530	9930	8630	6480	5630	5180	
				IPM(FEED)	99	99	99	102	102	99	92	
				SFM(Vc)	875	815	805	850	850	935	1020	
				IPT(fz)	.0009	.0012	.0015	.0013	.0016	.0016	.0012	
11.2	High alloyed steel, and tool steel	0.3D	1.5D	SFM(Vc)	595	555	540	595	580	575	680	
				IPT(fz)	.0009	.0012	.0015	.0013	.0015	.0015	.0012	
				RPM	9090	6780	5500	4550	3550	2930	2600	
				IPM(FEED)	24	24	24	24	22	18	15	
				SFM(Vc)	240	210	210	235	215	235	285	
				IPT(fz)	.0010	.0013	.0019	.0015	.0013	.0013	.0012	
K	38.1-38.2	Hardened steel	0.05D	1.0D	SFM(Vc)	240	210	210	235	215	235	285
					IPT(fz)	.0010	.0013	.0019	.0015	.0013	.0013	.0012
					RPM	3670	2570	2140	1800	1310	1200	1090
					IPM(FEED)	11	10	12	11	7	6	6
					SFM(Vc)	595	555	540	595	580	575	680
					IPT(fz)	.0009	.0012	.0015	.0013	.0015	.0015	.0012
K	40	Chilled Cast Iron	0.3D	1.5D	SFM(Vc)	595	555	540	595	580	575	680
					IPT(fz)	.0009	.0012	.0015	.0013	.0015	.0015	.0012
					RPM	9090	6780	5500	4550	3550	2930	2600
					IPM(FEED)	24	24	24	24	22	18	15
					SFM(Vc)	240	210	210	235	215	235	285
					IPT(fz)	.0010	.0013	.0019	.0015	.0013	.0013	.0012
K	41	Hardened Cast Iron	0.05D	1.0D	SFM(Vc)	240	210	210	235	215	235	285
					IPT(fz)	.0010	.0013	.0019	.0015	.0013	.0013	.0012
					RPM	3670	2570	2140	1800	1310	1200	1090
					IPM(FEED)	11	10	12	11	7	6	6
					SFM(Vc)	595	555	540	595	580	575	680
					IPT(fz)	.0009	.0012	.0015	.0013	.0015	.0015	.0012

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)



HSS

HSS



RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

GM156 SERIES 3-5FLUTE Roughing - Side Cutting

GM967 SERIES 2FLUTE BALL NOSE - PROFILE

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) [1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 1]. Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and Hardened steel.

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

Table with columns: ISO, VDI 3323, Material Description, Parameter, Diameter (Ø) [1/32, 3/64, 1/16, 5/64, 3/32, 1/8]. Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and Hardened steel.

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

HSS

HSS



RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

GM876, GM813 SERIES 2 FLUTE BALL NOSE

GM876, GM813 SERIES 2 FLUTE BALL NOSE

NORMAL SPEED

HIGH SPEED

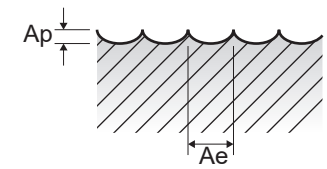
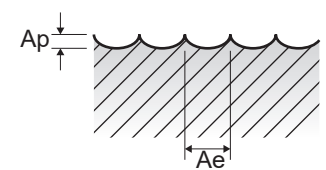
Table with columns: ISO, VDI 3323, Material Description, Ae, Parameter, Diameter (Ø) [1.0, 1.5, 2.0, 2.5, 3.0, 4.0, 5.0, 6.0, 8.0, 10.0, 12.0, 16.0, 20.0]. Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and Grey cast iron.

Table with columns: ISO, VDI 3323, Material Description, Ae, Parameter, Diameter (Ø) [1.0, 1.5, 2.0, 2.5, 3.0, 4.0, 5.0, 6.0, 8.0, 10.0, 12.0, 16.0, 20.0]. Rows include Non-alloy steel, Low alloy steel, High alloyed steel, Grey cast iron, Hardened steel, and Chilled Cast Iron.

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : mm (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : mm (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

▶ NEXT PAGE



**YG X-POWER PRO END MILLS** RECOMMENDED CUTTING CONDITIONS

**YG X-POWER PRO END MILLS** RECOMMENDED CUTTING CONDITIONS

**GM886 SERIES** 2 FLUTE BALL NOSE RIB PROCESSING

**GM886 SERIES** 2 FLUTE BALL NOSE RIB PROCESSING

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)					
				0.5	0.6	0.8	1.0	1.2	1.4
<b>P</b>	1-4	Non-alloy steel	SFM(Vc)	170~215	200~260	270~345	315~395	310~395	320~395
			IPT(fz)	.0001~.0002	.0001~.0003	.0001~.0003	.0002~.0004	.0002~.0005	.0002~.0006
			RPM	32990~41720	32340~42050	32750~41840	30560~38330	25070~31940	22180~27380
			IPM(FEED)	7~20	9~26	9~26	10~29	10~32	10~32
			Ap	0.023~0.045	0.027~0.054	0.036~0.072	0.045~0.090	0.055~0.100	0.062~0.125
			Ap	0.023~0.045	0.027~0.054	0.036~0.072	0.045~0.090	0.055~0.100	0.062~0.125
	5	Non-alloy steel	SFM(Vc)	120~155	145~185	195~245	220~280	220~280	225~275
			IPT(fz)	.0001~.0002	.0001~.0002	.0001~.0003	.0001~.0003	.0001~.0004	.0002~.0004
			RPM	23290~30080	23450~29920	23650~29720	21350~27170	17790~22640	15590~19060
			IPM(FEED)	4~11	5~15	5~15	5~16	5~16	5~16
			Ap	0.023~0.045	0.027~0.054	0.036~0.072	0.045~0.090	0.055~0.100	0.062~0.125
			Ap	0.023~0.045	0.027~0.054	0.036~0.072	0.045~0.090	0.055~0.100	0.062~0.125
	6-7	Low alloy steel	SFM(Vc)	170~215	200~260	270~345	315~395	310~395	320~395
			IPT(fz)	.0001~.0002	.0001~.0003	.0001~.0003	.0002~.0004	.0002~.0005	.0002~.0006
			RPM	32990~41720	32340~42050	32750~41840	30560~38330	25070~31940	22180~27380
			IPM(FEED)	7~20	9~26	9~26	10~29	10~32	10~32
			Ap	0.023~0.045	0.027~0.054	0.036~0.072	0.045~0.090	0.055~0.100	0.062~0.125
			Ap	0.023~0.045	0.027~0.054	0.036~0.072	0.045~0.090	0.055~0.100	0.062~0.125
	8-9	Low alloy steel	SFM(Vc)	120~155	145~185	195~245	220~280	220~280	225~275
			IPT(fz)	.0001~.0002	.0001~.0002	.0001~.0003	.0001~.0003	.0001~.0004	.0002~.0004
			RPM	23290~30080	23450~29920	23650~29720	21350~27170	17790~22640	15590~19060
			IPM(FEED)	4~11	5~15	5~15	5~16	5~16	5~16
			Ap	0.023~0.045	0.027~0.054	0.036~0.072	0.045~0.090	0.055~0.100	0.062~0.125
			Ap	0.023~0.045	0.027~0.054	0.036~0.072	0.045~0.090	0.055~0.100	0.062~0.125
10	High alloyed steel, and tool steel	SFM(Vc)	170~215	200~260	270~345	315~395	310~395	320~395	
		IPT(fz)	.0001~.0002	.0001~.0003	.0001~.0003	.0002~.0004	.0002~.0005	.0002~.0006	
		RPM	32990~41720	32340~42050	32750~41840	30560~38330	25070~31940	22180~27380	
		IPM(FEED)	7~20	9~26	9~26	10~29	10~32	10~32	
		Ap	0.023~0.045	0.027~0.054	0.036~0.072	0.045~0.090	0.055~0.100	0.062~0.125	
		Ap	0.023~0.045	0.027~0.054	0.036~0.072	0.045~0.090	0.055~0.100	0.062~0.125	
11.1 - 11.2	High alloyed steel, and tool steel	SFM(Vc)	120~155	145~185	195~245	220~280	220~280	225~275	
		IPT(fz)	.0001~.0002	.0001~.0002	.0001~.0003	.0001~.0003	.0001~.0004	.0002~.0004	
		RPM	23290~30080	23450~29920	23650~29720	21350~27170	17790~22640	15590~19060	
		IPM(FEED)	4~11	5~15	5~15	5~16	5~16	5~16	
		Ap	0.023~0.045	0.027~0.054	0.036~0.072	0.045~0.090	0.055~0.100	0.062~0.125	
		Ap	0.023~0.045	0.027~0.054	0.036~0.072	0.045~0.090	0.055~0.100	0.062~0.125	
<b>K</b>	15-20	Grey cast iron Nodular cast iron Malleable cast iron	SFM(Vc)	170~215	200~260	270~345	315~395	310~395	320~395
			IPT(fz)	.0001~.0002	.0001~.0003	.0001~.0003	.0002~.0004	.0002~.0005	.0002~.0006
			RPM	32990~41720	32340~42050	32750~41840	30560~38330	25070~31940	22180~27380
			IPM(FEED)	7~20	9~26	9~26	10~29	10~32	10~32
			Ap	0.023~0.045	0.027~0.054	0.036~0.072	0.045~0.090	0.055~0.100	0.062~0.125
			Ap	0.023~0.045	0.027~0.054	0.036~0.072	0.045~0.090	0.055~0.100	0.062~0.125
<b>H</b>	38.1 - 38.2	Hardened steel	SFM(Vc)	75~95	95~115	125~155	140~175	140~180	140~175
			IPT(fz)	.0001~.0002	.0002~.0003	.0002~.0003	.0002~.0003	.0002~.0004	.0003~.0004
			RPM	14550~18440	15360~18600	15160~18800	13580~16980	11320~14550	9700~12130
			IPM(FEED)	4~7	5~9	5~9	5~10	5~10	5~10
			Ap	0.005~0.009	0.005~0.011	0.007~0.014	0.009~0.018	0.010~0.022	0.012~0.025
			Ap	0.005~0.009	0.005~0.011	0.007~0.014	0.009~0.018	0.010~0.022	0.012~0.025
	40	Chilled Cast Iron	SFM(Vc)	120~155	145~185	195~245	220~280	220~280	225~275
			IPT(fz)	.0001~.0002	.0001~.0002	.0001~.0003	.0001~.0003	.0001~.0004	.0002~.0004
			RPM	23290~30080	23450~29920	23650~29720	21350~27170	17790~22640	15590~19060
			IPM(FEED)	4~11	5~15	5~15	5~16	5~16	5~16
			Ap	0.023~0.045	0.027~0.054	0.036~0.072	0.045~0.090	0.055~0.100	0.062~0.125
			Ap	0.023~0.045	0.027~0.054	0.036~0.072	0.045~0.090	0.055~0.100	0.062~0.125
41	Hardened Cast Iron	SFM(Vc)	75~95	95~115	125~155	140~175	140~180	140~175	
		IPT(fz)	.0001~.0002	.0002~.0003	.0002~.0003	.0002~.0003	.0002~.0004	.0003~.0004	
		RPM	14550~18440	15360~18600	15160~18800	13580~16980	11320~14550	9700~12130	
		IPM(FEED)	4~7	5~9	5~9	5~10	5~10	5~10	
		Ap	0.005~0.009	0.005~0.011	0.007~0.014	0.009~0.018	0.010~0.022	0.012~0.025	
		Ap	0.005~0.009	0.005~0.011	0.007~0.014	0.009~0.018	0.010~0.022	0.012~0.025	

VDI 3323	Parameter	Diameter (Ø)									
		1.5	1.6	1.8	2.0	3.0	4.0	5.0	6.0		
<b>1-4</b>	SFM(Vc)	310~390	310~405	330~420	335~410	340~420	370~475	370~475	370~475		
		IPT(fz)	.0003~.0006	.0003~.0007	.0003~.0007	.0003~.0008	.0005~.0012	.0006~.0014	.0007~.0018	.0009~.0021	
		RPM	20050~25230	18800~24560	17790~22640	16250~19890	11000~13580	8980~11520	7180~9220	5980~7680	
		IPM(FEED)	10~32	10~32	10~32	10~32	10~32	10~32	10~32	10~32	
		Ap	0.070~0.135	0.075~0.145	0.080~0.160	0.090~0.180	0.135~0.270	0.180~0.360	0.225~0.450	0.270~0.540	
		Ap	0.070~0.135	0.075~0.145	0.080~0.160	0.090~0.180	0.135~0.270	0.180~0.360	0.225~0.450	0.270~0.540	
	5	SFM(Vc)	220~285	230~285	235~290	240~290	225~290	250~340	250~335	255~340	
			IPT(fz)	.0002~.0004	.0002~.0005	.0002~.0005	.0002~.0006	.0007~.0017	.0009~.0020	.0011~.0025	.0013~.0029
			RPM	14230~18440	13950~17280	12670~15630	11640~14070	7280~9380	6060~8250	4850~6500	4120~5500
			IPM(FEED)	5~16	5~16	5~16	5~16	5~16	5~16	5~16	5~16
			Ap	0.070~0.135	0.075~0.145	0.080~0.160	0.090~0.180	0.135~0.270	0.180~0.360	0.225~0.450	0.270~0.540
			Ap	0.070~0.135	0.075~0.145	0.080~0.160	0.090~0.180	0.135~0.270	0.180~0.360	0.225~0.450	0.270~0.540
	6-7	SFM(Vc)	310~390	310~405	330~420	335~410	340~420	370~475	370~475	370~475	
			IPT(fz)	.0003~.0006	.0003~.0007	.0003~.0007	.0003~.0008	.0005~.0012	.0006~.0014	.0007~.0018	.0009~.0021
			RPM	20050~25230	18800~24560	17790~22640	16250~19890	11000~13580	8980~11520	7180~9220	5980~7680
			IPM(FEED)	10~32	10~32	10~32	10~32	10~32	10~32	10~32	10~32
			Ap	0.070~0.135	0.075~0.145	0.080~0.160	0.090~0.180	0.135~0.270	0.180~0.360	0.225~0.450	0.270~0.540
			Ap	0.070~0.135	0.075~0.145	0.080~0.160	0.090~0.180	0.135~0.270	0.180~0.360	0.225~0.450	0.270~0.540
	8-9	SFM(Vc)	220~285	230~285	235~290	240~290	225~290	250~340	250~335	255~340	
			IPT(fz)	.0002~.0004	.0002~.0005	.0002~.0005	.0002~.0006	.0007~.0017	.0009~.0020	.0011~.0025	.0013~.0029
			RPM	14230~18440	13950~17280	12670~15630	11640~14070	7280~9380	6060~8250	4850~6500	4120~5500
			IPM(FEED)	5~16	5~16	5~16	5~16	5~16	5~16	5~16	5~16
			Ap	0.070~0.135	0.075~0.145	0.080~0.160	0.090~0.180	0.135~0.270	0.180~0.360	0.225~0.450	0.270~0.540
			Ap	0.070~0.135	0.075~0.145	0.080~0.160	0.090~0.180	0.135~0.270	0.180~0.360	0.225~0.450	0.270~0.540
10	SFM(Vc)	310~390	310~405	330~420	335~410	340~420	370~475	370~475	370~475		
		IPT(fz)	.0003~.0006	.0003~.0007	.0003~.0007	.0003~.0008	.0005~.0012	.0006~.0014	.0007~.0018	.0009~.0021	
		RPM	20050~25230	18800~24560	17790~22640	16250~19890	11000~13580	8980~11520	7180~9220	5980~7680	
		IPM(FEED)	10~32	10~32	10~32	10~32	10~32	10~32	10~32	10~32	
		Ap	0.070~0.135	0.075~0.145	0.080~0.160	0.090~0.180	0.135~0.270	0.180~0.360	0.225~0.450	0.270~0.540	
		Ap	0.070~0.135	0.075~0.145	0.080~0.160	0.090~0.180	0.135~0.270	0.180~0.360	0.225~0.450	0.270~0.540	
11.1 - 11.2	SFM(Vc)	220~285	230~285	235~290	240~290	225~290	250~340	250~335	255~340		
		IPT(fz)	.0002~.0004	.0002~.0005	.0002~.0005	.0002~.0006	.0007~.0017	.0009~.0020	.0011~.0025	.0013~.0029	
		RPM	14230~18440	13950~17280	12670~15630	11640~14070	7280~9380	6060~8250	4850~6500	4120~5500	
		IPM(FEED)	5~16	5~16	5~16	5~16	5~16	5~16	5~16	5~16	
		Ap	0.070~0.135	0.075~0.145	0.080~0.160	0.090~0.180	0.135~0.270	0.180~0.360	0.225~0.450	0.270~0.540	
		Ap	0.070~0.135	0.075~0.145	0.080~0.160	0.090~0.180	0.135~0.270	0.180~0.360	0.225~0.450	0.270~0.540	
15 - 20	SFM(Vc)	310~390	310~405	330~420	335~410	340~420	370~475	370~475	3		





RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

GM902 SERIES 2 FLUTE BALL NOSE with TAPER NECK

GM902 SERIES 2 FLUTE BALL NOSE with TAPER NECK

NORMAL SPEED

HIGH SPEED

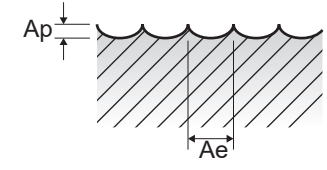
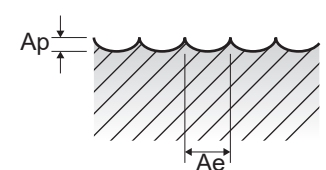
Table with columns: ISO, VDI 3323, Material Description, Ae, Parameter, Diameter (Ø) [1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 8.0]. Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and Hardened steel.

Table with columns: ISO, VDI 3323, Material Description, Ae, Parameter, Diameter (Ø) [1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 8.0]. Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and Grey cast iron.

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : mm (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : mm (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

▶ NEXT PAGE



HSS

HSS



RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

GM815 SERIES 4 FLUTE BALL NOSE

GM815 SERIES 4 FLUTE BALL NOSE

NORMAL SPEED

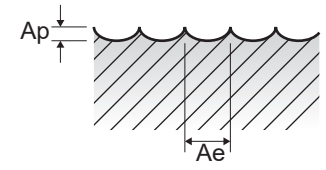
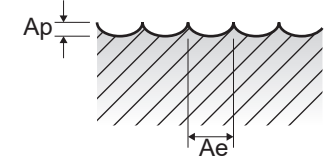
HIGH SPEED

Table with columns: ISO, VDI 3323, Material Description, Ae, Parameter, Diameter (Ø) [2.0, 3.0, 4.0, 5.0, 6.0, 8.0, 10.0, 12.0, 16.0]. Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and Grey cast iron.

Table with columns: ISO, VDI 3323, Material Description, Ae, Parameter, Diameter (Ø) [2.0, 3.0, 4.0, 5.0, 6.0, 8.0, 10.0, 12.0, 16.0]. Rows include Non-alloy steel, Low alloy steel, High alloyed steel, Grey cast iron, Hardened steel, and Chilled Cast Iron.

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : mm (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : mm (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)



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**YG X-POWER PRO END MILLS**

**RECOMMENDED CUTTING CONDITIONS**

**YG X-POWER PRO END MILLS**

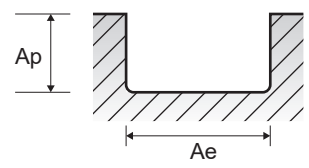
**RECOMMENDED CUTTING CONDITIONS**

**GM818 SERIES 2 FLUTE CORNER RADIUS - SLOTTING**

**GM8A1 SERIES 2 FLUTE CORNER RADIUS RIB PROCESSING**

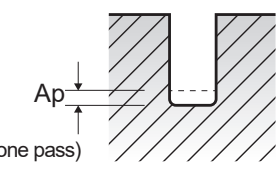
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)					
						4.0	5.0	6.0	8.0	10.0	12.0
P	1-4	Non-alloy steel	1.0D	0.3D	SFM(Vc)	245	260	260	280	280	280
					IPT(fz)	.0006	.0009	.0013	.0018	.0021	.0020
					RPM	5940	5050	4210	3400	2720	2260
					IPM(FEED)	8	9	11	12	11	9
					SFM(Vc)	150	165	165	180	180	195
					IPM(FEED)	4	4	5	6	5	5
	5	Non-alloy steel	1.0D	0.3D	SFM(Vc)	245	260	260	280	280	280
					IPT(fz)	.0006	.0009	.0013	.0018	.0021	.0020
					RPM	5940	5050	4210	3400	2720	2260
					IPM(FEED)	8	9	11	12	11	9
					SFM(Vc)	150	165	165	180	180	195
					IPM(FEED)	4	4	5	6	5	5
6-7	Low alloy steel	1.0D	0.3D	SFM(Vc)	245	260	260	280	280	280	
				IPT(fz)	.0006	.0009	.0013	.0018	.0021	.0020	
				RPM	5940	5050	4210	3400	2720	2260	
				IPM(FEED)	8	9	11	12	11	9	
				SFM(Vc)	150	165	165	180	180	195	
				IPM(FEED)	4	4	5	6	5	5	
8-9	Low alloy steel	1.0D	0.3D	SFM(Vc)	245	260	260	280	280	280	
				IPT(fz)	.0006	.0009	.0013	.0018	.0021	.0020	
				RPM	5940	5050	4210	3400	2720	2260	
				IPM(FEED)	8	9	11	12	11	9	
				SFM(Vc)	150	165	165	180	180	195	
				IPM(FEED)	4	4	5	6	5	5	
10	High alloyed steel, and tool steel	1.0D	0.3D	SFM(Vc)	245	260	260	280	280	280	
				IPT(fz)	.0006	.0009	.0013	.0018	.0021	.0020	
				RPM	5940	5050	4210	3400	2720	2260	
				IPM(FEED)	8	9	11	12	11	9	
				SFM(Vc)	150	165	165	180	180	195	
				IPM(FEED)	4	4	5	6	5	5	
11.1 11.2	High alloyed steel, and tool steel	1.0D	0.3D	SFM(Vc)	150	165	165	180	180	195	
				IPT(fz)	.0005	.0007	.0010	.0013	.0015	.0016	
				RPM	3640	3200	2670	2180	1750	1580	
				IPM(FEED)	4	4	5	6	5	5	
				SFM(Vc)	245	260	260	280	280	280	
				IPM(FEED)	8	9	11	12	11	9	
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	0.3D	SFM(Vc)	245	260	260	280	280	280
					IPT(fz)	.0006	.0009	.0013	.0018	.0021	.0020
					RPM	5940	5050	4210	3400	2720	2260
					IPM(FEED)	8	9	11	12	11	9
					SFM(Vc)	100	115	115	115	115	115
					IPM(FEED)	1	1	2	1	1	1
H	38.1 - 38.2	Hardened steel	1.0D	0.3D	SFM(Vc)	100	115	115	115	115	115
					IPT(fz)	.0002	.0003	.0004	.0005	.0006	.0008
					RPM	2430	2230	1860	1400	1120	930
					IPM(FEED)	1	1	2	1	1	1
					SFM(Vc)	150	165	165	180	180	195
					IPM(FEED)	4	4	5	6	5	5
H	40	Chilled Cast Iron	1.0D	0.3D	SFM(Vc)	100	115	115	115	115	115
					IPT(fz)	.0002	.0003	.0004	.0005	.0006	.0008
					RPM	2430	2230	1860	1400	1120	930
					IPM(FEED)	1	1	2	1	1	1
					SFM(Vc)	110	135	110	115	115	115
					IPM(FEED)	3~5	3~5	3~5	3~5	3~5	3~5
H	41	Hardened Cast Iron	1.0D	0.3D	SFM(Vc)	100	115	115	115	115	115
					IPT(fz)	.0002	.0003	.0004	.0005	.0006	.0008
					RPM	2430	2230	1860	1400	1120	930
					IPM(FEED)	1	1	2	1	1	1
					SFM(Vc)	110	135	110	115	115	115
					IPM(FEED)	3~5	3~5	3~5	3~5	3~5	3~5

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)



ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)					
				1.0	1.2	1.4	1.5	1.6	1.8
P	1-4	Non-alloy steel	SFM(Vc)	245~305	240~290	240~305	235~300	240~310	255~320
			IPT(fz)	.0002~.0006	.0003~.0008	.0003~.0009	.0004~.0010	.0004~.0010	.0004~.0011
			RPM	23770~29590	19410~23450	16630~21140	15200~19410	14550~18800	13750~17250
			IPM(FEED)	12~34	12~37	12~37	12~37	12~37	12~37
			Ap	0.045~0.090	0.055~0.100	0.062~0.125	0.070~0.135	0.075~0.145	0.080~0.160
			SFM(Vc)	170~215	170~215	175~210	170~220	175~220	180~225
	5	Non-alloy steel	SFM(Vc)	245~305	240~290	240~305	235~300	240~310	255~320
			IPT(fz)	.0002~.0006	.0003~.0008	.0003~.0009	.0004~.0010	.0004~.0010	.0004~.0011
			RPM	23770~29590	19410~23450	16630~21140	15200~19410	14550~18800	13750~17250
			IPM(FEED)	12~34	12~37	12~37	12~37	12~37	12~37
			Ap	0.045~0.090	0.055~0.100	0.062~0.125	0.070~0.135	0.075~0.145	0.080~0.160
			SFM(Vc)	170~215	170~215	175~210	170~220	175~220	180~225
6-7	Low alloy steel	SFM(Vc)	245~305	240~290	240~305	235~300	240~310	255~320	
		IPT(fz)	.0002~.0006	.0003~.0008	.0003~.0009	.0004~.0010	.0004~.0010	.0004~.0011	
		RPM	23770~29590	19410~23450	16630~21140	15200~19410	14550~18800	13750~17250	
		IPM(FEED)	12~34	12~37	12~37	12~37	12~37	12~37	
		Ap	0.045~0.090	0.055~0.100	0.062~0.125	0.070~0.135	0.075~0.145	0.080~0.160	
		SFM(Vc)	170~215	170~215	175~210	170~220	175~220	180~225	
8-9	Low alloy steel	SFM(Vc)	245~305	240~290	240~305	235~300	240~310	255~320	
		IPT(fz)	.0002~.0006	.0003~.0008	.0003~.0009	.0004~.0010	.0004~.0010	.0004~.0011	
		RPM	23770~29590	19410~23450	16630~21140	15200~19410	14550~18800	13750~17250	
		IPM(FEED)	12~34	12~37	12~37	12~37	12~37	12~37	
		Ap	0.045~0.090	0.055~0.100	0.062~0.125	0.070~0.135	0.075~0.145	0.080~0.160	
		SFM(Vc)	170~215	170~215	175~210	170~220	175~220	180~225	
10	High alloyed steel, and tool steel	SFM(Vc)	245~305	240~290	240~305	235~300	240~310	255~320	
		IPT(fz)	.0002~.0006	.0003~.0008	.0003~.0009	.0004~.0010	.0004~.0010	.0004~.0011	
		RPM	23770~29590	19410~23450	16630~21140	15200~19410	14550~18800	13750~17250	
		IPM(FEED)	12~34	12~37	12~37	12~37	12~37	12~37	
		Ap	0.045~0.090	0.055~0.100	0.062~0.125	0.070~0.135	0.075~0.145	0.080~0.160	
		SFM(Vc)	170~215	170~215	175~210	170~220	175~220	180~225	
11.1 11.2	High alloyed steel, and tool steel	SFM(Vc)	245~305	240~290	240~305	235~300	240~310	255~320	
		IPT(fz)	.0002~.0006	.0003~.0008	.0003~.0009	.0004~.0010	.0004~.0010	.0004~.0011	
		RPM	23770~29590	19410~23450	16630~21140	15200~19410	14550~18800	13750~17250	
		IPM(FEED)	12~34	12~37	12~37	12~37	12~37	12~37	
		Ap	0.045~0.090	0.055~0.100	0.062~0.125	0.070~0.135	0.075~0.145	0.080~0.160	
		SFM(Vc)	170~215	170~215	175~210	170~220	175~220	180~225	
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	SFM(Vc)	245~305	240~290	240~305	235~300	240~310	255~320
			IPT(fz)	.0002~.0006	.0003~.0008	.0003~.0009	.0004~.0010	.0004~.0010	.0004~.0011
			RPM	23770~29590	19410~23450	16630~21140	15200~19410	14550~18800	13750~17250
			IPM(FEED)	12~34	12~37	12~37	12~37	12~37	12~37
			Ap	0.045~0.090	0.055~0.100	0.062~0.125	0.070~0.135	0.075~0.145	0.080~0.160
			SFM(Vc)	110~135	110~135	110~135	110~135	110~140	110~140
H	38.1 - 38.2	Hardened steel	SFM(Vc)	110~135	110~135	110~135	110~135	110~140	110~140
			IPT(fz)	.0001~.0002	.0002~.0002	.0002~.0003	.0002~.0003	.0002~.0003	.0002~.0004
			RPM	10670~13100	8890~10920	7620~9360	7120~8730	6670~8490	5930~7550
			IPM(FEED)	3~5	3~5	3~5	3~5	3~5	3~5
			Ap	0.009~0.018	0.010~0.022	0.012~0.025	0.014~0.028	0.015~0.030	0.016~0.032
			SFM(Vc)	170~215	170~215	175~210	170~220	175~220	180~225
H	40	Chilled Cast Iron	SFM(Vc)	170~215	170~215	175~210	170~220	175~220	180~225
			IPT(fz)	.0002~.0006	.0003~.0007	.0003~.0009	.0004~.0009	.0004~.0009	.0004~.001
			RPM	16500~20860	13750~17380	12130~14550	11000~14230	10610~13340	9700~12130
			IPM(FEED)	8~25	8~25	8~25	8~25	8~25	8~25
			Ap	0.045~0.090	0.055~0.100	0.062~0.125	0.070~0.135	0.075~0.145	0.080~0.160
			SFM(Vc)	110~135	110~135	110~135	110~135	110~140	110~140
H	41	Hardened Cast Iron	SFM(Vc)	110~135	110~135	110~135	110~135	110~140	110~140
			IPT(fz)	.0001~.0002	.0002~.0002	.0002~.0003	.0002~.0003	.0002~.0003	.0002~.0004
			RPM	10670~13100	8890~10920	7620~9360	7120~8730	6670~8490	5930~7550
			IPM(FEED)	3~5	3~5	3~5	3~5	3~5	3~5
			Ap	0.009~0.018	0.010~0.022	0.012~0.025	0.014~0.028	0.015~0.030	0.016~0.032
			SFM(Vc)	110~135	110~135	110~135	110~135	110~140	110~140

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : mm (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)



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**YG X-POWER PRO END MILLS**

**RECOMMENDED CUTTING CONDITIONS**

**YG X-POWER PRO END MILLS**

**RECOMMENDED CUTTING CONDITIONS**

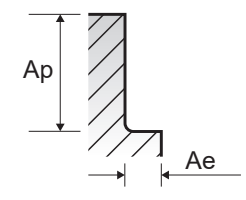
**GM8A1 SERIES 2 FLUTE CORNER RADIUS RIB PROCESSING**

**GM839 SERIES 4 FLUTE CORNER RADIUS - SIDE CUTTING**

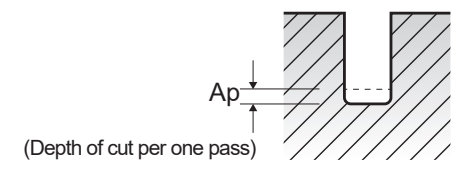
ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)					
				2.0	2.5	3.0	4.0	5.0	6.0
P	1-4	Non-alloy steel	SFM(Vc)	260~315	255~325	260~325	260~325	260~325	260~325
			IPT(fz)	.0005~.0012	.0006~.0015	.0007~.0018	.0009~.0024	.0011~.0029	.0014~.0035
			RPM	12610~15280	9900~12610	8410~10510	6310~7880	5050~6310	4210~5260
			IPM(FEED)	12~37	12~37	12~37	12~37	12~37	12~37
			Ap	0.090~0.180	0.112~0.235	0.135~0.270	0.180~0.360	0.225~0.450	0.270~0.540
			SFM(Vc)	180~225	180~230	180~225	180~230	180~225	180~230
	5	Low alloy steel	SFM(Vc)	260~315	255~325	260~325	260~325	260~325	260~325
			IPT(fz)	.0005~.0012	.0006~.0015	.0007~.0018	.0009~.0024	.0011~.0029	.0014~.0035
			RPM	12610~15280	9900~12610	8410~10510	6310~7880	5050~6310	4210~5260
			IPM(FEED)	12~37	12~37	12~37	12~37	12~37	12~37
			Ap	0.090~0.180	0.112~0.235	0.135~0.270	0.180~0.360	0.225~0.450	0.270~0.540
			SFM(Vc)	180~225	180~230	180~225	180~230	180~225	180~230
6-7	High alloyed steel, and tool steel	SFM(Vc)	260~315	255~325	260~325	260~325	260~325	260~325	
		IPT(fz)	.0005~.0012	.0006~.0015	.0007~.0018	.0009~.0024	.0011~.0029	.0014~.0035	
		RPM	12610~15280	9900~12610	8410~10510	6310~7880	5050~6310	4210~5260	
		IPM(FEED)	12~37	12~37	12~37	12~37	12~37	12~37	
		Ap	0.090~0.180	0.112~0.235	0.135~0.270	0.180~0.360	0.225~0.450	0.270~0.540	
		SFM(Vc)	180~225	180~230	180~225	180~230	180~225	180~230	
8-9	Grey cast iron Nodular cast iron Malleable cast iron	SFM(Vc)	260~315	255~325	260~325	260~325	260~325	260~325	
		IPT(fz)	.0005~.0012	.0006~.0015	.0007~.0018	.0009~.0024	.0011~.0029	.0014~.0035	
		RPM	12610~15280	9900~12610	8410~10510	6310~7880	5050~6310	4210~5260	
		IPM(FEED)	12~37	12~37	12~37	12~37	12~37	12~37	
		Ap	0.090~0.180	0.112~0.235	0.135~0.270	0.180~0.360	0.225~0.450	0.270~0.540	
		SFM(Vc)	180~225	180~230	180~225	180~230	180~225	180~230	
10	Hardened steel	SFM(Vc)	260~315	255~325	260~325	260~325	260~325	260~325	
		IPT(fz)	.0005~.0012	.0006~.0015	.0007~.0018	.0009~.0024	.0011~.0029	.0014~.0035	
		RPM	12610~15280	9900~12610	8410~10510	6310~7880	5050~6310	4210~5260	
		IPM(FEED)	12~37	12~37	12~37	12~37	12~37	12~37	
		Ap	0.090~0.180	0.112~0.235	0.135~0.270	0.180~0.360	0.225~0.450	0.270~0.540	
		SFM(Vc)	180~225	180~230	180~225	180~230	180~225	180~230	
11.1 11.2	Chilled Cast Iron	SFM(Vc)	260~315	255~325	260~325	260~325	260~325	260~325	
		IPT(fz)	.0005~.0012	.0006~.0015	.0007~.0018	.0009~.0024	.0011~.0029	.0014~.0035	
		RPM	12610~15280	9900~12610	8410~10510	6310~7880	5050~6310	4210~5260	
		IPM(FEED)	12~37	12~37	12~37	12~37	12~37	12~37	
		Ap	0.090~0.180	0.112~0.235	0.135~0.270	0.180~0.360	0.225~0.450	0.270~0.540	
		SFM(Vc)	180~225	180~230	180~225	180~230	180~225	180~230	
K	Hardened Cast Iron	SFM(Vc)	260~315	255~325	260~325	260~325	260~325	260~325	
		IPT(fz)	.0005~.0012	.0006~.0015	.0007~.0018	.0009~.0024	.0011~.0029	.0014~.0035	
		RPM	12610~15280	9900~12610	8410~10510	6310~7880	5050~6310	4210~5260	
		IPM(FEED)	12~37	12~37	12~37	12~37	12~37	12~37	
		Ap	0.090~0.180	0.112~0.235	0.135~0.270	0.180~0.360	0.225~0.450	0.270~0.540	
		SFM(Vc)	180~225	180~230	180~225	180~230	180~225	180~230	
H	38.1 38.2	Hardened steel	SFM(Vc)	115~145	115~145	115~145	115~145	115~140	115~170
			IPT(fz)	.0003~.0004	.0003~.0005	.0004~.0006	.0005~.0008	.0006~.001	.0008~.001
			RPM	5580~7040	4460~5630	3720~4690	2790~3520	2230~2720	1860~2750
			IPM(FEED)	3~5	3~5	3~5	3~5	3~5	3~5
			Ap	0.018~0.035	0.022~0.045	0.028~0.055	0.036~0.072	0.045~0.090	0.054~0.108
			SFM(Vc)	180~225	180~230	180~225	180~230	180~225	180~230
H	40	Chilled Cast Iron	SFM(Vc)	115~145	115~145	115~145	115~145	115~140	115~170
			IPT(fz)	.0003~.0004	.0003~.0005	.0004~.0006	.0005~.0008	.0006~.001	.0008~.001
			RPM	5580~7040	4460~5630	3720~4690	2790~3520	2230~2720	1860~2750
			IPM(FEED)	3~5	3~5	3~5	3~5	3~5	3~5
			Ap	0.018~0.035	0.022~0.045	0.028~0.055	0.036~0.072	0.045~0.090	0.054~0.108
			SFM(Vc)	180~225	180~230	180~225	180~230	180~225	180~230
H	41	Hardened Cast Iron	SFM(Vc)	115~145	115~145	115~145	115~145	115~140	115~170
			IPT(fz)	.0003~.0004	.0003~.0005	.0004~.0006	.0005~.0008	.0006~.001	.0008~.001
			RPM	5580~7040	4460~5630	3720~4690	2790~3520	2230~2720	1860~2750
			IPM(FEED)	3~5	3~5	3~5	3~5	3~5	3~5
			Ap	0.018~0.035	0.022~0.045	0.028~0.055	0.036~0.072	0.045~0.090	0.054~0.108
			SFM(Vc)	180~225	180~230	180~225	180~230	180~225	180~230

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)						
						2.0	3.0	4.0	6.0	8.0	10.0	12.0
P	1-4	Non-alloy steel	0.05D	1.0D	SFM(Vc)	310	360	410	460	460	445	445
					IPT(fz)	.0002	.0004	.0007	.0012	.0017	.0018	.0019
					RPM	15040	11640	9950	7440	5580	4320	3600
					IPM(FEED)	14	17	30	35	37	32	27
					SFM(Vc)	215	230	245	280	280	280	280
					IPT(fz)	.0002	.0004	.0008	.0012	.0015	.0014	.0014
	5	Low alloy steel	0.05D	1.0D	SFM(Vc)	310	360	410	460	460	445	445
					IPT(fz)	.0002	.0004	.0007	.0012	.0017	.0018	.0019
					RPM	15040	11640	9950	7440	5580	4320	3600
					IPM(FEED)	14	17	30	35	37	32	27
					SFM(Vc)	215	230	245	280	280	280	280
					IPT(fz)	.0002	.0004	.0008	.0012	.0015	.0014	.0014
6-7	High alloyed steel, and tool steel	0.05D	1.0D	SFM(Vc)	310	360	410	460	460	445	445	
				IPT(fz)	.0002	.0004	.0007	.0012	.0017	.0018	.0019	
				RPM	15040	11640	9950	7440	5580	4320	3600	
				IPM(FEED)	14	17	30	35	37	32	27	
				SFM(Vc)	215	230	245	280	280	280	280	
				IPT(fz)	.0002	.0004	.0008	.0012	.0015	.0014	.0014	
8-9	Grey cast iron Nodular cast iron Malleable cast iron	0.05D	1.0D	SFM(Vc)	310	360	410	460	460	445	445	
				IPT(fz)	.0002	.0004	.0007	.0012	.0017	.0018	.0019	
				RPM	15040	11640	9950	7440	5580	4320	3600	
				IPM(FEED)	14	17	30	35	37	32	27	
				SFM(Vc)	215	230	245	280	280	280	280	
				IPT(fz)	.0002	.0004	.0008	.0012	.0015	.0014	.0014	
10	Hardened steel	0.05D	1.0D	SFM(Vc)	310	360	410	460	460	445	445	
				IPT(fz)	.0002	.0004	.0007	.0012	.0017	.0018	.0019	
				RPM	15040	11640	9950	7440	5580	4320	3600	
				IPM(FEED)	14	17	30	35	37	32	27	
				SFM(Vc)	215	230	245	280	280	280	280	
				IPT(fz)	.0002	.0004	.0008	.0012	.0015	.0014	.0014	
11.1 11.2	Chilled Cast Iron	0.05D	1.0D	SFM(Vc)	310	360	410	460	460	445	445	
				IPT(fz)	.0002	.0004	.0007	.0012	.0017	.0018	.0019	
				RPM	15040	11640	9950	7440	5580	4320	3600	
				IPM(FEED)	14	17	30	35	37	32	27	
				SFM(Vc)	215	230	245	280	280	280	280	
				IPT(fz)	.0002	.0004	.0008	.0012	.0015	.0014	.0014	
K	38.1 38.2	Hardened steel	0.05D	1.0D	SFM(Vc)	130	130	165	165	180	180	195
					IPT(fz)	.0001	.0002	.0002	.0004	.0006	.0007	.0007
					RPM	6310	4210	4000	2670	2180	1750	1580
					IPM(FEED)	2	3	3	4	6	5	4
					SFM(Vc)	215	230	245	280	280	280	280
					IPT(fz)	.0002	.0004	.0008	.0012	.0015	.0014	.0014
H	40	Chilled Cast Iron	0.05D	1.0D	SFM(Vc)	130	130	165	165	180	180	195
					IPT(fz)	.0001	.0002	.0002	.0004	.0006	.0007	.0007
					RPM	6310	4210	4000	2670	2180	1750	1580
					IPM(FEED)	2	3	3	4	6	5	4
					SFM(Vc)	215	230	245	280	280	280	280
					IPT(fz)	.0002	.0004	.0008	.0012	.0015	.0014	.0014
H	41	Hardened Cast Iron	0.05D	1.0D	SFM(Vc)	130	130	165	165	180	180	195
					IPT(fz)	.0001	.0002	.0002	.0004	.0006	.0007	.0007
					RPM	6310	4210	4000	2670	2180	1750	1580
					IPM(FEED)	2	3	3	4	6	5	4
					SFM(Vc)	215	230	245	280	280	280	280
					IPT(fz)	.0002	.0004	.0008	.0012	.0015	.0014	.0014

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)



SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : mm (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)



HSS

HSS



RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

GM819 SERIES 4 FLUTE CORNER RADIUS - SIDE CUTTING

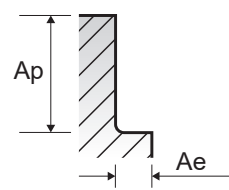
GM810 SERIES 2 FLUTE - SLOTTING

Table with columns for ISO, VDI 3323, Material Description, Ae, Ap, Parameter, and Diameter (Ø) ranging from 3.0 to 20.0. Includes material categories like Non-alloy steel, Low alloy steel, High alloyed steel, and Hardened steel.

Table with columns for ISO, VDI 3323, Material Description, Ae, Ap, Parameter, and Diameter (Ø) ranging from 0.4 to 1.5. Includes material categories like Non-alloy steel, Low alloy steel, High alloyed steel, and Hardened steel.

Table with columns for ISO, VDI 3323, Material Description, Ae, Ap, Parameter, and Diameter (Ø) ranging from 2.0 to 20.0. Includes material categories like Non-alloy steel, Low alloy steel, High alloyed steel, and Stainless steel.

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)



CBN END MILLS

i-Xmill END MILLS

i-SMART MODULAR END MILLS

X5070 END MILLS

4G MILL END MILLS

X-POWER PRO END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

V7 PLUS A END MILLS

V7 MILL INOX

ALU-POWER HPC END MILLS

ALU-POWER END MILLS

D-POWER GRAPHITE END MILLS

STANDARD CARBIDE

ONLY ONE COATED PM60 END MILLS

SINE-POWER

TANK-POWER END MILLS

STANDARD COBALT & HSS

TECHNICAL DATA



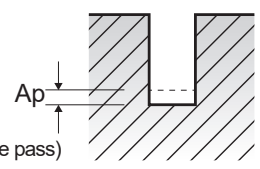
**X-POWER PRO END MILLS**

**RECOMMENDED CUTTING CONDITIONS**

**GM883 SERIES 2 FLUTE RIB PROCESSING**

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)							
				0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2
P	1-4	Non-alloy steel	SFM(Vc)	135~175	170~215	200~260	235~305	235~220	245~305	245~305	240~290
			IPT(fz)	.0001~.0002	.0001~.0002	.0002~.0003	.0002~.0003	.0002~.0005	.0002~.0005	.0002~.0006	.0003~.0008
			RPM	32750~42450	32990~41720	32340~42050	32570~42280	28500~26680	26410~32880	23770~29590	19410~23450
			IPM(FEED)	8~18	8~18	10~24	10~24	12~26	12~30	12~34	12~37
			Ap	0.007~0.018	0.009~0.022	0.011~0.026	0.012~0.031	0.014~0.035	0.030~0.060	0.045~0.090	0.055~0.100
	5	Non-alloy steel	SFM(Vc)	95~120	120~150	145~180	170~210	170~210	170~220	170~215	170~215
			IPT(fz)	.0001~.0002	.0001~.0002	.0001~.0003	.0001~.0003	.0001~.0004	.0002~.0005	.0002~.0006	.0003~.0007
			RPM	23040~29110	23290~29110	23450~29110	23560~29110	20620~25470	18330~23720	16500~20860	13750~17380
			IPM(FEED)	4~14	4~14	5~18	5~18	5~20	7~22	8~25	8~25
			Ap	0.007~0.018	0.009~0.022	0.011~0.026	0.012~0.031	0.014~0.035	0.030~0.060	0.045~0.090	0.055~0.100
	6-7	Low alloy steel	SFM(Vc)	135~175	170~215	200~260	235~305	235~220	245~305	245~305	240~290
			IPT(fz)	.0001~.0002	.0001~.0002	.0002~.0003	.0002~.0003	.0002~.0005	.0002~.0005	.0002~.0006	.0003~.0008
			RPM	32750~42450	32990~41720	32340~42050	32570~42280	28500~26680	26410~32880	23770~29590	19410~23450
			IPM(FEED)	8~18	8~18	10~24	10~24	12~26	12~30	12~34	12~37
			Ap	0.007~0.018	0.009~0.022	0.011~0.026	0.012~0.031	0.014~0.035	0.030~0.060	0.045~0.090	0.055~0.100
8-9	Low alloy steel	SFM(Vc)	95~120	120~150	145~180	170~210	170~210	170~220	170~215	170~215	
		IPT(fz)	.0001~.0002	.0001~.0002	.0001~.0003	.0001~.0003	.0001~.0004	.0002~.0005	.0002~.0006	.0003~.0007	
		RPM	23040~29110	23290~29110	23450~29110	23560~29110	20620~25470	18330~23720	16500~20860	13750~17380	
		IPM(FEED)	4~14	4~14	5~18	5~18	5~20	7~22	8~25	8~25	
		Ap	0.007~0.018	0.009~0.022	0.011~0.026	0.012~0.031	0.014~0.035	0.030~0.060	0.045~0.090	0.055~0.100	
10	High alloyed steel, and tool steel	SFM(Vc)	135~175	170~215	200~260	235~305	235~220	245~305	245~305	240~290	
		IPT(fz)	.0001~.0002	.0001~.0002	.0002~.0003	.0002~.0003	.0002~.0005	.0002~.0005	.0002~.0006	.0003~.0008	
		RPM	32750~42450	32990~41720	32340~42050	32570~42280	28500~26680	26410~32880	23770~29590	19410~23450	
		IPM(FEED)	8~18	8~18	10~24	10~24	12~26	12~30	12~34	12~37	
		Ap	0.007~0.018	0.009~0.022	0.011~0.026	0.012~0.031	0.014~0.035	0.030~0.060	0.045~0.090	0.055~0.100	
11.1-11.2	High alloyed steel, and tool steel	SFM(Vc)	95~120	120~150	145~180	170~210	170~210	170~220	170~215	170~215	
		IPT(fz)	.0001~.0002	.0001~.0002	.0001~.0003	.0001~.0003	.0001~.0004	.0002~.0005	.0002~.0006	.0003~.0007	
		RPM	23040~29110	23290~29110	23450~29110	23560~29110	20620~25470	18330~23720	16500~20860	13750~17380	
		IPM(FEED)	4~14	4~14	5~18	5~18	5~20	7~22	8~25	8~25	
		Ap	0.007~0.018	0.009~0.022	0.011~0.026	0.012~0.031	0.014~0.035	0.030~0.060	0.045~0.090	0.055~0.100	
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	SFM(Vc)	135~175	170~215	200~260	235~305	235~220	245~305	245~305	240~290
			IPT(fz)	.0001~.0002	.0001~.0002	.0002~.0003	.0002~.0003	.0002~.0005	.0002~.0005	.0002~.0006	.0003~.0008
			RPM	32750~42450	32990~41720	32340~42050	32570~42280	28500~26680	26410~32880	23770~29590	19410~23450
			IPM(FEED)	8~18	8~18	10~24	10~24	12~26	12~30	12~34	12~37
			Ap	0.007~0.018	0.009~0.022	0.011~0.026	0.012~0.031	0.014~0.035	0.030~0.060	0.045~0.090	0.055~0.100
H	38.1-38.2	Hardened steel	SFM(Vc)	60~75	75~90	95~110	110~130	110~130	105~120	110~135	110~135
			IPT(fz)	.00004~.0001	.00004~.0001	.0001~.0001	.0001~.0001	.00005~.0001	.0001~.0002	.0001~.0002	.0002~.0002
			RPM	14550~18190	14550~17470	15360~17790	15250~18020	13340~15770	11320~12940	10670~13100	8890~10920
			IPM(FEED)	1~4	1~4	2~5	2~5	2~5	3~5	3~5	3~5
			Ap	0.004~0.008	0.004~0.009	0.005~0.011	0.006~0.013	0.007~0.015	0.008~0.016	0.009~0.018	0.010~0.022
	40	Chilled Cast Iron	SFM(Vc)	95~120	120~150	145~180	170~210	170~210	170~220	170~215	170~215
			IPT(fz)	.0001~.0002	.0001~.0002	.0001~.0003	.0001~.0003	.0001~.0004	.0002~.0005	.0002~.0006	.0003~.0007
			RPM	23040~29110	23290~29110	23450~29110	23560~29110	20620~25470	18330~23720	16500~20860	13750~17380
			IPM(FEED)	4~14	4~14	5~18	5~18	5~20	7~22	8~25	8~25
			Ap	0.007~0.018	0.009~0.022	0.011~0.026	0.012~0.031	0.014~0.035	0.030~0.060	0.045~0.090	0.055~0.100
41	Hardened Cast Iron	SFM(Vc)	60~75	75~90	95~110	110~130	110~130	105~120	110~135	110~135	
		IPT(fz)	.00004~.0001	.00004~.0001	.0001~.0001	.0001~.0001	.00005~.0001	.0001~.0002	.0001~.0002	.0002~.0002	
		RPM	14550~18190	14550~17470	15360~17790	15250~18020	13340~15770	11320~12940	10670~13100	8890~10920	
		IPM(FEED)	1~4	1~4	2~5	2~5	2~5	3~5	3~5	3~5	
		Ap	0.004~0.008	0.004~0.009	0.005~0.011	0.006~0.013	0.007~0.015	0.008~0.016	0.009~0.018	0.010~0.022	

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : mm (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)



▶ NEXT PAGE



**X-POWER PRO END MILLS**

**RECOMMENDED CUTTING CONDITIONS**

**GM883 SERIES 2 FLUTE RIB PROCESSING**

VDI 3323	Parameter	Diameter (Ø)									
		1.4	1.5	1.6	1.8	2.0	2.5	3.0	4.0	5.0	6.0
1-4	SFM(Vc)	240~305	235~300	240~310	255~320	260~315	255~325	260~325	260~325	260~325	260~325
	IPT(fz)	.0003~.0009	.0004~.001	.0004~.001	.0004~.0011	.0005~.0012	.0006~.0015	.0007~.0018	.0009~.0024	.0011~.0029	.0014~.0035
	RPM	16630~21140	15200~19410	14550~18800	13750~17250	12610~15280	9900~12610	8410~10510	6310~7880	5050~6310	4210~5260
	IPM(FEED)	12~37	12~37	12~37	12~37	12~37	12~37	12~37	12~37	12~37	12~37
	Ap	0.062~0.125	0.070~0.135	0.075~0.145	0.080~0.160	0.090~0.180	0.112~0.235	0.135~0.270	0.180~0.360	0.225~0.450	0.270~0.540
5	SFM(Vc)	175~210	170~220	175~220	180~225	180~225	180~230	180~225	180~230	180~225	180~230
	IPT(fz)	.0003~.0009	.0004~.0009	.0004~.0009	.0004~.001	.0005~.0011	.0006~.0014	.0007~.0017	.0009~.0022	.0011~.0028	.0014~.0033
	RPM	12130~14550	11000~14230	10610~13340	9700~12130	8730~10920	6990~8930	5820~7280	4370~5580	3490~4370	2830~3720
	IPM(FEED)	8~25	8~25	8~25	8~25	8~25	8~25	8~25	8~25	8~25	8~25
	Ap	0.062~0.125	0.070~0.135	0.075~0.145	0.080~0.160	0.090~0.180	0.112~0.235	0.135~0.270	0.180~0.360	0.225~0.450	0.270~0.540
6-7	SFM(Vc)	240~305	235~300	240~310	255~320	260~315	255~325	260~325	260~325	260~325	260~325
	IPT(fz)	.0003~.0009	.0004~.001	.0004~.001	.0004~.0011	.0005~.0012	.0006~.0015	.0007~.0018	.0009~.0024	.0011~.0029	.0014~.0035
	RPM	16630~21140	15200~19410	14550~18800	13750~17250	12610~15280	9900~12610	8410~10510	6310~7880	5050~6310	4210~5260
	IPM(FEED)	12~37	12~37	12~37	12~37	12~37	12~37	12~37	12~37	12~37	12~37
	Ap	0.062~0.125	0.070~0.135	0.075~0.145	0.080~0.160	0.090~0.180	0.112~0.235	0.135~0.270	0.180~0.360	0.225~0.450	0.270~0.540
8-9	SFM(Vc)	175~210	170~220	175~220	180~225	180~225	180~230	180~225	180~230	180~225	180~230
	IPT(fz)	.0003~.0009	.0004~.0009	.0004~.0009	.0004~.001	.0005~.0011	.0006~.0014	.0007~.0017	.0009~.0022	.0011~.0028	.0014~.0033
	RPM	12130~14550	11000~14230	10610~13340	9700~12130	8730~10920	6990~8930	5820~7280	4370~5580	3490~4370	2830~3720
	IPM(FEED)	8~25	8~25	8~25	8~25	8~25	8~25	8~25	8~25	8~25	8~25
	Ap	0.062~0.125	0.070~0.135	0.075~0.145	0.080~0.160	0.090~0.180	0.112~0.235	0.135~0.270	0.180~0.360	0.225~0.450	0.270~0.540
10	SFM(Vc)	240~305	235~300	240~310	255~320	260~315	255~325	260~325	260~325	260~325	260~325
	IPT(fz)	.0003~.0009	.0004~.0								



# YG X-POWER PRO END MILLS

## RECOMMENDED CUTTING CONDITIONS

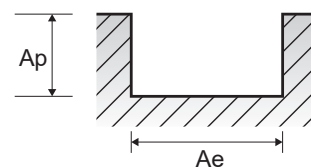
# YG X-POWER PRO END MILLS

## RECOMMENDED CUTTING CONDITIONS

### GM895 SERIES 3 FLUTE - SLOTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)								
						2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	16.0
P	1-4	Non-alloy steel	1.0D	D≤3:0.2D D>3:0.5D	SFM(Vc)	260	295	345	360	375	375	375	375	395
					IPT(fz)	.0002	.0003	.0005	.0006	.0008	.0011	.0012	.0012	.0012
					RPM	12610	9540	8370	6990	6060	4550	3640	3030	2400
					IPM(FEED)	8	8	12	12	14	15	13	11	9
					SFM(Vc)	165	195	215	215	230	230	230	230	245
					IPT(fz)	.0002	.0003	.0004	.0006	.0008	.0009	.0009	.0009	.0009
	5	Non-alloy steel	1.0D	D≤3:0.2D D>3:0.5D	SFM(Vc)	8010	6310	5220	4170	3720	2790	2230	1860	1490
					IPT(fz)	.0002	.0003	.0004	.0006	.0008	.0009	.0009	.0009	.0009
					RPM	8010	6310	5220	4170	3720	2790	2230	1860	1490
					IPM(FEED)	5	6	7	7	9	8	6	5	4
					SFM(Vc)	260	295	345	360	375	375	375	375	395
					IPT(fz)	.0002	.0003	.0005	.0006	.0008	.0011	.0012	.0012	.0012
6-7	Low alloy steel	1.0D	D≤3:0.2D D>3:0.5D	SFM(Vc)	12610	9540	8370	6990	6060	4550	3640	3030	2400	
				IPT(fz)	.0002	.0003	.0004	.0006	.0008	.0009	.0009	.0009	.0009	
				RPM	12610	9540	8370	6990	6060	4550	3640	3030	2400	
				IPM(FEED)	8	8	12	12	14	15	13	11	9	
				SFM(Vc)	165	195	215	215	230	230	230	230	245	
				IPT(fz)	.0002	.0003	.0004	.0006	.0008	.0009	.0009	.0009	.0009	
8-9	Low alloy steel	1.0D	D≤3:0.2D D>3:0.5D	SFM(Vc)	8010	6310	5220	4170	3720	2790	2230	1860	1490	
				IPT(fz)	.0002	.0003	.0004	.0006	.0008	.0009	.0009	.0009	.0009	
				RPM	8010	6310	5220	4170	3720	2790	2230	1860	1490	
				IPM(FEED)	5	6	7	7	9	8	6	5	4	
				SFM(Vc)	260	295	345	360	375	375	375	375	395	
				IPT(fz)	.0002	.0003	.0005	.0006	.0008	.0011	.0012	.0012	.0012	
10	High alloyed steel, and tool steel	1.0D	D≤3:0.2D D>3:0.5D	SFM(Vc)	12610	9540	8370	6990	6060	4550	3640	3030	2400	
				IPT(fz)	.0002	.0003	.0004	.0006	.0008	.0009	.0009	.0009	.0009	
				RPM	12610	9540	8370	6990	6060	4550	3640	3030	2400	
				IPM(FEED)	8	8	12	12	14	15	13	11	9	
				SFM(Vc)	165	195	215	215	230	230	230	230	245	
				IPT(fz)	.0002	.0003	.0004	.0006	.0008	.0009	.0009	.0009	.0009	
11.1 11.2	High alloyed steel, and tool steel	1.0D	D≤3:0.2D D>3:0.5D	SFM(Vc)	8010	6310	5220	4170	3720	2790	2230	1860	1490	
				IPT(fz)	.0002	.0003	.0004	.0006	.0008	.0009	.0009	.0009	.0009	
				RPM	8010	6310	5220	4170	3720	2790	2230	1860	1490	
				IPM(FEED)	5	6	7	7	9	8	6	5	4	
				SFM(Vc)	150	165	180	180	195	195	195	180	195	
				IPT(fz)	.0002	.0003	.0004	.0006	.0008	.0010	.0011	.0011	.0012	
M	14.1	Stainless steel	1.0D	D≤3:0.2D D>3:0.5D	SFM(Vc)	7280	5340	43780	3490	3150	2370	1890	1460	1180
					IPT(fz)	.0002	.0003	.0004	.0006	.0008	.0010	.0011	.0011	.0012
					RPM	7280	5340	43780	3490	3150	2370	1890	1460	1180
					IPM(FEED)	3	5	6	6	7	7	5	4	4
					SFM(Vc)	260	295	345	360	375	375	375	375	395
					IPT(fz)	.0002	.0003	.0005	.0006	.0008	.0011	.0012	.0012	.0012
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	D≤3:0.2D D>3:0.5D	SFM(Vc)	12610	9540	8370	6990	6060	4550	3640	3030	2400
					IPT(fz)	.0002	.0003	.0004	.0006	.0008	.0011	.0012	.0012	.0012
					RPM	12610	9540	8370	6990	6060	4550	3640	3030	2400
					IPM(FEED)	8	8	12	12	14	15	13	11	9
					SFM(Vc)	115	115	130	130	130	150	150	165	165
					IPT(fz)	.0001	.0002	.0002	.0003	.0003	.0005	.0005	.0005	.0005
H	38.1 - 38.2	Hardened steel	1.0D	0.05D	SFM(Vc)	5580	3720	3150	2520	2100	1820	1460	1330	1000
					IPT(fz)	.0001	.0002	.0002	.0003	.0003	.0005	.0005	.0005	.0005
					RPM	5580	3720	3150	2520	2100	1820	1460	1330	1000
					IPM(FEED)	1	2	2	2	2	3	2	2	2
					SFM(Vc)	165	195	215	215	230	230	230	230	245
					IPT(fz)	.0002	.0003	.0004	.0006	.0008	.0009	.0009	.0009	.0009
H	40	Chilled Cast Iron	1.0D	D≤3:0.2D D>3:0.5D	SFM(Vc)	8010	6310	5220	4170	3720	2790	2230	1860	1490
					IPT(fz)	.0002	.0003	.0004	.0006	.0008	.0009	.0009	.0009	.0009
					RPM	8010	6310	5220	4170	3720	2790	2230	1860	1490
					IPM(FEED)	5	6	7	7	9	8	6	5	4
					SFM(Vc)	115	115	130	130	130	150	150	165	165
					IPT(fz)	.0001	.0002	.0002	.0003	.0003	.0005	.0005	.0005	.0005
H	41	Hardened Cast Iron	1.0D	0.05D	SFM(Vc)	5580	3720	3150	2520	2100	1820	1460	1330	1000
					IPT(fz)	.0001	.0002	.0002	.0003	.0003	.0005	.0005	.0005	.0005
					RPM	5580	3720	3150	2520	2100	1820	1460	1330	1000
					IPM(FEED)	1	2	2	2	2	3	2	2	2
					SFM(Vc)	115	115	130	130	130	150	150	165	165
					IPT(fz)	.0001	.0002	.0002	.0003	.0003	.0005	.0005	.0005	.0005

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)



▶ NEXT PAGE

### GM895 SERIES 3 FLUTE - SIDE CUTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)								
						2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	16.0
P	1-4	Non-alloy steel	0.05D	1.0D	SFM(Vc)	260	295	345	360	375	375	375	375	395
					IPT(fz)	.0002	.0004	.0007	.0009	.0012	.0017	.0019	.0019	.0019
					RPM	12610	9540	8370	6990	6060	4550	3640	3030	2400
					IPM(FEED)	9	10	19	20	22	23	20	17	13
					SFM(Vc)	165	195	215	215	230	230	230	230	245
					IPT(fz)	.0002	.0004	.0007	.0009	.0012	.0017	.0019	.0019	.0019
	5	Non-alloy steel	0.05D	1.0D	SFM(Vc)	8010	6310	5220	4170	3720	2790	2230	1860	1490
					IPT(fz)	.0002	.0004	.0007	.0009	.0012	.0017	.0019	.0019	.0019
					RPM	8010	6310	5220	4170	3720	2790	2230	1860	1490
					IPM(FEED)	6	7	12	12	14	13	10	8	7
					SFM(Vc)	260	295	345	360	375	375	375	375	395
					IPT(fz)	.0002	.0004	.0007	.0009	.0012	.0017	.0019	.0019	.0019
6-7	Low alloy steel	0.05D	1.0D	SFM(Vc)	12610	9540	8370	6990	6060	4550	3640	3030	2400	
				IPT(fz)	.0002	.0004	.0007	.0009	.0012	.0017	.0019	.0019	.0019	
				RPM	12610	9540	8370	6990	6060	4550	3640	3030	2400	
				IPM(FEED)	9	10	19	20	22	23	20	17	13	
				SFM(Vc)	165	195	215	215	230	230	230	230	245	
				IPT(fz)	.0002	.0004	.0007	.0009	.0012	.0017	.0019	.0019	.0019	
8-9	Low alloy steel	0.05D	1.0D	SFM(Vc)	8010	6310	5220	4170	3720	2790	2230	1860	1490	
				IPT(fz)	.0002	.0004	.0007	.0009	.0012	.0017	.0019	.0019	.0019	
				RPM	8010	6310	5220	4170	3720	2790	2230	1860	1490	
				IPM(FEED)	6	7	12	12	14	13	10	8	7	
				SFM(Vc)	260	295	345	360	375	375	375	375	395	
				IPT(fz)	.0002	.0004	.0007	.0009	.0012	.0017	.0019	.0019	.0019	
10	High alloyed steel, and tool steel	0.05D	1.0D	SFM(Vc)	12610	9540	8370	6990	6060	4550	3640	3030	2400	
				IPT(fz)	.0002	.0004	.0007	.0009	.0012	.0017	.0019	.0019	.0019	
				RPM	12610	9540	8370	6990	6060	4550	3640	3030	2400	
				IPM(FEED)	9	10	19	20	22	23	20	17	13	
				SFM(Vc)	165	195	215	215	230	230	230	230	245	
				IPT(fz)	.0002	.0004	.0007	.0009	.0012	.0017	.0019	.0019	.0019	
11.1 11.2	High alloyed steel, and tool steel	0.05D	1.0D	SFM(Vc)	8010	6310	5220	4170	3720	2790	2230	1860	1490	
				IPT(fz)	.0002	.0004	.0007	.0009	.0012	.0017	.0019	.0019	.0019	
				RPM	8010	6310	5220	4170	3720	2790	2230	1860	1490	
				IPM(FEED)	6	7	12	12	14	13	10	8	7	
				SFM(Vc)	150	165	180	180	195	195	195	180	195	
				IPT(fz)	.0002	.0003	.0004	.0006	.0008	.0010	.0011	.0011	.0012	
M	14.1	Stainless steel	0.05D	1.0D	SFM(Vc)	7280	5340	4370	3490	3150	2370	1890	1460	1180
					IPT(fz)	.0002	.0003	.0007	.0009	.0012	.0017	.0019	.0019	.0019
					RPM	7280	5340	4370	3490	3150	2370	1890	1460	1180
					IPM(FEED)	5	6	9	10	11	12	10	8	7
					SFM(Vc)	260	295	345	360	375	375	375	375	395
					IPT(fz)	.0002	.0004	.0007	.0009	.0012	.0017	.0019	.0019	.0019
K	15-20	Grey cast iron Nodular cast iron Malle												

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# YG X-POWER PRO END MILLS

## RECOMMENDED CUTTING CONDITIONS

# YG X-POWER PRO END MILLS

## RECOMMENDED CUTTING CONDITIONS

### GM811 SERIES 4 FLUTE - SIDE CUTTING

### GM817 SERIES 4 FLUTE - SIDE CUTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)										
						2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	16.0	20.0	25.0
P	1-4	Non-alloy steel	0.05D	1.0D	SFM(Vc)	260	310	345	360	375	395	375	375	410	395	395
					IPT(fz)	.0002	.0004	.0007	.0009	.0012	.0016	.0019	.0019	.0019	.0018	
					RPM	12610	10030	8370	6990	6060	4790	3640	3030	2490	1920	1530
					IPM(FEED)	12	14	25	27	29	32	27	23	18	14	11
					SFM(Vc)	180	195	215	215	230	230	230	230	245	245	245
					IPT(fz)	.0002	.0004	.0007	.0009	.0012	.0015	.0015	.0015	.0015	.0015	.0016
	5	Non-alloy steel	0.05D	1.0D	SFM(Vc)	180	195	215	215	230	230	230	230	245	245	245
					IPT(fz)	.0002	.0004	.0007	.0009	.0012	.0015	.0015	.0015	.0015	.0015	.0016
					RPM	8730	6310	5220	4170	3720	2790	2230	1860	1490	1190	950
					IPM(FEED)	8	9	16	16	18	17	13	11	9	7	6
					SFM(Vc)	260	310	345	360	375	395	375	375	410	395	395
					IPT(fz)	.0002	.0004	.0007	.0009	.0012	.0016	.0019	.0019	.0019	.0019	.0018
6-7	Low alloy steel	0.05D	1.0D	SFM(Vc)	12610	10030	8370	6990	6060	4790	3640	3030	2490	1920	1530	
				IPT(fz)	12	14	25	27	29	32	27	23	18	14	11	
				RPM	180	195	215	215	230	230	230	230	245	245	245	
				IPM(FEED)	.0002	.0004	.0007	.0009	.0012	.0015	.0015	.0015	.0015	.0015	.0016	
				SFM(Vc)	8730	6310	5220	4170	3720	2790	2230	1860	1490	1190	950	
				IPT(fz)	8	9	16	16	18	17	13	11	9	7	6	
8-9	Low alloy steel	0.05D	1.0D	SFM(Vc)	180	195	215	215	230	230	230	230	245	245	245	
				IPT(fz)	.0002	.0004	.0007	.0009	.0012	.0015	.0015	.0015	.0015	.0015	.0016	
				RPM	8730	6310	5220	4170	3720	2790	2230	1860	1490	1190	950	
				IPM(FEED)	8	9	16	16	18	17	13	11	9	7	6	
				SFM(Vc)	260	310	345	360	375	395	375	375	410	395	395	
				IPT(fz)	.0002	.0004	.0007	.0009	.0012	.0016	.0019	.0019	.0019	.0019	.0018	
10	High alloyed steel, and tool steel	0.05D	1.0D	SFM(Vc)	12610	10030	8370	6990	6060	4790	3640	3030	2490	1920	1530	
				IPT(fz)	12	14	25	27	29	32	27	23	18	14	11	
				RPM	180	195	215	215	230	230	230	230	245	245	245	
				IPM(FEED)	.0002	.0004	.0007	.0009	.0012	.0015	.0015	.0015	.0015	.0015	.0016	
				SFM(Vc)	8730	6310	5220	4170	3720	2790	2230	1860	1490	1190	950	
				IPT(fz)	8	9	16	16	18	17	13	11	9	7	6	
11.1 11.2	High alloyed steel, and tool steel	0.05D	1.0D	SFM(Vc)	150	165	180	180	195	195	195	180	195	195		
				IPT(fz)	.0002	.0004	.0007	.0009	.0011	.0016	.0018	.0017	.0018	.0018	.0018	
				RPM	7280	5340	4370	3490	3150	2370	1890	1460	1180	950	760	
				IPM(FEED)	6	8	12	13	15	15	14	10	9	7	5	
				SFM(Vc)	260	310	345	360	375	395	375	375	410	395	395	
				IPT(fz)	.0002	.0004	.0007	.0009	.0012	.0016	.0019	.0019	.0019	.0019	.0018	
M	14.1	Stainless steel	0.05D	1.0D	SFM(Vc)	12610	10030	8370	6990	6060	4790	3640	3030	2490	1920	1530
					IPT(fz)	12	14	25	27	29	32	27	23	18	14	11
					RPM	180	195	215	215	230	230	230	230	245	245	245
					IPM(FEED)	.0002	.0004	.0007	.0009	.0012	.0015	.0015	.0015	.0015	.0015	.0016
					SFM(Vc)	8730	6310	5220	4170	3720	2790	2230	1860	1490	1190	950
					IPT(fz)	8	9	16	16	18	17	13	11	9	7	6
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.05D	1.0D	SFM(Vc)	115	105	130	130	130	150	165	165	165	150	
					IPT(fz)	.0001	.0002	.0002	.0003	.0004	.0007	.0006	.0006	.0006	.0006	.0006
					RPM	5580	3400	3150	2520	2100	1820	1600	1330	1000	800	580
					IPM(FEED)	2	2	3	3	3	5	4	4	3	2	1
					SFM(Vc)	180	195	215	215	230	230	230	230	245	245	245
					IPT(fz)	.0002	.0004	.0007	.0009	.0012	.0015	.0015	.0015	.0015	.0015	.0016
H	38.1 - 38.2	Hardened steel	0.05D	1.0D	SFM(Vc)	8730	6310	5220	4170	3720	2790	2230	1860	1490	1190	950
					IPT(fz)	8	9	16	16	18	17	13	11	9	7	6
					RPM	115	105	130	130	130	150	165	165	165	150	
					IPM(FEED)	.0001	.0002	.0002	.0003	.0004	.0007	.0006	.0006	.0006	.0006	.0006
					SFM(Vc)	5580	3400	3150	2520	2100	1820	1600	1330	1000	800	580
					IPT(fz)	2	2	3	3	3	5	4	4	3	2	1
H	40	Chilled Cast Iron	0.05D	1.0D	SFM(Vc)	115	105	130	130	130	150	165	165	165	150	
					IPT(fz)	.0001	.0002	.0002	.0003	.0004	.0007	.0006	.0006	.0006	.0006	.0006
					RPM	5580	3400	3150	2520	2100	1820	1600	1330	1000	800	580
					IPM(FEED)	2	2	3	3	3	5	4	4	3	2	1
					SFM(Vc)	180	195	215	215	230	230	230	230	245	245	245
					IPT(fz)	.0002	.0004	.0007	.0009	.0012	.0015	.0015	.0015	.0015	.0015	.0016
H	41	Hardened Cast Iron	0.05D	1.0D	SFM(Vc)	115	105	130	130	130	150	165	165	165	150	
					IPT(fz)	.0001	.0002	.0002	.0003	.0004	.0007	.0006	.0006	.0006	.0006	.0006
					RPM	5580	3400	3150	2520	2100	1820	1600	1330	1000	800	580
					IPM(FEED)	2	2	3	3	3	5	4	4	3	2	1
					SFM(Vc)	180	195	215	215	230	230	230	230	245	245	245
					IPT(fz)	.0002	.0004	.0007	.0009	.0012	.0015	.0015	.0015	.0015	.0015	.0016

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)									
						2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	16.0	20.0
P	1-4	Non-alloy steel	0.05D	2.5D	SFM(Vc)	195	215	230	245	260	260	280	260	295	280
					IPT(fz)	.0002	.0004	.0006	.0008	.0012	.0016	.0019	.0019	.0020	.0019
					RPM	9460	6950	5580	4750	4210	3150	2720	2100	1790	1360
					IPM(FEED)	9	10	12	16	19	21	21	16	14	10
					SFM(Vc)	115	130	130	150	150	150	165	165	165	165
					IPT(fz)	.0002	.0003	.0004	.0005	.0008	.0011	.0013	.0014	.0014	.0013
	5	Non-alloy steel	0.05D	2.5D	SFM(Vc)	5580	4210	3150	2910	2430	1820	1600	1330	1000	800
					IPT(fz)	4	5	5	6	8	8	8	7	6	4
					RPM	195	215	230	245	260	260	280	260	295	280
					IPM(FEED)	.0002	.0004	.0006	.0008	.0012	.0016	.0019	.0019	.0020	.0019
					SFM(Vc)	9460	6950	5580	4750	4210	3150	2720	2100	1790	1360
					IPT(fz)	9	10	12	16	19	21	21	16	14	10
6-7	Low alloy steel	0.05D	2.5D	SFM(Vc)	115	130	130	150	150	150	165	165	165	165	
				IPT(fz)	.0002	.0003	.0004	.0005	.0008	.0011	.0013	.0014	.0014	.0013	
				RPM	5580	4210	3150	2910	2430	1820	1600	1330	1000	800	
				IPM(FEED)	4	5	5	6	8	8	8	7	6	4	
				SFM(Vc)	195	215	230	245	260	260	280	260	295	280	
				IPT(fz)	.0002	.0004	.0006	.0008	.0012	.0016	.0019	.0019	.0020	.0019	
8-9	Low alloy steel	0.05D	2.5D	SFM(Vc)	9460	6950	5580	4750	4210	3150	2720	2100	1790	1360	
				IPT(fz)	9	10	12	16	19	21	21	16	14	10	
				RPM	115	130	130	150	150	150	165	165	165	165	
				IPM(FEED)	.0002	.0003	.0004	.0005	.0008	.0011	.0013	.0014	.0014	.0013	
				SFM(Vc)	5580	4210	3150	2910	2430	1820	1600	1330	1000	800	
				IPT(fz)	4	5	5	6	8	8	8	7	6	4	
10	High alloyed steel, and tool steel	0.05D	2.5D	SFM(Vc)	195	215	230	245	260	260	280	260	295	280	
				IPT(fz)	.0002	.0004	.0006	.0008	.0012	.0016	.0019	.0019	.0020	.0019	
				RPM	9460	6950	5580	4750	4210	3150	2720	2100	1790	1360	
				IPM(FEED)	9	10	12	16	19	21	21	16	14	10	
				SFM(Vc)	115	130	130	150	150	150	165	165	165	165	
				IPT(fz)	.0002	.0003	.0004	.0005	.0008	.0011	.0013	.0014	.0014	.0013	
11.1 11.2	High alloyed steel, and tool steel	0.05D	2.5D	SFM(Vc)	5580	4210	3150	2910	2430	1820	1600	1330	1000	800	
				IPT(fz)	4	5	5	6	8	8	8	7	6	4	
				RPM	195	215	230	245	260	260	280	260	295	280	
				IPM(FEED)	.0002	.0004	.0006	.0008	.0012	.0016	.0019	.0019	.0020	.0019	
				SFM(Vc)	9460	6950	5580	4750	4210	3150	2720	2100	1790	1360	
				IPT(fz)	9	10	12	16	19	21	21	16	14	10	
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.05D	2.5D	SFM(Vc)</										

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RECOMMENDED CUTTING CONDITIONS

GM812 SERIES 6&8 FLUTE - SIDE CUTTING

NORMAL SPEED

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) [6.0, 8.0, 10.0, 12.0, 16.0, 20.0]. Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and Hardened steel.

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)

HIGH SPEED

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) [6.0, 8.0, 10.0, 12.0, 16.0, 20.0]. Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and Hardened steel.

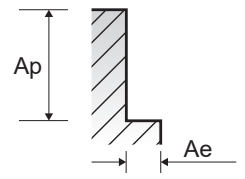


RECOMMENDED CUTTING CONDITIONS

GM834 SERIES 6 FLUTE - SIDE CUTTING

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) [6.0, 8.0, 10.0, 12.0, 16.0, 20.0, 25.0]. Rows include Non-alloy steel, Low alloy steel, High alloyed steel, Grey cast iron, and Hardened steel.

SFM = Surface Feet per Minute
RPM = Revolutions Per Minute
IPT = Inches Per Tooth
IPM = Inches Per Minute
Ap : Inch (Axial Depth of Cut)
Ae : Inch (Radial Depth of Cut)







# X-POWER PRO END MILLS

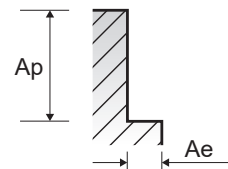
## RECOMMENDED CUTTING CONDITIONS

### GM814 SERIES

### 3&4 FLUTE ROUGHING - SIDE CUTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)																																									
						6.0	8.0	10.0	12.0	16.0	20.0																																				
P	1-4	Non-alloy steel	0.3D	1.5D	SFM(Vc)	1015	1000	1000	1035	1035	1035																																				
					IPT(fz)	.0020	.0026	.0025	.0029	.0039	.0044																																				
					RPM	16410	12130	9700	8370	6280	5020																																				
					IPM(FEED)	97	96	96	99	99	89																																				
					SFM(Vc)	805	805	820	785	835	785																																				
					IPT(fz)	.0009	.0012	.0011	.0013	.0016	.0015																																				
	5	Non-alloy steel	0.3D	1.5D	RPM	13020	9760	7960	6350	5060	3810																																				
					IPM(FEED)	35	35	35	33	32	24																																				
					SFM(Vc)	1015	1000	1000	1035	1035	1035																																				
					IPT(fz)	.0020	.0026	.0025	.0029	.0039	.0044																																				
					RPM	16410	12130	9700	8370	6280	5020																																				
					IPM(FEED)	97	96	96	99	99	89																																				
6-7	Low alloy steel	0.3D	1.5D	SFM(Vc)	805	805	820	785	835	785																																					
				IPT(fz)	.0009	.0012	.0011	.0013	.0016	.0015																																					
				RPM	13020	9760	7960	6350	5060	3810																																					
				IPM(FEED)	35	35	35	33	32	24																																					
				SFM(Vc)	1015	1000	1000	1035	1035	1035																																					
				IPT(fz)	.0020	.0026	.0025	.0029	.0039	.0044																																					
8-9	Low alloy steel	0.3D	1.5D	RPM	16410	12130	9700	8370	6280	5020																																					
				IPM(FEED)	97	96	96	99	99	89																																					
				SFM(Vc)	805	805	820	785	835	785																																					
				IPT(fz)	.0009	.0012	.0011	.0013	.0016	.0015																																					
				RPM	13020	9760	7960	6350	5060	3810																																					
				IPM(FEED)	35	35	35	33	32	24																																					
10	High alloyed steel, and tool steel	0.3D	1.5D	SFM(Vc)	1015	1000	1000	1035	1035	1035																																					
				IPT(fz)	.0020	.0026	.0025	.0029	.0039	.0044																																					
				RPM	16410	12130	9700	8370	6280	5020																																					
				IPM(FEED)	97	96	96	99	99	89																																					
				SFM(Vc)	805	805	820	785	835	785																																					
				IPT(fz)	.0009	.0012	.0011	.0013	.0016	.0015																																					
11.1 - 11.2	High alloyed steel, and tool steel	0.3D	1.5D	RPM	13020	9760	7960	6350	5060	3810																																					
				IPM(FEED)	35	35	35	33	32	24																																					
				SFM(Vc)	540	540	560	540	575	525																																					
				IPT(fz)	8733	6549	5434	4366	3487	2547																																					
				RPM	.0009	.0012	.0011	.0013	.0015	.0015																																					
				IPM(FEED)	23.8	23.3	23.9	23.4	21.4	15.2																																					
M	14.1	Stainless steel	0.3D	1.5D	SFM(Vc)	1015	1000	1000	1035	1035	1035																																				
					IPT(fz)	.0020	.0026	.0025	.0029	.0039	.0044																																				
					RPM	16410	12130	9700	8370	6280	5020																																				
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.3D	1.5D	IPM(FEED)	97	96	96	99	99	89																																				
					SFM(Vc)	215	215	215	215	215	215																																				
					IPT(fz)	.0010	.0013	.0014	.0015	.0013	.0015																																				
H	38.1 - 38.2	Hardened steel	0.05D	1.0D	RPM	3480	2610	2090	1740	1300	1040																																				
					IPM(FEED)	11	10	12	11	7	6																																				
					SFM(Vc)	805	805	820	785	835	785																																				
H	40	Chilled Cast Iron	0.3D	1.5D	IPT(fz)	.0009	.0012	.0011	.0013	.0016	.0015																																				
					RPM	13020	9760	7960	6350	5060	3810																																				
					IPM(FEED)	35	35	35	33	32	24																																				
H	41	Hardened Cast Iron	0.05D	1.0D	SFM(Vc)	215	215	215	215	215	215																																				
					IPT(fz)	.0010	.0013	.0014	.0015	.0013	.0015																																				
					RPM	3480	2610	2090	1740	1300	1040																																				
						IPM(FEED)						11						10						12						11						7						6					

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute  
 Ap : Inch (Axial Depth of Cut)  
 Ae : Inch (Radial Depth of Cut)





Being the best through innovation

**SOLID CARBIDE**

# TitaNox-POWER END MILLS

- High Speed Machining for Exotic Materials:  
Titanium, Inconel and Stainless Steels





HSS

CBN  
END MILLS

i-Xmill  
END MILLS

i-SMART  
MODULAR  
END MILLS

X5070  
END MILLS

4G MILL  
END MILLS

X-POWER  
PRO  
END MILLS

TitaNox-  
POWER  
END MILLS

JET-POWER  
END MILLS

V7 PLUS A  
END MILLS

V7 MILL  
INOX

ALU-POWER  
HPC  
END MILLS

ALU-  
POWER  
END MILLS

D-POWER  
GRAPHITE  
END MILLS

STANDARD  
CARBIDE

ONLY ONE  
COATED PM60  
END MILLS

SINE-  
POWER

TANK-  
POWER  
END MILLS

STANDARD  
COBALT &  
HSS

TECHNICAL  
DATA

SERIES	Inch		
	UGMG42	UGMG43	UGMH12
SHANK	Plain	Weldon Flat	Plain
FLUTE	4		5
HELIX ANGLE	43° / 45° (MULTIPLE HELIX)		43°/44°/45° (MULTIPLE HELIX)
CUTTING EDGE SHAPE	CORNER RADIUS	CORNER RADIUS	SQUARE
SIZE MIN	1/4	3/8	1/8
SIZE MAX	1	1	1-1/4
PAGE	C474	C475	C476-C477
	DOUBLE CORE STANDARD LENGTH		STANDARD LENGTH
	Y-Coating		Y-Coating

SOLID CARBIDE

# TitaNox-Power END MILLS

High Speed Machining for Exotic Materials:  
Titanium, Inconel and Stainless Steels



Recommended cutting conditions : p.C484

◎ : Excellent ○ : Good

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc	UGMG42	UGMG43	UGMH12
P	1	Non-alloy steel	About 0.15% C Annealed	125		○	○	○
	2		About 0.45% C Annealed	190	13	○	○	○
	3		About 0.45% C Quenched & Tempered	250	25	○	○	○
	4		About 0.75% C Annealed	270	28	○	○	○
	5		About 0.75% C Quenched & Tempered	300	32	○	○	○
	6	Low alloy steel	Annealed	180	10	○	○	○
	7		Quenched & Tempered	275	29	○	○	○
	8		Quenched & Tempered	300	32	○	○	○
	9		Quenched & Tempered	350	38	○	○	○
	10		High alloyed steel, and tool steel	Annealed	200	15	○	○
	11	Quenched & Tempered	325	35	○	○	○	
M	12	Stainless steel	Ferritic / Martensitic Annealed	200	15	◎	◎	◎
	13		Martensitic Quenched & Tempered	240	23	◎	◎	◎
	14	Austenitic	180	10	◎	◎	◎	
	15	Grey cast iron	Pearlitic / ferritic	180	10	○	○	○
16	Pearlitic (Martensitic)		260	26	○	○	○	
17	Nodular cast iron		Ferritic	160	3	○	○	○
18	Pearlitic		250	25	○	○	○	
K	19	Malleable cast iron	Ferritic	130		○	○	○
	20	Pearlitic	230	21	○	○	○	
N	21	Aluminum-wrought alloy	Not Curable	60				
	22		Curable Hardened	100				
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable	75				
	24		≤ 12% Si, Curable Hardened	90				
	25		> 12% Si, Not Curable	130				
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%	110				
	27		CuZn, CuSnZn (Brass)	90				
	28		CuSn, lead-free copper and electrolytic copper	100				
	29		Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic				
	30	Rubber, Wood, etc.						
S	31	Heat Resistant Super Alloys	Fe Based Annealed	200	15	○	○	○
	32		Cured	280	30	○	○	○
	33		Annealed	250	25	○	○	○
	34		Cured	350	38	○	○	○
	35	Cast	320	34	○	○	○	
	36	Titanium Alloys	Pure Titanium	400 Rm		◎	◎	◎
	37		Alpha + Beta Alloys Hardened	1050 Rm		◎	◎	◎
H	38	Hardened steel	Hardened	550	55			
	39		Hardened	630	60			
	40	Chilled Cast Iron	Cast	400	42			
	41	Hardened Cast Iron	Hardened	550	55			

HSS

CBN  
END MILLS

i-Xmill  
END MILLS

i-SMART  
MODULAR  
END MILLS

X5070  
END MILLS

4G MILL  
END MILLS

X-POWER  
PRO  
END MILLS

TitaNox-  
POWER  
END MILLS

JET-POWER  
END MILLS

V7 PLUS A  
END MILLS

V7 MILL  
INOX

ALU-POWER  
HPC  
END MILLS

ALU-  
POWER  
END MILLS

D-POWER  
GRAPHITE  
END MILLS

STANDARD  
CARBIDE

ONLY ONE  
COATED PM60  
END MILLS

SINE-  
POWER

TANK-  
POWER  
END MILLS

STANDARD  
COBALT &  
HSS

TECHNICAL  
DATA

UGMG32	UGMG34	UGMH06	UGMH07	EMI42	EMI43	Metric			
						GMG40	GMG24, GMG26	GMG28, GMG30	
Plain		Plain		Plain		Plain		Plain	
5		5		5		4		5	
43°/44°/45° (MULTIPLE HELIX)		43°/44°/45° (MULTIPLE HELIX)		38°		43° / 45° (MULTIPLE HELIX)		43°/44°/45° (MULTIPLE HELIX)	
CHAMFER	CORNER RADIUS	SQUARE	CORNER RADIUS	SQUARE	CORNER RADIUS	CORNER RADIUS	CHAMFER	CORNER RADIUS	CORNER RADIUS
1/8	1/8	1/8	1/8	1/4	1/4	6.0	6.0	6.0	6.0
1	1-1/4	1	1	1	1	25.0	25.0	25.0	25.0
C476-C477		C478-C479		C480-C481		C482		C483	
STANDARD LENGTH		EXTENDED LENGTH		STANDARD LENGTH		EXTENDED LENGTH		STANDARD LENGTH	
Y-Coating		Y-Coating		AITIN		Y-Coating		Y-Coating	
				TitaNox-Power HPC					



○	○	○	○	○	○	○	○	○	○	1
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										38
										39
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										41

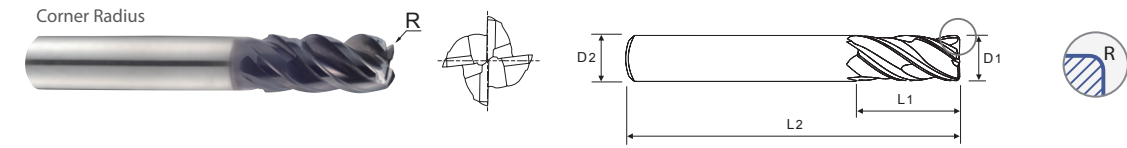


# TitaNox-POWER END MILLS

CORNER RADIUS **UGMG42** SERIES

## CARBIDE, 4-FLUTE DOUBLE CORE STANDARD LENGTH (PLAIN SHANK)

- ▶ Double core end mill has a unique flute design for excellent chip evacuation and higher rigidity.
- ▶ The double core adds stability and aids chip flow, reducing tool deflection, improving dimensional stability and workpiece accuracy.



CARBIDE 4 43°/45° PLAIN Coating Y p.C484-C485

Unit : Inch

OD (D1)	SD (D2)	LOC (L1)	OAL (L2)	Corner Radius									
				.010 EDP No.	.015 EDP No.	.030 EDP No.	.060 EDP No.	.090 EDP No.	.125 EDP No.	.190 EDP No.	.250 EDP No.		
1/4	1/4	9/16	2-1/2	UGMG42802	UGMG42016	UGMG42901	UGMG42902	-	-	-	-	-	-
		3/4	2-1/2	-	-	UGMG42924	UGMG42925	-	-	-	-	-	-
		1	3	-	-	UGMG425926*	UGMG425927*	-	-	-	-	-	-
3/8	3/8	1/2	2-1/2	-	-	UGMG42K998	UGMG42K999	UGMG42K801	-	-	-	-	-
		7/8	2-1/2	-	-	UGMG42928	UGMG42929	UGMG42930	-	-	-	-	-
		13/16	2-1/2	UGMG42931	-	UGMG42905	UGMG42906	UGMG42907	-	-	-	-	-
		1	3	UGMG42932	UGMG42803	UGMG42933	UGMG42934	UGMG42935	-	-	-	-	-
		1-1/4	3	UGMG425936*	UGMG425804*	UGMG425937*	UGMG425938*	UGMG425939*	-	-	-	-	-
1/2	1/2	1	3	UGMG42940	-	UGMG42908	UGMG42909	UGMG42910	UGMG42911	-	-	-	-
		1-1/4	3	UGMG42810	UGMG42811	UGMG42813	UGMG42815	UGMG42816	UGMG42817	-	-	-	-
		1-1/4	3-1/2	-	UGMG42805	UGMG42912	UGMG42941	UGMG42942	UGMG42943	-	-	-	-
		1-5/8	4	-	-	UGMG425944*	UGMG425945*	UGMG425946*	UGMG425947*	-	-	-	-
		2	4	-	-	UGMG425806*	UGMG425807*	UGMG425808*	UGMG425809*	-	-	-	-
5/8	5/8	1-1/4	3-1/2	-	-	UGMG42040	UGMG42913	UGMG42914	UGMG42915	-	-	-	-
		1-5/8	4	-	-	UGMG42948	UGMG42949	UGMG42950	UGMG42951	-	-	-	-
		2	4	-	-	UGMG425952*	UGMG425953*	UGMG425954*	UGMG425955*	-	-	-	-
		3-1/4	6	-	-	UGMG425956*	UGMG425957*	UGMG425958*	UGMG425959*	-	-	-	-
3/4	3/4	1-1/2	4	-	-	UGMG42048	UGMG42916	UGMG42917	UGMG42918	UGMG42919	UGMG42960	-	-
		1-7/8	4	-	-	UGMG42961	UGMG42962	UGMG42963	UGMG42964	UGMG42965	UGMG42966	-	-
		2-1/4	5	-	-	UGMG42967	UGMG42968	UGMG42969	UGMG42970	UGMG42971	UGMG42972	-	-
		3-1/4	6	-	-	UGMG425973*	UGMG425974*	UGMG425975*	UGMG425976*	UGMG425977*	UGMG425978*	-	-
1	1	2	5	-	-	UGMG42064	UGMG42920	UGMG42921	UGMG42922	UGMG42923	UGMG42979	-	-
		2-5/8	5	-	-	UGMG42980	UGMG42981	UGMG42982	UGMG42983	UGMG42984	UGMG42985	-	-
		3	6	-	-	UGMG42986	UGMG42987	UGMG42988	UGMG42989	UGMG42990	UGMG42991	-	-
4-1/4	7	-	-	UGMG425992*	UGMG425993*	UGMG425994*	UGMG425995*	UGMG425996*	UGMG425997*	-	-		

Mill Dia. Tolerance (in)	Shank Dia. Tolerance
0 ~ - .0012	h5 * Shank Dia. ≥ Ø1/2 : h6

\* Feed to be reduced by approximately 50% if L.O.C. (Length Of Cut) is over 3xD

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	○	○	○	○	○	○	○	○	○	◎	◎	◎	○	○	○	○	○	○

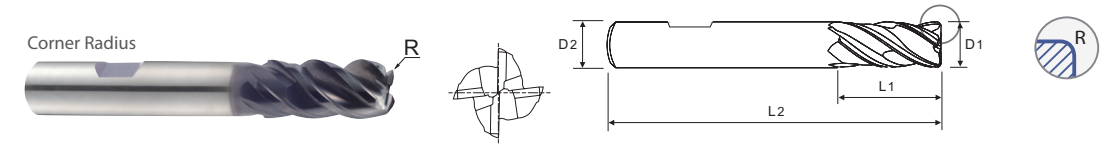
ISO	N										S					H					
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	15	30	25	38	34	15	30	25	38	34	55	60	42	55	55	60	42	55	55	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	◎	◎	○	○	○	○

# TitaNox-POWER END MILLS

CORNER RADIUS **UGMG43** SERIES

## CARBIDE, 4-FLUTE STANDARD LENGTH (WELDON FLAT SHANK)

- ▶ Double core end mill has a unique flute design for excellent chip evacuation and higher rigidity.
- ▶ The double core adds stability and aids chip flow, reducing tool deflection, improving dimensional stability and workpiece accuracy.

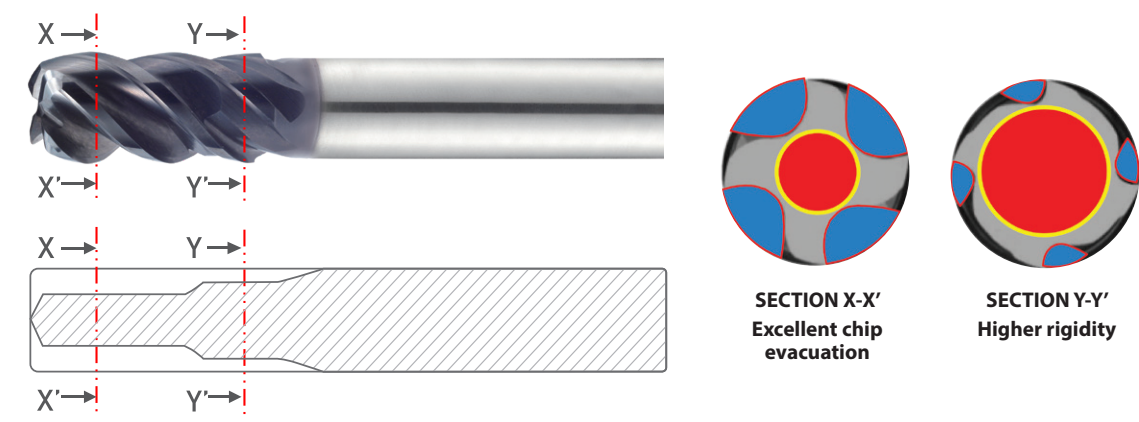


CARBIDE 4 43°/45° FLAT Coating Y p.C484-C485

Unit : Inch

OD (D1)	SD (D2)	LOC (L1)	OAL (L2)	Corner Radius						
				.010 EDP No.	.030 EDP No.	.060 EDP No.	.090 EDP No.	.125 EDP No.	.190 EDP No.	
3/8	3/8	13/16	2-1/2	UGMG43024	UGMG43905	UGMG43906	UGMG43907	-	-	-
1/2	1/2	1	3	-	UGMG43908	UGMG43909	UGMG43910	UGMG43911	-	-
		1-1/4	3	-	UGMG43926	UGMG43927	UGMG43928	UGMG43929	-	-
		1-1/4	3-1/2	-	UGMG43912	UGMG43924	UGMG43930	UGMG43931	-	-
5/8	5/8	1-1/4	3-1/2	-	UGMG43040	UGMG43913	UGMG43914	UGMG43915	-	-
3/4	3/4	1-1/2	4	-	UGMG43048	UGMG43916	UGMG43917	UGMG43818	UGMG43919	-
1	1	2	5	-	UGMG43064	UGMG43920	UGMG43921	UGMG43922	UGMG43923	-

Mill Dia. Tolerance (in)	Shank Dia. Tolerance
0 ~ - .0012	h5 * Shank Dia. ≥ Ø1/2 : h6



◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	○	○	○	○	○	○	○	○	○	◎	◎	◎	○	○	○	○	○	○

ISO	N										S					H					
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	15	30	25	38	34	15	30	25	38	34	55	60	42	55	55	60	42	55	55	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	◎	◎	○	○	○	○

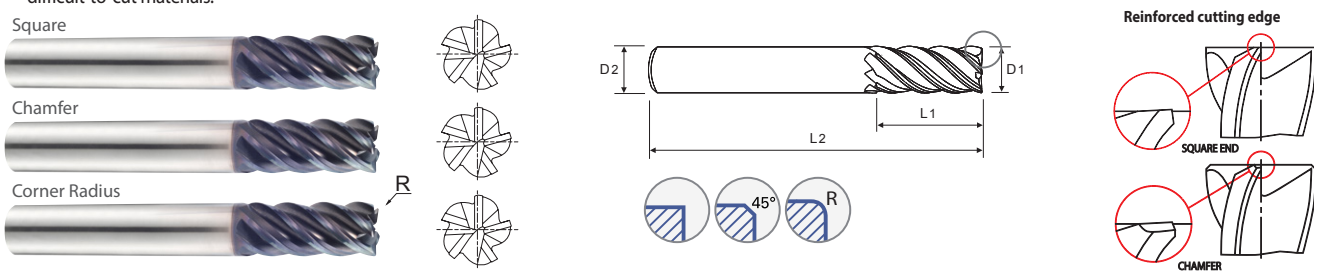


SQUARE **UGMH12** SERIES  
 CHAMFER **UGMG32** SERIES  
 CORNER RADIUS **UGMG34** SERIES

CARBIDE, 5-FLUTE STANDARD LENGTH (PLAIN SHANK)

- Suitable for Titanium, Titanium Alloys, Inconel and Stainless Steels.
- Optimized flute design for chip evacuation and rigidity when machining difficult-to-cut materials.

- Special roughing profile for machining Titanium and Titanium Alloys.
- Longer tool life with special coating.



OD (D1)	SD (D2)	LOC (L1)	OAL (L2)	Corner Radius						
				Square EDP No.	Chamfer EDP No.	Corner Radius				
						.015 EDP No.	.030 EDP No.	.060 EDP No.	.090 EDP No.	.125 EDP No.
1/8	1/8	1/4	1-1/2	UGMH12008	UGMG32008	UGMG34008	UGMG34950	-	-	-
		3/8	1-1/2	UGMH12901	UGMG32901	UGMG34901	UGMG34951	-	-	-
		1/2	2-1/2	UGMH12S902*	-	UGMG34S952*	UGMG34S953*	-	-	-
		3/4	2-1/2	UGMH12S903*	-	UGMG34S954*	UGMG34S955*	-	-	-
3/16	3/16	5/16	2	UGMH12012	UGMG32012	UGMG34012	UGMG34956	-	-	-
		9/16	2	UGMH12904	UGMG32902	UGMG34902	UGMG34957	-	-	-
		3/4	2-1/2	UGMH12S905*	-	UGMG34S958*	UGMG34S959*	-	-	-
		3/8	2	UGMH12016	UGMG32016	UGMG34960	UGMG34016	UGMG34961	-	-
1/4	1/4	1/2	2-1/2	UGMH12906	UGMG34962	UGMG34963	UGMG34964	-	-	-
		3/4	2-1/2	UGMH12907	UGMG32903	UGMG34903	UGMG34904	UGMG34905	-	-
		1	3	UGMH12S908*	-	UGMG34S965*	UGMG34S966*	UGMG34S967*	-	-
		1-1/4	3	UGMH12S909*	-	UGMG34S968*	UGMG34S969*	UGMG34S970*	-	-
5/16	5/16	7/16	2"	UGMH12020	UGMG32020	UGMG34971	UGMG34020	UGMG34972	-	-
		13/16	2-1/2	UGMH12910	UGMG32904	UGMG34906	UGMG34907	UGMG34908	-	-
		1	3	UGMH12S911*	-	UGMG34S973*	UGMG34S974*	UGMG34S975*	-	-
		1/2	2-1/2	UGMH12024	UGMG32024	UGMG34976	UGMG34024	UGMG34909	UGMG34977	-
3/8	3/8	1	3	UGMH12912	UGMG32905	UGMG34910	UGMG34911	UGMG34912	UGMG34978	-
		1-1/4	3	UGMH12S913*	-	UGMG34S979*	UGMG34S980*	UGMG34S981*	UGMG34S982*	-
		1-1/2	4	UGMH12S914*	-	UGMG34S983*	UGMG34S984*	UGMG34S985*	UGMG34S986*	-
		5/8	2-1/2	UGMH12032	UGMG32032	UGMG34913	UGMG34913	UGMG34914	UGMG34987	UGMG34988
1/2	1/2	1	3	UGMH12915	UGMG32906	UGMG34915	UGMG34916	UGMG34917	UGMG34918	UGMG34919
		1-1/4	3-1/2	UGMH12916	UGMG32907	UGMG34920	UGMG34921	UGMG34922	UGMG34923	UGMG34924
		1-5/8	4	UGMH12S917*	-	UGMG34S989*	UGMG34S990*	UGMG34S991*	UGMG34S992*	UGMG34S993*
		2	4	UGMH12S918*	-	UGMG34S994*	UGMG34S995*	UGMG34S996*	UGMG34S997*	UGMG34S998*

**CHAMFER KEY UGMG32**

Mill Diameter (in.)	Chamfer Size
1/8	.004
3/16	.006
1/4	.007
5/16	.007
3/8	.011
1/2	.015
5/8	.015
3/4	.019
1	.019

Mill Dia. Tolerance (in) 0 ~ .0012  
 Shank Dia. Tolerance h5 \* Shank Dia. ≥ Ø1/2 : h6  
 \* Feed to be reduced by approximately 50% if L.O.C. (Length Of Cut) is over 3xD  
 NEXT PAGE ►

ISO Material Description	P										M					K					H																				
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel					Stainless steel					Grey cast iron					Nodular cast iron					Malleable cast iron										
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	3	25	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	130	230	130	230	130	130	230	130	230	130	130	230	130	230	130	130	230	130	230	130	230
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

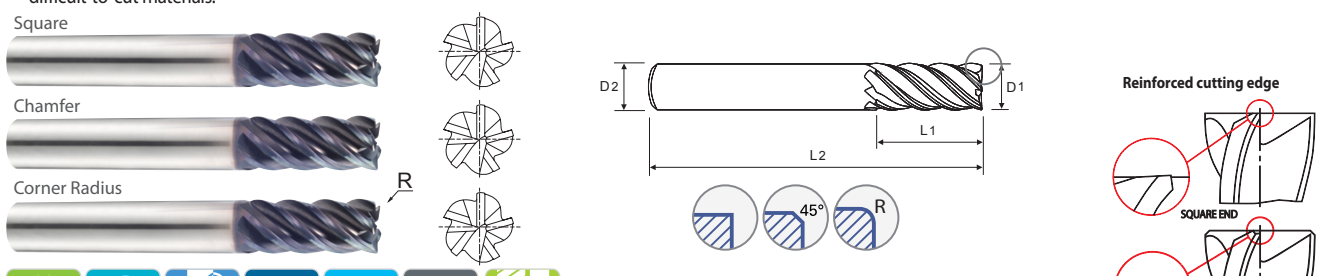


SQUARE **UGMH12** SERIES  
 CHAMFER **UGMG32** SERIES  
 CORNER RADIUS **UGMG34** SERIES

CARBIDE, 5-FLUTE STANDARD LENGTH (PLAIN SHANK)

- Suitable for Titanium, Titanium Alloys, Inconel and Stainless Steels.
- Optimized flute design for chip evacuation and rigidity when machining difficult-to-cut materials.

- Special roughing profile for machining Titanium and Titanium Alloys.
- Longer tool life with special coating.



OD (D1)	SD (D2)	LOC (L1)	OAL (L2)	Square EDP No.	Chamfer EDP No.	Corner Radius						
						.015 EDP No.	.030 EDP No.	.060 EDP No.	.090 EDP No.	.125 EDP No.	.190 EDP No.	.250 EDP No.
1-1/4	3-1/2	UGMH12919	UGMG32908	UGMG34926	UGMG34927	UGMG34928	UGMG34929	UGMG34930	-	-		
1-5/8	4	UGMH12920	-	-	UGMG34802	UGMG34803	UGMG34804	UGMG34805	-	-		
2-1/8	4-1/2	UGMH12S921*	-	-	UGMG34S806*	UGMG34S807*	UGMG34S808*	UGMG34S809*	-	-		
3/4	3/4	1	3-1/2	UGMH12048	UGMG32048	-	UGMG34048	UGMG34931	UGMG34932	UGMG34814	UGMG34815	UGMG34816
		1-1/2	4	UGMH12923	UGMG32909	UGMG34933	UGMG34934	UGMG34935	UGMG34936	UGMG34937	UGMG34938	UGMG34817
		1-7/8	5	UGMH12924	-	-	UGMG34818	UGMG34819	UGMG34820	UGMG34821	UGMG34822	UGMG34823
		2-1/4	5	UGMH12925	-	-	UGMG34824	UGMG34825	UGMG34826	UGMG34827	UGMG34828	UGMG34829
1	1	3-1/4	6	UGMH12S927*	-	-	UGMG34S836*	UGMG34S837*	UGMG34S838*	UGMG34S839*	UGMG34S840*	UGMG34S841*
		1-1/8	4	UGMH12064	UGMG32064	-	UGMG34064	UGMG34939	UGMG34940	UGMG34842	UGMG34843	UGMG34844
		1-1/2	4	UGMH12928	UGMG32910	UGMG34941	UGMG34942	UGMG34943	UGMG34944	UGMG34945	UGMG34946	UGMG34845
		2	5	UGMH12929	UGMG32911	-	UGMG34947	UGMG34948	UGMG34949	UGMG34846	UGMG34847	UGMG34848
1-1/4	1-1/4	2-5/8	5	UGMH12930	-	-	UGMG34849	UGMG34850	UGMG34851	UGMG34852	UGMG34853	UGMG34854
		3-1/4	6	UGMH12S931*	-	-	UGMG34S855*	UGMG34S856*	UGMG34S857*	UGMG34S858*	UGMG34S859*	UGMG34S860*
		4-1/4	7	UGMH12S932*	-	-	UGMG34S861*	UGMG34S862*	UGMG34S863*	UGMG34S864*	UGMG34S865*	UGMG34S866*
		1-1/2	4-1/2	UGMH12116	-	-	UGMG34116	UGMG34867	UGMG34868	UGMG34869	UGMG34870	UGMG34871
1-1/4	1-1/4	2	4-1/2	UGMH12933	-	-	UGMG34871	UGMG34872	UGMG34873	UGMG34874	UGMG34875	UGMG34876
		2-5/8	5-1/2	UGMH12934	-	-	UGMG34876	UGMG34877	UGMG34878	UGMG34879	UGMG34880	UGMG34881
		3-1/4	6	UGMH12935	-	-	UGMG34881	UGMG34882	UGMG34883	UGMG34884	UGMG34885	UGMG34886
		4-1/2	7	UGMH12S936*	-	-	UGMG34S886*	UGMG34S887*	UGMG34S888*	UGMG34S889*	UGMG34S890*	UGMG34S891*

Mill Dia. Tolerance (in) 0 ~ .0012  
 Shank Dia. Tolerance h5 \* Shank Dia. ≥ Ø1/2 : h6  
 \* Feed to be reduced by approximately 50% if L.O.C. (Length Of Cut) is over 3xD

ISO Material Description	P										M					K					H																				
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel					Stainless steel					Grey cast iron					Nodular cast iron					Malleable cast iron										
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	3	25	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	130	230	130	230	130	130	230	130	230	130	130	230	130	230	130	130	230	130	230	130	230
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

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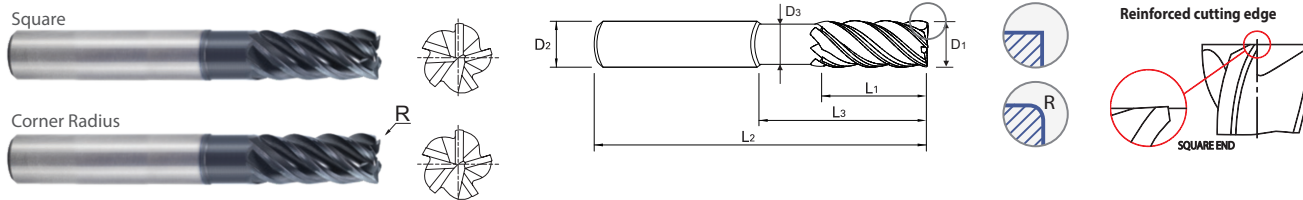
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# TitaNox-POWER END MILLS

SQUARE UGMH06 SERIES  
CORNER RADIUS UGMH07 SERIES

## CARBIDE, 5-FLUTE EXTENDED LENGTH (PLAIN SHANK)

- Suitable for Titanium, Titanium Alloys, Inconel and Stainless Steels.
- Optimized flute design for chip evacuation and rigidity when machining difficult-to-cut materials.
- Special roughing profile for machining Titanium and Titanium Alloys.
- Longer tool life with special coating.



CARBIDE 5 43°/44°/45° PLAIN Coating Y p.C486

Unit : Inch

OD (D <sub>1</sub> )	SD (D <sub>2</sub> )	LOC (L <sub>1</sub> )	LBS (L <sub>3</sub> )	OAL (L <sub>2</sub> )	Neck Dia (D <sub>3</sub> )	Square EDP No.	Corner Radius					
							.030 EDP No.	.060 EDP No.	.090 EDP No.	.125 EDP No.	.190 EDP No.	.250 EDP No.
1/8	1/8	5/32	3/8	3	.113	UGMH06008	UGMH07008	-	-	-	-	-
		5/32	1/2	3	.113	UGMH06901	UGMH07901	-	-	-	-	-
		5/32	5/8	3	.113	UGMH06902	UGMH07902	-	-	-	-	-
3/16	3/16	7/32	1/2	3	.176	UGMH06012	UGMH07012	-	-	-	-	-
		7/32	3/4	3	.176	UGMH06903	UGMH07903	-	-	-	-	-
		7/32	1	3	.176	UGMH06904	UGMH07904	-	-	-	-	-
1/4	1/4	3/8	3/4	4	.230	UGMH06016	UGMH07016	UGMH07905	-	-	-	-
		3/8	1-1/8	4	.230	UGMH06905	UGMH07906	UGMH07907	-	-	-	-
		3/8	2-1/8	4	.230	UGMH06906	UGMH07908	UGMH07909	-	-	-	-
3/8	3/8	1/2	1-1/8	4	.344	UGMH06024	UGMH07024	UGMH07910	UGMH07911	-	-	-
		1/2	2-1/8	4	.344	UGMH06907	UGMH07912	UGMH07913	UGMH07914	-	-	-
		1/2	3-1/8	5	.344	UGMH06923	UGMH07804	UGMH07805	UGMH07806	-	-	-
		1/2	3-1/8	6	.344	UGMH06908	UGMH07915	UGMH07916	UGMH07917	-	-	-
		1/2	4-1/8	6	.344	UGMH06909	UGMH07918	UGMH07919	UGMH07920	-	-	-
1/2	1/2	5/8	1-1/2	4	.461	UGMH06032	UGMH07032	UGMH07921	UGMH07922	UGMH07923	-	-
		5/8	2-1/4	4	.461	UGMH06910	UGMH07924	UGMH07925	UGMH07926	UGMH07927	-	-
		5/8	3-3/8	5	.461	UGMH06924	UGMH07807	UGMH07808	UGMH07809	UGMH07810	-	-
5/8	5/8	3/4	1-5/8	4	.586	UGMH06040	UGMH07040	UGMH07936	UGMH07937	UGMH07938	-	-
		3/4	2-3/8	6	.586	UGMH06913	UGMH07939	UGMH07940	UGMH07941	UGMH07942	-	-
		3/4	3-3/8	6	.586	UGMH06914	UGMH07943	UGMH07944	UGMH07945	UGMH07946	-	-
5/8	5/8	3/4	4-1/8	6	.586	UGMH06915	UGMH07947	UGMH07948	UGMH07949	UGMH07950	-	-

Mill Dia. Tolerance (in)	Shank Dia. Tolerance
0 ~ - .0012	h5 * Shank Dia. ≥ Ø1/2 : h6

Feed to be reduced by approximately 50% if L.O.C. (Length Of Cut) is over 3xD

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron	Nodular cast iron		Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	○	○	○	○	○	○	○	○	○	◎	◎	◎	○	○	○	○	○	○

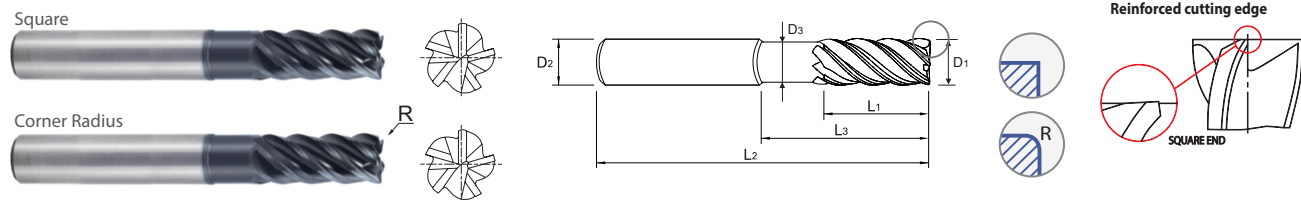
ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	◎	◎				

# TitaNox-POWER END MILLS

SQUARE UGMH06 SERIES  
CORNER RADIUS UGMH07 SERIES

## CARBIDE, 5-FLUTE EXTENDED LENGTH (PLAIN SHANK)

- Suitable for Titanium, Titanium Alloys, Inconel and Stainless Steels.
- Optimized flute design for chip evacuation and rigidity when machining difficult-to-cut materials.
- Special roughing profile for machining Titanium and Titanium Alloys.
- Longer tool life with special coating.



CARBIDE 5 43°/44°/45° PLAIN Coating Y p.C486

Unit : Inch

OD (D <sub>1</sub> )	SD (D <sub>2</sub> )	LOC (L <sub>1</sub> )	LBS (L <sub>3</sub> )	OAL (L <sub>2</sub> )	Neck Dia (D <sub>3</sub> )	Square EDP No.	Corner Radius					
							.030 EDP No.	.060 EDP No.	.090 EDP No.	.125 EDP No.	.190 EDP No.	.250 EDP No.
3/4	3/4	1-1/8	2	4	.711	UGMH06048	UGMH07048	UGMH07951	UGMH07952	UGMH07953	UGMH07954	UGMH07955
		1-1/8	2-5/8	5	.711	UGMH06916	UGMH07956	UGMH07957	UGMH07958	UGMH07959	UGMH07960	UGMH07961
		1-1/8	3-1/4	6	.711	UGMH06917	UGMH07962	UGMH07963	UGMH07964	UGMH07965	UGMH07966	UGMH07967
1	1	1-1/4	4-1/4	7	.711	UGMH06918	UGMH07968	UGMH07969	UGMH07970	UGMH07971	UGMH07972	UGMH07973
		1-1/4	2-1/4	4	.961	UGMH06064	UGMH07064	UGMH07974	UGMH07975	UGMH07976	UGMH07977	UGMH07978
		1-1/4	2-5/8	5	.961	UGMH06919	UGMH07979	UGMH07980	UGMH07981	UGMH07982	UGMH07983	UGMH07984
1	1	1-1/4	3-1/4	6	.961	UGMH06920	UGMH07985	UGMH07986	UGMH07987	UGMH07988	UGMH07989	UGMH07990
		1-1/4	4-1/4	7	.961	UGMH06921	UGMH07991	UGMH07992	UGMH07993	UGMH07994	UGMH07995	UGMH07996
		1-1/4	5-1/4	8	.961	UGMH06922	UGMH07997	UGMH07998	UGMH07999	UGMH07801	UGMH07802	UGMH07803

Mill Dia. Tolerance (in)	Shank Dia. Tolerance
0 ~ - .0012	h5 * Shank Dia. ≥ Ø1/2 : h6

Feed to be reduced by approximately 50% if L.O.C. (Length Of Cut) is over 3xD

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron	Nodular cast iron		Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	○	○	○	○	○	○	○	○	○	◎	◎	◎	○	○	○	○	○	○

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	◎	◎				



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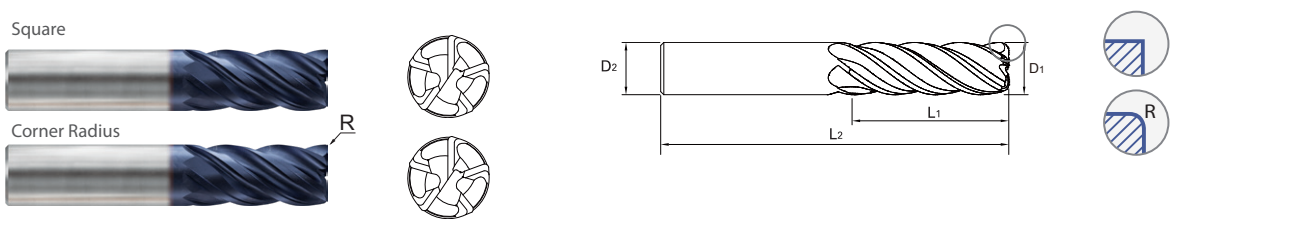
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SQUARE EMI42 SERIES  
CORNER RADIUS EMI43 SERIES

CARBIDE, 5-FLUTE STANDARD LENGTH (PLAIN SHANK) - *TitaNox-Power HPC*

- ▶ New design enhances chip space in heavy cuts, while still maintaining rigidity in peel milling.
- ▶ Unequal index design for Chatter-Free cutting
- ▶ high performance milling of Stainless Steel, Titanium, and Heat-Resistant Super Alloys



CARBIDE 5 38° PLAIN AITIN p.C487-C489

OD (D1)	SD (D2)	LOC (L1)	OAL (L2)	Corner Radius							
				Square							
				.015	.030	.060	.090	.125	.190	.250	
EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.				
1/4	1/4	3/8	2	EMI42016	EMI43016	EMI43901	EMI43902	-	-	-	-
		1/2	2-1/2	EMI42901	EMI43903	EMI43904	EMI43905	-	-	-	-
		3/4	2-1/2	EMI42902	EMI43906	EMI43907	EMI43908	-	-	-	-
5/16	5/16	7/16	2	EMI42020	EMI43020	EMI43909	-	-	-	-	-
		13/16	2-1/2	EMI42903	EMI43910	EMI43911	-	-	-	-	-
		1/2	2-1/2	EMI42024	EMI43024	EMI43912	EMI43913	EMI43914	-	-	-
3/8	3/8	1	3	EMI42904	EMI43915	EMI43916	EMI43917	EMI43918	-	-	-
		1-1/4	3	EMI42905	EMI43919	EMI43920	EMI43921	EMI43922	-	-	-
		5/8	2-1/2	EMI42032	EMI43032	EMI43923	EMI43924	EMI43925	EMI43926	-	-
1/2	1/2	1	3	EMI42906	EMI43927	EMI43928	EMI43929	EMI43930	EMI43931	-	-
		1-1/4	3	EMI42907	EMI43932	EMI43933	EMI43934	EMI43935	EMI43936	-	-
		1-5/8	4	EMI42908	EMI43937	EMI43938	EMI43939	EMI43940	EMI43941	-	-
5/8	5/8	3/4	3	EMI42040	-	EMI43040	EMI43942	EMI43943	EMI43944	-	-
		1-1/4	3-1/2	EMI42909	EMI43945	EMI43946	EMI43947	EMI43948	EMI43949	-	-
		1-5/8	4	EMI42910	-	EMI43950	EMI43951	EMI43952	EMI43953	-	-
3/4	3/4	2-1/8	4-1/2	EMI42911	-	EMI43954	EMI43955	EMI43956	EMI43957	-	-
		1	3-1/2	EMI42048	-	EMI43048	EMI43958	EMI43959	EMI43960	EMI43961	-
		1-1/2	4	EMI42912	EMI43962	EMI43963	EMI43964	EMI43965	EMI43966	EMI43967	EMI43968
3/4	3/4	1-5/8	5	EMI42913	-	EMI43969	EMI43802	EMI43970	EMI43973	EMI43971	EMI43972
		2-1/4	5	EMI42914	EMI43974	EMI43975	EMI43976	EMI43977	EMI43978	EMI43979	EMI43980

Mill Dia. Tolerance (in) 0 ~ - .0012 Shank Dia. Tolerance h5 \* Shank Dia. ≥ Ø1/2 : h6 Feed to be reduced by approximately 50% if L.O.C. (Length Of Cut) is over 3x D NEXT PAGE ▶

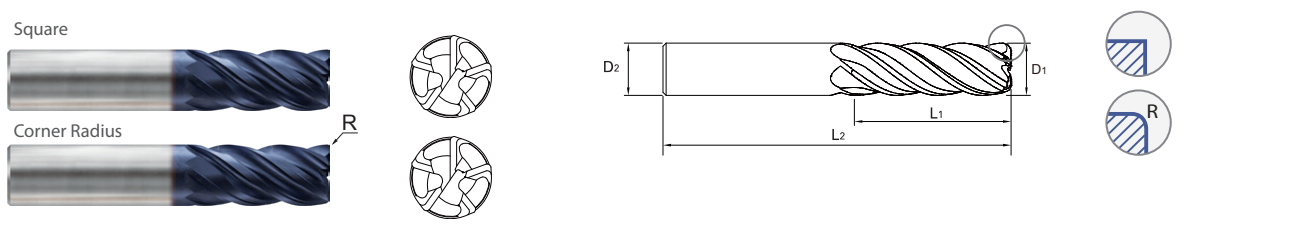
ISO	P										M				K					
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	○	○	○	○	○	○	○	○	○	◎	◎	◎	○	○	○	○	○	○



SQUARE EMI42 SERIES  
CORNER RADIUS EMI43 SERIES

CARBIDE, 5-FLUTE STANDARD LENGTH (PLAIN SHANK) - *TitaNox-Power HPC*

- ▶ New design enhances chip space in heavy cuts, while still maintaining rigidity in peel milling.
- ▶ Unequal index design for Chatter-Free cutting
- ▶ high performance milling of Stainless Steel, Titanium, and Heat-Resistant Super Alloys



CARBIDE 5 38° PLAIN AITIN p.C487-C489

OD (D1)	SD (D2)	LOC (L1)	OAL (L2)	Corner Radius							
				Square							
				.015	.030	.060	.090	.125	.190	.250	
EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.				
1	1	1-1/8	4	EMI42064	-	-	EMI43064	-	EMI43981	-	-
		1-1/2	4	EMI42915	EMI43982	EMI43983	EMI43984	-	EMI43985	-	-
		2	5	EMI42916	EMI43986	EMI43987	EMI43988	EMI43989	EMI43990	-	EMI43991
		2-5/8	5	EMI42917	-	EMI43992	EMI43993	-	EMI43994	-	EMI43995
		3-1/4	6	EMI42918	-	EMI43996	EMI43997	EMI43998	EMI43999	-	EMI43801

Mill Dia. Tolerance (in) 0 ~ - .0012 Shank Dia. Tolerance h5 \* Shank Dia. ≥ Ø1/2 : h6 Feed to be reduced by approximately 50% if L.O.C. (Length Of Cut) is over 3x D

**Unequal Index** Exclusively Designed Unique Geometry applied to Reduce Vibration and also to achieve Excellent surface finish

**Core Design** YG-1's High Performance Core Geometries is designed for superior chip evacuation. It's excellent at Slotting & Heavy Profiling.

38° Single Helix

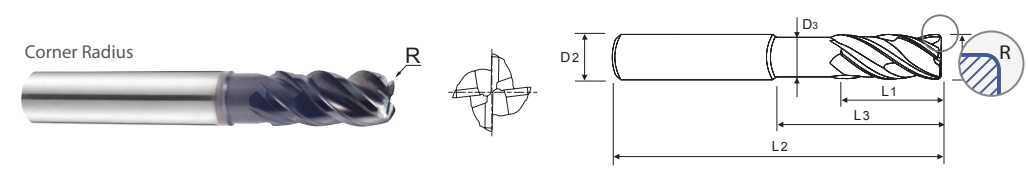
ISO	P										M				K					
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	○	○	○	○	○	○	○	○	○	◎	◎	◎	○	○	○	○	○	○

# TitaNox-POWER END MILLS

CORNER RADIUS **GMG40** SERIES

## CARBIDE, 4-FLUTE DOUBLE CORE EXTENDED LENGTH (PLAIN SHANK)

- ▶ Double core end mill has a unique flute design for excellent chip evacuation and higher rigidity.
- ▶ The double core adds stability and aids chip flow, reducing tool deflection, improving dimensional stability and workpiece accuracy.



CARBIDE 4 43°/45° PLAIN Y Coating p.C490-C491

Unit : Metric

OD (D <sub>1</sub> )	SD (D <sub>2</sub> )	LOC (L <sub>1</sub> )	LBS (L <sub>3</sub> )	OAL (L <sub>2</sub> )	Neck Dia (D <sub>3</sub> )	Corner Radius						
						0.50	1.00	1.50	2.00	3.00	3.50	4.00
Metric	Inch					EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
6	.2362	6	13	20	57	5.5	GMG40060	GMG40901	-	-	-	-
8	.315	8	19	25	63	7.5	GMG40080	GMG40902	GMG40903	GMG40904	-	-
10	.3937	10	22	30	72	9.2	GMG40100	GMG40905	GMG40906	GMG40907	-	-
12	.4724	12	26	35	83	11.0	GMG40120	GMG40908	GMG40909	GMG40910	GMG40911	-
14	.5512	14	26	35	83	13.0	-	GMG40140	-	GMG40912	-	-
16	.6299	16	35	43	92	15.0	-	GMG40160	GMG40913	GMG40914	GMG40915	GMG40916
20	.7874	20	44	56	110	19.0	-	GMG40200	GMG40917	GMG40918	GMG40919	GMG40920
25	.9843	25	55	70	130	24.0	-	GMG40250	GMG40922	GMG40923	GMG40924	GMG40925

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0 ~ - 0.03	h5 * Shank Dia. ±0.012 : h6

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron	Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	3	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	○	○	○	○	○	○	○	○	○	◎	◎	◎	○	○	○	○	○	○

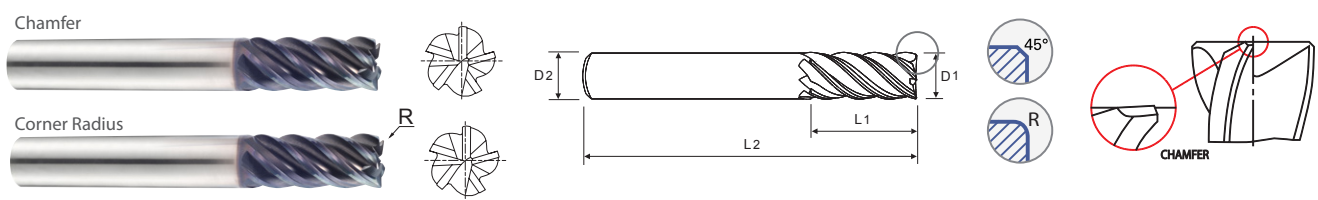
ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	◎	◎				

# TitaNox-POWER END MILLS

CHAMFER CORNER RADIUS **GMG24, GMG26** SERIES  
**GMG28, GMG30** SERIES

## CARBIDE, 5-FLUTE EXTENDED LENGTH (PLAIN SHANK)

- ▶ Suitable for Titanium, Titanium Alloys, Inconel and Stainless Steels.
- ▶ Optimized flute design for chip evacuation and rigidity when machining difficult-to-cut materials.
- ▶ Special roughing profile for machining Titanium and Titanium Alloys.
- ▶ Longer tool life with special coating.



CARBIDE 5 43°/44°/45° C x 45° PLAIN Y Coating p.C492

Unit : Metric

OD (D <sub>1</sub> )	SD (D <sub>2</sub> )	LOC (L <sub>1</sub> )	OAL (L <sub>2</sub> )	Chamfer	Corner Radius								
					0.30	0.50	1.00	1.50	2.00	2.50	3.00	4.00	5.00
Metric	Inch			EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
6	.2362	6	10	54	GMG24060	-	GMG28060	-	-	-	-	-	-
		6	13	57	GMG26060	GMG30060	GMG30901	GMG30902	-	-	-	-	-
8	.315	8	12	58	GMG24080	-	GMG28080	-	-	-	-	-	-
		8	19	63	GMG26080	-	GMG30080	GMG30903	GMG30904	GMG30905	-	-	-
10	.3937	10	14	66	GMG24100	-	GMG28100	-	-	-	-	-	-
		10	22	72	GMG26100	-	GMG30100	GMG30906	GMG30907	GMG30908	-	-	-
12	.4724	12	16	73	GMG24120	-	GMG28120	-	-	-	-	-	-
		12	26	83	GMG26120	-	GMG30120	GMG30909	GMG30910	GMG30911	GMG30912	GMG30913	-
16	.6299	16	22	82	GMG24160	-	-	GMG28160	-	-	-	-	-
		16	36	92	GMG26160	-	-	GMG30160	GMG30914	GMG30915	GMG30916	GMG30917	GMG30918
20	.7874	20	26	92	GMG24200	-	-	GMG28200	-	-	-	-	-
		20	44	104	GMG26200	-	-	GMG30200	GMG30919	GMG30920	GMG30921	GMG30922	GMG30923
25	.9843	25	29	100	GMG24250	-	-	GMG28250	-	-	-	-	-
		25	54	121	GMG26250	-	-	GMG30250	GMG30925	GMG30926	GMG30927	GMG30928	GMG30929

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0 ~ - 0.03	h5 * Shank Dia. ±0.012 : h6

### CHAMFER KEY GMG24 | GMG26

Mill Diameter	Chamfer Size (mm)	
	Metric	Inch
6	.2362	0.20
8	.315	0.20
10	.3937	0.30
12	.4724	0.35
16	.6299	0.40
20	.7478	0.50
25	.9843	0.50

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron	Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	3	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	○	○	○	○	○	○	○	○	○	○	○	◎	◎	◎	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	◎	◎				

HSS

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# TitaNox-POWER END MILLS

## RECOMMENDED CUTTING CONDITIONS

# TitaNox-POWER END MILLS

## RECOMMENDED CUTTING CONDITIONS

### UGMG42, UGMG43 SERIES 4 FLUTES DOUBLE CORE - Side Cutting

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

### UGMG42, UGMG43 SERIES 4 FLUTES DOUBLE CORE - Slotting

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)						
						1/4	5/16	3/8	1/2	5/8	3/4	1
P	1-5	Non-alloy steel	0.4D	1.0D (0.7D)*	SFM(Vc)	525	525	525	525	525	525	525
					IPT(fz)	.0011	.0014	.0017	.0021	.0025	.0030	.0033
					RPM	8020	6420	5350	4010	3210	2670	2010
					IPM(FEED)	35	36	36	34	32	32	27
					SFM(Vc)	525	525	525	525	525	525	525
					IPT(fz)	.0011	.0014	.0017	.0021	.0025	.0030	.0033
	6-8	Low alloy steel	0.4D	1.0D (0.7D)*	SFM(Vc)	8020	6420	5350	4010	3210	2670	2010
					IPT(fz)	.0011	.0014	.0017	.0021	.0025	.0030	.0033
					RPM	8020	6420	5350	4010	3210	2670	2010
					IPM(FEED)	35	36	36	34	32	32	27
					SFM(Vc)	490	490	490	490	490	490	490
					IPT(fz)	.0010	.0014	.0017	.0019	.0025	.0028	.0033
9	High alloyed steel, and tool steel	0.4D	1.0D (0.7D)*	SFM(Vc)	7490	5990	4990	3740	2990	2500	1870	
				IPT(fz)	.0010	.0014	.0017	.0019	.0025	.0028	.0033	
				RPM	7490	5990	4990	3740	2990	2500	1870	
				IPM(FEED)	30	34	34	28	30	28	25	
				SFM(Vc)	490	490	490	490	490	490	490	
				IPT(fz)	.0011	.0014	.0018	.0021	.0026	.0030	.0033	
10	High alloyed steel, and tool steel	0.4D	1.0D (0.7D)*	SFM(Vc)	7490	5990	4990	3740	2990	2500	1870	
				IPT(fz)	.0011	.0014	.0018	.0021	.0026	.0030	.0033	
				RPM	7490	5990	4990	3740	2990	2500	1870	
				IPM(FEED)	33	34	36	31	31	30	25	
				SFM(Vc)	490	490	490	490	490	490	490	
				IPT(fz)	.0010	.0014	.0017	.0019	.0025	.0028	.0033	
11.1	High alloyed steel, and tool steel	0.4D	1.0D (0.7D)*	SFM(Vc)	7490	5990	4990	3740	2990	2500	1870	
				IPT(fz)	.0010	.0014	.0017	.0019	.0025	.0028	.0033	
				RPM	7490	5990	4990	3740	2990	2500	1870	
				IPM(FEED)	30	34	34	28	30	28	25	
				SFM(Vc)	490	490	490	490	490	490	490	
				IPT(fz)	.0010	.0014	.0017	.0019	.0025	.0028	.0033	
M	12-13	Stainless steel (SUS 420, X40Cr13, 420)	0.4D	1.0D (0.7D)	SFM(Vc)	510	510	510	510	510	510	510
					IPT(fz)	.0013	.0018	.0022	.0026	.0034	.0037	.0045
					RPM	7790	6230	5190	3900	3120	2600	1950
					IPM(FEED)	41	45	46	41	42	38	35
					SFM(Vc)	345	345	345	345	345	345	345
					IPT(fz)	.0010	.0013	.0016	.0019	.0024	.0028	.0032
	14.1	Stainless steel (SUS 316, 316, X5CrNiMo 17 12 2)	0.4D	1.0D (0.7D)*	SFM(Vc)	5270	4220	3510	2640	2110	1760	1320
					IPT(fz)	.0010	.0013	.0016	.0019	.0024	.0028	.0032
					RPM	5270	4220	3510	2640	2110	1760	1320
					IPM(FEED)	21	22	22	20	20	20	17
					SFM(Vc)	145	145	145	145	145	145	145
					IPT(fz)	.0006	.0008	.0010	.0013	.0016	.0018	.0021
14.2	Stainless steel (SUS 630, PH 15-5)	0.4D	0.6D	SFM(Vc)	2220	1770	1480	1110	890	740	550	
				IPT(fz)	.0006	.0008	.0010	.0013	.0016	.0018	.0021	
				RPM	2220	1770	1480	1110	890	740	550	
				IPM(FEED)	5	6	6	6	6	5	5	
				SFM(Vc)	575	575	575	575	575	575	575	
				IPT(fz)	.0008	.0011	.0014	.0017	.0021	.0024	.0028	
K	15-20	Grey cast iron	0.4D	1.0D (0.7D)*	SFM(Vc)	8790	7030	5860	4390	3510	2930	2200
					IPT(fz)	.0008	.0011	.0014	.0017	.0021	.0024	.0028
					RPM	8790	7030	5860	4390	3510	2930	2200
					IPM(FEED)	28	31	33	30	29	28	25
					SFM(Vc)	105	105	105	105	105	105	105
					IPT(fz)	.0008	.0010	.0013	.0015	.0019	.0022	.0026
S	31-35	Heat Resistant Super Alloys (X12 NiCrSi 36-16, 1.4864, Inconel 718, NiCr20TiAl, 2.4631, NiCu30Al, 2.4375, G-X120Mn12, 1.3401)	0.3D	0.6D	SFM(Vc)	1600	1280	1070	800	640	530	400
					IPT(fz)	.0008	.0010	.0013	.0015	.0019	.0022	.0026
					RPM	1600	1280	1070	800	640	530	400
					IPM(FEED)	5	5	6	5	5	5	4
					SFM(Vc)	230	230	230	230	230	230	230
					IPT(fz)	.0013	.0019	.0022	.0026	.0034	.0037	.0045
36-37	Titanium Alloys (HB 400 Rm, HB 1050 Rm TiAl6V4, 3.7165)	0.4D	1.0D (0.7D)*	SFM(Vc)	3510	2810	2340	1760	1410	1170	880	
				IPT(fz)	.0013	.0019	.0022	.0026	.0034	.0037	.0045	
				RPM	3510	2810	2340	1760	1410	1170	880	
				IPM(FEED)	18	21	21	18	19	17	16	
				SFM(Vc)	460	460	460	460	460	460	460	
				IPT(fz)	.0008	.0011	.0014	.0017	.0021	.0024	.0028	

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)						
						1/4	5/16	3/8	1/2	5/8	3/4	1
P	1-5	Non-alloy steel	1.0D	1.0D (0.7D)*	SFM(Vc)	410	410	410	410	410	410	410
					IPT(fz)	.0010	.0013	.0017	.0019	.0025	.0028	.0033
					RPM	6260	5010	4180	3130	2510	2090	1570
					IPM(FEED)	25	26	28	24	25	23	21
					SFM(Vc)	410	410	410	410	410	410	410
					IPT(fz)	.0010	.0013	.0017	.0019	.0025	.0028	.0033
	6-8	Low alloy steel	1.0D	1.0D (0.7D)*	SFM(Vc)	6260	5010	4180	3130	2510	2090	1570
					IPT(fz)	.0010	.0013	.0017	.0019	.0025	.0028	.0033
					RPM	6260	5010	4180	3130	2510	2090	1570
					IPM(FEED)	25	26	28	24	25	23	21
					SFM(Vc)	395	395	395	395	395	395	395
					IPT(fz)	.0010	.0013	.0017	.0019	.0025	.0028	.0030
9	High alloyed steel, and tool steel	1.0D	1.0D (0.7D)*	SFM(Vc)	6040	4830	4020	3020	2410	2010	1510	
				IPT(fz)	.0010	.0013	.0017	.0019	.0025	.0028	.0030	
				RPM	6040	4830	4020	3020	2410	2010	1510	
				IPM(FEED)	24	25	27	23	24	23	18	
				SFM(Vc)	410	410	410	410	410	410	410	
				IPT(fz)	.0010	.0013	.0017	.0019	.0025	.0028	.0033	
10	High alloyed steel, and tool steel	1.0D	1.0D (0.7D)*	SFM(Vc)	6260	5010	4180	3130	2510	2090	1570	
				IPT(fz)	.0010	.0013	.0017	.0019	.0025	.0028	.0033	
				RPM	6260	5010	4180	3130	2510	2090	1570	
				IPM(FEED)	25	26	28	24	25	23	21	
				SFM(Vc)	395	395	395	395	395	395	395	
				IPT(fz)	.0010	.0013	.0017	.0019	.0025	.0028	.0030	
11.1	High alloyed steel, and tool steel	1.0D	1.0D (0.7D)*	SFM(Vc)	6040	4830	4020	3020	2410	2010	1510	
				IPT(fz)	.0010	.0013	.0017	.0019	.0025	.0028	.0030	
				RPM	6040	4830	4020	3020	2410	2010	1510	
				IPM(FEED)	24	25	27	23	24	23	18	
				SFM(Vc)	410	410	410	410	410	410	410	
				IPT(fz)	.0010	.0013	.0017	.0019	.0025	.0028	.0030	
M	12-13	Stainless steel (SUS 420, X40Cr13, 420)	1.0D	1.0D (0.7D)	SFM(Vc)	410	410	410	410	410	410	410
					IPT(fz)	.0013	.0018	.0022	.0026	.0034	.0037	.0045
					RPM	6260	5010	4180	3130	2510	2090	1570
					IPM(FEED)	33	36	37	33	32	31	26
					SFM(Vc)	280	280	280	280	280	280	280
					IPT(fz)	.0010	.0013	.0016	.0019	.0024	.0028	.0032
	14.1	Stainless steel (SUS 316, 316, X5CrNiMo 17 12 2)	1.0D	1.0D (0.7D)*	SFM(Vc)	4280	3420	2850	2140	1710	1430	1070
					IPT(fz)	.0010	.0013	.0016	.0019	.0024	.0028	.0032
					RPM	4280	3420	2850	2140	1710	1430	1070
					IPM(FEED)	17	18	18	16	16	16	14
					SFM(Vc)	120	120	120	120	120	120	120
					IPT(fz)	.0006	.0008	.0010	.0013	.0016	.0018	.0021
14.2	Stainless steel (SUS 630, PH 15-5)	1.0D	0.5D	SFM(Vc)	1830	1470	1220	920	730	610	460	
				IPT(fz)	.0006	.0008	.0010	.0013	.0016	.0018	.0021	
				RPM	1830	1470	1220	920	730	610	460	
				IPM(FEED)	4	5	5	5	5	4	4	
				SFM(Vc)	460	460	460	460	460	460	460	
				IPT(fz)	.0008	.0011	.0014	.0017	.0021	.0024	.0028	
K	15-20	Grey cast iron	1.0D	1.0D (0.7D)*	SFM(Vc)	7030	5620	4690	3510	2810	2340	1760
					IPT(fz)	.0008	.0011	.0014	.0017	.0021	.0024	.0028
					RPM	7030	5620	4690	3510	2810	2340	1760
					IPM(FEED)	22	25	26	24	24	22	18
					SFM(Vc)	80	80	80	80	80	80	80
					IPT(fz)	.0007	.0009	.0012	.0014	.0017	.0020	.0022
S	31-35	Heat Resistant Super Alloys (X12 NiCrSi 36-16, 1.4864, Inconel 718, NiCr20TiAl, 2.4631, NiCu30Al, 2.4375, G-X120Mn12, 1.3401)	1.0D	0.4D	SFM(Vc)	1220	980	810	610	490	410	310
					IPT(fz)	.0007	.0009	.0012	.0014	.0017	.0020	.0022
					RPM	1220	980	810	610	490	410	310
					IPM(FEED)	3	4	4	3	3	3	3
					SFM(Vc)	180	180	180	180	180	180	180
					IPT(fz)	.0013	.0018	.0022	.0026	.0034	.0037	.0041
36-37	Titanium Alloys (HB 400 Rm, HB 1050 Rm TiAl6V4, 3.7165)	1.0D	1.0D (0.7D)*	SFM(Vc)	2750	2200	1830	1380	1100	920	690	
				IPT(fz)	.0013	.0018	.0022	.0026	.0034	.0037	.0041	



# YG TitaNox-POWER END MILLS

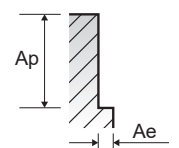
## RECOMMENDED CUTTING CONDITIONS

### UGMH12, UGMG32, UGMG34, UGMH06, UGMH07 SERIES

#### 5 FLUTES - Side Cutting

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)													
						1/8	3/16	1/4	5/16	3/8	1/2	9/16	5/8	11/16	3/4	1	1 1/4		
P	1-5	Non-alloy steel	0.3D	1.5D	SFM(Vc)	470	470	470	470	470	470	470	470	470	470	470	470	470	
					IPT(fz)	.0004	.0007	.0013	.0015	.0020	.0025	.0027	.0030	.0033	.0035	.0040	.0046		
					RPM	14360	9570	7180	5740	4790	3590	3190	2870	2610	2390	1800	1440		
					IPM(Feed)	29	33	47	43	48	45	43	43	42	36	33			
	6-8	Low alloy steel	0.3D	1.5D	SFM(Vc)	470	470	470	470	470	470	470	470	470	470	470	470		
					IPT(fz)	.0004	.0007	.0013	.0015	.0020	.0025	.0027	.0030	.0033	.0035	.0040	.0046		
					RPM	14360	9570	7180	5740	4790	3590	3190	2870	2610	2390	1800	1440		
					IPM(Feed)	29	33	47	43	48	45	43	43	42	36	33			
	9	High alloyed steel, and tool steel	0.3D	1.5D	SFM(Vc)	330	330	330	330	330	330	330	330	330	330	330	330		
					IPT(fz)	.0004	.0007	.0013	.0015	.0020	.0025	.0027	.0030	.0033	.0035	.0040	.0046		
					RPM	10080	6720	5040	4030	3360	2520	2240	2020	1830	1680	1260	1010		
					IPM(Feed)	20	24	33	30	34	32	30	30	29	25	23			
10	High alloyed steel, and tool steel	0.3D	1.5D	SFM(Vc)	470	470	470	470	470	470	470	470	470	470	470	470			
				IPT(fz)	.0004	.0007	.0013	.0015	.0020	.0025	.0027	.0030	.0033	.0035	.0040	.0046			
				RPM	14360	9570	7180	5740	4790	3590	3190	2870	2610	2390	1800	1440			
				IPM(Feed)	29	33	47	43	48	45	43	43	42	36	33				
11.1	High alloyed steel, and tool steel	0.3D	1.5D	SFM(Vc)	330	330	330	330	330	330	330	330	330	330	330	330			
				IPT(fz)	.0004	.0007	.0013	.0015	.0020	.0025	.0027	.0030	.0033	.0035	.0040	.0046			
				RPM	10080	6720	5040	4030	3360	2520	2240	2020	1830	1680	1260	1010			
				IPM(Feed)	20	24	33	30	34	32	30	30	29	25	23				
M	12-13	Stainless steel (SUS 420, X40Cr13, 420)	0.3D	1.5D	SFM(Vc)	385	385	385	385	385	385	385	385	385	385	385			
					IPT(fz)	.0003	.0004	.0009	.0010	.0012	.0018	.0020	.0021	.0022	.0024	.0028	.0033		
					RPM	11760	7840	5880	4710	3920	2940	2610	2350	2140	1960	1470	1180		
					IPM(Feed)	18	16	26	24	24	26	26	25	24	24	21	19		
	14.1	Stainless steel (SUS 316, 316L, X5CrNiMo 17 12 2)	0.3D	1.5D	SFM(Vc)	270	270	270	270	270	270	270	270	270	270	270			
					IPT(fz)	.0004	.0005	.0012	.0013	.0015	.0025	.0026	.0027	.0028	.0030	.0035	.0041		
					RPM	8250	5500	4130	3300	2750	2060	1830	1650	1500	1380	1030	830		
					IPM(Feed)	17	14	25	21	21	26	24	22	21	21	18	17		
	14.2	Stainless steel (SUS 630, PH 15-5)	0.3D	1.5D	SFM(Vc)	195	195	195	195	195	195	195	195	195	195	195			
					IPT(fz)	.0004	.0005	.0012	.0013	.0015	.0025	.0026	.0027	.0028	.0030	.0035	.0041		
					RPM	5960	3970	2980	2380	1990	1490	1320	1190	1080	990	740	600		
					IPM(Feed)	12	10	18	15	15	19	17	16	15	15	13	12		
K	15-20	Grey cast iron	0.3D	1.5D	SFM(Vc)	350	350	350	350	350	350	350	350	350	350	350			
					IPT(fz)	.0006	.0008	.0017	.0019	.0025	.0031	.0034	.0038	.0041	.0044	.0050	.0057		
					RPM	10700	7130	5350	4280	3570	2670	2380	2140	1940	1780	1340	1070		
					IPM(Feed)	32	29	45	41	45	41	40	41	40	39	34	30		
S	31-35	Heat Resistant Super Alloys (X12 NiCrSi 36-16, 1.4864, Inconel 718, NiCr20TiAl 2.4631, NiCu30Al 2.4375, G-X120Mn12, 1.3401)	0.1D	1.5D	SFM(Vc)	100	100	100	100	100	100	100	100	100	100	100			
					IPT(fz)	.0004	.0005	.0008	.0009	.0011	.0017	.0018	.0019	.0019	.0021	.0024	.0027		
					RPM	3060	2040	1530	1220	1020	760	680	610	560	510	380	310		
					IPM(Feed)	5	4	5	4	4	5	5	5	4	4	4	3		
36-37	Titanium Alloys (HB 400 Rm, HB 1050 Rm TiAl6V4, 3.7165)	0.2D	1.5D	SFM(Vc)	225	225	225	225	225	225	225	225	225	225	225				
				IPT(fz)	.0004	.0004	.0011	.0011	.0013	.0022	.0023	.0024	.0025	.0027	.0031	.0036			
				RPM	6880	4580	3440	2750	2290	1720	1530	1380	1250	1150	860	690			
				IPM(Feed)	14	9	19	15	15	19	18	17	16	16	13	12			



- NOTES:**
- ▶ Maximum recommended depth shown
  - ▶ Finish cuts typically require reduced feed rates and/or higher spindle speed, with radial width of 2% x D1 or less
  - ▶ Feed to be reduced by approximately 50% if L.O.C.(length of cut) is over 3xD
  - ▶ Reduce speed and feed recommendations for materials harder than listed
  - ▶ Recommendations above are based on ideal conditions. Adjust parameters accordingly for smaller taper machining centers or less rigid conditions

# YG TitaNox-POWER END MILLS

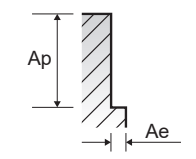
## RECOMMENDED CUTTING CONDITIONS

### EMI42, EMI43 SERIES

#### 5 FLUTES (TitaNox-Power HPC) Heavy Side Cutting

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)									
						3/16	1/4	5/16	3/8	1/2	5/8	3/4	1		
P	1-5	Non-alloy steel	0.5D	1.5D	SFM(Vc)	500	500	500	500	500	500	500	500	500	500
					IPT(fz)	.0013	.0016	.0018	.0022	.0031	.0037	.0043	.0049		
					RPM	10190	7640	6110	5090	3820	3060	2550	1910		
					IPM(Feed)	66	61	55	56	59	57	55	47		
	6-8	Low alloy steel	0.5D	1.5D	SFM(Vc)	500	500	500	500	500	500	500	500	500	
					IPT(fz)	.0013	.0016	.0018	.0022	.0031	.0037	.0043	.0049		
					RPM	10190	7640	6110	5090	3820	3060	2550	1910		
					IPM(Feed)	66	61	55	56	59	57	55	47		
	9	High alloyed steel, and tool steel	0.5D	1.5D	SFM(Vc)	400	400	400	400	400	400	400	400	400	
					IPT(fz)	.0008	.0012	.0014	.0017	.0024	.0028	.0033	.0038		
					RPM	8150	6110	4890	4070	3060	2440	2040	1530		
					IPM(Feed)	33	37	34	35	37	34	34	29		
10	High alloyed steel, and tool steel	0.5D	1.5D	SFM(Vc)	450	450	450	450	450	450	450	450	450		
				IPT(fz)	.0013	.0016	.0018	.0022	.0031	.0037	.0043	.0049			
				RPM	9170	6880	5500	4580	3440	2750	2290	1720			
				IPM(Feed)	60	55	50	50	53	51	49	42			
11.1	High alloyed steel, and tool steel	0.5D	1.5D	SFM(Vc)	400	400	400	400	400	400	400	400	400		
				IPT(fz)	.0008	.0012	.0014	.0017	.0024	.0028	.0033	.0038			
				RPM	8150	6110	4890	4070	3060	2440	2040	1530			
				IPM(Feed)	33	37	34	35	37	34	34	29			
M	12-13	Stainless steel (SUS 420, X40Cr13, 420)	0.5D	1.5D	SFM(Vc)	250	250	250	250	250	250	250	250	250	
					IPT(fz)	.0007	.0010	.0012	.0015	.0021	.0024	.0028	.0033		
					RPM	5090	3820	3060	2550	1910	1530	1270	950		
					IPM(Feed)	18	19	18	19	20	18	18	15		
	14.1	Stainless steel (SUS 316, 316L, X5CrNiMo 17 12 2)	0.5D	1.5D	SFM(Vc)	300	300	300	300	300	300	300	300	300	
					IPT(fz)	.0008	.0013	.0014	.0018	.0026	.0028	.0031	.0036		
					RPM	6110	4580	3670	3060	2290	1830	1530	1150		
					IPM(Feed)	24	30	26	28	30	26	24	21		
	14.2	Stainless steel (SUS 630, PH 15-5)	0.5D	1.5D	SFM(Vc)	200	200	200	200	200	200	200	200	200	
					IPT(fz)	.0007	.0010	.0011	.0014	.0021	.0022	.0025	.0029		
					RPM	4070	3060	2440	2040	1530	1220	1020	760		
					IPM(Feed)	14	15	13	14	16	13	13	11		
K	15-20	Grey cast iron	0.5D	1.5D	SFM(Vc)	370	370	370	370	370	370	370	370	370	
					IPT(fz)	.0010	.0014	.0016	.0019	.0026	.0032	.0037	.0042		
					RPM	7540	5650	4520	3770	2830	2260	1880	1410		
					IPM(Feed)	38	40	36	36	37	36	35	30		
S	31-35	Heat Resistant Super Alloys (X12 NiCrSi 36-16, 1.4864, Inconel 718, NiCr20TiAl 2.4631, NiCu30Al 2.4375, G-X120Mn12, 1.3401)	0.2D	1.5D	SFM(Vc)	90	90	90	90	90	90	90	90	90	
					IPT(fz)	.0006	.0010	.0012	.0014	.0019	.0021	.0023	.0027		
					RPM	1830	1380	1100	920	690	550	460	340		
					IPM(Feed)	5	7	7	6	7	6	5	5		
36-37	Titanium Alloys (HB 400 Rm, HB 1050 Rm TiAl6V4, 3.7165)	0.5D	1.5D	SFM(Vc)	160	160	160	160	160	160	160	160	160		
				IPT(fz)	.0006	.0010	.0012	.0014	.0019	.0021	.0023	.0027			
				RPM	3260	2440	1960	1630	1220	980	810	610			
				IPM(Feed)	10	12	12	11	12	10	9	8			



- NOTES:**
- ▶ Maximum recommended depth shown
  - ▶ Finish cuts typically require reduced feed rates and/or higher spindle speed, with radial width of 2% x D1 or less
  - ▶ Feed to be reduced by approximately 50% if L.O.C.(length of cut) is over 3xD
  - ▶ Reduce speed and feed recommendations for materials harder than listed
  - ▶ Recommendations above are based on ideal conditions. Adjust parameters accordingly for smaller taper machining centers or less rigid conditions



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# YG TitaNox-POWER END MILLS

## RECOMMENDED CUTTING CONDITIONS

# YG TitaNox-POWER END MILLS

## RECOMMENDED CUTTING CONDITIONS

### GMG40 SERIES 4 FLUTES DOUBLE CORE - Side Cutting

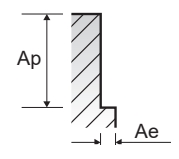
### GMG40 SERIES 4 FLUTES DOUBLE CORE - Slotting

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

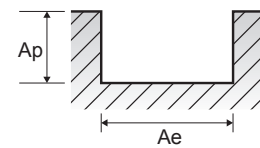
SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)							
						6.0	8.0	10.0	12.0	14.0	16.0	20.0	25.0
P	1-4	Non-alloy steel	0.4D	1.0D	SFM(Vc)	525	525	525	525	525	525	525	525
					IPT(fz)	.0011	.0014	.0017	.0021	.0023	.0025	.0030	.0033
					RPM	8490	6370	5090	4240	3640	3180	2550	2040
					IPM(FEED)	37	36	35	36	33	32	31	27
					SFM(Vc)	490	490	490	490	490	490	490	490
					IPT(fz)	.0010	.0014	.0017	.0019	.0022	.0025	.0028	.0033
	5	Non-alloy steel	0.4D	1.0D	SFM(Vc)	490	490	490	490	490	490	490	490
					IPT(fz)	.0010	.0014	.0017	.0019	.0022	.0025	.0028	.0033
					RPM	7920	5940	4750	3960	3400	2970	2380	1900
					IPM(FEED)	32	33	32	30	30	27	25	25
					SFM(Vc)	525	525	525	525	525	525	525	525
					IPT(fz)	.0011	.0014	.0017	.0021	.0023	.0025	.0030	.0033
6-7	Low alloy steel	0.4D	1.0D	SFM(Vc)	490	490	490	490	490	490	490	490	
				IPT(fz)	.0010	.0014	.0017	.0019	.0022	.0025	.0028	.0033	
				RPM	7920	5940	4750	3960	3400	2970	2380	1900	
				IPM(FEED)	32	33	32	30	30	27	25	25	
				SFM(Vc)	525	525	525	525	525	525	525	525	
				IPT(fz)	.0011	.0014	.0017	.0021	.0023	.0025	.0030	.0033	
8-9	Low alloy steel	0.4D	1.0D	SFM(Vc)	490	490	490	490	490	490	490	490	
				IPT(fz)	.0010	.0014	.0017	.0019	.0022	.0025	.0028	.0033	
				RPM	7920	5940	4750	3960	3400	2970	2380	1900	
				IPM(FEED)	32	33	32	30	30	27	25	25	
				SFM(Vc)	490	490	490	490	490	490	490	490	
				IPT(fz)	.0011	.0014	.0018	.0021	.0024	.0026	.0030	.0033	
10-11.1	High alloyed steel, and tool steel	0.4D	1.0D	SFM(Vc)	490	490	490	490	490	490	490	490	
				IPT(fz)	.0011	.0014	.0018	.0021	.0024	.0026	.0030	.0033	
				RPM	7920	5940	4750	3960	3400	2970	2380	1900	
				IPM(FEED)	35	33	34	33	33	31	29	25	
				SFM(Vc)	510	510	510	510	510	510	510	510	
				IPT(fz)	.0013	.0018	.0022	.0026	.0030	.0034	.0037	.0045	
M	12-13	Stainless steel (SUS 420, X40Cr13, 420)	0.4D	1.0D	SFM(Vc)	8250	6190	4950	4120	3530	3090	2470	1980
					IPT(fz)	.0013	.0018	.0022	.0026	.0030	.0034	.0037	.0045
					RPM	8250	6190	4950	4120	3530	3090	2470	1980
	14.1	Stainless steel (SUS 316, 316L, X5CrNiMo 17 12 2)	0.4D	1.0D	SFM(Vc)	345	345	345	345	345	345	345	345
					IPT(fz)	.0010	.0013	.0016	.0019	.0022	.0024	.0028	.0032
					RPM	5580	4180	3350	2790	2390	2090	1670	1340
14.2	Stainless steel (SUS 630, PH 15-5)	0.4D	0.6D	SFM(Vc)	145	145	145	145	145	145	145	145	
				IPT(fz)	.0006	.0008	.0010	.0013	.0014	.0016	.0018	.0021	
				RPM	2340	1760	1410	1170	1000	880	700	560	
K	15-20	Grey cast iron	0.4D	1.0D	SFM(Vc)	575	575	575	575	575	575	575	575
					IPT(fz)	.0008	.0011	.0014	.0017	.0019	.0021	.0024	.0028
					RPM	9300	6970	5580	4650	3980	3490	2790	2230
	31-35	Heat Resistant Super Alloys (X12 NiCrSi 36-16, 1.4864, Inconel 718, NiCr20TiAl 2.4631, NiCu30Al 2.4375, G-X120Mn12, 1.3401)	0.3D	0.6D	SFM(Vc)	105	105	105	105	105	105	105	105
					IPT(fz)	.0008	.0010	.0013	.0015	.0017	.0019	.0022	.0026
					RPM	1700	1270	1020	850	730	640	510	410
S	Titanium Alloys (HB 400 Rm, HB 1050 Rm TiAl6V4, 3.7165)	0.3D	0.6D	SFM(Vc)	230	230	230	230	230	230	230	230	
				IPT(fz)	.0013	.0019	.0022	.0026	.0030	.0034	.0037	.0045	
				RPM	3720	2790	2230	1860	1590	1390	1120	890	

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)							
						6.0	8.0	10.0	12.0	14.0	16.0	20.0	25.0
P	1-4	Non-alloy steel	1.0D	1.0D	SFM(Vc)	410	410	410	410	410	410	410	410
					IPT(fz)	.0010	.0013	.0017	.0019	.0022	.0025	.0028	.0033
					RPM	6630	4970	3980	3310	2840	2490	1990	1590
					IPM(FEED)	27	26	27	25	25	22	21	21
					SFM(Vc)	395	395	395	395	395	395	395	395
					IPT(fz)	.0010	.0013	.0017	.0019	.0022	.0025	.0028	.0033
	5	Non-alloy steel	1.0D	1.0D	SFM(Vc)	6390	4790	3830	3190	2740	2400	1920	1530
					IPT(fz)	.0010	.0013	.0017	.0019	.0022	.0025	.0028	.0033
					RPM	6390	4790	3830	3190	2740	2400	1920	1530
					IPM(FEED)	26	25	26	24	24	22	18	18
					SFM(Vc)	410	410	410	410	410	410	410	410
					IPT(fz)	.0010	.0013	.0017	.0019	.0022	.0025	.0028	.0033
6-7	Low alloy steel	1.0D	1.0D	SFM(Vc)	6630	4970	3980	3310	2840	2490	1990	1590	
				IPT(fz)	.0010	.0013	.0017	.0019	.0022	.0025	.0028	.0033	
				RPM	6630	4970	3980	3310	2840	2490	1990	1590	
				IPM(FEED)	27	26	27	25	25	22	21	21	
				SFM(Vc)	395	395	395	395	395	395	395	395	
				IPT(fz)	.0010	.0013	.0017	.0019	.0022	.0025	.0028	.0033	
8-9	Low alloy steel	1.0D	1.0D	SFM(Vc)	6390	4790	3830	3190	2740	2400	1920	1530	
				IPT(fz)	.0010	.0013	.0017	.0019	.0022	.0025	.0028	.0033	
				RPM	6390	4790	3830	3190	2740	2400	1920	1530	
				IPM(FEED)	26	25	26	24	24	22	18	18	
				SFM(Vc)	395	395	395	395	395	395	395	395	
				IPT(fz)	.0010	.0013	.0017	.0019	.0022	.0025	.0028	.0033	
10-11.1	High alloyed steel, and tool steel	1.0D	1.0D	SFM(Vc)	6390	4790	3830	3190	2740	2400	1920	1530	
				IPT(fz)	.0011	.0014	.0017	.0021	.0023	.0025	.0030	.0033	
				RPM	6390	4790	3830	3190	2740	2400	1920	1530	
				IPM(FEED)	28	27	26	27	25	24	23	20	
				SFM(Vc)	410	410	410	410	410	410	410	410	
				IPT(fz)	.0013	.0018	.0022	.0026	.0029	.0032	.0037	.0041	
M	12-13	Stainless steel (SUS 420, X40Cr13, 420)	1.0D	1.0D	SFM(Vc)	6630	4970	3980	3310	2840	2490	1990	1590
					IPT(fz)	.0013	.0018	.0022	.0026	.0029	.0032	.0037	.0041
					RPM	6630	4970	3980	3310	2840	2490	1990	1590
	14.1	Stainless steel (SUS 316, 316L, X5CrNiMo 17 12 2)	1.0D	1.0D	SFM(Vc)	280	280	280	280	280	280	280	280
					IPT(fz)	.0010	.0013	.0016	.0019	.0022	.0024	.0028	.0032
					RPM	4530	3400	2720	2260	1940	1700	1360	1090
14.2	Stainless steel (SUS 630, PH 15-5)	1.0D	0.5D	SFM(Vc)	120	120	120	120	120	120	120	120	
				IPT(fz)	.0006	.0008	.0010	.0013	.0014	.0016	.0018	.0021	
				RPM	1940	1460	1160	970	830	730	580	470	
K	15-20	Grey cast iron	1.0D	1.0D	SFM(Vc)	460	460	460	460	460	460	460	460
					IPT(fz)	.0008	.0011	.0014	.0017	.0019	.0021	.0024	.0026
					RPM	7440	5580	4460	3720	3190	2790	2230	1790
	31-35	Heat Resistant Super Alloys (X12 NiCrSi 36-16, 1.4864, Inconel 718, NiCr20TiAl 2.4631, NiCu30Al 2.4375, G-X120Mn12, 1.3401)	1.0D	0.4D	SFM(Vc)	80	80	80	80	80	80	80	80
					IPT(fz)	.0007	.0009	.0012	.0014	.0016	.0017	.0020	.0022
					RPM	1290	970	780	650	550	490	390	310
S	Titanium Alloys (HB 400 Rm, HB 1050 Rm TiAl6V4, 3.7165)	1.0D	1.0D	SFM(Vc)	180	180	180	180	180	180	180	180	
				IPT(fz)	.0013	.0018	.0022	.0026	.0030	.0034	.0037	.0041	
				RPM	2910	2180	1750	1460	1250	1090	870	700	



- NOTES:**
- ▶ Maximum recommended depth shown
  - ▶ Finish cuts typically require reduced feed rates and/or higher spindle speed, with radial width of 2% x D1 or less
  - ▶ Feed to be reduced by approximately 50% if L.O.C.(length of cut) is over 3xD
  - ▶ Reduce speed and feed recommendations for materials harder than listed
  - ▶ Recommendations above are based on ideal conditions. Adjust parameters accordingly for smaller taper machining centers or less rigid conditions



- NOTES:**
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# TitaNox-POWER END MILLS

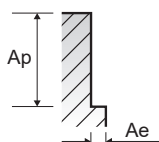
## RECOMMENDED CUTTING CONDITIONS

### GMG24, GMG26, GMG28, GMG30 SERIES

### 5 FLUTES - Side Cutting

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)									
						6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	25.0	
P	1-4	Non-alloy steel	0.3D	1.5D	SFM (Vc)	475	475	475	475	475	475	475	475	475	
					IPT (fz)	.0013	.0015	.0020	.0025	.0027	.0030	.0033	.0035	.0040	
					RPM	7680	5760	4610	3840	3290	2880	2560	2300	1840	
					IPM (FEED)	50	43	46	48	44	43	42	40	37	
					SFM (Vc)	330	330	330	330	330	330	330	330	330	
					IPT (fz)	.0013	.0015	.0020	.0025	.0027	.0030	.0033	.0035	.0040	
	5	Non-alloy steel	0.3D	1.5D	SFM (Vc)	5340	4000	3200	2670	2290	2000	1780	1600	1280	
					IPT (fz)	35	30	32	33	31	30	29	28	26	
					RPM	330	330	330	330	330	330	330	330	330	
					IPT (fz)	.0013	.0015	.0020	.0025	.0027	.0030	.0033	.0035	.0040	
					RPM	5340	4000	3200	2670	2290	2000	1780	1600	1280	
					IPM (FEED)	35	30	32	33	31	30	29	28	26	
6-7	Low alloy steel	0.3D	1.5D	SFM (Vc)	475	475	475	475	475	475	475	475	475		
				IPT (fz)	.0013	.0015	.0020	.0025	.0027	.0030	.0033	.0035	.0040		
				RPM	7680	5760	4610	3840	3290	2880	2560	2300	1840		
				IPM (FEED)	50	43	46	48	44	43	42	40	37		
				SFM (Vc)	330	330	330	330	330	330	330	330	330		
				IPT (fz)	.0013	.0015	.0020	.0025	.0027	.0030	.0033	.0035	.0040		
8-9	Low alloy steel	0.3D	1.5D	SFM (Vc)	5340	4000	3200	2670	2290	2000	1780	1600	1280		
				IPT (fz)	35	30	32	33	31	30	29	28	26		
				RPM	330	330	330	330	330	330	330	330	330		
				IPT (fz)	.0013	.0015	.0020	.0025	.0027	.0030	.0033	.0035	.0040		
				RPM	5340	4000	3200	2670	2290	2000	1780	1600	1280		
				IPM (FEED)	35	30	32	33	31	30	29	28	26		
10-11.1	High alloyed steel, and tool steel	0.3D	1.5D	SFM (Vc)	200	200	200	200	200	200	200	200	200		
				IPT (fz)	.0009	.0011	.0014	.0017	.0019	.0021	.0023	.0024	.0028		
				RPM	3230	2430	1940	1620	1390	1210	1080	970	780		
				IPM (FEED)	15	13	14	14	13	13	12	12	11		
				SFM (Vc)	385	385	385	385	385	385	385	385	385		
				IPT (fz)	.0009	.0010	.0012	.0018	.0020	.0021	.0022	.0024	.0028		
M	12-13	Stainless steel (SUS 420, X40Cr13, 420)	0.3D	1.5D	SFM (Vc)	6230	4670	3740	3110	2670	2330	2080	1870	1490	
					IPT (fz)	28	23	22	28	27	24	23	22	21	
					RPM	270	270	270	270	270	270	270	270	270	
	14.1	Stainless steel (SUS 316, 316L, X5CrNiMo 17 12 2)	0.3D	1.5D	SFM (Vc)	4370	3270	2620	2180	1870	1640	1460	1310	1050	
					IPT (fz)	26	21	20	27	24	22	20	20	18	
					RPM	195	195	195	195	195	195	195	195	195	
14.2	Stainless steel (SUS 630, PH 15-5)	0.3D	1.5D	SFM (Vc)	3150	2360	1890	1580	1350	1180	1050	950	760		
				IPT (fz)	19	15	14	20	18	16	15	14	13		
				RPM	350	350	350	350	350	350	350	350	350		
K	15-20	Grey cast iron	0.3D	1.5D	SFM (Vc)	5660	4240	3400	2830	2430	2120	1890	1700	1360	
					IPT (fz)	48	40	43	44	41	40	39	37	34	
					RPM	100	100	100	100	100	100	100	100	100	
					IPT (fz)	.0008	.0009	.0011	.0017	.0018	.0019	.0019	.0021	.0024	
					RPM	1620	1210	970	810	690	610	540	490	390	
					IPM (FEED)	6	5	5	7	6	6	5	5	5	
S	31-35	Heat Resistant Super Alloys (X12 NiCrSi 36-16, 1.4864, Inconel 718, NiCr20TiAl, 2.4631, NiCu30Al, 2.4375, G-X120Mn12, 1.3401)	0.1D	1.5D	SFM (Vc)	225	225	225	225	225	225	225	225	225	
					IPT (fz)	.0011	.0011	.0013	.0022	.0023	.0024	.0025	.0027	.0031	
					RPM	3640	2730	2180	1820	1560	1360	1210	1090	870	
	36-37	Titanium Alloys (HB 400 Rm, HB 1050Rm TiAl6V4, 3.7165)	0.3D	1.5D	SFM (Vc)	20	15	14	20	18	16	15	15	13	
					IPT (fz)	20	15	14	20	18	16	15	15	13	
					RPM	20	15	14	20	18	16	15	15	13	



- NOTES:**
- ▶ Maximum recommended depth shown
  - ▶ Finish cuts typically require reduced feed rates and/or higher spindle speed, with radial width of 2% x D1 or less
  - ▶ Feed to be reduced by approximately 50% if L.O.C.(length of cut) is over 3xD
  - ▶ Reduce speed and feed recommendations for materials harder than listed
  - ▶ Recommendations above are based on ideal conditions. Adjust parameters accordingly for smaller taper machining centers or less rigid conditions



Being the best through innovation



**SOLID CARBIDE**

# **JET-POWER END MILLS**

- Exotic materials like Stainless Steels, Nickel alloys and Titanium

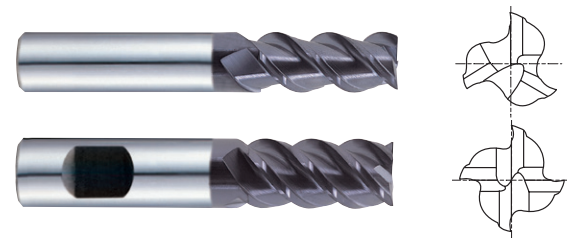






**CARBIDE, 3&4 FLUTE 50° HELIX REGULAR LENGTH**

- ▶ Suitable for low hardness materials (under HRc 45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steels, inconel, nimonic, etc.
- ▶ Corner Protection against chipping.

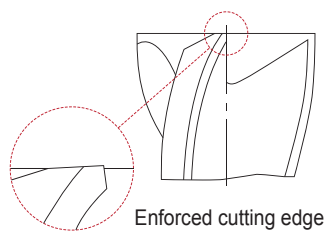


◆ U.S.A Stock

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~-0.0012	0~-0.0003



◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	130	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	◎	◎	◎	◎	◎	◎	◎	◎	

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

**HSS-PM, 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.



◇ Call for availability

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~-0.0003

◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	130	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	◎	◎	◎	◎	◎	◎	◎	◎	

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

HSS



PLAIN SHANK Ø1/8~Ø5/16 E5075 SERIES
FLAT SHANK Ø11/32~Ø1 E5105 SERIES

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).



p.C514-515

U.S.A Stock

Table with columns: UNCOATED, TIN COATED, TiCN COATED, YG:TYLON F, YG:TYLON E, Corner Radius R, Mill Diameter, Shank Diameter, Length of Cut, Overall Length. Rows include part numbers 57558 to 57600.

Table with columns: Mill Dia. Tolerance (inch), Shank Dia. Tolerance. Values: 0~-0.012, 0~-0.003

ISO material compatibility chart with columns for P (Non-alloy steel, Low alloy steel, High alloyed steel), M (Stainless steel, Grey cast iron, Nodular cast iron, Malleable cast iron), S (Aluminum, Copper, Titanium, Heat Resistant Super Alloys), H (Hardened steel, Chilled Cast Iron, Hardened Cast Iron).



PLAIN SHANK Ø1/8~Ø5/16 E5074 SERIES
FLAT SHANK Ø11/32~Ø1 E5104 SERIES

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).



p.C514-515

U.S.A Stock

Table with columns: UNCOATED, TIN COATED, TiCN COATED, YG:TYLON F, YG:TYLON E, Corner Radius R, Mill Diameter, Shank Diameter, Length of Cut, Overall Length. Rows include part numbers 56558 to 56600.

Table with columns: Mill Dia. Tolerance (inch), Shank Dia. Tolerance. Values: 0~-0.012, 0~-0.003

ISO material compatibility chart with columns for P (Non-alloy steel, Low alloy steel, High alloyed steel), M (Stainless steel, Grey cast iron, Nodular cast iron, Malleable cast iron), S (Aluminum, Copper, Titanium, Heat Resistant Super Alloys), H (Hardened steel, Chilled Cast Iron, Hardened Cast Iron).

## 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, etc.
- High velocity milling operation.
- Fast chip ejection.

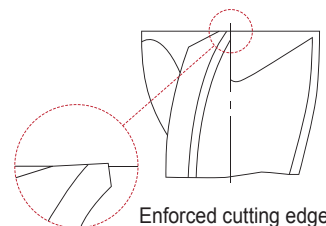


◆ U.S.A Stock

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

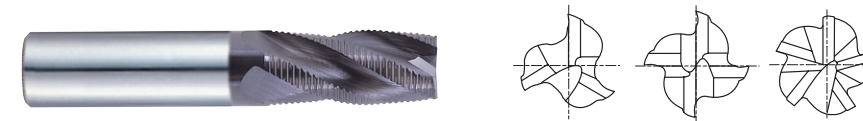
ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	130	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	15	30	25	38	34	15	30	25	38	34	55	60	42	55	550	630	550	630	400	550	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	◎	◎	○	○	◎	◎	○	○	○	○	

## CARBIDE, MULTI FLUTE LONG LENGTH FINE PITCH ROUGHING

- Suitable for low hardness materials (under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steel, inconel, nimonic, etc.
- High velocity milling operation.
- Fast chip ejection.

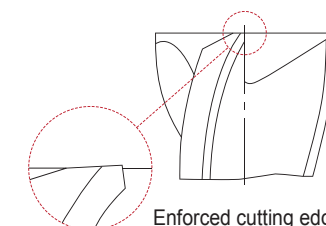


◆ U.S.A Stock

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	



◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	130	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	15	30	25	38	34	15	30	25	38	34	55	60	42	55	550	630	550	630	400	550	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	◎	◎	○	○	◎	◎	○	○	○	○	

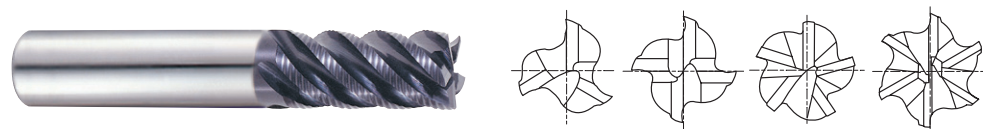




PLAIN SHANK **EH969** SERIES

**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.

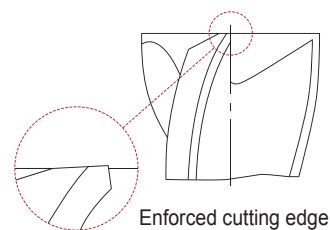


◆ U.S.A Stock

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

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	130	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

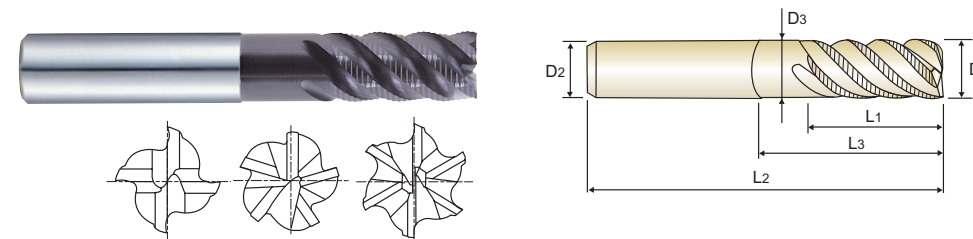
ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	15	30	25	38	34	15	30	25	38	34	15	30	25	38	34	55	60	42	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	◎	◎	◎	◎	◎	◎	◎	○	○	○	○



PLAIN SHANK **EH970** SERIES

**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.

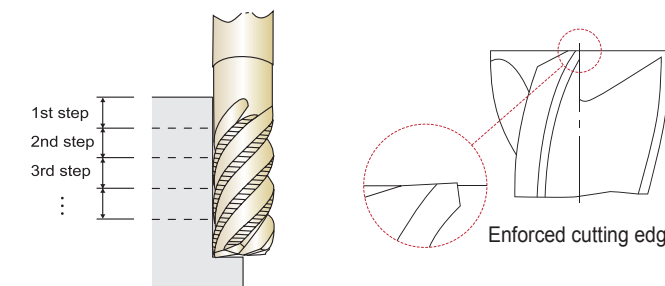


◆ U.S.A Stock

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	



◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	130	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	15	30	25	38	34	15	30	25	38	34	15	30	25	38	34	55	60	42	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	◎	◎	◎	◎	◎	◎	◎	○	○	○	○



HSS

HSS



PLAIN SHANK **EH852** SERIES



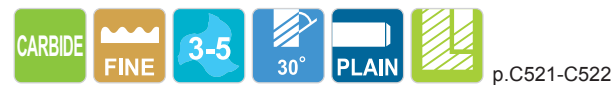
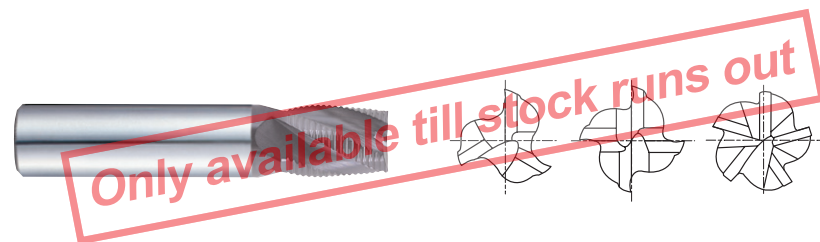
PLAIN SHANK **EH831** SERIES

**CARBIDE, MULTI FLUTE STUB LENGTH FINE PITCH ROUGHING**

**CARBIDE, MULTI FLUTE LONG LENGTH FINE PITCH ROUGHING**

- ▶ Designed to machine low hardness materials (under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steel, inconel, nimonic.
- ▶ High velocity milling operation.
- ▶ Fast chip ejection.

- ▶ 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.



◇ Call for Availability

◇ Call for Availability

Unit : mm

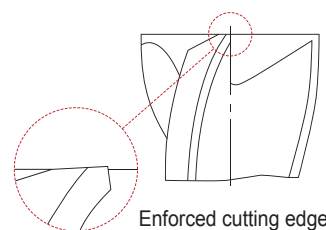
Unit : mm

EDP No.	Mill Diameter		Shank Diameter h6	Length of Cut	Overall Length	No. of Flute
	Metric h10	Inch				
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

EDP No.	Mill Diameter		Shank Diameter h6	Length of Cut	Overall Length	No. of Flute
	Metric h10	Inch				
EH831060	6.0	.2362	6	16	57	3
EH831070	7.0	.2756	8	16	63	3
EH831080	8.0	.3150	8	16	63	3
EH831090	9.0	.3543	10	19	72	4
EH831100	10.0	.3937	10	22	72	4
EH831120	12.0	.4724	12	26	83	4
EH831140	14.0	.5512	14	26	83	4
EH831160	16.0	.6299	16	32	92	4
EH831180	18.0	.7087	18	32	92	4
EH831200	20.0	.7874	20	38	104	4
EH831250	25.0	.9843	25	45	121	5

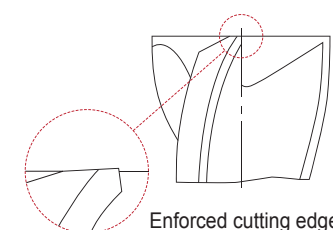
**Tolerances according to DIN 7160 & 7161**

Tolerance range in μm					
Nominal-Diameter in mm					
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
<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



**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

◎ : Excellent ○ : Good

ISO	P										M				K											
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron					
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14	15	16	17	18	19	20	21	22	23	24	25
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	10	26	3	25	130	230	10	10	10	10	10
HB	125	190	250	270	300	180	275	300	350	200	325	200	270	240	180	180	260	160	250	130	230	130	230	230	230	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO	N					S					H																			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron										
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	550	630	400	550	550	630	400	550	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO	P										M				K											
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron					
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14	15	16	17	18	19	20	21	22	23	24	25
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	10	26	3	25	130	230	10	10	10	10	10
HB	125	190	250	270	300	180	275	300	350	200	325	200	270	240	180	180	260	160	250	130	230	130	230	230	230	230
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO	N					S					H																			
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron										
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	550	630	400	550	550	630	400	550	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

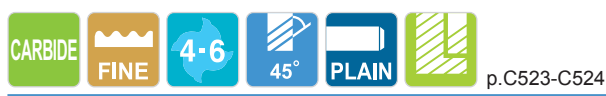




PLAIN SHANK **EH917** SERIES

**CARBIDE, MULTI FLUTE 45° HELIX 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



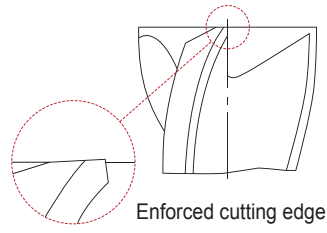
◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter h6	Length of Cut	Overall Length	No. of Flute
	Metric h10	Inch				
EH917060	6.0	.2362	6	7	54	4
EH917080	8.0	.3150	8	9	58	4
EH917100	10.0	.3937	10	14	66	4
EH917120	12.0	.4724	12	16	73	4
EH917160	16.0	.6299	16	22	82	5
EH917200	20.0	.7874	20	26	92	6

**Tolerances according to DIN 7160 & 7161**

Tolerance range in μm					
Nominal-Diameter in mm					
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
<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

ISO Material Description	P										M				K			H								
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron	Nodular cast iron		Malleable cast iron						
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14	15	16	17	18	19	20	21	22	23	24	25
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25			21					
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250			130	230				
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

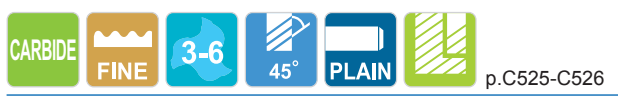
ISO Material Description	N					S					H													
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron											
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	550	630	550
Recommend	○	○	○	○	○	○	○	○	○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎



PLAIN SHANK **EH919** SERIES

**CARBIDE, MULTI FLUTE 45° HELIX LONG LENGTH FINE PITCH ROUGHING**

- ▶ High chip removal and minimizing breakages of cutting edges.
- ▶ Suitable for low hardness materials (under HRc45), alloy steels, tool steels, carbon steels, prehardened steels, stainless steels, Inconel, nimonic, etc



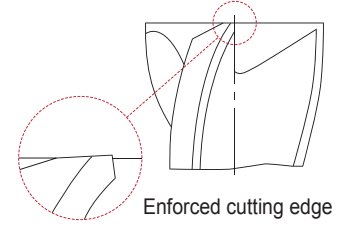
◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter h6	Length of Cut	Overall Length	No. of Flute
	Metric h10	Inch				
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

ISO Material Description	P										M				K			H								
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron	Nodular cast iron		Malleable cast iron						
VDI 3323	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14	15	16	17	18	19	20	21	22	23	24	25
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25			21					
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250			130	230				
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

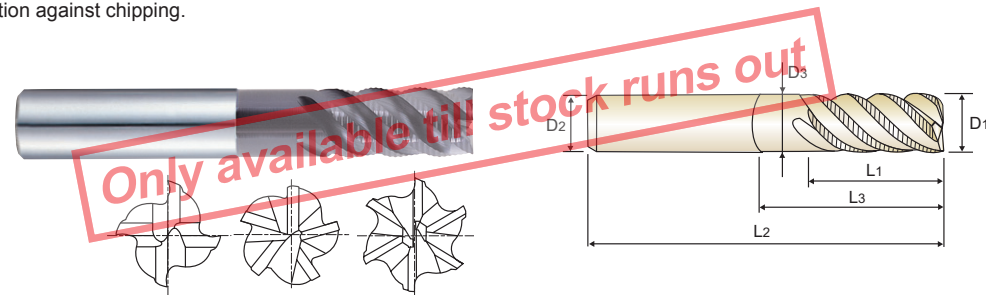
ISO Material Description	N					S					H													
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron											
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	550	630	550
Recommend	○	○	○	○	○	○	○	○	○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎



PLAIN SHANK **EH921** SERIES

**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.



p.C523-C524

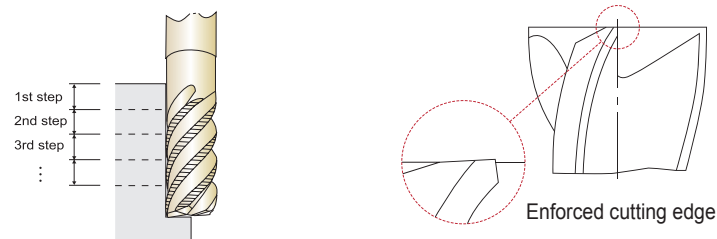
◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter D2	Length of Cut L1	Length Below Shank L3	Overall Length L2	Neck Diameter D3	No. of Flute
	Metric D1	Inch						
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 $\mu\text{m}$				
	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

ISO	P										M				K																		
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron												
Material Description	1	2	3	4	5	6	7	8	9	10	11.1	11.2	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
VDI 3323	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	180	260	160	250	130	230	31	32	33	34	35	36	37	38	39	40	41	
HRc																						15	30	25	38	34	55	60	42	55	55		
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550												
Recommend	○	○	◎	◎	◎	○	◎	◎	◎	○	◎	○	◎	◎	◎	◎	◎					○	○	○	○	○	◎	◎					

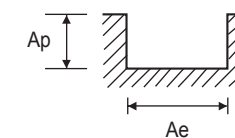


**RECOMMENDED CUTTING CONDITIONS**

**EH108** SERIES **3&4 FLUTE - SLOTTING**

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)						
						1/4	5/16	3/8	1/2	5/8	3/4	1
P	1-4	Non-alloy steel	1.0D	0.5D	SFM(Vc)	365	345	320	360	360	345	355
					IPT(fz)	.0007	.0011	.0012	.0012	.0012	.0010	.0008
	RPM		5560	4200	3260	2740	2200	1750	1360			
	IPM(Feed)		12	13	12	10	8	7	5			
	5		SFM(Vc)	220	205	195	220	225	215	220		
			IPT(fz)	.0008	.0009	.0009	.0009	.0010	.0008	.0007		
	RPM		3360	2520	2000	1680	1360	1100	840			
	IPM(Feed)		8	7	6	5	4	3	2			
	6-7		SFM(Vc)	365	345	320	360	360	345	355		
			IPT(fz)	.0007	.0011	.0012	.0012	.0012	.0010	.0008		
RPM	5560	4200	3260	2740	2200	1750	1360					
IPM(Feed)	12	13	12	10	8	7	5					
8-9	SFM(Vc)	220	205	195	220	225	215	220				
	IPT(fz)	.0008	.0009	.0009	.0009	.0010	.0008	.0007				
RPM	3360	2520	2000	1680	1360	1100	840					
IPM(Feed)	8	7	6	5	4	3	2					
10	SFM(Vc)	365	345	320	360	360	345	355				
	IPT(fz)	.0007	.0011	.0012	.0012	.0012	.0010	.0008				
RPM	5560	4200	3260	2740	2200	1750	1360					
IPM(Feed)	12	13	12	10	8	7	5					
11.1-11.2	SFM(Vc)	220	205	195	220	225	215	220				
	IPT(fz)	.0008	.0009	.0009	.0009	.0010	.0008	.0007				
RPM	3360	2520	2000	1680	1360	1100	840					
IPM(Feed)	8	7	6	5	4	3	2					
M	12-14.2	Stainless steel	1.0D	0.05D	SFM(Vc)	185	170	165	180	170	175	175
					IPT(fz)	.0007	.0010	.0011	.0011	.0013	.0010	.0009
RPM	2840	2100	1680	1370	1050	880	670					
IPM(Feed)	6	6	6	5	4	3	2					
S	31-35	Heat Resistant Super Alloys	1.0D	0.05D	SFM(Vc)	75	70	65	75	70	70	70
					IPT(fz)	.0005	.0006	.0008	.0007	.0008	.0009	.0006
	RPM		1160	840	670	560	420	350	270			
	IPM(Feed)		2	2	2	1	1	1	1			
36-37	Titanium Alloys	SFM(Vc)	100	90	85	95	90	95	90			
		IPT(fz)	.0005	.0007	.0008	.0008	.0008	.0006	.0006			
RPM	1500	1090	870	730	550	480	350					
IPM(Feed)	2	2	2	2	1	1	1					
H	40	Chilled Cast Iron	1.0D	0.5D	SFM(Vc)	220	205	195	220	225	215	220
					IPT(fz)	.0008	.0009	.0009	.0009	.0010	.0008	.0007
RPM	3360	2520	2000	1680	1360	1100	840					
IPM(Feed)	8	7	6	5	4	3	2					



\* The Feed, in long & extra long types, should be reduced by around 50%.

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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

**EH108** SERIES **3&4 FLUTE - SIDE CUTTING**

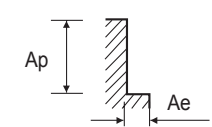
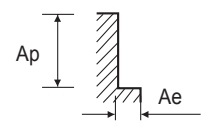
**EE882** SERIES **6FLUTE - SIDE CUTTING**

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)						
						1/4	5/16	3/8	1/2	5/8	3/4	1
P	1-4	Non-alloy steel	0.5D	1.5D	SFM(Vc)	365	345	320	360	360	345	355
					IPT(fz)	.0009	.0013	.0015	.0015	.0015	.0012	.0011
					RPM	5560	4200	3260	2740	2200	1750	1360
					IPM(FEED)	16	17	15	12	10	9	6
					SFM(Vc)	220	205	195	220	225	215	220
					IPT(fz)	.0010	.0012	.0012	.0012	.0012	.0010	.0009
	5	Non-alloy steel	0.5D	1.5D	SFM(Vc)	365	345	320	360	360	345	355
					IPT(fz)	.0009	.0013	.0015	.0015	.0015	.0012	.0011
					RPM	5560	4200	3260	2740	2200	1750	1360
					IPM(FEED)	16	17	15	12	10	9	6
					SFM(Vc)	220	205	195	220	225	215	220
					IPT(fz)	.0010	.0012	.0012	.0012	.0012	.0010	.0009
6-7	Low alloy steel	0.5D	1.5D	SFM(Vc)	365	345	320	360	360	345	355	
				IPT(fz)	.0009	.0013	.0015	.0015	.0015	.0012	.0011	
				RPM	5560	4200	3260	2740	2200	1750	1360	
				IPM(FEED)	16	17	15	12	10	9	6	
				SFM(Vc)	220	205	195	220	225	215	220	
				IPT(fz)	.0010	.0012	.0012	.0012	.0012	.0010	.0009	
8-9	Low alloy steel	0.5D	1.5D	SFM(Vc)	365	345	320	360	360	345	355	
				IPT(fz)	.0009	.0013	.0015	.0015	.0015	.0012	.0011	
				RPM	5560	4200	3260	2740	2200	1750	1360	
				IPM(FEED)	16	17	15	12	10	9	6	
				SFM(Vc)	220	205	195	220	225	215	220	
				IPT(fz)	.0010	.0012	.0012	.0012	.0012	.0010	.0009	
10	High alloyed steel, and tool steel	0.5D	1.5D	SFM(Vc)	365	345	320	360	360	345	355	
				IPT(fz)	.0009	.0013	.0015	.0015	.0015	.0012	.0011	
				RPM	5560	4200	3260	2740	2200	1750	1360	
				IPM(FEED)	16	17	15	12	10	9	6	
				SFM(Vc)	220	205	195	220	225	215	220	
				IPT(fz)	.0010	.0012	.0012	.0012	.0012	.0010	.0009	
11.1-11.2	High alloyed steel, and tool steel	0.5D	1.5D	SFM(Vc)	220	205	195	220	225	215	220	
				IPT(fz)	.0010	.0012	.0012	.0012	.0012	.0010	.0009	
				RPM	3360	2520	2000	1680	1360	1100	840	
				IPM(FEED)	10	9	7	6	5	4	3	
				SFM(Vc)	185	170	165	180	170	175	175	
				IPT(fz)	.0010	.0014	.0017	.0017	.0017	.0015	.0017	
M	12-14.2	Stainless steel	0.5D	1.5D	SFM(Vc)	185	170	165	180	170	175	175
					IPT(fz)	.0010	.0014	.0017	.0017	.0017	.0015	.0017
					RPM	2840	2100	1680	1370	1050	880	670
					IPM(FEED)	8	9	9	7	5	5	5
					SFM(Vc)	70	70	65	75	70	70	70
					IPT(fz)	.0007	.0008	.0010	.0011	.0011	.0009	.0009
S	31-35	Heat Resistant Super Alloys	0.05D	1.0D	SFM(Vc)	70	70	65	75	70	70	70
					IPT(fz)	.0007	.0008	.0010	.0011	.0011	.0009	.0009
					RPM	1050	840	680	560	420	350	270
					IPM(FEED)	2	2	2	2	1	1	1
					SFM(Vc)	90	90	85	95	90	95	90
					IPT(fz)	.0007	.0009	.0011	.0012	.0012	.0008	.0010
S	36-37	Titanium Alloys	0.05D	1.0D	SFM(Vc)	90	90	85	95	90	95	90
					IPT(fz)	.0007	.0009	.0011	.0012	.0012	.0008	.0010
					RPM	1360	1090	880	730	550	480	350
					IPM(FEED)	3	3	3	3	2	2	1
					SFM(Vc)	220	205	195	220	225	215	220
					IPT(fz)	.0010	.0012	.0012	.0012	.0012	.0010	.0009
H	40	Chilled Cast Iron	0.5D	1.5D	SFM(Vc)	220	205	195	220	225	215	220
					IPT(fz)	.0010	.0012	.0012	.0012	.0012	.0010	.0009
					RPM	3360	2520	2000	1680	1360	1100	840
					IPM(FEED)	10	9	7	6	5	4	3

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)				
						3/4	7/8	1	1 1/4	1 1/2
P	1-4	Non-alloy steel	0.1D	1.5D	SFM(Vc)	190	165	170	170	170
					IPT(fz)	.0014	.0017	.0017	.0017	.0017
					RPM	960	730	640	520	430
					IPM(FEED)	8	7	7	5	4
					SFM(Vc)	40	40	45	45	40
					IPT(fz)	.0006	.0006	.0006	.0006	.0006
	5	Non-alloy steel	0.1D	1.5D	SFM(Vc)	190	165	170	170	170
					IPT(fz)	.0014	.0017	.0017	.0017	.0017
					RPM	960	730	640	520	430
					IPM(FEED)	8	7	7	5	4
					SFM(Vc)	40	40	45	45	40
					IPT(fz)	.0006	.0006	.0006	.0006	.0006
6-7	Low alloy steel	0.1D	1.5D	SFM(Vc)	190	165	170	170	170	
				IPT(fz)	.0014	.0017	.0017	.0017	.0017	
				RPM	960	730	640	520	430	
				IPM(FEED)	8	7	7	5	4	
				SFM(Vc)	40	40	45	45	40	
				IPT(fz)	.0006	.0006	.0006	.0006	.0006	
8-9	Low alloy steel	0.1D	1.5D	SFM(Vc)	190	165	170	170	170	
				IPT(fz)	.0014	.0017	.0017	.0017	.0017	
				RPM	960	730	640	520	430	
				IPM(FEED)	8	7	7	5	4	
				SFM(Vc)	40	40	45	45	40	
				IPT(fz)	.0006	.0006	.0006	.0006	.0006	
10	High alloyed steel, and tool steel	0.1D	1.5D	SFM(Vc)	190	165	170	170	170	
				IPT(fz)	.0014	.0017	.0017	.0017	.0017	
				RPM	960	730	640	520	430	
				IPM(FEED)	8	7	7	5	4	
				SFM(Vc)	40	40	45	45	40	
				IPT(fz)	.0006	.0006	.0006	.0006	.0006	
11.1-11.2	High alloyed steel, and tool steel	0.1D	1.5D	SFM(Vc)	190	165	170	170	170	
				IPT(fz)	.0014	.0017	.0017	.0017	.0017	
				RPM	960	730	640	520	430	
				IPM(FEED)	8	7	7	5	4	
				SFM(Vc)	40	40	45	45	40	
				IPT(fz)	.0006	.0006	.0006	.0006	.0006	
M	12-14.2	Stainless steel	0.1D	1.5D	SFM(Vc)	95	85	85	85	85
					IPT(fz)	.0017	.0020	.0021	.0021	.0020
					RPM	480	365	320	260	215
					IPM(FEED)	5	4	4	3	3
					SFM(Vc)	35	35	35	35	35
					IPT(fz)	.0010	.0009	.0009	.0010	.0010
S	31-35	Heat Resistant Super Alloys	0.05D	1.0D	SFM(Vc)	35	35	35	35	35
					IPT(fz)	.0010	.0009	.0009	.0010	.0010
					RPM	170	145	130	105	85
					IPM(FEED)	1	1	1	1	1
					SFM(Vc)	45	45	45	45	45
					IPT(fz)	.0011	.0010	.0010	.0010	.0009
S	36-37	Titanium Alloys	0.05D	1.0D	SFM(Vc)	45	45	45	45	45
					IPT(fz)	.0011	.0010	.0010	.0010	.0009
					RPM	220	190	170	140	110
					IPM(FEED)	1	1	1	1	1
					SFM(Vc)	40	40	45	45	40
					IPT(fz)	.0006	.0006	.0006	.0006	.0006
H	40	Chilled Cast Iron	0.1D	1.5D	SFM(Vc)	40	40	45	45	40
					IPT(fz)	.0006	.0006	.0006	.0006	.0006
					RPM	215	180	165	130	105
					IPM(FEED)	1	1	1	1	1



※ The Feed, in long & extra long types, should be reduced by around 50%.



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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

**E5075, E5105, E5074, E5104** SERIES

**3 FLUTE - SLOTTING**

**E5075, E5105, E5074, E5104** SERIES

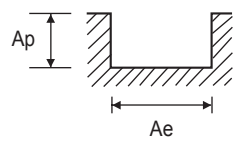
**3 FLUTE - SIDE CUTTING**

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

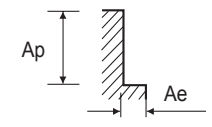
SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)										
						1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	1	
P	1-2	Non-alloy steel	1.0D	0.5D	SFM(Vc)	110	110	110	110	110	110	110	110	110	110	
					IPT(fz)	.0009	.0012	.0017	.0022	.0025	.0030	.0035	.0037	.0045	.0050	
					RPM	3360	2240	1680	1340	1120	960	840	670	560	420	
	3-4		SFM(Vc)	90	90	90	90	90	90	90	90	90	90	90		
			IPT(fz)	.0009	.0012	.0017	.0022	.0025	.0030	.0035	.0037	.0045	.0050			
			RPM	2750	1830	1380	1100	920	790	690	550	460	340			
	5		SFM(Vc)	70	70	70	70	70	70	70	70	70	70	70		
			IPT(fz)	.0009	.0012	.0017	.0022	.0025	.0030	.0035	.0037	.0045	.0050			
			RPM	2140	1430	1070	860	710	610	530	430	360	270			
	6		SFM(Vc)	110	110	110	110	110	110	110	110	110	110	110		
			IPT(fz)	.0009	.0012	.0017	.0022	.0025	.0030	.0035	.0037	.0045	.0050			
			RPM	3360	2240	1680	1340	1120	960	840	670	560	420			
7	SFM(Vc)	90	90	90	90	90	90	90	90	90	90	90				
	IPT(fz)	.0009	.0012	.0017	.0022	.0025	.0030	.0035	.0037	.0045	.0050					
	RPM	2750	1830	1380	1100	920	790	690	550	460	340					
8-9	SFM(Vc)	70	70	70	70	70	70	70	70	70	70	70				
	IPT(fz)	.0009	.0012	.0017	.0022	.0025	.0030	.0035	.0037	.0045	.0050					
	RPM	2140	1430	1070	860	710	610	530	430	360	270					
10	SFM(Vc)	110	110	110	110	110	110	110	110	110	110	110				
	IPT(fz)	.0009	.0012	.0017	.0022	.0025	.0030	.0035	.0037	.0045	.0050					
	RPM	3360	2240	1680	1340	1120	960	840	670	560	420					
11.1	SFM(Vc)	70	70	70	70	70	70	70	70	70	70	70				
	IPT(fz)	.0009	.0012	.0017	.0022	.0025	.0030	.0035	.0037	.0045	.0050					
	RPM	2140	1430	1070	860	710	610	530	430	360	270					
M	12-14.2	Stainless steel	1.0D	0.5D	SFM(Vc)	60	60	60	60	60	60	60	60	60		
					IPT(fz)	.0009	.0012	.0017	.0022	.0025	.0030	.0035	.0037	.0045	.0050	
					RPM	1830	1220	920	730	610	520	460	370	310	230	
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	0.5D	SFM(Vc)	90	90	90	90	90	90	90	90	90		
					IPT(fz)	.0009	.0012	.0017	.0022	.0025	.0030	.0035	.0037	.0045	.0050	
					RPM	2750	1830	1380	1100	920	790	690	550	460	340	

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)										
						1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	1	
P	1-2	Non-alloy steel	0.5D	1.5D	SFM(Vc)	110	110	110	110	110	110	110	110	110		
					IPT(fz)	.0009	.0012	.0017	.0022	.0025	.0030	.0035	.0037	.0045	.0050	
					RPM	3360	2240	1680	1340	1120	960	840	670	560	420	
	3-4		SFM(Vc)	90	90	90	90	90	90	90	90	90	90	90		
			IPT(fz)	.0009	.0012	.0017	.0022	.0025	.0030	.0035	.0037	.0045	.0050			
			RPM	2750	1830	1380	1100	920	790	690	550	460	340			
	5		SFM(Vc)	70	70	70	70	70	70	70	70	70	70	70		
			IPT(fz)	.0009	.0012	.0017	.0022	.0025	.0030	.0035	.0037	.0045	.0050			
			RPM	2140	1430	1070	860	710	610	530	430	360	270			
	6		SFM(Vc)	110	110	110	110	110	110	110	110	110	110	110		
			IPT(fz)	.0009	.0012	.0017	.0022	.0025	.0030	.0035	.0037	.0045	.0050			
			RPM	3360	2240	1680	1340	1120	960	840	670	560	420			
7	SFM(Vc)	90	90	90	90	90	90	90	90	90	90	90				
	IPT(fz)	.0009	.0012	.0017	.0022	.0025	.0030	.0035	.0037	.0045	.0050					
	RPM	2750	1830	1380	1100	920	790	690	550	460	340					
8-9	SFM(Vc)	70	70	70	70	70	70	70	70	70	70	70				
	IPT(fz)	.0009	.0012	.0017	.0022	.0025	.0030	.0035	.0037	.0045	.0050					
	RPM	2140	1430	1070	860	710	610	530	430	360	270					
10	SFM(Vc)	110	110	110	110	110	110	110	110	110	110	110				
	IPT(fz)	.0009	.0012	.0017	.0022	.0025	.0030	.0035	.0037	.0045	.0050					
	RPM	3360	2240	1680	1340	1120	960	840	670	560	420					
11.1	SFM(Vc)	70	70	70	70	70	70	70	70	70	70	70				
	IPT(fz)	.0009	.0012	.0017	.0022	.0025	.0030	.0035	.0037	.0045	.0050					
	RPM	2140	1430	1070	860	710	610	530	430	360	270					
M	12-14.2	Stainless steel	0.05D	1.0D	SFM(Vc)	60	60	60	60	60	60	60	60	60		
					IPT(fz)	.0009	.0012	.0017	.0022	.0025	.0030	.0035	.0037	.0045	.0050	
					RPM	1830	1220	920	730	610	520	460	370	310	230	
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.5D	1.5D	SFM(Vc)	90	90	90	90	90	90	90	90	90		
					IPT(fz)	.0009	.0012	.0017	.0022	.0025	.0030	.0035	.0037	.0045	.0050	
					RPM	2750	1830	1380	1100	920	790	690	550	460	340	



※ The Feed, in long & extra long types, should be reduced by around 50%.



※ The Feed, in long & extra long types, should be reduced by around 50%.

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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

EH094, EH095, EH969, EH970 SERIES MULTI FLUTE - SLOTTING

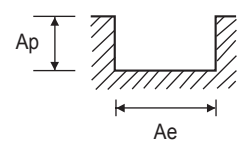
EH094, EH095, EH969, EH970 SERIES MULTI FLUTE - SIDE CUTTING

SFM(Vc) = ft./min. IPT(fz) = in./tooth RPM = rev./min. IPM(Feed) = in./min.

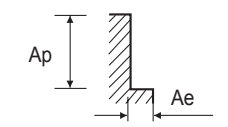
SFM(Vc) = ft./min. IPT(fz) = in./tooth RPM = rev./min. IPM(Feed) = in./min.

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) (1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 1). Rows include Non-alloy steel, Low alloy steel, High alloyed steel, Stainless steel, Heat Resistant Super Alloys, Titanium Alloys, and Chilled Cast Iron.

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) (1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 1). Rows include Non-alloy steel, Low alloy steel, High alloyed steel, Stainless steel, Heat Resistant Super Alloys, Titanium Alloys, and Chilled Cast Iron.



※ The Feed, in long & extra long types, should be reduced by around 50%.



※ The Feed, in long & extra long types, should be reduced by around 50%.



RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

**EH830 SERIES 3&4 FLUTE - SLOTTING**

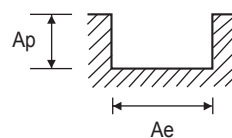
**EH830 SERIES 3&4 FLUTE - SIDE CUTTING**

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

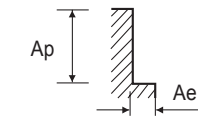
SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)							
						6.0	8.0	10.0	12.0	16.0	18.0	20.0	25.0
P	1-4	Non-alloy steel	1.0D	0.5D	SFM(Vc)	345	345	330	345	360	360	345	345
					IPT(fz)	.0007	.0011	.0012	.0012	.0012	.0012	.0007	.0007
					RPM	5570	4180	3180	2790	2190	1950	1670	1340
					IPM(Feed)	13	13	12	10	8	7	6	4
					SFM(Vc)	215	215	215	215	230	230	215	215
					IPT(fz)	.0008	.0009	.0009	.0009	.0010	.0009	.0007	.0007
	5	Non-alloy steel	1.0D	0.5D	SFM(Vc)	3450	2590	2070	1720	1390	1240	1040	830
					RPM	3450	2590	2070	1720	1390	1240	1040	830
					IPM(Feed)	8	7	6	5	4	3	3	2
					SFM(Vc)	345	345	330	345	360	360	345	345
					IPT(fz)	.0007	.0011	.0012	.0012	.0012	.0012	.0007	.0007
					RPM	5570	4180	3180	2790	2190	1950	1670	1340
6-7	Low alloy steel	1.0D	0.5D	SFM(Vc)	345	345	330	345	360	360	345	345	
				IPT(fz)	.0007	.0011	.0012	.0012	.0012	.0012	.0007	.0007	
				RPM	5570	4180	3180	2790	2190	1950	1670	1340	
				IPM(Feed)	13	13	12	10	8	7	6	4	
				SFM(Vc)	215	215	215	215	230	230	215	215	
				IPT(fz)	.0008	.0009	.0009	.0009	.0010	.0009	.0007	.0007	
8-9	Low alloy steel	1.0D	0.5D	SFM(Vc)	3450	2590	2070	1720	1390	1240	1040	830	
				RPM	3450	2590	2070	1720	1390	1240	1040	830	
				IPM(Feed)	8	7	6	5	4	3	3	2	
				SFM(Vc)	345	345	330	345	360	360	345	345	
				IPT(fz)	.0007	.0011	.0012	.0012	.0012	.0012	.0007	.0007	
				RPM	5570	4180	3180	2790	2190	1950	1670	1340	
10	High alloyed steel, and tool steel	1.0D	0.5D	SFM(Vc)	345	345	330	345	360	360	345	345	
				IPT(fz)	.0007	.0011	.0012	.0012	.0012	.0012	.0007	.0007	
				RPM	5570	4180	3180	2790	2190	1950	1670	1340	
				IPM(Feed)	13	13	12	10	8	7	6	4	
				SFM(Vc)	215	215	215	215	230	230	215	215	
				IPT(fz)	.0008	.0009	.0009	.0009	.0010	.0009	.0007	.0007	
11.1-11.2	High alloyed steel, and tool steel	1.0D	0.5D	SFM(Vc)	3450	2590	2070	1720	1390	1240	1040	830	
				RPM	3450	2590	2070	1720	1390	1240	1040	830	
				IPM(Feed)	8	7	6	5	4	3	3	2	
				SFM(Vc)	180	180	180	165	180	180	180	180	
				IPT(fz)	.0007	.0010	.0011	.0011	.0013	.0012	.0008	.0009	
				RPM	2920	2190	1750	1330	1090	970	880	700	
M	12-14.2	Stainless steel	1.0D	0.5D	SFM(Vc)	65	65	65	65	65	65	65	65
					IPT(fz)	.0004	.0006	.0008	.0007	.0008	.0007	.0006	.0005
					RPM	1060	800	640	530	400	350	320	260
					IPM(Feed)	1	1	1	1	1	1	1	1
					SFM(Vc)	175	175	175	170	175	175	175	175
					IPT(fz)	.0007	.0010	.0011	.0011	.0012	.0012	.0008	.0009
S	31-35	Heat Resistant Super Alloys	1.0D	0.05D	SFM(Vc)	2840	2100	1680	1370	1050	950	840	670
					RPM	2840	2100	1680	1370	1050	950	840	670
					IPM(Feed)	6	6	6	5	4	3	3	2
					SFM(Vc)	180	180	180	165	180	180	180	180
					IPT(fz)	.0011	.0017	.0018	.0017	.0019	.0018	.0013	.0013
					RPM	2920	2190	1750	1330	1090	970	880	700
S	36-37	Titanium Alloys	1.0D	0.05D	SFM(Vc)	65	65	65	65	65	65	65	65
					IPT(fz)	.0007	.0008	.0010	.0011	.0011	.0011	.0009	.0009
					RPM	1060	800	640	530	400	350	320	260
					IPM(Feed)	2	2	2	2	1	1	1	1
					SFM(Vc)	180	180	180	165	180	180	180	180
					IPT(fz)	.0011	.0017	.0018	.0017	.0019	.0018	.0013	.0013
H	40	Chilled Cast Iron	1.0D	0.5D	SFM(Vc)	2920	2190	1750	1330	1090	970	880	700
					RPM	2920	2190	1750	1330	1090	970	880	700
					IPM(Feed)	10	11	10	7	6	5	5	4
					SFM(Vc)	215	215	215	215	230	230	215	215
					IPT(fz)	.0010	.0012	.0012	.0012	.0011	.0012	.0009	.0009
					RPM	3450	2590	2070	1720	1390	1240	1040	830

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)							
						6.0	8.0	10.0	12.0	16.0	18.0	20.0	25.0
P	1-4	Non-alloy steel	0.5D	1.5D	SFM(Vc)	345	345	330	345	360	360	345	345
					IPT(fz)	.0009	.0013	.0015	.0015	.0015	.0015	.0011	.0011
					RPM	5570	4180	3180	2790	2190	1950	1670	1340
					IPM(Feed)	16	16	14	13	10	9	7	6
					SFM(Vc)	215	215	215	215	230	230	215	215
					IPT(fz)	.0010	.0012	.0012	.0012	.0011	.0012	.0009	.0009
	5	Non-alloy steel	0.5D	1.5D	SFM(Vc)	3450	2590	2070	1720	1390	1240	1040	830
					RPM	3450	2590	2070	1720	1390	1240	1040	830
					IPM(Feed)	10	9	7	6	5	4	4	3
					SFM(Vc)	345	345	330	345	360	360	345	345
					IPT(fz)	.0009	.0013	.0015	.0015	.0015	.0015	.0011	.0011
					RPM	5570	4180	3180	2790	2190	1950	1670	1340
6-7	Low alloy steel	0.5D	1.5D	SFM(Vc)	345	345	330	345	360	360	345	345	
				IPT(fz)	.0009	.0013	.0015	.0015	.0015	.0015	.0011	.0011	
				RPM	5570	4180	3180	2790	2190	1950	1670	1340	
				IPM(Feed)	16	16	14	13	10	9	7	6	
				SFM(Vc)	215	215	215	215	230	230	215	215	
				IPT(fz)	.0010	.0012	.0012	.0012	.0011	.0012	.0009	.0009	
8-9	Low alloy steel	0.5D	1.5D	SFM(Vc)	3450	2590	2070	1720	1390	1240	1040	830	
				RPM	3450	2590	2070	1720	1390	1240	1040	830	
				IPM(Feed)	10	9	7	6	5	4	4	3	
				SFM(Vc)	345	345	330	345	360	360	345	345	
				IPT(fz)	.0009	.0013	.0015	.0015	.0015	.0015	.0011	.0011	
				RPM	5570	4180	3180	2790	2190	1950	1670	1340	
10	High alloyed steel, and tool steel	0.5D	1.5D	SFM(Vc)	345	345	330	345	360	360	345	345	
				IPT(fz)	.0009	.0013	.0015	.0015	.0015	.0015	.0011	.0011	
				RPM	5570	4180	3180	2790	2190	1950	1670	1340	
				IPM(Feed)	16	16	14	13	10	9	7	6	
				SFM(Vc)	215	215	215	215	230	230	215	215	
				IPT(fz)	.0010	.0012	.0012	.0012	.0011	.0012	.0009	.0009	
11.1-11.2	High alloyed steel, and tool steel	0.5D	1.5D	SFM(Vc)	3450	2590	2070	1720	1390	1240	1040	830	
				RPM	3450	2590	2070	1720	1390	1240	1040	830	
				IPM(Feed)	10	9	7	6	5	4	4	3	
				SFM(Vc)	180	180	180	165	180	180	180	180	
				IPT(fz)	.0011	.0017	.0018	.0017	.0019	.0018	.0013	.0013	
				RPM	2920	2190	1750	1330	1090	970	880	700	
M	12-14.2	Stainless steel	0.5D	1.5D	SFM(Vc)	65	65	65	65	65	65	65	65
					IPT(fz)	.0007	.0008	.0010	.0011	.0011	.0011	.0009	.0009
					RPM	1060	800	640	530	400	350	320	260
					IPM(Feed)	2	2	2	2	1	1	1	1
					SFM(Vc)	180	180	180	165	180	180	180	180
					IPT(fz)	.0011	.0017	.0018	.0017	.0019	.0018	.0013	.0013
S	31-35	Heat Resistant Super Alloys	0.05D	1.0D	SFM(Vc)	2920	2190	1750	1330	1090	970	880	700
					RPM	2920	2190	1750	1330	1090	970	880	700
					IPM(Feed)	10	11	10	7	6	5	5	4
					SFM(Vc)	215	215	215	215	230	230	215	215
					IPT(fz)	.0010	.0012	.0012	.0012	.0011	.0012	.0009	.0009
					RPM	3450	2590	2070	1720	1390	1240	1040	830



※ The Feed, in long & extra long types, should be reduced by around 50%.



※ The Feed, in long & extra long types, should be reduced by around 50%.



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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

EE515 SERIES 4&6 FLUTE - SIDE CUTTING

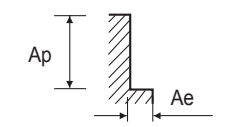
EH52, EH831 SERIES MULTI FLUTE - SLOTTING

SFM(Vc) = ft./min. IPT(fz) = in./tooth RPM = rev./min. IPM(Feed) = in./min.

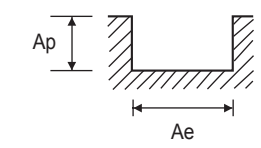
SFM(Vc) = ft./min. IPT(fz) = in./tooth RPM = rev./min. IPM(Feed) = in./min.

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) (3.0 to 25.0), SFM(Vc), IPT(fz), RPM, IPM(Feed). Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and tool steel, Stainless steel, Heat Resistant Super Alloys, Titanium Alloys, and Chilled Cast Iron.

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) (6.0 to 25.0), SFM(Vc), IPT(fz), RPM, IPM(Feed). Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and tool steel, Stainless steel, Heat Resistant Super Alloys, Titanium Alloys, and Chilled Cast Iron.



※ The Feed, in long & extra long types, should be reduced by around 50%.



※ The Feed, in long & extra long types, should be reduced by around 50%.

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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

**EH852, EH831 SERIES** MULTI FLUTE - **SIDE CUTTING**

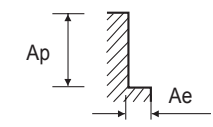
**EH917, EH921 SERIES** MULTI FLUTE - **SLOTING**

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

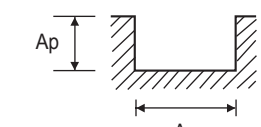
SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)								
						6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	25.0
P	1-4	Non-alloy steel	0.3D	1.5D	SFM(Vc)	965	960	950	990	980	990	965	990	1110
					IPT(fz)	.0020	.0026	.0025	.0030	.0035	.0039	.0044	.0044	.0039
					RPM	15600	11620	9200	8010	6800	6010	5200	4810	4300
					IPM(Feed)	92	92	91	95	94	95	92	86	85
	5	Non-alloy steel	0.3D	1.5D	SFM(Vc)	765	760	785	740	750	790	815	740	825
					IPT(fz)	.0009	.0012	.0011	.0013	.0016	.0016	.0016	.0015	.0015
					RPM	12410	9190	7610	6000	5210	4800	4400	3600	3200
					IPM(Feed)	34	33	34	31	33	30	28	22	25
	6-7	Low alloy steel	0.3D	1.5D	SFM(Vc)	965	960	950	990	980	990	965	990	1110
					IPT(fz)	.0020	.0026	.0025	.0030	.0035	.0039	.0044	.0044	.0039
					RPM	15600	11620	9200	8010	6800	6010	5200	4810	4300
					IPM(Feed)	92	92	91	95	94	95	92	86	85
8-9	Low alloy steel	0.3D	1.5D	SFM(Vc)	765	760	785	740	750	790	815	740	825	
				IPT(fz)	.0009	.0012	.0011	.0013	.0016	.0016	.0016	.0015	.0015	
				RPM	12410	9190	7610	6000	5210	4800	4400	3600	3200	
				IPM(Feed)	34	33	34	31	33	30	28	22	25	
10	High alloyed steel, and tool steel	0.3D	1.5D	SFM(Vc)	965	960	950	990	980	990	965	990	1110	
				IPT(fz)	.0020	.0026	.0025	.0030	.0035	.0039	.0044	.0044	.0039	
				RPM	15600	11620	9200	8010	6800	6010	5200	4810	4300	
				IPM(Feed)	92	92	91	95	94	95	92	86	85	
11.1-11.2	High alloyed steel, and tool steel	0.3D	1.5D	SFM(Vc)	765	760	785	740	750	790	815	740	825	
				IPT(fz)	.0009	.0012	.0011	.0013	.0016	.0016	.0016	.0015	.0015	
				RPM	12410	9190	7610	6000	5210	4800	4400	3600	3200	
				IPM(Feed)	34	33	34	31	33	30	28	22	25	
M	12-14.2	Stainless steel	D4~10:0.15D D12~16:0.1D D18~25:0.05D	1.5D	SFM(Vc)	520	520	525	520	520	545	505	495	560
					IPT(fz)	.0009	.0012	.0011	.0013	.0016	.0015	.0015	.0015	.0015
					RPM	8380	6290	5090	4190	3590	3300	2710	2400	2170
					IPM(Feed)	23	22	22	22	23	20	17	14	16
S	31-35	Heat Resistant Super Alloys	0.05D	1.0D	SFM(Vc)	150	150	135	145	130	130	130	135	155
					IPT(fz)	.0010	.0013	.0015	.0016	.0014	.0013	.0014	.0015	.0015
					RPM	2390	1790	1310	1190	910	800	710	650	600
					IPM(Feed)	7	7	8	8	5	4	4	4	4
S	36-37	Titanium Alloys	D4~10:0.15D D12~16:0.1D D18~25:0.05D	1.0D	SFM(Vc)	520	520	525	520	520	545	505	495	560
					IPT(fz)	.0009	.0012	.0011	.0013	.0016	.0015	.0015	.0015	.0015
					RPM	8380	6290	5090	4190	3590	3300	2710	2400	2170
					IPM(Feed)	23	22	22	22	23	20	17	14	16
H	40	Chilled Cast Iron	0.3D	1.5D	SFM(Vc)	765	760	785	740	750	790	815	740	825
					IPT(fz)	.0009	.0012	.0011	.0013	.0016	.0016	.0016	.0015	.0015
					RPM	12410	9190	7610	6000	5210	4800	4400	3600	3200
					IPM(Feed)	34	33	34	31	33	30	28	22	25

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)							
						6.0	8.0	10.0	12.0	16.0	20.0		
P	1-4	Non-alloy steel	1.0D	0.5D	SFM(Vc)	965	960	950	990	990	965	990	
					IPT(fz)	.0009	.0012	.0011	.0013	.0016	.0016	.0016	
					RPM	15600	11620	9200	8010	6010	5200	4810	
					IPM(Feed)	54	55	55	57	57	51	51	
	5	Non-alloy steel	1.0D	0.5D	SFM(Vc)	765	760	785	740	790	815	740	
					IPT(fz)	.0004	.0006	.0006	.0008	.0007	.0006	.0006	
					RPM	12410	9190	7610	6000	4800	3600	3200	
					IPM(Feed)	20	20	19	19	18	14	14	
	6-7	Low alloy steel	1.0D	0.5D	SFM(Vc)	965	960	950	990	990	965	990	
					IPT(fz)	.0009	.0012	.0011	.0013	.0016	.0016	.0016	
					RPM	15600	11620	9200	8010	6010	5200	4810	
					IPM(Feed)	54	55	55	57	57	51	51	
8-9	Low alloy steel	1.0D	0.5D	SFM(Vc)	765	760	785	740	790	815	740		
				IPT(fz)	.0004	.0006	.0006	.0008	.0007	.0006	.0006		
				RPM	12410	9190	7610	6000	4800	3600	3200		
				IPM(Feed)	20	20	19	19	18	14	14		
10	High alloyed steel, and tool steel	1.0D	0.5D	SFM(Vc)	965	960	950	990	990	965	990		
				IPT(fz)	.0009	.0012	.0011	.0013	.0016	.0016	.0016		
				RPM	15600	11620	9200	8010	6010	5200	4810		
				IPM(Feed)	54	55	55	57	57	51	51		
11.1-11.2	High alloyed steel, and tool steel	1.0D	0.5D	SFM(Vc)	765	760	785	740	790	815	740		
				IPT(fz)	.0004	.0006	.0006	.0008	.0007	.0006	.0006		
				RPM	12410	9190	7610	6000	4800	3600	3200		
				IPM(Feed)	20	20	19	19	18	14	14		
M	12-14.2	Stainless steel	1.0D	D4~10:0.25D D12~16:0.15D D18~25:0.1D	SFM(Vc)	520	520	525	520	520	545	505	495
					IPT(fz)	.0004	.0005	.0007	.0008	.0007	.0006	.0006	
					RPM	8380	6290	5090	4190	3300	2710	2400	
					IPM(Feed)	13	13	14	13	12	9	9	
S	31-35	Heat Resistant Super Alloys	1.0D	0.05D	SFM(Vc)	150	150	135	145	130	130	135	155
					IPT(fz)	.0005	.0006	.0009	.0010	.0006	.0006	.0006	
					RPM	2390	1790	1310	1190	800	710	650	
					IPM(Feed)	5	4	5	5	3	2	2	
S	36-37	Titanium Alloys	1.0D	D4~10:0.25D D12~16:0.15D D18~25:0.1D	SFM(Vc)	520	520	525	520	520	545	505	495
					IPT(fz)	.0004	.0005	.0007	.0008	.0007	.0006	.0006	
					RPM	8380	6290	5090	4190	3300	2710	2400	
					IPM(Feed)	13	13	14	13	12	9	9	
H	40	Chilled Cast Iron	1.0D	0.5D	SFM(Vc)	765	760	785	740	790	815	740	825
					IPT(fz)	.0004	.0006	.0006	.0008	.0007	.0006	.0006	
					RPM	12410	9190	7610	6000	4800	3600	3200	
					IPM(Feed)	20	20	19	19	18	14	14	



※ The Feed, in long & extra long types, should be reduced by around 50%.



※ The Feed, in long & extra long types, should be reduced by around 50%.

HSS

HSS



RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

**EH917, EH921** SERIES MULTI FLUTE - **SIDE CUTTING**

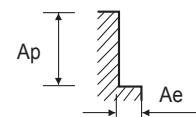
**EH919** SERIES MULTI FLUTE - **SLOTING**

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

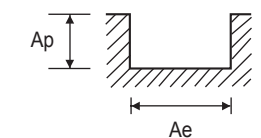
SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)					
						6.0	8.0	10.0	12.0	16.0	20.0
P	1-4	Non-alloy steel	0.3D	1.5D	SFM(Vc)	965	960	950	990	990	990
					IPT(fz)	.0015	.0020	.0025	.0030	.0031	.0030
					RPM	15600	11620	9200	8010	6010	4810
					IPM(Feed)	91	91	91	95	95	85
					SFM(Vc)	765	760	785	740	790	740
					IPT(fz)	.0007	.0009	.0011	.0013	.0013	.0010
	5	Non-alloy steel	0.3D	1.5D	SFM(Vc)	12410	9190	7610	6000	4800	3600
					IPT(fz)	33	33	34	31	30	22
					RPM	965	960	950	990	990	990
					IPM(Feed)	.0015	.0020	.0025	.0030	.0031	.0030
					SFM(Vc)	15600	11620	9200	8010	6010	4810
					IPT(fz)	91	91	91	95	95	85
6-7	Low alloy steel	0.3D	1.5D	SFM(Vc)	765	760	785	740	790	740	
				IPT(fz)	.0007	.0009	.0011	.0013	.0013	.0010	
				RPM	12410	9190	7610	6000	4800	3600	
				IPM(Feed)	33	33	34	31	30	22	
				SFM(Vc)	965	960	950	990	990	990	
				IPT(fz)	.0015	.0020	.0025	.0030	.0031	.0030	
8-9	Low alloy steel	0.3D	1.5D	SFM(Vc)	15600	11620	9200	8010	6010	4810	
				IPT(fz)	91	91	91	95	95	85	
				RPM	765	760	785	740	790	740	
				IPM(Feed)	.0007	.0009	.0011	.0013	.0013	.0010	
				SFM(Vc)	12410	9190	7610	6000	4800	3600	
				IPT(fz)	33	33	34	31	30	22	
10	High alloyed steel, and tool steel	0.3D	1.5D	SFM(Vc)	965	960	950	990	990	990	
				IPT(fz)	.0015	.0020	.0025	.0030	.0031	.0030	
				RPM	15600	11620	9200	8010	6010	4810	
				IPM(Feed)	91	91	91	95	95	85	
				SFM(Vc)	765	760	785	740	790	740	
				IPT(fz)	.0007	.0009	.0011	.0013	.0013	.0010	
11.1-11.2	High alloyed steel, and tool steel	0.3D	1.5D	SFM(Vc)	12410	9190	7610	6000	4800	3600	
				IPT(fz)	33	33	34	31	30	22	
				RPM	965	960	950	990	990	990	
				IPM(Feed)	.0015	.0020	.0025	.0030	.0031	.0030	
				SFM(Vc)	15600	11620	9200	8010	6010	4810	
				IPT(fz)	91	91	91	95	95	85	
M	12-14.2	Stainless steel	D4~10:0.15D D12~16:0.1D D18~25:0.05D	1.5D	SFM(Vc)	520	520	525	520	545	495
					IPT(fz)	.0007	.0009	.0011	.0013	.0012	.0010
					RPM	8380	6290	5090	4190	3300	2400
					IPM(Feed)	22	23	22	22	20	14
S	31-35	Heat Resistant Super Alloys	0.05D	1.0D	SFM(Vc)	150	150	135	145	130	135
					IPT(fz)	.0008	.0010	.0015	.0016	.0011	.0010
					RPM	2390	1790	1310	1190	800	650
					IPM(Feed)	8	7	8	8	4	4
S	36-37	Titanium Alloys	D4~10:0.15D D12~16:0.1D D18~25:0.05D	1.0D	SFM(Vc)	520	520	525	520	545	495
					IPT(fz)	.0007	.0009	.0011	.0013	.0012	.0010
					RPM	8380	6290	5090	4190	3300	2400
					IPM(Feed)	22	23	22	22	20	14
H	40	Chilled Cast Iron	0.3D	1.5D	SFM(Vc)	765	760	785	740	790	740
					IPT(fz)	.0007	.0009	.0011	.0013	.0013	.0010
					RPM	12410	9190	7610	6000	4800	3600
					IPM(Feed)	33	33	34	31	30	22

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)								
						4.0	6.0	8.0	10.0	12.0	14.0	16.0	20.0	25.0
P	1-4	Non-alloy steel	1.0D	0.5D	SFM(Vc)	965	965	960	950	990	980	990	990	1110
					IPT(fz)	.0008	.0009	.0012	.0015	.0018	.0017	.0019	.0018	.0020
					RPM	23400	15600	11620	9200	8010	6800	6010	4810	4300
					IPM(Feed)	55	54	55	55	57	56	57	51	51
					SFM(Vc)	770	765	760	785	740	750	790	740	825
					IPT(fz)	.0004	.0004	.0006	.0006	.0008	.0007	.0007	.0006	.0007
	5	Non-alloy steel	1.0D	0.5D	SFM(Vc)	18620	12410	9190	7610	6000	5210	4800	3600	3200
					IPT(fz)	20	20	20	19	19	19	18	14	14
					RPM	965	965	960	950	990	980	990	990	1110
					IPM(Feed)	.0008	.0009	.0012	.0015	.0018	.0017	.0019	.0018	.0020
					SFM(Vc)	23400	15600	11620	9200	8010	6800	6010	4810	4300
					IPT(fz)	55	54	55	55	57	56	57	51	51
6-7	Low alloy steel	1.0D	0.5D	SFM(Vc)	770	765	760	785	740	750	790	740	825	
				IPT(fz)	.0004	.0004	.0006	.0006	.0008	.0007	.0007	.0006	.0007	
				RPM	18620	12410	9190	7610	6000	5210	4800	3600	3200	
				IPM(Feed)	20	20	20	19	19	19	18	14	14	
				SFM(Vc)	965	965	960	950	990	980	990	990	1110	
				IPT(fz)	.0008	.0009	.0012	.0015	.0018	.0017	.0019	.0018	.0020	
8-9	Low alloy steel	1.0D	0.5D	SFM(Vc)	23400	15600	11620	9200	8010	6800	6010	4810	4300	
				IPT(fz)	55	54	55	55	57	56	57	51	51	
				RPM	770	765	760	785	740	750	790	740	825	
				IPM(Feed)	.0004	.0004	.0006	.0006	.0008	.0007	.0007	.0006	.0007	
				SFM(Vc)	18620	12410	9190	7610	6000	5210	4800	3600	3200	
				IPT(fz)	20	20	20	19	19	19	18	14	14	
10	High alloyed steel, and tool steel	1.0D	0.5D	SFM(Vc)	965	965	960	950	990	980	990	990	1110	
				IPT(fz)	.0008	.0009	.0012	.0015	.0018	.0017	.0019	.0018	.0020	
				RPM	23400	15600	11620	9200	8010	6800	6010	4810	4300	
				IPM(Feed)	55	54	55	55	57	56	57	51	51	
				SFM(Vc)	770	765	760	785	740	750	790	740	825	
				IPT(fz)	.0004	.0004	.0006	.0006	.0008	.0007	.0007	.0006	.0007	
11.1-11.2	High alloyed steel, and tool steel	1.0D	0.5D	SFM(Vc)	18620	12410	9190	7610	6000	5210	4800	3600	3200	
				IPT(fz)	20	20	20	19	19	19	18	14	14	
				RPM	965	965	960	950	990	980	990	990	1110	
				IPM(Feed)	.0008	.0009	.0012	.0015	.0018	.0017	.0019	.0018	.0020	
				SFM(Vc)	23400	15600	11620	9200	8010	6800	6010	4810	4300	
				IPT(fz)	55	54	55	55	57	56	57	51	51	
M	12-14.2	Stainless steel	1.0D	D4~10:0.25D D12~16:0.15D D18~25:0.1D	SFM(Vc)	520	520	520	525	520	520	545	495	560
					IPT(fz)	.0004	.0004	.0005	.0007	.0008	.0007	.0007	.0006	.0007
					RPM	12570	8380	6290	5090	4190	3590	3300	2400	2170
					IPM(Feed)	13	13	13	14	13	13	12	9	10
S	31-35	Heat Resistant Super Alloys	1.0D	0.05D	SFM(Vc)	150	150	150	135	145	130	130	135	155
					IPT(fz)	.0004	.0005	.0006	.0009	.0010	.0007	.0006	.0006	.0007
					RPM	3580	2390	1790	1310	1190	910	800	650	600
					IPM(Feed)	5	5	4	5	5	3	3	2	3
S	36-37	Titanium Alloys	1.0D	D4~10:0.25D D12~16:0.15D D18~25:0.1D	SFM(Vc)	520	520	520	525	520	520	545	495	560
					IPT(fz)	.0004	.0004	.0005	.0007	.0008	.0007	.0007	.0006	.0007
					RPM	12570	8380	6290	5090	4190	3590	3300	2400	2170
					IPM(Feed)	13	13	13	14	13	13	12	9	10
H	40	Chilled Cast Iron	1.0D	0.5D	SFM(Vc)	770	765	760	785	740	750	790	740	825
					IPT(fz)	.0004	.0004	.0006	.0006	.0008	.0007	.0007	.0006	.0007
					RPM	18620	12410	9190	7610	6000	5210	4800	3600	3200
					IPM(Feed)	20	20	20	19	19	19	18	14	14



※ The Feed, in long & extra long types, should be reduced by around 50%.



※ The Feed, in long & extra long types, should be reduced by around 50%.





# JET-POWER END MILLS

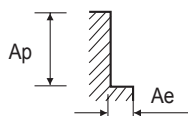
## RECOMMENDED CUTTING CONDITIONS

### EH919 SERIES

### MULTI FLUTE - SIDE CUTTING

SFM(Vc) = ft./min.  
IPT (fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)								
						4.0	6.0	8.0	10.0	12.0	14.0	16.0	20.0	25.0
P	1	Non-alloy steel	0.3D	1.5D	SFM(Vc)	965	965	960	950	990	980	990	990	1110
					IPT (fz)	.0013	.0015	.0020	.0025	.0030	.0028	.0031	.0030	.0033
					RPM	23400	15600	11620	9200	8010	6800	6010	4810	4300
	2-4		0.3D	1.5D	SFM(Vc)	965	965	960	950	990	980	990	990	1110
					IPT (fz)	.0008	.0009	.0012	.0015	.0018	.0017	.0019	.0018	.0020
					RPM	23400	15600	11620	9200	8010	6800	6010	4810	4300
	5		0.3D	1.5D	SFM(Vc)	770	765	760	785	740	750	790	740	825
					IPT (fz)	.0006	.0007	.0009	.0011	.0013	.0013	.0013	.0010	.0013
					RPM	18620	12410	9190	7610	6000	5210	4800	3600	3200
	6-7		0.3D	1.5D	SFM(Vc)	965	965	960	950	990	980	990	990	1110
					IPT (fz)	.0008	.0009	.0012	.0015	.0018	.0017	.0019	.0018	.0020
					RPM	23400	15600	11620	9200	8010	6800	6010	4810	4300
8-9	0.3D	1.5D	SFM(Vc)	770	765	760	785	740	750	790	740	825		
			IPT (fz)	.0006	.0007	.0009	.0011	.0013	.0013	.0013	.0010	.0013		
			RPM	18620	12410	9190	7610	6000	5210	4800	3600	3200		
10	0.3D	1.5D	SFM(Vc)	965	965	960	950	990	980	990	990	1110		
			IPT (fz)	.0008	.0009	.0012	.0015	.0018	.0017	.0019	.0018	.0020		
			RPM	23400	15600	11620	9200	8010	6800	6010	4810	4300		
11.1-11.2	0.3D	1.5D	SFM(Vc)	770	765	760	785	740	750	790	740	825		
			IPT (fz)	.0006	.0007	.0009	.0011	.0013	.0013	.0013	.0010	.0013		
			RPM	18620	12410	9190	7610	6000	5210	4800	3600	3200		
M	12-14.2	Stainless steel	D4~10:0.15D D12~16:0.1D D18~25:0.05D	1.5D	SFM(Vc)	520	520	520	525	520	520	545	495	560
					IPT (fz)	.0006	.0007	.0009	.0011	.0013	.0013	.0012	.0010	.0013
					RPM	12570	8380	6290	5090	4190	3590	3300	2400	2170
					IPM (FEED)	22	22	23	22	22	23	20	14	16
S	31-35	Heat Resistant Super Alloys	D4~10:0.15D D12~16:0.1D D18~25:0.05D	1.0D	SFM(Vc)	150	150	150	135	145	130	130	135	155
					IPT (fz)	.0007	.0008	.0010	.0015	.0016	.0011	.0011	.0010	.0012
	36-37	Titanium Alloys		SFM(Vc)	520	520	520	525	520	520	545	495	560	
				IPT (fz)	.0006	.0007	.0009	.0011	.0013	.0013	.0012	.0010	.0013	
H	40	Chilled Cast Iron	0.3D	1.5D	SFM(Vc)	770	765	760	785	740	750	790	740	825
					IPT (fz)	.0004	.0004	.0006	.0006	.0008	.0007	.0007	.0006	.0007
					RPM	18620	12410	9190	7610	6000	5210	4800	3600	3200
					IPM (FEED)	20	20	20	19	19	19	18	14	14



※ The Feed, in long & extra long types, should be reduced by around 50%.



Being the best through innovation



**SOLID CARBIDE**

# V7 PLUS A END MILLS

- High performance carbide end mills for Steels, Cast Iron and Stainless Steels



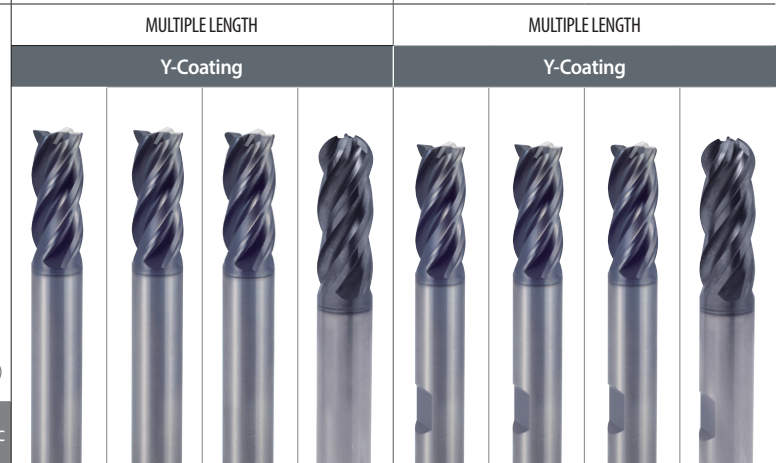
SELECTION GUIDE INCH

SOLID CARBIDE V7 PLUS A END MILLS High performance carbide end mills for Steels, Cast Iron and Stainless Steels

Please visit global.yg1.com/mat for material search. Recommended cutting conditions: P 553

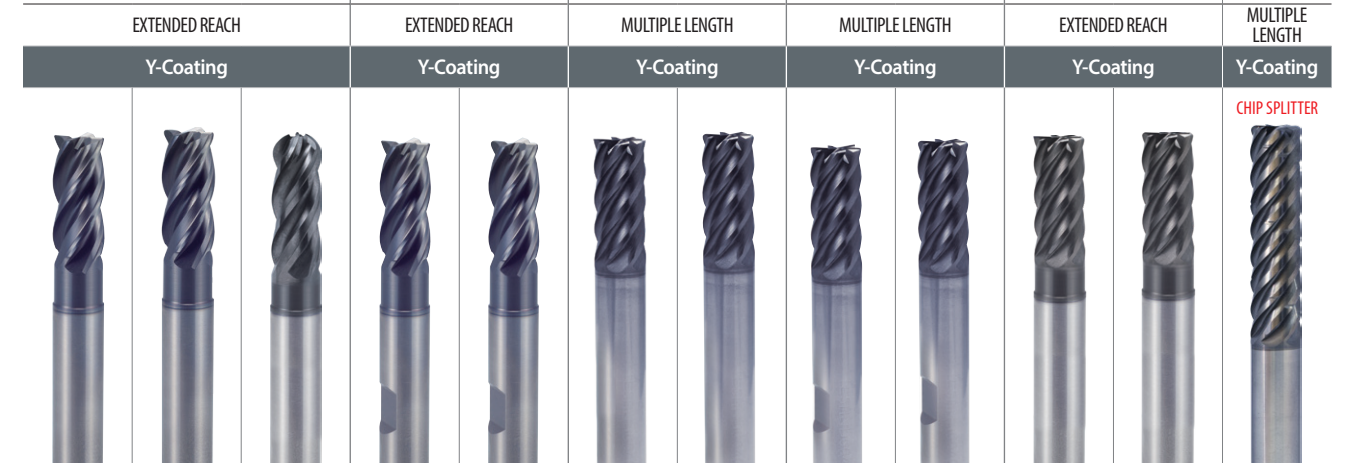
Table with columns: ISO, VDI 3323, Material Description, Composition / Structure / Heat Treatment, HB, HRC. Rows include P (Non-alloy steel, Low alloy steel, High alloyed steel), M (Stainless steel), K (Grey cast iron, Nodular cast iron, Malleable cast iron), N (Aluminum, Copper, Non Metallic Materials), S (Heat Resistant Super Alloys, Titanium Alloys), H (Hardened steel, Chilled Cast Iron, Hardened Cast Iron).

Table with columns: SERIES (UGMF68, UGMF76, UGMF70, UGMG53, UGMF69, UGMF77, UGMF71, UGMG54), FLUTE(Shank), HELIX ANGLE, CUTTING EDGE SHAPE, SIZE MIN, SIZE MAX, PAGE.



Large table with columns for ISO, VDI 3323, Material Description, Composition / Structure / Heat Treatment, HB, HRC, and application suitability (circles) for each end mill type.

Table with columns: UGMF72, UGMF74, UGMH10, UGMF73, UGMF75, UGMG20, UGMG22, UGMG21, UGMG23, UGMH08, UGMH09, GMH72. Includes FLUTE(Shank), HELIX ANGLE, CUTTING EDGE SHAPE, SIZE MIN, SIZE MAX, PAGE.



Large table with columns for ISO, VDI 3323, Material Description, Composition / Structure / Heat Treatment, HB, HRC, and application suitability (circles) for each end mill type.

HSS

CBN END MILLS

i-Xmill END MILLS

i-SMART MODULAR END MILLS

X5070 END MILLS

4G MILL END MILLS

X-POWER PRO END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

V7 PLUS A END MILLS

V7 MILL INOX

ALU-POWER HPC END MILLS

ALU-POWER END MILLS

D-POWER GRAPHITE END MILLS

STANDARD CARBIDE

ONLY ONE COATED PM60 END MILLS

SINE-POWER

TANK-POWER END MILLS

STANDARD COBALT & HSS

TECHNICAL DATA

HSS

CBN END MILLS

i-Xmill END MILLS

i-SMART MODULAR END MILLS

X5070 END MILLS

4G MILL END MILLS

X-POWER PRO END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

V7 PLUS A END MILLS

V7 MILL INOX

ALU-POWER HPC END MILLS

ALU-POWER END MILLS

D-POWER GRAPHITE END MILLS

STANDARD CARBIDE

ONLY ONE COATED PM60 END MILLS

SINE-POWER

TANK-POWER END MILLS

STANDARD COBALT & HSS

TECHNICAL DATA





HSS

HSS

CBN END MILLS

CBN END MILLS

i-Xmill END MILLS

i-Xmill END MILLS

i-SMART MODULAR END MILLS

i-SMART MODULAR END MILLS

X5070 END MILLS

X5070 END MILLS

4G MILL END MILLS

4G MILL END MILLS

X-POWER PRO END MILLS

X-POWER PRO END MILLS

TitaNox-POWER END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

JET-POWER END MILLS

V7 PLUS A END MILLS

V7 PLUS A END MILLS

V7 MILL INOX

V7 MILL INOX

ALU-POWER HPC END MILLS

ALU-POWER HPC END MILLS

ALU-POWER END MILLS

ALU-POWER END MILLS

D-POWER GRAPHITE END MILLS

D-POWER GRAPHITE END MILLS

STANDARD CARBIDE

STANDARD CARBIDE

ONLY ONE COATED PM60 END MILLS

ONLY ONE COATED PM60 END MILLS

SINE-POWER

SINE-POWER

TANK-POWER END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS

STANDARD COBALT & HSS

TECHNICAL DATA

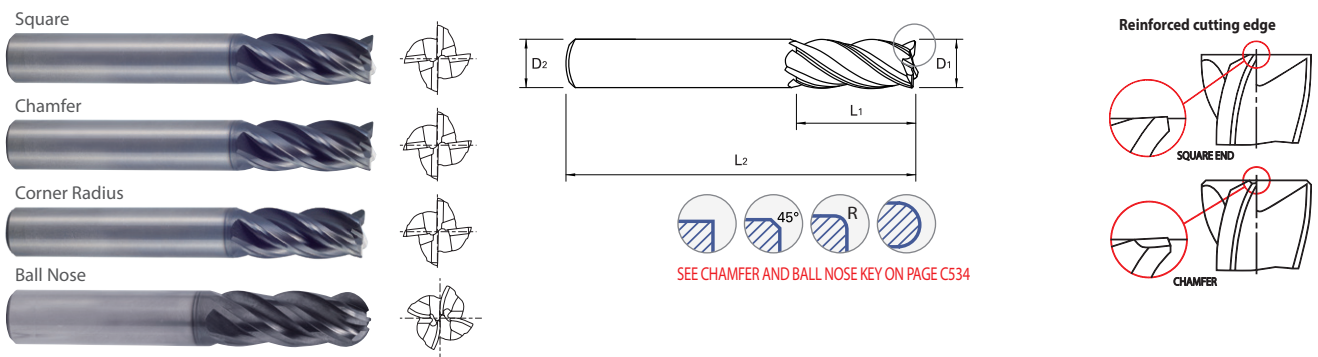
TECHNICAL DATA



SQUARE UGMF68 CHAMFER UGMF76 CORNER RADIUS UGMF70 BALL NOSE UGMG53

CARBIDE, 4 FLUTE MULTIPLE LENGTH (PLAIN SHANK)

- Special flute geometry and multiple helix eliminate vibrations
Excellent performance for stainless steels, mild steels, cast iron, low/medium hardness materials and all exotic materials up to HRC40
Advanced coating for superior performance and tool life



p.C553-C555

Table with columns: OD (D1), SD (D2), LOC (L1), OAL (L2), Square End, Chamfer, Corner Radius (.010 to .250), Ball Nose. Lists various end mill models and their specifications.

Unit : Inch

Mill Dia. Tolerance (inch) Shank Dia. Tolerance Length of cut in excess of 3xD on 37° single-helix requires feed reduction of approximately 50%

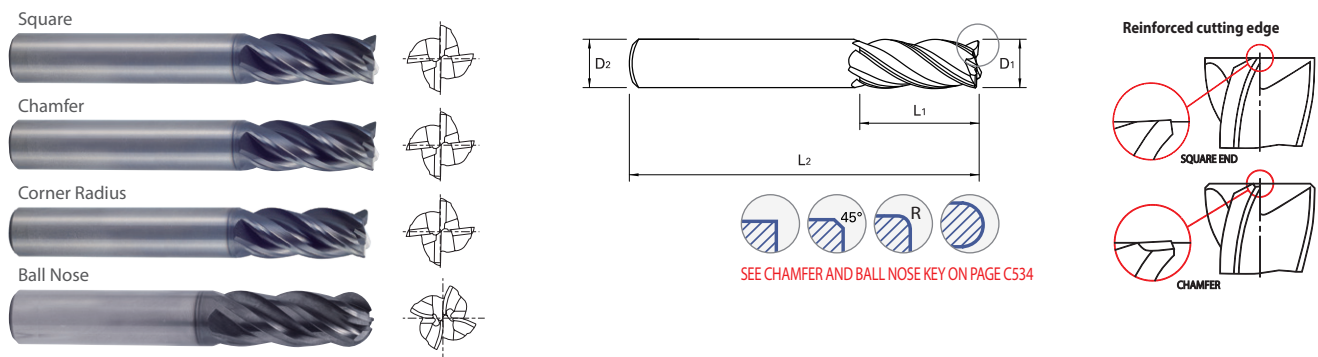
Material compatibility table with columns for ISO, Material Description, and various material groups (P, M, K, S, H) with performance indicators.



SQUARE UGMF68 CHAMFER UGMF76 CORNER RADIUS UGMF70 BALL NOSE UGMG53

CARBIDE, 4 FLUTE MULTIPLE LENGTH (PLAIN SHANK)

- Special flute geometry and multiple helix eliminate vibrations
Excellent performance for stainless steels, mild steels, cast iron, low/medium hardness materials and all exotic materials up to HRC40
Advanced coating for superior performance and tool life



p.C553-C555

Table with columns: OD (D1), SD (D2), LOC (L1), OAL (L2), Square End, Chamfer, Corner Radius (.010 to .250), Ball Nose. Lists various end mill models and their specifications.

Unit : Inch

Length of cut in excess of 3xD on 37° single-helix requires feed reduction of approximately 50% NEXT PAGE

Table with columns: Mill Dia. Tolerance (inch), Shank Dia. Tolerance. Values: 0 ~ -.0012, h5 (≥ Ø1/2" : h6)

Material compatibility table with columns for ISO, Material Description, and various material groups (P, M, K, S, H) with performance indicators.



HSS

HSS



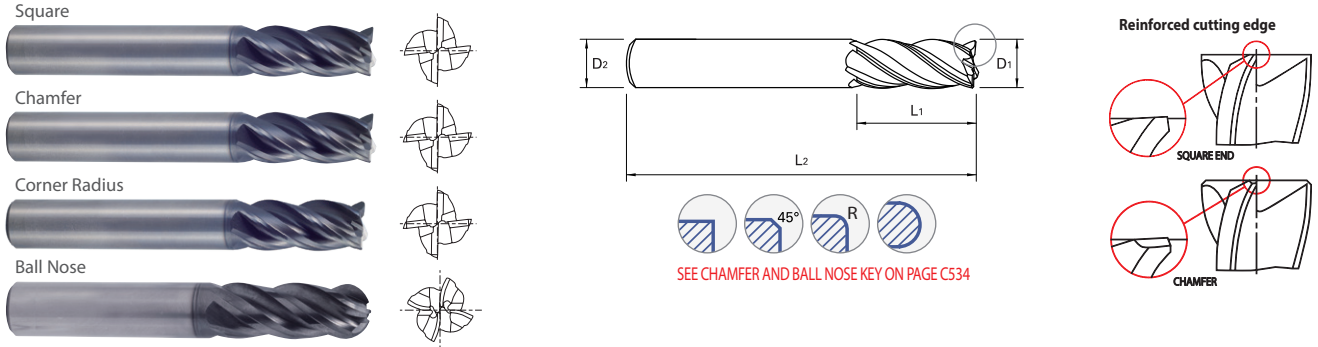
SQUARE UGMF68 CHAMFER UGMF76 CORNER RADIUS UGMF70 BALL NOSE UGMG53



SQUARE UGMF69 CHAMFER UGMF77 CORNER RADIUS UGMF71 BALL NOSE UGMG54

CARBIDE, 4 FLUTE MULTIPLE LENGTH (PLAIN SHANK)

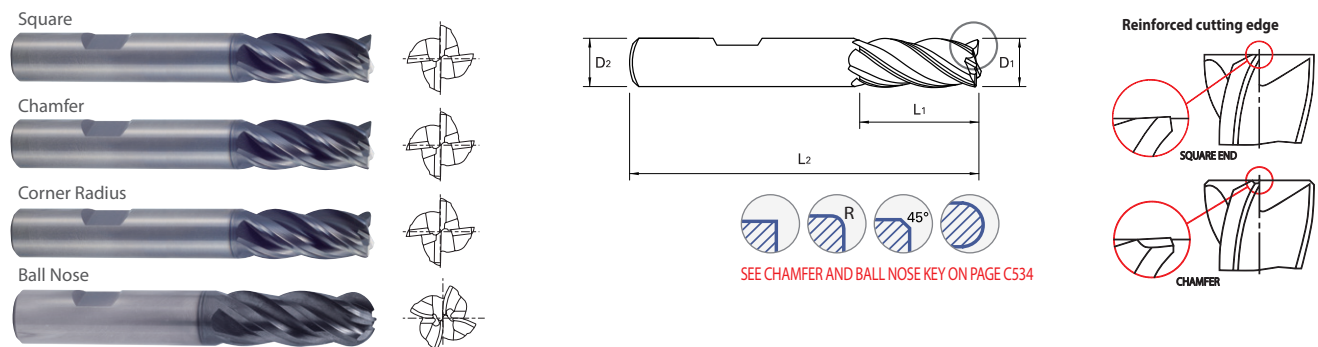
- Special flute geometry and multiple helix eliminate vibrations
Excellent performance for stainless steels, mild steels, cast iron, low/medium hardness materials and all exotic materials up to HRc40
Advanced coating for superior performance and tool life



Product icons: CARBIDE, 4 flutes, 35°/37° angle, PLAIN end, ±.0008 tolerance, C x 45° coating, and p.C553-C555 part numbers.

CARBIDE, 4 FLUTE MULTIPLE LENGTH (FLAT SHANK)

- Special flute geometry and multiple helix eliminate vibrations
Excellent performance for stainless steels, mild steels, cast iron, low/medium hardness materials and all exotic materials up to HRc40
Advanced coating for superior performance and tool life



Product icons: CARBIDE, 4 flutes, 35°/37° angle, FLAT end, ±.0008 tolerance, C x 45° coating, and p.C553-C555 part numbers.

Table with columns: OD (D1), SD (D2), LOC (L1), OAL (L2), Square End, Chamfer, Corner Radius (.010 to .250), Ball Nose. Lists various part numbers and their specifications.

Table with columns: OD (D1), SD (D2), LOC (L1), OAL (L2), Square End, Chamfer, Corner Radius (.010 to .125), Ball Nose. Lists various part numbers and their specifications.

Length of cut in excess of 3xD on 37° single-helix requires feed reduction of approximately 50%

Table with columns: Mill Dia. Tolerance (inch), Shank Dia. Tolerance. Values: 0 ~ -.0012, h5 (≥ Ø1/2" : h6)

Length of cut in excess of 3xD on 37° single-helix requires feed reduction of approximately 50%

Table with columns: Mill Dia. Tolerance (inch), Shank Dia. Tolerance. Values: 0 ~ -.0012, h5 (≥ Ø1/2" : h6)

Material compatibility chart with columns: ISO, Material Description, P (Non-alloy steel, Low alloy steel, High alloyed steel), M (Stainless steel, Grey cast iron, Nodular cast iron), K (Malleable cast iron), S (Aluminum-wrought alloy, Aluminum-cast, alloyed, Copper and Copper Alloys, Non Metallic Materials), H (Heat Resistant Super Alloys, Titanium Alloys, Hardened steel, Chilled Cast Iron, Hardened Cast Iron).

Material compatibility chart with columns: ISO, Material Description, P (Non-alloy steel, Low alloy steel, High alloyed steel), M (Stainless steel, Grey cast iron, Nodular cast iron), K (Malleable cast iron), S (Aluminum-wrought alloy, Aluminum-cast, alloyed, Copper and Copper Alloys, Non Metallic Materials), H (Heat Resistant Super Alloys, Titanium Alloys, Hardened steel, Chilled Cast Iron, Hardened Cast Iron).

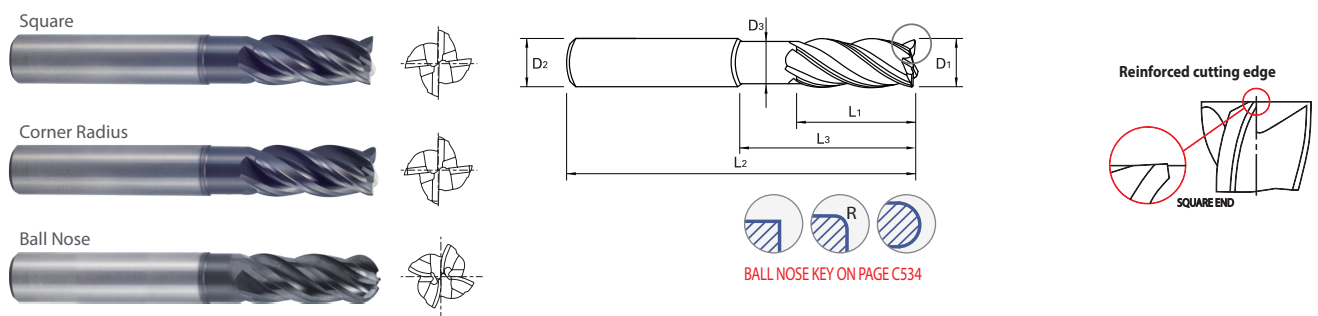




SQUARE UGMF72 SERIES
CORNER RADIUS UGMF74 SERIES
BALL NOSE UGMH10 SERIES

CARBIDE, 4 FLUTE EXTENDED REACH (PLAIN SHANK)

- Special flute geometry and multiple helix eliminate vibrations
Excellent performance for stainless steels, mild steels, cast iron, low/medium hardness materials and all exotic materials up to HRc40
Advanced coating for superior performance and tool life



p.C553-C555

Table with columns: OD (D1), SD (D2), LOC (L1), LBS (L3), OAL (L2), Neck Dia (D3), Square End (EDP No.), Corner Radius (.010 to .250), Ball Nose Mill (EDP No.).

Unit : Inch

Length of cut in excess of 3xD on 37° single-helix requires feed reduction of approximately 50% NEXT PAGE

Table with 2 columns: Mill Dia. Tolerance (inch) and Shank Dia. Tolerance. Values: 0 ~ -.0012, h5 (≥ Ø1/2" : h6)

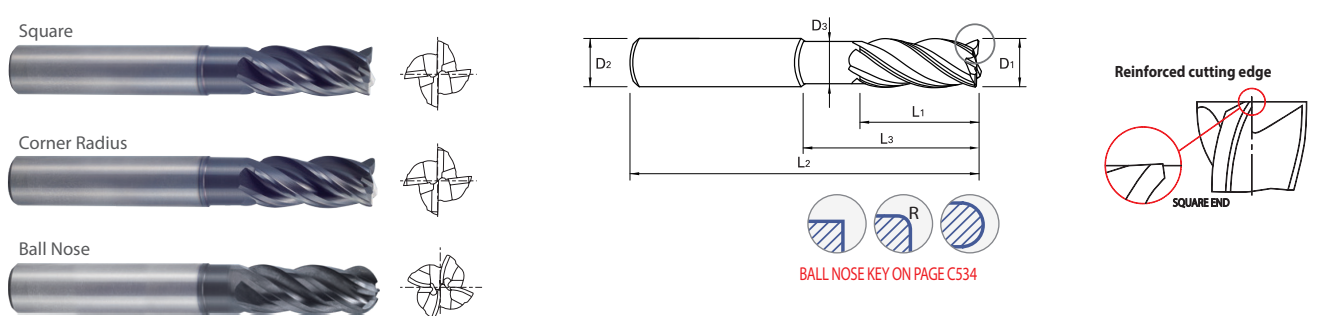
ISO material compatibility chart with columns for P (Non-alloy steel, Low alloy steel, High alloyed steel), M (Stainless steel, Grey cast iron, Nodular cast iron, Malleable cast iron), K, S (Aluminum-wrought alloy, Aluminum-cast, alloyed, Copper and Copper Alloys, Non Metallic Materials, Heat Resistant Super Alloys, Titanium Alloys), H (Hardened steel, Chilled Cast Iron, Hardened Cast Iron).



SQUARE UGMF72 SERIES
CORNER RADIUS UGMF74 SERIES
BALL NOSE UGMH10 SERIES

CARBIDE, 4 FLUTE EXTENDED REACH (PLAIN SHANK)

- Special flute geometry and multiple helix eliminate vibrations
Excellent performance for stainless steels, mild steels, cast iron, low/medium hardness materials and all exotic materials up to HRc40
Advanced coating for superior performance and tool life



p.C553-C555

Table with columns: OD (D1), SD (D2), LOC (L1), LBS (L3), OAL (L2), Neck Dia (D3), Square End (EDP No.), Corner Radius (.010 to .250), Ball Nose Mill (EDP No.).

Unit : Inch

Length of cut in excess of 3xD on 37° single-helix requires feed reduction of approximately 50%

Table with 2 columns: Mill Dia. Tolerance (inch) and Shank Dia. Tolerance. Values: 0 ~ -.0012, h5 (≥ Ø1/2" : h6)

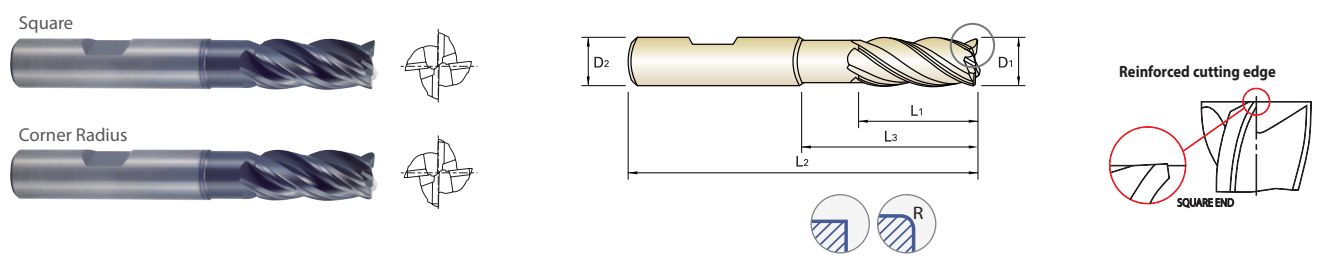
ISO material compatibility chart with columns for P (Non-alloy steel, Low alloy steel, High alloyed steel), M (Stainless steel, Grey cast iron, Nodular cast iron, Malleable cast iron), K, S (Aluminum-wrought alloy, Aluminum-cast, alloyed, Copper and Copper Alloys, Non Metallic Materials, Heat Resistant Super Alloys, Titanium Alloys), H (Hardened steel, Chilled Cast Iron, Hardened Cast Iron).



SQUARE **UGMF73** SERIES  
CORNER RADIUS **UGMF75** SERIES

**CARBIDE, 4 FLUTE EXTENDED REACH (FLAT SHANK)**

- ▶ Special flute geometry and multiple helix eliminate vibrations
- ▶ Excellent performance for stainless steels, mild steels, cast iron, low/medium hardness materials and all exotic materials up to HRC40
- ▶ Advanced coating for superior performance and tool life



CARBIDE 4 35°/37° FLAT p.C553-C554

Unit : Inch

OD (D <sub>1</sub> )	SD (D <sub>2</sub> )	LOC (L <sub>1</sub> )	LBS (L <sub>3</sub> )	OAL (L <sub>2</sub> )	Neck Dia (D <sub>3</sub> )	Square End	Corner Radius						
						EDP No.	.030 EDP No.						
3/8	3/8	1/2	1-1/8	4	.344	UGMF73024	UGMF75024						
						UGMF73903	UGMF75903						
						UGMF73913	UGMF75913						
						UGMF73904	UGMF75904						
1/2	1/2	5/8	1-1/2	4	.461	UGMF73032	UGMF75032						
						UGMF73905	UGMF75905						
						UGMF73914	UGMF75914						
						UGMF73906	UGMF75906						
						5/8	5/8	3/4	1-5/8	4	.586	UGMF73040	UGMF75040
												UGMF73915	UGMF75915
UGMF73916	UGMF75916												
UGMF73907	UGMF75907												
3/4	3/4	1	2	4	.711	UGMF73048	UGMF75048						
						UGMF73917	UGMF75917						
						UGMF73910	UGMF75910						
						1	1	1-1/8	2	4	.961	UGMF73064	UGMF75064
UGMF73918	UGMF75918												
UGMF73919	UGMF75919												
UGMF73911	UGMF75911												
UGMF73912	UGMF75912												

▶ Length of cut in excess of 3xD on 37° single-helix requires feed reduction of approximately 50%

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0 ~ -.0012	h5 (≥ Ø1/2" : h6)

◎ : Excellent ○ : Good

ISO Material Description	P											M				K					
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRC	13	25	28	32	32	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

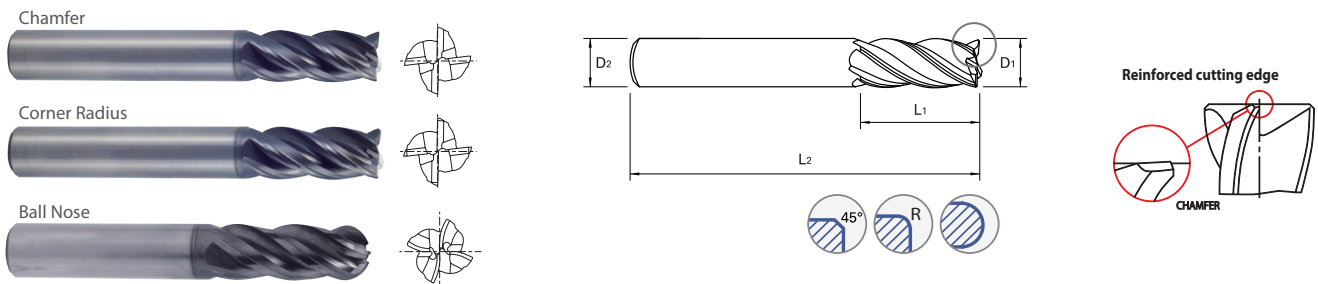
ISO Material Description	N					S					H											
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron							
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRC	15	30	25	38	34	15	30	25	38	34	55	60	42	55	55	60	42	55	55	55	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎



CHAMFER **GMF52 / GMF56** SERIES  
CORNER RADIUS **GMF54 / GMF58** SERIES  
BALL NOSE **GMG55** SERIES

**CARBIDE, 4 FLUTE MULTIPLE LENGTH (PLAIN SHANK)**

- ▶ Special flute geometry and multiple helix eliminate vibrations
- ▶ Excellent performance for stainless steels, mild steels, cast iron, low/medium hardness materials and all exotic materials up to HRC40
- ▶ Advanced coating for superior performance and tool life



CARBIDE 4 35°/37° PLAIN ±0.02mm C x 45° p.C558-C560

Unit : Metric

OD (D <sub>1</sub> )	SD (D <sub>2</sub> )	LOC (L <sub>1</sub> )	OAL (L <sub>2</sub> )	Chamfer EDP No.	Corner Radius					Ball Nose EDP No.	CHAMFER KEY		
					0.30 EDP No.	0.50 EDP No.	1.00 EDP No.	2.00 EDP No.	3.00 EDP No.		Mill Diameter Metric	Chamfer Size (mm)	
3.0	.1181	6	7	54	GMF52030	GMF54030	GMF54901						
					GMF56030	GMF58030	GMF58901				GMG55030	3.0 .1181 0.10	
4.0	.1575	6	8	54	GMF52040	GMF54040	GMF54902						
					GMF56040	GMF58040	GMF58902				GMG55040	4.0 .1575 0.15	
5.0	.1969	6	10	54	GMF52050	GMF54050	GMF54903						
					GMF56050	GMF58050	GMF58903				GMG55050	5.0 .1969 0.15	
6.0	.2362	6	10	54	GMF52060	GMF54060	GMF54904	GMF54905					
					GMF56060	GMF58060	GMF58904	GMF58905			GMG55060	6.0 .2362 0.20	
8.0	.3150	8	12	58	GMF52080		GMF54080	GMF54906					
					GMF56080		GMF58080	GMF58906			GMG55080	8.0 .3150 0.20	
10.0	.3937	10	14	66	GMF52100		GMF54100	GMF54907					
					GMF56100		GMF58100	GMF58907			GMG55100	10.0 .3937 0.30	
12.0	.4724	12	16	73	GMF52120		GMF54120	GMF54908	GMF54909				
					GMF56120		GMF58120	GMF58908	GMF58909			GMG55120	12.0 .4724 0.35
14.0	.5512	14	18	83	GMF52140		GMF54140						
					GMF56140		GMF58140					GMG55140	14.0 .5512 0.40
16.0	.6299	16	22	82	GMF52160			GMF54160	GMF54912	GMF54913			
					GMF56160			GMF58160	GMF58912	GMF58913	GMG55160	16.0 .6299 0.40	
18.0	.7087	18	24	84	GMF52180			GMF54180					
					GMF56180			GMF58180				GMG55180	18.0 .7087 0.50
20.0	.7874	20	26	92	GMF52200			GMF54200	GMF54916	GMF54917			
					GMF56200			GMF58200	GMF58916	GMF58917	GMG55200	20.0 .7874 0.50	
25.0	.9843	25	38	104	GMF56250			GMF58250					

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
Up to Ø12 0 ~ -0.02	h5 (≥ Ø12 : h6)
Over Ø12 0 ~ -0.03	

◎ : Excellent ○ : Good

ISO Material Description	P											M				K					
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRC	13	25	28	32	32	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO Material Description	N					S					H											
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron							
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRC	15	30	25	38	34	15	30	25	38	34	55	60	42	55	55	60	42	55	55	55	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎









CHAMFER GMF61 SERIES
CORNER RADIUS GMF63 SERIES

CARBIDE, 4 FLUTE EXTENDED REACH(FLAT SHANK)

- Special flute geometry and multiple helix eliminate vibrations
Excellent performance for stainless steels, mild steels, cast iron, low/medium hardness materials and all exotic materials up to HRc40
Advanced coating for superior performance and tool life

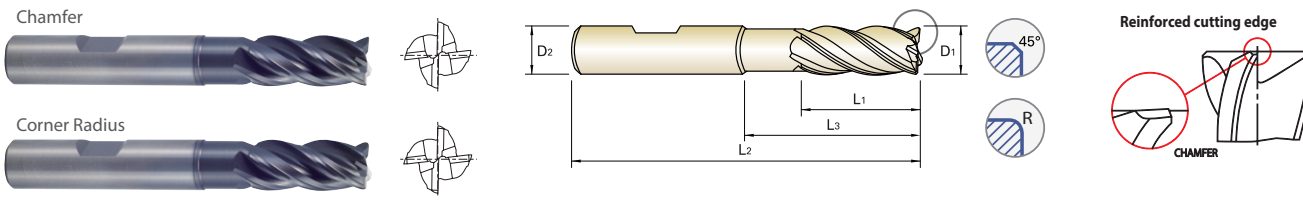


Table with columns for OD (D1), SD (D2), LOC (L1), LBS (L3), OAL (L2), Neck Dia (D3), Chamfer (EDP No.), and Corner Radius (EDP No.). Includes a CHAMFER KEY table for Mill Diameter and Chamfer Size.

Material compatibility table with columns for ISO, Material Description, and hardness ranges for various materials like Non-alloy steel, Low alloy steel, High alloyed steel, Stainless steel, Grey cast iron, etc.



SQUARE UGMG20 SERIES
CORNER RADIUS UGMG22 SERIES

CARBIDE, 6 FLUTE MULTIPLE LENGTH (PLAIN SHANK)

- The unique geometry of the variable pitch provides the best chatter free tool for high speed and trochoidal milling
Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRc40

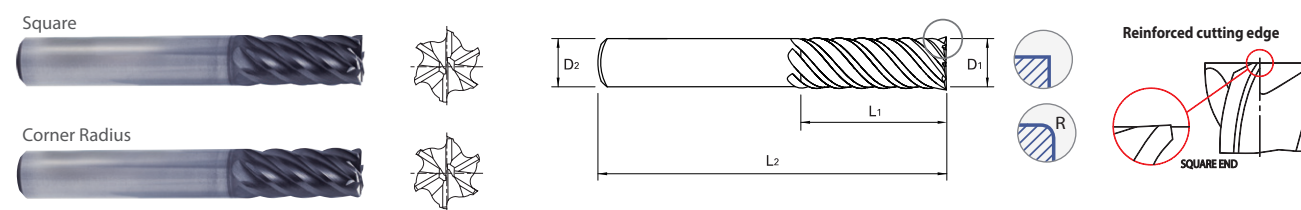


Table with columns for OD (D1), SD (D2), LOC (L1), OAL (L2), Square End (EDP No.), and Corner Radius (EDP No.).

Table with columns for Mill Dia. Tolerance (mm) and Shank Dia. Tolerance.

Material compatibility table with columns for ISO, Material Description, and hardness ranges for various materials like Non-alloy steel, Low alloy steel, High alloyed steel, Stainless steel, Grey cast iron, etc.

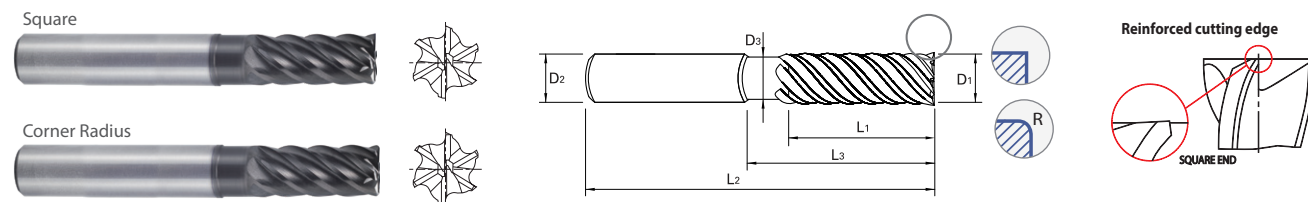




SQUARE UGMH08 SERIES  
CORNER RADIUS UGMH09 SERIES

CARBIDE, 6 FLUTE EXTENDED REACH (PLAIN SHANK)

- The unique geometry of the variable pitch provides the best chatter free tool for high speed and trochoidal milling
- Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRC40



Unit : Inch

OD (D1)	SD (D2)	LOC (L1)	LBS (L3)	OAL (L2)	Neck Dia (D3)	Square End EDP No.	Corner Radius								
							.030	.060	.090	.125	.190	.250			
							EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.			
1/4	1/4	3/8	3/4	4	.230	UGMH08016	UGMH09016	UGMH09901							
		3/8	1-1/8	4	.230	UGMH08901	UGMH09902	UGMH09903							
		3/8	2-1/8	4	.230	UGMH08902	UGMH09904	UGMH09905							
3/8	3/8	1/2	1-1/8	4	.344	UGMH08024	UGMH09024	UGMH09906	UGMH09907						
		1/2	2-1/8	4	.344	UGMH08903	UGMH09908	UGMH09909	UGMH09910						
		1/2	3-1/8	5	.344	UGMH08919	UGMH09999	UGMH09801	UGMH09802						
		1/2	3-1/8	6	.344	UGMH08904	UGMH09911	UGMH09912	UGMH09913						
1/2	1/2	5/8	1-1/2	4	.461	UGMH08032	UGMH09032	UGMH09917	UGMH09918	UGMH09919					
		5/8	2-1/4	4	.461	UGMH08906	UGMH09920	UGMH09921	UGMH09922	UGMH09923					
		5/8	3-3/8	5	.461	UGMH08920	UGMH09803	UGMH09804	UGMH09805	UGMH09806					
		5/8	3-3/8	6	.461	UGMH08907	UGMH09924	UGMH09925	UGMH09926	UGMH09927					
		5/8	4-1/8	6	.461	UGMH08908	UGMH09928	UGMH09929	UGMH09930	UGMH09931					
5/8	5/8	3/4	1-5/8	4	.586	UGMH08040	UGMH09040	UGMH09932	UGMH09933	UGMH09934					
		3/4	2-3/8	5	.586	UGMH08921	UGMH09807	UGMH09808	UGMH09809	UGMH09810					
		3/4	3-3/8	5	.586	UGMH08922	UGMH09811	UGMH09812	UGMH09813	UGMH09814					
		3/4	2-3/8	6	.586	UGMH08909	UGMH09935	UGMH09936	UGMH09937	UGMH09938					
		3/4	3-3/8	6	.586	UGMH08910	UGMH09939	UGMH09940	UGMH09941	UGMH09942					
		3/4	4-1/8	6	.586	UGMH08911	UGMH09943	UGMH09944	UGMH09945	UGMH09946					

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.012	h5 (≥ Ø12 : h6)

NEXT PAGE ►

◎ : Excellent ○ : Good

ISO	P											M				K							
Material Description	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
HRc	13	25	28	32	32	10	29	32	38	15	35	15	23	10	10	26	3	25					
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230			
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

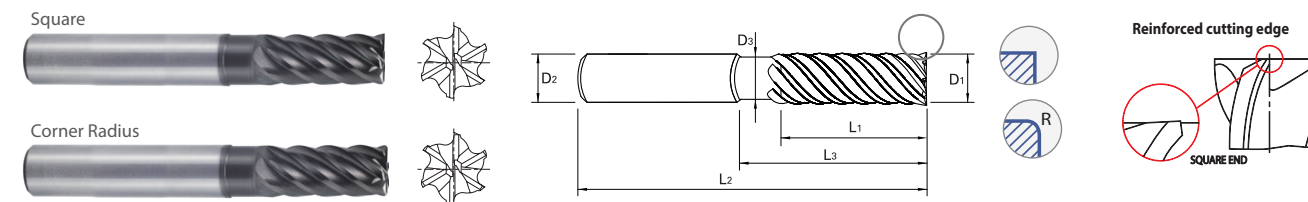
ISO	N					S					H										
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	○	○	○	○	○	○



SQUARE UGMH08 SERIES  
CORNER RADIUS UGMH09 SERIES

CARBIDE, 6 FLUTE EXTENDED REACH (PLAIN SHANK)

- The unique geometry of the variable pitch provides the best chatter free tool for high speed and trochoidal milling
- Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRC40



Unit : Inch

OD (D1)	SD (D2)	LOC (L1)	LBS (L3)	OAL (L2)	Neck Dia (D3)	Square End EDP No.	Corner Radius					
							.030	.060	.090	.125	.190	.250
							EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
3/4	3/4	1-1/8	2	4	.711	UGMH08048	UGMH09048	UGMH09947	UGMH09948	UGMH09949	UGMH09950	UGMH09951
		1-1/8	2-5/8	5	.711	UGMH08912	UGMH09952	UGMH09953	UGMH09954	UGMH09955	UGMH09956	UGMH09957
		1-1/8	3-1/4	6	.711	UGMH08913	UGMH09958	UGMH09959	UGMH09960	UGMH09961	UGMH09962	UGMH09963
		1-1/8	4-1/4	7	.711	UGMH08914	UGMH09964	UGMH09965	UGMH09966	UGMH09967	UGMH09968	UGMH09969
1	1	1-1/4	2-1/4	4	.961	UGMH08064	UGMH09064	UGMH09970	UGMH09971	UGMH09972	UGMH09973	UGMH09974
		1-1/4	2-5/8	5	.961	UGMH08915	UGMH09975	UGMH09976	UGMH09977	UGMH09978	UGMH09979	UGMH09980
		1-1/4	3-1/4	6	.961	UGMH08916	UGMH09981	UGMH09982	UGMH09983	UGMH09984	UGMH09985	UGMH09986
		1-1/4	4-1/4	7	.961	UGMH08917	UGMH09987	UGMH09988	UGMH09989	UGMH09990	UGMH09991	UGMH09992
		1-1/4	5-1/4	8	.961	UGMH08918	UGMH09993	UGMH09994	UGMH09995	UGMH09996	UGMH09997	UGMH09998

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.012	h5 (≥ Ø12 : h6)

◎ : Excellent ○ : Good

ISO	P											M				K							
Material Description	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
HRc	13	25	28	32	32	10	29	32	38	15	35	15	23	10	10	26	3	25					
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230			
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

ISO	N					S					H										
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	○	○	○	○	○	○

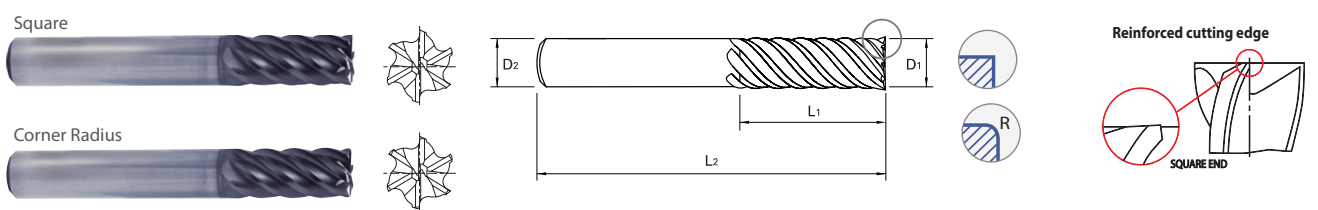




SQUARE **GMG12 / GMG14** SERIES  
CORNER RADIUS **GMG16 / GMG18** SERIES

**CARBIDE, 6 FLUTE MULTIPLE LENGTH (PLAIN SHANK)**

▶ The unique geometry of the variable pitch provides the best chatter free tool for high speed and trochoidal milling  
▶ Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRC40



Unit : Metric

Metric	Inch	OD (D <sub>1</sub> )	SD (D <sub>2</sub> )	LOC (L <sub>1</sub> )	OAL (L <sub>2</sub> )	Square End EDP No.	Corner Radius									
							0.50 EDP No.	1.00 EDP No.	1.50 EDP No.	2.00 EDP No.	3.00 EDP No.	4.00 EDP No.	5.00 EDP No.			
6.0	0.2362	6	6	13	57	GMG12060	GMG16060	GMG16901								
			6	24	75	GMG14060	GMG18060	GMG18901								
8.0	0.3150	8	8	19	63	GMG12080	GMG16080	GMG16902								
			8	32	75	GMG14080	GMG18080	GMG18902			GMG18903					
10.0	0.3937	10	10	22	72	GMG12100	GMG16100	GMG16903	GMG16904	GMG16905						
			10	40	100	GMG14100	GMG18100	GMG18904	GMG18905	GMG18906						
12.0	0.4724	12	12	26	83	GMG12120	GMG16120	GMG16906	GMG16907	GMG16908	GMG16909					
			12	48	120	GMG14120	GMG18120	GMG18907	GMG18908	GMG18909	GMG18910					
16.0	0.6299	16	16	32	92	GMG12160		GMG16160	GMG16910	GMG16911	GMG16912					
			16	64	140	GMG14160		GMG18160	GMG18911	GMG18912	GMG18913					
20.0	0.7874	20	20	38	104	GMG12200		GMG16200	GMG16913	GMG16914	GMG16915					
			20	80	150	GMG14200		GMG18200	GMG18914	GMG18915	GMG18916	GMG18917	GMG18918			
25.0	0.9843	25	25	44	104	GMG12250		GMG16250	GMG16916	GMG16917	GMG16918					
			25	100	170	GMG14250		GMG18250	GMG18919	GMG18920	GMG18921	GMG18922	GMG18923			

Mill Dia. Tolerance (mm)		Shank Dia. Tolerance	
Up to 3xD	Over 3xD	h5 (≥ Ø12 : h6)	
Up to Ø12	0 ~ -0.02		
Over Ø12	0 ~ -0.03		

◎ : Excellent ○ : Good

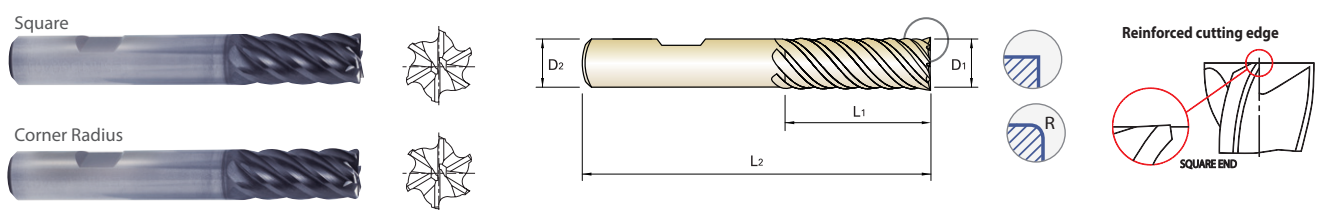
ISO	P											M				K																									
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron																			
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	13	25	28	32	35	38	42	45	48	52	55	58	62	65	68	72	75	78	82	85	88	92	95	98	102	105	108	112	115	118	122	125	128	132	135	138	142	145	148	152	155
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230																					
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎



SQUARE **GMG13 / GMG15** SERIES  
CORNER RADIUS **GMG17 / GMG19** SERIES

**CARBIDE, 6 FLUTE MULTIPLE LENGTH (FLAT SHANK)**

▶ The unique geometry of the variable pitch provides the best chatter free tool for high speed and trochoidal milling  
▶ Excellent performance for Stainless Steels, Mild Steels, Cast Iron, Low/Medium hardness materials under HRC40



Unit : Metric

Metric	Inch	OD (D <sub>1</sub> )	SD (D <sub>2</sub> )	LOC (L <sub>1</sub> )	OAL (L <sub>2</sub> )	Square End EDP No.	Corner Radius									
							0.50 EDP No.	1.00 EDP No.	1.50 EDP No.	2.00 EDP No.	3.00 EDP No.	4.00 EDP No.	5.00 EDP No.			
6.0	0.2362	6	6	13	57	GMG13060	GMG17060	GMG17901								
			6	24	75	GMG15060	GMG19060	GMG19901								
8.0	0.3150	8	8	19	63	GMG13080	GMG17080	GMG17902								
			8	32	75	GMG15080	GMG19080	GMG19902			GMG19903					
10.0	0.3937	10	10	22	72	GMG13100	GMG17100	GMG17903	GMG17904	GMG17905						
			10	40	100	GMG15100	GMG19100	GMG19904	GMG19905	GMG19906						
12.0	0.4724	12	12	26	83	GMG13120	GMG17120	GMG17906	GMG17907	GMG17908	GMG17909					
			12	48	120	GMG15120	GMG19120	GMG19907	GMG19908	GMG19909	GMG19910					
16.0	0.6299	16	16	32	92	GMG13160		GMG17160	GMG17910	GMG17911	GMG17912					
			16	64	140	GMG15160		GMG19160	GMG19911	GMG19912	GMG19913					
20.0	0.7874	20	20	38	104	GMG13200		GMG17200	GMG17913	GMG17914	GMG17915					
			20	80	150	GMG15200		GMG19200	GMG19914	GMG19915	GMG19916	GMG19917	GMG19918			
25.0	0.9843	25	25	44	104	GMG13250		GMG17250	GMG17916	GMG17917	GMG17918					
			25	100	170	GMG15250		GMG19250	GMG19919	GMG19920	GMG19921	GMG19922	GMG19923			

Mill Dia. Tolerance (mm)		Shank Dia. Tolerance	
Up to 3xD	Over 3xD	h5 (≥ Ø12 : h6)	
Up to Ø12	0 ~ -0.02		
Over Ø12	0 ~ -0.03		

◎ : Excellent ○ : Good

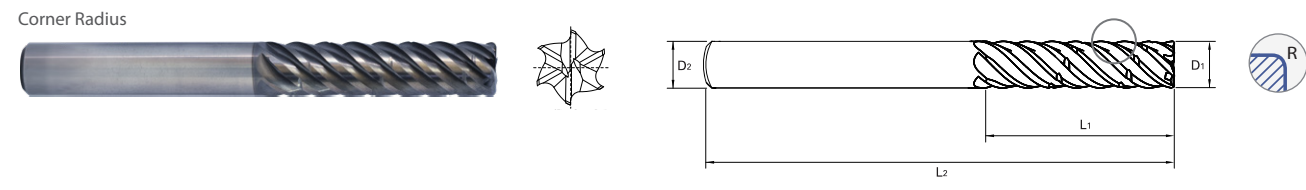
ISO	P											M				K																									
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron																			
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	13	25	28	32	35	38	42	45	48	52	55	58	62	65	68	72	75	78	82	85	88	92	95	98	102	105	108	112	115	118	122	125	128	132	135	138	142	145	148	152	155
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230																					
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎



CORNER RADIUS **GMH72** SERIES

**CARBIDE, 6 FLUTE CHIP SPLITTER (PLAIN SHANK)**

- ▶ Special chip splitter design for better chip removal shortened chip length at high axial machining
- ▶ High Performance for Steels, Stainless Steels and Cast Iron



CARBIDE 6 45° PLAIN p.C566

Unit : Inch

OD (D <sub>1</sub> )	SD (D <sub>2</sub> )	LOC (L <sub>1</sub> )	OAL (L <sub>2</sub> )	Corner Radius			
				.015	.030	.060	.125
				EDP No.	EDP No.	EDP No.	EDP No.
3/8	3/8	5/8	2-1/2	◇ GMH72901	GMH72902		
3/8	3/8	1	2-1/2	◇ GMH72903			
3/8	3/8	1-1/8	3	GMH72024	GMH72904		
1/2	1/2	1-1/4	3		◇ GMH72905	◇ GMH72906	
1/2	1/2	1-1/2	3-1/2		◇ GMH72907	◇ GMH72908	
1/2	1/2	1-5/8	4	GMH72032	GMH72909	GMH72910	
1/2	1/2	2	4		GMH72911	GMH72912	
5/8	5/8	1-1/4	3-1/2		◇ GMH72913	◇ GMH72914	
5/8	5/8	1-7/8	4		◇ GMH72915	◇ GMH72916	
5/8	5/8	2	4	GMH72040	GMH72917	GMH72918	◇ GMH72919
5/8	5/8	2-3/16	4-1/2		◇ GMH72920	◇ GMH72921	
5/8	5/8	2-5/8	5		GMH72922	GMH72923	
3/4	3/4	1-1/2	4		◇ GMH72924	◇ GMH72925	◇ GMH72926
3/4	3/4	1-7/8	4-1/2		GMH72927	GMH72928	
3/4	3/4	2-1/4	5	GMH72048	GMH72929	GMH72930	GMH72931
3/4	3/4	2-3/4	5		◇ GMH72932	GMH72933	◇ GMH72934
3/4	3/4	3	6		GMH72935	◇ GMH72936	
1	1	2	5		◇ GMH72937	◇ GMH72938	◇ GMH72939
1	1	2-1/2	5-1/2		◇ GMH72942	◇ GMH72943	
1	1	3-1/4	6	GMH72064	GMH72944	GMH72945	GMH72946
1	1	3-1/2	6-1/2		◇ GMH72940	◇ GMH72941	
1	1	4	7			◇ GMH72947	

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.012	h5 (≥ Ø12 : h6)

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

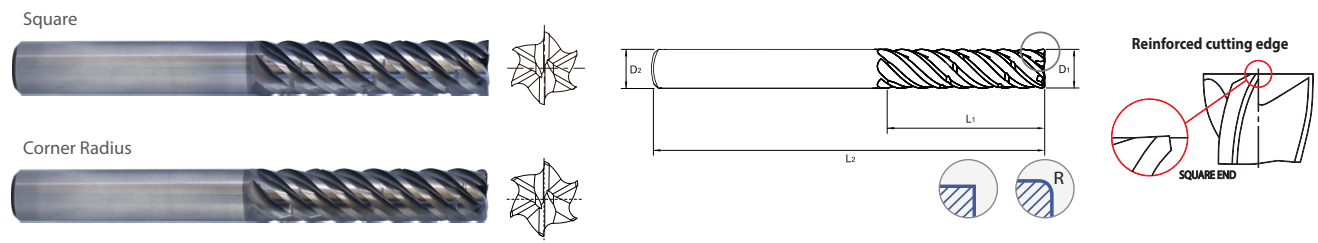
ISO Material Description	N				S						H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials			Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	○	○	○	○	○	○



SQUARE CORNER RADIUS **GMH56** SERIES **GMH58** SERIES

**CARBIDE, 6 FLUTE CHIP SPLITTER (PLAIN SHANK)**

- ▶ Special chip splitter design for better chip removal shortened chip length at high axial machining
- ▶ High Performance for Steels, Stainless Steels and Cast Iron



CARBIDE 6 45° PLAIN p.C562

Unit : Metric

Metric	Inch	OD (D <sub>1</sub> )	SD (D <sub>2</sub> )	LOC (L <sub>1</sub> )	OAL (L <sub>2</sub> )	Square End EDP No.	Corner Radius						
							0.50	1.00	1.50	2.00	3.00	4.00	5.00
							EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
6.0	.2363	6	24	75	GMH56060	GMH58060	GMH58901						
8.0	.3150	8	32	75	GMH56080	GMH58080	GMH58902		GMH58903				
10.0	.3937	10	40	100	GMH56100	GMH58100	GMH58904	GMH58905	GMH58906				
12.0	.4724	12	48	120	GMH56120	GMH58120	GMH58907	GMH58908	GMH58909	GMH58910			
16.0	.6299	16	64	140	GMH56160		GMH58160	GMH58911	GMH58912	GMH58913			
20.0	.7874	20	80	150	GMH56200		GMH58200	GMH58914	GMH58915	GMH58916	GMH58917	GMH58918	
25.0	.9843	25	100	170	GMH56250		GMH58250	GMH58919	GMH58920	GMH58921	GMH58922	GMH58923	

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0 ~ -0.03	h5 (≥ Ø12 : h6)

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

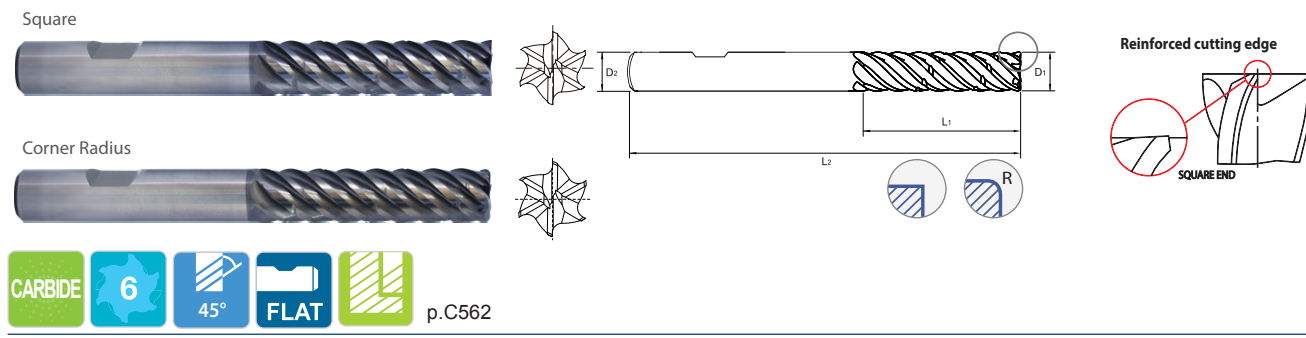
ISO Material Description	N				S						H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials			Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	○	○	○	○	○	○



SQUARE **GMH57** SERIES  
CORNER RADIUS **GMH59** SERIES

**CARBIDE, 6 FLUTE CHIP SPLITTER (FLAT SHANK)**

- ▶ Special chip splitter design for better chip removal shortened chip length at high axial machining
- ▶ High Performance for Steels, Stainless Steels and Cast Iron



Unit : Metric

OD (D <sub>1</sub> )		SD (D <sub>2</sub> )	LOC (L <sub>1</sub> )	OAL (L <sub>2</sub> )	Square End	Corner Radius						
Metric	Inch					0.50	1.00	1.50	2.00	3.00	4.00	5.00
				EDP No.		EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.	EDP No.
6.0	.2363	6	24	75	GMH57060	GMH59060	GMH59901					
8.0	.3150	8	32	75	GMH57080	GMH59080	GMH59902		GMH59903			
10.0	.3937	10	40	100	GMH57100	GMH59100	GMH59904	GMH59905	GMH59906			
12.0	.4724	12	48	120	GMH57120	GMH59120	GMH59907	GMH59908	GMH59909	GMH59910		
16.0	.6299	16	64	140	GMH57160		GMH59160	GMH59911	GMH59912	GMH59913		
20.0	.7874	20	80	150	GMH57200		GMH59200	GMH59914	GMH59915	GMH59916	GMH59917	GMH59918
25.0	.9843	25	100	170	GMH57250		GMH59250	GMH59919	GMH59920	GMH59921	GMH59922	GMH59923

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0 ~ -0.03	h5 (≥ Ø12 : h6)

◎ : Excellent ○ : Good

ISO	P											M					K						
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel					Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
VDI 3323																							
HRc	13	25	28	32	30	29	32	38	35	15	35	15	23	10	10	26	3	25		21			
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230			
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎			

ISO	N				S					H											
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323																					
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	○	○				



**RECOMMENDED CUTTING CONDITIONS**

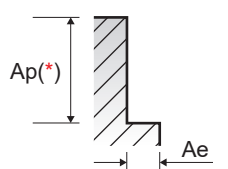
**UGMF68, UGMF69, UGMF70, UGMF71, UGMF72  
UGMF73, UGMF74, UGMF75, UGMF76, UGMF77 SERIES**

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

**4 FLUTE - SIDE CUTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)															
						1/8	5/32	3/16	7/32	1/4	9/32	5/16	11/32	3/8	7/16	1/2	5/8	3/4	1		
P	1-4	Non-alloy steel	0.5D	1.5D (1.2D)	SFM	500	500	500	500	500	500	525	550	550	550	550	550	550			
					IPT	.0002	.0003	.0004	.0005	.0006	.0008	.0011	.0013	.0015	.0017	.0019	.0021	.0026	.0025		
					RPM	15250	12200	10170	8710	7630	6780	6100	5830	5620	4810	4210	3370	2810	2110		
					IPM	12	15	18	19	23	26	30	34	32	31	28	29	21			
	5	Low alloy steel	0.5D	1.5D (1.2D)	SFM	350	350	350	350	350	350	370	385	385	385	385	385	385			
					IPT	.0002	.0003	.0004	.0005	.0006	.0008	.0011	.0013	.0015	.0017	.0018	.0021	.0026	.0025		
					RPM	10730	8580	7150	6130	5360	4770	4290	4090	3910	3350	2930	2350	1960	1470		
					IPM	8	11	12	13	14	16	18	21	23	22	22	20	20	15		
	6-7	Low alloy steel	0.5D	1.5D (1.2D)	SFM	500	500	500	500	500	500	525	550	550	550	550	550	550			
					IPT	.0002	.0003	.0004	.0005	.0006	.0008	.0011	.0013	.0015	.0017	.0019	.0021	.0026	.0025		
					RPM	15250	12200	10170	8710	7630	6780	6100	5830	5620	4810	4210	3370	2810	2110		
					IPM	12	15	18	19	23	26	30	34	32	31	28	29	21			
8-9	Low alloy steel	0.5D	1.5D (1.2D)	SFM	350	350	350	350	350	350	370	385	385	385	385	385	385				
				IPT	.0002	.0003	.0004	.0005	.0006	.0008	.0011	.0013	.0015	.0017	.0018	.0021	.0026	.0025			
				RPM	10730	8580	7150	6130	5360	4770	4290	4090	3910	3350	2930	2350	1960	1470			
				IPM	8	11	12	13	14	16	18	21	23	22	22	20	20	15			
10-11.1	High alloyed steel, and tool steel	0.5D	1.5D (1.2D)	SFM	210	210	210	210	210	210	210	220	230	230	230	230	230				
				IPT	.0001	.0002	.0003	.0004	.0004	.0006	.0007	.0009	.0011	.0012	.0013	.0015	.0018	.0018			
				RPM	6420	5130	4280	3670	3210	2850	2570	2450	2340	2010	1760	1410	1170	880			
				IPM	3	5	5	6	7	8	9	10	9	9	9	8	8	6			
M	12-13	Stainless steel	0.5D	1.5D (1.2D)	SFM	500	500	500	500	500	500	525	550	550	550	550	550				
					IPT	.0002	.0003	.0004	.0005	.0006	.0008	.0011	.0013	.0015	.0017	.0019	.0021	.0026	.0025		
					RPM	15250	12200	10170	8710	7630	6780	6100	5830	5620	4810	4210	3370	2810	2110		
					IPM	12	15	18	19	23	26	30	34	32	31	28	29	21			
	14.1	Stainless steel	0.5D	1.5D (1.2D)	SFM	350	350	350	350	350	350	370	385	385	385	385	385	385			
					IPT	.0002	.0003	.0004	.0005	.0006	.0008	.0011	.0013	.0015	.0017	.0018	.0021	.0026	.0025		
					RPM	10730	8580	7150	6130	5360	4770	4290	4090	3910	3350	2930	2350	1960	1470		
					IPM	8	11	12	13	14	16	18	21	23	22	22	20	20	15		
	14.2	Stainless steel	0.5D	1.5D (1.2D)	SFM	310	310	310	310	310	310	310	310	310	310	310	310	310			
					IPT	.0002	.0003	.0005	.0006	.0007	.0009	.0011	.0015	.0019	.0020	.0022	.0024	.0030	.0030		
					RPM	9540	7630	6360	5450	4770	4240	3810	3470	3180	2720	2380	1910	1590	1190		
					IPM	8	10	13	13	14	15	17	21	24	22	21	19	19	14		
K	Grey cast iron	0.5D	1.5D (1.2D)	SFM	365	365	365	365	365	365	365	405	405	405	405	405	405				
				IPT	.0002	.0004	.0006	.0007	.0008	.0011	.0013	.0016	.0019	.0021	.0023	.0026	.0032	.0031			
				RPM	11220	8970	7480	6410	5610	4990	4490	4290	4120	3530	3090	2470	2060	1540			
				IPM	11	14	16	17	18	21	24	28	31	29	28	25	26	19			
S	Heat Resistant Super Alloys	0.25D	1.0D	SFM	85	85	85	85	85	85	85	85	85	85	85	85	85				
				IPT	.0002	.0003	.0003	.0004	.0005	.0006	.0007	.0010	.0013	.0014	.0015	.0017	.0021	.0020			
				RPM	2600	2080	1730	1480	1300	1150	1040	950	870	740	650	520	430	330			
				IPM	2	2	2	2	2	3	3	4	5	4	4	4	4	3			
36-37	Titanium Alloys	0.35D	1.0D	SFM	190	190	190	190	190	190	190	190	190	190	190	190	190				
				IPT	.0002	.0003	.0004	.0005	.0006	.0008	.0010	.0013	.0017	.0018	.0020	.0022	.0027	.0027			
				RPM	5810	4650	3870	3320	2900	2580	2320	2110	1940	1660	1450	1160	970	730			
				IPM	4	5	7	7	7	8	9	11	13	12	11	10	10	8			

\* ( ) : Short length & Neck type



- NOTES:**
- ▶ Feed to be reduced by approximately 50% if L.O.C. (Length Of Cut) is over 3xD
  - ▶ The above recommendations are based on ideal conditions; for smaller taper machining centers or less rigid conditions please adjust parameters accordingly on diameters greater than 1/2"
  - ▶ In profile operations, engaging more than 2xD, reduce the radial depth of cut by 50%-60%
  - ▶ Finish cuts typically require reduced cutting feeds and speeds; also, it is recommended the radial width of cut (AE) should not exceed 2%xD1



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# YG V7 PLUS A END MILLS

## RECOMMENDED CUTTING CONDITIONS

# YG V7 PLUS A END MILLS

## RECOMMENDED CUTTING CONDITIONS

### UGMF68, UGMF69, UGMF70, UGMF71, UGMF72 UGMF73, UGMF74, UGMF75, UGMF76, UGMF77 SERIES

### UGMG53, UGMG54, UGMH10 SERIES 4 FLUTE BALL NOSE

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

#### 4 FLUTE - SLOTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)																
						1/8	5/32	3/16	7/32	1/4	9/32	5/16	11/32	3/8	7/16	1/2	5/8	3/4	1			
P	1-4	Non-alloy steel	1.0D	1.0D (0.8D)	SFM(Vc)	500	500	500	500	500	500	525	550	550	550	550	550	550	550			
					IPT(fz)	.0002	.0003	.0004	.0005	.0006	.0008	.0011	.0013	.0015	.0017	.0019	.0021	.0026	.0025			
	RPM	15250	12200	10170	8710	7630	6780	6100	5830	5620	4810	4210	3370	2810	2110							
	IPM(Feed)	12	15	18	19	19	23	26	30	34	32	31	28	29	21							
	5	Low alloy steel	1.0D	1.0D (0.8D)	SFM(Vc)	350	350	350	350	350	350	370	385	385	385	385	385	385				
					IPT(fz)	.0002	.0003	.0004	.0005	.0006	.0008	.0011	.0013	.0015	.0017	.0018	.0021	.0026	.0025			
RPM	10730	8580	7150	6130	5360	4770	4290	4090	3910	3350	2930	2350	1960	1470								
IPM(Feed)	8	11	12	13	14	16	18	21	23	22	20	20	20	15								
6-7	Low alloy steel	1.0D	1.0D (0.8D)	SFM(Vc)	500	500	500	500	500	500	525	550	550	550	550	550	550					
				IPT(fz)	.0002	.0003	.0004	.0005	.0006	.0008	.0011	.0013	.0015	.0017	.0019	.0021	.0026	.0025				
RPM	15250	12200	10170	8710	7630	6780	6100	5830	5620	4810	4210	3370	2810	2110								
IPM(Feed)	12	15	18	19	19	23	26	30	34	32	31	28	29	21								
8-9	High alloyed steel, and tool steel	1.0D	1.0D (0.8D)	SFM(Vc)	350	350	350	350	350	350	370	385	385	385	385	385	385					
				IPT(fz)	.0002	.0003	.0004	.0005	.0006	.0008	.0011	.0013	.0015	.0017	.0018	.0021	.0026	.0025				
RPM	10730	8580	7150	6130	5360	4770	4290	4090	3910	3350	2930	2350	1960	1470								
IPM(Feed)	8	11	12	13	14	16	18	21	23	22	20	20	20	15								
10-11.1	High alloyed steel, and tool steel	1.0D	1.0D (0.8D)	SFM(Vc)	210	210	210	210	210	210	220	230	230	230	230	230	230					
				IPT(fz)	.0001	.0002	.0003	.0004	.0004	.0006	.0007	.0009	.0011	.0012	.0013	.0015	.0018	.0018				
RPM	6420	5130	4280	3670	3210	2850	2570	2450	2340	2010	1760	1410	1170	880								
IPM(Feed)	3	5	5	5	6	7	8	9	10	9	9	8	8	6								
M	12-13	Stainless steel	1.0D	1.0D (0.8D)	SFM(Vc)	485	485	485	485	485	485	485	485	485	485	485	485					
					IPT(fz)	.0002	.0002	.0004	.0004	.0005	.0007	.0009	.0011	.0013	.0014	.0015	.0018	.0022	.0022			
	RPM	14852	11882	9901	8487	7426	6601	5941	5401	4951	4243	3713	2970	2475	1857							
	IPM(Feed)	9.36	11.23	14.03	14.7	15.2	18.48	20.58	23.81	26.51	24.39	22.8	21.05	21.44	16.08							
14.1	Stainless steel	1.0D	1.0D (0.8D)	SFM(Vc)	350	350	350	350	350	350	370	385	385	385	385	385	385					
				IPT(fz)	.0002	.0003	.0004	.0005	.0006	.0008	.0011	.0013	.0015	.0017	.0018	.0021	.0026	.0025				
RPM	10730	8580	7150	6130	5360	4770	4290	4090	3910	3350	2930	2350	1960	1470								
IPM(Feed)	8	11	12	13	14	16	18	21	23	22	22	20	20	15								
14.2	Stainless steel	1.0D	1.0D (0.8D)	SFM(Vc)	310	310	310	310	310	310	310	310	310	310	310	310	310					
				IPT(fz)	.0002	.0003	.0005	.0006	.0007	.0009	.0011	.0015	.0019	.0020	.0022	.0024	.0030	.0030				
RPM	9540	7630	6360	5450	4770	4240	3810	3470	3180	2720	2380	1910	1590	1190								
IPM(Feed)	8	10	13	13	14	15	17	21	24	22	21	19	19	14								
K	15-20	Grey cast iron	1.0D	1.0D (0.8D)	SFM(Vc)	365	365	365	365	365	365	385	405	405	405	405	405	405				
					IPT(fz)	.0002	.0004	.0006	.0007	.0008	.0011	.0013	.0016	.0019	.0021	.0023	.0026	.0032	.0031			
RPM	11220	8970	7480	6410	5610	4990	4490	4290	4120	3530	3090	2470	2060	1540								
IPM(Feed)	11	14	16	17	18	21	24	28	31	29	28	25	26	19								
S	31-35	Heat Resistant Super Alloys	1.0D	0.5D	SFM(Vc)	85	85	85	85	85	85	85	85	85	85	85	85	85				
					IPT(fz)	.0002	.0003	.0003	.0004	.0005	.0006	.0007	.0010	.0013	.0014	.0015	.0017	.0021	.0020			
RPM	2600	2080	1730	1480	1300	1150	1040	950	870	740	650	520	430	330								
IPM(Feed)	2	2	2	2	2	3	3	4	5	4	4	4	4	3								
36-37	Titanium Alloys	1.0D	0.5D	SFM(Vc)	190	190	190	190	190	190	190	190	190	190	190	190	190					
				IPT(fz)	.0002	.0003	.0004	.0005	.0006	.0008	.0010	.0013	.0017	.0018	.0020	.0022	.0027	.0027				
RPM	5810	4650	3870	3320	2900	2580	2320	2110	1940	1660	1450	1160	970	730								
IPM(Feed)	4	5	7	7	7	8	9	11	13	12	11	10	10	8								

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)														
						1/8	3/16	13/64	1/4	5/16	3/8	1/2	5/8	11/16	3/4	1				
P	1-4	Non-alloy steel	0.5D	1.0D	SFM(Vc)	530	530	530	530	530	530	530	530	530	530	530	530	530		
					IPT(fz)	.0010	.0011	.0012	.0016	.0024	.0026	.0028	.0030	.0032	.0035	.0039				
	RPM	16230	10820	9990	8110	6490	5410	4060	3250	2950	2710	2030								
	IPM(Feed)	64	46	47	51	61	55	45	38	37	38	32								
	5	Low alloy steel	0.5D	1.0D	SFM(Vc)	370	370	370	370	370	370	370	370	370	370	370	370	370		
					IPT(fz)	.0010	.0011	.0012	.0016	.0024	.0026	.0028	.0029	.0031	.0035	.0039				
RPM	11340	7560	6980	5670	4540	3780	2830	2260	2060	1890	1420									
IPM(Feed)	45	32	33	36	43	39	31	26	26	27	22									
6-7	Low alloy steel	0.5D	1.0D	SFM(Vc)	530	530	530	530	530	530	530	530	530	530	530	530	530			
				IPT(fz)	.0010	.0011	.0012	.0016	.0024	.0026	.0028	.0030	.0032	.0035	.0039					
RPM	16230	10820	9990	8110	6490	5410	4060	3250	2950	2710	2030									
IPM(Feed)	64	46	47	51	61	55	45	38	37	38	32									
8-9	Low alloy steel	0.5D	1.0D	SFM(Vc)	370	370	370	370	370	370	370	370	370	370	370	370	370			
				IPT(fz)	.0010	.0011	.0012	.0016	.0024	.0026	.0028	.0029	.0031	.0035	.0039					
RPM	11340	7560	6980	5670	4540	3780	2830	2260	2060	1890	1420									
IPM(Feed)	45	32	33	36	43	39	31	26	26	27	22									
10-11.1	High alloyed steel, and tool steel	0.5D	1.0D	SFM(Vc)	225	225	225	225	225	225	225	225	225	225	225	225	225			
				IPT(fz)	.0007	.0007	.0008	.0011	.0017	.0018	.0019	.0020	.0022	.0025	.0028					
RPM	6820	4540	4190	3410	2730	2270	1700	1360	1240	1140	850									
IPM(Feed)	18	14	14	15	18	16	13	11	11	11	9									
M	12-13	Stainless steel	0.5D	1.0D	SFM(Vc)	255	255	255	255	255	255	255	255	255	255	255	255			
					IPT(fz)	.0006	.0006	.0010	.0012	.0016	.0018	.0020	.0022	.0025	.0026	.0027				
	RPM	7730	5150	4760	3870	3090	2580	1930	1550	1410	1290	970								
	IPM(Feed)	18	12	19	18	19	18	15	13	13	12	9								
14.1	Stainless steel	0.5D	1.0D	SFM(Vc)	280	280	280	280	280	280	280	280	280	280	280	280				
				IPT(fz)	.0008	.0008	.0010	.0016	.0018	.0020	.0022	.0024	.0025	.0026	.0027					
RPM	8530	5680	5250	4260	3410	2840	2130	1710	1550	1420	1070									
IPM(Feed)	27	18	21	28	24	22	18	16	16	15	11									
14.2	Stainless steel	0.5D	1.0D	SFM(Vc)	255	255	255	255	255	255	255	255	255	255	255	255				
				IPT(fz)	.0008	.0008	.0010	.0016	.0018	.0020	.0022	.0024	.0025	.0026	.0027					
RPM	7730	5150	4760	3870	3090	2580	1930	1550	1410	1290	970									
IPM(Feed)	24	16	19	25	22	20	17	15	14	13	10									
K	15-20	Grey cast iron	0.5D	1.0D	SFM(Vc)	390	390	390	390	390	390	390	390	390	390	390	390			
					IPT(fz)	.0012	.0013	.0015	.0020	.0029	.0032	.0034	.0037	.0039	.0044	.0049				
RPM	11920	7950	7330	5960	4770	3970	2980	2380	2170	1990	1490									
IPM(Feed)	58	41	43	47	56	51	41	35	34	35	29									
S	31-35	Heat Resistant Super Alloys	0.2D	0.3D	SFM(Vc)	70	70	70	70	70	70	70	70	70	70	70	70			
					IPT(fz)	.0006	.0006	.0007	.0011	.0012	.0014	.0015	.0017	.0018	.0018	.0019				
RPM	2110	1410	1300	1050	840	700														

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HSS

CBN END MILLS

CBN END MILLS

i-Xmill END MILLS

i-Xmill END MILLS

i-SMART MODULAR END MILLS

i-SMART MODULAR END MILLS

X5070 END MILLS

X5070 END MILLS

4G MILL END MILLS

4G MILL END MILLS

X-POWER PRO END MILLS

X-POWER PRO END MILLS

TitaNox-POWER END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

JET-POWER END MILLS

V7 PLUS A END MILLS

V7 PLUS A END MILLS

V7 MILL INOX

V7 MILL INOX

ALU-POWER HPC END MILLS

ALU-POWER HPC END MILLS

ALU-POWER END MILLS

ALU-POWER END MILLS

D-POWER GRAPHITE END MILLS

D-POWER GRAPHITE END MILLS

STANDARD CARBIDE

STANDARD CARBIDE

ONLY ONE COATED PM60 END MILLS

ONLY ONE COATED PM60 END MILLS

SINE-POWER

SINE-POWER

TANK-POWER END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS

STANDARD COBALT & HSS

TECHNICAL DATA

TECHNICAL DATA



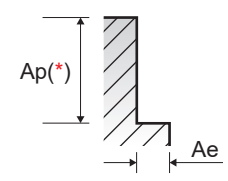
RECOMMENDED CUTTING CONDITIONS

UGMG20, UGMG21, UGMG22  
UGMG23, UGMH08, UGMH09 SERIES

6 FLUTE - SIDE CUTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)																														
						1/4	5/16	3/8	1/2	5/8	3/4	1																								
						SFM (Vc)	IPT (fz)	RPM	IPM (FEED)	SFM (Vc)	IPT (fz)	RPM	IPM (FEED)	SFM (Vc)	IPT (fz)	RPM	IPM (FEED)	SFM (Vc)	IPT (fz)	RPM	IPM (FEED)	SFM (Vc)	IPT (fz)	RPM	IPM (FEED)											
P	1-4	Non-alloy steel	0.05D	2.0D	SFM (Vc)	985	985	985	985	985	985	985	IPT (fz)	.0027	.0046	.0057	.0068	.0080	.0089	.0091	RPM	15040	12030	10020	7520	6010	5010	3760	IPM (FEED)	242	330	341	307	287	266	206
					SFM (Vc)	665	665	665	665	665	665	665	IPT (fz)	.0020	.0034	.0042	.0050	.0059	.0066	.0069	RPM	10180	8140	6780	5090	4070	3390	2540	IPM (FEED)	120	163	170	154	143	134	105
					SFM (Vc)	985	985	985	985	985	985	985	IPT (fz)	.0027	.0046	.0057	.0068	.0080	.0089	.0091	RPM	15040	12030	10020	7520	6010	5010	3760	IPM (FEED)	242	330	341	307	287	266	206
	5	Low alloy steel	0.05D	2.0D	SFM (Vc)	665	665	665	665	665	665	665	IPT (fz)	.0020	.0034	.0042	.0050	.0059	.0066	.0069	RPM	10180	8140	6780	5090	4070	3390	2540	IPM (FEED)	120	163	170	154	143	134	105
					SFM (Vc)	985	985	985	985	985	985	985	IPT (fz)	.0027	.0046	.0057	.0068	.0080	.0089	.0091	RPM	15040	12030	10020	7520	6010	5010	3760	IPM (FEED)	242	330	341	307	287	266	206
					SFM (Vc)	665	665	665	665	665	665	665	IPT (fz)	.0020	.0034	.0042	.0050	.0059	.0066	.0069	RPM	10180	8140	6780	5090	4070	3390	2540	IPM (FEED)	120	163	170	154	143	134	105
	6-7	Low alloy steel	0.05D	2.0D	SFM (Vc)	985	985	985	985	985	985	985	IPT (fz)	.0027	.0046	.0057	.0068	.0080	.0089	.0091	RPM	15040	12030	10020	7520	6010	5010	3760	IPM (FEED)	242	330	341	307	287	266	206
					SFM (Vc)	665	665	665	665	665	665	665	IPT (fz)	.0020	.0034	.0042	.0050	.0059	.0066	.0069	RPM	10180	8140	6780	5090	4070	3390	2540	IPM (FEED)	120	163	170	154	143	134	105
					SFM (Vc)	985	985	985	985	985	985	985	IPT (fz)	.0027	.0046	.0057	.0068	.0080	.0089	.0091	RPM	15040	12030	10020	7520	6010	5010	3760	IPM (FEED)	242	330	341	307	287	266	206
	8-9	High alloyed steel, and tool steel	0.05D	2.0D	SFM (Vc)	330	330	330	330	330	330	330	IPT (fz)	.0016	.0028	.0035	.0041	.0048	.0054	.0056	RPM	5010	4010	3340	2510	2010	1670	1250	IPM (FEED)	49	67	69	62	58	54	43
					SFM (Vc)	700	700	700	700	700	700	700	IPT (fz)	.0019	.0033	.0041	.0049	.0058	.0064	.0066	RPM	10680	8550	7120	5340	4270	3560	2670	IPM (FEED)	124	170	175	158	147	136	106
					SFM (Vc)	480	480	480	480	480	480	480	IPT (fz)	.0016	.0028	.0035	.0041	.0048	.0054	.0056	RPM	7370	5890	4910	3680	2950	2460	1840	IPM (FEED)	71	99	102	91	86	79	62
M	14.1	Stainless steel	0.05D	2.0D	SFM (Vc)	440	440	440	440	440	440	IPT (fz)	.0016	.0028	.0035	.0041	.0048	.0054	.0056	RPM	6720	5380	4480	3360	2690	2240	1680	IPM (FEED)	65	90	93	83	78	73	56	
					SFM (Vc)	740	740	740	740	740	740	740	IPT (fz)	.0032	.0055	.0068	.0082	.0095	.0106	.0110	RPM	11310	9050	7540	5650	4520	3770	2830	IPM (FEED)	218	297	308	277	259	240	186
					SFM (Vc)	110	110	110	110	110	110	110	IPT (fz)	.0013	.0022	.0028	.0032	.0038	.0044	.0045	RPM	1650	1320	1100	830	660	550	410	IPM (FEED)	13	17	18	16	15	15	11
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.05D	2.0D	SFM (Vc)	380	380	380	380	380	380	IPT (fz)	.0013	.0022	.0028	.0032	.0038	.0044	.0045	RPM	5820	4660	3880	2910	2330	1940	1460	IPM (FEED)	45	61	64	57	53	52	40	
					SFM (Vc)	740	740	740	740	740	740	740	IPT (fz)	.0032	.0055	.0068	.0082	.0095	.0106	.0110	RPM	11310	9050	7540	5650	4520	3770	2830	IPM (FEED)	218	297	308	277	259	240	186
					SFM (Vc)	110	110	110	110	110	110	110	IPT (fz)	.0013	.0022	.0028	.0032	.0038	.0044	.0045	RPM	1650	1320	1100	830	660	550	410	IPM (FEED)	13	17	18	16	15	15	11
S	31-35	Heat Resistant Super Alloys	0.05D	2.0D	SFM (Vc)	380	380	380	380	380	380	IPT (fz)	.0013	.0022	.0028	.0032	.0038	.0044	.0045	RPM	5820	4660	3880	2910	2330	1940	1460	IPM (FEED)	45	61	64	57	53	52	40	
					SFM (Vc)	740	740	740	740	740	740	740	IPT (fz)	.0032	.0055	.0068	.0082	.0095	.0106	.0110	RPM	11310	9050	7540	5650	4520	3770	2830	IPM (FEED)	218	297	308	277	259	240	186
					SFM (Vc)	110	110	110	110	110	110	110	IPT (fz)	.0013	.0022	.0028	.0032	.0038	.0044	.0045	RPM	1650	1320	1100	830	660	550	410	IPM (FEED)	13	17	18	16	15	15	11
S	36-37	Titanium Alloys	0.05D	2.0D	SFM (Vc)	380	380	380	380	380	380	IPT (fz)	.0013	.0022	.0028	.0032	.0038	.0044	.0045	RPM	5820	4660	3880	2910	2330	1940	1460	IPM (FEED)	45	61	64	57	53	52	40	
					SFM (Vc)	740	740	740	740	740	740	740	IPT (fz)	.0032	.0055	.0068	.0082	.0095	.0106	.0110	RPM	11310	9050	7540	5650	4520	3770	2830	IPM (FEED)	218	297	308	277	259	240	186
					SFM (Vc)	110	110	110	110	110	110	110	IPT (fz)	.0013	.0022	.0028	.0032	.0038	.0044	.0045	RPM	1650	1320	1100	830	660	550	410	IPM (FEED)	13	17	18	16	15	15	11

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.



(\*) : If product's Length of Cut(L.O.C) is below 2D, it must be applied L.O.C x 90%



RECOMMENDED CUTTING CONDITIONS

GMH72 SERIES

6 FLUTE CHIP SPLITTER - SIDE CUTTING

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)																							
						3/8	1/2	5/8	3/4	1																			
P	1-4	Non-alloy steel	0.05D	3.0D	SFM (Vc)	985	985	985	985	985	IPT (fz)	.0057	.0068	.0080	.0089	.0091	RPM	10020	7520	6010	5010	3760	IPM (FEED)	341	307	287	266	206	
					SFM (Vc)	665	665	665	665	665	665	IPT (fz)	.0042	.0050	.0059	.0066	.0069	RPM	6780	5090	4070	3390	2540	IPM (FEED)	170	154	143	134	105
					SFM (Vc)	985	985	985	985	985	985	IPT (fz)	.0057	.0068	.0080	.0089	.0091	RPM	10020	7520	6010	5010	3760	IPM (FEED)	341	307	287	266	206
	5	Low alloy steel	0.05D	3.0D	SFM (Vc)	665	665	665	665	665	665	IPT (fz)	.0042	.0050	.0059	.0066	.0069	RPM	6780	5090	4070	3390	2540	IPM (FEED)	170	154	143	134	105
					SFM (Vc)	985	985	985	985	985	985	IPT (fz)	.0057	.0068	.0080	.0089	.0091	RPM	10020	7520	6010	5010	3760	IPM (FEED)	341	307	287	266	206
					SFM (Vc)	665	665	665	665	665	665	IPT (fz)	.0042	.0050	.0059	.0066	.0069	RPM	6780	5090	4070	3390	2540	IPM (FEED)	170	154	143	134	105
	6-7	Low alloy steel	0.05D	3.0D	SFM (Vc)	985	985	985	985	985	985	IPT (fz)	.0057	.0068	.0080	.0089	.0091	RPM	10020	7520	6010	5010	3760	IPM (FEED)	341	307	287	266	206
					SFM (Vc)	665	665	665	665	665	665	IPT (fz)	.0042	.0050	.0059	.0066	.0069	RPM	6780	5090	4070	3390	2540	IPM (FEED)	170	154	143	134	105
					SFM (Vc)	985	985	985	985	985	985	IPT (fz)	.0057	.0068	.0080	.0089	.0091	RPM	10020	7520									





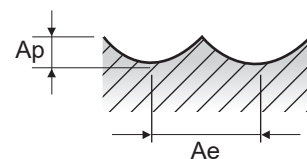
# YG V7 PLUS A END MILLS

## RECOMMENDED CUTTING CONDITIONS

### GMG55, GMG56 SERIES 4 FLUTE BALL NOSE

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)												
						3.0	4.0	5.0	6.0	8.0	10.0	12.0	16.0	18.0	20.0	25.0		
P	1-4	Non-alloy steel	0.5D	1.0D	SFM (Vc)	530	530	530	530	530	530	530	530	530	530	530	530	530
					IPT (fz)	.0010	.0011	.0012	.0016	.0024	.0026	.0028	.0030	.0032	.0035	.0039		
					RPM	17190	12890	10310	8590	6450	5160	4300	3220	2870	2580	2060		
	5	0.5D	1.0D	SFM (Vc)	370	370	370	370	370	370	370	370	370	370	370	370	370	
				IPT (fz)	.0010	.0011	.0012	.0016	.0024	.0026	.0028	.0029	.0031	.0035	.0039			
				RPM	11990	8990	7190	6000	4500	3600	3000	2250	2000	1800	1440			
	6-7	Low alloy steel	0.5D	1.0D	SFM (Vc)	530	530	530	530	530	530	530	530	530	530	530	530	
					IPT (fz)	.0010	.0011	.0012	.0016	.0024	.0026	.0028	.0030	.0032	.0035	.0039		
					RPM	17190	12890	10310	8590	6450	5160	4300	3220	2870	2580	2060		
	8-9	0.5D	1.0D	SFM (Vc)	370	370	370	370	370	370	370	370	370	370	370	370		
				IPT (fz)	.0010	.0011	.0012	.0016	.0024	.0026	.0028	.0029	.0031	.0035	.0039			
				RPM	11990	8990	7190	6000	4500	3600	3000	2250	2000	1800	1440			
10-11.1	High alloyed steel, and tool steel	0.5D	1.0D	SFM (Vc)	225	225	225	225	225	225	225	225	225	225	225	225		
				IPT (fz)	.0007	.0007	.0008	.0011	.0017	.0018	.0019	.0020	.0022	.0025	.0028			
				RPM	7220	5410	4330	3610	2710	2170	1800	1350	1200	1080	870			
M	12-13	0.5D	1.0D	SFM (Vc)	255	255	255	255	255	255	255	255	255	255	255	255		
				IPT (fz)	.0006	.0006	.0010	.0012	.0016	.0018	.0020	.0021	.0023	.0023	.0023			
				RPM	8170	6130	4900	4090	3060	2450	2040	1530	1360	1230	980			
	14.1	Stainless steel	0.5D	1.0D	SFM (Vc)	280	280	280	280	280	280	280	280	280	280	280		
					IPT (fz)	.0008	.0008	.0010	.0016	.0018	.0020	.0022	.0024	.0025	.0026	.0027		
					RPM	9020	6760	5410	4510	3380	2710	2260	1690	1500	1350	1080		
	14.2	0.5D	1.0D	SFM (Vc)	255	255	255	255	255	255	255	255	255	255	255			
				IPT (fz)	.0008	.0008	.0010	.0016	.0018	.0020	.0022	.0024	.0025	.0026	.0027			
				RPM	8170	6130	4900	4090	3060	2450	2040	1530	1360	1230	980			
	K	15-20	Grey cast iron	0.5D	1.0D	SFM (Vc)	390	390	390	390	390	390	390	390	390	390	390	
						IPT (fz)	.0012	.0013	.0015	.0020	.0029	.0032	.0034	.0037	.0039	.0044	.0049	
						RPM	12630	9470	7580	6310	4740	3790	3160	2370	2100	1890	1520	
31-35		Heat Resistant Super Alloys	0.2D	0.3D	SFM (Vc)	70	70	70	70	70	70	70	70	70	70	70		
					IPT (fz)	.0006	.0006	.0007	.0011	.0012	.0014	.0015	.0017	.0018	.0018	.0019		
					RPM	2230	1670	1340	1110	840	670	560	420	370	330	270		
36-37		Titanium Alloys	0.5D	0.3D	SFM (Vc)	155	155	155	155	155	155	155	155	155	155	155		
					IPT (fz)	.0007	.0007	.0009	.0015	.0016	.0018	.0019	.0021	.0023	.0023	.0024		
					RPM	4990	3740	2990	2490	1870	1500	1250	940	830	750	600		

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.



# YG V7 PLUS A END MILLS

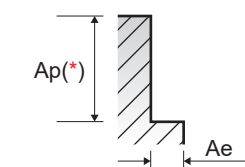
## RECOMMENDED CUTTING CONDITIONS

### GMG12, GMG13, GMG14, GMG15 GMG16, GMG17, GMG18, GMG19 SERIES

#### 6 FLUTE - SIDE CUTTING

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)								
						6.0	8.0	10.0	12.0	16.0	20.0	25.0		
P	1-4	Non-alloy steel	0.05D	2.0D	SFM (Vc)	985	985	985	985	985	985	985	985	
					IPT (fz)	.0027	.0046	.0057	.0068	.0080	.0089	.0091		
					RPM	15920	11940	9550	7960	5970	4780	3820		
	5	0.05D	2.0D	SFM (Vc)	665	665	665	665	665	665	665	665		
				IPT (fz)	.0020	.0034	.0042	.0050	.0059	.0066	.0069			
				RPM	10770	8080	6460	5390	4040	3230	2590			
	6-7	Low alloy steel	0.05D	2.0D	SFM (Vc)	985	985	985	985	985	985	985	985	
					IPT (fz)	.0027	.0046	.0057	.0068	.0080	.0089	.0091		
					RPM	15920	11940	9550	7960	5970	4780	3820		
	8-9	0.05D	2.0D	SFM (Vc)	665	665	665	665	665	665	665	665		
				IPT (fz)	.0020	.0034	.0042	.0050	.0059	.0066	.0069			
				RPM	10770	8080	6460	5390	4040	3230	2590			
10-11.1	High alloyed steel, and tool steel	0.05D	2.0D	SFM (Vc)	330	330	330	330	330	330	330	330		
				IPT (fz)	.0016	.0028	.0035	.0041	.0048	.0054	.0057			
				RPM	5310	3980	3180	2650	1990	1590	1270			
M	12-13	0.05D	2.0D	SFM (Vc)	700	700	700	700	700	700	700	700		
				IPT (fz)	.0019	.0033	.0041	.0049	.0058	.0064	.0066			
				RPM	11300	8480	6780	5650	4240	3390	2710			
	14.1	Stainless steel	0.05D	2.0D	SFM (Vc)	480	480	480	480	480	480	480	480	
					IPT (fz)	.0016	.0028	.0035	.0041	.0048	.0054	.0056		
					RPM	7800	5850	4680	3900	2920	2340	1870		
	14.2	0.05D	2.0D	SFM (Vc)	440	440	440	440	440	440	440	440		
				IPT (fz)	.0016	.0028	.0035	.0041	.0048	.0054	.0056			
				RPM	7110	5330	4270	3550	2670	2130	1710			
	K	15-20	Grey cast iron	0.05D	2.0D	SFM (Vc)	740	740	740	740	740	740	740	740
						IPT (fz)	.0032	.0055	.0068	.0082	.0095	.0106	.0110	
						RPM	11940	8950	7160	5970	4480	3580	2870	
31-35		Heat Resistant Super Alloys	0.05D	2.0D	SFM (Vc)	110	110	110	110	110	110	110	110	
					IPT (fz)	.0013	.0022	.0028	.0032	.0038	.0044	.0045		
					RPM	1750	1310	1050	880	660	530	420		
36-37		Titanium Alloys	0.05D	2.0D	SFM (Vc)	380	380	380	380	380	380	380	380	
					IPT (fz)	.0013	.0022	.0028	.0033	.0038	.0045	.0046		
					RPM	6150	4620	3690	3080	2310	1850	1480		



(\*) : If product's Length of Cut(L.O.C) is below 2D, it must be applied L.O.C x 90%

# YG V7 PLUS A END MILLS

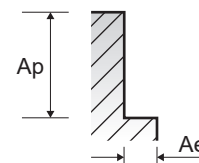
## RECOMMENDED CUTTING CONDITIONS

### GMH56, GMH58, GMH57, GMH59 SERIES

#### 6 FLUTE CHIP SPLITTER - SIDE CUTTING

SFM(Vc) = ft./min.  
 IPT(fz) = in./tooth  
 RPM = rev./min.  
 IPM(Feed) = in./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)						
						6.0	8.0	10.0	12.0	16.0	20.0	25.0
P	1-4	Non-alloy steel	0.05D	3.0D	SFM(Vc)	985	985	985	985	985	985	985
					IPT(fz)	.0027	.0046	.0057	.0068	.0080	.0089	.0091
					RPM	15920	11940	9550	7960	5970	4780	3820
					IPM(Feed)	256	327	325	325	285	254	209
	5	Low alloy steel	0.05D	3.0D	SFM(Vc)	665	665	665	665	665	665	665
					IPT(fz)	.0020	.0034	.0042	.0050	.0059	.0066	.0069
					RPM	10770	8080	6460	5390	4040	3230	2590
					IPM(Feed)	127	162	162	163	142	127	106
	6-7	Low alloy steel	0.05D	3.0D	SFM(Vc)	985	985	985	985	985	985	985
					IPT(fz)	.0027	.0046	.0057	.0068	.0080	.0089	.0091
					RPM	15920	11940	9550	7960	5970	4780	3820
					IPM(Feed)	256	327	325	325	285	254	209
8-9	Low alloy steel	0.05D	3.0D	SFM(Vc)	665	665	665	665	665	665	665	
				IPT(fz)	.0020	.0034	.0042	.0050	.0059	.0066	.0069	
				RPM	10770	8080	6460	5390	4040	3230	2590	
				IPM(Feed)	127	162	162	163	142	127	106	
10-11.1	High alloyed steel, and tool steel	0.05D	3.0D	SFM(Vc)	330	330	330	330	330	330	330	
				IPT(fz)	.0016	.0028	.0035	.0041	.0048	.0054	.0057	
				RPM	5310	3980	3180	2650	1990	1590	1270	
				IPM(Feed)	51	67	66	66	58	52	43	
M	12-13	Stainless steel	0.05D	3.0D	SFM(Vc)	700	700	700	700	700	700	700
					IPT(fz)	.0019	.0033	.0041	.0049	.0058	.0064	.0066
					RPM	11300	8480	6780	5650	4240	3390	2710
					IPM(Feed)	131	168	167	167	146	130	108
	14.1	Stainless steel	0.05D	3.0D	SFM(Vc)	480	480	480	480	480	480	480
					IPT(fz)	.0016	.0028	.0035	.0041	.0048	.0054	.0056
					RPM	7800	5850	4680	3900	2920	2340	1870
					IPM(Feed)	76	98	97	97	85	76	63
	14.2	Stainless steel	0.05D	3.0D	SFM(Vc)	440	440	440	440	440	440	440
					IPT(fz)	.0016	.0028	.0035	.0041	.0048	.0054	.0056
					RPM	7110	5330	4270	3550	2670	2130	1710
					IPM(Feed)	69	89	89	88	77	69	57
K	15-20	Grey cast iron	0.05D	3.0D	SFM(Vc)	740	740	740	740	740	740	740
					IPT(fz)	.0032	.0055	.0068	.0082	.0095	.0106	.0110
					RPM	11940	8950	7160	5970	4480	3580	2870
					IPM(Feed)	230	294	292	293	256	228	188
S	31-35	Heat Resistant Super Alloys	0.05D	3.0D	SFM(Vc)	110	110	110	110	110	110	110
					IPT(fz)	.0013	.0022	.0028	.0032	.0038	.0044	.0045
					RPM	1750	1310	1050	880	660	530	420
					IPM(Feed)	14	17	17	17	15	14	11
	36-37	Titanium Alloys	0.05D	3.0D	SFM(Vc)	380	380	380	380	380	380	380
					IPT(fz)	.0013	.0022	.0028	.0033	.0038	.0045	.0046
					RPM	6150	4620	3690	3080	2310	1850	1480
					IPM(Feed)	48	60	61	60	53	49	41





Being the best through innovation



**SOLID CARBIDE**

# V7 MILL INOX END MILLS

- Silent Cutting of Stainless Steels up to HRc40.  
Designed as Variable Leads, YG-1's Patent.







PLAIN SHANK **EMC75** SERIES  
 FLAT SHANK **EMD60** SERIES

**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



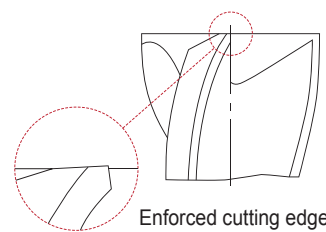
◆ U.S.A Stock

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



Enforced cutting edge

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	○	○	○	◎	○	○	○	◎	○	◎	◎	◎						

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	◎	◎				



PLAIN SHANK **EMC76** SERIES  
 FLAT SHANK **EMD61** SERIES

**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



◆ U.S.A Stock

Unit : Inch

EDP No.		Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT					
EMC76008	-	R.015	1/8	1/8	1/8	1-1/2
EMC76010	-	R.015	5/32	3/16	3/16	2
EMC76012	-	R.015	3/16	3/16	3/16	2
EMC76014	-	R.020	7/32	1/4	1/4	2
EMC76016	-	R.020	1/4	1/4	1/4	2
EMC76020	-	R.020	5/16	5/16	5/16	2
-	EMD61024	R.020	3/8	3/8	3/8	2
-	EMD61028	R.020	7/16	7/16	7/16	2-1/2
-	EMD61032	R.030	1/2	1/2	1/2	2-1/2
-	EMD61040	R.040	5/8	5/8	5/8	3
-	EMD61048	R.040	3/4	3/4	3/4	3
-	EMD61064	R.040	1	1	1	4

▶ Shanks 3/8" and over come standard with Flats.

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	○	○	○	◎	○	○	○	◎	○	◎	◎	◎						

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	◎	◎				

**Y/G V7 MILL INOX END MILLS**

PLAIN SHANK **EMB12** SERIES  
 FLAT SHANK **EMB37** SERIES

**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



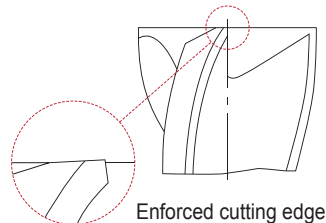
◆ U.S.A Stock

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~-0.0012	h6



◎ : Excellent ○ : Good

ISO Material Description	P										M				K			H		
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	○	○	○	◎	○	○	○	◎	○	◎	◎	◎	◎	◎	◎	◎	◎	◎

**Y/G V7 MILL INOX END MILLS**

PLAIN SHANK **EMB13** SERIES  
 FLAT SHANK **EMB38** SERIES

**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



◆ U.S.A Stock

Unit : Inch

EDP No.		Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT					
EMB13008	-	R.015	1/8	1/8	3/8	1-1/2
EMB13012	-	R.015	3/16	3/16	7/16	2
EMB13016	-	R.020	1/4	1/4	1/2	2-1/2
EMB13020	-	R.020	5/16	5/16	13/16	2-1/2
-	EMB38024	R.020	3/8	3/8	7/8	2-1/2
-	EMB38028	R.020	7/16	7/16	1	2-3/4
-	EMB38032	R.030	1/2	1/2	1	3
-	EMB38036	R.030	9/16	9/16	1-1/8	3-1/2
-	EMB38040	R.040	5/8	5/8	1-1/4	3-1/2
-	EMB38048	R.040	3/4	3/4	1-1/2	4
-	EMB38064	R.040	1	1	1-1/2	4

▶ Shanks 3/8" and over come standard with Flats.

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-0.0012	h6

◎ : Excellent ○ : Good

ISO Material Description	P										M				K			H		
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	○	○	○	◎	○	○	○	◎	○	◎	◎	◎	◎	◎	◎	◎	◎	◎



# YG V7 MILL INOX END MILLS

PLAIN SHANK FLAT SHANK **EMB20** SERIES

## CARBIDE, 4 FLUTE EXTENDED LENGTH, LONG REACH

- ▶ Higher speeds, deeper cuts and metal removal rates.
- ▶ Improved surface finishes
- ▶ New "NANO" AlTiN coating



◆ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Reach Length	Overall Length
	PLAIN	FLAT				
<b>EMB20160</b>	-	1/4	1/4	3/8	1-1/4	4
-	<b>EMB20240</b>	3/8	3/8	1/2	1-7/8	4
-	<b>EMB20320</b>	1/2	1/2	5/8	2-1/4	4
-	<b>EMB20400</b>	5/8	5/8	3/4	2-1/4	4-1/8
-	<b>EMB20401</b>	5/8	5/8	3/4	3-1/4	5
-	<b>EMB20480</b>	3/4	3/4	1	2-1/4	4-1/4
-	<b>EMB20481</b>	3/4	3/4	1	3-1/4	5-1/2
-	<b>EMB20640</b>	1	1	1-1/8	2-1/4	4-1/2
-	<b>EMB20641</b>	1	1	1-1/8	3-1/4	5-1/2
-	<b>EMB20642</b>	1	1	1-1/8	4-1/4	6-1/2

▶ Shanks 3/8" and over come standard with Flats.

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6

◎ : Excellent ○ : Good

ISO Material Description	P										M				K			H		
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	○	○	○	◎	○	○	○	◎	○	◎	◎	◎						

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	◎	◎				

# YG V7 MILL INOX END MILLS

PLAIN SHANK **EMB78** SERIES  
FLAT SHANK **EMB79** SERIES

## 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



◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	PLAIN	FLAT				
<b>EMB78008</b>	-	R1/16	1/8	1/8	3/8	1-1/2
<b>EMB78010</b>	-	R5/64	5/32	3/16	7/16	2
<b>EMB78012</b>	-	R3/32	3/16	3/16	7/16	2
<b>EMB78016</b>	-	R1/8	1/4	1/4	1/2	2-1/2
<b>EMB78020</b>	-	R5/32	5/16	5/16	13/16	2-1/2
-	<b>EMB79024</b>	R3/16	3/8	3/8	7/8	2-1/2
-	<b>EMB79032</b>	R1/4	1/2	1/2	1	3
-	<b>EMB79040</b>	R5/16	5/8	5/8	1-1/4	3-1/2
-	<b>EMB79048</b>	R3/8	3/4	3/4	1-1/2	4
-	<b>EMB79064</b>	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

ISO Material Description	P										M				K			H		
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	○	○	○	◎	○	○	○	◎	○	◎	◎	◎						

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	◎	◎				

# YG V7 MILL INOX END MILLS

PLAIN SHANK **EMB76** SERIES  
 FLAT SHANK **EMB77** SERIES

## 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



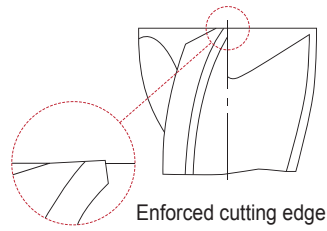
◆ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	PLAIN	FLAT			
EMB76016	-	1/4	1/4	1/2	2-1/2
EMB76020	-	5/16	5/16	13/16	2-1/2
EMB76024		3/8	3/8	7/8	2-1/2
-		1/2	1/2	1	3
-		9/16	9/16	1-1/8	3-1/2
-		5/8	5/8	1-1/4	3-1/2
-		3/4	3/4	1-1/2	4
-		1	1	1-1/2	4

▶ Shanks 3/8" and over come standard with Flats.

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-0.012	h6



◎ : Excellent ○ : Good

ISO Material Description	P											M				K				
	Non-alloy steel				Low alloy steel				High alloyed steel, and tool steel			Stainless steel		Grey cast iron	Nodular cast iron		Malleable cast iron			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	○	○	○	◎	○	○	○	◎	○	◎	◎	◎						

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron							
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	◎	◎				

# YG V7 MILL INOX END MILLS

PLAIN SHANK **EMB41** SERIES  
 FLAT SHANK **EMB42** SERIES

## 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

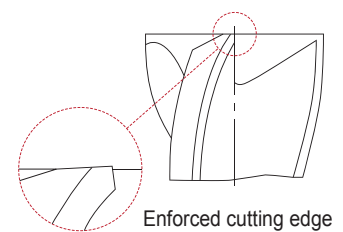


◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	
	PLAIN	FLAT				
EMB41030	EMB42030	3.0	.1181	6	7	54
EMB41040	EMB42040	4.0	.1575	6	8	54
EMB41050	EMB42050	5.0	.1969	6	10	54
EMB41060	EMB42060	6.0	.2362	6	10	54
EMB41080	EMB42080	8.0	.3150	8	12	58
EMB41100	EMB42100	10.0	.3937	10	14	66
EMB41120	EMB42120	12.0	.4724	12	16	73
EMB41140	EMB42140	14.0	.5512	14	18	75
EMB41160	EMB42160	16.0	.6299	16	22	82
EMB41180	EMB42180	18.0	.7087	18	24	84
EMB41200	EMB42200	20.0	.7874	20	26	92

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.03	h6



◎ : Excellent ○ : Good

ISO Material Description	P											M				K				
	Non-alloy steel				Low alloy steel				High alloyed steel, and tool steel			Stainless steel		Grey cast iron	Nodular cast iron		Malleable cast iron			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	○	○	○	◎	○	○	○	◎	○	◎	◎	◎						

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron							
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	◎	◎				

# YG V7 MILL INOX END MILLS

PLAIN SHANK **EMB43** SERIES  
 FLAT SHANK **EMB44** SERIES

## 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



p.C581-C582

◇ Call for Availability

Unit : mm

EDP No.		Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R	Metric	Inch			
EMB43030	EMB44030	R0.3	3.0	.1181	6	7	54
EMB43040	EMB44040	R0.3	4.0	.1575	6	8	54
EMB43050	EMB44050	R0.3	5.0	.1969	6	10	54
EMB43060	EMB44060	R0.5	6.0	.2362	6	10	54
EMB43080	EMB44080	R0.5	8.0	.3150	8	12	58
EMB43100	EMB44100	R0.5	10.0	.3937	10	14	66
EMB43120	EMB44120	R0.7	12.0	.4724	12	16	73
EMB43140	EMB44140	R0.7	14.0	.5512	14	18	75
EMB43160	EMB44160	R1.0	16.0	.6299	16	22	82
EMB43180	EMB44180	R1.0	18.0	.7087	18	24	84
EMB43200	EMB44200	R1.0	20.0	.7874	20	26	92

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.03	h6

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	○	○	○	◎	○	○	○	◎	○	◎	◎	◎						

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials	Heat Resistant Super Alloys				Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron							
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	◎	◎				

# YG V7 MILL INOX END MILLS

PLAIN SHANK **EMB14** SERIES  
 FLAT SHANK **EMB39** SERIES

## 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



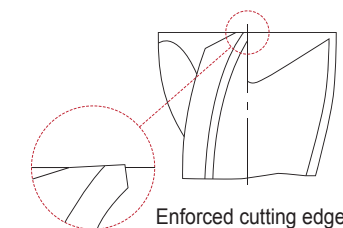
p.C581-C582

◇ Call for Availability

Unit : mm

EDP No.		Mill Diameter		Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	Metric	Inch			
EMB14030	-	3.0	.1181	6	8	57
EMB14040	-	4.0	.1575	6	11	57
EMB14050	-	5.0	.1969	6	13	57
EMB14060	-	6.0	.2362	6	13	57
EMB14080	-	8.0	.3150	8	19	63
EMB14100	-	10.0	.3937	10	22	72
-	EMB39120	12.0	.4724	12	26	83
-	EMB39140	14.0	.5512	14	26	83
-	EMB39160	16.0	.6299	16	32	92
-	EMB39180	18.0	.7087	18	32	92
-	EMB39200	20.0	.7874	20	38	104
-	EMB39250	25.0	.9800	25	38	104

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.03	h6



◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	○	○	○	◎	○	○	○	◎	○	◎	◎	◎						

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials	Heat Resistant Super Alloys				Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron							
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	◎	◎				

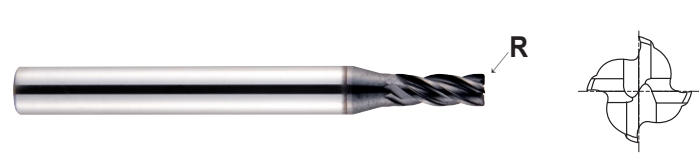


# YG V7 MILL INOX END MILLS

PLAIN SHANK **EMB15** SERIES  
 FLAT SHANK **EMB40** SERIES

## 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



CARBIDE 4 PLAIN FLAT p.C581-C582

◇ Call for Availability

Unit : mm

EDP No.	Corner Radius		Mill Diameter		Shank Diameter	Length of Cut	Overall Length	
	PLAIN	FLAT	R	Metric				Inch
EMB15030	-	-	R0.3	3.0	.1181	6	8	57
EMB15040	-	-	R0.3	4.0	.1575	6	11	57
EMB15050	-	-	R0.3	5.0	.1969	6	13	57
EMB15060	-	-	R0.5	6.0	.2362	6	13	57
EMB15080	-	-	R0.5	8.0	.3150	8	19	63
EMB15100	-	-	R0.5	10.0	.3937	10	22	72
-	EMB40120	-	R0.7	12.0	.4724	12	26	83
-	EMB40140	-	R0.7	14.0	.5512	14	26	83
-	EMB40160	-	R1.0	16.0	.6299	16	32	92
-	EMB40180	-	R1.0	18.0	.7087	18	32	92
-	EMB40200	-	R1.0	20.0	.7874	20	38	104
-	EMB40250	-	R1.0	25.0	.9800	25	38	104

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.03	h6

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	32	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	○	○	○	◎	○	○	○	◎	○	◎	◎	◎						

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron							
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	15	30	25	38	34	15	30	25	38	34	55	60	42	55							
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	◎	◎				

# YG V7 MILL INOX END MILLS

PLAIN SHANK **EMB74** SERIES  
 FLAT SHANK **EMB75** SERIES

## 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



CARBIDE 4 R ±0.01 PLAIN FLAT p.C584

◇ Call for Availability

Unit : mm

EDP No.		Radius of Ball Nose	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R (±0.01)	Metric	Inch			
EMB74030	EMB75030	R1.5	3.0	.1181	6	8	57
EMB74040	EMB75040	R2.0	4.0	.1575	6	11	57
EMB74050	EMB75050	R2.5	5.0	.1969	6	13	57
EMB74060	EMB75060	R3.0	6.0	.2362	6	13	57
EMB74080	EMB75080	R4.0	8.0	.3150	8	19	63
EMB74100	EMB75100	R5.0	10.0	.3937	10	22	72
EMB74120	EMB75120	R6.0	12.0	.4724	12	26	83
EMB74160	EMB75160	R8.0	16.0	.6299	16	32	92
EMB74200	EMB75200	R10.0	20.0	.7874	20	38	104
EMB74250	EMB75250	R12.5	25.0	.9800	25	38	104

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.03	h6

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	32	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	○	○	○	◎	○	○	○	◎	○	◎	◎	◎						

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron							
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	15	30	25	38	34	15	30	25	38	34	55	60	42	55							
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	◎	◎				

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CBN END MILLS

CBN END MILLS

i-Xmill END MILLS

i-Xmill END MILLS

i-SMART MODULAR END MILLS

i-SMART MODULAR END MILLS

X5070 END MILLS

X5070 END MILLS

4G MILL END MILLS

4G MILL END MILLS

X-POWER PRO END MILLS

X-POWER PRO END MILLS

TitaNox-POWER END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

JET-POWER END MILLS

V7 PLUS A END MILLS

V7 PLUS A END MILLS

V7 MILL INOX

V7 MILL INOX

ALU-POWER HPC END MILLS

ALU-POWER HPC END MILLS

ALU-POWER END MILLS

ALU-POWER END MILLS

D-POWER GRAPHITE END MILLS

D-POWER GRAPHITE END MILLS

STANDARD CARBIDE

STANDARD CARBIDE

ONLY ONE COATED PM60 END MILLS

ONLY ONE COATED PM60 END MILLS

SINE-POWER

SINE-POWER

TANK-POWER END MILLS

TANK-POWER END MILLS

STANDARD COBALT & HSS

STANDARD COBALT & HSS

TECHNICAL DATA

TECHNICAL DATA

# YG V7 MILL INOX END MILLS

PLAIN SHANK **EMB72** SERIES  
FLAT SHANK **EMB73** SERIES

## 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

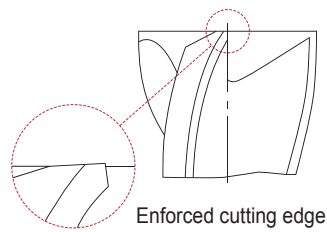


◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	
	PLAIN	FLAT				Metric
EMB72060	EMB73060	6.0	.2362	6	13	57
EMB72080	EMB73080	8.0	.3150	8	19	63
EMB72100	EMB73100	10.0	.3937	10	22	72
EMB72120	EMB73120	12.0	.4724	12	26	83
EMB72140	EMB73140	14.0	.5512	14	26	83
EMB72160	EMB73160	16.0	.6299	16	32	92
EMB72180	EMB73180	18.0	.7087	18	32	92
EMB72200	EMB73200	20.0	.7874	20	38	104
EMB72250	EMB73250	25.0	.9800	25	38	104

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.03	h6



◎: Excellent ○: Good

ISO	P											M				K						
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230		
Recommend	◎	◎	○	○	○	◎	○	○	○	◎	○	◎	◎	◎								

ISO	N				S				H												
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys		Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend											○	○	○	○	○	◎	◎				

# YG V7 MILL INOX END MILLS

## RECOMMENDED CUTTING CONDITIONS

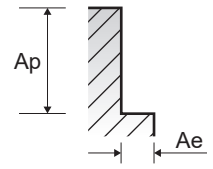
### EMC75, EMD60, EMC76, EMD61, EMB12 EMB37, EMB13, EMB38, EMB20 SERIES

#### 4 FLUTES - SIDE CUTTING

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)										
						1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	3/4	1
P	1-2	Non-alloy steel	0.5D	1.5D (1.2D) [0.6D]	SFM(Vc)	415	415	415	415	415	460	460	460	460	460	460
					IPT(fz)	.0002	.0003	.0005	.0006	.0011	.0015	.0019	.0021	.0023	.0026	.0025
	RPM	12735	8490	6370	5100	4245	4010	3500	3110	2800	2340	1755				
	IPM(Feed)	10	11	12	13	18	25	26	26	26	24	17				
	6	Low alloy steel	0.5D	1.5D (1.2D) [0.6D]	SFM(Vc)	415	415	415	415	415	460	460	460	460	460	460
					IPT(fz)	.0002	.0003	.0005	.0006	.0011	.0015	.0019	.0021	.0023	.0026	.0025
RPM	12735	8490	6370	5100	4245	4010	3500	3110	2800	2340	1755					
IPM(Feed)	10	11	12	13	18	25	26	26	26	24	17					
10	High alloyed steel, and tool steel	0.5D	1.5D (1.2D) [0.6D]	SFM(Vc)	415	415	415	415	415	460	460	460	460	460	460	
				IPT(fz)	.0002	.0003	.0005	.0006	.0011	.0015	.0019	.0021	.0023	.0026	.0025	
RPM	12735	8490	6370	5100	4245	4010	3500	3110	2800	2340	1755					
IPM(Feed)	10	11	12	13	18	25	26	26	26	24	17					
M	12-13	Stainless steel	0.5D	1.5D (1.2D) [0.6D]	SFM(Vc)	440	590	445	440	440	440	440	440	440	440	440
					IPT(fz)	.0001	.0002	.0004	.0005	.0009	.0014	.0016	.0018	.0020	.0022	.0022
	RPM	13475	12000	6815	5390	4490	3850	3370	2990	2700	2250	1685				
	IPM(Feed)	8	8	10	11	15	21	21	21	21	19	15				
	14.1	Stainless steel	0.5D	1.5D (1.2D) [0.6D]	SFM(Vc)	315	315	315	315	315	315	315	315	315	315	315
					IPT(fz)	.0002	.0003	.0005	.0007	.0012	.0019	.0022	.0025	.0028	.0030	.0031
RPM	9625	6385	4810	3850	3210	2750	2400	2140	1925	1600	1200					
IPM(Feed)	7	8	10	11	15	21	21	21	21	19	15					
S	31-35	Heat Resistant Super Alloys	0.35D	1.0D [0.6D]	SFM(Vc)	85	85	85	85	85	85	85	85	85	85	80
					IPT(fz)	.0002	.0003	.0005	.0007	.0012	.0019	.0022	.0025	.0027	.0031	.0034
	RPM	2565	1685	1285	1025	855	735	640	570	510	425	315				
	IPM(Feed)	2	2	3	3	4	6	6	6	6	5	4				
	36-37	Titanium Alloys	0.5D	1.5D (1.2D) [0.6D]	SFM(Vc)	270	270	270	270	270	275	270	270	270	275	270
					IPT(fz)	.0002	.0004	.0006	.0008	.0014	.0022	.0025	.0029	.0032	.0035	.0036
RPM	8320	5550	4160	3330	2770	2380	2080	1850	1660	1390	1040					
IPM(Feed)	8	8	10	11	15	21	21	21	21	19	15					

\*( ) : 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.

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# YG V7 MILL INOX END MILLS

## RECOMMENDED CUTTING CONDITIONS

# YG V7 MILL INOX END MILLS

## RECOMMENDED CUTTING CONDITIONS

### EMC75, EMD60, EMC76, EMD61, EMB12 EMB37, EMB13, EMB38, EMB20 SERIES

#### 4 FLUTE - SLOTTING

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

### EMB41, EMB42, EMB43, EMB44 EMB14, EMB39, EMB15, EMB40 SERIES

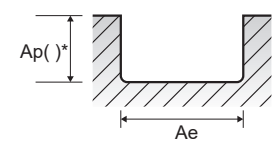
#### 4 FLUTES - SIDE CUTTING

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)														
						1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	3/4	1				
P	1-2	Non-alloy steel	1.0D	1.0D [0.6D]	SFM(Vc)	415	415	415	415	415	460	460	460	460	460	460	460			
					IPT(fz)	.0002	.0003	.0005	.0006	.0011	.0015	.0019	.0021	.0023	.0026	.0025				
					RPM	12735	8490	6370	5100	4245	4010	3500	3110	2800	2340	1755				
					IPM(Feed)	10	11	12	13	18	25	26	26	26	24	17				
					SFM(Vc)	415	415	415	415	415	460	460	460	460	460	460				
					IPT(fz)	.0002	.0003	.0005	.0006	.0011	.0015	.0019	.0021	.0023	.0026	.0025				
	6	Low alloy steel	1.0D	1.0D [0.6D]	SFM(Vc)	415	415	415	415	415	460	460	460	460	460	460				
					IPT(fz)	.0002	.0003	.0005	.0006	.0011	.0015	.0019	.0021	.0023	.0026	.0025				
					RPM	12735	8490	6370	5100	4245	4010	3500	3110	2800	2340	1755				
					IPM(Feed)	10	11	12	13	18	25	26	26	26	24	17				
					SFM(Vc)	415	415	415	415	415	460	460	460	460	460	460				
					IPT(fz)	.0002	.0003	.0005	.0006	.0011	.0015	.0019	.0021	.0023	.0026	.0025				
10	High alloyed steel, and tool steel	1.0D	1.0D [0.6D]	SFM(Vc)	415	415	415	415	415	460	460	460	460	460	460					
				IPT(fz)	.0002	.0003	.0005	.0006	.0011	.0015	.0019	.0021	.0023	.0026	.0025					
				RPM	12735	8490	6370	5100	4245	4010	3500	3110	2800	2340	1755					
				IPM(Feed)	10	11	12	13	18	25	26	26	26	24	17					
				SFM(Vc)	440	590	445	440	440	440	440	440	440	440	440					
				IPT(fz)	.0001	.0002	.0004	.0005	.0009	.0014	.0016	.0018	.0020	.0022	.0022					
M	12-13	Stainless steel	1.0D	1.0D [0.6D]	SFM(Vc)	440	590	445	440	440	440	440	440	440	440	440				
					IPT(fz)	.0001	.0002	.0004	.0005	.0009	.0014	.0016	.0018	.0020	.0022	.0022				
					RPM	13475	12000	6815	5390	4490	3850	3370	2990	2700	2250	1685				
	IPM(Feed)				8	8	10	11	15	21	21	21	21	19	15					
	14.1				Stainless steel	1.0D	1.0D [0.6D]	SFM(Vc)	315	315	315	315	315	315	315	315	315	315	315	
								IPT(fz)	.0002	.0003	.0005	.0007	.0012	.0019	.0022	.0025	.0028	.0030	.0031	
RPM		9625	6385	4810				3850	3210	2750	2400	2140	1925	1600	1200					
IPM(Feed)	7	8	10	11				15	21	21	21	21	19	15						
S	31-35	Heat Resistant Super Alloys	1.0D	0.5D				SFM(Vc)	85	85	85	85	85	85	85	85	85	85	80	
								IPT(fz)	.0002	.0003	.0005	.0007	.0012	.0019	.0022	.0025	.0027	.0031	.0034	
					RPM	2565	1685	1285	1025	855	735	640	570	510	425	315				
	IPM(Feed)				2	2	3	3	4	6	6	6	6	5	4					
	36-37				Titanium Alloys	1.0D	1.0D [0.6D]	SFM(Vc)	270	270	270	270	270	275	270	270	270	275	270	
								IPT(fz)	.0002	.0004	.0006	.0008	.0014	.0022	.0025	.0029	.0032	.0035	.0036	
RPM		8320	5550	4160				3330	2770	2380	2080	1850	1660	1390	1040					
IPM(Feed)	8	8	10	11				15	21	21	21	21	19	15						

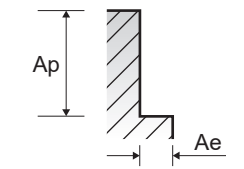
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)														
						3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	25.0			
P	1-2	Non-alloy steel	0.5D	1.5D (1.2D)	SFM(Vc)	415	415	415	415	415	460	460	460	460	460	460	460			
					IPT(fz)	.0002	.0003	.0005	.0006	.0011	.0015	.0018	.0019	.0021	.0023	.0026	.0025			
					RPM	13480	10110	8090	6740	5050	4460	3710	3180	2790	2480	2230	1780			
					IPM(Feed)	11	13	15	17	22	27	27	24	23	23	23	18			
					SFM(Vc)	415	415	415	415	415	460	460	460	460	460	460	460			
					IPT(fz)	.0002	.0003	.0005	.0006	.0011	.0015	.0018	.0019	.0021	.0023	.0026	.0025			
	6	Low alloy steel	0.5D	1.5D (1.2D)	SFM(Vc)	415	415	415	415	415	460	460	460	460	460	460				
					IPT(fz)	.0002	.0003	.0005	.0006	.0011	.0015	.0018	.0019	.0021	.0023	.0026	.0025			
					RPM	13480	10110	8090	6740	5050	4460	3710	3180	2790	2480	2230	1780			
					IPM(Feed)	11	13	15	17	22	27	27	24	23	23	23	18			
					SFM(Vc)	415	415	415	415	415	460	460	460	460	460	460	460			
					IPT(fz)	.0002	.0003	.0005	.0006	.0011	.0015	.0018	.0019	.0021	.0023	.0026	.0025			
10	High alloyed steel, and tool steel	0.5D	1.5D (1.2D)	SFM(Vc)	415	415	415	415	415	460	460	460	460	460	460					
				IPT(fz)	.0002	.0003	.0005	.0006	.0011	.0015	.0018	.0019	.0021	.0023	.0026	.0025				
				RPM	13480	10110	8090	6740	5050	4460	3710	3180	2790	2480	2230	1780				
				IPM(Feed)	11	13	15	17	22	27	27	24	23	23	23	18				
				SFM(Vc)	440	590	445	440	440	440	440	440	440	440	440	440				
				IPT(fz)	.0001	.0002	.0004	.0005	.0009	.0014	.0016	.0018	.0020	.0022	.0022	.0022				
M	12-13	Stainless steel	0.5D	1.5D (1.2D)	SFM(Vc)	440	590	445	440	440	440	440	440	440	440	440				
					IPT(fz)	.0001	.0002	.0004	.0005	.0009	.0014	.0016	.0018	.0020	.0022	.0022				
					RPM	14260	14260	8660	7130	5350	4280	3570	3060	2670	2380	2140	1710			
	IPM(Feed)				8	10	12	14	18	23	22	20	19	19	19	15				
	14.1				Stainless steel	0.5D	1.5D (1.2D)	SFM(Vc)	315	315	315	315	315	315	315	315	315	315	315	
								IPT(fz)	.0002	.0003	.0005	.0007	.0011	.0019	.0022	.0023	.0025	.0028	.0030	.0031
RPM		10190	7600	6110				5100	3820	3060	2550	2180	1910	1700	1530	1220				
IPM(Feed)	8	10	12	14				17	23	22	20	19	19	19	15					
S	31-35	Heat Resistant Super Alloys	0.35D	1.0D				SFM(Vc)	85	85	85	85	85	85	85	85	85	85	80	
								IPT(fz)	.0002	.0003	.0005	.0007	.0012	.0019	.0022	.0024	.0025	.0027	.0030	.0034
					RPM	2720	2010	1630	1360	1020	820	680	580	510	450	410	320			
	IPM(Feed)				2	2	3	4	5	6	6	6	5	5	5	4				
	36-37				Titanium Alloys	0.5D	1.5D (1.2D)	SFM(Vc)	315	315	315	315	270	315	315	315	315	315	315	
								IPT(fz)	.0002	.0003	.0005	.0007	.0014	.0019	.0022	.0023	.0025	.0028	.0030	.0031
RPM		10190	7600	6110				5100	3280	3060	2550	2180	1910	1700	1530	1220				
IPM(Feed)	8	10	12	14				18	23	22	20	19	19	19	15					

\*( ) : 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.

\*( ) : Short length Type



\*1.2 x D Axial cutting depth should be applied for Short length series DIA over 5/16mm



HSS

HSS

# YG V7 MILL INOX END MILLS

## RECOMMENDED CUTTING CONDITIONS

# YG V7 MILL INOX END MILLS

## RECOMMENDED CUTTING CONDITIONS

### EMB41, EMB42, EMB43, EMB44 EMB14, EMB39, EMB15, EMB40 SERIES

#### 4 FLUTE - SLOTTING

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

### EMB78, EMB79 SERIES

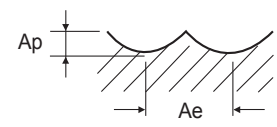
#### 4 FLUTES - PLANE

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

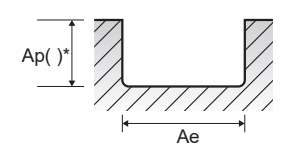
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)												
						3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	25.0	
P	1-2	Non-alloy steel	1.0D	1.0D	SFM	415	415	415	415	415	460	460	460	460	460	460	460	460
					IPT	.0002	.0003	.0005	.0006	.0011	.0015	.0018	.0019	.0021	.0023	.0026	.0025	
					RPM	13480	10110	8090	6740	5050	4460	3710	3180	2790	2480	2230	1780	
					IPM	11	13	15	17	22	27	27	24	23	23	23	18	
					SFM	415	415	415	415	415	460	460	460	460	460	460	460	
					IPT	.0002	.0003	.0005	.0006	.0011	.0015	.0018	.0019	.0021	.0023	.0026	.0025	
	6	Low alloy steel	1.0D	1.0D	SFM	415	415	415	415	415	460	460	460	460	460	460	460	
					IPT	.0002	.0003	.0005	.0006	.0011	.0015	.0018	.0019	.0021	.0023	.0026	.0025	
					RPM	13480	10110	8090	6740	5050	4460	3710	3180	2790	2480	2230	1780	
					IPM	11	13	15	17	22	27	27	24	23	23	23	18	
					SFM	415	415	415	415	415	460	460	460	460	460	460	460	
					IPT	.0002	.0003	.0005	.0006	.0011	.0015	.0018	.0019	.0021	.0023	.0026	.0025	
10	High alloyed steel, and tool steel	1.0D	1.0D	SFM	415	415	415	415	415	460	460	460	460	460	460	460		
				IPT	.0002	.0003	.0005	.0006	.0011	.0015	.0018	.0019	.0021	.0023	.0026	.0025		
				RPM	13480	10110	8090	6740	5050	4460	3710	3180	2790	2480	2230	1780		
				IPM	11	13	15	17	22	27	27	24	23	23	23	18		
				SFM	415	415	415	415	415	460	460	460	460	460	460	460		
				IPT	.0002	.0003	.0005	.0006	.0011	.0015	.0018	.0019	.0021	.0023	.0026	.0025		
M	12-13	Stainless steel	1.0D	1.0D	SFM	440	590	445	440	440	440	440	440	440	440	440	440	
					IPT	.0001	.0002	.0004	.0005	.0009	.0013	.0016	.0017	.0018	.0020	.0022	.0022	
					RPM	14260	14260	8660	7130	5350	4280	3570	3060	2670	2380	2140	1710	
					IPM	8	10	12	14	18	23	22	20	19	19	19	15	
					SFM	315	315	315	315	315	315	315	315	315	315	315	315	
					IPT	.0002	.0003	.0005	.0007	.0011	.0019	.0022	.0023	.0025	.0028	.0030	.0031	
	14.1	Stainless steel	1.0D	1.0D	SFM	10190	7600	6110	5100	3820	3060	2550	2180	1910	1700	1530	1220	
					IPT	.0002	.0003	.0005	.0007	.0011	.0019	.0022	.0023	.0025	.0028	.0030	.0031	
					RPM	10190	7600	6110	5100	3820	3060	2550	2180	1910	1700	1530	1220	
					IPM	8	10	12	14	17	22	20	19	19	19	19	15	
					SFM	85	85	85	85	85	85	85	85	85	85	85	80	
					IPT	.0002	.0003	.0005	.0007	.0012	.0019	.0022	.0024	.0025	.0027	.0030	.0034	
S	31-35	Heat Resistant Super Alloys	1.0D	0.5D	SFM	2720	2010	1630	1360	1020	820	680	580	510	450	410	320	
					IPT	.0002	.0003	.0005	.0007	.0012	.0019	.0022	.0024	.0025	.0027	.0030	.0034	
					RPM	2720	2010	1630	1360	1020	820	680	580	510	450	410	320	
					IPM	2	2	3	4	5	6	6	6	5	5	5	4	
					SFM	315	315	315	315	270	315	315	315	315	315	315	315	
					IPT	.0002	.0003	.0005	.0007	.0014	.0019	.0022	.0023	.0025	.0028	.0030	.0031	
	36-37	Titanium Alloys	1.0D	1.0D	SFM	10190	7600	6110	5100	3280	3060	2550	2180	1910	1700	1530	1220	
					IPT	.0002	.0003	.0005	.0007	.0014	.0019	.0022	.0023	.0025	.0028	.0030	.0031	
					RPM	10190	7600	6110	5100	3280	3060	2550	2180	1910	1700	1530	1220	
					IPM	8	10	12	14	18	23	22	20	19	19	19	15	
					SFM	180	180	180	180	180	180	180	180	180	180	180	180	
					IPT	.0005	.0006	.0008	.0012	.0012	.0012	.0012	.0012	.0012	.0012	.0012	.0012	

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)											
						1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	3/4	1	
P	1-2	Non-alloy steel	0.5D	1.0D	SFM	445	445	445	445	445	445	445	445	445	445	445	440
					IPT	.0010	.0012	.0015	.0023	.0024	.0026	.0028	.0028	.0029	.0035	.0039	
					RPM	13530	9020	6770	5410	4510	3870	3380	3010	2710	2260	1690	
					IPM	53	43	41	51	43	40	37	34	32	32	27	
					SFM	445	445	445	445	445	445	445	445	445	445	445	440
					IPT	.0010	.0012	.0015	.0023	.0024	.0026	.0028	.0028	.0029	.0035	.0039	
	6	Low alloy steel	0.5D	1.0D	SFM	445	445	445	445	445	445	445	445	445	445	440	
					IPT	.0010	.0012	.0015	.0023	.0024	.0026	.0028	.0028	.0029	.0035	.0039	
					RPM	13530	9020	6770	5410	4510	3870	3380	3010	2710	2260	1690	
					IPM	53	43	41	51	43	40	37	34	32	32	27	
					SFM	445	445	445	445	445	445	445	445	445	445	445	440
					IPT	.0010	.0012	.0015	.0023	.0024	.0026	.0028	.0028	.0029	.0035	.0039	
10	High alloyed steel, and tool steel	0.5D	1.0D	SFM	445	445	445	445	445	445	445	445	445	445	440		
				IPT	.0010	.0012	.0015	.0023	.0024	.0026	.0028	.0028	.0029	.0035	.0039		
				RPM	13530	9020	6770	5410	4510	3870	3380	3010	2710	2260	1690		
				IPM	53	43	41	51	43	40	37	34	32	32	27		
				SFM	230	230	230	230	230	230	230	230	230	230	230	230	
				IPT	.0006	.0010	.0012	.0016	.0018	.0019	.0020	.0021	.0021	.0023	.0023		
M	12-13	Stainless steel	0.5D	1.0D	SFM	255	255	255	255	255	255	255	255	255	255	255	
					IPT	.0008	.0010	.0016	.0018	.0020	.0021	.0022	.0023	.0024	.0026	.0028	
					RPM	7770	5180	3880	3110	2590	2220	1940	1730	1550	1290	970	
					IPM	24	20	25	22	20	18	17	16	15	13	11	
					SFM	255	255	255	255	255	255	255	255	255	255	255	
					IPT	.0008	.0010	.0016	.0018	.0020	.0021	.0022	.0023	.0024	.0026	.0028	
	14.1	Stainless steel	0.5D	1.0D	SFM	7770	5180	3880	3110	2590	2220	1940	1730	1550	1290	970	
					IPT	.0008	.0010	.0016	.0018	.0020	.0021	.0022	.0023	.0024	.0026	.0028	
					RPM	7770	5180	3880	3110	2590	2220	1940	1730	1550	1290	970	
					IPM	24	20	25	22	20	18	17	16	15	13	11	
					SFM	100	100	100	100	100	100	100	100	100	100	100	
					IPT	.0004	.0004	.0006	.0010	.0011	.0013	.0015	.0017	.0018	.0021	.0020	
S	31-35	Heat Resistant Super Alloys	0.2D	0.3D	SFM	3010	2010	1500	1200	1000	860	750	670	600	500	380	
					IPT	.0004	.0004	.0006	.0010	.0011	.0013	.0015	.0017	.0018	.0021	.0020	
					RPM	3010	2010	1500	1200	1000	860	750	670	600	500	380	
					IPM	5	3	4	5	4	4	5	5	4	4	3	
					SFM	180	180	180	180	180	180	180	180	180	180	180	
					IPT	.0005	.0006	.0008	.0012	.0012	.0012	.0012	.0012	.0012	.0012	.0012	
	36-37	Titanium Alloys	0.5D	1.0D	SFM	5510	3680	2760	2210	1840	1580	1380	1230	1100	920	690	
					IPT	.0005	.0006	.0008	.0012	.0012	.0012	.0012	.0012	.0012	.0012	.0012	
					RPM	5510	3680	2760	2210	1840	1580	1380	1230	1100	920	690	
					IPM	10	9	9	10	9	9	9	8	8	9	7	
					SFM	180	180	180	180	180	180	180	180	180	180	180	
					IPT	.0005	.0006	.0008	.0012	.0012	.0012	.0012	.0012	.0012	.0012	.0012	

SFM = Surface Feet per Minute  
RPM = Revolutions Per Minute  
IPT = Inches Per Tooth  
IPM = Inches Per Minute  
Ap : Inch (Axial Depth of Cut)  
Ae : Inch (Radial Depth of Cut)



SFM = Surface Feet per Minute  
RPM = Revolutions Per Minute  
IPT = Inches Per Tooth  
IPM = Inches Per Minute  
Ap : Inch (Axial Depth of Cut)  
Ae : Inch (Radial Depth of Cut)



\*( ) : Short length Type

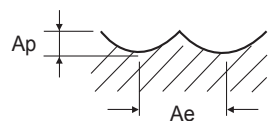
\*1.2 x D Axial cutting depth should be applied for Short length series DIA over 5/16mm

# YG V7 MILL INOX END MILLS

## RECOMMENDED CUTTING CONDITIONS

### EMB74, EMB75 SERIES 4 FLUTES - PLANE

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)												
						3.0	4.0	5.0	6.0	8.0	10.0	12.0	16.0	18.0	20.0	25.0		
P	1-2	Non-alloy steel	0.5D	1.0D	SFM (Vc)	445	445	445	460	445	440	445	440	440	440	440	440	
					IPT (fz)	.0010	.0010	.0012	.0015	.0023	.0024	.0027	.0029	.0031	.0035	.0039		
					RPM	14320	10740	8590	7460	5370	4290	3580	2680	2380	2140	1710		
	6	Low alloy steel	0.5D	1.0D	SFM (Vc)	445	445	445	460	445	440	445	440	440	440	440		
					IPT (fz)	.0010	.0010	.0012	.0015	.0023	.0024	.0027	.0029	.0031	.0035	.0039		
					RPM	14320	10740	8590	7460	5370	4290	3580	2680	2380	2140	1710		
	10	High alloyed steel, and tool steel	0.5D	1.0D	SFM (Vc)	445	445	445	460	445	440	445	440	440	440	440		
					IPT (fz)	.0010	.0010	.0012	.0015	.0023	.0024	.0027	.0029	.0031	.0035	.0039		
					RPM	14320	10740	8590	7460	5370	4290	3580	2680	2380	2140	1710		
	M	12-13	Stainless steel	0.5D	1.0D	SFM (Vc)	230	230	230	230	230	230	230	230	230	230	230	
						IPT (fz)	.0006	.0006	.0010	.0012	.0016	.0018	.0020	.0021	.0023	.0023	.0023	
						RPM	7420	5570	4450	3710	2780	2220	1850	1390	1230	1110	890	
14.1		Stainless steel	0.5D	1.0D	SFM (Vc)	255	255	255	255	255	255	255	255	255	255	255		
					IPT (fz)	.0008	.0008	.0010	.0016	.0018	.0020	.0022	.0024	.0025	.0026	.0027		
					RPM	8220	6160	4930	4110	3080	2460	2050	1540	1370	1230	980		
S		31-35	Heat Resistant Super Alloys	0.2D	0.3D	SFM (Vc)	100	100	100	100	100	100	100	95	100	95	100	
						IPT (fz)	.0004	.0004	.0004	.0006	.0010	.0010	.0015	.0018	.0020	.0021	.0021	
						RPM	3180	2380	1910	1590	1190	950	790	590	530	470	380	
		36-37	Titanium Alloys	0.5D	1.0D	SFM (Vc)	180	180	180	180	180	180	180	180	180	180	180	
						IPT (fz)	.0005	.0005	.0006	.0008	.0012	.0012	.0016	.0017	.0019	.0024	.0027	
						RPM	5830	4370	3500	2910	2180	1750	1450	1090	970	870	700	
	IPM (FEED)	11	8	8	9	10	8	9	7	7	8	7						

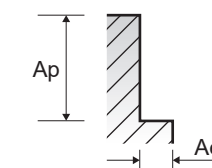


# YG V7 MILL INOX END MILLS

## RECOMMENDED CUTTING CONDITIONS

### EMB76, EMB77 SERIES 5 FLUTES - SIDE CUTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)												
						1/4	5/16	3/8	7/16	1/2	9/16	5/8	3/4	1				
P	1-2	Non-alloy steel	0.25D	1.25D	SFM (Vc)	450	450	450	450	450	450	450	450	450	450	450		
					IPT (fz)	.0013	.0015	.0020	.0022	.0025	.0027	.0030	.0035	.0040				
					RPM	6870	5490	4580	3920	3430	3050	2750	2290	1720				
	6	Low alloy steel	0.25D	1.25D	SFM (Vc)	450	450	450	450	450	450	450	450	450	450	450		
					IPT (fz)	.0013	.0015	.0020	.0022	.0025	.0027	.0030	.0035	.0040				
					RPM	6870	5490	4580	3920	3430	3050	2750	2290	1720				
	10	High alloyed steel, and tool steel	0.25D	1.25D	SFM (Vc)	450	450	450	450	450	450	450	450	450	450	450		
					IPT (fz)	.0013	.0015	.0020	.0022	.0025	.0027	.0030	.0035	.0040				
					RPM	6870	5490	4580	3920	3430	3050	2750	2290	1720				
	M	12-13	Stainless steel	0.25D	1.25D	SFM (Vc)	350	350	350	350	350	350	350	350	350	350	350	
						IPT (fz)	.0012	.0012	.0015	.0016	.0017	.0025	.0027	.0030	.0035	.0035		
						RPM	5310	4250	3540	3040	2660	2360	2130	1770	1330			
14.1		Stainless steel	0.25D	1.25D	SFM (Vc)	375	375	375	375	375	375	375	375	375	375	375		
					IPT (fz)	.0012	.0013	.0015	.0020	.0025	.0026	.0027	.0030	.0035	.0035			
					RPM	5710	4570	3810	3270	2860	2540	2290	1900	1430				
S		31-35	Heat Resistant Super Alloys	0.25D	1.0D	SFM (Vc)	90	90	90	90	90	90	90	90	90	90	90	
						IPT (fz)	.0007	.0008	.0010	.0012	.0014	.0018	.0019	.0024	.0030	.0030		
						RPM	1350	1080	900	770	680	600	540	450	340			
		36-37	Titanium Alloys	0.25D	1.25D	SFM (Vc)	275	275	275	275	275	275	275	275	275	275	275	
						IPT (fz)	.0012	.0012	.0015	.0017	.0020	.0022	.0025	.0030	.0035	.0035		
						RPM	4200	3360	2800	2400	2100	1860	1680	1400	1050			
	IPM (FEED)	25	21	21	21	21	21	21	21	21	18							





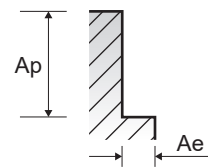
# V7 MILL INOX END MILLS

## RECOMMENDED CUTTING CONDITIONS

### EMB72, EMB73 SERIES

### 5 FLUTES - SIDE CUTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)						
						6.0	8.0	10.0	12.0	14.0	16.0	20.0
P	1-2	Non-alloy steel	0.25D	1.25D	SFM (Vc)	445	445	445	445	445	445	445
					IPT (fz)	.0013	.0015	.0020	.0025	.0027	.0030	.0035
					RPM	7160	5370	4300	3580	3070	2690	2150
	6	Low alloy steel	0.25D	1.25D	SFM (Vc)	450	450	450	450	450	450	450
					IPT (fz)	.0013	.0015	.0020	.0022	.0025	.0027	.0035
					RPM	6870	5490	4580	3920	3430	3050	2290
	10	High alloyed steel, and tool steel	0.25D	1.25D	SFM (Vc)	450	450	450	450	450	450	450
					IPT (fz)	.0013	.0015	.0020	.0022	.0025	.0027	.0035
					RPM	6870	5490	4580	3920	3430	3050	2290
M	12-13	Stainless steel	0.25D	1.25D	SFM (Vc)	345	345	345	475	345	345	345
					IPT (fz)	.0012	.0013	.0015	.0017	.0025	.0027	.0030
					RPM	5570	4180	3340	3850	2390	2090	1670
	14.1	Stainless steel	0.25D	1.25D	SFM (Vc)	375	380	375	375	380	380	375
					IPT (fz)	.0012	.0013	.0015	.0025	.0026	.0027	.0030
					RPM	6100	4580	3660	3050	2620	2290	1830
S	31-35	Heat Resistant Super Alloys	0.25D	1.0D	SFM (Vc)	80	80	80	80	80	80	80
					IPT (fz)	.0007	.0008	.0010	.0014	.0018	.0019	.0023
					RPM	1330	1000	800	660	570	500	400
	36-37	Titanium Alloys	0.25D	1.25D	SFM (Vc)	280	280	280	280	280	280	280
					IPT (fz)	.0012	.0012	.0015	.0020	.0022	.0025	.0030
					RPM	4510	3380	2710	2260	1930	1690	1350
					IPM (FEED)	27	21	20	22	22	21	20







Being the best through innovation

**SOLID CARBIDE**

# **ALU-POWER HPC END MILLS**

- For Aluminium, Aluminum Die Cast, Non-ferrous Alloys and Plastics





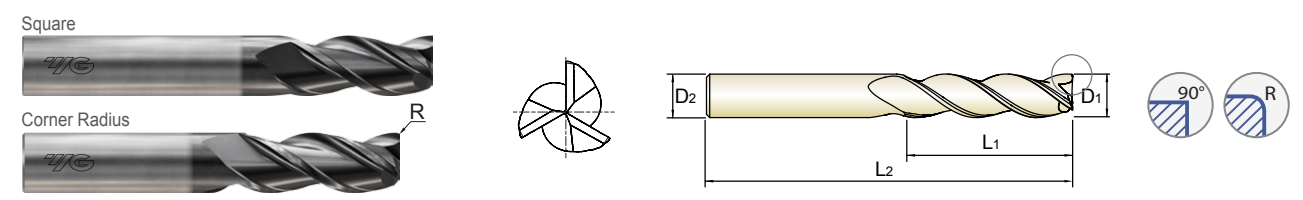
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# Y/G ALU-POWER HPC END MILLS

SQUARE CORNER RADIUS **JAG95** SERIES **JAG97** SERIES

## CARBIDE, 3-FLUTE STANDARD LENGTH - DLC COATED

- Balanced cutting with less vibration
- Ability to run at higher speeds with less heat in aluminum
- More efficient chip evacuation
- Ability to counteract extreme radial forces
- DLC Coating provides edge strength and unsurpassed tool life



Unit : Inch

OD (D1)	SD (D2)	LOC (L1)	OAL (L2)	Square End EDP No.	Corner Radius							
					.010 EDP No.	.030 EDP No.	.060 EDP No.	.090 EDP No.	.120 EDP No.	.190 EDP No.	.250 EDP No.	
1/8	1/8	1/4	1-1/2	JAG95008	JAG97008	JAG97901						
		3/8	1-1/2	JAG95901	JAG97902	JAG97903						
3/16	3/16	5/16	2	JAG95012	JAG97012	JAG97904						
		9/16	2	JAG95902	JAG97905	JAG97906						
		3/8	2	JAG95016	JAG97016	JAG97907	JAG97908					
1/4	1/4	5/8	2-1/2	JAG95903	JAG97909	JAG97910	JAG97911					
		7/8	3	JAG95929	JAG97892	JAG97893	JAG97894					
		1-1/4	3-1/4	JAG95904	JAG97912	JAG97913	JAG97914					
		7/16	2	JAG95020	JAG97020	JAG97915	JAG97916	JAG97917				
5/16	5/16	5/8	2-1/2	JAG95905	JAG97918	JAG97919	JAG97920	JAG97921				
		13/16	3	JAG95930	JAG97895	JAG97896	JAG97897	JAG97898				
		1-1/4	3-1/2	JAG95906	JAG97922	JAG97923	JAG97924	JAG97925				
		1/2	2	JAG95024	JAG97024	JAG97926	JAG97927	JAG97928	JAG97929			
3/8	3/8	1	2-1/2	JAG95907	JAG97930	JAG97931	JAG97932	JAG97933	JAG97934			
		1-1/2	3-1/2	JAG95908	JAG97935	JAG97936	JAG97937	JAG97938	JAG97939			
		2	4	JAG95909	JAG97940	JAG97941	JAG97942	JAG97943	JAG97944			
7/16	7/16	9/16	2-1/2	JAG95028	JAG97028	JAG97945	JAG97946	JAG97947	JAG97948			
		1-1/4	2-3/4	JAG95910	JAG97949	JAG97950	JAG97951	JAG97952	JAG97953			
		2	4	JAG95911	JAG97954	JAG97955	JAG97956	JAG97957	JAG97958			

NEXT PAGE

Outside Diameter Tolerances (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 - 3/16	+0/-0.0032	h6
1/4 - 3/8	+0/-0.0035	
1/2 - 5/8	+0/-0.0043	
3/4 - 1	+0/-0.0051	

© : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloy steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323																				
HRC	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

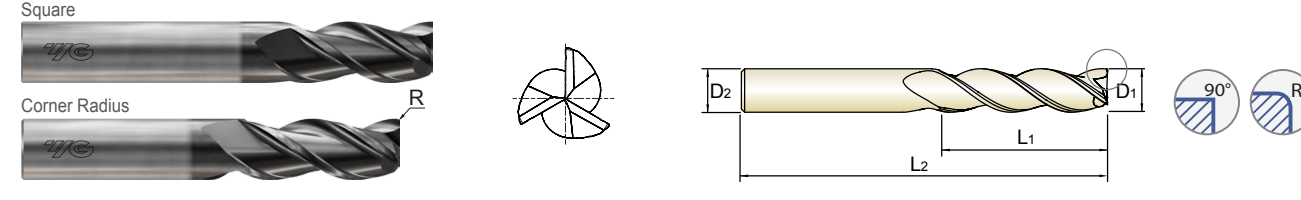
ISO	N					S					H												
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron										
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	39-1	40	41	
VDI 3323																							
HRC											15	30	25	38	34			55	60	50	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630		400	550	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

# Y/G ALU-POWER HPC END MILLS

SQUARE CORNER RADIUS **JAG95** SERIES **JAG97** SERIES

## CARBIDE, 3-FLUTE STANDARD LENGTH - DLC COATED

- Balanced cutting with less vibration
- Ability to run at higher speeds with less heat in aluminum
- More efficient chip evacuation
- Ability to counteract extreme radial forces
- DLC Coating provides edge strength and unsurpassed tool life



Unit : Inch

OD (D1)	SD (D2)	LOC (L1)	OAL (L2)	Square End EDP No.	Corner Radius							
					.010 EDP No.	.030 EDP No.	.060 EDP No.	.090 EDP No.	.120 EDP No.	.190 EDP No.	.250 EDP No.	
1/2	1/2	5/8	2-1/2	JAG95032	JAG97032	JAG97959	JAG97960	JAG97961	JAG97962	JAG97963		
		1	3	JAG95927	JAG97879	JAG97880	JAG97881	JAG97882	JAG97883	JAG97884		
		1-1/4	3	JAG95912	JAG97964	JAG97965	JAG97966	JAG97967	JAG97968	JAG97969		
		1-5/8	4	JAG95913	JAG97970	JAG97971	JAG97972	JAG97973	JAG97974	JAG97975		
		2	4	JAG95914	JAG97976	JAG97977	JAG97978	JAG97979	JAG97980	JAG97981		
		2-1/2	5	JAG95915	JAG97982	JAG97983	JAG97984	JAG97985	JAG97986	JAG97987		
5/8	5/8	3/4	3	JAG95040	JAG97040	JAG97994	JAG97995	JAG97996	JAG97997	JAG97998		
		1-5/8	3-1/2	JAG95917	JAG97999	JAG97801	JAG97802	JAG97803	JAG97804	JAG97805		
		2-1/2	5	JAG95918	JAG97806	JAG97807	JAG97808	JAG97809	JAG97810	JAG97811		
		3	5-1/4	JAG95919	JAG97812	JAG97813	JAG97814	JAG97815	JAG97816	JAG97817		
3/4	3/4	1	3	JAG95048	JAG97048	JAG97818	JAG97819	JAG97820	JAG97821	JAG97822	JAG97823	
		1-5/8	4	JAG95920	JAG97824	JAG97825	JAG97826	JAG97827	JAG97828	JAG97829	JAG97830	
		2-1/4	5	JAG95921	JAG97831	JAG97832	JAG97833	JAG97834	JAG97835	JAG97836	JAG97837	
		3-1/4	6	JAG95922	JAG97838	JAG97839	JAG97840	JAG97841	JAG97842	JAG97843	JAG97844	
1	1	4	6-1/4	JAG95923	JAG97845	JAG97846	JAG97847	JAG97848	JAG97849	JAG97850	JAG97851	
		1-1/4	3	JAG95064	JAG97064	JAG97852	JAG97853	JAG97854	JAG97855	JAG97856	JAG97857	
		1-1/4	4	JAG95928	JAG97885	JAG97886	JAG97887	JAG97888	JAG97889	JAG97890	JAG97891	
		2	5	JAG95924	JAG97858	JAG97859	JAG97860	JAG97861	JAG97862	JAG97863	JAG97864	
3/4	3/4	3-1/4	6	JAG95925	JAG97865	JAG97866	JAG97867	JAG97868	JAG97869	JAG97870	JAG97871	
		4	7	JAG95926	JAG97872	JAG97873	JAG97874	JAG97875	JAG97876	JAG97877	JAG97878	

Outside Diameter Tolerances (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 - 3/16	+0/-0.0032	h6
1/4 - 3/8	+0/-0.0035	
1/2 - 5/8	+0/-0.0043	
3/4 - 1	+0/-0.0051	

© : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloy steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323																					
HRC	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO	N					S					H												
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron										
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	39-1	40	41	
VDI 3323																							
HRC											15	30	25	38	34			55	60	50	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630		400	550	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎



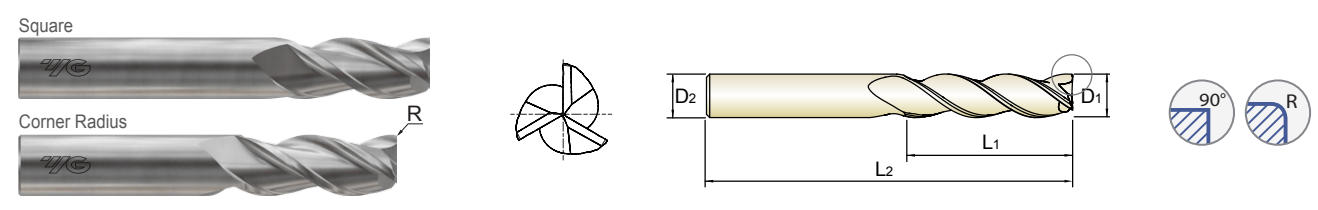
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SQUARE E5G95 SERIES CORNER RADIUS E5G97 SERIES

CARBIDE, 3-FLUTE STANDARD LENGTH - UNCOATED

- Balanced cutting with less vibration
Ability to run at higher speeds with less heat in aluminum
More efficient chip evacuation
Ability to counteract extreme radial forces



Unit : Inch

Table with columns: OD (D1), SD (D2), LOC (L1), OAL (L2), Square End EDP No., and Corner Radius (.010 to .250) EDP No.

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Outside Diameter Tolerances (inch) and Shank Diameter Tolerance table.

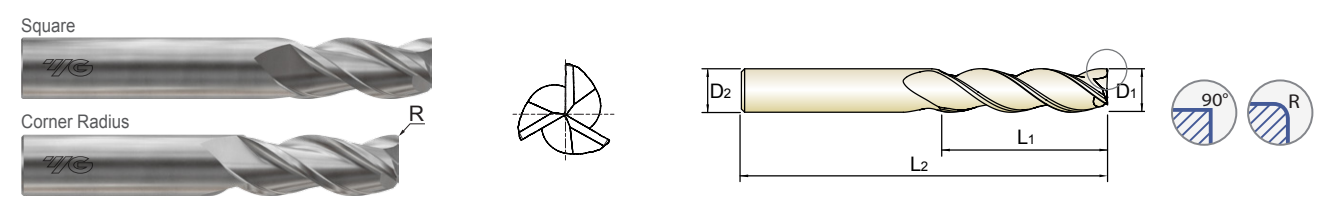
ISO material compatibility chart with columns for P, M, K, S, H and rows for Material Description, VDI 3323, HRC, HB, and Recommended.



SQUARE E5G95 SERIES CORNER RADIUS E5G97 SERIES

CARBIDE, 3-FLUTE STANDARD LENGTH - UNCOATED

- Balanced cutting with less vibration
Ability to run at higher speeds with less heat in aluminum
More efficient chip evacuation
Ability to counteract extreme radial forces



Unit : Inch

Table with columns: OD (D1), SD (D2), LOC (L1), OAL (L2), Square End EDP No., and Corner Radius (.010 to .250) EDP No.

Outside Diameter Tolerances (inch) and Shank Diameter Tolerance table.

ISO material compatibility chart with columns for P, M, K, S, H and rows for Material Description, VDI 3323, HRC, HB, and Recommended.

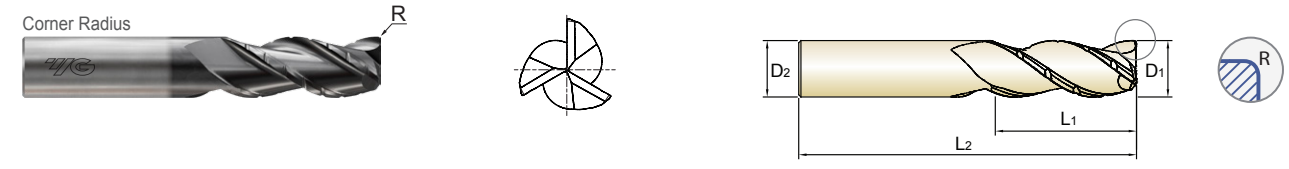


# Y/G ALU-POWER HPC END MILLS

CORNER RADIUS **JAI38** SERIES

## CARBIDE, 3-FLUTE STANDARD LENGTH - CHIP BREAKER - DLC COATED

- Balanced cutting with less vibration
- Ability to run at higher speeds with less heat in aluminum
- Chip Breaker Improves chip evacuation by shortening the chip length
- Ability to counteract extreme radial forces
- DLC Coating provides edge strength and unsurpassed tool life



CARBIDE 3 37° PLAIN DLC p.C601

OD (D1)	SD (D2)	LOC (L1)	OAL (L2)	Corner Radius			
				.010 EDP No.	.030 EDP No.	.060 EDP No.	.120 EDP No.
1/8	1/8	1/4	1-1/2	JAI38008			
		3/8	1-1/2	JAI38901			
		1/2	2-1/2	JAI38902			
3/16	3/16	5/16	2	JAI38012			
		9/16	2	JAI38903	JAI38904		
		3/8	2	JAI38016	JAI38905		
1/4	1/4	5/8	2-1/2	JAI38906	JAI38907		
		1-1/4	3-1/4	JAI38908	JAI38909	JAI38910	
		1/2	2	JAI38024	JAI38911		
3/8	3/8	1	2-1/2	JAI38912	JAI38913	JAI38914	
		1-1/2	3-1/2	JAI38915	JAI38916	JAI38917	
		2	4			JAI38918	
1/2	1/2	5/8	2-1/2	JAI38032	JAI38919	JAI38920	
		1-1/4	3	JAI38921	JAI38922	JAI38923	
		1-5/8	4	JAI38924	JAI38925	JAI38926	
		2	4	JAI38927	JAI38928	JAI38929	
		2-1/2	5		JAI38930	JAI38931	
		3	5		JAI38932		
5/8	5/8	3/4	3			JAI38040	
		1-5/8	3-1/2			JAI38933	
3/4	3/4	2-1/2	5		JAI38934		
		1	3	JAI38048	JAI38935	JAI38936	
		1-5/8	4	JAI38937	JAI38938	JAI38939	JAI38940
1	1	2-1/4	5		JAI38941	JAI38942	JAI38943
		1-1/4	3	JAI38064			
		2	5	JAI38944	JAI38945	JAI38946	
		3-1/4	6	JAI38947			

Outside Diameter Tolerances (inch)		Shank Diameter Tolerance	
Diameter	Tolerance		
1/8 - 3/16	+0/-0.0032	h6	◇ : Call for availability
1/4 - 3/8	+0/-0.0035		
1/2 - 5/8	+0/-0.0043		
3/4 - 1	+0/-0.0051		

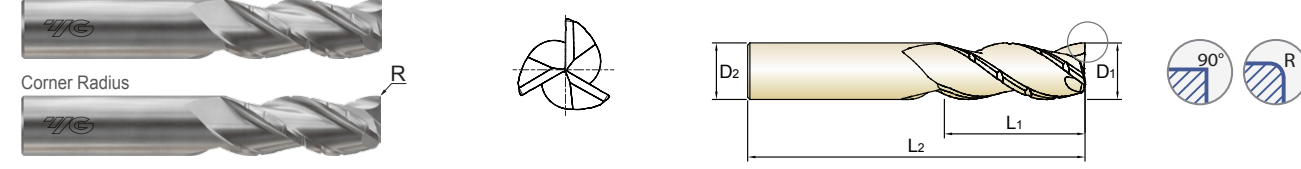
ISO	P										M				K			H			
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRC	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

# Y/G ALU-POWER HPC END MILLS

SQUARE **E5136** SERIES  
CORNER RADIUS **E5138** SERIES

## CARBIDE, 3-FLUTE STANDARD LENGTH - CHIP BREAKER - UNCOATED

- Balanced cutting with less vibration
- Ability to run at higher speeds with less heat in aluminum
- Chip Breaker Improves chip evacuation by shortening the chip length
- Ability to counteract extreme radial forces



CARBIDE 3 37° PLAIN UNCOATED p.C601

OD (D1)	SD (D2)	LOC (L1)	OAL (L2)	Square End EDP No.	Corner Radius			
					.010 EDP No.	.030 EDP No.	.060 EDP No.	.120 EDP No.
1/8	1/8	1/4	1-1/2		E5138008			
		3/8	1-1/2		E5138901			
		1/2	2-1/2		E5138902			
3/16	3/16	5/16	2		E5138012			
		9/16	2		E5138903	E5138904		
		3/8	2		E5138016	E5138905		
1/4	1/4	5/8	2-1/2		E5138906	E5138907		
		1-1/4	3-1/4		E5138908	E5138909	E5138910	
		1/2	2		E5138024	E5138911		
3/8	3/8	1	2-1/2		E5138912	E5138913	E5138914	
		1-1/2	3-1/2		E5138915	E5138916	E5138917	
		2	4				E5138918	
1/2	1/2	5/8	2-1/2		E5138032	E5138919	E5138920	
		1-1/4	3	E5136032	E5138921	E5138922	E5138923	
		1-5/8	4	E5136901	E5138924	E5138925	E5138926	
		2	4	E5136902	E5138927	E5138928	E5138929	
		2-1/2	5	E5136902		E5138930	E5138931	
		3	5	E5136040		E5138932		
5/8	5/8	3/4	3				E5138040	
		1-5/8	3-1/2				E5138933	
3/4	3/4	2-1/2	5			E5138934		
		1	3	E5136048	E5138048	E5138935	E5138936	
		1-5/8	4	E5136903	E5138937	E5138938	E5138939	E5138940
1	1	2-1/4	5			E5138941	E5138942	E5138943
		1-1/4	3			E5138064		
		2	5			E5138944	E5138945	E5138946
		3-1/4	6		E5138947			

Outside Diameter Tolerances (inch)		Shank Diameter Tolerance	
Diameter	Tolerance		
1/8 - 3/16	+0/-0.0032	h6	◇ : Call for availability
1/4 - 3/8	+0/-0.0035		
1/2 - 5/8	+0/-0.0043		
3/4 - 1	+0/-0.0051		

ISO	P										M				K			H			
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRC	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

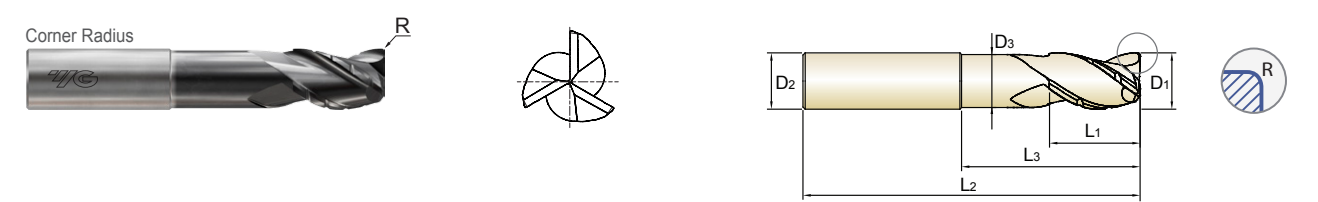


# Y/G ALU-POWER HPC END MILLS

CORNER RADIUS **JAI39** SERIES

## CARBIDE, 3-FLUTE EXTENDED LENGTH - CHIP BREAKER - DLC COATED

- Balanced cutting with less vibration
- Ability to run at higher speeds with less heat in aluminum
- Chip Breaker Improves chip evacuation by shortening the chip length
- Ability to counteract extreme radial forces
- DLC Coating provides edge strength and unsurpassed tool life



CARBIDE 3 37° PLAIN DLC p.C601

Unit : Inch

OD (D1)	SD (D2)	LOC (L1)	LBS (L3)	Neck Dia. (D3)	OAL (L2)	Corner Radius		
						.010 EDP No.	.030 EDP No.	.060 EDP No.
1/4	1/4	3/8	3/4	.220	2-1/2	JAI39016		
3/8	3/8	1/2	1-1/8	.345	3		JAI39024	
		1/2	2-1/8	.345	4		JAI39901	
1/2	1/2	5/8	1-3/8	.470	3		JAI39032	JAI39902
		5/8	2-1/4	.470	4		JAI39903	JAI39904
		5/8	3-3/8	.470	5		JAI39905	JAI39906
		5/8	4-1/4	.470	6	JAI39907	JAI39908	JAI39909
3/4	3/4	1	2	.710	4		JAI39048	JAI39910
		1	3-3/8	.710	6		JAI39911	JAI39912
		1	5	.710	7		JAI39913	JAI39914
1	1	1-1/4	4-3/8	.960	7	JAI39064		

Outside Diameter Tolerances (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 - 3/16	+0/-0.00032	h6
1/4 - 3/8	+0/-0.00035	
1/2 - 5/8	+0/-0.00043	
3/4 - 1	+0/-0.00051	

◎ : Excellent ○ : Good

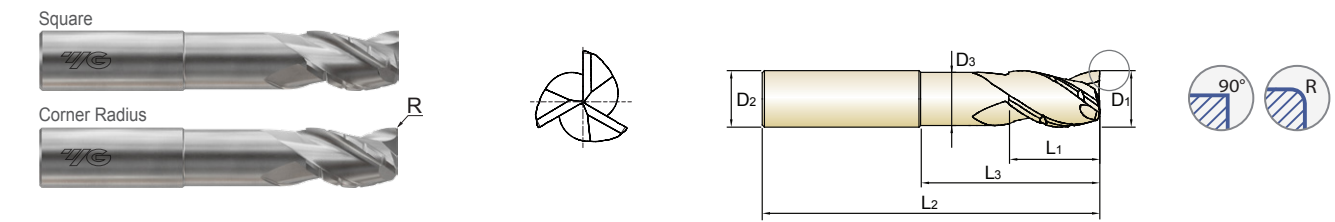
ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

# Y/G ALU-POWER HPC END MILLS

SQUARE **E5I37** SERIES  
CORNER RADIUS **E5I39** SERIES

## CARBIDE, 3-FLUTE EXTENDED LENGTH - CHIP BREAKER - UNCOATED

- Balanced cutting with less vibration
- Ability to run at higher speeds with less heat in aluminum
- Chip Breaker Improves chip evacuation by shortening the chip length
- Ability to counteract extreme radial forces



CARBIDE 3 37° PLAIN UNCOATED p.C601

Unit : Inch

OD (D1)	SD (D2)	LOC (L1)	LBS (L3)	Neck Dia. (D3)	OAL (L2)	Square End EDP No.	Corner Radius		
							.010 EDP No.	.030 EDP No.	.060 EDP No.
1/4	1/4	3/8	3/4	.220	2-1/2		E5I39016		
3/8	3/8	1/2	1-1/8	.345	3			E5I39024	
		1/2	2-1/8	.345	4			E5I39901	
1/2	1/2	5/8	1-3/8	.470	3	E5I37032		E5I39032	E5I39902
		5/8	2-1/4	.470	4	E5I37901		E5I39903	E5I39904
		5/8	3-3/8	.470	5			E5I39905	E5I39906
		5/8	4-1/4	.470	6		E5I39907	E5I39908	E5I39909
3/4	3/4	1	2	.710	4			E5I39048	E5I39910
		1	3-3/8	.710	6			E5I39911	E5I39912
		1	5	.710	7			E5I39913	E5I39914
1	1	1-1/4	4-3/8	.960	7		E5I39064		

Outside Diameter Tolerances (inch)		Shank Diameter Tolerance
Diameter	Tolerance	
1/8 - 3/16	+0/-0.00032	h6
1/4 - 3/8	+0/-0.00035	
1/2 - 5/8	+0/-0.00043	
3/4 - 1	+0/-0.00051	

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

HSS

CBN END MILLS

i-Xmill END MILLS

i-SMART MODULAR END MILLS

X5070 END MILLS

4G MILL END MILLS

X-POWER PRO END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

V7 PLUS A END MILLS

V7 MILL INOX

ALU-POWER HPC END MILLS

ALU-POWER END MILLS

D-POWER GRAPHITE END MILLS

STANDARD CARBIDE

ONLY ONE COATED PM60 END MILLS

SINE-POWER

TANK-POWER END MILLS

STANDARD COBALT & HSS

TECHNICAL DATA

# ALU-POWER HPC END MILLS

## RECOMMENDED CUTTING CONDITIONS

**JAG96, JAG98, JAG95, JAG97** SERIES **DLC Coated**

**E5G95, E5G97, E5G96, E5G98** SERIES **Uncoated**

**DLC Coated**

**Uncoated**

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.



### 3 FLUTE - SLOTTING

ISO	VDI 3323	Material Description	Hardness (HB)	Ae	Ap	Parameter	Mill Diameter (Ø)						
							1/8	1/4	3/8	1/2	5/8	3/4	1
N	21-22	Aluminum-wrought alloy	60 / 100	1.0D	1.0D	SFM (Vc)	2000	2000	2000	2000	2000	2000	2000
						IPT (fz)	.0010	.0030	.0045	.0060	.0066	.0075	.0100
						RPM	61100	30500	20400	15300	12200	10200	7600
	23-25	Aluminum-cast, alloyed	75 / 90 / 130	1.0D	1.0D	SFM (Vc)	600	600	600	600	600	600	600
						IPT (fz)	.0010	.0030	.0045	.0060	.0066	.0075	.0100
						RPM	18340	9170	6110	4580	3670	3060	2290
	26-28	Copper and Copper Alloys (Bronze / Brass)	110 / 90 / 100	1.0D	1.0D	SFM (Vc)	880	880	880	880	880	880	880
						IPT (fz)	.0008	.0020	.0040	.0050	.0055	.0060	.0070
						RPM	26890	13450	8960	6720	5380	4480	3360
	29.1	Non Metallic Materials (Duroplastic)	-	1.0D	1.0D	SFM (Vc)	1670	1670	1670	1670	1670	1670	1670
						IPT (fz)	.0015	.0040	.0075	.0100	.0110	.0120	.0140
						RPM	51040	25520	17010	12760	10210	8510	6380
IPM (FEED)							230	306	383	383	337	306	268

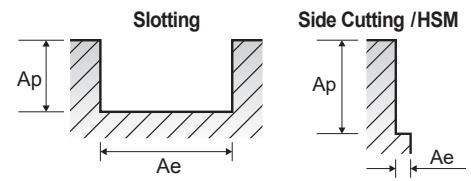
### 3 FLUTE - SIDE CUTTING

ISO	VDI 3323	Material Description	Hardness (HB)	Ae	Ap	Parameter	Mill Diameter (Ø)						
							1/8	1/4	3/8	1/2	5/8	3/4	1
N	21-22	Aluminum-wrought alloy	60 / 100	1.5D	0.5D	SFM (Vc)	3000	3000	3000	3000	3000	3000	3000
						IPT (fz)	.0010	.0030	.0045	.0060	.0066	.0075	.0100
						RPM	91700	45800	30600	23000	18300	15300	11500
	23-25	Aluminum-cast, alloyed	75 / 130	1.5D	0.5D	SFM (Vc)	800	800	800	800	800	800	800
						IPT (fz)	.0010	.0030	.0045	.0060	.0066	.0075	.0100
						RPM	24450	12220	8150	6110	4890	4080	3060
	26-28	Copper and Copper Alloys (Bronze / Brass)	110 / 90 / 100	1.5D	0.5D	SFM (Vc)	1150	1150	1150	1150	1150	1150	1150
						IPT (fz)	.0008	.0020	.0040	.0050	.0055	.0060	.0070
						RPM	35140	17570	11720	8790	7030	5860	4390
	29.1	Non Metallic Materials (Duroplastic)	-	1.5D	0.5D	SFM (Vc)	2070	2070	2070	2070	2070	2070	2070
						IPT (fz)	.0015	.0040	.0075	.0100	.0110	.0120	.0140
						RPM	63260	31630	21090	15820	12650	10540	7910
IPM (FEED)							285	380	474	474	418	380	332

### 3 FLUTE - SIDE CUTTING HSM (Light)

ISO	VDI 3323	Material Description	Hardness (HB)	Ae	Ap	Parameter	Mill Diameter (Ø)						
							1/8	1/4	3/8	1/2	5/8	3/4	1
N	21-22	Aluminum-wrought alloy	60 / 100	2.0D	0.05D	SFM (Vc)	8000	8000	8000	8000	8000	8000	8000
						IPT (fz)	.0021	.0055	.0105	.0140	.0150	.0165	.0195
						RPM	244500	122200	81500	61100	48900	40700	30600
	23-25	Aluminum-cast, alloyed	75 / 130	2.0D	0.05D	SFM (Vc)	1200	1200	1200	1200	1200	1200	1200
						IPT (fz)	.0021	.0055	.0105	.0140	.0150	.0165	.0195
						RPM	36670	18340	12220	9170	7330	6110	4580
	26-28	Copper and Copper Alloys (Bronze / Brass)	110 / 90 / 100	2.0D	0.05D	SFM (Vc)	1850	1850	1850	1850	1850	1850	1850
						IPT (fz)	.0017	.0045	.0085	.0115	.0130	.0140	.0160
						RPM	56540	28270	18850	14130	11310	9420	7070
	29.1	Non Metallic Materials (Duroplastic)	-	2.0D	0.05D	SFM (Vc)	3350	3350	3350	3350	3350	3350	3350
						IPT (fz)	.0034	.0090	.0170	.0230	.0250	.0275	.0320
						RPM	102380	51190	34130	25590	20480	17060	12800
IPM (FEED)							1044	1382	1740	1766	1536	1408	1229

- NOTES:**
- ▶ All cutting data are target values
  - ▶ Maximum recommended depth shown
  - ▶ Finish cuts typically require reduced feed rates and/or higher spindle speed, with radial width of 2% x D or less
  - ▶ Reduce speed and feed recommendations for materials harder than listed
  - ▶ Reduce cut depth and feed by 50% for long-flute or long-reach tools
  - ▶ Above recommendations are based on ideal conditions. Adjust parameters accordingly for smaller taper machining centers or less rigid conditions
  - ▶ HSM = high-speed machining



# ALU-POWER HPC END MILLS

## RECOMMENDED CUTTING CONDITIONS

**JAI38, JAI39** SERIES **DLC Coated**

**E5I36, E5I38, E5I37, E5I39** SERIES **Uncoated**

**DLC Coated**

**Uncoated**

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.



### 3 FLUTE CHIP BREAKER - SLOTTING

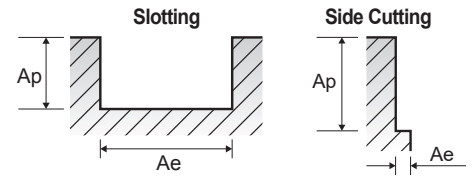
ISO	VDI 3323	Material Description	Hardness (HB)	Ae	Ap	Parameter	Outside Diameter (Ø)						
							1/8	1/4	3/8	1/2	5/8	3/4	1
N	21-22	Aluminum-wrought alloy	60 / 100	1.0D	1.0D	SFM (Vc)	2000	2000	2000	2000	2000	2000	2000
						IPT (fz)	.0010	.0030	.0045	.0060	.0066	.0075	.0100
						RPM	61100	30500	20400	15300	12200	10200	7600
	23-25	Aluminum-cast, alloyed	75 / 130	1.0D	1.0D	SFM (Vc)	600	600	600	600	600	600	600
						IPT (fz)	.0010	.0030	.0045	.0060	.0066	.0075	.0100
						RPM	18340	9170	6110	4580	3670	3060	2290
	26-28	Copper and Copper Alloys (Bronze / Brass)	110 / 90 / 100	1.0D	1.0D	SFM (Vc)	880	880	880	880	880	880	880
						IPT (fz)	.0008	.0020	.0040	.0050	.0055	.0060	.0070
						RPM	26890	13450	8960	6720	5380	4480	3360
	29.1	Non Metallic Materials (Duroplastic)	-	1.0D	1.0D	SFM (Vc)	1670	1670	1670	1670	1670	1670	1670
						IPT (fz)	.0015	.0040	.0075	.0100	.0110	.0120	.0140
						RPM	51040	25520	17010	12760	10210	8510	6380
IPM (FEED)							230	306	383	383	337	306	268

### 3 FLUTE CHIP BREAKER - SIDE CUTTING

ISO	VDI 3323	Material Description	Hardness (HB)	Ae	Ap	Parameter	Outside Diameter (Ø)						
							1/8	1/4	3/8	1/2	5/8	3/4	1
N	21-22	Aluminum-wrought alloy	60 / 100	1.5D	0.5D	SFM (Vc)	3000	3000	3000	3000	3000	3000	3000
						IPT (fz)	.0010	.0030	.0045	.0060	.0066	.0075	.0100
						RPM	91700	45800	30600	23000	18300	15300	11500
	23-25	Aluminum-cast, alloyed	75 / 130	1.5D	0.5D	SFM (Vc)	800	800	800	800	800	800	800
						IPT (fz)	.0010	.0030	.0045	.0060	.0066	.0075	.0100
						RPM	24450	12220	8150	6110	4890	4080	3060
	26-28	Copper and Copper Alloys (Bronze / Brass)	110 / 90 / 100	1.5D	0.5D	SFM (Vc)	1150	1150	1150	1150	1150	1150	1150
						IPT (fz)	.0008	.0020	.0040	.0050	.0055	.0060	.0070
						RPM	35140	17570	11720	8790	7030	5860	4390
	29.1	Non Metallic Materials (Duroplastic)	-	1.5D	0.5D	SFM (Vc)	2070	2070	2070	2070	2070	2070	2070
						IPT (fz)	.0015	.0040	.0075	.0100	.0110	.0120	.0140
						RPM	63260	31630	21090	15820	12650	10540	7910
IPM (FEED)							285	380	474	474	418	380	332

- NOTES:**
- ▶ All cutting data are target values
  - ▶ Maximum recommended depth shown
  - ▶ Finish cuts typically require reduced feed rates and/or higher spindle speed, with radial width of 2% x D or less
  - ▶ Reduce speed and feed recommendations for materials harder than listed
  - ▶ Reduce cut depth and feed by 50% for long-flute or long-reach tools
  - ▶ Above recommendations are based on ideal conditions. Adjust parameters accordingly for smaller taper machining centers or less rigid conditions
  - ▶ HSM = high-speed machining

**Tech Tip:** The tables above are based on common machining calculations. We realize that shops may not have RPM capability shown in the tables. To adapt the tables to machining conditions available, use the following calculation:  
**(Recommended Feed (IPM) / Recommended RPM) X Available RPM = IPM**  
 Example for 1/8" Side Milling in N21-22 WorkPiece Materials:  
**(275 IPM / 91700 RPM) X 15,000 = 45 IPM**





Global Cutting Tool Leader **YG-1**



# MILLING





Being the best through innovation



**SOLID CARBIDE**

# **ALU-POWER END MILLS**

- For Silent Cutting of Aluminium Alloys, Mirror Surface

SELECTION GUIDE



SERIES  
FLUTE  
HELIX ANGLE  
CUTTING EDGE SHAPE  
SIZE MIN  
SIZE MAX  
PAGE

Inch				
SERIES	E5253	E5254	E5976	E5980
FLUTE	2 (Weldon)	2	2	3
HELIX ANGLE	42°	42°	37°	45°
CUTTING EDGE SHAPE	SQUARE	SQUARE	SQUARE	SQUARE
SIZE MIN	D1/4	D1/16	D1/4	D1/8
SIZE MAX	D1	D1	D1	D1
PAGE	C608	C609	C610	C611
REGULAR LENGTH	REGULAR LENGTH	REGULAR LENGTH	EXTENDED NECK	STUB
TICN	TICN	TICN	TICN	TICN
Uncoated	Uncoated	Uncoated	Uncoated	Uncoated

SOLID CARBIDE & HSS  
**ALU POWER**  
END MILLS

for Silent Cutting of Aluminium Alloys,  
Mirror Surface



Please visit [globalyg1.com/mat](http://globalyg1.com/mat) for material search

◎: Excellent ○: Good

Recommended cutting conditions : p. C636

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc
P	1	Non-alloy steel	About 0.15% C Annealed	125	
	2		About 0.45% C Annealed	190	13
	3		About 0.45% C Quenched & Tempered	250	25
	4		About 0.75% C Annealed	270	28
	5		About 0.75% C Quenched & Tempered	300	32
	6	Low alloy steel	Annealed	180	10
	7		Quenched & Tempered	275	29
	8		Quenched & Tempered	300	32
	9		Quenched & Tempered	350	38
	10		High alloyed steel, and tool steel	Annealed	200
	11	Quenched & Tempered		325	35
M	12	Stainless steel	Ferritic / Martensitic Annealed	200	15
	13		Martensitic Quenched & Tempered	240	23
	14		Austenitic	180	10
K	15	Grey cast iron	Pearlitic / ferritic	180	10
	16		Pearlitic (Martensitic)	260	26
	17	Nodular cast iron	Ferritic	160	3
	18		Pearlitic	250	25
	19	Malleable cast iron	Ferritic	130	
	20		Pearlitic	230	21
N	21	Aluminum-wrought alloy	Not Curable	60	
	22		Curable Hardened	100	
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable	75	
	24		≤ 12% Si, Curable Hardened	90	
	25		> 12% Si, Not Curable	130	
	26		Copper and Copper Alloys (Bronze / Brass)	CuZn, CuSnZn (Brass)	90
	27	Non Metallic Materials	Cutting Alloys, PB>1%	110	
	28		Duroplastic, Fiber Reinforced Plastic	90	
	29		Rubber, Wood, etc.	100	
	S	31	Heat Resistant Super Alloys	Fe Based Annealed	200
32		Cured		280	30
33		Ni or Co Based Annealed		250	25
34		Cured		350	38
35		Cast		320	34
36		Titanium Alloys	Pure Titanium	400 Rm	
37			Alpha + Beta Alloys Hardened	1050 Rm	
H	38	Hardened steel	Hardened	550	55
	39		Hardened	630	60
	40	Chilled Cast Iron	Cast	400	42
	41	Hardened Cast Iron	Hardened	550	55



Inch													
E5981	E5983	E5982	E5984	E5E44	E5E98	E5E45	E5977	E5985	E5973	E5974	E5978	E5975	
3	3	3	3	3	3	3	3	3	2	3	2	3	
45°	45°	45°	45°	30°	30°	30°	37°	37°	30°	50°	37°	40°	
SQUARE	CORNER RADIUS	SQUARE	CORNER RADIUS	ROUGHING	ROUGHING	BALL NOSE ROUGHING	SQUARE	CORNER RADIUS	CORNER RADIUS	BALL NOSE	BALL NOSE	BALL NOSE	
D1/8	D1/2	D1/4	D1/2	D1/4	D1/4	D1/4	D1/4	D1/2	D5/32	R1/8	R1/8	R3/64	
D1	D1	D1	D1	D1	D1	D1	D1	D1	D3/4	R3/8	R1/2	R5/16	
C612			C613		C614		C615	C616	C617	C618	C619	C620	C621
REGULAR LENGTH	REGULAR LENGTH	LONG LENGTH	LONG LENGTH	NECK		EXTENDED NECK	EXTENDED NECK	NECK	STUB CUT LENGTH NECK	LONG REACH	LONG LENGTH NECK		
TICN	TICN	TICN	TICN	TICN	TICN	TICN	TICN	TICN	TICN	TICN	TICN	TICN	
Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	



													1
													2
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SELECTION GUIDE



SERIES	Metric		
	E5522 EG522	EG930	EG909
FLUTE	2	2	2
HELIX ANGLE	45°	25°	30°
CUTTING EDGE SHAPE	SQUARE	CORNER RADIUS	CORNER RADIUS
SIZE MIN	D3.0	D2.0	D4.0
SIZE MAX	D20.0	D20.0	D20.0
PAGE	C622	C623	C624

**SOLID CARBIDE & HSS**  
**ALU POWER**  
**END MILLS**

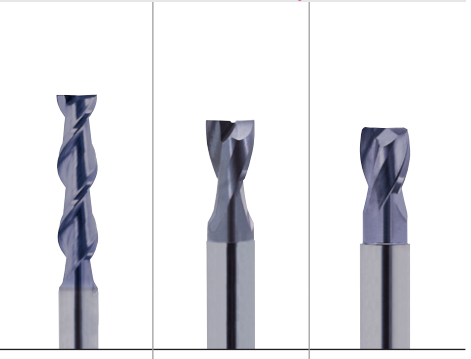
for Silent Cutting of Aluminium Alloys, Mirror Surface



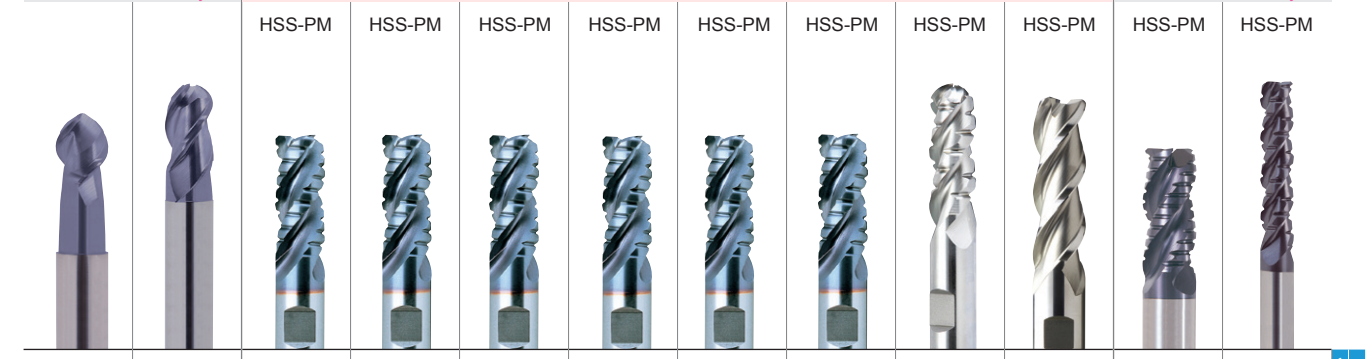
◎: Excellent ○: Good

Recommended cutting conditions : p. C636

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc	
P	1	Non-alloy steel	About 0.15% C Annealed	125		
	2		About 0.45% C Annealed	190	13	
	3		About 0.45% C Quenched & Tempered	250	25	
	4		About 0.75% C Annealed	270	28	
	5		About 0.75% C Quenched & Tempered	300	32	
	6	Low alloy steel	Annealed	180	10	
	7		Quenched & Tempered	275	29	
	8		Quenched & Tempered	300	32	
	9		Quenched & Tempered	350	38	
	10		High alloyed steel, and tool steel	Annealed	200	15
	11			Quenched & Tempered	325	35
M	12	Stainless steel	Ferritic / Martensitic Annealed	200	15	
	13		Martensitic Quenched & Tempered	240	23	
	14		Austenitic	180	10	
K	15	Grey cast iron	Pearlitic / ferritic	180	10	
	16		Pearlitic (Martensitic)	260	26	
	17	Nodular cast iron	Ferritic	160	3	
	18		Pearlitic	250	25	
	19		Ferritic	130		
20	Malleable cast iron	Pearlitic	230	21		
N	21	Aluminum-wrought alloy	Not Curable	60	◎	
	22		Curable Hardened	100	◎	
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable	75	◎	
	24		≤ 12% Si, Curable Hardened	90	◎	
	25		> 12% Si, Not Curable	130	◎	
	26		Cutting Alloys, PB>1%	110	◎	
	27	Copper and Copper Alloys (Bronze / Brass)	CuZn, CuSnZn (Brass)	90		
	28		CuSn, lead-free copper and electrolytic copper	100		
	29		Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic Rubber, Wood, etc.		
	30					
S	31	Heat Resistant Super Alloys	Fe Based Annealed	200	15	
	32		Cured	280	30	
	33		Annealed	250	25	
	34		Ni or Co Based Cured	350	38	
	35	Cast	320	34		
	36	Titanium Alloys	Pure Titanium	400 Rm		
37	Alpha + Beta Alloys Hardened		1050 Rm			
H	38	Hardened steel	Hardened	550	55	
	39		Hardened	630	60	
	40	Chilled Cast Iron	Cast	400	42	
	41	Hardened Cast Iron	Hardened	550	55	



Metric	HSS-PM Inch								HSS-PM Metric			
	EG910	EG908	EK191	EK191	EK226	EK226	EK192	EK192	EK196	EK193 EK132	EP922	EP924
2	3	3	3	3	3	3	3	3	3	3	3	3
50°	40°	42°	42°	42°	42°	42°	42°	42°	42°	42°	42°	42°
BALL NOSE	BALL NOSE	ROUGHING	CORNER RADIUS ROUGHING	ROUGHING	CORNER RADIUS ROUGHING	ROUGHING	CORNER RADIUS ROUGHING	BALL NOSE ROUGHING	CORNER RADIUS	ROUGHING	ROUGHING	ROUGHING
R3.0	R1.0	D1/2	D3/4	D3/4	D3/4	D1/2	D3/4	R1/4	D1/2	D12.0	D12.0	D12.0
R10.0	R8.0	D2	D1-1/4	D2	D1-1/4	D2	D1-1/4	R5/8	D1-1/2	D32.0	D32.0	D32.0
C625	C626	C627	C583	C628			C629 - C630		C631	C632	C634	C635
STUB CUT LENGTH NECK	LONG LENGTH NECK	REGULAR LENGTH for ALUMINUM	REGULAR LENGTH for ALUMINUM	MEDIUM LENGTH for ALUMINUM	MEDIUM LENGTH for ALUMINUM	LONG LENGTH for ALUMINUM	LONG LENGTH for ALUMINUM	REGULAR LENGTH for ALUMINUM	REGULAR & MEDIUM & LONG LENGTH	SHORT LENGTH for ALUMINUM	LONG LENGTH for ALUMINUM	
TICN	TICN	TICN	TICN	TICN	TICN	TICN	TICN	TICN	TICN	TiAlN	TiAlN	
Uncoated		Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated			
Call for Availability		U.S.A Stock								Call for Availability		
		HSS-PM	HSS-PM	HSS-PM	HSS-PM	HSS-PM	HSS-PM	HSS-PM	HSS-PM	HSS-PM	HSS-PM	HSS-PM





# Y/G ALU-POWER END MILLS

FLAT SHANK **E5253** SERIES

## 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.



CARBIDE 2 42° FLAT p.C636

◆ U.S.A Stock

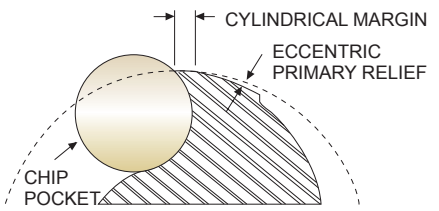
Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED				
17574	17574TC	1/4	3/8	3/4	2-1/2
17580	17580TC	5/16	3/8	13/16	2-1/2
17584	17584TC	3/8	3/8	1	2-1/2
17593	17593TC	1/2	1/2	1	3
18593	18593TC	1/2	1/2	2	4
17901	17901TC	1/2	1/2	1-1/4	3-1/4
17595	17595TC	5/8	5/8	1-1/4	3-1/2
17598	17598TC	3/4	3/4	1-1/2	4
18598	18598TC	3/4	3/4	3	5-1/2
17600	17600TC	1	1	1-1/2	4
18600	18600TC	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

ISO Material Description	P											M				K					
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend																					

ISO Material Description	N					S					H											
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	55	60	42	55	55	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommend	◎	◎	◎	◎	◎																	

# Y/G ALU-POWER END MILLS

PLAIN SHANK **E5254** SERIES

## 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.



CARBIDE 2 42° PLAIN p.C636

◆ U.S.A Stock

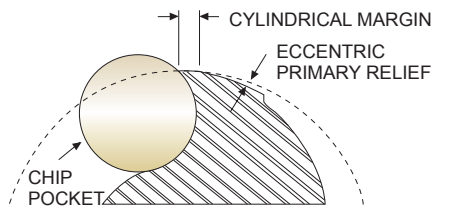
Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiCN COATED				
21554	21554TC	1/16	1/8	1/8	1-1/2
21556	21556TC	3/32	1/8	1/4	1-1/2
21601	21601TC	1/8	1/4	5/16	1-3/4
21566	21566TC	3/16	1/4	7/16	2
21574	21574TC	1/4	3/8	3/4	2-1/2
21580	21580TC	5/16	3/8	13/16	2-1/2
21584	21584TC	3/8	3/8	1	2-1/2
21588	21588TC	7/16	7/16	1	2-3/4
21593	21593TC	1/2	1/2	1	3
21904	21904TC	1/2	1/2	1-1/4	3
21901	21901TC	1/2	1/2	2	4
21595	21595TC	5/8	5/8	1-1/4	3-1/2
21598	21598TC	3/4	3/4	1-1/2	4
21902	21902TC	3/4	3/4	3	5-1/2
21600	21600TC	1	1	1-1/2	4
21903	21903TC	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

ISO Material Description	P											M				K					
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend																					

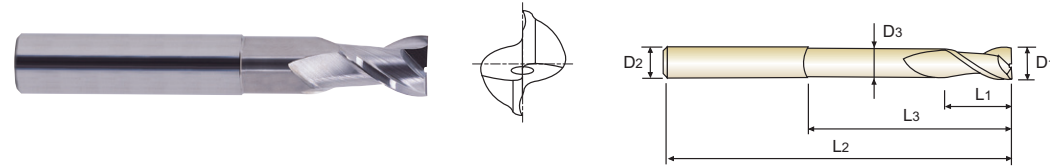
ISO Material Description	N					S					H											
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	55	60	42	55	55	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommend	◎	◎	◎	◎	◎																	

# YG ALU-POWER END MILLS

PLANE SHANK **E5976** SERIES

## 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.

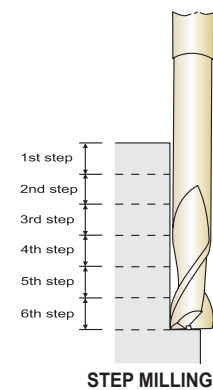


◆ U.S.A Stock

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	
							UNCOATED
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



◎ : Excellent ○ : Good

ISO	P											M				K				
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend																				

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc						15	30	25	38	34	15	30	25	38	34	55	60	42	40	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎																

# YG ALU-POWER END MILLS

PLAIN SHANK **E5980** SERIES

## 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.



◆ U.S.A Stock

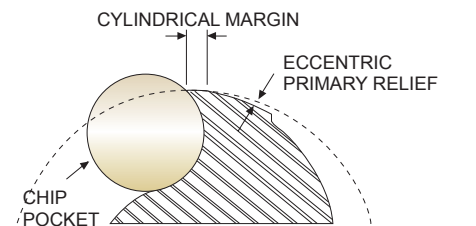
Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length			
					UNCOATED	TICN COATED	D1
25558	25558TC	1/8	1/8	1-1/2			
25565	25565TC	3/16	3/16	2			
25573	25573TC	1/4	1/4	2			
25579	25579TC	5/16	5/16	2			
25584	25584TC	3/8	3/8	2			
25588	25588TC	7/16	7/16	2-1/2			
25593	25593TC	1/2	1/2	2-1/2			
25595	25595TC	5/8	5/8	3			
25598	25598TC	3/4	3/4	3			
25600	25600TC	1	1	3			

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~.0005	0~.0003



- High performance in machining aluminum and non-ferrous materials
- Special designed geometry with high rigidity cutting edge
- Improved surface roughness - cylindrical margin which is controlled tightly.
- Excellent chip removal - higher rake angle, higher helix angle(45°), bigger chip pocket.



◎ : Excellent ○ : Good

ISO	P											M				K				
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend																				

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc						15	30	25	38	34	15	30	25	38	34	55	60	42	40	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎																



PLAIN SHANK **E5981** SERIES  
PLAIN SHANK **E5983** SERIES

**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

■ SQUARE Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
28558	1/8	1/8	3/8	1-1/2
28565	3/16	3/16	9/16	2
28573	1/4	1/4	5/8	2-1/2
28579	5/16	5/16	5/8	2-1/2
28584	3/8	3/8	1	2-1/2
28588	7/16	7/16	1-1/4	2-3/4
28593	1/2	1/2	1-1/4	3
28595	5/8	5/8	1-5/8	3-1/2
28598	3/4	3/4	1-5/8	4
28600	1	1	2	5

■ CORNER RADIUS Unit : Inch

EDP No.	Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EA50321	R.060	1/2	1/2	1-1/4	3
EA50401	R.060	5/8	5/8	1-5/8	3-1/2
EA50481	R.060	3/4	3/4	1-5/8	4
EA50641	R.065	1	1	2	5
EA20321	R.120	1/2	1/2	1-1/4	3
EA20401	R.120	5/8	5/8	1-5/8	3-1/2
EA20481	R.120	3/4	3/4	1-5/8	4
EA20641	R.120	1	1	2	5

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~.0005	0~.0003

◎ : Excellent ○ : Good

ISO Material Description	P											M				K				
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend																				

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎																



PLAIN SHANK **E5982** SERIES  
PLAIN SHANK **E5984** SERIES

**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

■ SQUARE Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
36573	1/4	1/4	1-1/4	3-1/4
36579	5/16	5/16	1-1/4	3-1/2
36584	3/8	3/8	1-1/2	3-1/2
36588	7/16	7/16	2	4
36593	1/2	1/2	2	4
36595	5/8	5/8	2-1/2	5
36598	3/4	3/4	3-1/4	6
36600	1	1	3-1/4	6

■ CORNER RADIUS Unit : Inch

EDP No.	Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
EA60321	R.060	1/2	1/2	2	4
EA60401	R.060	5/8	5/8	2-1/2	5
EA60481	R.060	3/4	3/4	3-1/4	6
EA60641	R.060	1	1	3-1/4	6
EA30321	R.120	1/2	1/2	2	4
EA30401	R.120	5/8	5/8	2-1/2	5
EA30481	R.120	3/4	3/4	3-1/4	6
EA30641	R.120	1	1	3-1/4	6

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~.0005	0~.0003

◎ : Excellent ○ : Good

ISO Material Description	P											M				K				
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend																				

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎																





PLAIN SHANK **E5E44** SERIES  
 PLAIN SHANK **E5E98** SERIES

**CARBIDE, 3 FLUTE ROUGHING / ROUGHING with NECK**

- ▶ Excellent cutting qualities on aluminum, copper
- ▶ Increased tool life and superior chip evacuation
- ▶ Reduces chipping of corner edges



\* WITH NECK

CARBIDE 3 30° PLAIN p.C643

◆ U.S.A Stock

■ ROUGHING

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
44016	1/4	1/4	3/4	2-1/2
44024	3/8	3/8	7/8	2-1/2
44032	1/2	1/2	1	3
44040	5/8	5/8	1-1/4	3-1/2
44048	3/4	3/4	1-5/8	4
44064	1	1	1-3/4	4

■ ROUGHING WITH NECK

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
98016	1/4	1/4	3/4	1	2-1/2	.210
98024	3/8	3/8	7/8	1-1/4	3	.335
98032	1/2	1/2	1	1-3/8	3-1/4	.440
98040	5/8	5/8	1-1/4	1-3/4	3-3/4	.565
98048	3/4	3/4	1-5/8	2-1/4	4-1/2	.690
98064	1	1	1-3/4	2-1/2	5	.940

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~- .0005	0~- .0003

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend																				

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc						15	30	25	38	34	15	30	25	38	34	55	60	42	55		
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎																



PLAIN SHANK **E5E45** SERIES

**CARBIDE, 3 FLUTE ROUGHING BALL NOSE**

- ▶ Excellent cutting qualities on aluminum, copper
- ▶ Increased tool life and superior chip evacuation
- ▶ Reduces chipping of corner edges



CARBIDE 3 30° PLAIN p.C643

◆ U.S.A Stock

■ ROUGHING

Unit : Inch

SAB CODE	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
45016	1/4	1/4	3/4	2-1/2	3
45024	3/8	3/8	7/8	2-1/2	3
45032	1/2	1/2	1	3	3
45040	5/8	5/8	1-1/4	3-1/2	3
45048	3/4	3/4	1-5/8	4	3
45064	1	1	1-3/4	4	3

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~- .0005	0~- .0003

◎ : Excellent ○ : Good

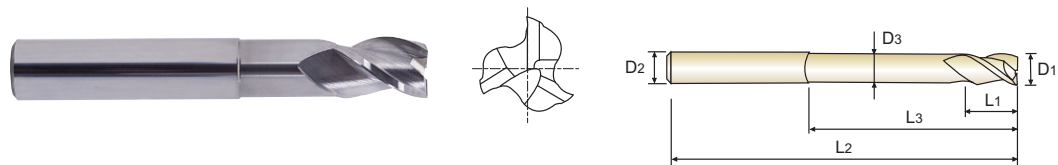
ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend																				

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc						15	30	25	38	34	15	30	25	38	34	55	60	42	55		
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎																

**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.

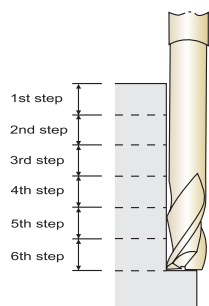


◆ U.S.A Stock

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

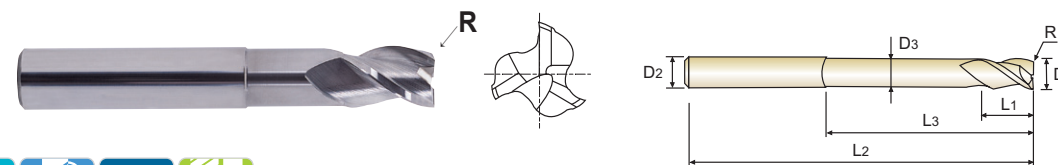
ISO Material Description	P										M				K			H		
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend																				

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials	Heat Resistant Super Alloys					Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎																

**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.

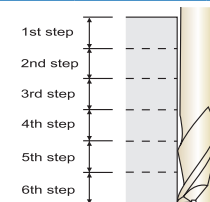


◆ U.S.A Stock

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
UNCOATED	TICN COATED	R	D1	D2	L1	L3	L2	D3
EA40321	EA40321C	R.060	1/2	1/2	5/8	3-1/4	6	.470
EA40322	EA40322C	R.060	1/2	1/2	5/8	4	6	.470
EA40401	EA40401C	R.060	5/8	5/8	3/4	2-1/4	5	.585
EA40402	EA40402C	R.060	5/8	5/8	3/4	3-1/4	6	.585
EA40403	EA40403C	R.060	5/8	5/8	3/4	4-1/4	7	.585
EA40481	EA40481C	R.060	3/4	3/4	1	2-1/4	5	.710
EA40482	EA40482C	R.060	3/4	3/4	1	3-1/4	6	.710
EA40483	EA40483C	R.060	3/4	3/4	1	4-1/4	7	.710
EA40641	EA40641C	R.060	1	1	1-1/8	2-1/4	5	.960
EA40642	EA40642C	R.060	1	1	1-1/8	3-1/4	6	.960
EA40643	EA40643C	R.060	1	1	1-1/8	4-1/4	7	.960
EA10321	EA10321C	R.120	1/2	1/2	5/8	3-1/4	6	.470
EA10322	EA10322C	R.120	1/2	1/2	5/8	4	6	.470
EA10401	EA10401C	R.120	5/8	5/8	3/4	2-1/4	5	.585
EA10402	EA10402C	R.120	5/8	5/8	3/4	3-1/4	6	.585
EA10403	EA10403C	R.120	5/8	5/8	3/4	4-1/4	7	.585
EA10481	EA10481C	R.120	3/4	3/4	1	2-1/4	5	.710
EA10482	EA10482C	R.120	3/4	3/4	1	3-1/4	6	.710
EA10483	EA10483C	R.120	3/4	3/4	1	4-1/4	7	.710
EA10641	EA10641C	R.120	1	1	1-1/8	2-1/4	5	.960
EA10642	EA10642C	R.120	1	1	1-1/8	3-1/4	6	.960
EA10643	EA10643C	R.120	1	1	1-1/8	4-1/4	7	.960

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~- .0005	0~- .0003



STEP MILLING

◎ : Excellent ○ : Good

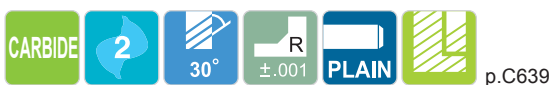
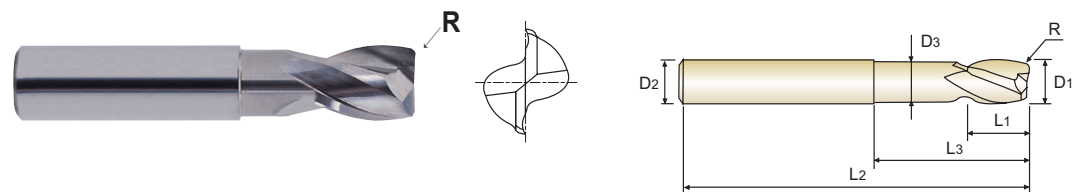
ISO Material Description	P										M				K			H		
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend																				

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials	Heat Resistant Super Alloys					Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎																

**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.

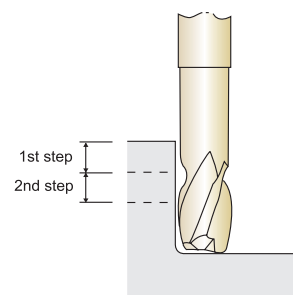


◆ U.S.A Stock

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	D3	L1	L3	L2	D3
24562	24562TC	R.012	5/32	1/4	1/4	3/16	3/8	2	.140
24573	24573TC	R.020	1/4	1/4	1/4	5/16	3/4	2-3/8	.226
24579	24579TC	R.024	5/16	5/16	5/16	3/8	1-1/8	2-3/4	.282
24584	24584TC	R.031	3/8	3/8	3/8	1/2	1-1/2	3-1/8	.336
24593	24593TC	R.040	1/2	1/2	1/2	9/16	1-1/2	3-1/2	.460
24595	24595TC	R.051	5/8	5/8	5/8	3/4	1-3/4	4	.566
24598	24598TC	R.063	3/4	3/4	3/4	1	1-3/4	4	.670

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-0.0012	0~-0.0003



STEP MILLING

◎ : Excellent ○ : Good

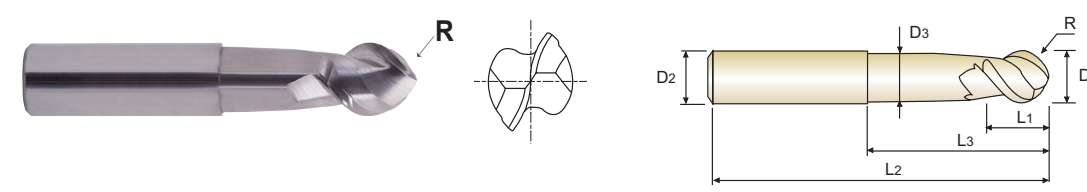
ISO Material Description	P											M				K					
	Non-alloy steel				Low alloy steel				High alloyed steel, and tool steel			Stainless steel				Grey cast iron		Nodular cast iron	Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend																					

ISO Material Description	N					S					H											
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron							
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc						15	30	25	38	34	15	30	25	38	34	55	60	42	55	55	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommend	◎	◎	◎	◎	◎																	

**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.

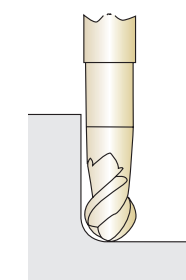


◆ U.S.A Stock

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	D3	L1	L3	L2	D3
37573	37573TC	R 1/8	1/4	1/4	1/4	7/32	1	2-1/4	.226
37579	37579TC	R 5/32	5/16	5/16	5/16	9/32	1-1/8	2-1/2	.280
37584	37584TC	R 3/16	3/8	3/8	3/8	11/32	1-3/8	3	.335
37593	37593TC	R 1/4	1/2	1/2	1/2	13/32	1-1/2	3	.460
37595	37595TC	R 5/16	5/8	5/8	5/8	9/16	2	3-1/2	.566
37598	37598TC	R 3/8	3/4	3/4	3/4	11/16	2	4	.671

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-0.0010	0~-0.0003



STEP MILLING

◎ : Excellent ○ : Good

ISO Material Description	P											M				K					
	Non-alloy steel				Low alloy steel				High alloyed steel, and tool steel			Stainless steel				Grey cast iron		Nodular cast iron	Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend																					

ISO Material Description	N					S					H											
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron							
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc						15	30	25	38	34	15	30	25	38	34	55	60	42	55	55	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommend	◎	◎	◎	◎	◎																	

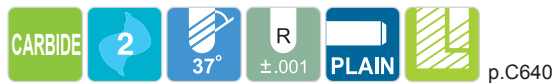
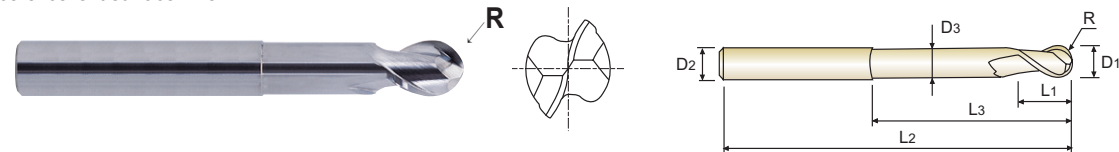


# YG ALU-POWER END MILLS

PLAIN SHANK **E5978** SERIES

## 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.

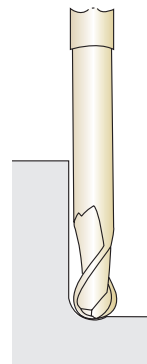


◆ U.S.A Stock

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	R 1/2	1	1	1-1/8	2-1/4	5	.960
89907	89907TC	R 1/2	1	1	1-1/8	3-1/4	6	.960
89908	89908TC	R 1/2	1	1	1-1/8	4-1/4	7	.960

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~- .0012	0~- .0003



◎ : Excellent ○ : Good

ISO Material Description	P											M				K					
	Non-alloy steel				Low alloy steel				High alloyed steel, and tool steel			Stainless steel				Grey cast iron		Nodular cast iron	Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend																					

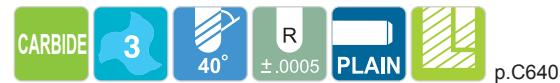
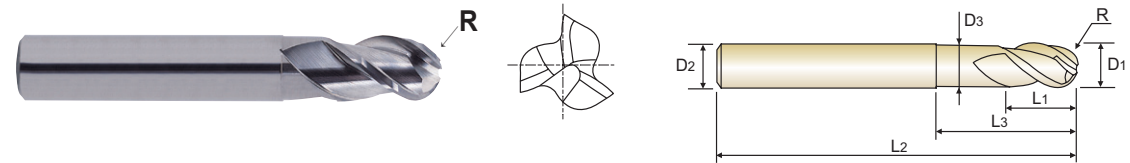
ISO Material Description	N					S					H											
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron							
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc											15	30	25	38	34			55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommend	◎	◎	◎	◎	◎																	

# YG ALU-POWER END MILLS

PLAIN SHANK **E5975** SERIES

## 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.

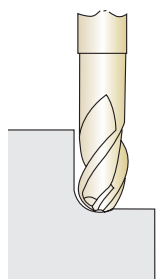


◆ U.S.A Stock

Unit : Inch

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
UNCOATED	TICN COATED	R (±.0005)	D1	D2	L1	L3	L2	D3
38602	38602TC	R 3/64	3/32	1/4	1/8	3/16	2-3/8	.090
38601	38601TC	R 1/16	1/8	1/4	3/16	1/4	2-3/8	.117
38566	38566TC	R 3/32	3/16	1/4	1/4	3/8	2-1/2	.172
38573	38573TC	R 1/8	1/4	1/4	3/8	1/2	3	.235
38579	38579TC	R 5/32	5/16	5/16	1/2	1	3	.289
38584	38584TC	R 3/16	3/8	3/8	5/8	1-1/4	3-1/8	.351
38593	38593TC	R 1/4	1/2	1/2	3/4	1-3/8	3-1/2	.476
38595	38595TC	R 5/16	5/8	5/8	1	1-1/2	4	.601

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~- .0012	0~- .0003



◎ : Excellent ○ : Good

ISO Material Description	P											M				K					
	Non-alloy steel				Low alloy steel				High alloyed steel, and tool steel			Stainless steel				Grey cast iron		Nodular cast iron	Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend																					

ISO Material Description	N					S					H											
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron							
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc											15	30	25	38	34			55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommend	◎	◎	◎	◎	◎																	



PLAIN SHANK **E5522** SERIES  
 PLAIN SHANK **EG522** SERIES

**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.



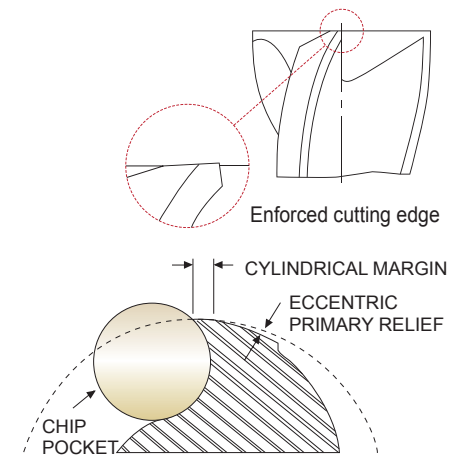
◇ Call for Availability

Unit : Inch

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length	
	UNCOATED	TiCN COATED				
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

ISO Material Description	P											M				K				
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend																				

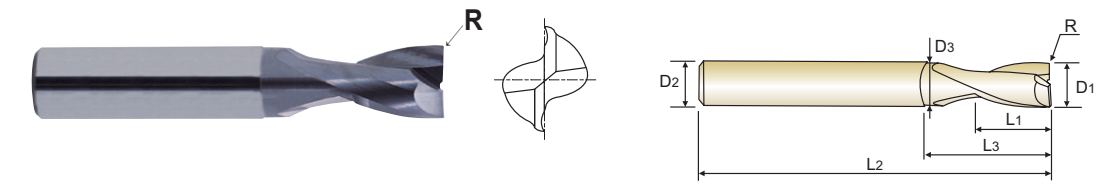
ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc						15	30	25	38	34	15	30	25	38	34	55	60	42	40	41	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎																



PLAIN SHANK **EG930** SERIES

**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.

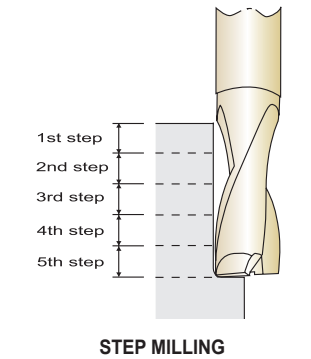


◇ Call for Availability

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					
EG930020	R0.2	2.0	.0787	3	3	6	40	1.9
EG930030	R0.2	3.0	.1181	3	4	8	40	2.9
EG930040	R0.2	4.0	.1575	4	5	12	50	3.8
EG930050	R0.2	5.0	.1969	5	8	14	50	4.8
EG930060	R0.2	6.0	.2362	6	8	18	65	5.7
EG930080	R0.2	8.0	.3150	8	10	22	70	7.7
EG930100	R0.2	10.0	.3937	10	14	28	80	9.7
EG930120	R0.2	12.0	.4724	12	16	35	90	11.5
EG930160	R0.2	16.0	.6299	16	20	40	90	15.5
EG930200	R0.2	20.0	.7874	20	25	50	100	19.5

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.03	h6



◎ : Excellent ○ : Good

ISO Material Description	P											M				K				
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend																				

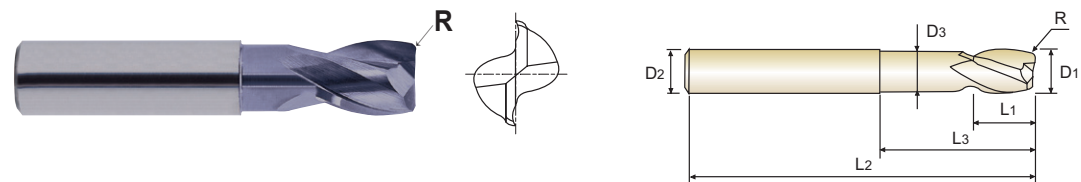
ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc						15	30	25	38	34	15	30	25	38	34	55	60	42	40	41	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎																

# YG ALU-POWER END MILLS

PLAIN SHANK **EG909** SERIES

## 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.

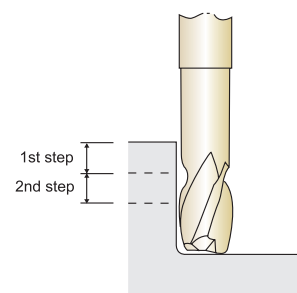


◇ Call for Availability

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					
EG909040	R0.3	4.0	.1575	6	5	10	50	3.6
EG909060	R0.5	6.0	.2362	6	8	20	60	5.4
EG909080	R0.6	8.0	.3150	8	10	30	70	7.2
EG909100	R0.8	10.0	.3937	10	12	36	80	9.0
EG909120	R1.0	12.0	.4724	12	14	40	90	11.0
EG909160	R1.3	16.0	.6299	16	18	45	100	14.5
EG909200	R1.6	20.0	.7874	20	24	45	100	18.0

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.03	h6



STEP MILLING

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend																				

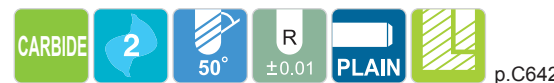
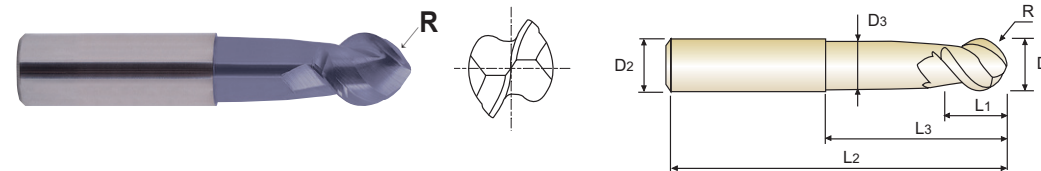
ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎																

# YG ALU-POWER END MILLS

PLAIN SHANK **EG910** SERIES

## 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.

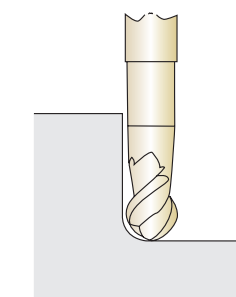


◇ Call for Availability

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

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend																				

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎																

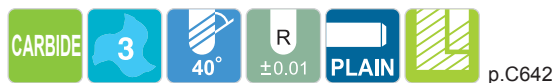
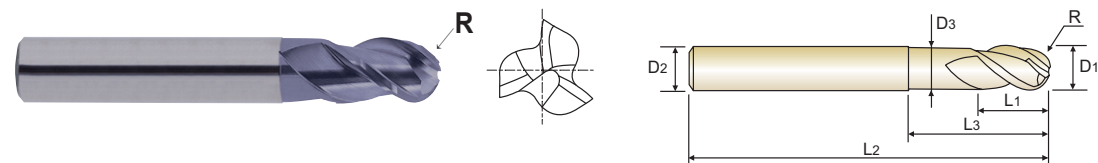


# YG ALU-POWER END MILLS

PLAIN SHANK **EG908** SERIES

## 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.

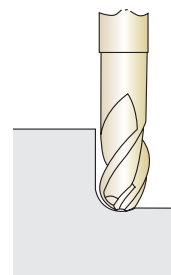


◇ Call for Availability

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					
EG908020	R1.0	2.0	.0787	6	3	5	60	1.9
EG908025	R1.25	2.5	.0984	6	4	6	60	2.4
EG908030	R1.5	3.0	.1181	6	4.5	6.5	60	2.8
EG908035	R1.75	3.5	.1378	6	5	7	65	3.2
EG908040	R2.0	4.0	.1575	6	6	8	65	3.7
EG908050	R2.5	5.0	.1969	6	7.5	10	65	4.6
EG908060	R3.0	6.0	.2362	6	9	12	75	5.6
EG908080	R4.0	8.0	.3150	8	12	25	75	7.4
EG908100	R5.0	10.0	.3937	10	15	30	80	9.4
EG908120	R6.0	12.0	.4724	12	18	36	90	11.4
EG908160	R8.0	16.0	.6299	16	24	40	100	15.4

Mill Dia. Tolerance (mm)	Shank Dia. Tolerance
0~-0.03	h6



◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend																				

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	55	60	42	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎																

# YG ALU-POWER END MILLS

FLAT SHANK **EK191** SERIES

## HSS-PM, 3 FLUTE 42° HELIX REGULAR LENGTH ROUGHING for ALUMINUM

- ▶ High performance metal removal in aluminum alloys.
- ▶ Corner radius against chipping



◆ U.S.A Stock

### ■ SQUARE

Unit : Inch

EDP No.	UNCOATED	TiCN COATED	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
66519	66519 PC	5/8	5/8	1-5/8	3-3/4	
66524	66524 PC	3/4	3/4	1-5/8	3-7/8	
66540	66540 PC	1	1	2	4-1/2	
66541	66541 PC	1-1/4	1-1/4	2	4-1/2	
66542	66542 PC	1-1/2	1-1/4	2	4-1/2	
*66543	*66543 PC	2	2	2	5-3/4	

\*Combination Shank



◆ U.S.A Stock

### ■ with CORNER RADIUS

Unit : Inch

EDP No.	UNCOATED	TiCN COATED	Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
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

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend																				

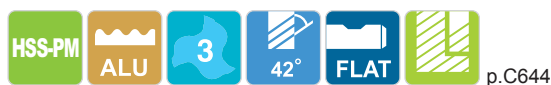
ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	55	60	42	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎																

# YG ALU-POWER END MILLS

FLAT SHANK **EK226** SERIES

## HSS-PM, 3 FLUTE 42° HELIX & MEDIUM LENGTH ROUGHING for ALUMINUM

- ▶ High performance metal removal in aluminum alloys.
- ▶ Corner radius against chipping



◆ 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	2-1/2	4-5/8
80540	80540 PC	1	1	3	5-1/2
80541	80541 PC	1-1/4	1-1/4	3	5-1/2
80542	80542 PC	1-1/2	1-1/4	3	5-1/2
*80543	*80543 PC	2	2	3	6-3/4

\*Combination Shank



◆ 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

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend																				

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎																

# YG ALU-POWER END MILLS

FLAT SHANK **EK192** SERIES

## HSS-PM, 3 FLUTE 42° HELIX LONG LENGTH ROUGHING for ALUMINUM

- ▶ High performance metal removal in aluminum alloys.



◆ U.S.A Stock

■ SQUARE

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

\*Combination Shank

■ with NECK

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
UNCOATED	TiCN COATED						
EK10482	EK10482C	3/4	3/4	1-1/2	3	5-1/4	.705
EK10483	EK10483C	3/4	3/4	1-1/2	4	6-1/4	.705
EK10642	EK10642C	1	1	1-1/2	3	5-1/2	.950
EK10643	EK10643C	1	1	2	4	6-1/2	.950
EK10644	EK10644C	1	1	2	6	8-1/2	.950
EK11601	EK11601C	1-1/4	1-1/4	2	4	6-1/2	1.200
EK11602	EK11602C	1-1/4	1-1/4	2	6	8-1/2	1.200

■ The TiN coated, or TiAlN coated is available on your request.

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend																				

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎																



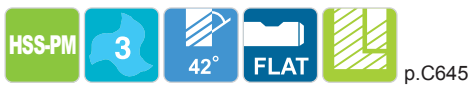




FLAT SHANK **EK193** SERIES  
FLAT SHANK **EK132** SERIES

**HSS-PM, 3 FLUTE FINISHING REGULAR LENGTH & MEDIUM LENGTH & LONG LENGTH**

► High performance metal removal in aluminum alloys.



◆ U.S.A Stock

■ SQUARE

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TICN COATED				
EP10323	EP10323C	1/2	1/2	1-1/4	3-1/4
EP10324	EP10324C	1/2	1/2	2	4
EP10403	EP10403C	5/8	5/8	1-5/8	3-3/4
EP10404	EP10404C	5/8	5/8	2-1/2	4-5/8
EP10484	EP10484C	3/4	3/4	1-5/8	3-7/8
EP10485	EP10485C	3/4	3/4	2-1/4	4-5/8
EP10486	EP10486C	3/4	3/4	3	5-1/4
EP10644	EP10644C	1	1	2	4-1/2
EP10645	EP10645C	1	1	3	5-1/2
EP10646	EP10646C	1	1	4	6-1/2
EP11165	EP11165C	1-1/4	1-1/4	2	4-1/2
EP11166	EP11166C	1-1/4	1-1/4	3	5-1/2
EP11167	EP11167C	1-1/4	1-1/4	4	6-1/2
EP11324	EP11324C	1-1/2	1-1/4	2	4-1/2
EP11325	EP11325C	1-1/2	1-1/4	3	5-1/2
EP11326	EP11326C	1-1/2	1-1/4	4	6-1/2

■ SQUARE with NECK

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
UNCOATED	TICN COATED						
EK13210	EK13210C	3/4	3/4	1-1/2	3	5-1/4	.705
EK13211	EK13211C	3/4	3/4	1-1/2	4	6-1/4	.705
EK13212	EK13212C	1	1	1-1/2	3	5-1/2	.950
EK13213	EK13213C	1	1	2	4	6-1/2	.950
EK13214	EK13214C	1	1	2	6	8-1/2	.950
EK13215	EK13215C	1-1/4	1-1/4	2	4	6-1/2	1.200
EK13216	EK13216C	1-1/4	1-1/4	2	6	8-1/2	1.200

■ 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

ISO Material Description	P											M				K				
	Non-alloy steel					Low alloy steel			High alloyed steel, and tool steel			Stainless steel		Grey cast iron	Nodular cast iron		Malleable cast iron			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend																				

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎																



FLAT SHANK **EK193** SERIES

**HSS-PM, 3 FLUTE FINISHING CORNER RADIUS REGULAR LENGTH & MEDIUM LENGTH & LONG LENGTH**

► High performance metal removal in aluminum alloys.  
► Corner radius against chipping



◆ U.S.A Stock

EDP No.		Corner Radius R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TICN COATED					
EP10321	EP10321C	R.120	1/2	1/2	1-1/4	3-1/4
EP10322	EP10322C	R.120	1/2	1/2	2	4
EP10401	EP10401C	R.120	5/8	5/8	1-5/8	3-3/4
EP10402	EP10402C	R.120	5/8	5/8	2-1/2	4-5/8
EP10481	EP10481C	R.120	3/4	3/4	1-5/8	3-7/8
EP10482	EP10482C	R.120	3/4	3/4	2-1/4	4-5/8
EP10483	EP10483C	R.120	3/4	3/4	3	5-1/4
EP10641	EP10641C	R.120	1	1	2	4-1/2
EP10642	EP10642C	R.120	1	1	3	5-1/2
EP10643	EP10643C	R.120	1	1	4	6-1/2
EP11162	EP11162C	R.120	1-1/4	1-1/4	2	4-1/2
EP11163	EP11163C	R.120	1-1/4	1-1/4	3	5-1/2
EP11164	EP11164C	R.120	1-1/4	1-1/4	4	6-1/2
EP11321	EP11321C	R.120	1-1/2	1-1/4	2	4-1/2
EP11322	EP11322C	R.120	1-1/2	1-1/4	3	5-1/2
EP11323	EP11323C	R.120	1-1/2	1-1/4	4	6-1/2

■ The TiN coated, or TiAlN coated is available on your request.

Mill Dia. Tolerance (inch)
0~+.0010
* * 0~+.0015

\* \* The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

ISO Material Description	P											M				K				
	Non-alloy steel					Low alloy steel			High alloyed steel, and tool steel			Stainless steel		Grey cast iron	Nodular cast iron		Malleable cast iron			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend																				

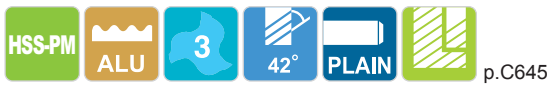
ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎																



PLAIN SHANK **EP922** SERIES

**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.



◇ Call for Availability

Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
	js12		h6		
EP922120	12.0	.4724	12	26	83
EP922140	14.0	.5512	12	26	83
EP922160	16.0	.6299	16	32	92
EP922180	18.0	.7087	16	32	92
EP922200	20.0	.7874	20	38	104
EP922220	22.0	.8661	20	38	104
EP922250	25.0	.9843	25	45	121
EP922280	28.0	1.1024	25	45	121
EP922320	32.0	1.2598	32	53	133

**Tolerances according to DIN 7160 & 7161**

Tolerance range in μm						
Nominal-Diameter in mm						
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30	over 30 to 50
<b>js12</b>	± 50	± 60	± 75	± 90	± 105	± 125
<b>h6</b>	$\begin{matrix} 0 \\ -6 \end{matrix}$	$\begin{matrix} 0 \\ -8 \end{matrix}$	$\begin{matrix} 0 \\ -9 \end{matrix}$	$\begin{matrix} 0 \\ -11 \end{matrix}$	$\begin{matrix} 0 \\ -13 \end{matrix}$	$\begin{matrix} 0 \\ -16 \end{matrix}$

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend																				

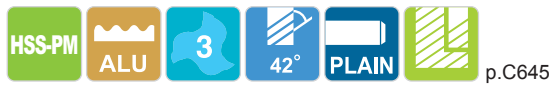
ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc						15	30	25	38	34	15	30	25	38	34	55	60	42	55		55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎																



PLAIN SHANK **EP924** SERIES

**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 μm						
Nominal-Diameter in mm						
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30	over 30 to 50
<b>js12</b>	± 50	± 60	± 75	± 90	± 105	± 125
<b>h6</b>	$\begin{matrix} 0 \\ -6 \end{matrix}$	$\begin{matrix} 0 \\ -8 \end{matrix}$	$\begin{matrix} 0 \\ -9 \end{matrix}$	$\begin{matrix} 0 \\ -11 \end{matrix}$	$\begin{matrix} 0 \\ -13 \end{matrix}$	$\begin{matrix} 0 \\ -16 \end{matrix}$

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend																				

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc						15	30	25	38	34	15	30	25	38	34	55	60	42	55		55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎																

HSS

# YG ALU-POWER END MILLS

## RECOMMENDED CUTTING CONDITIONS

### E5253, E5254 SERIES

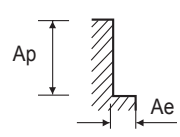
#### 2 FLUTE - SIDE CUTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)												
						1/8	5/32	3/16	1/4	5/16	3/8	1/2	9/16	5/8	11/16	13/16		
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	D1/8 ~ 3/8 : 0.25D D1/2 ~ 13/16 : 0.5D	1.0D	SFM (Vc)	325	410	490	655	655	785	1045	885	980	720	850		
					IPT (fz)	.0018	.0022	.0026	.0030	.0044	.0052	.0064	.0073	.0079	.0089	.0094		
					RPM	10000	10000	10000	10000	8000	8000	8000	6000	6000	4000	4000		
					IPM (FEED)	35	43	51	59	71	83	102	87	95	71	75		

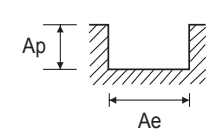
SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

#### 2 FLUTE - SLOTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)												
						1/8	5/32	3/16	1/4	5/16	3/8	1/2	9/16	5/8	11/16	13/16		
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	1.0D	0.5D	SFM (Vc)	325	410	490	655	655	785	1045	885	980	720	850		
					IPT (fz)	.0014	.0018	.0020	.0024	.0034	.0042	.0052	.0059	.0063	.0069	.0079		
					RPM	10000	10000	10000	10000	8000	8000	8000	6000	6000	4000	4000		
					IPM (FEED)	28	35	39	47	55	67	83	71	75	55	63		



※ The Feed, in long & extra long types, should be reduced by around 50%.



※ The Feed, in long & extra long types, should be reduced by around 50%.

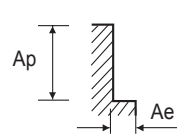
### EG253, EG254 SERIES TiCN Coated

#### 2 FLUTE - SIDE CUTTING

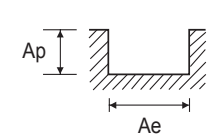
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)												
						1/8	5/32	3/16	1/4	5/16	3/8	1/2	9/16	5/8	11/16	13/16		
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	D1/8 ~ 3/8 : 0.25D D1/2 ~ 13/16 : 0.5D	1.0D	SFM (Vc)	395	490	590	785	785	940	1255	1060	1180	865	1020		
					IPT (fz)	.0024	.0028	.0033	.0040	.0057	.0067	.0084	.0092	.0102	.0114	.0123		
					RPM	12000	12000	12000	12000	9600	9600	9600	7200	7200	4800	4800		
					IPM (FEED)	57	66	80	95	109	128	161	132	147	109	118		

#### 2 FLUTE - SLOTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)												
						1/8	5/32	3/16	1/4	5/16	3/8	1/2	9/16	5/8	11/16	13/16		
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	1.0D	0.5D	SFM (Vc)	510	640	765	1020	980	1180	1570	1415	1570	1080	1275		
					IPT (fz)	.0014	.0018	.0020	.0023	.0035	.0043	.0053	.0057	.0061	.0071	.0079		
					RPM	15600	15600	15600	15600	12000	12000	12000	9600	9600	6000	6000		
					IPM (FEED)	43	57	61	71	85	104	128	109	118	85	95		



※ The Feed, in long & extra long types, should be reduced by around 50%.



※ The Feed, in long & extra long types, should be reduced by around 50%.

# YG ALU-POWER END MILLS

## RECOMMENDED CUTTING CONDITIONS

### E5980, E5981, E5982, E5983, E5984 SERIES

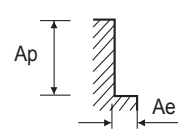
#### 3 FLUTE - SIDE CUTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)												
						1/8	5/32	3/16	1/4	5/16	3/8	1/2	9/16	5/8	11/16	13/16		
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	D1/8 ~ 3/8 : 0.25D D1/2 ~ 13/16 : 0.5D	1.0D	SFM (Vc)	325	410	490	655	655	785	1045	885	980	720	850		
					IPT (fz)	.0014	.0017	.0020	.0024	.0035	.0041	.0051	.0058	.0063	.0071	.0075		
					RPM	10000	10000	10000	10000	8000	8000	8000	6000	6000	4000	4000		
					IPM (FEED)	43	52	61	71	85	99	123	104	113	85	90		

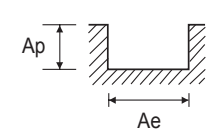
SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

#### 3 FLUTE - SLOTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)												
						1/8	5/32	3/16	1/4	5/16	3/8	1/2	9/16	5/8	11/16	13/16		
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	1.0D	0.5D	SFM (Vc)	325	410	490	655	655	785	1045	885	980	720	850		
					IPT (fz)	.0011	.0014	.0016	.0019	.0028	.0033	.0041	.0047	.0050	.0055	.0063		
					RPM	10000	10000	10000	10000	8000	8000	8000	6000	6000	4000	4000		
					IPM (FEED)	33	43	47	57	66	80	99	85	90	66	76		



※ The Feed, in long & extra long types, should be reduced by around 50%.



※ The Feed, in long & extra long types, should be reduced by around 50%.

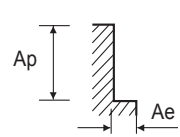
### EG980, EG981, EG982, EG983, EG984 SERIES TiCN Coated

#### 3 FLUTE - SIDE CUTTING

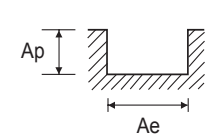
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)												
						1/8	5/32	3/16	1/4	5/16	3/8	1/2	9/16	5/8	11/16	13/16		
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	D1/8 ~ 3/8 : 0.25D D1/2 ~ 13/16 : 0.5D	1.0D	SFM (Vc)	395	490	590	785	785	940	1255	1060	1180	865	1020		
					IPT (fz)	.0015	.0019	.0022	.0026	.0039	.0045	.0056	.0063	.0068	.0077	.0081		
					RPM	12000	12000	12000	12000	9600	9600	9600	7200	7200	4800	4800		
					IPM (FEED)	55	68	80	92	111	129	160	135	147	111	117		

#### 3 FLUTE - SLOTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)												
						1/8	5/32	3/16	1/4	5/16	3/8	1/2	9/16	5/8	11/16	13/16		
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	1.0D	0.5D	SFM (Vc)	510	640	765	1020	980	1180	1570	1415	1570	1080	1275		
					IPT (fz)	.0009	.0012	.0013	.0016	.0024	.0029	.0036	.0039	.0041	.0048	.0054		
					RPM	15600	15600	15600	15600	12000	12000	12000	9600	9600	6000	6000		
					IPM (FEED)	43	55	61	74	86	104	129	111	117	86	98		



※ The Feed, in long & extra long types, should be reduced by around 50%.



※ The Feed, in long & extra long types, should be reduced by around 50%.



**E5977, E5985 SERIES**

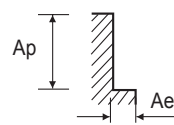
**3 FLUTE - SIDE CUTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)					
						1/4	3/8	1/2	5/8	3/4	1
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	D1/8 ~ 3/8 : 0.25D D1/2 ~ 13/16 : 0.5D	1.0D	SFM (Vc)	525	630	840	785	630	680
					IPT (fz)	.0024	.0041	.0051	.0063	.0091	.0101
					RPM	8000	6400	6400	4800	3200	2600
					IPM (FEED)	57	79	98	91	87	79

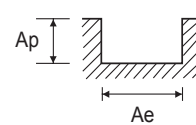
SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

**3 FLUTE - SLOTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)					
						1/4	3/8	1/2	5/8	3/4	1
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	1.0D	0.5D	SFM (Vc)	525	630	840	785	630	680
					IPT (fz)	.0019	.0033	.0041	.0050	.0074	.0082
					RPM	8000	6400	6400	4800	3200	2600
					IPM (FEED)	45	64	79	72	71	64



※ The Feed, in long & extra long types, should be reduced by around 50%.



※ The Feed, in long & extra long types, should be reduced by around 50%.

**EG977, EG985 SERIES TiCN Coated**

**3 FLUTE - SIDE CUTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)					
						1/4	3/8	1/2	5/8	3/4	1
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	D1/8 ~ 3/8 : 0.25D D1/2 ~ 13/16 : 0.5D	1.0D	SFM (Vc)	685	815	1085	1015	825	890
					IPT (fz)	.0023	.0041	.0051	.0063	.0090	.0100
					RPM	10500	8300	8300	6200	4200	3400
					IPM (FEED)	74	103	128	118	114	102

**3 FLUTE - SLOTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)					
						1/4	3/8	1/2	5/8	3/4	1
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	1.0D	0.5D	SFM (Vc)	685	815	1085	1015	825	890
					IPT (fz)	.0028	.0051	.0062	.0075	.0110	.0122
					RPM	10500	8300	8300	6200	4200	3400
					IPM (FEED)	59	84	103	93	92	83



※ The Feed, in long & extra long types, should be reduced by around 50%.



※ The Feed, in long & extra long types, should be reduced by around 50%.

**E5973 SERIES**

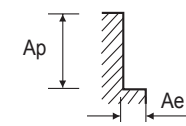
**2 FLUTE - SIDE CUTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)						
						5/32	1/4	5/16	3/8	1/2	5/8	3/4
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	D5/32 ~ 3/8 : 0.25D D1/2 ~ 3/4 : 0.5D	1.0D	SFM (Vc)	410	655	655	785	1045	980	785
					IPT (fz)	.0021	.0031	.0044	.0051	.0064	.0078	.0095
					RPM	10000	10000	8000	8000	6000	4000	4000
					IPM (FEED)	42	61	70	82	103	94	76
N	26-28	Copper and Copper Alloys (Bronze / Brass)	D5/32 ~ 3/8 : 0.25D D1/2 ~ 3/4 : 0.5D	1.0D	SFM (Vc)	125	195	190	225	300	295	225
					IPT (fz)	.0018	.0025	.0039	.0046	.0057	.0067	.0083
					RPM	3000	3000	2300	2300	2300	1800	1150
					IPM (FEED)	11	15	18	21	26	24	19

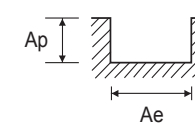
SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

**2 FLUTE - SLOTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)						
						5/32	1/4	5/16	3/8	1/2	5/8	3/4
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	1.0D	0.5D	SFM (Vc)	410	655	655	785	1045	980	785
					IPT (fz)	.0018	.0023	.0034	.0042	.0051	.0063	.0076
					RPM	10000	10000	8000	8000	8000	6000	4000
					IPM (FEED)	36	45	55	67	82	76	61
N	26-28	Copper and Copper Alloys (Bronze / Brass)	1.0D	0.5D	SFM (Vc)	125	195	190	225	300	295	225
					IPT (fz)	.0015	.0020	.0030	.0037	.0046	.0053	.0065
					RPM	3000	3000	2300	2300	2300	1800	1150
					IPM (FEED)	9	12	14	17	21	19	15



※ The Feed, in long & extra long types, should be reduced by around 50%.



※ The Feed, in long & extra long types, should be reduced by around 50%.

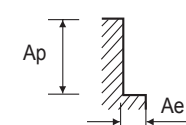
**E5976 SERIES**

**2 FLUTE - SIDE CUTTING**

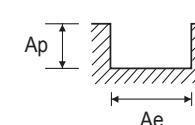
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)					
						1/4	3/8	1/2	5/8	3/4	1
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	D1/4 ~ 3/8 : 0.25D D1/2 ~ 1 : 0.5D	1.0D	SFM (Vc)	525	630	840	785	630	680
					IPT (fz)	.0029	.0052	.0064	.0079	.0114	.0127
					RPM	8000	6400	6400	4800	3200	2600
					IPM (FEED)	47	66	82	76	73	66

**2 FLUTE - SLOTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)					
						1/4	3/8	1/2	5/8	3/4	1
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	0.5D	1.0D	SFM (Vc)	525	630	840	785	630	680
					IPT (fz)	.0024	.0042	.0052	.0063	.0092	.0102
					RPM	8000	6400	6400	4800	3200	2600
					IPM (FEED)	38	54	66	60	59	53



※ The Feed, in long & extra long types, should be reduced by around 50%.



※ The Feed, in long & extra long types, should be reduced by around 50%.

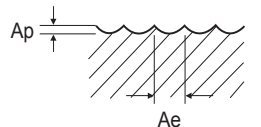
HSS

# YG ALU-POWER END MILLS

## RECOMMENDED CUTTING CONDITIONS

### E5978 SERIES 2 FLUTE - PLANE

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)					
						1/4	5/16	3/8	1/2	5/8	3/4
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	0.5D	0.2D	SFM (Vc)	735	705	845	1125	1115	845
					IPT (fz)	.0025	.0037	.0043	.0055	.0063	.0080
					RPM	11200	8600	8600	8600	6800	4300
					IPM (FEED)	55	63	74	95	85	69

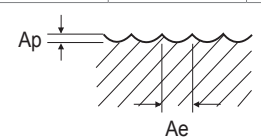


※ The Feed, in long & extra long types, should be reduced by around 50%.

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

### E5978 SERIES TiCN Coated 2 FLUTE - PLANE

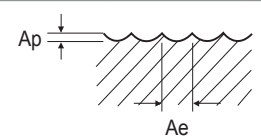
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)					
						1/4	5/16	3/8	1/2	5/8	3/4
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	0.5D	0.2D	SFM (Vc)	950	915	1100	1465	1440	1100
					IPT (fz)	.0025	.0037	.0043	.0055	.0063	.0093
					RPM	14500	11200	11200	11200	8800	5600
					IPM (FEED)	72	82	96	123	111	104



※ The Feed, in long & extra long types, should be reduced by around 50%.

### E5974 SERIES 2 FLUTE - PLANE

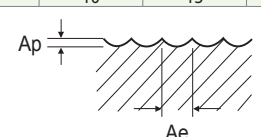
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)					
						1/4	5/16	3/8	1/2	5/8	3/4
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	0.5D	0.2D	SFM (Vc)	915	885	1060	1415	1390	1060
					IPT (fz)	.0019	.0028	.0033	.0042	.0048	.0062
					RPM	14000	10800	10800	10800	8500	5400
					IPM (FEED)	53	61	71	91	82	67
N	26-28	Copper and Copper Alloys (Bronze / Brass)	0.5D	0.2D	SFM (Vc)	275	260	315	420	410	315
					IPT (fz)	.0015	.0023	.0028	.0036	.0040	.0053
					RPM	4200	3200	3200	3200	2500	1600
					IPM (FEED)	13	15	18	23	20	17



※ The Feed, in long & extra long types, should be reduced by around 50%.

### E5975 SERIES 3 FLUTE - PLANE

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)							
						3/32	1/8	3/16	1/4	5/16	3/8	1/2	5/8
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	0.5D	0.2D	SFM (Vc)	510	450	675	905	885	1060	1415	1390
					IPT (fz)	.0005	.0007	.0010	.0013	.0019	.0022	.0028	.0032
					RPM	20700	13800	13800	13800	10800	10800	10800	8500
					IPM (FEED)	29	29	41	53	61	71	91	82
N	26-28	Copper and Copper Alloys (Bronze / Brass)	0.5D	0.2D	SFM (Vc)	150	135	205	275	260	315	420	410
					IPT (fz)	.0004	.0006	.0008	.0010	.0016	.0019	.0024	.0027
					RPM	6200	4200	4200	4200	3200	3200	3200	2500
					IPM (FEED)	7	7	10	13	15	18	23	20



※ The Feed, in long & extra long types, should be reduced by around 50%.

# YG ALU-POWER END MILLS

## RECOMMENDED CUTTING CONDITIONS

### E5522 SERIES 2Flute / Side Cutting / METRIC

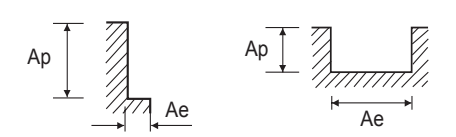
#### 2 FLUTE - SIDE CUTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)										
						3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	D3 ~ 10 : 0.25D D12 ~ 20 : 0.5D	1.0D	SFM (Vc)	310	410	515	620	660	825	990	865	990	740	825
					IPT (fz)	.0018	.0022	.0026	.0030	.0044	.0052	.0064	.0073	.0079	.0089	.0094
					RPM	10000	10000	10000	10000	8000	8000	8000	6000	6000	4000	4000
					IPM (FEED)	35	43	51	59	71	83	102	87	95	71	75

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

#### 2 FLUTE - SLOTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)										
						3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	1.0D	0.5D	SFM (Vc)	310	410	515	620	660	825	990	865	990	740	825
					IPT (fz)	.0014	.0018	.0020	.0024	.0034	.0042	.0052	.0059	.0063	.0069	.0079
					RPM	10000	10000	10000	10000	8000	8000	8000	6000	6000	4000	4000
					IPM (FEED)	28	35	39	47	55	67	83	71	75	55	63



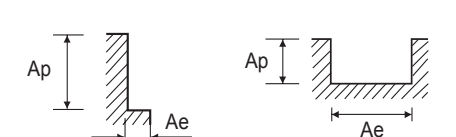
### EG522, EG930 SERIES TiCN Coated

#### 2 FLUTE - SIDE CUTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)										
						3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	D3 ~ 10 : 0.25D D12 ~ 20 : 0.5D	1.0D	SFM (Vc)	400	535	670	805	825	1030	1235	1155	1320	930	1030
					IPT (fz)	.0018	.0021	.0026	.0030	.0046	.0053	.0067	.0069	.0076	.0091	.0098
					RPM	13000	13000	13000	13000	10000	10000	10000	8000	8000	5000	5000
					IPM (FEED)	47	55	67	79	91	106	134	110	122	91	98

#### 2 FLUTE - SLOTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)										
						3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	1.0D	0.5D	SFM (Vc)	400	535	670	805	825	1030	1235	1155	1320	930	1030
					IPT (fz)	.0013	.0018	.0020	.0023	.0036	.0044	.0053	.0057	.0061	.0071	.0079
					RPM	13000	13000	13000	13000	10000	10000	10000	8000	8000	5000	5000
					IPM (FEED)	35	47	51	59	71	87	106	91	98	71	79



HSS



RECOMMENDED CUTTING CONDITIONS

**EG909 SERIES** TiCN Coated

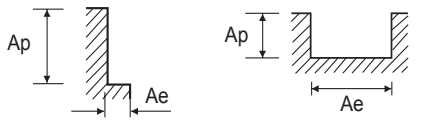
**2 FLUTE - SIDE CUTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)						
						4.0	6.0	8.0	10.0	12.0	16.0	20.0
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	~ D10 : 0.25D D12 ~ 20 : 0.5D	1.0D	SFM (Vc)	535	805	825	1030	1235	1320	1030
					IPT (fz)	.0021	.0030	.0046	.0053	.0067	.0076	.0098
					RPM	13000	13000	10000	10000	10000	8000	5000
					IPM (FEED)	55	79	91	106	134	122	98
					SFM (Vc)	160	240	245	310	370	395	310
					IPT (fz)	.001	.002	.003	.004	.005	.006	.008
					RPM	3900	3900	3000	3000	3000	2400	1500
					IPM (FEED)	14	20	23	27	34	31	25

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

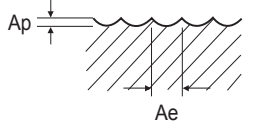
**2 FLUTE - SLOTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)						
						4.0	6.0	8.0	10.0	12.0	16.0	20.0
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	1.0D	0.5D	SFM (Vc)	535	805	825	1030	1235	1320	1030
					IPT (fz)	.0018	.0023	.0036	.0044	.0053	.0061	.0079
					RPM	13000	13000	10000	10000	10000	8000	5000
					IPM (FEED)	47	59	71	87	106	98	79
					SFM (Vc)	160	240	245	310	370	395	310
					IPT (fz)	.001	.001	.003	.003	.004	.005	.006
					RPM	3900	3900	3000	3000	3000	2400	1500
					IPM (FEED)	12	15	18	22	27	25	20



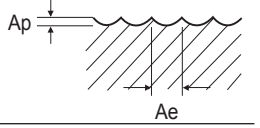
**EG910 SERIES** TiCN Coated **2 FLUTE - PLANE**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)					
						6.0	8.0	10.0	12.0	16.0	20.0
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	0.5D	0.2D	SFM (Vc)	1115	1155	1445	1730	1815	1445
					IPT (fz)	.0019	.0028	.0033	.0042	.0048	.0062
					RPM	18000	14000	14000	11000	7000	
					IPM (FEED)	69	79	93	118	106	87
					SFM (Vc)	340	345	435	520	545	435
					IPT (fz)	.001	.002	.002	.003	.003	.005
					RPM	5500	4200	4200	4200	3300	2100
					IPM (FEED)	17	20	23	30	26	22



**EG908 SERIES** TiCN Coated **3 FLUTE - PLANE**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)									
						2.0	2.5	3.0	4.0	5.0	6.0	8.0	10.0	12.0	16.0
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	0.5D	0.2D	SFM (Vc)	555	565	555	740	930	1115	1155	1445	1730	1815
					IPT (fz)	.0005	.0006	.0007	.0009	.0010	.0013	.0019	.0022	.0028	.0032
					RPM	27000	22000	18000	18000	18000	14000	14000	14000	14000	11000
					IPM (FEED)	37	37	37	49	53	69	79	93	118	106
					SFM (Vc)	165	165	170	225	285	340	345	435	520	545
					IPT (fz)	.0004	.0005	.0006	.0007	.0007	.001	.001	.001	.002	.002
					RPM	8000	6500	5500	5500	5500	4200	4200	4200	4200	3300
					IPM (FEED)	10	10	10	12	13	17	20	23	30	26



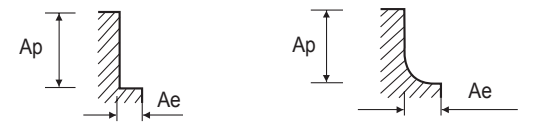
RECOMMENDED CUTTING CONDITIONS

**E5E44, E5E98, E5E45 SERIES**

**3 FLUTE - SIDE CUTTING**

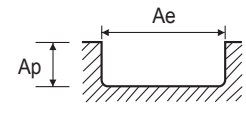
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)					
						1/4	3/8	1/2	5/8	3/4	1
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	0.5D	1.5D	SFM (Vc)	655	660	670	655	650	655
					IPT (fz)	.0010	.0011	.0015	.0020	.0026	.0032
					RPM	10000	6700	5100	4000	3300	2500
					IPM (FEED)	30	23	23	24	26	24

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.



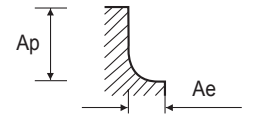
**3 FLUTE - SLOTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)					
						1/4	3/8	1/2	5/8	3/4	1
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	1.0D	1.5D	SFM (Vc)	460	460	470	460	450	470
					IPT (fz)	.0010	.0011	.0015	.0020	.0028	.0031
					RPM	7000	4700	3600	2800	2300	1800
					IPM (FEED)	21	16	16	17	19	17



**EK196 SERIES** **3 FLUTE - SIDE CUTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)				
						1/4	5/16	3/8	1/2	5/8
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	0.5D	1.5D	SFM (Vc)	295	255	245	260	260
					IPT (fz)	.0006	.0010	.0019	.0027	.0038
					RPM	4500	3100	2500	2000	1600
					IPM (FEED)	8	9	14	16	18



HSS

CBN END MILLS

i-Xmill END MILLS

i-SMART MODULAR END MILLS

X5070 END MILLS

4G MILL END MILLS

X-POWER PRO END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

V7 PLUS A END MILLS

V7 MILL INOX

ALU-POWER HPC END MILLS

ALU-POWER END MILLS

D-POWER GRAPHITE END MILLS

STANDARD CARBIDE

ONLY ONE COATED PM60 END MILLS

SINE-POWER

TANK-POWER END MILLS

STANDARD COBALT & HSS

TECHNICAL DATA

HSS

CBN END MILLS

i-Xmill END MILLS

i-SMART MODULAR END MILLS

X5070 END MILLS

4G MILL END MILLS

X-POWER PRO END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

V7 PLUS A END MILLS

V7 MILL INOX

ALU-POWER HPC END MILLS

ALU-POWER END MILLS

D-POWER GRAPHITE END MILLS

STANDARD CARBIDE

ONLY ONE COATED PM60 END MILLS

SINE-POWER

TANK-POWER END MILLS

STANDARD COBALT & HSS

TECHNICAL DATA





RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

**EK191, EK226, EK192** SERIES

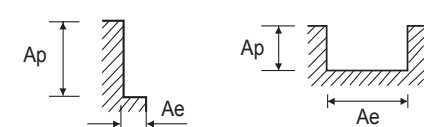
**3 FLUTE - SIDE CUTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)				
						1/2	3/4	1	1 1/4	2
N	21-22	Aluminum-wrought alloy	0.5D	1.5D	SFM (Vc)	250~500	250~500	250~500	250~500	250~500
					IPT (fz)	.0050	.0070	.0100	.0120	.0150
					RPM	1910~3820	1270~2550	960~1910	760~1530	480~960
N	23-22	Aluminum-cast, alloyed	0.5D	1.5D	SFM (Vc)	250~750	250~750	250~750	250~750	250~750
					IPT (fz)	.0050	.0070	.0100	.0120	.0150
					RPM	1910~5730	1270~3820	960~2870	760~2290	480~1430
					IPM (FEED)	29~57	27~54	29~57	27~55	22~43
					IPM (FEED)	29~86	27~80	29~86	27~82	22~64

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

**3 FLUTE - SLOTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)				
						1/2	3/4	1	1 1/4	2
N	21-22	Aluminum-wrought alloy	1.0D	0.5D	SFM (Vc)	250~500	250~500	250~500	250~500	250~500
					IPT (fz)	.0050	.0070	.0100	.0120	.0150
					RPM	1910~3820	1270~2550	960~1910	760~1530	480~960
N	23-22	Aluminum-cast, alloyed	1.0D	0.5D	SFM (Vc)	250~750	250~750	250~750	250~750	250~750
					IPT (fz)	.0050	.0070	.0100	.0120	.0150
					RPM	1910~5730	1270~3820	960~2870	760~2290	480~1430
					IPM (FEED)	29~57	27~54	29~57	27~55	22~43
					IPM (FEED)	29~86	27~80	29~86	27~82	22~64



**EK191, EK226, EK192** SERIES

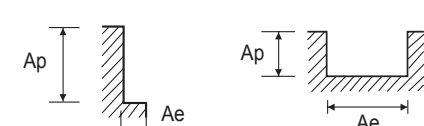
**TiCN Coated**

**3 FLUTE - SIDE CUTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)				
						1/2	3/4	1	1 1/4	2
N	21-22	Aluminum-wrought alloy	0.5D	1.5D	SFM (Vc)	400~2500	400~2500	400~2500	400~2500	400~2500
					IPT (fz)	.0050	.0070	.0100	.0120	.0150
					RPM	3060~19100	2040~12730	1530~9550	1220~7640	760~4780
N	23-22	Aluminum-cast, alloyed	0.5D	1.5D	SFM (Vc)	500~3250	500~3250	500~3250	500~3250	500~3250
					IPT (fz)	.0050	.0070	.0100	.0120	.0150
					RPM	3820~24830	2550~16550	1910~12420	1530~9930	960~6210
					IPM (FEED)	46~287	43~267	46~287	44~275	34~215
					IPM (FEED)	57~372	54~348	57~372	55~357	43~279

**3 FLUTE - SLOTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)				
						1/2	3/4	1	1 1/4	2
N	21-22	Aluminum-wrought alloy	1.0D	0.5D	SFM (Vc)	400~2500	400~2500	400~2500	400~2500	400~2500
					IPT (fz)	.0050	.0070	.0100	.0120	.0150
					RPM	3060~19100	2040~12730	1530~9550	1220~7640	760~4780
N	23-22	Aluminum-cast, alloyed	1.0D	0.5D	SFM (Vc)	500~3250	500~3250	500~3250	500~3250	500~3250
					IPT (fz)	.0050	.0070	.0100	.0120	.0150
					RPM	3820~24830	2550~16550	1910~12420	1530~9930	960~6210
					IPM (FEED)	46~287	43~267	46~287	44~275	34~215
					IPM (FEED)	57~372	54~348	57~372	55~357	43~279



**EK193, EK132** SERIES

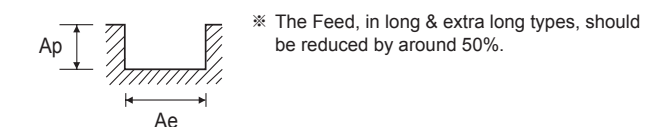
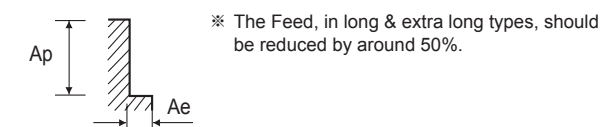
**3 FLUTE - SIDE CUTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)					
						1/2	5/8	3/4	1	1 1/4	1 1/2
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	0.5D	1.5D	SFM (Vc)	590	575	450	525	525	530
					IPT (fz)	.0028	.0025	.0039	.0045	.0054	.0062
					RPM	4500	3500	2300	2000	1600	1350
					IPM (FEED)	38	26	27	27	26	25

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

**3 FLUTE - SLOTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)					
						1/2	5/8	3/4	1	1 1/4	1 1/2
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	1.0D	0.5D	SFM (Vc)	535	520	410	475	475	485
					IPT (fz)	.0031	.0041	.0065	.0073	.0087	.0103
					RPM	4095	3185	2093	1820	1456	1229
					IPM (FEED)	38	39	41	40	38	38



**EP922, EP924** SERIES

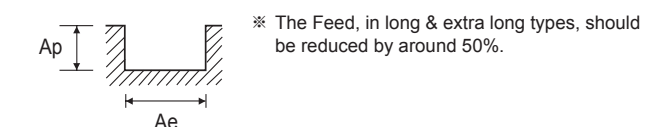
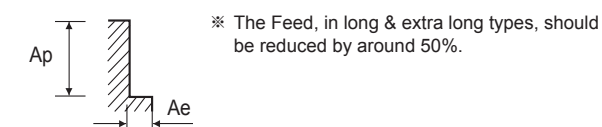
**TiAlN Coated**

**3 FLUTE - SIDE CUTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)				
						12.0	16.0	20.0	25.0	32.0
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	0.5D	1.5D	SFM (Vc)	345	365	350	360	365
					IPT (fz)	.0019	.0027	.0041	.0043	.0064
					RPM	2800	2200	1700	1400	1100
					IPM (FEED)	16	18	21	18	21

**3 FLUTE - SLOTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)				
						12.0	16.0	20.0	25.0	32.0
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	1.0D	0.5D	SFM (Vc)	345	365	350	360	365
					IPT (fz)	.0026	.0038	.0055	.0060	.0085
					RPM	2800	2200	1700	1400	1100
					IPM (FEED)	22	25	28	25	28





Global Cutting Tool Leader **YG-1**



# MILLING



Being the best through innovation



**SOLID CARBIDE**

**D-POWER GRAPHITE  
END MILLS**

- For Graphites





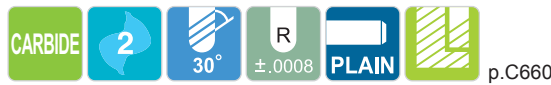
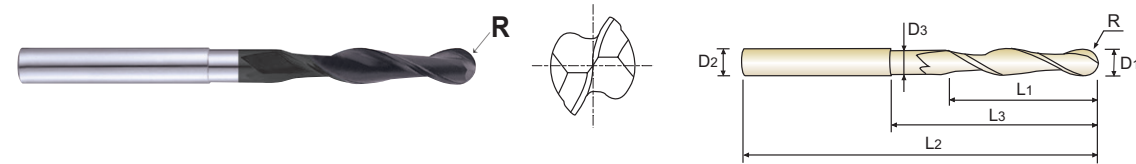


# YG D-POWER GRAPHITE END MILLS

PLAIN SHANK **EI971** SERIES

## CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE

- ▶ Higher hardness of film and excellent wear-resistance increase the tool life dramatically.
- ▶ Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- ▶ High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass, etc.
- ▶ YG-1's diamond coated carbide ball end mills may have good result for the machining of non-ferrous metals and non-metallic materials.

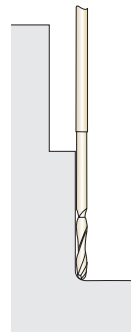


for GRAPHITE  
◆ U.S.A Stock

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
99671	R.0391	5/64	1/8	3/8	3/4	3-1/4	.076
99672	R 1/16	1/8	1/8	5/8	1	3-1/4	.120
99973	R 3/32	3/16	3/16	1-1/8	2	4	.182
99673	R 3/32	3/16	1/4	1-1/8	2	4	.185
99674	R 1/8	1/4	1/4	1-1/8	2	4	.230
99675	R 5/32	5/16	5/16	1-1/2	2-3/8	4-1/2	.293
99676	R 3/16	3/8	3/8	2	2-3/4	4-3/4	.355
99677	R1/4	1/2	1/2	2-1/8	3	5-1/8	.480

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~- .0012	0~- .0003



◎ : Excellent ○ : Good

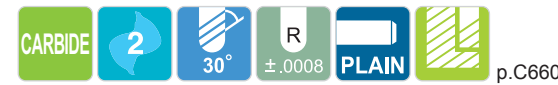
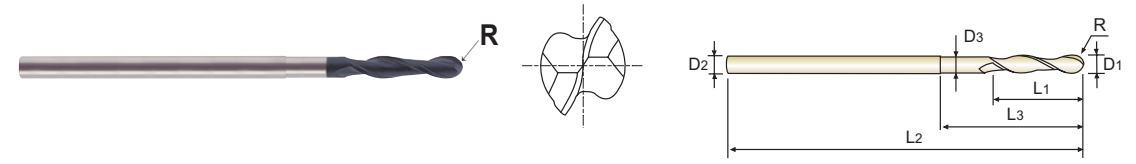
ISO	P										M				K																											
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron																					
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	39-1	40	41
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	39-1	40	41
HRc	13	25	28	32	35	10	29	32	38	15	35	15	23	10	10	26	3	25			15	30	25	38	34						15	30	25	38	34			55	60	50	42	55
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230											200	280	250	350	320	400Rm	1050Rm	550	630		400	550
Recommended	○	○	○	○	○																																					

# YG D-POWER GRAPHITE END MILLS

PLAIN SHANK **EI972** SERIES

## CARBIDE, 2 FLUTE LONG REACH BALL NOSE

- ▶ Higher hardness of film and excellent wear-resistance increase the tool life dramatically.
- ▶ Ultra fine film of YG-1's diamond coated carbide ball end mills ensure the smooth and excellent surface on work materials.
- ▶ High performance on graphite, wrought aluminum, bakelite, plastics, wood, brass, etc.
- ▶ YG-1's diamond coated carbide ball end mills may have good result for the machining of non-ferrous metals and non-metallic materials.

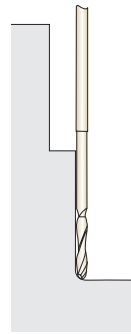


for GRAPHITE  
◆ U.S.A Stock

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter
	R (±.0008)	D1	D2	L1	L3	L2	D3
99678	R.0391	5/64	1/8	3/8	3/4	4	.076
99679	R1/16	1/8	1/8	5/8	1	4	.120
99980	R3/32	3/16	3/16	1-1/8	2	4-3/4	.182
99680	R3/32	3/16	1/4	1-1/8	2	4-3/4	.186
99681	R1/8	1/4	1/4	1-1/8	2	6	.230
99682	R5/32	5/16	5/16	1-1/2	2-3/8	6	.293

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~- .0012	0~- .0003



◎ : Excellent ○ : Good

ISO	P										M				K																											
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron																					
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	39-1	40	41
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	39-1	40	41
HRc	13	25	28	32	35	10	29	32	38	15	35	15	23	10	10	26	3	25			15	30	25	38	34						15	30	25	38	34			55	60	50	42	55
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230											200	280	250	350	320	400Rm	1050Rm	550	630		400	550
Recommended	○	○	○	○	○																																					











HSS

# YG D-POWER GRAPHITE END MILLS

## RECOMMENDED CUTTING CONDITIONS

# YG D-POWER GRAPHITE END MILLS

## RECOMMENDED CUTTING CONDITIONS

CBN END MILLS

i-Xmill END MILLS

i-SMART MODULAR END MILLS

X5070 END MILLS

4G MILL END MILLS

X-POWER PRO END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

V7 PLUS A END MILLS

V7 MILL INOX

ALU-POWER HPC END MILLS

ALU-POWER END MILLS

D-POWER GRAPHITE END MILLS

STANDARD CARBIDE

ONLY ONE COATED PM60 END MILLS

SINE-POWER

TANK-POWER END MILLS

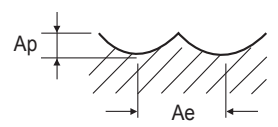
STANDARD COBALT & HSS

TECHNICAL DATA

### EI106 SERIES 4 FLUTE BALL NOSE - SURFACING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)									
						5/64	3/32	1/8	9/64	5/32	3/16	1/4	5/16	3/8	1/2
N	29.2	Non Metallic Materials	0.2D	0.2D	SFM (Vc)	325	395	525	590	655	760	980	1065	1130	1375
					IPT (fz)	.0010	.0014	.0018	.0021	.0026	.0032	.0039	.0045	.0070	.0059
					RPM	15890	16090	16040	16030	16010	15480	14970	13020	11510	10510
					IPM (FEED)	63	88	114	138	165	201	232	236	324	248

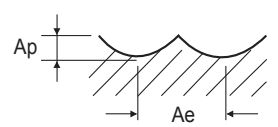
SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute



### EI099, EI971, EI972 SERIES 2 FLUTE BALL NOSE - SURFACING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)									
						5/64	3/32	1/8	9/64	5/32	3/16	1/4	5/16	3/8	1/2
N	29.2	Non Metallic Materials	0.2D	0.2D	SFM (Vc)	325	395	525	590	655	760	980	1065	1130	1375
					IPT (fz)	.0010	.0014	.0018	.0018	.0026	.0032	.0039	.0045	.0052	.0059
					RPM	15890	16090	16040	16030	16010	15480	14970	13020	11510	10510
					IPM (FEED)	32	44	57	59	83	100	116	118	120	124

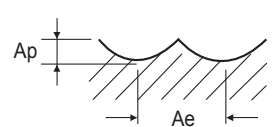
SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute



### EIB07 SERIES 4 FLUTE BALL NOSE - SURFACING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)													
						1/32	3/64	1/16	5/64	3/32	1/8	9/64	5/32	3/16	1/4	5/16	3/8	1/2	
N	29.2	Non Metallic Materials	0.2D	0.2D	SFM (Vc)	165	245	325	325	395	525	590	655	760	980	1065	1130	1375	
					IPT (fz)	.0005	.0005	.0007	.0009	.0012	.0016	.0019	.0023	.0029	.0035	.0041	.0047	.0053	
					RPM	20170	19970	19860	15890	16090	16040	16030	16010	15480	14970	13020	11510	10510	
					IPM (FEED)	38	43	52	57	79	102	125	147	182	211	212	217	225	

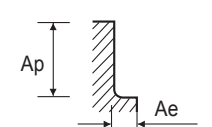
SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute



### EIB05 SERIES 4 FLUTE CORNER RADIUS - SIDE CUTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)								
						1/16	5/64	1/8	5/32	3/16	1/4	5/16	3/8	1/2
N	29.2	Non Metallic Materials	0.3D	0.3D	SFM (Vc)	655	820	1310	1635	1965	2620	2620	2550	2750
					IPT (fz)	.0008	.0010	.0014	.0020	.0024	.0028	.0034	.0043	.0051
					RPM	40030	40090	40030	39970	40030	40030	32030	25980	21010
					IPM (FEED)	126	158	221	315	378	441	441	451	431

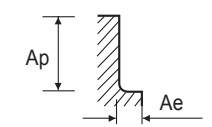
SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute



### EIB06 SERIES 4 FLUTE CORNER RADIUS - SIDE CUTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)											
						1/32	3/64	1/16	5/64	1/8	5/32	3/16	1/4	5/16	3/8	1/2	
N	29.2	Non Metallic Materials	0.3D	0.3D	SFM (Vc)	325	490	655	820	1310	1635	1965	2620	2620	230	2750	
					IPT (fz)	.0003	.0004	.0006	.0007	.0010	.0014	.0017	.0019	.0024	.0030	.0036	
					RPM	39730	39930	40030	40090	40030	39970	40030	40030	32030	26070	21010	
					IPM (FEED)	44	66	88	110	154	221	265	309	309	316	301	

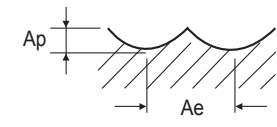
SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute



### EI880, EI451, EI450 SERIES 2 FLUTE BALL NOSE - SURFACING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)									
						2	2.5	3	3.5	4	5	6	8	10	12
N	29.2	Non Metallic Materials	0.2D	0.2D	SFM (Vc)	330	410	495	575	660	800	930	1070	1185	1300
					IPT (fz)	.0010	.0014	.0018	.0022	.0026	.0032	.0039	.0046	.0052	.0059
					RPM	16010	15910	16010	15940	16010	15520	15040	12980	11500	10510
					IPM (FEED)	32	44	57	69	83	100	116	118	120	124

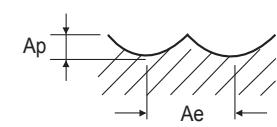
SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute



### EI881 SERIES 3 FLUTE BALL NOSE - SURFACING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)									
						2	2.5	3	3.5	4	5	6	8	10	12
N	29.2	Non Metallic Materials	0.2D	0.2D	SFM (Vc)	330	410	495	575	660	800	930	1070	1185	1300
					IPT (fz)	.0010	.0014	.0018	.0022	.0025	.0032	.0039	.0046	.0053	.0059
					RPM	16010	15910	16010	15940	16010	15520	15040	12980	11500	10510
					IPM (FEED)	47	67	85	104	122	150	175	177	181	187

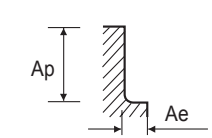
SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute



### EI107 SERIES 4 FLUTE - SIDE CUTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)						
						1/64	1/8	3/16	1/4	5/16	3/8	1/2
N	29.2	Non Metallic Materials	0.3D	0.3D	SFM (Vc)	165	1310	1965	2620	2620	2550	2620
					IPT (fz)	.0002	.0004	.0008	.0012	.0015	.0020	.0024
					RPM	40340	40030	40030	40030	32030	25980	20020
					IPM (FEED)	32	63	126	189	197	205	189

SFM = Surface Feet per Minute  
 RPM = Revolutions Per Minute  
 IPT = Inches Per Tooth  
 IPM = Inches Per Minute





Global Cutting Tool Leader **YG-1**



# MILLING



Being the best through innovation



**SOLID CARBIDE**

# STANDARD CARBIDE END MILLS

- General Purpose



SELECTION GUIDE



MILLING TOOLS

CARBIDE

STANDARD CARBIDE END MILLS

- General Purpose

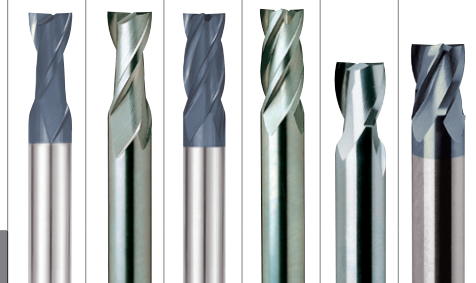
Please visit global.yg1.com/mat for material search

© : Excellent ○ : Good

Recommended cutting conditions : p. C708

Table with columns: SERIES, UGMF90, E5020, UGMF89, E5021, E5244, UGMGF57. Rows: FLUTE, HELIX ANGLE, CUTTING EDGE SHAPE, SIZE MIN, SIZE MAX, PAGE.

Table with columns: REGULAR LENGTH, UNCOATED, Y-COATING, UNCOATED, UNCOATED, Y-COATING. Rows: Y-Coating, TiN, TiCN, TYLON F, TYLON E.



Main material selection table with columns: ISO, VDI 3323, Material Description, Composition / Structure / Heat Treatment, HB, HRc, and application suitability icons.

HSS

Table with columns: E5245, E5011, E5012, UGMGF58, E5026, UGMGF59, E5065, E5022, E5023, E5025, E5024, E5249, E5250, UGMF91, E5014. Rows: FLUTE, HELIX ANGLE, CUTTING EDGE SHAPE, SIZE MIN, SIZE MAX, PAGE.

Table with columns: REGULAR LENGTH, UNCOATED, Y-COATING, UNCOATED, UNCOATED, Y-COATING. Rows: Y-Coating, TiN, TiCN, TYLON F, TYLON E.



Main material selection table for HSS with columns: ISO, VDI 3323, Material Description, Composition / Structure / Heat Treatment, HB, HRc, and application suitability icons.

SELECTION GUIDE



MILLING TOOLS

CARBIDE

STANDARD CARBIDE END MILLS

- General Purpose

Please visit [globalyg1.com/mat](http://globalyg1.com/mat) for material search

◎: Excellent ○: Good

Recommended cutting conditions : p. C708

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc	E5060	E5018	E5062	E5251 E5252	E5216	E5069	
P	1	Non-alloy steel	About 0.15% C Annealed	125	13	◎	◎	◎	◎	◎	◎	
	2		About 0.45% C Annealed	190	13	◎	◎	◎	◎	◎	◎	
	3		About 0.45% C Quenched & Tempered	250	25	◎	◎	◎	◎	◎	◎	
	4		About 0.75% C Annealed	270	28	◎	◎	◎	◎	◎	◎	
	5		About 0.75% C Quenched & Tempered	300	32	◎	◎	◎	◎	◎	◎	
	6	Low alloy steel	Annealed	180	10	◎	◎	◎	◎	◎	◎	
	7		Quenched & Tempered	275	29	◎	◎	◎	◎	◎	◎	
	8		Quenched & Tempered	300	32	◎	◎	◎	◎	◎	◎	
	9		Quenched & Tempered	350	38	◎	◎	◎	◎	◎	◎	
	10		High alloyed steel, and tool steel	Annealed	200	15	◎	◎	◎	◎	◎	◎
	11	Quenched & Tempered		325	35	◎	◎	◎	◎	◎	◎	
M	12	Stainless steel	Ferritic / Martensitic Annealed	200	15	◎	◎	◎	◎	◎	◎	
	13		Martensitic Quenched & Tempered	240	23	◎	◎	◎	◎	◎	◎	
	14		Austenitic	180	10	◎	◎	◎	◎	◎	◎	
K	15	Grey cast iron	Pearlitic / ferritic	180	10	○	○	○	○	○	○	
	16		Pearlitic (Martensitic)	260	26	○	○	○	○	○	○	
	17	Nodular cast iron	Ferritic	160	3	○	○	○	○	○	○	
	18		Pearlitic	250	25	○	○	○	○	○	○	
19	Malleable cast iron	Ferritic	130	13	○	○	○	○	○	○		
20		Pearlitic	230	21	○	○	○	○	○	○		
N	21	Aluminum-wrought alloy	Not Curable	60		○	○	○	○	○	○	
	22		Curable Hardened	100		○	○	○	○	○	○	
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable	75		○	○	○	○	○	○	
	24		≤ 12% Si, Curable Hardened	90		○	○	○	○	○	○	
	25		> 12% Si, Not Curable	130		○	○	○	○	○	○	
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%	110		○	○	○	○	○	○	
	27		CuZn, CuSnZn (Brass)	90		○	○	○	○	○	○	
28	CuSn, lead-free copper and electrolytic copper		100		○	○	○	○	○	○		
29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic										
30		Rubber, Wood, etc.										
S	31	Heat Resistant Super Alloys	Fe Based Annealed	200	15						○	
	32		Cured	280	30						○	
	33		Annealed	250	25						○	
	34		Ni or Co Based	Cured	350	38						○
	35			Cast	320	34						○
	36	Titanium Alloys	Pure Titanium	400 Rm							○	
37	Alpha + Beta Alloys Hardened		1050 Rm							○		
H	38	Hardened steel	Hardened	550	55							
	39		Hardened	630	60							
	40	Hardened Cast Iron	Cast	400	42						○	
	41		Hardened	550	55						○	

HSS

CBN END MILLS

i-Xmill END MILLS

i-SMART MODULAR END MILLS

X5070 END MILLS

4G MILL END MILLS

X-POWER PRO END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

V7 PLUS A END MILLS

V7 MILL INOX

ALU-POWER HPC END MILLS

ALU-POWER END MILLS

D-POWER GRAPHITE END MILLS

STANDARD CARBIDE

ONLY ONE COATED PM60 END MILLS

SINE-POWER

TANK-POWER END MILLS

STANDARD COBALT & HSS

TECHNICAL DATA

TECHNICAL DATA

Inch													Metric		
E5243	E5059	E5246	E5066	E5067	E5068	E5073	E5058	E5056 E5057	E5077	E5078	EH527	EH540	EH882		
3	3	3	5	5	5	5	6	5	3	3	2	4	3		
45°	50°	60°	45°	45°	45°	45°	40°	45°	30°	30°	30°	30°	35°		
SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	ROUGHING	TAPER	TAPER BALL NOSE	SQUARE	SQUARE	CORNER RADIUS		
D1/8	D1/4	D1/8	D1/8	D1/8	D1/4	D5/16	D3/16	D3/8	D3/32	R.047	D3.5	D3.5	D3.0		
D1	D3/4	D1	D1	D1	D1	D1	D3/4	D1	D1/4	R.125	D20.0	D20.0	D20.0		
C694	C695	C696	C697	C698	C699	C700	C701	C702	C703	C704	C705	C706	C707		
REGULAR LENGTH	STUB & REGULAR & LONG LENGTH	REGULAR LENGTH	STUB LENGTH	REGULAR LENGTH	MEDIUM & LONG LENGTH	EXTRA LONG LENGTH	REGULAR LENGTH	STUB & REGULAR LENGTH			LONG LENGTH	LONG LENGTH	REGULAR LENGTH		
Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	TiAIN	TiAIN	TiAIN		
TiN	TiN	TiN	TiN	TiN	TiN	TiN	TiN	TiN	TiN	TiN					
TiCN	TiCN	TiCN	TiCN	TiCN	TiCN	TiCN	TiCN	TiCN	TiCN	TiCN					
TYLON F	TYLON F	TYLON F	TYLON F	TYLON F	TYLON F	TYLON F	TYLON F	TYLON F	TYLON F	TYLON F					
TYLON E	TYLON E	TYLON E	TYLON E	TYLON E	TYLON E	TYLON E	TYLON E	TYLON E	TYLON E	TYLON E					



PLAIN SHANK **UGMF90** SERIES

### 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.



Unit : Inch

EDP No. Y-COATED	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
<b>UGMF90008</b>	<b>1/8</b>	<b>1/8</b>	<b>1/2</b>	<b>1-1/2</b>
<b>UGMF90012</b>	<b>3/16</b>	<b>3/16</b>	<b>5/8</b>	<b>2</b>
<b>UGMF90016</b>	<b>1/4</b>	<b>1/4</b>	<b>3/4</b>	<b>2-1/2</b>
<b>UGMF90024</b>	<b>3/8</b>	<b>3/8</b>	<b>1</b>	<b>2-1/2</b>
<b>UGMF90032</b>	<b>1/2</b>	<b>1/2</b>	<b>1</b>	<b>3</b>
<b>UGMF90040</b>	<b>5/8</b>	<b>5/8</b>	<b>1-1/4</b>	<b>3-1/2</b>
<b>UGMF90048</b>	<b>3/4</b>	<b>3/4</b>	<b>1-1/2</b>	<b>4</b>
<b>UGMF90064</b>	<b>1</b>	<b>1</b>	<b>1-1/2</b>	<b>4</b>

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-0.0012	0~-0.0005

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	32	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	○	◎	◎	○	◎	◎	○	○	○	○	○	○	○	○	○	○	

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	15	30	25	38	34	15	30	25	38	34	15	30	25	38	34	55	60	42	55	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													



PLAIN SHANK **E5020** SERIES

### 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.



Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TIN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
<b>01552</b>	<b>01552TN</b>	<b>01552TC</b>	<b>01552TF</b>	<b>01552TE</b>	<b>1/32</b>	<b>1/8</b>	<b>5/64</b>	<b>1-1/2</b>
<b>01553</b>	<b>01553TN</b>	<b>01553TC</b>	<b>01553TF</b>	<b>01553TE</b>	<b>3/64</b>	<b>1/8</b>	<b>7/64</b>	<b>1-1/2</b>
<b>01554</b>	<b>01554TN</b>	<b>01554TC</b>	<b>01554TF</b>	<b>01554TE</b>	<b>1/16</b>	<b>1/8</b>	<b>3/16</b>	<b>1-1/2</b>
<b>01555</b>	<b>01555TN</b>	<b>01555TC</b>	<b>01555TF</b>	<b>01555TE</b>	<b>5/64</b>	<b>1/8</b>	<b>3/16</b>	<b>1-1/2</b>
<b>01556</b>	<b>01556TN</b>	<b>01556TC</b>	<b>01556TF</b>	<b>01556TE</b>	<b>3/32</b>	<b>1/8</b>	<b>3/8</b>	<b>1-1/2</b>
<b>01557</b>	<b>01557TN</b>	<b>01557TC</b>	<b>01557TF</b>	<b>01557TE</b>	<b>7/64</b>	<b>1/8</b>	<b>3/8</b>	<b>1-1/2</b>
<b>01558</b>	<b>01558TN</b>	<b>01558TC</b>	<b>01558TF</b>	<b>01558TE</b>	<b>1/8</b>	<b>1/8</b>	<b>1/2</b>	<b>1-1/2</b>
<b>01560</b>	<b>01560TN</b>	<b>01560TC</b>	<b>01560TF</b>	<b>01560TE</b>	<b>9/64</b>	<b>3/16</b>	<b>1/2</b>	<b>2</b>
<b>01562</b>	<b>01562TN</b>	<b>01562TC</b>	<b>01562TF</b>	<b>01562TE</b>	<b>5/32</b>	<b>3/16</b>	<b>9/16</b>	<b>2</b>
<b>01564</b>	<b>01564TN</b>	<b>01564TC</b>	<b>01564TF</b>	<b>01564TE</b>	<b>11/64</b>	<b>3/16</b>	<b>5/8</b>	<b>2</b>
<b>01565</b>	<b>01565TN</b>	<b>01565TC</b>	<b>01565TF</b>	<b>01565TE</b>	<b>3/16</b>	<b>3/16</b>	<b>5/8</b>	<b>2</b>
<b>01569</b>	<b>01569TN</b>	<b>01569TC</b>	<b>01569TF</b>	<b>01569TE</b>	<b>13/64</b>	<b>1/4</b>	<b>5/8</b>	<b>2-1/2</b>
<b>01570</b>	<b>01570TN</b>	<b>01570TC</b>	<b>01570TF</b>	<b>01570TE</b>	<b>7/32</b>	<b>1/4</b>	<b>5/8</b>	<b>2-1/2</b>
<b>01572</b>	<b>01572TN</b>	<b>01572TC</b>	<b>01572TF</b>	<b>01572TE</b>	<b>15/64</b>	<b>1/4</b>	<b>3/4</b>	<b>2-1/2</b>
<b>01573</b>	<b>01573TN</b>	<b>01573TC</b>	<b>01573TF</b>	<b>01573TE</b>	<b>1/4</b>	<b>1/4</b>	<b>3/4</b>	<b>2-1/2</b>
<b>01579</b>	<b>01579TN</b>	<b>01579TC</b>	<b>01579TF</b>	<b>01579TE</b>	<b>5/16</b>	<b>5/16</b>	<b>13/16</b>	<b>2-1/2</b>
<b>01584</b>	<b>01584TN</b>	<b>01584TC</b>	<b>01584TF</b>	<b>01584TE</b>	<b>3/8</b>	<b>3/8</b>	<b>1</b>	<b>2-1/2</b>
<b>01588</b>	<b>01588TN</b>	<b>01588TC</b>	<b>01588TF</b>	<b>01588TE</b>	<b>7/16</b>	<b>7/16</b>	<b>1</b>	<b>2-3/4</b>
<b>01593</b>	<b>01593TN</b>	<b>01593TC</b>	<b>01593TF</b>	<b>01593TE</b>	<b>1/2</b>	<b>1/2</b>	<b>1</b>	<b>3</b>
<b>01595</b>	<b>01595TN</b>	<b>01595TC</b>	<b>01595TF</b>	<b>01595TE</b>	<b>5/8</b>	<b>5/8</b>	<b>1-1/4</b>	<b>3-1/2</b>
<b>01598</b>	<b>01598TN</b>	<b>01598TC</b>	<b>01598TF</b>	<b>01598TE</b>	<b>3/4</b>	<b>3/4</b>	<b>1-1/2</b>	<b>4</b>
<b>01600</b>	<b>01600TN</b>	<b>01600TC</b>	<b>01600TF</b>	<b>01600TE</b>	<b>1</b>	<b>1</b>	<b>1-1/2</b>	<b>4</b>

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-0.0012	0~-0.0005

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	32	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	○	

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	15	30	25	38	34	15	30	25	38	34	15	30	25	38	34	55	60	42	55	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													





PLAIN SHANK UGMF89 SERIES

CARBIDE, 4 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.



Table with 5 columns: EDP No. (Y-COATED), Mill Diameter, Shank Diameter, Length of Cut, Overall Length. Lists various end mill models like UGMF89004 to UGMF89064.

Table with 2 columns: Mill Dia. Tolerance (inch), Shank Dia. Tolerance. Values: 0~-0.0012, 0~-0.0005.

ISO material compatibility chart for UGMF89 series. Columns include P (Non-alloy steel, Low alloy steel, High alloyed steel, and tool steel), M (Stainless steel, Grey cast iron, Nodular cast iron, Malleable cast iron), N (Aluminum-wrought alloy, Aluminum-cast, alloyed, Copper and Copper Alloys, Non Metallic Materials), S (Heat Resistant Super Alloys, Titanium Alloys), H (Hardened steel, Chilled Cast Iron, Hardened Cast Iron).



PLAIN SHANK E5021 SERIES

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.



Table with 9 columns: EDP No. (UNCOATED, TIN COATED, TiCN COATED, YG:TYLON F, YG:TYLON E), Mill Diameter, Shank Diameter, Length of Cut, Overall Length. Lists various end mill models like 07554 to 07600.

Table with 2 columns: Mill Dia. Tolerance (inch), Shank Dia. Tolerance. Values: 0~-0.0012, 0~-0.0005.

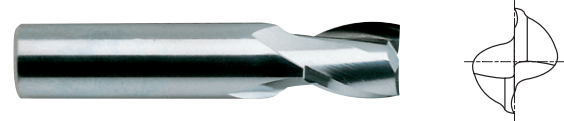
ISO material compatibility chart for E5021 series. Columns include P (Non-alloy steel, Low alloy steel, High alloyed steel, and tool steel), M (Stainless steel, Grey cast iron, Nodular cast iron, Malleable cast iron), N (Aluminum-wrought alloy, Aluminum-cast, alloyed, Copper and Copper Alloys, Non Metallic Materials), S (Heat Resistant Super Alloys, Titanium Alloys), H (Hardened steel, Chilled Cast Iron, Hardened Cast Iron).



PLAIN SHANK **E5244** SERIES

**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.



CARBIDE 2 30° PLAIN p.C712, C713

Unit : Inch

EDP No.	UNCOATED				Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	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

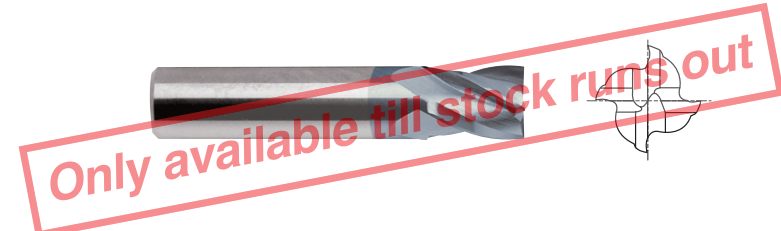
ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	130	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	



PLAIN SHANK **UGMGF57** SERIES

**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.



CARBIDE 4 30° PLAIN p.C709

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UGMGF57004	1/16	1/8	1/8	1-1/2
UGMGF57006	3/32	1/8	3/16	1-1/2
UGMGF57008	1/8	1/8	1/4	1-1/2
UGMGF57010	5/32	3/16	5/16	2
UGMGF57012	3/16	3/16	3/8	2
UGMGF57014	7/32	1/4	7/16	2
UGMGF57016	1/4	1/4	1/2	2
UGMGF57020	5/16	5/16	1/2	2
UGMGF57024	3/8	3/8	5/8	2
UGMGF57028	7/16	7/16	5/8	2-1/2
UGMGF57032	1/2	1/2	5/8	2-1/2
UGMGF57040	5/8	5/8	3/4	3
UGMGF57048	3/4	3/4	1	3

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	130	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	



PLAIN SHANK **E5245** SERIES

### 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

UNCOATED	EDP No.				Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	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~-0.0012	0~-0.0005

◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	

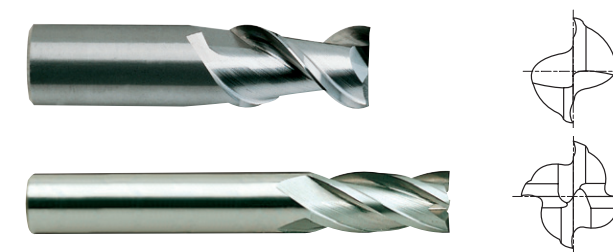
ISO	N										S				H								
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)					Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41		
HRc						15	30	25	38	34								55	60	42	55		
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550		
Recommend	○	○	○	○	○	○	○	○															



PLAIN SHANK **E5011** SERIES  
PLAIN SHANK **E5012** SERIES

### 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.



Unit : Inch

E5011(2 FLUTE) Series					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					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~-0.0012	0~-0.0005

◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	

ISO	N										S				H								
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)					Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41		
HRc						15	30	25	38	34								55	60	42	55		
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550		
Recommend	○	○	○	○	○	○	○	○															



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PLAIN SHANK UGMGF58 SERIES



PLAIN SHANK E5026 SERIES

CARBIDE, 4 FLUTE LONG LENGTH

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.

► 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

Unit : Inch

EDP No. Y-COATED	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UGMGF58008	1/8	1/8	3/4	2-1/4
UGMGF58012	3/16	3/16	3/4	2-1/2
UGMGF58016	1/4	1/4	1-1/8	3
UGMGF58020	5/16	5/16	1-1/8	3
UGMGF58024	3/8	3/8	1-1/8	3
UGMGF58028	7/16	7/16	2	4
UGMGF58032	1/2	1/2	2	4
UGMGF58040	5/8	5/8	2-1/4	5
UGMGF58048	3/4	3/4	2-1/4	5
UGMGF58064	1	1	2-1/4	5

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

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc						15	30	25	38	34	15	30	25	38	34	55	60	42	55		
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○			○	○	○	○	○	○	○	○	○	○	○

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc						15	30	25	38	34	15	30	25	38	34	55	60	42	55		
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○			○	○	○	○	○	○	○	○	○	○	○



PLAIN SHANK UGMGF59 SERIES

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.



Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UGMGF59008	1/8	1/8	1	3
UGMGF59012	3/16	3/16	1-1/8	3
UGMGF59016	1/4	1/4	1-1/2	4
UGMGF59020	5/16	5/16	1-5/8	4
UGMGF59024	3/8	3/8	1-3/4	4
UGMGF59028	7/16	7/16	3	6
UGMGF59032	1/2	1/2	3	6
UGMGF59040	5/8	5/8	3	6
UGMGF59048	3/4	3/4	3	6
UGMGF59064	1	1	3	6
UGMGF59901	1/4	1/4	1-1/2	6
UGMGF59902	3/8	3/8	1-1/2	6
UGMGF59903	1/2	1/2	1-1/2	6
UGMGF59904	3/16	3/16	1	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	32	10	29	32	38	15	35	15	23	10	10	26	3	25	130	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎	◎	◎	◎			◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎



PLAIN SHANK E5065 SERIES

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.



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

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	32	10	29	32	38	15	35	15	23	10	10	26	3	25	130	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎	◎	◎	◎			◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

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PLAIN SHANK **E5022** SERIES



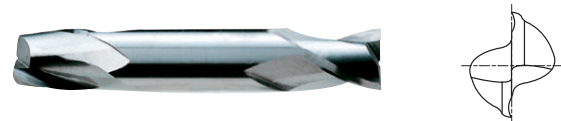
PLAIN SHANK **E5023** SERIES

### 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.

### 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.



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

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~-0.0012	** 0~-0.0020

Mill Dia. Tolerance (inch)	
0~-0.0012	** 0~-0.0020

\*\* The shank of end mills is the same diameter as the cutting portion.

\*\* The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

ISO	P											M				K						
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230		
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○		

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron	
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○			○	○	○	○	○	○	○	○	○	○	○

◎ : Excellent ○ : Good

ISO	P											M				K						
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230		
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○		

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron	
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○			○	○	○	○	○	○	○	○	○	○	○





FLAT SHANK **E5025** SERIES

### CARBIDE, 2 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.



CARBIDE 2 30° FLAT p.C712, C713

Unit : Inch

UNCOATED	EDP No.				Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	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

Mill Dia. Tolerance (inch)	
0~- .0012	** 0~- .0020

\*\* The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	40	55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○			○	○	○	○	○	○	○	○	○	○	○



FLAT SHANK **E5024** SERIES

### CARBIDE, 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.



CARBIDE 4 30° FLAT p.C714, C715

Unit : Inch

UNCOATED	EDP No.				Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	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

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○	

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	40	55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○			○	○	○	○	○	○	○	○	○	○	○



PLAIN SHANK **E5249** SERIES

**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.



CARBIDE 2 30° ±.0008 PLAIN p.C716, C717

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

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	0~-.0005

◎ : Excellent ○ : Good

ISO	P										M				K					
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○

ISO	N					S					H										
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34	55	60	42	55		
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○																



PLAIN SHANK **E5250** SERIES

**CARBIDE, 4 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.



CARBIDE 4 30° ±.0008 PLAIN p.C718, C719

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

ISO	P										M				K					
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○

ISO	N					S					H										
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34	55	60	42	55		
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○																



PLAIN SHANK UGMF91 SERIES

### CARBIDE, 4 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.



EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
Y-COATED					
UGMF91008	1/16	1/8	1/8	1/2	1-1/2
UGMF91010	5/64	5/32	3/16	9/16	2
UGMF91012	3/32	3/16	3/16	5/8	2
UGMF91016	1/8	1/4	1/4	3/4	2-1/2
UGMF91020	5/32	5/16	5/16	13/16	2-1/2
UGMF91024	3/16	3/8	3/8	1	2-1/2
UGMF91028	7/32	7/16	7/16	1	2-3/4
UGMF91032	1/4	1/2	1/2	1	3
UGMF91040	5/16	5/8	5/8	1-1/4	3-1/2
UGMF91048	3/8	3/4	3/4	1-1/2	4
UGMF91064	1/2	1	1	1-1/2	4

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0--.0012	0--.0005

◎ : Excellent ○ : Good

ISO Material Description	P											M				K			H		
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc						15	30	25	38	34	15	30	25	38	34	40	55	60	42		55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



PLAIN SHANK E5014 SERIES  
PLAIN SHANK E5060 SERIES

### 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.



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

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

ISO Material Description	P											M				K			H		
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc						15	30	25	38	34	15	30	25	38	34	40	55	60	42		55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○





PLAIN SHANK **E5018** SERIES

**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.



p.C716, C717

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					
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~-0.012	0~-0.005

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials			Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34	55	60	42	55		
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○																



PLAIN SHANK **E5062** SERIES

**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.



p.C718, C719

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~-0.012	0~-0.005

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○

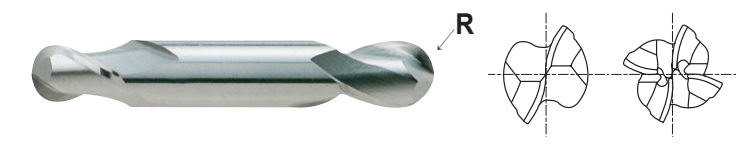
ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials			Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34	55	60	42	55		
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○																



PLAIN SHANK **E5251** SERIES  
 PLAIN SHANK **E5252** SERIES

### 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.



CARBIDE 2&4 30° ±.0008 PLAIN p.C716, C717 p.C718, C719

**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

ISO	P											M				K				
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎



PLAIN SHANK **E5216** SERIES

### 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.



CARBIDE 4 30° ±.001 PLAIN p.C714, C715

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

▶ NEXT PAGE

◎ : Excellent ○ : Good

ISO	P											M				K				
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎



PLAIN SHANK **E5216** SERIES

**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.



CARBIDE 4 30° ±.001 PLAIN p.C714, C715

Unit : Inch

EDP No.		Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	YG:TYLON F	R				
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
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

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	3	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	55	60	42	55	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎	◎	◎	◎			◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎



PLAIN SHANK **E5069** SERIES

**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.



CARBIDE 5 45° ±.001 PLAIN p.C708

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R				
86573TF-030R	R.030	1/4	1/4	3/4	2-1/2
86584TF-030R	R.030	3/8	3/8	1	2-1/2
86584TF-060R	R.060	3/8	3/8	1	2-1/2
86593TF-030R	R.030	1/2	1/2	1-1/4	3
86593TF-060R	R.060	1/2	1/2	1-1/4	3
86593TF-090R	R.090	1/2	1/2	1-1/4	3
86595TF-030R	R.030	5/8	5/8	1-5/8	3-1/2
86595TF-060R	R.060	5/8	5/8	1-5/8	3-1/2
86595TF-090R	R.090	5/8	5/8	1-5/8	3-1/2
86595TF-125R	R.125	5/8	5/8	1-5/8	3-1/2
86598TF-030R	R.030	3/4	3/4	1-5/8	4
86598TF-060R	R.060	3/4	3/4	1-5/8	4
86598TF-090R	R.090	3/4	3/4	1-5/8	4
86598TF-125R	R.125	3/4	3/4	1-5/8	4
86598TF-156R	R.156	3/4	3/4	1-5/8	4
86598TF-187R	R.187	3/4	3/4	1-5/8	4
86600TF-030R	R.030	1	1	2	4
86600TF-060R	R.060	1	1	2	4
86600TF-090R	R.090	1	1	2	4
86600TF-125R	R.125	1	1	2	4
86600TF-156R	R.156	1	1	2	4
86600TF-187R	R.187	1	1	2	4

Any non stocked radius available in 1 week for uncoated tools

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~- .0012	0~- .0005

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	3	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	55	60	42	55	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎	◎	◎	◎			◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎





PLAIN SHANK  
FLAT SHANK **E5243** SERIES

**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.



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~-0.0012	0~-0.0005

◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	13	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	

ISO	N					S					H									
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎



PLAIN SHANK **E5059** SERIES

**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.

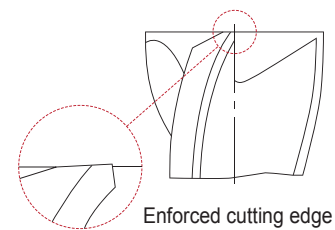


p.C708

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~-0.0012	0~-0.0005



◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	13	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	

ISO	N					S					H									
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎



PLAIN SHANK  
FLAT SHANK **E5246** SERIES

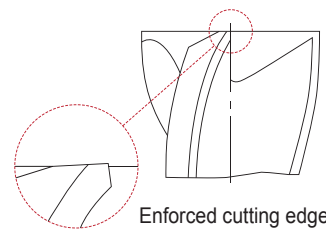
**CARBIDE, 3 FLUTE 60° HELIX REGULAR LENGTH**

- ▶ Excellent shearing and chip ejection due to 60° Helix.
- ▶ 20% ~ 30% increase in chip load recommended over 30° helix tools.



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

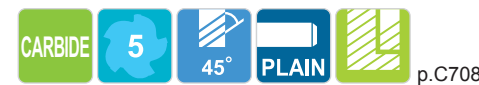
Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0--.0012	0--.0005



PLAIN SHANK **E5066** SERIES

**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.



EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TIN COATED	TiCN COATED	YG:TYLON F	YG:TYLON E				
85558	85558TN	85558TC	85558TF	85558TE	1/8	1/8	1/4	1-1/2
85561	85561TN	85561TC	85561TF	85561TE	5/32	3/16	5/16	2
85565	85565TN	85565TC	85565TF	85565TE	3/16	3/16	5/16	2
85570	85570TN	85570TC	85570TF	85570TE	7/32	1/4	3/8	2
85573	85573TN	85573TC	85573TF	85573TE	1/4	1/4	3/8	2
85579	85579TN	85579TC	85579TF	85579TE	5/16	5/16	7/16	2
85584	85584TN	85584TC	85584TF	85584TE	3/8	3/8	1/2	2
85588	85588TN	85588TC	85588TF	85588TE	7/16	7/16	9/16	2-1/2
85593	85593TN	85593TC	85593TF	85593TE	1/2	1/2	5/8	2-1/2
85595	85595TN	85595TC	85595TF	85595TE	5/8	5/8	3/4	3
85598	85598TN	85598TC	85598TF	85598TE	3/4	3/4	1	3
85600	85600TN	85600TC	85600TF	85600TE	1	1	1-1/4	3

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0--.0012	0--.0003

◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	13	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	

◎ : Excellent ○ : Good

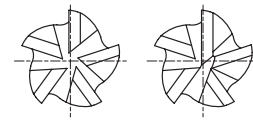
ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	13	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	



PLAIN SHANK **E5067** SERIES

**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



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~-0.0012	0~-0.0003

◎ : Excellent ○ : Good

ISO	P											M				K						
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
HRc	13	25	28	32	32	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230		
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○		

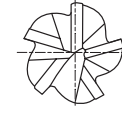
ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend						○	○	○			○	○	○	○	○	○	○	○	○	○	○



PLAIN SHANK **E5068** SERIES

**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~-0.0012	0~-0.0003

◎ : Excellent ○ : Good

ISO	P											M				K						
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
HRc	13	25	28	32	32	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230		
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○		

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend						○	○	○			○	○	○	○	○	○	○	○	○	○	○





PLAIN SHANK **E5073** SERIES

**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.



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~-0.0012	0~-0.0003

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○

ISO	N					S					H									
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



PLAIN SHANK **E5058** SERIES

**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.



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~-0.0012	0~-0.0005

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○

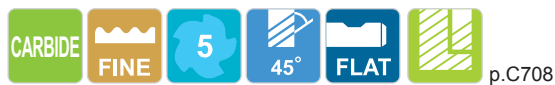
ISO	N					S					H									
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



FLAT SHANK **E5056** SERIES  
 FLAT SHANK **E5057** SERIES

**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.					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					
47570	47570TN	47570TC	47570TF	81584TE	R7/64	7/32	1/4	1/2	2-1/2
47573	47573TN	47573TC	47573TF	81593TE	R1/8	1/4	1/4	1/2	2-1/2
47584	47584TN	47584TC	47584TF	81595TE	R3/16	3/8	3/8	9/16	2-1/2
47588	47588TN	47588TC	47588TF	81598TE	R7/32	7/16	7/16	9/16	2-3/4
47593	47593TN	47593TC	47593TF	81600TE	R1/4	1/2	1/2	5/8	3

**E5057 Series ■ REGULAR LENGTH** 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					
48570	48570TN	48570TC	48570TF	82584TE	R7/64	7/32	1/4	1/2	2-1/2
48573	48573TN	48573TC	48573TF	82593TE	R1/8	1/4	1/4	1/2	2-1/2
48584	48584TN	48584TC	48584TF	82595TE	R3/16	3/8	3/8	9/16	2-1/2
48588	48588TN	48588TC	48588TF	82598TE	R7/32	7/16	7/16	9/16	2-3/4
48593	48593TN	48593TC	48593TF	82600TE	R1/4	1/2	1/2	5/8	3

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-0.003	0~-0.005

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	29	32	38	35	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34	55	60	42	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



PLAIN SHANK **E5077** SERIES

**CARBIDE, 3 FLUTE TAPER**

- ▶ Designed for milling die cavity.
- ▶ Many different center line angles are available on your job requirement.



**E5077 Series ■ TAPER LENGTH** Unit : Inch

EDP No.					Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TIN COATED	TICN COATED	YG:TYLON F	YG:TYLON E				
87552	87552TN	87552TC	87552TF	87552TE	1/8	1/4	1-1/2	1°
87553	87553TN	87553TC	87553TF	87553TE	1/8	1/4	1-1/2	1.5°
87554	87554TN	87554TC	87554TF	87554TE	1/8	1/4	1-1/4	2°
87556	87556TN	87556TC	87556TF	87556TE	1/8	1/4	1	3°
87560	87560TN	87560TC	87560TF	87560TE	1/8	1/4	3/4	5°
87564	87564TN	87564TC	87564TF	87564TE	1/8	1/4	1/2	7°
87570	87570TN	87570TC	87570TF	87570TE	3/32	1/4	1/2	10°
87572	87572TN	87572TC	87572TF	87572TE	3/16	3/8	1-3/4	1°
87573	87573TN	87573TC	87573TF	87573TE	3/16	3/8	1-3/4	1.5°
87574	87574TN	87574TC	87574TF	87574TE	3/16	3/8	1-3/4	2°
87576	87576TN	87576TC	87576TF	87576TE	5/32	3/8	1-3/4	3°
87580	87580TN	87580TC	87580TF	87580TE	1/8	3/8	1-1/2	5°
87584	87584TN	87584TC	87584TF	87584TE	1/8	3/8	1	7°
87590	87590TN	87590TC	87590TF	87590TE	1/8	3/8	3/4	10°
87592	87592TN	87592TC	87592TF	87592TE	1/4	1/2	2	1°
87594	87594TN	87594TC	87594TF	87594TE	1/4	1/2	2	2°
87596	87596TN	87596TC	87596TF	87596TE	1/4	1/2	2	3°
87600	87600TN	87600TC	87600TF	87600TE	1/4	1/2	1-1/4	5°
87902	87902TN	87902TC	87902TF	87902TE	3/16	1/2	1-1/4	7°
87903	87903TN	87903TC	87903TF	87903TE	1/8	1/2	1	10°

Cutting Small Dia. Tolerance (mm)	Shank Dia. Tolerance	Center Line Angle Tolerance
Ø1/16 ~ Ø1/4	0~-0.0020	±5'
Ø17/64 ~ Ø1	0~-0.0030	

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	29	32	38	35	35	15	23	10	10	26	3	25	21	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34	55	60	42	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



PLAIN SHANK **E5078** SERIES

**CARBIDE, 3 FLUTE TAPER BALL NOSE**

- ▶ Designed for milling die cavity.
- ▶ Many different center line angles are available on your job requirement.



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	±5'
Ø17/64 ~ Ø1	0~~.0030	

ISO	P										M				K					
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	29	32	38	35	15	23	10	10	26	3	25				21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎



PLAIN SHANK **EH527** SERIES

**CARBIDE, 2 FLUTE LONG LENGTH - TiAlN 'F' Coated**



EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
EH527035	3.5	.1378	3.5	7	50
EH527040	4.0	.1575	4	8	50
EH527045	4.5	.1772	4.5	8	50
EH527050	5.0	.1969	5	10	50
EH527055	5.5	.2165	5.5	10	57
EH527060	6.0	.2362	6	10	57
EH527065	6.5	.2559	6.5	13	60
EH527070	7.0	.2756	7	13	60
EH527075	7.5	.2953	7.5	16	63
EH527080	8.0	.3150	8	16	63
EH527085	8.5	.3346	8.5	16	67
EH527090	9.0	.3543	9	16	67
EH527095	9.5	.3740	9.5	19	72
EH527100	10.0	.3937	10	19	72
EH527110	11.0	.4330	11	22	83
EH527120	12.0	.4724	12	22	83
EH527130	13.0	.5118	13	22	83
EH527140	14.0	.5512	14	22	83
EH527150	15.0	.5905	15	26	92
EH527160	16.0	.6299	16	26	92
EH527180	18.0	.7087	18	26	92
EH527200	20.0	.7874	20	32	104

**Tolerances according to DIN 7160 & 7161**

Tolerance range in µm					
Nominal-Diameter in mm					
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30
h10	0 - 40	0 - 48	0 - 58	0 - 70	0 - 84
h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13

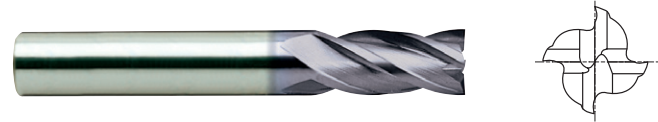
ISO	P										M				K					
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	29	32	38	35	15	23	10	10	26	3	25				21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎





PLAIN SHANK **EH540** SERIES

**CARBIDE, 4 FLUTE LONG LENGTH - TiAlN 'F' Coated**



Unit : mm

EDP No.	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	Metric	Inch			
	h10		h6		
EH540035	3.5	.1378	3.5	10	50
EH540040	4.0	.1575	4	11	50
EH540045	4.5	.1772	4.5	11	50
EH540050	5.0	.1969	5	13	50
EH540055	5.5	.2165	5.5	13	57
EH540060	6.0	.2362	6	13	57
EH540065	6.5	.2559	6.5	16	60
EH540070	7.0	.2756	7	16	60
EH540075	7.5	.2953	7.5	19	63
EH540080	8.0	.3150	8	19	63
EH540085	8.5	.3346	8.5	19	67
EH540090	9.0	.3543	9	19	67
EH540095	9.5	.3740	9.5	22	72
EH540100	10.0	.3937	10	22	72
EH540110	11.0	.4330	11	26	83
EH540120	12.0	.4724	12	26	83
EH540130	13.0	.5118	13	26	83
EH540140	14.0	.5512	14	26	83
EH540150	15.0	.5905	15	32	92
EH540160	16.0	.6299	16	32	92
EH540180	18.0	.7087	18	32	92
EH540200	20.0	.7874	20	38	104

**Tolerances according to DIN 7160 & 7161**

Tolerance range in $\mu\text{m}$					
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

◎ : Excellent ○ : Good

ISO	P										M				K					
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel	Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron				
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	29	32	38	35	15	35	15	23	10	10	26	3	25	40	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○

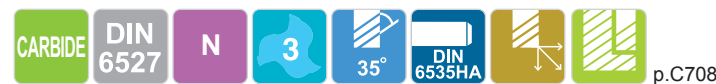
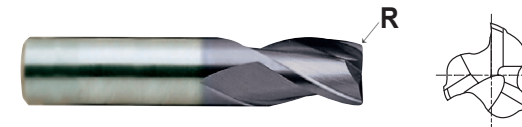
  

ISO	N					S					H										
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron									
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	55	60	42	55	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													



PLAIN SHANK **EH882** SERIES

**CARBIDE, 3 FLUTE 35° HELIX CORNER RADIUS - TiAlN 'F' Coated**



Unit : mm

EDP No.	Corner Radius	Mill Diameter		Shank Diameter	Length of Cut	Overall Length
		Metric	Inch			
	R	h10		h6		
EH882030	0.20~0.25	3.0	.1181	3	4	38
EH882040	0.20~0.25	4.0	.1575	6	5	54
EH882050	0.20~0.25	5.0	.1969	6	6	54
EH882060	0.40~0.50	6.0	.2362	6	7	54
EH882080	0.40~0.50	8.0	.3150	8	9	58
EH882100	0.40~0.50	10.0	.3937	10	11	66
EH882120	0.75~0.85	12.0	.4724	12	12	73
EH882160	0.75~0.85	16.0	.6299	16	16	82
EH882200	0.75~0.85	20.0	.7874	20	20	92

TiN & TiCN-COATING are available on your request.

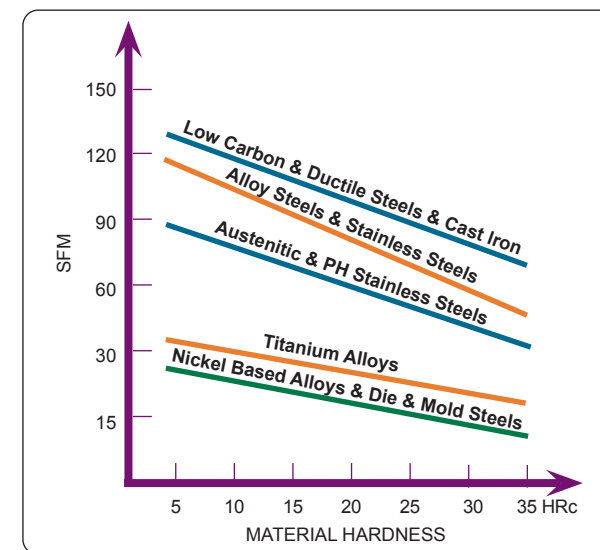
**Tolerances according to DIN 7160 & 7161**

Tolerance range in $\mu\text{m}$					
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

**TiAlN FEED CHART**

Unit : inch

Mill Diameter	Feed / Tooth	Mill Diameter	Feed / Tooth
3	.0035 ~ .0070	10	.0018 ~ .0040
5	.0050 ~ .0025	12	.0025 ~ .0050
6	.0012 ~ .0030	16	.0030 ~ .0060
8	.0018 ~ .0035	20	.0035 ~ .0070



◎ : Excellent ○ : Good

ISO	P										M				K					
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel	Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron				
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	29	32	38	35	15	35	15	23	10	10	26	3	25	40	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	○	○	○	○	○

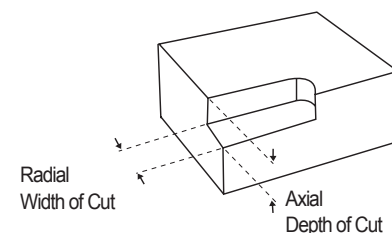
  

ISO	N					S					H										
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron									
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	55	60	42	55	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													

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 = CHROME NITRIDE



SPEED & FEED DETERMINANTS

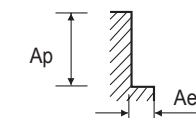
1. MATERIAL HARDNESS
2. MACHINE RIGIDITY
3. TYPE OF COATING
4. TOOL GEOMETRY
5. FINISH REQUIREMENTS
6. DEPTH & WIDTH OF CUT

UGMF89, UGMGF57, UGMGF58, UGMGF59 SERIES

4 FLUTE - SIDE CUTTING

SFM(Vc) = ft./min.  
 IPT(fz) = in./tooth  
 RPM = rev./min.  
 IPM(FEED) = in./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)															
						1/16	5/64	3/32	7/64	1/8	9/64	5/32	11/64	3/16	13/64	7/32	15/64				
P	1-2	Non-alloy steel	0.1D	1.5D	SFM(Vc)	185	205	225	215	200	195	190	185	175	185	190	195				
					IPT(fz)	.0003	.0004	.0004	.0005	.0007	.0008	.0009	.0010	.0012	.0012	.0013	.0013				
					RPM	11200	10080	9070	7560	6050	5320	4590	4100	3600	3460	3310	3170				
	3-4		SFM(Vc)	160	180	190	190	175	170	160	160	155	160	165	165						
			IPT(fz)	.0003	.0004	.0004	.0005	.0007	.0008	.0010	.0011	.0012	.0013	.0013	.0014						
			RPM	9640	8680	7810	6550	5290	4600	3910	3530	3150	2990	2840	2680						
	5		SFM(Vc)	130	150	160	155	140	140	135	130	125	130	135	135						
			IPT(fz)	.0003	.0003	.0004	.0005	.0006	.0007	.0008	.0009	.0011	.0011	.0012	.0012						
			RPM	8090	7280	6550	5420	4280	3780	3280	2900	2520	2430	2330	2240						
	6		SFM(Vc)	185	205	225	215	200	195	190	185	175	185	175	185	190	195				
			IPT(fz)	.0003	.0004	.0004	.0005	.0007	.0008	.0009	.0010	.0012	.0012	.0013	.0013	.0013					
RPM		11200	10080	9070	7560	6050	5320	4590	4100	3600	3460	3310	3170								
7	SFM(Vc)	160	180	190	190	175	170	160	160	155	160	165	165								
	IPT(fz)	.0003	.0004	.0004	.0005	.0007	.0008	.0010	.0011	.0012	.0013	.0013	.0014								
	RPM	9640	8680	7810	6550	5290	4600	3910	3530	3150	2990	2840	2680								
8-9	SFM(Vc)	130	150	160	155	140	140	135	130	125	130	135	135								
	IPT(fz)	.0003	.0003	.0004	.0005	.0006	.0007	.0008	.0009	.0011	.0011	.0012	.0012								
	RPM	8090	7280	6550	5420	4280	3780	3280	2900	2520	2430	2330	2240								
10	SFM(Vc)	185	205	225	215	200	195	190	185	175	185	175	185	190	195						
	IPT(fz)	.0003	.0004	.0004	.0005	.0007	.0008	.0009	.0010	.0012	.0012	.0013	.0013								
	RPM	11200	10080	9070	7560	6050	5320	4590	4100	3600	3460	3310	3170								
11.1	SFM(Vc)	130	150	160	155	140	140	135	130	125	130	135	135								
	IPT(fz)	.0003	.0003	.0004	.0005	.0006	.0007	.0008	.0009	.0011	.0011	.0012	.0012								
	RPM	8090	7280	6550	5420	4280	3780	3280	2900	2520	2430	2330	2240								
M	12-13	Stainless steel	0.1D	1.5D	SFM(Vc)	255	285	310	305	285	280	270	265	260	270	275	280				
					IPT(fz)	.0002	.0002	.0003	.0003	.0004	.0004	.0005	.0005	.0006	.0006	.0007	.0007				
					RPM	15560	14000	12600	10650	8690	7620	6550	5920	5290	5040	4790	4540				
14.1-14.2	SFM(Vc)		255	285	310	305	285	280	270	265	260	270	275	280							
	IPT(fz)		.0002	.0002	.0003	.0003	.0004	.0004	.0005	.0005	.0006	.0006	.0007	.0007							
	RPM		15560	14000	12600	10650	8690	7620	6550	5920	5290	5040	4790	4540							
K	15-20		Grey cast iron Nodular cast iron Malleable cast iron	0.1D	1.5D	SFM(Vc)	215	245	265	255	225	225	215	215	205	210	215	220			
						IPT(fz)	.0005	.0006	.0007	.0008	.0010	.0012	.0014	.0015	.0017	.0019	.0021	.0023			
						RPM	13220	11900	10710	8820	6930	6110	5290	4730	4160	3970	3780	3590			
N	21-25			Aluminum-wrought alloy Aluminum-cast, alloyed	0.1D	1.5D	SFM(Vc)	510	575	620	615	575	555	515	520	515	535	550	560		
							IPT(fz)	.0005	.0005	.0006	.0007	.0009	.0010	.0012	.0013	.0014	.0015	.0016	.0017		
		RPM					31110	28000	25200	21420	17640	15120	12600	11530	10460	10020	9580	9140			
26-28	Copper and Copper Alloys (Bronze / Brass)	SFM(Vc)			380	430	465	450	410	415	410	405	385	400	410	420					
		IPT(fz)			.0005	.0006	.0006	.0007	.0009	.0010	.0012	.0013	.0015	.0016	.0017	.0018					
		RPM			23330	21000	18900	15750	12600	11340	10080	8950	7810	7500	7180	6870					



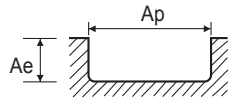


RECOMMENDED CUTTING CONDITIONS

UGMF90 SERIES 2 FLUTE - SLOTTING

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)							
						1/8	3/16	1/4	3/8	1/2	5/8	3/4	1
P	1-2	Non-alloy steel	1.0D	1.0D	SFM (Vc)	200	175	200	175	200	185	190	195
					IPT (fz)	.0005	.0008	.0010	.0017	.0020	.0027	.0031	.0033
					RPM	6050	3600	3020	1760	1510	1130	980	750
	3-4		1.0D	1.0D	SFM (Vc)	175	155	165	150	165	165	165	165
					IPT (fz)	.0005	.0008	.0010	.0017	.0020	.0025	.0030	.0032
					RPM	5290	3150	2520	1510	1260	1010	830	630
	5		1.0D	1.0D	SFM (Vc)	140	125	140	125	140	135	135	140
					IPT (fz)	.0005	.0008	.0009	.0016	.0019	.0030	.0036	.0038
					RPM	4280	2520	2140	1260	1080	820	690	530
	6		1.0D	1.0D	SFM (Vc)	200	175	200	175	200	185	190	195
					IPT (fz)	.0005	.0008	.0010	.0017	.0020	.0027	.0031	.0033
					RPM	6050	3600	3020	1760	1510	1130	980	750
7	1.0D	1.0D	SFM (Vc)	175	155	165	150	165	165	165	165		
			IPT (fz)	.0005	.0008	.0010	.0017	.0020	.0025	.0030	.0032		
			RPM	5290	3150	2520	1510	1260	1010	830	630		
8-9	1.0D	1.0D	SFM (Vc)	140	125	140	125	140	135	135	140		
			IPT (fz)	.0005	.0008	.0009	.0016	.0019	.0030	.0036	.0038		
			RPM	4280	2520	2140	1260	1080	820	690	530		
10	1.0D	1.0D	SFM (Vc)	200	175	200	175	200	185	190	195		
			IPT (fz)	.0005	.0008	.0010	.0017	.0020	.0027	.0031	.0033		
			RPM	6050	3600	3020	1760	1510	1130	980	750		
11.1	1.0D	1.0D	SFM (Vc)	140	125	140	125	140	135	135	140		
			IPT (fz)	.0005	.0008	.0009	.0016	.0019	.0030	.0036	.0038		
			RPM	4280	2520	2140	1260	1080	820	690	530		
M	12-13	Stainless steel	1.0D	1.0D	SFM (Vc)	285	260	280	245	280	270	265	265
					IPT (fz)	.0002	.0004	.0005	.0008	.0009	.0015	.0019	.0020
					RPM	8690	5290	4280	2520	2140	1640	1350	1020
14.1-14.2	1.0D	1.0D	SFM (Vc)	285	260	280	245	280	270	265	265		
			IPT (fz)	.0002	.0004	.0005	.0008	.0009	.0015	.0019	.0020		
			RPM	8690	5290	4280	2520	2140	1640	1350	1020		
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	1.0D	SFM (Vc)	225	205	225	210	215	205	215	225
					IPT (fz)	.0007	.0012	.0016	.0030	.0040	.0056	.0068	.0071
					RPM	6930	4160	3400	2140	1640	1260	1100	850
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	1.0D	1.0D	SFM (Vc)	575	515	570	520	560	535	530	535
					IPT (fz)	.0006	.0010	.0013	.0021	.0026	.0034	.0041	.0044
					RPM	17640	10460	8690	5290	4280	3280	2710	2040
26-28	Copper and Copper Alloys (Bronze / Brass)	1.0D	1.0D	SFM (Vc)	410	385	430	385	430	410	410	415	
				IPT (fz)	.0006	.0010	.0013	.0022	.0026	.0034	.0040	.0044	
				RPM	12600	7810	6550	3910	3280	2520	2100	1590	

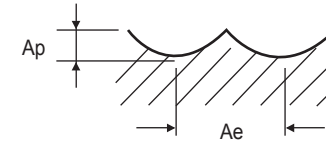


RECOMMENDED CUTTING CONDITIONS

UGMF91 SERIES 4 FLUTE BALL NOSE - PLANE

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)							
						1/8	3/16	1/4	3/8	1/2	5/8	3/4	1
P	1-4	Non-alloy steel	0.7D	0.3D	SFM (Vc)	185	165	180	160	180	175	190	200
					IPT (fz)	.0004	.0007	.0009	.0014	.0014	.0019	.0020	.0023
					RPM	5670	3400	2770	1640	1390	1070	980	770
	5		0.7D	0.3D	SFM (Vc)	155	135	155	135	155	145	155	165
					IPT (fz)	.0002	.0004	.0004	.0007	.0008	.0011	.0013	.0016
					RPM	4790	2770	2380	1390	1200	880	800	630
	6-7		0.7D	0.3D	SFM (Vc)	185	165	180	160	180	175	190	200
					IPT (fz)	.0004	.0007	.0009	.0014	.0014	.0019	.0020	.0023
					RPM	5670	3400	2770	1640	1390	1070	980	770
	8-9		0.7D	0.3D	SFM (Vc)	155	135	155	135	155	145	155	165
					IPT (fz)	.0002	.0004	.0004	.0007	.0008	.0011	.0013	.0016
					RPM	4790	2770	2380	1390	1200	880	800	630
10	0.7D	0.3D	SFM (Vc)	185	165	180	160	180	175	190	200		
			IPT (fz)	.0004	.0007	.0009	.0014	.0014	.0019	.0020	.0023		
			RPM	5670	3400	2770	1640	1390	1070	980	770		
11.1	0.7D	0.3D	SFM (Vc)	155	135	155	135	155	145	155	165		
			IPT (fz)	.0002	.0004	.0004	.0007	.0008	.0011	.0013	.0016		
			RPM	4790	2770	2380	1390	1200	880	800	630		
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.7D	0.3D	SFM (Vc)	265	235	255	235	265	245	260	265
					IPT (fz)	.0005	.0011	.0015	.0033	.0038	.0053	.0061	.0064
					RPM	8060	4790	3910	2380	2020	1510	1320	1020
N	21-25	Aluminum-wrought alloy Aluminum-cast, alloyed	0.7D	0.3D	SFM (Vc)	765	680	775	695	775	720	790	825
					IPT (fz)	.0003	.0006	.0007	.0013	.0018	.0021	.0023	.0024
					RPM	23440	13860	11840	7060	5920	4410	4030	3160





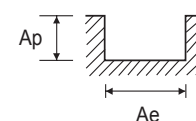
**E5020, E5244, E5011**  
**E5026, E5022, E5025** SERIES

**2 FLUTE - SLOTTING**

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)												
						3/32	1/8	5/32	3/16	1/4	5/16	3/8	1/2	9/16	5/8	13/16		
P	1-2	Non-alloy steel	1.0D	1.0D	SFM(Vc)	135	120	115	110	120	115	110	120	120	115	115		
					IPT(fz)	.0003	.0005	.0007	.0009	.0011	.0014	.0018	.0022	.0025	.0029	.0036		
					RPM	5500	3700	2800	2200	1800	1400	1100	900	800	700	550		
	3-4		1.0D	1.0D	SFM(Vc)	120	105	100	95	105	100	95	105	105	100	100		
					IPT(fz)	.0003	.0005	.0006	.0008	.0009	.0013	.0016	.0019	.0021	.0025	.0031		
					RPM	4800	3200	2400	1900	1600	1200	950	800	700	600	480		
	5		1.0D	1.0D	SFM(Vc)	100	85	80	80	85	80	80	85	85	80	85		
					IPT(fz)	.0003	.0004	.0005	.0006	.0008	.0010	.0013	.0015	.0018	.0030	.0038		
					RPM	4000	2600	2000	1600	1300	1000	800	660	570	500	400		
	6		1.0D	1.0D	SFM(Vc)	135	120	115	110	120	115	110	120	120	115	115		
					IPT(fz)	.0003	.0005	.0007	.0009	.0011	.0014	.0018	.0022	.0025	.0029	.0036		
RPM		5500			3700	2800	2200	1800	1400	1100	900	800	700	550				
7	1.0D	1.0D	SFM(Vc)	120	105	100	95	105	100	95	105	105	100	100				
			IPT(fz)	.0003	.0005	.0006	.0008	.0009	.0013	.0016	.0019	.0021	.0025	.0031				
			RPM	4800	3200	2400	1900	1600	1200	950	800	700	600	480				
8-9	1.0D	1.0D	SFM(Vc)	100	85	80	80	85	80	80	85	85	80	85				
			IPT(fz)	.0003	.0004	.0005	.0006	.0008	.0010	.0013	.0015	.0018	.0030	.0038				
			RPM	4000	2600	2000	1600	1300	1000	800	660	570	500	400				
10	1.0D	1.0D	SFM(Vc)	135	120	115	110	120	115	110	120	120	115	115				
			IPT(fz)	.0003	.0005	.0007	.0009	.0011	.0014	.0018	.0022	.0025	.0029	.0036				
			RPM	5500	3700	2800	2200	1800	1400	1100	900	800	700	550				
11.1	1.0D	1.0D	SFM(Vc)	100	85	80	80	85	80	80	85	85	80	85				
			IPT(fz)	.0003	.0004	.0005	.0006	.0008	.0010	.0013	.0015	.0018	.0030	.0038				
			RPM	4000	2600	2000	1600	1300	1000	800	660	570	500	400				
M	12-13	1.0D	1.0D	SFM(Vc)	195	175	165	155	170	165	155	170	160	165	170			
				IPT(fz)	.0002	.0003	.0004	.0005	.0006	.0008	.0009	.0012	.0014	.0015	.0019			
				RPM	8000	5300	4000	3200	2600	2000	1600	1300	1100	1000	800			
14.1-14.2	1.0D	1.0D	SFM(Vc)	195	175	165	155	170	165	155	170	160	165	170				
			IPT(fz)	.0002	.0003	.0004	.0005	.0006	.0008	.0009	.0012	.0014	.0015	.0019				
			RPM	8000	5300	4000	3200	2600	2000	1600	1300	1100	1000	800				
K	15-20	1.0D	1.0D	SFM(Vc)	160	135	130	125	135	130	130	130	135	130	135			
				IPT(fz)	.0005	.0007	.0009	.0012	.0017	.0025	.0031	.0040	.0050	.0056	.0078			
				RPM	6500	4200	3200	2500	2100	1600	1300	1000	900	800	640			
N	21-25	1.0D	1.0D	SFM(Vc)	395	360	325	315	345	325	315	340	340	325	340			
				IPT(fz)	.0004	.0006	.0008	.0010	.0012	.0016	.0020	.0025	.0028	.0033	.0041			
				RPM	16000	11000	8000	6400	5300	4000	3200	2600	2300	2000	1600			
26-28	1.0D	1.0D	SFM(Vc)	295	260	245	235	260	245	235	260	250	245	255				
			IPT(fz)	.0004	.0006	.0008	.0010	.0013	.0017	.0021	.0025	.0029	.0033	.0042				
			RPM	12000	8000	6000	4800	4000	3000	2400	2000	1700	1500	1200				

RPM = rev./min.  
Feed = inch/min.  
SFM = ft/min  
Fz = inch/tooth



※ The Feed, in long & extra long types, should be reduced by around 50%.

**E5020, E5244, E5011**  
**E5026, E5022, E5025** SERIES

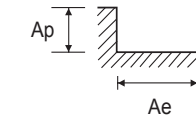
**TiAlN Coated**

**2 FLUTE - SLOTTING**

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)												
						3/32	1/8	5/32	3/16	1/4	5/16	3/8	1/2	9/16	5/8	13/16		
P	1-2	Non-alloy steel	1.0D	1.0D	SFM(Vc)	210	190	180	170	190	175	165	190	175	175	185		
					IPT(fz)	.0003	.0005	.0007	.0009	.0010	.0014	.0018	.0021	.0025	.0028	.0034		
					RPM	8640	5760	4370	3430	2880	2160	1680	1440	1200	1080	880		
	3-4		1.0D	1.0D	SFM(Vc)	185	165	150	145	155	145	140	155	160	155	155		
					IPT(fz)	.0003	.0005	.0007	.0008	.0010	.0014	.0017	.0021	.0023	.0026	.0034		
					RPM	7440	5040	3720	3000	2400	1800	1440	1200	1080	960	740		
	5		1.0D	1.0D	SFM(Vc)	155	135	130	120	135	130	120	135	130	130	130		
					IPT(fz)	.0002	.0005	.0006	.0008	.0010	.0013	.0017	.0019	.0022	.0032	.0040		
					RPM	6240	4080	3120	2400	2040	1560	1200	1030	890	780	620		
	6		1.0D	1.0D	SFM(Vc)	210	190	180	170	190	175	165	190	175	175	185		
					IPT(fz)	.0003	.0005	.0007	.0009	.0010	.0014	.0018	.0021	.0025	.0028	.0034		
RPM		8640			5760	4370	3430	2880	2160	1680	1440	1200	1080	880				
7	1.0D	1.0D	SFM(Vc)	185	165	150	145	155	145	140	155	160	155	155				
			IPT(fz)	.0003	.0005	.0007	.0008	.0010	.0014	.0017	.0021	.0023	.0026	.0034				
			RPM	7440	5040	3720	3000	2400	1800	1440	1200	1080	960	740				
8-9	1.0D	1.0D	SFM(Vc)	155	135	130	120	135	130	120	135	130	130	130				
			IPT(fz)	.0002	.0005	.0006	.0008	.0010	.0013	.0017	.0019	.0022	.0032	.0040				
			RPM	6240	4080	3120	2400	2040	1560	1200	1030	890	780	620				
10	1.0D	1.0D	SFM(Vc)	210	190	180	170	190	175	165	190	175	175	185				
			IPT(fz)	.0003	.0005	.0007	.0009	.0010	.0014	.0018	.0021	.0025	.0028	.0034				
			RPM	8640	5760	4370	3430	2880	2160	1680	1440	1200	1080	880				
11.1	1.0D	1.0D	SFM(Vc)	155	135	130	120	135	130	120	135	130	130	130				
			IPT(fz)	.0002	.0005	.0006	.0008	.0010	.0013	.0017	.0019	.0022	.0032	.0040				
			RPM	6240	4080	3120	2400	2040	1560	1200	1030	890	780	620				
M	12-13	1.0D	1.0D	SFM(Vc)	295	270	255	245	265	255	235	265	245	255	255			
				IPT(fz)	.0002	.0002	.0003	.0004	.0005	.0006	.0008	.0010	.0012	.0016	.0021			
				RPM	12000	8280	6240	5040	4080	3120	2400	2040	1680	1560	1200			
14.1-14.2	1.0D	1.0D	SFM(Vc)	295	270	255	245	265	255	235	265	245	255	255				
			IPT(fz)	.0002	.0002	.0003	.0004	.0005	.0006	.0008	.0010	.0012	.0016	.0021				
			RPM	12000	8280	6240	5040	4080	3120	2400	2040	1680	1560	1200				
K	15-20	1.0D	1.0D	SFM(Vc)	250	215	205	195	210	195	200	205	210	195	215			
				IPT(fz)	.0004	.0007	.0009	.0011	.0017	.0025	.0029	.0042	.0045	.0058	.0075			
				RPM	10200	6600	5040	3960	3240	2400	2040	1560	1440	1200	1000			
N	21-25	1.0D	1.0D	SFM(Vc)	590	550	490	490	540	510	495	535	530	510	510			
				IPT(fz)	.0004	.0006	.0008	.0010	.0013	.0017	.0021	.0026	.0029	.0034	.0044			
				RPM	24000	16800	12000	9960	8280	6240	5040	4080	3600	3120	2400			
26-28	1.0D	1.0D	SFM(Vc)	440	395	395	365	410	395	365	410	390	395	400				
			IPT(fz)	.0004	.0006	.0008	.0010	.0013	.0017	.0022	.0026	.0030	.0033	.0043				
			RPM	18000	12000	9600	7440	6240	4800	3720	3120	2640	2400	1870				

RPM = rev./min.  
Feed = inch/min.  
SFM = ft/min  
Fz = inch/tooth



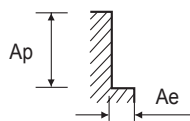
※ The Feed, in long & extra long types, should be reduced by around 50%.

**E5021, E5245, E5012, E5065  
E5023, E5024, E5216 SERIES**

**4 FLUTE - SIDE CUTTING**

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) [3/32, 1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2, 9/16, 5/8, 13/16]. Rows include categories P (Non-alloy steel, Low alloy steel, High alloyed steel, and tool steel), M (Stainless steel), K (Grey cast iron, Nodular cast iron, Malleable cast iron), and N (Aluminum-wrought alloy, Aluminum-cast, alloyed, Copper and Copper Alloys (Bronze / Brass)).



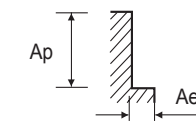
**E5021, E5245, E5012, E5065  
E5023, E5024, E5216 SERIES**

**TiAlN Coated**

**4 FLUTE - SIDE CUTTING**

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

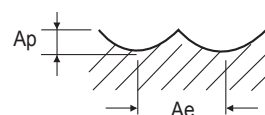
Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) [3/32, 1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2, 9/16, 5/8, 13/16]. Rows include categories P (Non-alloy steel, Low alloy steel, High alloyed steel, and tool steel), M (Stainless steel), K (Grey cast iron, Nodular cast iron, Malleable cast iron), and N (Aluminum-wrought alloy, Aluminum-cast, alloyed, Copper and Copper Alloys (Bronze / Brass)).



**E5249, E5014, E5018, E5251 SERIES 2 FLUTE BALL NOSE - PLANE**

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) (3/32, 1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2, 9/16, 5/8, 11/16, 13/16). Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and tool steel for groups P, K, and N.

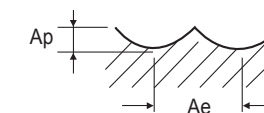


**E5249, E5014, E5018, E5251 SERIES TiAlN Coated**

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

**2 FLUTE BALL NOSE - PLANE**

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) (3/32, 1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2, 9/16, 5/8, 11/16, 13/16). Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and tool steel for groups P, K, and N.

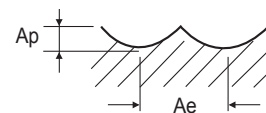




**E5250, E5060, E5062, E5252** SERIES 4 FLUTE BALL NOSE - PLANE

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)															
						3/32	1/8	5/32	3/16	1/4	5/16	3/8	1/2	9/16	5/8	11/16	13/16				
P	1-4	Non-alloy steel	0.7D	0.3D	SFM(Vc)	130	115	105	105	110	105	100	115	110	105	105	105				
					IPT(fz)	.0003	.0004	.0006	.0007	.0009	.0012	.0015	.0014	.0017	.0019	.0022	.0025				
	RPM				5200	3500	2600	2100	1700	1270	1000	870	750	650	580	500					
	IPM(Feed)				6	6	6	6	6	6	5	5	5	5	5	5					
	SFM(Vc)				110	95	85	85	95	90	85	95	90	90	85	90					
	IPT(fz)				.0002	.0003	.0004	.0004	.0005	.0007	.0009	.0010	.0012	.0014	.0016	.0017					
	5	Low alloy steel	0.7D	0.3D	SFM(Vc)	130	115	105	105	110	105	100	115	110	105	105					
					IPT(fz)	.0003	.0004	.0006	.0007	.0009	.0012	.0015	.0014	.0017	.0019	.0022	.0025				
	RPM				5200	3500	2600	2100	1700	1270	1000	870	750	650	580	500					
	IPM(Feed)				6	6	6	6	6	6	5	5	5	5	5	5					
	SFM(Vc)				110	95	85	85	95	90	85	95	90	90	85	90					
	IPT(fz)				.0002	.0003	.0004	.0004	.0005	.0007	.0009	.0010	.0012	.0014	.0016	.0017					
6-7	High alloyed steel, and tool steel	0.7D	0.3D	SFM(Vc)	130	115	105	105	110	105	100	115	110	105	105						
				IPT(fz)	.0003	.0004	.0006	.0007	.0009	.0012	.0015	.0014	.0017	.0019	.0022	.0025					
RPM				5200	3500	2600	2100	1700	1270	1000	870	750	650	580	500						
IPM(Feed)				6	6	6	6	6	6	5	5	5	5	5	5						
SFM(Vc)				110	95	85	85	95	90	85	95	90	90	85	90						
IPT(fz)				.0002	.0003	.0004	.0004	.0005	.0007	.0009	.0010	.0012	.0014	.0016	.0017						
8-9	High alloyed steel, and tool steel	0.7D	0.3D	SFM(Vc)	130	115	105	105	110	105	100	115	110	105	105						
				IPT(fz)	.0003	.0004	.0006	.0007	.0009	.0012	.0015	.0014	.0017	.0019	.0022	.0025					
RPM				5200	3500	2600	2100	1700	1270	1000	870	750	650	580	500						
IPM(Feed)				6	6	6	6	6	6	5	5	5	5	5	5						
SFM(Vc)				110	95	85	85	95	90	85	95	90	90	85	90						
IPT(fz)				.0002	.0003	.0004	.0004	.0005	.0007	.0009	.0010	.0012	.0014	.0016	.0017						
10	Grey cast iron Nodular cast iron Malleable cast iron	0.7D	0.3D	SFM(Vc)	180	160	145	140	155	145	140	155	145	150	145	155					
				IPT(fz)	.0003	.0005	.0008	.0012	.0016	.0026	.0033	.0040	.0048	.0052	.0059	.0058					
RPM				7300	4900	3600	2900	2400	1800	1430	1200	1000	920	810	730						
IPM(Feed)				9	10	12	14	15	19	19	19	19	19	19	17						
SFM(Vc)				530	470	445	430	475	450	420	470	440	440	430	445						
IPT(fz)				.0002	.0003	.0004	.0006	.0007	.0010	.0013	.0018	.0022	.0020	.0023	.0026						
11.1	Aluminum-wrought alloy Aluminum-cast, alloyed	0.7D	0.3D	SFM(Vc)	530	470	445	430	475	450	420	470	440	440	430	445					
				IPT(fz)	.0002	.0003	.0004	.0006	.0007	.0010	.0013	.0018	.0022	.0020	.0023	.0026					
RPM				21500	14300	10900	8800	7260	5500	4300	3600	3000	2700	2400	2100						
IPM(Feed)				17	17	17	20	20	22	22	26	26	22	22	22						

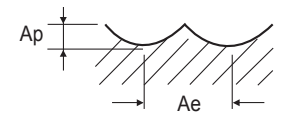


**E5250, E5060, E5062, E5252** SERIES TiAlN Coated

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

4 FLUTE BALL NOSE - PLANE

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)															
						3/32	1/8	5/32	3/16	1/4	5/16	3/8	1/2	9/16	5/8	11/16	13/16				
P	1-4	Non-alloy steel	0.7D	0.3D	SFM(Vc)	200	175	165	160	175	155	155	175	175	165	160	165				
					IPT(fz)	.0003	.0004	.0006	.0008	.0009	.0012	.0014	.0015	.0017	.0020	.0022	.0026				
	RPM				8110	5400	4080	3240	2640	1920	1560	1320	1180	1020	900	780					
	IPM(Feed)				9	9	9	10	9	9	9	8	8	8	8	8					
	SFM(Vc)				170	150	135	130	150	135	130	150	140	135	135	145					
	IPT(fz)				.0001	.0002	.0003	.0004	.0004	.0006	.0008	.0009	.0010	.0012	.0014	.0015					
	5	Low alloy steel	0.7D	0.3D	SFM(Vc)	200	175	165	160	175	155	155	175	175	165	160	165				
					IPT(fz)	.0003	.0004	.0006	.0008	.0009	.0012	.0014	.0015	.0017	.0020	.0022	.0026				
	RPM				6840	4560	3240	2640	2270	1680	1320	1140	960	840	740	670					
	IPM(Feed)				4	4	4	4	4	4	4	4	4	4	4	4					
	SFM(Vc)				170	150	135	130	150	135	130	150	140	135	135	145					
	IPT(fz)				.0001	.0002	.0003	.0004	.0004	.0006	.0008	.0009	.0010	.0012	.0014	.0015					
6-7	High alloyed steel, and tool steel	0.7D	0.3D	SFM(Vc)	200	175	165	160	175	155	155	175	175	165	160	165					
				IPT(fz)	.0003	.0004	.0006	.0008	.0009	.0012	.0014	.0015	.0017	.0020	.0022	.0026					
RPM				8110	5400	4080	3240	2640	1920	1560	1320	1180	1020	900	780						
IPM(Feed)				9	9	9	10	9	9	9	8	8	8	8	8						
SFM(Vc)				170	150	135	130	150	135	130	150	140	135	135	145						
IPT(fz)				.0001	.0002	.0003	.0004	.0004	.0006	.0008	.0009	.0010	.0012	.0014	.0015						
8-9	High alloyed steel, and tool steel	0.7D	0.3D	SFM(Vc)	200	175	165	160	175	155	155	175	175	165	160	165					
				IPT(fz)	.0003	.0004	.0006	.0008	.0009	.0012	.0014	.0015	.0017	.0020	.0022	.0026					
RPM				6840	4560	3240	2640	2270	1680	1320	1140	960	840	740	670						
IPM(Feed)				4	4	4	4	4	4	4	4	4	4	4	4						
SFM(Vc)				170	150	135	130	150	135	130	150	140	135	135	145						
IPT(fz)				.0001	.0002	.0003	.0004	.0004	.0006	.0008	.0009	.0010	.0012	.0014	.0015						
10	Grey cast iron Nodular cast iron Malleable cast iron	0.7D	0.3D	SFM(Vc)	280	250	230	225	245	225	225	250	230	235	215	240					
				IPT(fz)	.0003	.0005	.0008	.0012	.0015	.0026	.0032	.0038	.0048	.0052	.0063	.0059					
RPM				11400	7680	5640	4560	3720	2770	2270	1920	1560	1440	1200	1140						
IPM(Feed)				14	15	18	21	23	29	29	29	30	30	30	27						
SFM(Vc)				825	730	685	650	740	705	660	740	690	685	670	690						
IPT(fz)				.0002	.0003	.0004	.0006	.0007	.0010	.0013	.0018	.0022	.0021	.0024	.0027						
11.1	Aluminum-wrought alloy Aluminum-cast, alloyed	0.7D	0.3D	SFM(Vc)	825	730	685	650	740	705	660	740	690	685	670	690					
				IPT(fz)	.0002	.0003	.0004	.0006	.0007	.0010	.0013	.0018	.0022	.0021	.0024	.0027					
RPM				33600	22320	16800	13200	11280	8640	6720	5640	4680	4200	3720	3240						
IPM(Feed)				26	26	26	31	31	35	35	41	41	35	35	35						



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RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

EH527 SERIES TiAlN Coated 2 FLUTE - SLOTTING

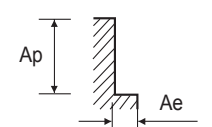
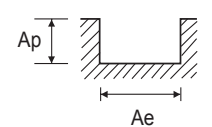
EH540 SERIES TiAlN Coated 4 FLUTE - SIDE CUTTING

SFM(Vc) = ft./min.
IPT(fz) = in./tooth
RPM = rev./min.
IPM(Feed) = in./min.

SFM(Vc) = ft./min.
IPT(fz) = in./tooth
RPM = rev./min.
IPM(Feed) = in./min.

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) [2.0, 3.0, 4.0, 5.0, 6.0, 8.0, 10.0, 12.0, 14.0, 16.0, 20.0]. Rows include materials like Non-alloy steel, Low alloy steel, High alloyed steel, Stainless steel, Grey cast iron, Aluminum-wrought alloy, and Copper and Copper Alloys.

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) [2.0, 3.0, 4.0, 5.0, 6.0, 8.0, 10.0, 12.0, 14.0, 16.0, 20.0]. Rows include materials like Non-alloy steel, Low alloy steel, High alloyed steel, Stainless steel, Grey cast iron, Aluminum-wrought alloy, and Copper and Copper Alloys.





**PROPERTIES AND APPLICATIONS OF COATINGS**

	<b>Titanium Nitride</b>	<b>Titanium Carbonitride</b>	<b>Super TiAlN "F" Coatings</b>	<b>Super TiAlN "E" Coatings</b>
<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	750F	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>				





Being the best through innovation



**HSS PM60**

**ONLY ONE COATED  
PM60 END MILLS**

- Perfect Solution of Carbide Chipping under Vibrations

SELECTION GUIDE



SERIES	GYG64	GYG67
FLUTE	2	4
HELIX ANGLE	30°	30°
CUTTING EDGE SHAPE	SQUARE	BALL NOSE
SIZE MIN	D1/8	R1/16
SIZE MAX	D1	R1/2
PAGE	C726	C727

HSS PM60

ONLY ONE END MILLS

Perfect solution to protect Carbide chipping problems under vibrations



Please visit globalyg1.com/mat for material search

⊙ : Excellent ○ : Good

Recommended cutting conditions : p.C733

	GYG64	GYG67
CENTER CUT		
Y-Coating	Y-Coating	Y-Coating



ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc	GYG64	GYG67
P	1	Non-alloy steel	About 0.15% C Annealed	125		⊙	⊙
	2		About 0.45% C Annealed	190	13	⊙	⊙
	3		About 0.45% C Quenched & Tempered	250	25	⊙	⊙
	4		About 0.75% C Annealed	270	28	⊙	⊙
	5		About 0.75% C Quenched & Tempered	300	32	⊙	⊙
	6	Low alloy steel	Annealed	180	10	⊙	⊙
	7		Quenched & Tempered	275	29	⊙	⊙
	8		Quenched & Tempered	300	32	⊙	⊙
	9		Quenched & Tempered	350	38	○	○
	10		High alloyed steel, and tool steel	Annealed	200	15	⊙
	11	Quenched & Tempered		325	35	○	○
M	12	Stainless steel	Ferritic / Martensitic Annealed	200	15	⊙	⊙
	13		Martensitic Quenched & Tempered	240	23	⊙	⊙
	14		Austenitic	180	10	⊙	⊙
K	15	Grey cast iron	Pearlitic / ferritic	180	10	⊙	⊙
	16		Pearlitic (Martensitic)	260	26	⊙	⊙
	17	Nodular cast iron	Ferritic	160	3	⊙	⊙
	18		Pearlitic	250	25	⊙	⊙
	19		Ferritic	130		⊙	⊙
20	Malleable cast iron	Pearlitic	230	21	⊙	⊙	
N	21	Aluminum-wrought alloy	Not Curable	60			
	22		Curable Hardened	100			
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable	75			
	24		≤ 12% Si, Curable Hardened	90			
	25		> 12% Si, Not Curable	130			
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%	110		○	○
	27		CuZn, CuSnZn (Brass)	90		○	○
	28		CuSn, lead-free copper and electrolytic copper	100		○	○
	29		Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic Rubber, Wood, etc.			
	30						
S	31	Heat Resistant Super Alloys	Fe Based Annealed	200	15		
	32		Cured	280	30		
	33		Annealed	250	25		
	34		Ni or Co Based Cured	350	38		
	35	Cast	320	34			
	36	Titanium Alloys	Pure Titanium	400 Rm			
37	Alpha + Beta Alloys Hardened		1050 Rm				
H	38	Hardened steel	Hardened	550	55		
	39		Hardened	630	60		
	40	Chilled Cast Iron	Cast	400	42	○	○
	41	Hardened Cast Iron	Hardened	550	55		

GYG65	GYG66	GYG69	GYG68	GYG70
4	4	4&5	3-6	3-6
30°	M-Helix	M-Helix	30°	30°
SQUARE	SQUARE	CORNER RADIUS ROUGHING	ROUGHING	ROUGHING
D1/8	D1/8	D1/4	D1/4	D1/4
D1	D1	D1	D1-1/4	D1-1/4
C728	C729	C730	C731	C732
CENTER CUT	CENTER CUT	FINE CENTER CUT	FINE CENTER CUT	COARSE CENTER CUT
Y-Coating	Y-Coating	Y-Coating	Y-Coating	Y-Coating



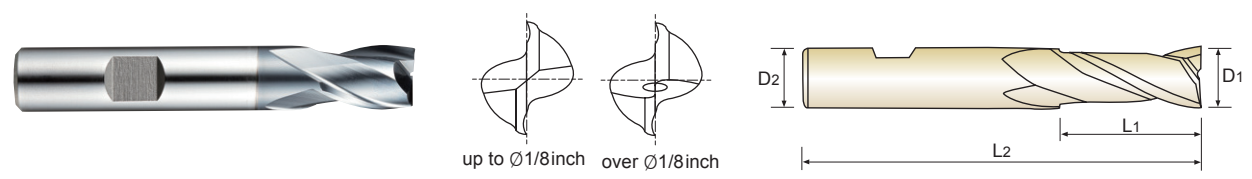
ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc	GYG65	GYG66	GYG69	GYG68	GYG70
P	1	Non-alloy steel	About 0.15% C Annealed	125		⊙	⊙	⊙	⊙	⊙
	2		About 0.45% C Annealed	190	13	⊙	⊙	⊙	⊙	⊙
	3		About 0.45% C Quenched & Tempered	250	25	⊙	⊙	⊙	⊙	⊙
	4		About 0.75% C Annealed	270	28	⊙	⊙	⊙	⊙	⊙
	5		About 0.75% C Quenched & Tempered	300	32	⊙	⊙	⊙	⊙	⊙
	6	Low alloy steel	Annealed	180	10	⊙	⊙	⊙	⊙	⊙
	7		Quenched & Tempered	275	29	⊙	⊙	⊙	⊙	⊙
	8		Quenched & Tempered	300	32	⊙	⊙	⊙	⊙	⊙
	9		Quenched & Tempered	350	38	○	○	○	○	○
	10		High alloyed steel, and tool steel	Annealed	200	15	⊙	⊙	⊙	⊙
	11	Quenched & Tempered		325	35	○	○	○	○	○
M	12	Stainless steel	Ferritic / Martensitic Annealed	200	15	⊙	⊙	⊙	⊙	⊙
	13		Martensitic Quenched & Tempered	240	23	⊙	⊙	⊙	⊙	⊙
	14		Austenitic	180	10	⊙	⊙	⊙	⊙	⊙
K	15	Grey cast iron	Pearlitic / ferritic	180	10	⊙	⊙	⊙	⊙	⊙
	16		Pearlitic (Martensitic)	260	26	⊙	⊙	⊙	⊙	⊙
	17	Nodular cast iron	Ferritic	160	3	⊙	⊙	⊙	⊙	⊙
	18		Pearlitic	250	25	⊙	⊙	⊙	⊙	⊙
	19		Ferritic	130		⊙	⊙	⊙	⊙	⊙
20	Malleable cast iron	Pearlitic	230	21	⊙	⊙	⊙	⊙	⊙	
N	21	Aluminum-wrought alloy	Not Curable	60						
	22		Curable Hardened	100						
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable	75						
	24		≤ 12% Si, Curable Hardened	90						
	25		> 12% Si, Not Curable	130						
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%	110		○	○	○	○	○
	27		CuZn, CuSnZn (Brass)	90		○	○	○	○	○
	28		CuSn, lead-free copper and electrolytic copper	100		○	○	○	○	○
	29		Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic Rubber, Wood, etc.						
	30									
S	31	Heat Resistant Super Alloys	Fe Based Annealed	200	15					
	32		Cured	280	30					
	33		Annealed	250	25					
	34		Ni or Co Based Cured	350	38					
	35	Cast	320	34						
	36	Titanium Alloys	Pure Titanium	400 Rm						
37	Alpha + Beta Alloys Hardened		1050 Rm							
H	38	Hardened steel	Hardened	550	55					
	39		Hardened	630	60					
	40	Chilled Cast Iron	Cast	400	42	○	○	○	○	○
	41	Hardened Cast Iron	Hardened	550	55					





FLAT SHANK **GYG64** SERIES

**PM60, 2 FLUTE (Center Cut)**



p.C733

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	D1	D2	L1	L2
Y-COATED				
GYG64008	1/8	3/8	3/8	2-5/16
GYG64012	3/16	3/8	7/16	2-5/16
GYG64016	1/4	3/8	1/2	2-5/16
GYG64020	5/16	3/8	9/16	2-5/16
GYG64024	3/8	3/8	9/16	2-5/16
GYG64032	1/2	1/2	1	3
GYG64040	5/8	5/8	1-5/16	3-7/16
GYG64048	3/4	3/4	1-5/16	3-7/16
GYG64064	1	1	1-5/8	4-1/8

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-0.0012	h6

◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	3	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

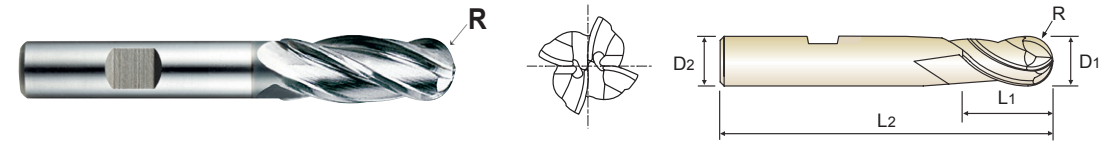
  

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron								
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	55	60	42	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend						○	○	○												○	



FLAT SHANK **GYG67** SERIES

**PM60, 4 FLUTE BALL NOSE**



p.C734

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	R	D1	D2	L1	L2
Y-COATED					
GYG67008	R1/16	1/8	3/8	3/8	2-5/16
GYG67012	R3/32	3/16	3/8	1/2	2-3/8
GYG67016	R1/8	1/4	3/8	5/8	2-7/16
GYG67020	R5/32	5/16	3/8	3/4	2-1/2
GYG67024	R3/16	3/8	3/8	3/4	2-1/2
GYG67032	R1/4	1/2	1/2	1-1/4	3-1/4
GYG67040	R5/16	5/8	5/8	1-5/8	3-3/4
GYG67048	R3/8	3/4	3/4	1-5/8	3-7/8
GYG67064	R1/2	1	1	2	4-1/2

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-0.0012	h6

◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	3	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

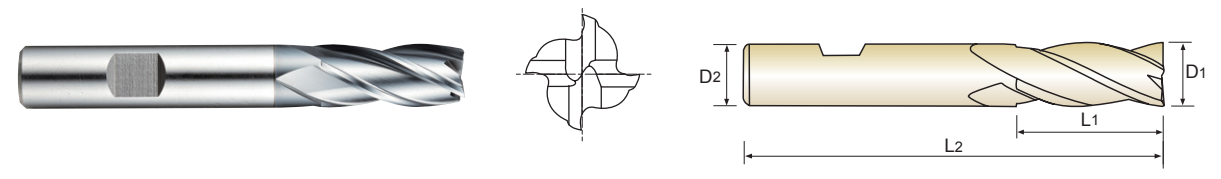
ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron								
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	55	60	42	42	55	55
HRc	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend						○	○	○												○	





FLAT SHANK **GYG65** SERIES

**PM60, 4 FLUTE (Center Cut)**



Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
Y-COATED	D1	D2	L1	L2
GYG65008	1/8	3/8	3/8	2-5/16
GYG65012	3/16	3/8	1/2	2-3/8
GYG65016	1/4	3/8	5/8	2-7/16
GYG65020	5/16	3/8	3/4	2-1/2
GYG65024	3/8	3/8	3/4	2-1/2
GYG65032	1/2	1/2	1-1/4	3-1/4
GYG65040	5/8	5/8	1-5/8	3-3/4
GYG65048	3/4	3/4	1-5/8	3-7/8
GYG65056	7/8	7/8	1-7/8	4-1/8
GYG65064	1	1	2	4-1/2

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel	Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron				
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

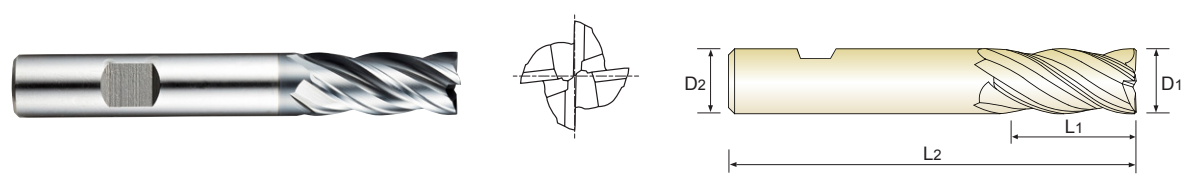
  

ISO	N					S					H										
	Aluminum-wrought alloy	Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials	Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron								
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
Recommend						○	○	○													○



FLAT SHANK **GYG66** SERIES

**PM60, 4 FLUTE MULTIPLE HELIX (Center Cut)**



Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
Y-COATED	D1	D2	L1	L2
GYG66008	1/8	3/8	3/8	2-5/16
GYG66012	3/16	3/8	1/2	2-3/8
GYG66016	1/4	3/8	5/8	2-7/16
GYG66020	5/16	3/8	3/4	2-1/2
GYG66024	3/8	3/8	3/4	2-1/2
GYG66032	1/2	1/2	1-1/4	3-1/4
GYG66040	5/8	5/8	1-5/8	3-3/4
GYG66048	3/4	3/4	1-5/8	3-7/8
GYG66064	1	1	2	4-1/2

Mill Dia. Tolerance (inch)	Shank Dia. Tolerance
0~-.0012	h6

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel	Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron				
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

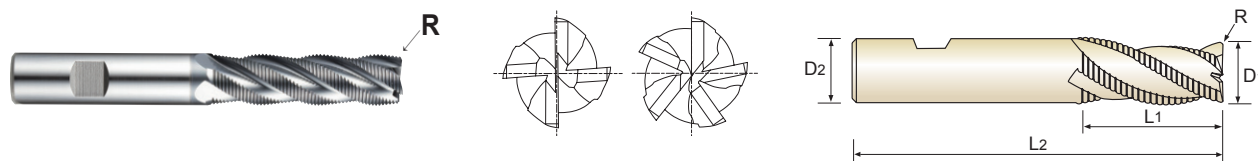
  

ISO	N					S					H										
	Aluminum-wrought alloy	Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials	Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron								
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
Recommend						○	○	○													○

**YG ONLY ONE END MILLS**

FLAT SHANK **GYG69** SERIES

**PM60, MULTI FLUTE MULTIPLE HELIX CORNER RADIUS ROUGHING - FINE (Center Cut)**



5 Flute, 44°/45°

Unit : Inch

EDP No.	Corner Radius	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
Y-COATED	R	D1	D2	L1	L2	
GYG69016	R.020	1/4	3/8	5/8	2-7/16	4
GYG69020	R.020	5/16	3/8	3/4	2-1/2	4
GYG69024	R.020	3/8	3/8	3/4	2-1/2	4
GYG69032	R.020	1/2	1/2	1-1/4	3-1/4	4
GYG69040	R.040	5/8	5/8	1-1/4	3-3/8	5
GYG69048	R.040	3/4	3/4	1-5/8	3-7/8	5
GYG69064	R.040	1	1	2	4-1/2	5

Mill Dia. Tolerance (inch)
0 ~ +.0030

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	35	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

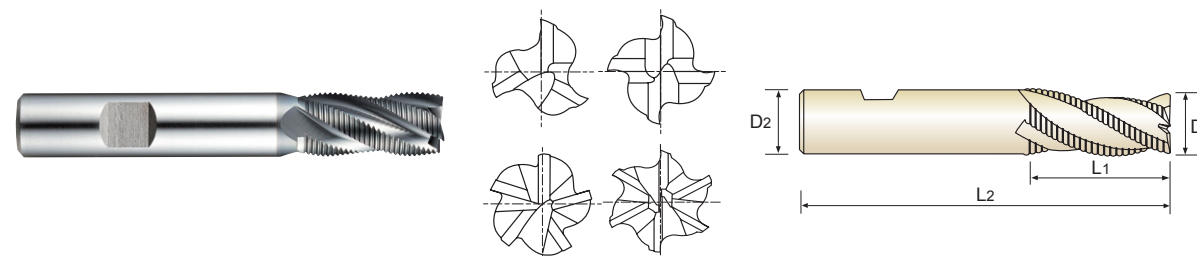
  

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend						○	○	○													

**YG ONLY ONE END MILLS**

FLAT SHANK **GYG68** SERIES

**PM60, MULTI FLUTE ROUGHING- FINE (Center Cut)**



p.C738

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
Y-COATED	D1	D2	L1	L2	
GYG68016	1/4	3/8	5/8	2-7/16	3
GYG68020	5/16	3/8	3/4	2-1/2	3
GYG68901	5/16	3/8	1-3/8	3_3/16	3
GYG68024	3/8	3/8	3/4	2-1/2	4
GYG68902	3/8	3/8	1-1/2	3-1/4	4
GYG68032	1/2	1/2	1-1/4	3-1/4	4
GYG68903	1/2	1/2	2	4	4
GYG68040	5/8	5/8	1-5/8	3-3/4	4
GYG68904	5/8	5/8	2-1/2	4-5/8	4
GYG68048	3/4	3/4	1-5/8	3-7/8	4
GYG68905	3/4	3/4	2-1/2	4-3/4	4
GYG68906	3/4	3/4	3	5-1/4	4
GYG68064	1	1	2	4-1/2	5
GYG68907	1	1	4	6-1/2	5
GYG68116	1-1/4	1-1/4	2	4-1/2	6

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	35	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

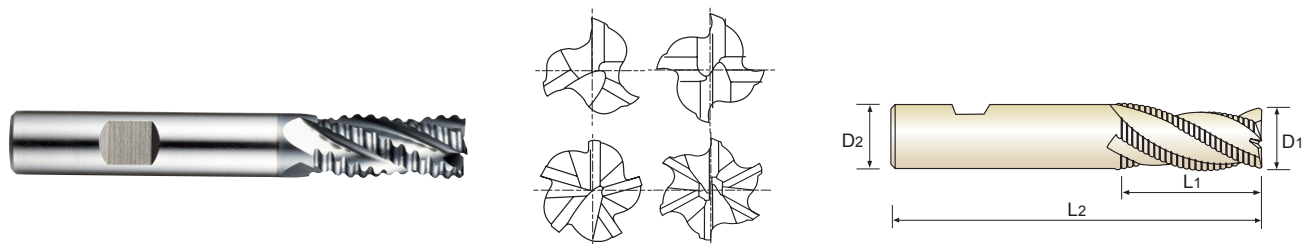
  

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend						○	○	○													

**YG ONLY ONE END MILLS**

FLAT SHANK **GYG70 SERIES**

**PM60, MULTI FLUTE ROUGHING- COARSE (Center Cut)**



Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
Y-COATED	D1	D2	L1	L2	
GYG70016	1/4	3/8	5/8	2-7/16	3
GYG70020	5/16	3/8	3/4	2-1/2	3
GYG70024	3/8	3/8	3/4	2-1/2	4
GYG70032	1/2	1/2	1-1/4	3-1/4	4
GYG70040	5/8	5/8	1-5/8	3-3/4	4
GYG70048	3/4	3/4	1-5/8	3-7/8	4
GYG70064	1	1	2	4-1/2	5
GYG70116	1-1/4	1-1/4	2	4-1/2	6

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

ISO	P											M				K						
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
VDI 3323																						
HRc	13	25	28	32	38	42	48	52	58	62	68	72	78	82	88	92	98	102	108	112		
HB	190	250	270	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100		
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

ISO	N						S						H									
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron			
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
VDI 3323																						
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	60	42	55	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommend						○	○	○														○

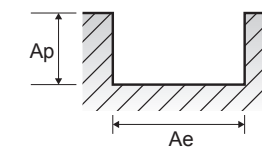
**YG ONLY ONE END MILLS**

**RECOMMENDED CUTTING CONDITIONS**

**GYG64 SERIES 2 FLUTE - SLOTTING**

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)										
						1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1		
P	1	Non-alloy steel	1.0D	0.5D	SFM(Vc)	185	245	260	255	260	265	265	235	235		
					IPT(fz)	.0006	.0013	.0015	.0021	.0028	.0030	.0039	.0046	.0041		
					RPM	5710	4950	3960	3130	2640	2030	1620	1200	890		
	2		3-4	1.0D	0.5D	SFM(Vc)	150	200	215	215	225	215	225	195	195	
						IPT(fz)	.0006	.0012	.0014	.0022	.0029	.0033	.0034	.0042	.0044	
						RPM	4610	4080	3310	2650	2270	1650	1380	990	750	
	5		6	1.0D	0.5D	SFM(Vc)	125	160	170	180	180	170	175	175	150	
						IPT(fz)	.0007	.0014	.0017	.0022	.0031	.0036	.0039	.0042	.0047	
						RPM	3810	3280	2610	2170	1840	1300	1080	890	580	
	7		8	1.0D	0.5D	SFM(Vc)	85	105	110	115	110	110	110	110	115	
						IPT(fz)	.0007	.0011	.0015	.0020	.0027	.0031	.0036	.0041	.0041	
RPM		2610				2140	1650	1400	1140	850	680	550	430			
9	10	1.0D	0.5D	SFM(Vc)	150	200	215	215	225	215	225	195	195			
				IPT(fz)	.0006	.0012	.0014	.0022	.0029	.0033	.0034	.0042	.0044			
				RPM	4610	4080	3310	2650	2270	1650	1380	990	750			
11.1	11.2	1.0D	0.5D	SFM(Vc)	85	105	110	115	110	110	110	110	115			
				IPT(fz)	.0007	.0011	.0015	.0020	.0027	.0031	.0036	.0041	.0041			
				RPM	2610	2140	1650	1400	1140	850	680	550	430			
M	14.1	Stainless steel	1.0D	0.5D	SFM(Vc)	70	90	95	100	95	95	95	100	85		
					IPT(fz)	.0007	.0011	.0014	.0019	.0028	.0028	.0036	.0040	.0038		
					RPM	2210	1870	1450	1200	970	730	580	500	330		
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	0.5D	SFM(Vc)	150	200	215	215	225	215	225	195	195		
					IPT(fz)	.0006	.0012	.0014	.0022	.0029	.0033	.0034	.0042	.0044		
					RPM	4610	4080	3310	2650	2270	1650	1380	990	750		
H	40	Hardened Cast Iron	1.0D	0.3D	SFM(Vc)	45	60	60	60	60	60	60	65	50		
					IPT(fz)	.0007	.0011	.0014	.0019	.0029	.0028	.0035	.0039	.0038		
					RPM	1400	1200	900	760	630	450	380	320	200		

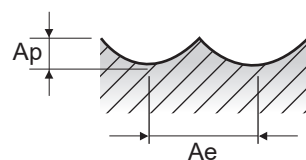




SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

### GYG67 SERIES 4 FLUTE BALL NOSE - PLANE

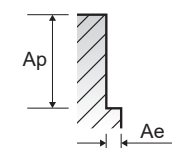
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)										
						1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1		
P	1	Non-alloy steel	0.5D	0.2D	SFM(Vc)	270	310	330	330	340	340	340	335	295		
					IPT(fz)	.0007	.0012	.0016	.0023	.0032	.0034	.0042	.0046	.0048		
					RPM	8320	6270	5010	4050	3480	2610	2070	1700	1130		
	2		0.5D	0.2D	SFM(Vc)	215	245	260	255	260	265	255	245	230		
					IPT(fz)	.0006	.0010	.0014	.0020	.0028	.0029	.0037	.0041	.0041		
					RPM	6620	4950	3960	3130	2640	2030	1560	1250	880		
	3-4		0.5D	0.2D	SFM(Vc)	145	160	170	180	175	175	175	170	145		
					IPT(fz)	.0005	.0008	.0011	.0016	.0024	.0025	.0030	.0032	.0037		
					RPM	4410	3260	2610	2170	1770	1350	1080	870	550		
	5		0.5D	0.2D	SFM(Vc)	75	85	90	90	85	85	90	90	80		
					IPT(fz)	.0004	.0007	.0010	.0014	.0022	.0021	.0027	.0030	.0030		
					RPM	2310	1690	1350	1080	870	650	540	450	300		
6	0.5D	0.2D	SFM(Vc)	215	245	260	255	260	265	255	245	230				
			IPT(fz)	.0006	.0010	.0014	.0020	.0028	.0029	.0037	.0041	.0041				
			RPM	6620	4950	3960	3130	2640	2030	1560	1250	880				
7	0.5D	0.2D	SFM(Vc)	145	160	170	180	175	175	175	170	145				
			IPT(fz)	.0005	.0008	.0011	.0016	.0024	.0025	.0030	.0032	.0037				
			RPM	4410	3260	2610	2170	1770	1350	1080	870	550				
8	0.5D	0.2D	SFM(Vc)	75	85	90	90	85	85	90	90	80				
			IPT(fz)	.0004	.0007	.0010	.0014	.0022	.0021	.0027	.0030	.0030				
			RPM	2310	1690	1350	1080	870	650	540	450	300				
9	0.5D	0.2D	SFM(Vc)	75	85	90	90	85	85	90	90	80				
			IPT(fz)	.0004	.0007	.0010	.0014	.0022	.0021	.0027	.0030	.0030				
			RPM	2310	1690	1350	1080	870	650	540	450	300				
10	0.5D	0.2D	SFM(Vc)	215	245	260	255	260	265	255	245	230				
			IPT(fz)	.0006	.0010	.0014	.0020	.0028	.0029	.0037	.0041	.0041				
			RPM	6620	4950	3960	3130	2640	2030	1560	1250	880				
11.1	0.5D	0.2D	SFM(Vc)	75	85	90	90	85	85	90	90	80				
			IPT(fz)	.0004	.0007	.0010	.0014	.0022	.0021	.0027	.0030	.0030				
			RPM	2310	1690	1350	1080	870	650	540	450	300				
11.2	0.3D	0.2D	SFM(Vc)	50	60	60	60	60	60	65	50					
			IPT(fz)	.0004	.0007	.0010	.0014	.0023	.0021	.0027	.0029	.0028				
			RPM	1600	1190	950	760	600	450	380	320	200				
M 14.1	0.5D	0.2D	SFM(Vc)	80	90	100	100	90	95	100	100	85				
			IPT(fz)	.0004	.0008	.0011	.0015	.0021	.0022	.0028	.0030	.0030				
			RPM	2510	1880	1500	1200	940	730	600	500	330				
K 15-20	0.5D	0.2D	SFM(Vc)	215	245	260	255	260	265	255	245	230				
			IPT(fz)	.0006	.0010	.0014	.0020	.0028	.0029	.0037	.0041	.0041				
			RPM	6620	4950	3960	3130	2640	2030	1560	1250	880				
H 40	0.3D	0.2D	SFM(Vc)	50	60	60	60	60	60	65	50					
			IPT(fz)	.0004	.0007	.0010	.0014	.0023	.0021	.0027	.0029	.0028				
			RPM	1600	1190	950	760	600	450	380	320	200				



SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

### GYG65 SERIES 4 FLUTE - SIDE CUTTING

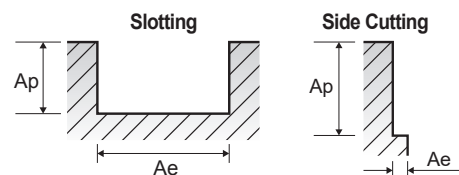
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)										
						1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	7/8	1	
P	1	Non-alloy steel	0.1D	1.5D	SFM(Vc)	245	270	290	305	285	295	320	310	285	310	
					IPT(fz)	.0006	.0011	.0014	.0018	.0027	.0028	.0031	.0035	.0038	.0037	
					RPM	7520	5550	4410	3730	2910	2260	1950	1570	1250	1180	
	2		0.1D	1.5D	SFM(Vc)	225	245	265	255	260	265	275	260	260	260	
					IPT(fz)	.0006	.0010	.0012	.0018	.0025	.0026	.0030	.0035	.0033	.0035	
					RPM	6820	5010	4060	3130	2640	2030	1680	1320	1130	990	
	3-4		0.1D	1.5D	SFM(Vc)	165	180	195	195	195	205	195	195	190	195	
					IPT(fz)	.0006	.0011	.0013	.0018	.0023	.0026	.0034	.0034	.0036	.0036	
					RPM	5010	3680	2960	2410	2010	1580	1200	990	820	750	
	5		0.1D	1.5D	SFM(Vc)	100	125	135	135	125	130	135	130	130	130	
					IPT(fz)	.0007	.0011	.0013	.0017	.0026	.0027	.0032	.0032	.0033	.0035	
					RPM	3110	2540	2060	1680	1270	1000	820	670	560	490	
6	0.1D	1.5D	SFM(Vc)	225	245	265	255	260	265	275	260	260	260			
			IPT(fz)	.0006	.0010	.0012	.0018	.0025	.0026	.0030	.0035	.0033	.0035			
			RPM	6820	5010	4060	3130	2640	2030	1680	1320	1130	990			
7	0.1D	1.5D	SFM(Vc)	165	180	195	195	195	205	195	195	190	195			
			IPT(fz)	.0006	.0011	.0013	.0018	.0023	.0026	.0034	.0034	.0036	.0036			
			RPM	5010	3680	2960	2410	2010	1580	1200	990	820	750			
8	0.1D	1.5D	SFM(Vc)	100	125	135	135	125	130	135	130	130	130			
			IPT(fz)	.0007	.0011	.0013	.0017	.0026	.0027	.0032	.0032	.0033	.0035			
			RPM	3110	2540	2060	1680	1270	1000	820	670	560	490			
9	0.1D	1.5D	SFM(Vc)	90	105	110	115	110	105	110	110	110	115			
			IPT(fz)	.0005	.0009	.0012	.0016	.0022	.0025	.0030	.0032	.0032	.0034			
			RPM	2710	2140	1650	1400	1140	800	660	550	470	430			
10	0.1D	1.5D	SFM(Vc)	225	245	265	255	260	265	275	260	260	260			
			IPT(fz)	.0006	.0010	.0012	.0018	.0025	.0026	.0030	.0035	.0033	.0035			
			RPM	6820	5010	4060	3130	2640	2030	1680	1320	1130	990			
11.1	0.1D	1.5D	SFM(Vc)	100	125	135	135	125	130	135	130	130	130			
			IPT(fz)	.0007	.0011	.0013	.0017	.0026	.0027	.0032	.0032	.0033	.0035			
			RPM	3110	2540	2060	1680	1270	1000	820	670	560	490			
11.2	0.05D	1.5D	SFM(Vc)	60	70	75	80	80	75	75	75	75	80			
			IPT(fz)	.0005	.0009	.0012	.0016	.0023	.0025	.0030	.0032	.0032	.0035			
			RPM	1900	1470	1150	960	800	580	460	380	330	300			
M 14.1	0.1D	1.5D	SFM(Vc)	100	115	120	125	120	120	120	120	120	120			
			IPT(fz)	.0005	.0009	.0012	.0015	.0022	.0025	.0030	.0032	.0032	.0035			
			RPM	3010	2340	1800	1520	1240	900	740	600	530	460			
K 15-20	0.1D	1.5D	SFM(Vc)	225	245	265	255	260	265	275	260	260	260			
			IPT(fz)	.0006	.0010	.0012	.0018	.0025	.0026	.0030	.0035	.0033	.0035			
			RPM	6820	5010	4060	3130	2640	2030	1680	1320	1130	990			
H 40	0.05D	1.5D	SFM(Vc)	60	70	75	80	80	75	75	75	75	80			
			IPT(fz)	.0005	.0009	.0012	.0016	.0023	.0025	.0030	.0032	.0032	.0035			
			RPM	1900	1470	1150	960	800	580	460	380	330	300			



SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

**GYG66 SERIES 4 FLUTE - SLOTTING & SIDE CUTTING**

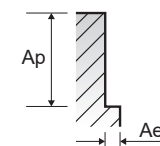
ISO	VDI 3323	Material Description	SLOTTING		SIDE CUTTING		Parameter	Diameter (Ø)								
			Ae	Ap	Ae	Ap		1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1
P	1-2	Non-alloy steel	1.0D	0.5D	0.3D	1.5D	SFM(Vc)	230	230	230	230	250	255	250	255	255
							IPT(fz)	.0002	.0005	.0006	.0011	.0015	.0019	.0021	.0026	.0025
							RPM	7020	4680	3510	2810	2570	1930	1540	1290	970
	3-4		1.0D	0.5D	0.3D	1.5D	SFM(Vc)	210	205	210	210	230	230	230	230	230
							IPT(fz)	.0002	.0004	.0006	.0011	.0015	.0019	.0021	.0026	.0025
							RPM	6420	4210	3210	2570	2340	1750	1400	1170	880
	5		1.0D	0.5D	0.3D	1.5D	SFM(Vc)	145	145	145	145	160	160	160	160	160
							IPT(fz)	.0002	.0004	.0006	.0011	.0015	.0018	.0021	.0026	.0026
							RPM	4410	2940	2210	1760	1640	1230	980	820	610
	6		1.0D	0.5D	0.3D	1.5D	SFM(Vc)	230	230	230	230	250	255	250	255	255
							IPT(fz)	.0002	.0005	.0006	.0011	.0015	.0019	.0021	.0026	.0025
							RPM	7020	4680	3510	2810	2570	1930	1540	1290	970
7	1.0D	0.5D	0.3D	1.5D	SFM(Vc)	210	205	210	210	230	230	230	230	230		
					IPT(fz)	.0002	.0004	.0006	.0011	.0015	.0019	.0021	.0026	.0025		
					RPM	6420	4210	3210	2570	2340	1750	1400	1170	880		
8	1.0D	0.5D	0.3D	1.5D	SFM(Vc)	145	145	145	145	160	160	160	160	160		
					IPT(fz)	.0002	.0004	.0006	.0011	.0015	.0018	.0021	.0026	.0026		
					RPM	4410	2940	2210	1760	1640	1230	980	820	610		
9	1.0D	0.5D	0.15D	1.5D	SFM(Vc)	90	90	90	90	100	95	100	100	95		
					IPT(fz)	.0002	.0004	.0006	.0009	.0013	.0016	.0017	.0022	.0021		
					RPM	2710	1800	1350	1080	1000	730	600	500	360		
10	1.0D	0.5D	0.3D	1.5D	SFM(Vc)	230	230	230	230	250	255	250	255	255		
					IPT(fz)	.0002	.0005	.0006	.0011	.0015	.0019	.0021	.0026	.0025		
					RPM	7020	4680	3510	2810	2570	1930	1540	1290	970		
11.1	1.0D	0.5D	0.3D	1.5D	SFM(Vc)	145	145	145	145	160	160	160	160	160		
					IPT(fz)	.0002	.0004	.0006	.0011	.0015	.0018	.0021	.0026	.0026		
					RPM	4410	2940	2210	1760	1640	1230	980	820	610		
11.2	1.0D	0.3D	0.15D	1.5D	SFM(Vc)	90	90	90	90	100	95	100	100	95		
					IPT(fz)	.0002	.0004	.0006	.0009	.0013	.0016	.0017	.0022	.0021		
					RPM	2710	1800	1350	1080	1000	730	600	500	360		
M	14.1	Stainless steel	1.0D	0.5D	0.3D	1.5D	SFM(Vc)	155	160	160	160	155	155	155		
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	0.5D	0.3D	1.5D	SFM(Vc)	230	230	230	230	250	255	250	255	255
							IPT(fz)	.0002	.0005	.0006	.0011	.0015	.0019	.0021	.0026	.0025
							RPM	7020	4680	3510	2810	2570	1930	1540	1290	970
H	40	Chilled Cast Iron	1.0D	0.3D	0.15D	1.5D	SFM(Vc)	90	90	90	90	100	95	100	100	95
							IPT(fz)	.0002	.0004	.0006	.0009	.0013	.0016	.0017	.0022	.0021
							RPM	2710	1800	1350	1080	1000	730	600	500	360



SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

**GYG69 SERIES MULTI FLUTE - SIDE CUTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)							
						1/4	5/16	3/8	1/2	5/8	3/4	1	
P	1	Non-alloy steel	0.5D	1.5D	SFM(Vc)	250	285	280	285	285	285	295	
					IPT(fz)	.0008	.0012	.0022	.0026	.0027	.0035	.0041	
					RPM	3810	3490	2870	2180	1740	1450	1130	
	2		0.5D	1.5D	SFM(Vc)	195	225	225	215	225	225	225	
					IPT(fz)	.0008	.0012	.0021	.0027	.0027	.0034	.0042	
					RPM	3010	2770	2270	1630	1380	1140	850	
	3-4		0.5D	1.5D	SFM(Vc)	140	170	155	160	155	155	155	
					IPT(fz)	.0007	.0011	.0018	.0025	.0027	.0034	.0042	
					RPM	2160	2050	1570	1230	960	800	590	
	5		0.5D	1.5D	SFM(Vc)	115	125	130	130	130	130	135	
					IPT(fz)	.0008	.0012	.0018	.0024	.0026	.0032	.0040	
					RPM	1750	1520	1340	1000	800	670	510	
6	0.5D	1.5D	SFM(Vc)	195	225	225	215	225	225	225			
			IPT(fz)	.0008	.0012	.0021	.0027	.0027	.0034	.0042			
			RPM	3010	2770	2270	1630	1380	1140	850			
7	0.5D	1.5D	SFM(Vc)	140	170	155	160	155	155	155			
			IPT(fz)	.0007	.0011	.0018	.0025	.0027	.0034	.0042			
			RPM	2160	2050	1570	1230	960	800	590			
8-9	0.5D	1.5D	SFM(Vc)	115	125	130	130	130	130	135			
			IPT(fz)	.0008	.0012	.0018	.0024	.0026	.0032	.0040			
			RPM	1750	1520	1340	1000	800	670	510			
10	0.5D	1.5D	SFM(Vc)	195	225	225	215	225	225	225			
			IPT(fz)	.0008	.0012	.0021	.0027	.0027	.0034	.0042			
			RPM	3010	2770	2270	1630	1380	1140	850			
11.1	0.5D	1.5D	SFM(Vc)	115	125	130	130	130	130	135			
			IPT(fz)	.0008	.0012	.0018	.0024	.0026	.0032	.0040			
			RPM	1750	1520	1340	1000	800	670	510			
11.2	0.3D	1.5D	SFM(Vc)	80	90	90	90	90	90	90			
			IPT(fz)	.0008	.0011	.0017	.0024	.0026	.0031	.0039			
			RPM	1250	1080	940	700	560	470	350			
M	14.1	Stainless steel	0.5D	1.5D	SFM(Vc)	130	140	140	140	140	145	145	
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.5D	1.5D	SFM(Vc)	195	225	225	215	225	225	225	
					IPT(fz)	.0008	.0012	.0021	.0027	.0027	.0034	.0042	
					RPM	3010	2770	2270	1630	1380	1140	850	
H	40	Hardened Cast Iron	0.3D	1.5D	SFM(Vc)	80	90	90	90	90	90	90	
					IPT(fz)	.0008	.0011	.0017	.0024	.0026	.0031	.0039	
					RPM	1250	1080	940	700	560	470	350	





**ONLY ONE  
END MILLS**

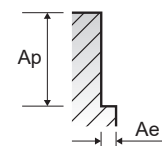
**RECOMMENDED CUTTING CONDITIONS**

**GYG68, GYG70 SERIES**

**MULTI FLUTE - SIDE CUTTING**

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(FEED) = in./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)								
						1/4	5/16	3/8	1/2	5/8	3/4	1	1-1/4	
P	1	Non-alloy steel	0.5D	1.5D	SFM(Vc)	205	235	235	235	235	235	245	175	
					IPT(fz)	.0011	.0016	.0022	.0026	.0034	.0044	.0041	.0044	
					RPM	3160	2890	2410	1800	1440	1200	940	670	
	2		0.5D	1.5D	SFM(Vc)	165	185	185	175	185	185	185	185	130
					IPT(fz)	.0011	.0016	.0021	.0027	.0034	.0043	.0042	.0045	
					RPM	2510	2290	1900	1350	1140	950	710	500	
	3-4		0.5D	1.5D	SFM(Vc)	120	135	130	135	130	130	130	130	90
					IPT(fz)	.0009	.0015	.0018	.0025	.0034	.0042	.0042	.0045	
					RPM	1800	1680	1340	1030	800	670	490	350	
	5		0.5D	1.5D	SFM(Vc)	95	105	110	110	110	110	110	115	80
					IPT(fz)	.0011	.0016	.0017	.0024	.0032	.0040	.0041	.0043	
					RPM	1450	1280	1140	850	660	550	430	300	
6	0.5D	1.5D	SFM(Vc)	165	185	185	175	185	185	185	185	130		
			IPT(fz)	.0011	.0016	.0021	.0027	.0034	.0043	.0042	.0045			
			RPM	2510	2290	1900	1350	1140	950	710	500			
7	0.5D	1.5D	SFM(Vc)	120	135	130	135	130	130	130	130	90		
			IPT(fz)	.0009	.0015	.0018	.0025	.0034	.0042	.0042	.0045			
			RPM	1800	1680	1340	1030	800	670	490	350			
8-9	0.5D	1.5D	SFM(Vc)	95	105	110	110	110	110	110	115	80		
			IPT(fz)	.0011	.0016	.0017	.0024	.0032	.0040	.0041	.0043			
			RPM	1450	1280	1140	850	660	550	430	300			
10	0.5D	1.5D	SFM(Vc)	165	185	185	175	185	185	185	185	130		
			IPT(fz)	.0011	.0016	.0021	.0027	.0034	.0043	.0042	.0045			
			RPM	2510	2290	1900	1350	1140	950	710	500			
11.1	0.5D	1.5D	SFM(Vc)	95	105	110	110	110	110	110	115	80		
			IPT(fz)	.0011	.0016	.0017	.0024	.0032	.0040	.0041	.0043			
			RPM	1450	1280	1140	850	660	550	430	300			
11.2	0.3D	1.5D	SFM(Vc)	70	70	80	75	75	75	80	55			
			IPT(fz)	.0011	.0016	.0018	.0023	.0032	.0040	.0039	.0042			
			RPM	1050	880	800	580	460	380	300	210			
M	14.1	Stainless steel	0.5D	1.5D	SFM(Vc)	110	120	120	120	120	120	120	85	
					IPT(fz)	.0010	.0015	.0018	.0025	.0034	.0042	.0040	.0043	
					RPM	1650	1440	1200	900	720	600	460	330	
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.5D	1.5D	SFM(Vc)	165	185	185	175	185	185	185	130	
					IPT(fz)	.0011	.0016	.0021	.0027	.0034	.0043	.0042	.0045	
					RPM	2510	2290	1900	1350	1140	950	710	500	
H	40	Hardened Cast Iron	0.3D	1.5D	SFM(Vc)	70	70	80	75	75	75	80	55	
					IPT(fz)	.0011	.0016	.0018	.0023	.0032	.0040	.0039	.0042	
					RPM	1050	880	800	580	460	380	300	210	
					IPM(FEED)	3	4	6	5	6	6	6	5	







Being the best through innovation



**HSS**

# **SINE-POWER END MILLS**

- High Performane HSS Rongher for Titanium and Titanium Alloys

SELECTION GUIDE

HSS



SERIES	E2F64
FLUTE	4&6
HELIX ANGLE	35°
CUTTING EDGE SHAPE	SQUARE
SIZE MIN	D3/4
SIZE MAX	D2
PAGE	C741

**HSSCo8**  
**SINE-POWER**  
**END MILLS**

Next Generation of Powdered Metal End Mills  
Higher Edge Strength & Feed Rates

Uncoated



Please visit [globalyg1.com/mat](http://globalyg1.com/mat) for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : p. C742

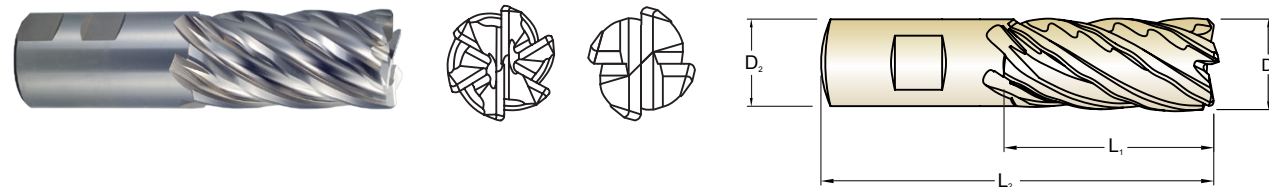
ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc	
P	1	Non-alloy steel	About 0.15% C Annealed	125		
	2		About 0.45% C Annealed	190	13	
	3		About 0.45% C Quenched & Tempered	250	25	
	4		About 0.75% C Annealed	270	28	
	5		About 0.75% C Quenched & Tempered	300	32	
	6	Low alloy steel	Annealed	180	10	
	7		Quenched & Tempered	275	29	
	8		Quenched & Tempered	300	32	
	9		Quenched & Tempered	350	38	
	10		High alloyed steel, and tool steel	Annealed	200	15
	11	Quenched & Tempered		325	35	
M	12	Stainless steel	Ferritic / Martensitic Annealed	200	15	
	13		Martensitic Quenched & Tempered	240	23	
	14		Austenitic	180	10	
K	15	Grey cast iron	Pearlitic / ferritic	180	10	
	16		Pearlitic (Martensitic)	260	26	
	17	Nodular cast iron	Ferritic	160	3	
	18		Pearlitic	250	25	
	19	Malleable cast iron	Ferritic	130		
	20		Pearlitic	230	21	
N	21	Aluminum-wrought alloy	Not Curable	60		
	22		Curable Hardened	100		
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable	75		
	24		≤ 12% Si, Curable Hardened	90		
	25		> 12% Si, Not Curable	130		
	26	Copper and Copper Alloys	Cutting Alloys, PB>1%	110		
	27		CuZn, CuSnZn (Brass)	90		
	28	(Bronze / Brass)	CuSn, lead-free copper and electrolytic copper	100		
	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic			
30	Rubber, Wood, etc.					
S	31	Heat Resistant Super Alloys	Fe Based	Annealed	200	15
	32			Cured	280	30
	33		Annealed	250	25	
	34		Cured	350	38	
	35		Cast	320	34	
	36	Titanium Alloys	Pure Titanium	400 Rm		◎
	37		Alpha + Beta Alloys	1050 Rm		◎
H	38	Hardened steel	Hardened	550	55	
	39		Hardened	630	60	
	40	Hardened Cast Iron	Cast	400	42	
	41		Hardened	550	55	

HSS



FLAT SHANK E2F64 SERIES

HSSCo8, 4&6 FLUTE



Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Chamfer	No. of Flute
	D1	D2	L1	L2		
E2F64048	3/4	3/4	1 5/8	3 7/8	.030	4
E2F64901	3/4	3/4	2 1/4	4 1/2	.030	4
E2F64902	3/4	3/4	3	5 1/4	.030	4
E2F64064	1	1	2	4 1/2	.030	4
E2F64903	1	1	2	4 1/2	.030	6
E2F64904	1	1	3	5 1/2	.030	4
E2F64905	1	1	3	5 1/2	.030	6
E2F64906	1	1	4	6 1/2	.030	4
E2F64907	1	1	4	6 1/2	.030	6
E2F64116	1 1/4	1 1/4	2	4 1/2	.040	4
E2F64908	1 1/4	1 1/4	2	4 1/2	.040	6
E2F64909	1 1/4	1 1/4	3	5 1/2	.040	4
E2F64910	1 1/4	1 1/4	3	5 1/2	.040	6
E2F64911	1 1/4	1 1/4	4	6 1/2	.040	4
E2F64912	1 1/4	1 1/4	4	6 1/2	.040	6
E2F64132	1 1/2	1 1/4	2	4 1/2	.040	6
E2F64913	1 1/2	1 1/4	3	5 1/2	.040	6
E2F64914	1 1/2	1 1/4	4	6 1/2	.040	6
E2F64915	1 1/2	1 1/4	6	8 1/2	.040	6
E2F64200	2	2	2	5 3/4	.040	6
E2F64916	2	2	3	6 3/4	.040	6
E2F64917	2	2	4	7 3/4	.040	6
E2F64918	2	2	6	9 3/4	.040	6
E2F64919	2	2	8	11 3/4	.040	6

Cutting Dia. Tolerance(inch)	Shank Dia. Tolerance(inch)
0~ + .0030	- .0001~ - .0005

※ Radius, coatings and HSS-PM available on request

◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	40	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended																					

ISO	N					S				H											
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron	
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	15	30	25	38	34	15	30	25	38	34	15	30	25	38	34	400Rm	1050Rm	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400Rm	1050Rm	550	630	400	550
Recommended																					

TECHNICAL DATA



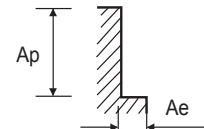
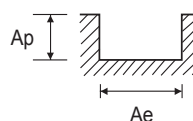
**E2F64** SERIES

**4&6 FLUTE - SLOTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)						
						4FL			6FL			
						3/4	1	1 1/4	1	1 1/4	1 1/2	2
S	1-2	Titanium Alloys	1D	1D	SFM (Vc)	40	40	40	40	40	40	40
					IPT (fz)	.0025	.0033	.0041	.0022	.0027	.0033	.0066
					RPM	200	150	120	150	120	100	80
	IPM (FEED)		2	2	2	2	2	2	3			
	3-4		1D	1D	SFM (Vc)	65	65	65	65	65	65	65
					IPT (fz)	.0023	.0040	.0050	.0027	.0034	.0040	.0054
RPM		330			250	200	250	200	170	120		
IPM (FEED)	3	4	4	4	4	4	4					

**4&6 FLUTE - SIDE CUTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)						
						4FL			6FL			
						3/4	1	1 1/4	1	1 1/4	1 1/2	2
S	1-2	Titanium Alloys	0.5D	1.5D	SFM (Vc)	60	60	60	60	60	60	60
					IPT (fz)	.0025	.0033	.0041	.0022	.0027	.0033	.0043
					RPM	310	230	180	230	180	150	120
	IPM (FEED)		3	3	3	3	3	3	3			
	3-4		0.5D	1.5D	SFM (Vc)	75	75	75	75	75	75	75
					IPT (fz)	.0026	.0035	.0044	.0023	.0029	.0035	.0047
RPM		380			290	230	290	230	190	140		
IPM (FEED)	4	4	4	4	4	4	4					







Being the best through innovation



**HSS-PM**

# TANK-POWER END MILLS

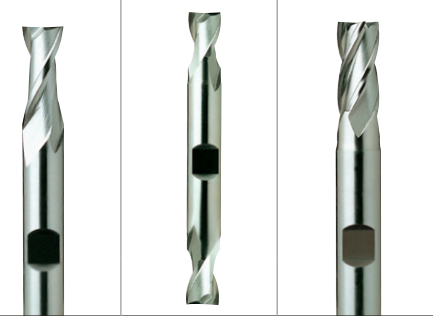
- High Toughness for Stainless Steels, Carbon steels and Alloy Steels

SELECTION GUIDE



SERIES	E9983	E9984	E9985
FLUTE	2	2	4
HELIX ANGLE	30°	30°	30°
CUTTING EDGE SHAPE	SQUARE	SQUARE	SQUARE
SIZE MIN	D1/8	D1/8	D1/8
SIZE MAX	D1	D1	D1
PAGE	C746	C747	C748

	REGULAR LENGTH	REGULAR LENGTH DOUBLE	REGULAR LENGTH
	Uncoated	Uncoated	Uncoated
	TiAIN	TiAIN	TiAIN
	U.S.A Stock		



# TANK-POWER END MILLS

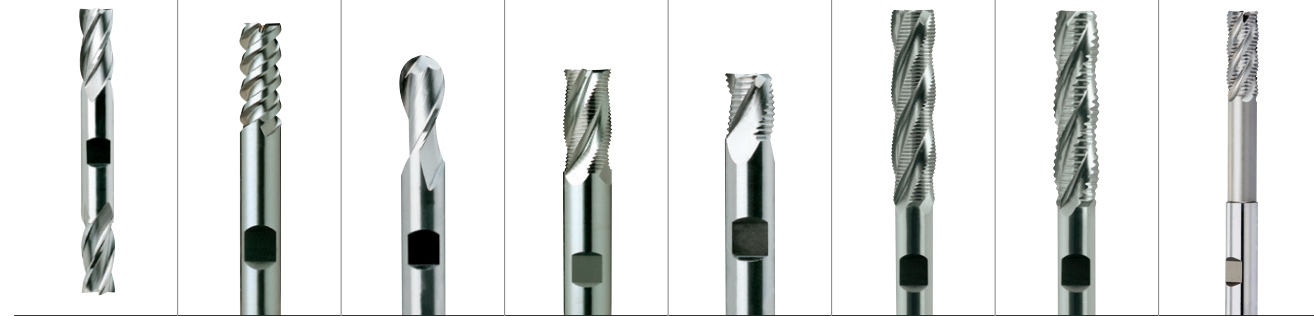
- Next Generation of Powdered Metal End Mills  
Higher Edge Strength & Feed Rates



Please visit [globalyg1.com/mat](http://globalyg1.com/mat) for material search  
© : Excellent ○ : Good  
Recommended cutting conditions : p. C757

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc	
P	1	Non-alloy steel	About 0.15% C Annealed	125		
	2		About 0.45% C Annealed	190	13	
	3		About 0.45% C Quenched & Tempered	250	25	
	4		About 0.75% C Annealed	270	28	
	5		About 0.75% C Quenched & Tempered	300	32	
	6	Low alloy steel	Annealed	180	10	
	7		Quenched & Tempered	275	29	
	8		Quenched & Tempered	300	32	
	9		Quenched & Tempered	350	38	
	10	High alloyed steel, and tool steel	Annealed	200	15	
	11		Quenched & Tempered	325	35	
M	12	Stainless steel	Ferritic / Martensitic Annealed	200	15	
	13		Martensitic Quenched & Tempered	240	23	
	14		Austenitic	180	10	
K	15	Grey cast iron	Pearlitic / ferritic	180	10	
	16		Pearlitic (Martensitic)	260	26	
	17	Nodular cast iron	Ferritic	160	3	
	18		Pearlitic	250	25	
	19	Malleable cast iron	Ferritic	130		
	20		Pearlitic	230	21	
N	21	Aluminum-wrought alloy	Not Curable	60		
	22		Curable Hardened	100		
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable	75		
	24		≤ 12% Si, Curable Hardened	90		
	25		> 12% Si, Not Curable	130		
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%	110		
	27		CuZn, CuSnZn (Brass)	90		
	28		CuSn, lead-free copper and electrolytic copper	100		
	29		Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic Rubber, Wood, etc.		
	S	31	Heat Resistant Super Alloys	Fe Based Annealed	200	15
32		Cured		280	30	
33		Annealed		250	25	
34		Ni or Co Based Cured		350	38	
35		Cast		320	34	
36		Titanium Alloys		Pure Titanium	400 Rm	
37	Alpha + Beta Alloys Hardened		1050 Rm			
H	38	Hardened steel	Hardened	550	55	
	39		Hardened	630	60	
	40		Chilled Cast Iron	Cast	400	42
	41		Hardened Cast Iron	Hardened	550	55

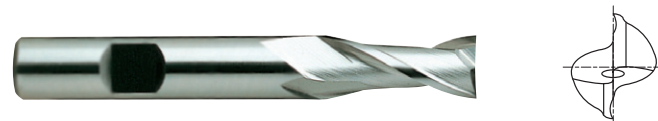
E9986	E9988	E9992	E9990	E9991	E9A86	E9A87	E9921
4	3&4	2	3~6	3~6	3~6	3~6	5~6
30°	60°	30°	30°	30°	30°	30°	35°
SQUARE	SQUARE	BALL NOSE	ROUGHING	ROUGHING	ROUGHING	ROUGHING	ROUGHING
D1/8	D1/4	R1/16	D1/4	D1/4	D5/16	D5/16	D1/2
D1	D1	R1/2	D1-1/4	D1-1/4	D1-1/4	D1-1/4	D1-1/4
C749	C750	C751	C752	C753	C754	C755	C756
REGULAR LENGTH DOUBLE	REGULAR LENGTH	REGULAR LENGTH	REGULAR LENGTH FINE PITCH	REGULAR LENGTH COARSE PITCH	LONG LENGTH FINE PITCH	LONG LENGTH COARSE PITCH	EXTENDED NECK FINE PITCH CENTER CUTTING
Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated
TiAIN	TiAIN	TiAIN	TiAIN	TiAIN	TiAIN	TiAIN	TiAIN
U.S.A Stock							



○	○	○	○	○	○	○	○	1
○	○	○	○	○	○	○	○	2
○	○	○	○	○	○	○	○	3
○	○	○	○	○	○	○	○	4
○	○	○	○	○	○	○	○	5
○	○	○	○	○	○	○	○	6
○	○	○	○	○	○	○	○	7
○	○	○	○	○	○	○	○	8
○	○	○	○	○	○	○	○	9
○	○	○	○	○	○	○	○	10
○	○	○	○	○	○	○	○	11
								12
								13
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								21
								22
								23
								24
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○	○	○	○	○	○	○	○	28
								29
								30
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								36
								37
								38
								39
								40
								41

**PREMIUM HSS-PM, 2 FLUTE REGULAR LENGTH**

▶ Faster feed & speed than normal HSS can be applied to hardened steels up to Rc 45. Accordingly, HSS-PM made by powder metallurgy makes much higher productivity possible.



◆ U.S.A Stock

Unit : Inch

EDP No.	UNCOATED	TiAIN COATED	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
<b>E9983012</b>	<b>E9983012TF</b>	<b>3/16</b>	<b>3/8</b>	<b>7/16</b>	<b>2-5/16</b>	
<b>E9983016</b>	<b>E9983016TF</b>	<b>1/4</b>	<b>3/8</b>	<b>1/2</b>	<b>2-5/16</b>	
<b>E9983020</b>	<b>E9983020TF</b>	<b>5/16</b>	<b>3/8</b>	<b>9/16</b>	<b>2-5/16</b>	
<b>E9983024</b>	<b>E9983024TF</b>	<b>3/8</b>	<b>3/8</b>	<b>9/16</b>	<b>2-5/16</b>	
<b>E9983032</b>	<b>E9983032TF</b>	<b>1/2</b>	<b>1/2</b>	<b>1</b>	<b>3</b>	
<b>E9983040</b>	<b>E9983040TF</b>	<b>5/8</b>	<b>5/8</b>	<b>1-5/16</b>	<b>3-7/16</b>	
<b>E9983048</b>	<b>E9983048TF</b>	<b>3/4</b>	<b>3/4</b>	<b>1-5/16</b>	<b>3-7/16</b>	
<b>E9983056</b>	<b>E9983056TF</b>	<b>7/8</b>	<b>7/8</b>	<b>1-1/2</b>	<b>3-3/4</b>	
<b>E9983064</b>	<b>E9983064TF</b>	<b>1</b>	<b>1</b>	<b>1-5/8</b>	<b>4-1/8</b>	

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

\*\* The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel	Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron				
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323																				
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO	N				S						H											
	Aluminum-wrought alloy	Aluminum-cast, alloyed	Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials	Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron											
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
VDI 3323																						
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HB	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55	
Recommend						○	○	○														

**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, HSS-PM made by powder metallurgy makes much higher productivity possible.



◆ U.S.A Stock

Unit : Inch

EDP No.	UNCOATED	TiAIN COATED	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
<b>E9984012</b>	<b>E9984012TF</b>	<b>3/16</b>	<b>3/8</b>	<b>7/16</b>	<b>3-1/8</b>	
<b>E9984016</b>	<b>E9984016TF</b>	<b>1/4</b>	<b>3/8</b>	<b>1/2</b>	<b>3-1/8</b>	
<b>E9984020</b>	<b>E9984020TF</b>	<b>5/16</b>	<b>3/8</b>	<b>9/16</b>	<b>3-1/8</b>	
<b>E9984024</b>	<b>E9984024TF</b>	<b>3/8</b>	<b>3/8</b>	<b>9/16</b>	<b>3-1/8</b>	
<b>E9984032</b>	<b>E9984032TF</b>	<b>1/2</b>	<b>1/2</b>	<b>13/16</b>	<b>3-3/4</b>	
<b>E9984040</b>	<b>E9984040TF</b>	<b>5/8</b>	<b>5/8</b>	<b>1-1/8</b>	<b>4-1/2</b>	
<b>E9984048</b>	<b>E9984048TF</b>	<b>3/4</b>	<b>3/4</b>	<b>1-5/16</b>	<b>5</b>	
<b>E9984056</b>	<b>E9984056TF</b>	<b>7/8</b>	<b>7/8</b>	<b>1-9/16</b>	<b>5-1/2</b>	
<b>E9984064</b>	<b>E9984064TF</b>	<b>1</b>	<b>1</b>	<b>1-5/8</b>	<b>5-7/8</b>	

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~-0.0020

\*\* The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel	Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron					
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323																					
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO	N				S						H											
	Aluminum-wrought alloy	Aluminum-cast, alloyed	Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials	Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron											
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
VDI 3323																						
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HB	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55	
Recommend						○	○	○														

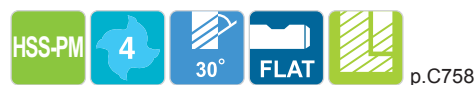




FLAT SHANK **E9985** SERIES

**PREMIUM HSS-PM, 4 FLUTE REGULAR LENGTH**

▶ Faster feed & speed than normal HSS can be applied to hardened steels up to Rc 45. Accordingly, HSS-PM 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
UNCOATED	TiAIN COATED				
E9985008	E9985008TF	1/8	3/8	3/8	2-5/16
E9985012	E9985012TF	3/16	3/8	1/2	2-3/8
E9985016	E9985016TF	1/4	3/8	5/8	2-7/16
E9985020	E9985020TF	5/16	3/8	3/4	2-1/2
E9985024	E9985024TF	3/8	3/8	3/4	2-1/2
E9985032	E9985032TF	1/2	1/2	1-1/4	3-1/4
E9985040	E9985040TF	5/8	5/8	1-5/8	3-3/4
E9985048	E9985048TF	3/4	3/4	1-5/8	3-7/8
E9985056	E9985056TF	7/8	7/8	1-7/8	4-1/8
E9985064	E9985064TF	1	1	2	4-1/2

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

\*\* The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel	Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron		
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	13	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials	Heat Resistant Super Alloys			Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
Recommend						○	○	○													



FLAT SHANK **E9986** SERIES

**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, HSS-PM 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
UNCOATED	TiAIN COATED				
E9986008	E9986008TF	1/8	3/8	3/8	3-1/16
E9986012	E9986012TF	3/16	3/8	1/2	3-1/4
E9986016	E9986016TF	1/4	3/8	5/8	3-3/8
E9986020	E9986020TF	5/16	3/8	3/4	3-1/2
E9986024	E9986024TF	3/8	3/8	3/4	3-1/2
E9986032	E9986032TF	1/2	1/2	1	4-1/8
E9986040	E9986040TF	5/8	5/8	1-3/8	5
E9986048	E9986048TF	3/4	3/4	1-5/8	5-5/8
E9986056	E9986056TF	7/8	7/8	1-7/8	6-1/8
E9986064	E9986064TF	1	1	1-7/8	6-3/8

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

\*\* The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel	Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron		
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	13	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials	Heat Resistant Super Alloys			Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
Recommend						○	○	○													



FLAT SHANK **E9988** SERIES

**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, HSS-PM made by powder metallurgy makes much higher productivity possible.



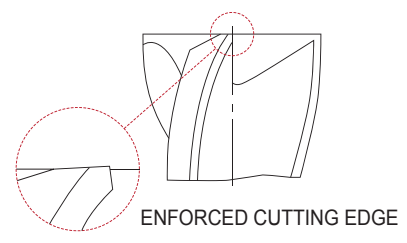
◆ U.S.A Stock

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Overall Length
UNCOATED	TiAIN 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.



◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron		
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

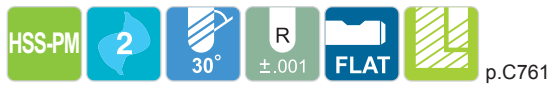
ISO	N				S						H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
Recommend						○	○	○													



FLAT SHANK **E9992** SERIES

**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.



◆ U.S.A Stock

Unit : Inch

EDP No.		Radius of Ball Nose R (±.001)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiAIN COATED					
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

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron		
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

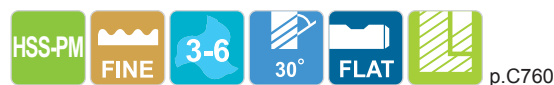
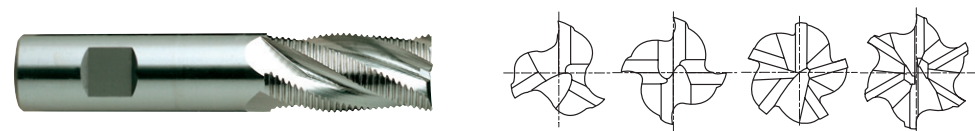
ISO	N				S						H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
Recommend						○	○	○													

# TANK-POWER END MILLS

FLAT SHANK **E9990** SERIES

## 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.

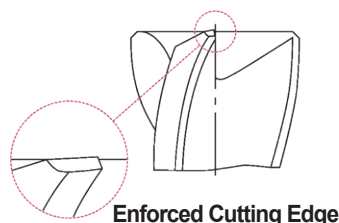


◆ U.S.A Stock

Unit : Inch

EDP No.	UNCOATED	TiAIN COATED	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
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



Enforced Cutting Edge

◎ : Excellent ○ : Good

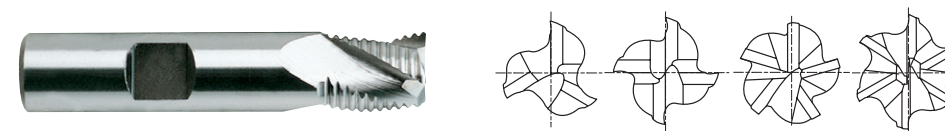
ISO	P										M				K			H		
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	130	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

# TANK-POWER END MILLS

FLAT SHANK **E9991** SERIES

## 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.

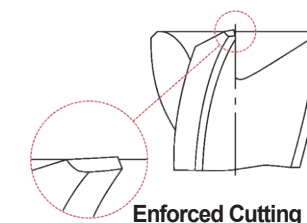


◆ U.S.A Stock

Unit : Inch

EDP No.	UNCOATED	TiAIN COATED	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
E9991902	E9991902TF	1/4	3/8	1-1/8	2-15/16	3	
E9991020	E9991020TF	5/16	3/8	3/4	2-1/2	3	
E9991024	E9991024TF	3/8	3/8	3/4	2-1/2	4	
E9991028	E9991028TF	7/16	3/8	1	2-11/16	4	
E9991032	E9991032TF	1/2	1/2	1-1/4	3-1/4	4	
E9991903	E9991903TF	1/2	1/2	1-5/8	3-5/8	4	
E9991036	E9991036TF	9/16	1/2	1-3/8	3-3/8	4	
E9991040	E9991040TF	5/8	5/8	1-5/8	3-3/4	4	
E9991048	E9991048TF	3/4	3/4	1-5/8	3-7/8	4	
E9991948	E9991948TF	3/4	5/8	1-5/8	3-7/8	4	
E9991904	E9991904TF	3/4	3/4	2-1/2	4-3/4	4	
E9991056	E9991056TF	7/8	7/8	1-7/8	4-1/8	5	
E9991901	E9991901TF	7/8	3/4	1-7/8	4-1/8	5	
E9991064	E9991064TF	1	1	2	4-1/2	5	
E9991905	E9991905TF	1	1	3	5-1/2	5	
E9991108	E9991108TF	1-1/8	1	2	4-1/2	6	
E9991116	E9991116TF	1-1/4	1-1/4	2	4-1/2	6	
E9991906	E9991906TF	1-1/4	1-1/4	3	5-1/2	6	

Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060



Enforced Cutting Edge

◎ : Excellent ○ : Good

ISO	P										M				K			H		
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	130	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

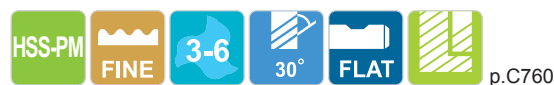
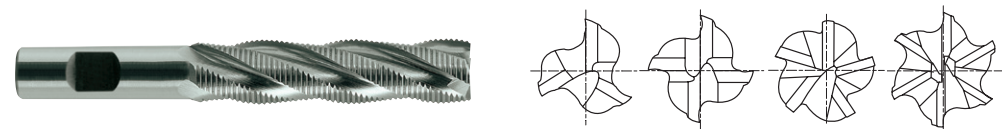


# YG TANK-POWER END MILLS

FLAT SHANK **E9A86** SERIES

## 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.

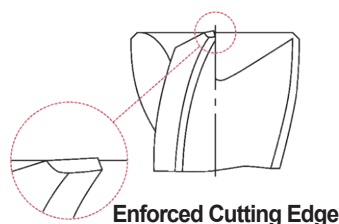


◆ U.S.A Stock

Unit : Inch

EDP No.	UNCOATED		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
	UNCOATED	TiAIN 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



Enforced Cutting Edge

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel	Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron				
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323																				
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

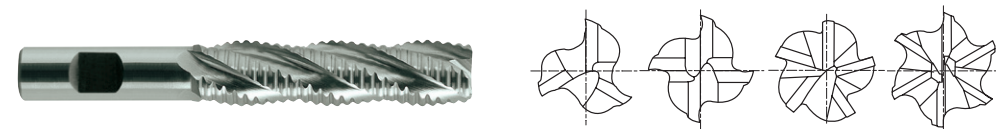
ISO	N					S					H										
	Aluminum-wrought alloy	Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials	Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron							
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323																					
HRc											15	30	25	38	34	55	60	42	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend						○	○	○													

# YG TANK-POWER END MILLS

FLAT SHANK **E9A87** SERIES

## 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.

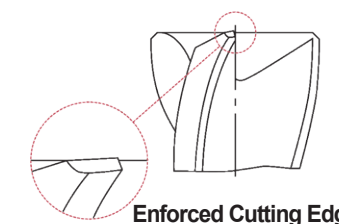


◆ U.S.A Stock

Unit : Inch

EDP No.	UNCOATED		Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
	UNCOATED	TiAIN 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



Enforced Cutting Edge

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel	Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron				
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323																				
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO	N					S					H										
	Aluminum-wrought alloy	Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials	Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron							
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323																					
HRc											15	30	25	38	34	55	60	42	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend						○	○	○													

# TANK-POWER END MILLS

FLAT SHANK **E9921** SERIES

## PREMIUM HSS-PM, MULTI FLUTE FINE PITCH ROUGHING EXTENDED NECK CENTER CUTTING

▶ This TANK-POWER rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths.

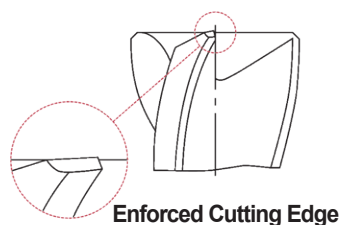


◆ U.S.A Stock

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



Enforced Cutting Edge

◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

ISO	N					S					H											
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys					Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc											15	30	25	38	34	55	60	55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommend						○	○	○														

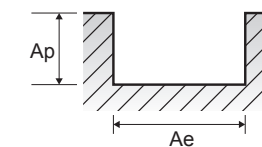
# TANK-POWER END MILLS

RECOMMENDED CUTTING CONDITIONS

## E9983, E9984 SERIES 2 FLUTE - SLOTTING

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)									
						1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	7/8	1
P	1	Non-alloy steel	1.0D	0.5D	SFM(Vc)	150	185	205	205	205	215	215	195	180	185
					IPT(fz)	.0006	.0011	.0014	.0019	.0024	.0028	.0035	.0040	.0039	.0037
					RPM	4600	3800	3150	2500	2100	1650	1300	1000	800	710
	IPM(FEED)		6	9	9	9	10	9	8	6	5	5			
	2		1.0D	0.5D	SFM(Vc)	125	155	175	170	175	175	180	160	155	155
					IPT(fz)	.0007	.0011	.0014	.0020	.0025	.0030	.0033	.0038	.0038	.0040
					RPM	3800	3150	2650	2100	1800	1350	1100	820	680	590
	IPM(FEED)		5	7	8	8	9	8	7	6	5	5			
	3-4		1.0D	0.5D	SFM(Vc)	105	130	135	140	140	135	140	140	130	120
					IPT(fz)	.0007	.0012	.0016	.0020	.0026	.0033	.0036	.0037	.0038	.0042
					RPM	3150	2600	2100	1700	1450	1050	860	710	560	470
IPM(FEED)	4	6	7	7	8	7	6	5	4	4					
5	1.0D	0.5D	SFM(Vc)	70	80	90	90	90	85	90	90	85	90		
			IPT(fz)	.0007	.0011	.0014	.0018	.0023	.0029	.0034	.0036	.0036	.0037		
			RPM	2150	1650	1350	1100	910	670	540	450	380	340		
IPM(FEED)	3	4	4	4	4	4	3	3	3	3					
6	1.0D	0.5D	SFM(Vc)	125	155	175	170	175	175	180	160	155	155		
			IPT(fz)	.0007	.0011	.0014	.0020	.0025	.0030	.0033	.0038	.0038	.0040		
			RPM	3800	3150	2650	2100	1800	1350	1100	820	680	590		
IPM(FEED)	5	7	8	8	9	8	7	6	5	5					
7	1.0D	0.5D	SFM(Vc)	105	130	135	140	140	135	140	140	130	120		
			IPT(fz)	.0007	.0012	.0016	.0020	.0026	.0033	.0036	.0037	.0038	.0042		
			RPM	3150	2600	2100	1700	1450	1050	860	710	560	470		
IPM(FEED)	4	6	7	7	8	7	6	5	4	4					
8	1.0D	0.5D	SFM(Vc)	70	80	90	90	90	85	90	90	85	90		
			IPT(fz)	.0007	.0011	.0014	.0018	.0023	.0029	.0034	.0036	.0036	.0037		
			RPM	2150	1650	1350	1100	910	670	540	450	380	340		
IPM(FEED)	3	4	4	4	4	4	3	3	3	3					
9	1.0D	0.5D	SFM(Vc)	55	65	70	70	70	70	70	70	70	60		
			IPT(fz)	.0007	.0010	.0014	.0018	.0024	.0028	.0033	.0035	.0033	.0036		
			RPM	1650	1350	1050	860	720	530	430	360	300	240		
IPM(FEED)	2	3	3	3	3	3	3	3	2	2					
10	1.0D	0.5D	SFM(Vc)	125	155	175	170	175	175	180	160	155	155		
			IPT(fz)	.0007	.0011	.0014	.0020	.0025	.0030	.0033	.0038	.0038	.0040		
			RPM	3800	3150	2650	2100	1800	1350	1100	820	680	590		
IPM(FEED)	5	7	8	8	9	8	7	6	5	5					
11.1	1.0D	0.5D	SFM(Vc)	70	80	90	90	90	85	90	90	85	90		
			IPT(fz)	.0007	.0011	.0014	.0018	.0023	.0029	.0034	.0036	.0036	.0037		
			RPM	2150	1650	1350	1100	910	670	540	450	380	340		
IPM(FEED)	3	4	4	4	4	4	3	3	3	3					
M	14.1	Stainless steel	1.0D	0.5D	SFM(Vc)	55	65	70	70	70	70	70	70	70	60
					IPT(fz)	.0007	.0010	.0014	.0018	.0024	.0028	.0033	.0035	.0033	.0036
					RPM	1650	1350	1050	860	720	530	430	360	300	240
IPM(FEED)	2	3	3	3	3	3	3	3	2	2					
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	0.5D	SFM(Vc)	125	155	175	170	175	175	180	160	155	155
					IPT(fz)	.0007	.0011	.0014	.0020	.0025	.0030	.0033	.0038	.0038	.0040
					RPM	3800	3150	2650	2100	1800	1350	1100	820	680	590
IPM(FEED)	5	7	8	8	9	8	7	6	5	5					





RECOMMENDED CUTTING CONDITIONS



RECOMMENDED CUTTING CONDITIONS

E9985, E9986 SERIES 4 FLUTE - SIDE CUTTING

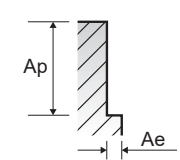
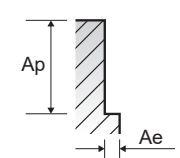
E9988 SERIES 3&4 FLUTE - SIDE CUTTING

SFM(Vc) = ft./min. IPT(fz) = in./tooth RPM = rev./min. IPM(Feed) = in./min.

SFM(Vc) = ft./min. IPT(fz) = in./tooth RPM = rev./min. IPM(Feed) = in./min.

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) (1/8, 3/16, 1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1), SFM(Vc), IPT(fz), RPM, IPM(Feed). Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and tool steel.

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) (1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1), SFM(Vc), IPT(fz), RPM, IPM(Feed). Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and tool steel.

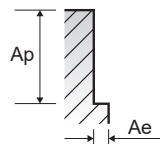




**E9990, E9991, E9A86, E9A87, E9921 SERIES MULTI FLUTE - SIDE CUTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)						
						1/4	3/8	1/2	5/8	3/4	7/8	1
P	1-2	Non-alloy steel	0.5D	1.5D	SFM(Vc)	175	185	190	190	190	195	195
					IPT(fz)	.0010	.0017	.0024	.0031	.0038	.0034	.0038
					RPM	2650	1900	1450	1150	960	850	740
	3-4		SFM(Vc)	135	145	145	150	155	140	145		
			IPT(fz)	.0010	.0017	.0026	.0031	.0037	.0037	.0038		
			RPM	2050	1500	1100	910	780	620	560		
	5		SFM(Vc)	95	105	105	105	105	100	105		
			IPT(fz)	.0010	.0015	.0025	.0031	.0037	.0035	.0037		
			RPM	1450	1050	810	630	540	450	400		
	6		SFM(Vc)	175	185	190	190	190	195	195		
IPT(fz)		.0010	.0017	.0024	.0031	.0038	.0034	.0038				
RPM		2650	1900	1450	1150	960	850	740				
7	SFM(Vc)	135	145	145	150	155	140	145				
	IPT(fz)	.0010	.0017	.0026	.0031	.0037	.0037	.0038				
	RPM	2050	1500	1100	910	780	620	560				
8	SFM(Vc)	95	105	105	105	105	100	105				
	IPT(fz)	.0010	.0015	.0025	.0031	.0037	.0035	.0037				
	RPM	1450	1050	810	630	540	450	400				
9	SFM(Vc)	80	85	85	85	85	85	80				
	IPT(fz)	.0009	.0015	.0023	.0029	.0034	.0033	.0038				
	RPM	1200	890	670	530	450	380	320				
10	SFM(Vc)	175	185	190	190	190	195	195				
	IPT(fz)	.0010	.0017	.0024	.0031	.0038	.0034	.0038				
	RPM	2650	1900	1450	1150	960	850	740				
11.1	SFM(Vc)	95	105	105	105	105	100	105				
	IPT(fz)	.0010	.0015	.0025	.0031	.0037	.0035	.0037				
	RPM	1450	1050	810	630	540	450	400				
M	14.1	Stainless steel	0.5D	1.5D	SFM(Vc)	125	125	125	125	125	125	125
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.1D	1.5D	IPT(fz)	.0010	.0017	.0024	.0031	.0038	.0034	.0038
					RPM	2650	1900	1450	1150	960	850	740
					IPM(FEED)	8	13	14	14	14	15	14

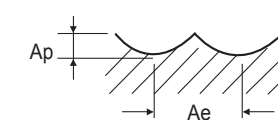
SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.



**E9992 SERIES 2 FLUTE BALL NOSE - PROFILING**

SFM(Vc) = ft./min.  
IPT(fz) = in./tooth  
RPM = rev./min.  
IPM(Feed) = in./min.

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)									
						1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	7/8	1
P	1	Non-alloy steel	0.5D	0.2D	SFM(Vc)	225	250	265	265	270	275	260	265	250	235
					IPT(fz)	.0009	.0015	.0021	.0028	.0036	.0042	.0052	.0054	.0057	.0059
					RPM	6800	5100	4050	3250	2750	2100	1600	1350	1100	890
	2		SFM(Vc)	175	195	205	210	205	210	205	205	200	180		
			IPT(fz)	.0008	.0013	.0018	.0024	.0032	.0038	.0044	.0047	.0049	.0051		
			RPM	5300	4000	3150	2550	2100	1600	1250	1050	870	690		
	3-4		SFM(Vc)	115	130	135	140	140	145	140	135	130	115		
			IPT(fz)	.0006	.0011	.0015	.0020	.0026	.0031	.0035	.0039	.0041	.0044		
			RPM	3550	2650	2100	1700	1450	1100	860	700	560	450		
	5		SFM(Vc)	60	65	70	70	70	70	70	70	70	60		
IPT(fz)		.0006	.0010	.0014	.0017	.0024	.0027	.0033	.0035	.0035	.0036				
RPM		1850	1350	1100	860	700	530	430	360	300	240				
6	SFM(Vc)	175	195	205	210	205	210	205	205	200	180				
	IPT(fz)	.0008	.0013	.0018	.0024	.0032	.0038	.0044	.0047	.0049	.0051				
	RPM	5300	4000	3150	2550	2100	1600	1250	1050	870	690				
7	SFM(Vc)	115	130	135	140	140	145	140	135	130	115				
	IPT(fz)	.0006	.0011	.0015	.0020	.0026	.0031	.0035	.0039	.0041	.0044				
	RPM	3550	2650	2100	1700	1450	1100	860	700	560	450				
8-9	SFM(Vc)	60	65	70	70	70	70	70	70	70	60				
	IPT(fz)	.0006	.0010	.0014	.0017	.0024	.0027	.0033	.0035	.0035	.0036				
	RPM	1850	1350	1100	860	700	530	430	360	300	240				
10	SFM(Vc)	175	195	205	210	205	210	205	205	200	180				
	IPT(fz)	.0008	.0013	.0018	.0024	.0032	.0038	.0044	.0047	.0049	.0051				
	RPM	5300	4000	3150	2550	2100	1600	1250	1050	870	690				
11.1	SFM(Vc)	60	65	70	70	70	70	70	70	70	60				
	IPT(fz)	.0006	.0010	.0014	.0017	.0024	.0027	.0033	.0035	.0035	.0036				
	RPM	1850	1350	1100	860	700	530	430	360	300	240				
M	14.1	Stainless steel	0.5D	0.2D	SFM(Vc)	60	65	70	70	70	70	70	70	60	
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.5D	0.2D	IPT(fz)	.0006	.0010	.0014	.0017	.0024	.0027	.0033	.0035	.0035	.0036
					RPM	1850	1350	1100	860	700	530	430	360	300	240
					IPM(FEED)	2	3	3	3	3	3	3	3	2	2



※ The Feed, in long & extra long types, should be reduced by around 50%.



Global Cutting Tool Leader **YG-1**



**MILLING**



Being the best through innovation



**HSSCo8 & HSS**

# **COBALT & HSS END MILLS**

- General Purpose / Coating Available







SELECTION GUIDE



MILLING TOOLS

HSS

CBN END MILLS

i-Xmill END MILLS

i-SMART MODULAR END MILLS

X5070 END MILLS

4G MILL END MILLS

X-POWER PRO END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

V7 PLUS A END MILLS

V7 MILL INOX

ALU-POWER HPC END MILLS

ALU-POWER END MILLS

D-POWER GRAPHITE END MILLS

STANDARD CARBIDE

ONLY ONE COATED PM60 END MILLS

SINE-POWER

TANK-POWER END MILLS

STANDARD COBALT & HSS

TECHNICAL DATA

SERIES	Inch					
	E2079	E2077	E2086	E2170	E2171	E2172
FLUTE	3~6	4~6	3	3~8	5~8	4~8
HELIX ANGLE	30°	30°	30°	30°	30°	30°
CUTTING EDGE SHAPE	ROUGHING	ROUGHING	ROUGHING	ROUGHING	ROUGHING	ROUGHING
SIZE MIN	D1/4	D1/2	D1/4	D1/4	D1	D1/2
SIZE MAX	D2	D2	D1	D2	D2	D2
PAGE	C813	C814	C815	C816	C817	C818

HSS

# COBALT & HSS END MILLS

General Purpose, Non-coated, Any Coating Available



Please visit [global.yg1.com/mat](http://global.yg1.com/mat) for material search

◎: Excellent ○: Good

Recommended cutting conditions : p. C833

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment	HB	HRc	E2079	E2077	E2086	E2170	E2171	E2172	
P	1	Non-alloy steel	About 0.15% C Annealed	125		◎	◎	◎	◎	◎	◎	
	2		About 0.45% C Annealed	190	13	◎	◎	◎	◎	◎	◎	
	3		About 0.45% C Quenched & Tempered	250	25	◎	◎	◎	◎	◎	◎	
	4		About 0.75% C Annealed	270	28	◎	◎	◎	◎	◎	◎	
	5		About 0.75% C Quenched & Tempered	300	32	○	○	○	○	○	○	
	6	Low alloy steel	Annealed	180	10	◎	◎	◎	◎	◎	◎	
	7		Quenched & Tempered	275	29	◎	◎	◎	◎	◎	◎	
	8		Quenched & Tempered	300	32	○	○	○	○	○	○	
	9		Quenched & Tempered	350	38	○	○	○	○	○	○	
	10		High alloyed steel, and tool steel	Annealed	200	15	◎	◎	◎	◎	◎	◎
	11			Quenched & Tempered	325	35	○	○	○	○	○	○
M	12	Stainless steel	Ferritic / Martensitic Annealed	200	15							
	13		Martensitic Quenched & Tempered	240	23							
	14		Austenitic	180	10							
K	15	Grey cast iron	Pearlitic / ferritic	180	10							
	16		Pearlitic (Martensitic)	260	26							
	17	Nodular cast iron	Ferritic	160	3							
	18		Pearlitic	250	25							
	19		Ferritic	130								
20	Malleable cast iron	Pearlitic	230	21								
N	21	Aluminum-wrought alloy	Not Curable	60		○	○	○	○	○	○	
	22		Curable Hardened	100		○	○	○	○	○	○	
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable	75		○	○	○	○	○	○	
	24		≤ 12% Si, Curable Hardened	90		○	○	○	○	○	○	
	25		> 12% Si, Not Curable	130		○	○	○	○	○	○	
	26		Copper and Copper Alloys (Bronze / Brass)	CuZn, CuSnZn (Brass)	90		○	○	○	○	○	○
	27	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic Rubber, Wood, etc.			○	○	○	○	○	○	
	28					○	○	○	○	○	○	
	29					○	○	○	○	○	○	
	S	31	Heat Resistant Super Alloys	Fe Based Annealed	200	15						
32		Fe Based Cured		280	30							
33		Ni or Co Based Annealed		250	25							
34		Ni or Co Based Cured		350	38							
35		Ni or Co Based Cast		320	34							
36		Titanium Alloys	Pure Titanium	400 Rm								
37			Alpha + Beta Alloys Hardened	1050 Rm								
H	38	Hardened steel	Hardened	550	55							
	39		Hardened	630	60							
	40	Chilled Cast Iron	Cast	400	42							
	41	Hardened Cast Iron	Hardened	550	55							

HSS

CBN END MILLS

i-Xmill END MILLS

i-SMART MODULAR END MILLS

X5070 END MILLS

4G MILL END MILLS

X-POWER PRO END MILLS

TitaNox-POWER END MILLS

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D-POWER GRAPHITE END MILLS

STANDARD CARBIDE

ONLY ONE COATED PM60 END MILLS

SINE-POWER

TANK-POWER END MILLS

STANDARD COBALT & HSS

TECHNICAL DATA

SERIES	Inch													
	E2241	E2195	E2197	E2193 E2125	E2248	E2191	E2226 E2192	E2163 E1163	E2120 E2121	E2160	E2161	E2237 E1237	E2482 E1482	E2483 E1483
FLUTE	3	4~6	4~6	3~6	4~8	3	3	2	3&4	3	3	4	2	4
HELIX ANGLE	30°	30°	30°	30°	30°	37°	37°	15°	60°	30°	30°	0°	30°	30°
CUTTING EDGE SHAPE	ROUGHING	ROUGHING	ROUGHING	BALL NOSE ROUGHING	ROUGHING & FINISHING	ROUGHING	ROUGHING	SQUARE	SQUARE	SQUARE	SQUARE	CORNER ROUNDING	SQUARE	SQUARE
SIZE MIN	D1/4	D1/2	D1/2	R1/8	D1/4	D1/4	D1/2	D1/8	D1/4 D7/8	D1/16	D1/16	D1/4	D2.0(.0787)	D2.0(.0787)
SIZE MAX	D1	D1-1/2	D1-1/2	R3/4	D2	D1-1/2	D1-1/2	D1	D3/4 D2	D1/4	D1/4	D5/8	D45.0(1.772)	D45.0(1.772)
PAGE	C819	C820		C821	C822	C823	C824	C825	C826	C827		C828	C829	C830
	STUB LENGTH COARSE PITCH CENTER CUTTING	REGULAR LENGTH COARSE PITCH CENTER CUTTING	LONG LENGTH COARSE PITCH CENTER CUTTING	REGULAR & LONG LENGTH COARSE PITCH	ROUGHING & FINISHING CENTER CUTTING	REGULAR LENGTH ALUMINUM CENTER CUTTING	MEDIUM & LONG LENGTH ALUMINUM CENTER CUTTING	KEYWAY CUTTING	REGULAR LENGTH	SHORT LENGTH THROW AWAY	LONG LENGTH THROW AWAY		REGULAR LENGTH	REGULAR LENGTH
	Uncoated HSSCo8	Uncoated HSSCo8 & HSS	Uncoated HSSCo8 & HSS	Uncoated HSSCo8 & HSS	Uncoated HSSCo8	Uncoated HSSCo8	Uncoated HSSCo8	Uncoated HSSCo8	Uncoated HSSCo8	Uncoated HSSCo8	Uncoated HSSCo8	Uncoated HSSCo8 & HSS	Uncoated HSSCo8 & HSS	Uncoated HSSCo8 & HSS

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**SUPER CUTTING END MILLS**

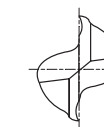
TYPE	DESCRIPTION			YG-1	**ANSI	REMARK
	NO. OF FLUTE	LENGTH OF CUT	TYPE OF END			
SINGLE END	2	REGULAR LONG EX. LONG	ALL	+ .0010 .0000 * ( + .0015 ) .0000	+ .0030 .0000	
	MULTIPLE	ALL	ALL	+ .0010 .0000 * ( + .0015 ) .0000	+ .0030 .0000	
KEY WAY	2	ALL	CENTER CUTTING	+ .0000 - .0015	+ .0000 - .0015	
DOUBLE 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.



p.C833, C834, C835

Unit : Inch

EDP No.	8% COBALT (M42)		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	HSS (M2)					
01289	01039	1/8	3/8	3/8	2-5/16	
01291	01041	5/32	3/8	7/16	2-5/16	
01293	01043	3/16	3/8	7/16	2-5/16	
01295	01045	7/32	3/8	1/2	2-5/16	
01297	01047	1/4	3/8	1/2	2-5/16	
01299	01049	9/32	3/8	9/16	2-5/16	
01301	01051	5/16	3/8	9/16	2-5/16	
01303	01053	11/32	3/8	9/16	2-5/16	
01305	01055	3/8	3/8	9/16	2-5/16	
01308	01058	13/32	3/8	13/16	2-1/2	
01312	01062	7/16	3/8	13/16	2-1/2	
01316	01066	15/32	3/8	13/16	2-1/2	
01320	01070	1/2	3/8	13/16	2-1/2	
01321	01071	1/2	1/2	1	3	
01328	01078	9/16	1/2	1-1/8	3-1/8	
01336	01086	5/8	1/2	1-1/8	3-1/8	
01337	01087	5/8	5/8	1-5/16	3-7/16	
01348	01098	11/16	5/8	1-5/16	3-7/16	
01357	01107	3/4	1/2	1-5/16	3-5/16	
01358	01108	3/4	5/8	1-5/16	3-7/16	
01359	01109	3/4	3/4	1-5/16	3-7/16	
01373	01123	13/16	5/8	1-1/2	3-5/8	
01391	01141	7/8	3/4	1-1/2	3-3/4	
01394	01144	7/8	7/8	1-1/2	3-3/4	
01409	01159	15/16	7/8	1-1/2	3-3/4	
01420	01170	1	5/8	1-1/2	3-5/8	

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.

■ Coating Codes for Cobalt

Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)

■ Coating Codes for HSS

Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)

► Coated Price Shown in Price List. Call for Availability.

► NEXT PAGE

◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323																					
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○										

ISO	N										S					H						
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)					Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
VDI 3323																						
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommend	○	○	○	○	○	○	○	○														



8% COBALT (M42) FLAT SHANK **E2030** SERIES  
 HSS (M2) FLAT SHANK **E1030** SERIES

### 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.



p.C833, C834, C835

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
01422	01172	1	3/4	1-1/2	3-3/4
01426	01176	1	1	1-5/8	4-1/8
01435	01185	1-1/8	1	1-5/8	4-1/8
01445	01195	1-1/4	1-1/4	1-5/8	4-1/8
01451	01201	1-3/8	1	1-5/8	4-1/8
01453	01203	1-3/8	1-1/4	1-5/8	4-1/8
01459	01209	1-1/2	1	1-5/8	4-1/8
01461	01211	1-1/2	1-1/4	1-5/8	4-1/8
01469	01219	1-3/4	1-1/4	1-5/8	4-1/8
01477	01227	2	1-1/4	1-5/8	4-1/8
*01480	*01230	2	2	2	5-3/4

- 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.
- \* Combination Shank

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

\*\* The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○									

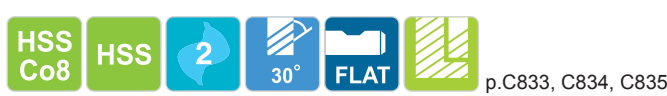
ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													



8% COBALT (M42) FLAT SHANK **E2080** SERIES  
 HSS (M2) FLAT SHANK **E1080** SERIES

### HSSCo8 & HSS, 2 FLUTE LONG LENGTH

► Longer flute length than E2030 type and allows deeper cutting.



p.C833, C834, C835

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.
- \* Combination Shank

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

\*\* The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○									

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													



8% COBALT (M42) FLAT SHANK E2033 SERIES
HSS (M2) FLAT SHANK E1033 SERIES



8% COBALT (M42) FLAT SHANK E2050 SERIES
HSS (M2) FLAT SHANK E1050 SERIES

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.C833, C834, C835

Unit : Inch

Table with 7 columns: EDP No., Mill Diameter, Shank Diameter, Length of Cut, Length Below Shank, Overall Length. Rows include various part numbers like 03289, 03293, etc.

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
■ Coating Codes for HSS

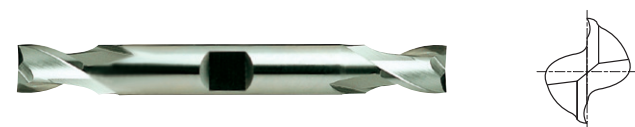
Table with 2 columns: Mill Dia. Tolerance (inch). Values: 0~+.0010, \*\* 0~+.0015

\*\* The shank of end mills is the same diameter as the cutting portion.

ISO Material Recommendation chart showing suitability for various materials like Non-alloy steel, Low alloy steel, Stainless steel, etc.

HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH DOUBLE

► Series E2050 two flute end mills are the double-end version of E2030 single-end tools. Same excellent tool geometry for slotting, keying and general purpose milling, plus the added economy offered by the double-end design.



HSS Co8 HSS 2 30° FLAT p.C833, C834, C835

Unit : Inch

Table with 7 columns: EDP No., Mill Diameter, Shank Diameter, Length of Cut, Overall Length. Rows include various part numbers like 11289, 11290, etc.

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
■ Coating Codes for Cobalt
■ Coating Codes for HSS

► NEXT PAGE

ISO Material Recommendation chart showing suitability for various materials like Non-alloy steel, Low alloy steel, Stainless steel, etc.





8% COBALT (M42) FLAT SHANK **E2050** SERIES  
HSS (M2) FLAT SHANK **E1050** SERIES

### HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH DOUBLE

► Series E2050 two flute end mills are the double-end version of E2030 single-end tools. Same excellent tool geometry for slotting, keying and general purpose milling, plus the added economy offered by the double-end design.



HSS Co8 HSS 2 30° FLAT p.C833, C834, C835

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
11330	11080	9/16	5/8	1-1/8	4-1/2
11334	11084	19/32	5/8	1-1/8	4-1/2
11337	11087	5/8	5/8	1-1/8	4-1/2
11344	11094	21/32	3/4	1-5/16	5
11350	11100	11/16	3/4	1-5/16	5
11354	11104	23/32	3/4	1-5/16	5
11359	11109	3/4	3/4	1-5/16	5
11368	11118	25/32	7/8	1-9/16	5-1/2
11377	11127	13/16	7/8	1-9/16	5-1/2
11384	11134	27/32	7/8	1-9/16	5-1/2
11394	11144	7/8	7/8	1-9/16	5-1/2
11402	11152	29/32	1	1-5/8	5-7/8
11410	11160	15/16	1	1-5/8	5-7/8
11417	11167	31/32	1	1-5/8	5-7/8
11426	11176	1	1	1-5/8	5-7/8

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt  
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS  
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~-.0020

\*\* The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○									

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	60	60	42	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													



8% COBALT (M42) FLAT SHANK **E2110** SERIES  
HSS (M2) FLAT SHANK **E1110** SERIES

### HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH BALL NOSE

► The two flute ball end mills are designed for milling of radius bottom slots, fillets and special contours. The end teeth are cut to center allowing these end mills to drill into material at the beginning of a slotting cut. The two flute design provides good chip removal ability in slotting.



HSS Co8 HSS 2 30° FLAT p.C844, C845, C846

EDP No.		Radius of Ball Nose R	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)					
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

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○									

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	60	60	42	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													



8% COBALT (M42) FLAT SHANK **E2111** SERIES  
 HSS (M2) FLAT SHANK **E1111** SERIES

**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.C844, C845, C846

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)					
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

ISO	P										M				K			H		
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○									

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
Recommend	○	○	○	○	○	○	○	○			○	○	○	○	○	○	○	○	○	○	○



8% COBALT (M42) FLAT SHANK **E2112** SERIES  
 HSS (M2) FLAT SHANK **E1112** SERIES

**HSSCo8 & HSS, 2 FLUTE REGULAR LENGTH BALL NOSE DOUBLE**

► Same construction features as E2110 end mill in a more economical version. Removes more material per grind. Machine ground notch assures positive anchorage in tool holder.



HSS Co8 HSS 2 30° FLAT p.C844, C845, C846

Unit : Inch

EDP No.	Radius of Ball Nose		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
	8% COBALT (M42)	HSS (M2)				
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

ISO	P										M				K			H		
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○									

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
Recommend	○	○	○	○	○	○	○	○			○	○	○	○	○	○	○	○	○	○	○



8% COBALT (M42) FLAT SHANK E2031 SERIES
HSS (M2) FLAT SHANK E1031 SERIES

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.C847, C848, C849

Table with 6 columns: EDP No., Mill Diameter, Shank Diameter, Length of Cut, Overall Length. Rows include 8% COBALT (M42) and HSS (M2) variants.

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
Coating Codes for Cobalt
Coating Codes for HSS

ISO material compatibility chart with columns for P, M, K, S, H and rows for Material Description, VDI 3323, HRc, HB, Recommend.



8% COBALT (M42) FLAT SHANK E2031 SERIES
HSS (M2) FLAT SHANK E1031 SERIES

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.C847, C848, C849

Table with 6 columns: EDP No., Mill Diameter, Shank Diameter, Length of Cut, Overall Length. Rows include 8% COBALT (M42) and HSS (M2) variants.

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
Coating Codes for Cobalt
Coating Codes for HSS

ISO material compatibility chart with columns for P, M, K, S, H and rows for Material Description, VDI 3323, HRc, HB, Recommend.





8% COBALT (M42) FLAT SHANK **E2032** SERIES  
HSS (M2) FLAT SHANK **E1032** SERIES

**HSSCo8 & HSS, 6 FLUTE REGULAR LENGTH**

► Possible for high-speed cutting, suitable for high efficiency machining. Easy to regrind.



p.C850, C851, C852

EDP No.		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

Unit : Inch

\* Combination Shank

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

ISO	P											M				K				
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○									

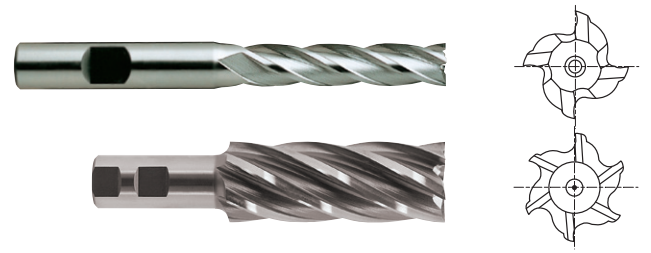
ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron								
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													



8% COBALT (M42) FLAT SHANK **E2034 / E2035** SERIES  
HSS (M2) FLAT SHANK **E1034 / E1035** SERIES

**HSSCo8 & HSS, 4&6 FLUTE LONG LENGTH**

► Longer flute length than E2031 type and allows deeper cutting. Easy to regrind.



p.C847, C848, C849 / p.C850, C851, C852

**E2034(8% COBALT) , E1034(HSS) Series ■ 4 FLUTE**

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

Unit : Inch

**E2035(8% COBALT) , E1035(HSS) Series ■ 6 FLUTE**

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

Unit : Inch

\* Combination Shank

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

ISO	P											M				K				
	Non-alloy steel					Low alloy steel						High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○									

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron								
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													



8% COBALT (M42) FLAT SHANK **E2036 / E2037** SERIES  
 HSS (M2) FLAT SHANK **E1036 / E1037** SERIES

**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.



p.C847, C848, C849 / p.C850, C851, C852

**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.

\* Combination Shank

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

\*\* The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

ISO	P										M				K			H		
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○									

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron								
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	60	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													



8% COBALT (M42) FLAT SHANK **E2051** SERIES  
 HSS (M2) FLAT SHANK **E1051** SERIES

**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.



p.C847, C848, C849

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.

► NEXT PAGE

◎ : Excellent ○ : Good

ISO	P										M				K			H		
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○									

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron								
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	60	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													



8% COBALT (M42) FLAT SHANK **E2051** SERIES  
 HSS (M2) FLAT SHANK **E1051** SERIES

**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.



p.C847, C848, C849

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

Unit : Inch

- 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

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	38	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○	○	○	○	○	○	○	○	○	○	

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	50	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○			○	○	○	○	○	○	○	○	○	○	○



8% COBALT (M42) FLAT SHANK **E2031 / E2032** SERIES  
 HSS (M2) FLAT SHANK **E1031 / E1032** SERIES

**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.



p.C847, C848, C849 / p.C850, C851, C852

**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

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	38	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○	○	○	○	○	○	○	○	○	○	

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	50	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○			○	○	○	○	○	○	○	○	○	○	○



**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.



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

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	29	32	38	15	35	15	23	10	10	26	3	25				
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○										

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	60	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													

**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.



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

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	29	32	38	15	35	15	23	10	10	26	3	25				
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○										

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel		Chilled Cast Iron		Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	60	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													



8% COBALT (M42) FLAT SHANK **E2069** SERIES

**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.C853, C854, C855

Unit : Inch

EDP No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	R				
46289	R1/16	1/8	3/8	3/8	3-1/16
46293	R3/32	3/16	3/8	1/2	3-1/4
46297	R1/8	1/4	3/8	5/8	3-3/8
46301	R5/32	5/16	3/8	3/4	3-1/2
46305	R3/16	3/8	3/8	3/4	3-1/2
46313	R7/32	7/16	1/2	1	4-1/8
46321	R1/4	1/2	1/2	1	4-1/8
46337	R5/16	5/8	5/8	1-3/8	5
46359	R3/8	3/4	3/4	1-5/8	5-5/8
46426	R1/2	1	1	1-7/8	6-3/8

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.  
■ Coating Codes for Cobalt  
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)  
▶ Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~- .0020

\*\* The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	42	48	52	58	63	68	73	78	83	88	93	98	103	108	113
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	55	60	42	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○			○	○	○	○	○	○	○	○	○	○	○



8% COBALT (M42) FLAT SHANK **E2039** SERIES  
HSS (M2) FLAT SHANK **E1039** SERIES

**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.C847, C848, C849

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
07289	07039	1/8	3/8	3/8	2-5/16
07291	07041	5/32	3/8	7/16	2-3/8
07293	07043	3/16	3/8	1/2	2-3/8
07295	07045	7/32	3/8	9/16	2-7/16
07297	07047	1/4	3/8	5/8	2-7/16
07299	07049	9/32	3/8	11/16	2-1/2
07301	07051	5/16	3/8	3/4	2-1/2
07303	07053	11/32	3/8	3/4	2-1/2
07305	07055	3/8	3/8	3/4	2-1/2
07308	07058	13/32	3/8	1	2-11/16
07312	07062	7/16	3/8	1	2-11/16
07316	07066	15/32	3/8	1	2-11/16
07320	07070	1/2	3/8	1	2-11/16
07321	07071	1/2	1/2	1-1/4	3-1/4

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.  
■ Coating Codes for Cobalt  
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)  
■ Coating Codes for HSS  
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)  
▶ Coated Price Shown in Price List. Call for Availability.

▶ NEXT PAGE

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

\*\* The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	42	48	52	58	63	68	73	78	83	88	93	98	103	108	113
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	55	60	42	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○			○	○	○	○	○	○	○	○	○	○	○



8% COBALT (M42) FLAT SHANK **E2039** SERIES  
HSS (M2) FLAT SHANK **E1039** SERIES

### 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.



p.C847, C848, C849

Unit : Inch

EDP No.	8% COBALT (M42)	HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
07337	07087	07087	5/8	5/8	1-5/8	3-3/4
07348	07098	07098	11/16	5/8	1-5/8	3-3/4
07357	07107	07107	3/4	1/2	1-5/8	3-5/8
07358	07108	07108	3/4	5/8	1-5/8	3-3/4
07359	07109	07109	3/4	3/4	1-5/8	3-7/8
07391	07141	07141	7/8	3/4	1-7/8	4-1/8
07394	07144	07144	7/8	7/8	1-7/8	4-1/8
07420	07170	07170	1	5/8	1-7/8	4
07422	07172	07172	1	3/4	1-7/8	4-1/8
07426	07176	07176	1	1	2	4-1/2
07435	07185	07185	1-1/8	1	2	4-1/2
07445	07195	07195	1-1/4	1-1/4	2	4-1/2
07461	07211	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

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○									

ISO	N						S					H									
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron							
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	55	60	42	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													



8% COBALT (M42) FLAT SHANK **E2042** SERIES  
HSS (M2) FLAT SHANK **E1042** SERIES

### 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.



p.C850, C851, C852

Unit : Inch

EDP No.	8% COBALT (M42)	HSS (M2)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
07338	07088	07088	5/8	5/8	1-5/8	3-3/4
07349	07099	07099	11/16	5/8	1-5/8	3-3/4
07360	07110	07110	3/4	3/4	1-5/8	3-7/8
07395	07145	07145	7/8	7/8	1-7/8	4-1/8
07427	07177	07177	1	1	2	4-1/2
07436	07186	07186	1-1/8	1	2	4-1/2
07446	07196	07196	1-1/4	1-1/4	2	4-1/2
07448	07196	07196	1-1/4	3/4	2	4-1/4
07462	07212	07212	1-1/2	1-1/4	2	4-1/2
07478	07228	07228	2	1-1/4	2	4-1/2
* 07481	* 07231	* 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

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○									

ISO	N						S					H									
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron							
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	55	60	42	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													

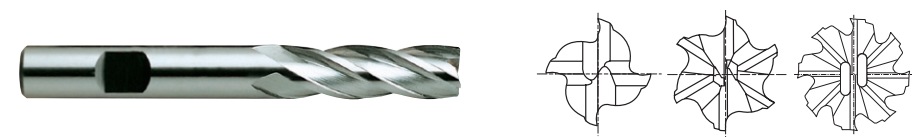




8% COBALT (M42) FLAT SHANK **E2039** SERIES  
 8% COBALT (M42) FLAT SHANK **E2042** SERIES

**HSSCo8, MULTI FLUTE MEDIUM LENGTH CENTER CUTTING**

► Center cutting allows these end mills to drill into the part for the beginning of a slot. These center cutting end mills are recommended for pocketing, tracer milling, cam milling, die sinking and slotting.



HSS Co8 4-8 30° FLAT p.C847, C848, C849 / p.C850, C851, C852

**E2039(4 FLUTE), E2042(6&8 FLUTE) Series** Unit : Inch

EDP No.	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

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
Recommend	○	○	○	○	○	○	○	○			○	○	○	○	○	○	○	○	○	○	○



8% COBALT (M42) FLAT SHANK **E2040 / E2162** SERIES  
 HSS (M2) FLAT SHANK **E1040 / E1162** SERIES

**HSSCo8 & HSS, 4&6 FLUTE LONG LENGTH CENTER CUTTING**

► Longer flute length than E2039 type, E2042 and allows deeper cutting.



HSS Co8 HSS 4&6 30° FLAT p.C847, C848, C849 / p.C850, C851, C852

**E2040(8% COBALT) , E1040(HSS) Series** ■ 4 FLUTE Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
08297	1/4	3/8	1-1/4	3-1/16
08301	5/16	3/8	1-3/8	3-1/8
08305	3/8	3/8	1-1/2	3-1/4
08321	1/2	1/2	2	4
08337	5/8	5/8	2-1/2	4-5/8
08359	3/4	3/4	3	5-1/4
08394	7/8	7/8	3-1/2	5-3/4
08426	1	1	4	6-1/2
08445	1-1/4	1-1/4	4	6-1/2
08461	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
08322	1/2	1/2	2	4
08338	5/8	5/8	2-1/2	4-5/8
08360	3/4	3/4	3	5-1/4
08395	7/8	7/8	3-1/2	5-3/4
08427	1	1	4	6-1/2
08446	1-1/4	1-1/4	4	6-1/2
08462	1-1/2	1-1/4	4	6-1/2
08478	2	1-1/4	4	6-1/2
* 08485	2	2	4	7-3/4
* 08489	2	2	6	9-3/4

\* Combination Shank

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

\*\* The shank of end mills is the same diameter as the cutting portion.

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.  
 ■ Coating Codes for Cobalt  
 Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)  
 ■ Coating Codes for HSS  
 Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)  
 ► Coated Price Shown in Price List. Call for Availability.

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HB	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
Recommend	○	○	○	○	○	○	○	○			○	○	○	○	○	○	○	○	○	○	○



8% COBALT (M42) FLAT SHANK **E2041 / E2175** SERIES  
 HSS (M2) FLAT SHANK **E1041 / E1175** SERIES

### HSSCo8 & HSS, 4&6 FLUTE EXTRA LONG LENGTH CENTER CUTTING

► Provided with longest flute length and suitable for high accuracy machining of deep step.



p.C847, C848, C849 / p.C850, C851, C852

#### 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

\* Combination Shank

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

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron		
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○									

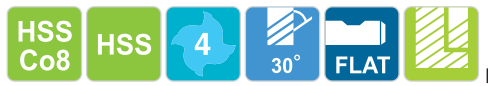
ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													



8% COBALT (M42) FLAT SHANK **E2053** SERIES  
 HSS (M2) FLAT SHANK **E1053** SERIES

### 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.C847, C848, C849

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
13289	13039	1/8	3/8	3/8	3-1/16
13290	13040	9/64	3/8	7/16	3-1/8
13291	13041	5/32	3/8	7/16	3-1/8
13292	13042	11/64	3/8	1/2	3-1/4
13293	13043	3/16	3/8	1/2	3-1/4
13294	13044	13/64	3/8	9/16	3-1/4
13295	13045	7/32	3/8	9/16	3-1/4
13296	13046	15/64	3/8	5/8	3-3/8
13297	13047	1/4	3/8	5/8	3-3/8
13298	13048	17/64	3/8	11/16	3-3/8
13299	13049	9/32	3/8	11/16	3-3/8
13300	13050	19/64	3/8	3/4	3-1/2
13301	13051	5/16	3/8	3/4	3-1/2
13302	13052	21/64	3/8	3/4	3-1/2
13303	13053	11/32	3/8	3/4	3-1/2
13304	13054	23/64	3/8	3/4	3-1/2
13305	13055	3/8	3/8	3/4	3-1/2
13307	13057	25/64	1/2	1	4-1/8
13309	13059	13/32	1/2	1	4-1/8
13311	13061	27/64	1/2	1	4-1/8
13313	13063	7/16	1/2	1	4-1/8
13315	13065	29/64	1/2	1	4-1/8
13317	13067	15/32	1/2	1	4-1/8

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt  
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS  
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

► NEXT PAGE

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron		
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○									

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													



8% COBALT (M42) FLAT SHANK **E2053** SERIES  
 HSS (M2) FLAT SHANK **E1053** SERIES

**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.C847, C848, C849

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.

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	10	29	32	38	45	15	23	10	10	10	26	3	25	3	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○	○	○	○	○	○	○	○	○	○

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○			○	○	○	○	○	○	○	○	○	○	○



8% COBALT (M42) FLAT SHANK **E2100** SERIES  
 HSS (M2) FLAT SHANK **E1100** SERIES

**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.



p.C850, C851, C852

Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
10481	10231	2	2	2	5-3/4
10485	10235	2	2	4	7-3/4
10487	10237	2	2	5	8-3/4
10489	10239	2	2	6	9-3/4
10491	10241	2	2	8	11-3/4

- The TiN coated, TiCN coated or 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

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	10	29	32	38	45	15	23	10	10	10	26	3	25	3	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○	○	○	○	○	○	○	○	○	○

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○			○	○	○	○	○	○	○	○	○	○	○

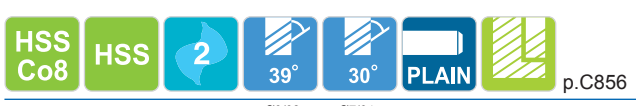




8% COBALT (M42) PLAIN SHANK **E2001** SERIES  
 HSS (M2) PLAIN SHANK **E1001** SERIES

### 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.



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

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○									

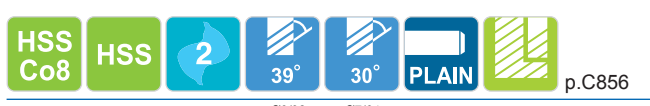
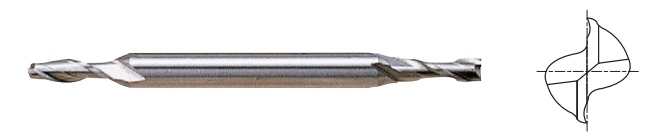
ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													



8% COBALT (M42) PLAIN SHANK **E2003** SERIES  
 HSS (M2) PLAIN SHANK **E1003** SERIES

### HSSCo8 & HSS, 2 FLUTE MINIATURE REGULAR LENGTH DOUBLE

► Suitable for finishing of precision components such as watch, camera electronic apparatus molds, etc.



Unit : Inch

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
50252	50002	1/32	3/16	3/32	2-1/4
50254	50004	3/64	3/16	9/64	2-1/4
50256	50006	1/16	3/16	3/16	2-1/4
50258	50008	5/64	3/16	15/64	2-1/4
50260	50010	3/32	3/16	9/32	2-1/4
50262	50012	7/64	3/16	21/64	2-1/4
50264	50014	1/8	3/16	3/8	2-1/4
50266	50016	9/64	3/16	13/32	2-1/4
50268	50018	5/32	3/16	7/16	2-1/4
50270	50020	11/64	3/16	1/2	2-1/4
50272	50022	3/16	3/16	1/2	2-1/4

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt  
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS  
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~-.0020

\*\* The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○									

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													



8% COBALT (M42) PLAIN SHANK **E2005** SERIES  
 HSS (M2) PLAIN SHANK **E1005** SERIES

### 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.C856

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
51260	51010	3/32	3/16	9/32	2-5/8
51262	51012	7/64	3/16	9/32	2-5/8
51264	51014	1/8	3/16	3/4	3-1/8
51266	51016	9/64	3/16	3/4	3-1/8
51268	51018	5/32	3/16	7/8	3-1/4
51270	51020	11/64	3/16	7/8	3-1/4
51272	51022	3/16	3/16	1	3-3/8

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt  
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS  
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~ -.0020

\*\* The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	3	25	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○	○	○	○	○	○	○	○	○	○	

ISO Material Description	N						S					H									
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



8% COBALT (M42) PLAIN SHANK **E2002** SERIES  
 HSS (M2) PLAIN SHANK **E1002** SERIES

### 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.C856

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

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	3	25	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○	○	○	○	○	○	○	○	○	○	

ISO Material Description	N						S					H									
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



8% COBALT (M42) PLAIN SHANK **E2004** SERIES  
 HSS (M2) PLAIN SHANK **E1004** SERIES

**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.C856

EDP No.		Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)				
53256	53006	1/16	3/16	3/16	2-1/4
53258	53008	5/64	3/16	15/64	2-1/4
53260	53010	3/32	3/16	9/32	2-1/4
53262	53012	7/64	3/16	21/64	2-1/4
53264	53014	1/8	3/16	3/8	2-1/4
53266	53016	9/64	3/16	13/32	2-1/4
53268	53018	5/32	3/16	7/16	2-1/4
53270	53020	11/64	3/16	1/2	2-1/4
53272	53022	3/16	3/16	1/2	2-1/4

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt  
 Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS  
 Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~-.0020

\*\* The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel	Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron		
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323																				
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○									

ISO	N					S					H											
	Aluminum-wrought alloy	Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials	Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron								
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
VDI 3323																						
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	60	42	55	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommend	○	○	○	○	○	○	○	○														



8% COBALT (M42) PLAIN SHANK **E2006** SERIES  
 HSS (M2) PLAIN SHANK **E1006** SERIES

**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.C856

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

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel	Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron		
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323																				
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○									

ISO	N					S					H											
	Aluminum-wrought alloy	Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials	Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron								
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
VDI 3323																						
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	60	42	55	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommend	○	○	○	○	○	○	○	○														





8% COBALT (M42) PLAIN SHANK **E2008** SERIES  
HSS (M2) PLAIN SHANK **E1008** SERIES

**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.C856  
~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.

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel	Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron				
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○									

ISO	N					S					H										
	Aluminum-wrought alloy	Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													



8% COBALT (M42) PLAIN SHANK **E2013** SERIES  
HSS (M2) PLAIN SHANK **E1013** SERIES

**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.C856  
~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	R1/32	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

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel	Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron				
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○									

ISO	N					S					H										
	Aluminum-wrought alloy	Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													

**YG COBALT & HSS END MILLS**

8% COBALT (M42) PLAIN SHANK **E2015 SERIES**

HSS (M2) PLAIN SHANK **E1015 SERIES**

**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.C856

EDP No.		Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)	HSS (M2)	R				
57256	57006	R1/32	1/16	3/16	7/32	2-1/2
57260	57010	R3/64	3/32	3/16	9/32	2-5/8
57264	57014	R1/16	1/8	3/16	3/4	3-1/8
57268	57018	R5/64	5/32	3/16	7/8	3-1/4
57272	57022	R3/32	3/16	3/16	1	3-3/8

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt  
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS  
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~-.0020

\*\* The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

ISO	P										M				K			H			
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO	N						S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron								
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	60	42	55	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎			◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

**YG COBALT & HSS END MILLS**

HSS (M2) FLAT SHANK **E1070 SERIES**

**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.C836

**REGULAR LENGTH** Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
HSS (M2)				
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.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
HSS (M2)				
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

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015

- 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.

\*\* The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

ISO	P										M				K			H			
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

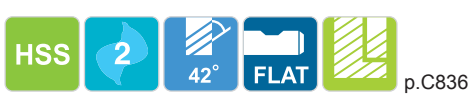
ISO	N						S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron								
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	60	42	55	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommend	◎	◎	◎	◎	◎	◎	◎	◎			◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎



HSS (M2) FLAT SHANK **E1071** SERIES  
 HSS (M2) FLAT SHANK **E1072** SERIES

**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.



p.C836

**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)	
up to 1	0~+.0030
over 1	0~+.0060

\*\* The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○				○				○											

ISO Material Description	N						S					H									
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34	55	60	42	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎																



8% COBALT (M42) FLAT SHANK **E2086** SERIES

**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.



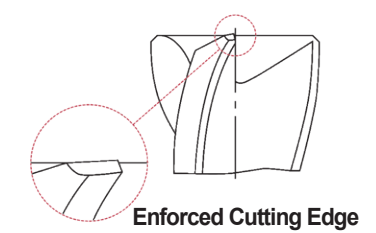
p.C857, C858, C859

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



◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	○	○				○				○											

ISO Material Description	N						S					H									
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34	55	60	42	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎																

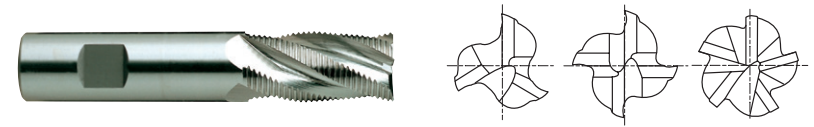


**Y/G COBALT & HSS END MILLS**

8% COBALT (M42) FLAT SHANK **E2085** SERIES

**HSSCo8, MULTI FLUTE REGULAR LENGTH FINE PITCH ROUGHING CENTER CUTTING**

► This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths. In many cases, the milled surfaces are of acceptable quality.

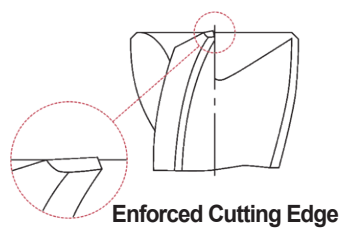


HSS Co8 FINE 3-5 30° FLAT p.C857, C858, C859

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

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○									

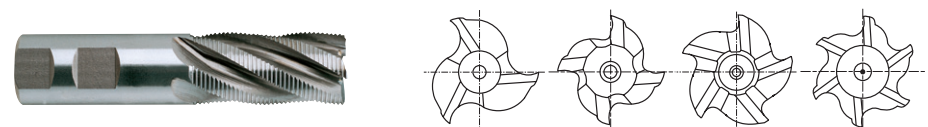
ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													

**Y/G COBALT & HSS END MILLS**

8% COBALT (M42) FLAT SHANK **E2079** SERIES

**HSSCo8, MULTI FLUTE REGULAR LENGTH FINE PITCH ROUGHING**

► This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths. In many cases, the milled surfaces are of acceptable quality.

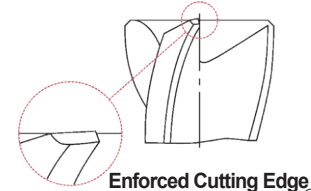


HSS Co8 FINE 3-6 30° FLAT p.C857, C858, C859

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.



◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○									

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	400 Rm	1050 Rm	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													



8% COBALT (M42) FLAT SHANK **E2077** SERIES

### 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.

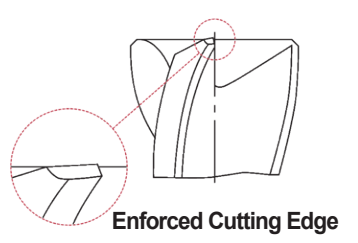


HSS Co8
FINE
4-6
30°
FLAT
p.C857, C858, C859

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
71321	1/2	1/2	2	4	4
71337	5/8	5/8	2-1/2	4-5/8	4
71358	3/4	5/8	3	5-1/4	4
71359	3/4	3/4	3	5-1/4	4
71394	7/8	7/8	3-1/2	5-3/4	5
71426	1	1	4	6-1/2	5
71445	1-1/4	1-1/4	4	6-1/2	6
71457	1-1/2	3/4	4	6-1/4	6
71461	1-1/2	1-1/4	4	6-1/2	6
71469	1-3/4	1-1/4	4	6-1/2	6
71477	2	1-1/4	4	6-1/2	6

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt  
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.



Mill Dia. Tolerance (inch)	
up to 1	0~+.0030
over 1	0~+.0060

◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	38	40	42	45	48	50	52	55	58	60	62	65	68	70	72	75	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○	○	○	○	○	○	○	○	○	○	○

ISO	N					S					H											
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron							
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	60	42	55	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommend	○	○	○	○	○	○	○	○			○	○	○	○	○	○	○	○	○	○	○	○



8% COBALT (M42) FLAT SHANK **E2086** SERIES

### 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.



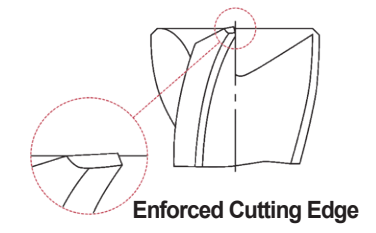
HSS Co8
FINE
3
30°
FLAT
p.C857, C858, C859

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



◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	38	40	42	45	48	50	52	55	58	60	62	65	68	70	72	75	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○	○	○	○	○	○	○	○	○	○	○

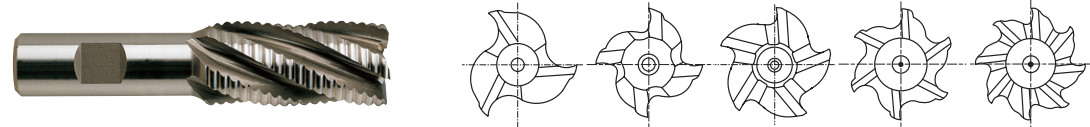
ISO	N					S					H											
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron							
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	60	42	55	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommend	○	○	○	○	○	○	○	○			○	○	○	○	○	○	○	○	○	○	○	○

**YG COBALT & HSS END MILLS**

8% COBALT (M42) FLAT SHANK **E2170** SERIES

**HSSCo8, MULTI FLUTE REGULAR LENGTH COARSE PITCH ROUGHING**

► This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is recommended for cutting steel grades and many non-ferrous materials. The end tooth of this tool has a center hole design for many accurate resharpenings between centers.



HSS Co8 COARSE 3-8 30° FLAT

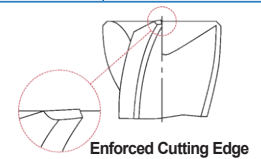
p.C857, C858, C859

Unit : Inch

EDP No.	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

ISO Material Description	P										M				K			H		
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

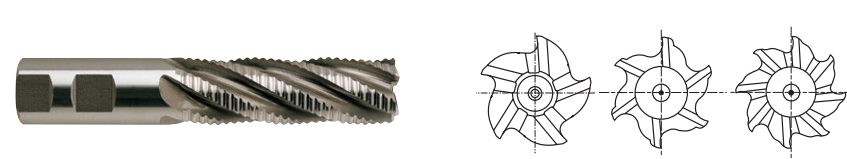
ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron							
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	40	55	60	42	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

**YG COBALT & HSS END MILLS**

8% COBALT (M42) FLAT SHANK **E2171** SERIES

**HSSCo8, MULTI FLUTE MEDIUM LENGTH COARSE PITCH ROUGHING**

► This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is recommended for cutting steel grades and many non-ferrous materials. The end tooth of this tool has a center hole design for many accurate resharpenings between centers.



HSS Co8 COARSE 5-8 30° FLAT

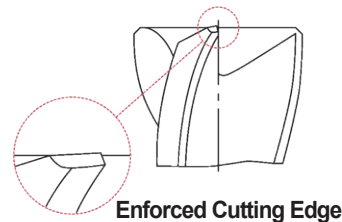
p.C857, C858, C859

Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute
61426	1	1	3	5-1/2	5
61445	1-1/4	1-1/4	3	5-1/2	6
61461	1-1/2	1-1/4	3	5-1/2	6
* 61488	2	2	6	9-3/4	8

\* Combination Shank

■ The TiN coated, TiCN coated or TiAlN coated is available on your request.  
 ■ Coating Codes for Cobalt  
 Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)  
 ► Coated Price Shown in Price List. Call for Availability.



Mill Dia. Tolerance (inch)

up to 1	0~+.0030
over 1	0~+.0060

ISO Material Description	P										M				K			H		
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron							
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	21	22	23	24	25	26	27	28	29	30	15	30	25	38	34	40	55	60	42	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

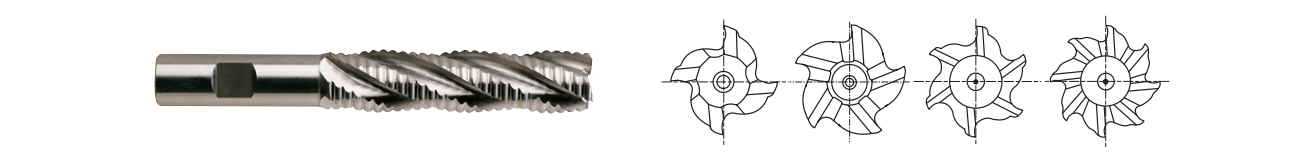


**Y/G COBALT & HSS END MILLS**

8% COBALT (M42) FLAT SHANK **E2172** SERIES

**HSSCo8, MULTI FLUTE LONG LENGTH COARSE PITCH ROUGHING**

► This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is recommended for cutting steel grades and many non-ferrous materials. The end tooth of this tool has a center hole design for many accurate resharpenings between centers.



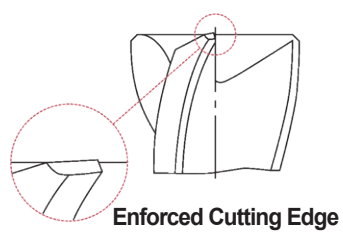
HSS Co8 COARSE 4-8 30° FLAT p.C857, C858, C859

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



\* Combination Shank

◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel	Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron			
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○									

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials	Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron							
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													

**Y/G COBALT & HSS END MILLS**

8% COBALT (M42) FLAT SHANK **E2241** SERIES

**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.



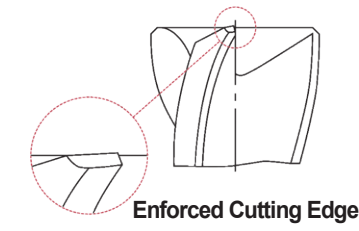
HSS Co8 COARSE 3 30° FLAT p.C857, C858, C859

Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
63297	1/4	3/8	1/4	2-1/16
63305	3/8	3/8	3/8	2-5/32
63321	1/2	1/2	1/2	2-1/2
63337	5/8	5/8	5/8	2-3/4
63359	3/4	3/4	3/4	2-7/8
63426	1	1	1	3-1/2

- The TiN coated, TiCN coated or 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

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel	Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron			
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○									

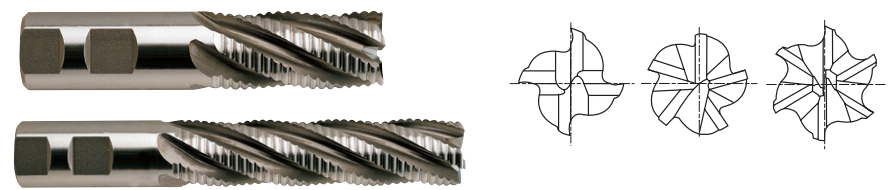
ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials	Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron							
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													



8% COBALT (M42) FLAT SHANK **E2195** SERIES  
 8% COBALT (M42) FLAT SHANK **E2197** SERIES

### 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.



p.C857, C858, C859

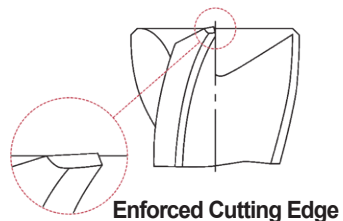
#### E2195 Series ■ REGULAR LENGTH Unit : Inch

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

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○	○	○	○	○	○	○	○	○	○

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													



8% COBALT (M42) FLAT SHANK **E2193** SERIES  
 8% COBALT (M42) FLAT SHANK **E2125** SERIES

### 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.C860

#### E2193 Series ■ REGULAR LENGTH Unit : Inch

EDP No. 8% COBALT (M42)	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
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. 8% COBALT (M42)	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
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

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron	Nodular cast iron	Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○	○	○	○	○	○	○	○	○	○

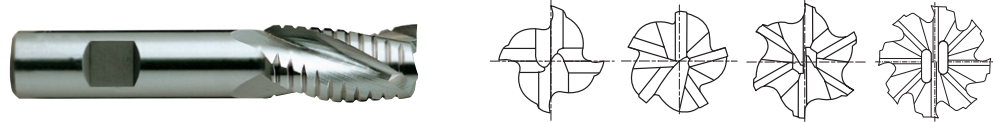
ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys	Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													

**Y/G COBALT & HSS END MILLS**

8% COBALT (M42) FLAT SHANK **E2248** SERIES

**HSSCo8, MULTI FLUTE REGULAR LENGTH ROUGHING & FINISHING**

► This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths. In many cases, the milled surfaces are of acceptable quality.



HSS Co8 NF 4-8 30° FLAT p.C861

EDP No.	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

Unit : Inch

\* Combination Shank

Mill Dia. Tolerance (inch)
+ .0025
+ .0005

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt  
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○									

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron								
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													

**Y/G COBALT & HSS END MILLS**

8% COBALT (M42) FLAT SHANK **E2191** SERIES

**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.



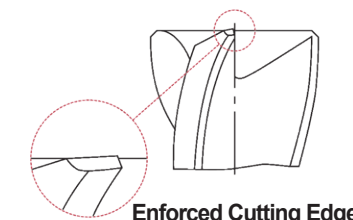
HSS Co8 ALU 3 37° FLAT p.C862

EDP No.	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

Unit : Inch

- 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

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○									

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron								
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎	○	○	○													

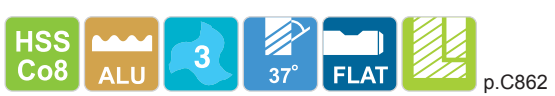




8% COBALT (M42) FLAT SHANK **E2226** SERIES  
 8% COBALT (M42) FLAT SHANK **E2192** SERIES

### 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.



**E2226 Series** ■ MEDIUM LENGTH Unit : Inch

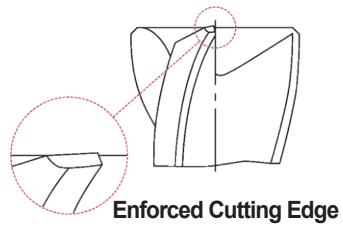
EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)				
66901	1	1	3	5-1/2
66902	1-1/4	1-1/4	3	5-1/2

**E2192 Series** ■ LONG LENGTH Unit : Inch

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
8% COBALT (M42)				
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)
- 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)
up to 1	0~+.0030
over 1	0~+.0060



◎ : Excellent ○ : Good

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○	○								

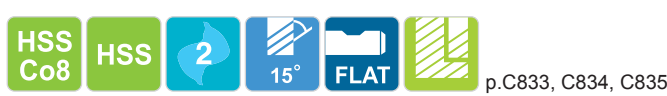
ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	40	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	◎	○	○	○													



8% COBALT (M42) FLAT SHANK **E2163** SERIES  
 HSS (M2) FLAT SHANK **E1163** SERIES

### 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.



**E2163 Series** ■ KEYWAY CUTTING 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

ISO	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel		Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
Material Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○	○								

ISO	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials		Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
Material Description	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	40	55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													



8% COBALT (M42) FLAT SHANK **E2120** SERIES  
 HSS (M2) FLAT SHANK **E2121** SERIES

**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.C843

**E2120 Series ■ 3 FLUTE** Unit : Inch

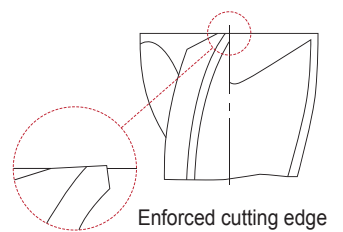
EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
20297	1/4	3/8	5/8	2-7/16
20301	5/16	3/8	3/4	2-1/2
20305	3/8	3/8	3/4	2-1/2
20312	7/16	3/8	1	2-11/16
20321	1/2	1/2	1-1/4	3-1/4
20337	5/8	5/8	1-5/8	3-3/4
20359	3/4	3/4	1-5/8	3-7/8

**E2121 Series ■ 4 FLUTE** Unit : Inch

EDP No. 8% COBALT (M42)	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
20394	7/8	7/8	1-7/8	4-1/8
20426	1	1	2	4-1/2
20445	1-1/4	1-1/4	2	4-1/2
20461	1-1/2	1-1/4	2	4-1/2
20477	2	1-1/4	2	4-1/2

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt  
 Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

Mill Dia. Tolerance (inch)	
0~+.0010	** 0~+.0015



\*\* The shank of end mills is the same diameter as the cutting portion.

◎ : Excellent ○ : Good

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○	○	○	○	○	○	○	○	○	○

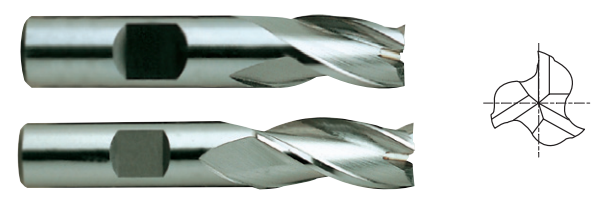
ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



8% COBALT (M42) FLAT SHANK **E2160** SERIES  
 HSS (M2) FLAT SHANK **E2161** SERIES

**HSSCo8, 3 FLUTE SHORT & LONG LENGTH THROW AWAY**

- Well balanced web design to minimize deflection & chattering. High accuracy for O.D. is guaranteed under the strict tolerance control. Much higher(50%) table speed than 2 Flute is allowed.



HSS Co8 3 30° FLAT p.C837, C838, C839, C840, C841, C842, C843

**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

ISO Material Description	P										M				K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25	21	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○	○	○	○	○	○	○	○	○	○

ISO Material Description	N					S					H										
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials			Heat Resistant Super Alloys		Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron						
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

# COBALT & HSS END MILLS

8% COBALT (M42) FLAT SHANK **E2237** SERIES  
HSS (M2) FLAT SHANK **E1237** SERIES

## 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 p.C863

EDP No.	8% COBALT (M42)		Radius	Pilot Diameter	Outside Diameter	Shank Diameter	Overall Length
	HSS (M2)						
29251	29001		1/16	1/4	7/16	3/8	2-1/2
29252	29002		3/32	1/4	1/2	3/8	2-1/2
29253	29003		1/8	1/4	5/8	1/2	3
29254	29004		5/32	5/16	3/4	1/2	3
29255	29005		3/16	3/8	7/8	1/2	3
29256	29006		3/16	3/8	7/8	3/4	3-1/8
29257	29007		7/32	5/16	7/8	1/2	3-1/4
29258	29008		1/4	3/8	1	1/2	3
29259	29009		9/32	3/8	1	5/8	3
29260	29010		1/4	3/8	1	3/4	3-1/4
29261	29011		5/16	3/8	1-1/8	1/2	3-1/4
29262	29012		5/16	3/8	1-1/8	5/8	3-1/2
29263	29013		5/16	3/8	1-1/8	3/4	3-1/2
29264	29014		5/16	3/8	1-1/8	7/8	3-1/2
29265	29015		3/8	3/8	1-1/4	1/2	3-1/2
29266	29016		3/8	3/8	1-1/4	3/4	3-3/4
29267	29017		3/8	3/8	1-1/4	7/8	3-3/4
29268	29018		7/16	3/8	1-3/8	3/4	3-3/4
29269	29019		7/16	3/8	1-3/8	1	4
29270	29020		1/2	3/8	1-1/2	3/4	3-7/8
29271	29021		1/2	3/8	1-1/2	1	4-1/8
29272	29022		5/8	5/16	1-5/8	3/4	4
29273	29023		5/8	5/16	1-5/8	1	4
29274	29024		5/8	9/16	1-15/16	3/4	4
29275	29025		5/8	9/16	1-15/16	1	4-1/4
29276	29026		3/4	5/16	1-7/8	3/4	4
29277	29027		3/4	5/16	1-7/8	1	4
29278	29028		3/4	5/8	2-1/4	3/4	4-1/8
29279	29029		3/4	5/8	2-1/4	1	4-5/16
29280	29030		7/8	5/8	2-1/2	3/4	4-1/2
29281	29031		1	5/8	2-5/8	3/4	4-1/2
29282	29032		1	5/8	2-3/4	1	4-3/4

- The TiN coated, TiCN coated or TiAlN coated is available on your request.
- Coating Codes for Cobalt  
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS  
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

◎ : Excellent ○ : Good

ISO	P										M				K							
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25				
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230		
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○	○	○	○	○	○	○	○	○	○	○	○

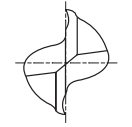
ISO	N					S					H										
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials			Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													

# COBALT & HSS END MILLS

8% COBALT (M42) FLAT SHANK **E2482** SERIES  
HSS (M2) FLAT SHANK **E1482** SERIES

## 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 p.C864

EDP No.	8% COBALT (M42)		Mill Diameter		Shank Diameter	Length of Cut	Overall Length
	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

ISO	P										M				K							
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
HRc	13	25	28	32	30	10	29	32	38	15	35	15	23	10	10	26	3	25				
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230		
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○	○	○	○	○	○	○	○	○	○	○	○

ISO	N					S					H										
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)	Non Metallic Materials			Heat Resistant Super Alloys			Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron					
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc	60	100	75	90	130	110	90	100			15	30	25	38	34	40	55	60	42	55	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	○	○	○	○	○	○	○	○													





8% COBALT (M42) FLAT SHANK **E2483** SERIES  
 HSS (M2) FLAT SHANK **E1483** SERIES

### 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.



p.C865

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	3/8	2-5/16
16253	16003	2.5	.0984	3/8	3/8	2-5/16
16254	16004	3.0	.1181	3/8	3/8	2-5/16
16255	16005	3.5	.1378	3/8	1/2	2-3/8
16256	16006	4.0	.1575	3/8	1/2	2-3/8
16257	16007	4.5	.1772	3/8	9/16	2-1/2
16258	16008	5.0	.1969	3/8	9/16	2-1/2
16259	16009	5.5	.2165	3/8	5/8	2-1/2
16260	16010	6.0	.2362	3/8	5/8	2-1/2
16261	16011	7.0	.2756	3/8	11/16	2-1/2
16262	16012	8.0	.3150	3/8	3/4	2-1/2
16263	16013	9.0	.3543	3/8	3/4	2-1/2
16264	16014	10.0	.3937	3/8	1	2-11/16
16265	16015	11.0	.4330	3/8	1	2-11/16
16266	16016	12.0	.4724	3/8	1	2-11/16
16267	16017	12.5	.4921	1/2	1-1/4	3-1/4
16268	16018	13.0	.5118	1/2	1-1/4	3-1/4
16270	16020	14.0	.5512	1/2	1-3/8	3-3/8
16276	16026	16.0	.6299	5/8	1-5/8	3-3/4
16280	16030	18.0	.7087	5/8	1-5/8	3-3/4
16282	16032	20.0	.7874	5/8	1-7/8	4-1/8
16284	16034	22.0	.8661	3/4	1-7/8	4-1/8
16288	16038	24.0	.9449	3/4	2	4-1/2
16290	16040	25.0	.9843	1	2	4-1/2
16296	16046	32.0	1.2598	1	2	4-1/2
16298	16048	36.0	1.4173	1	2	4-1/2
16300	16050	40.0	1.5748	1-1/4	2	4-1/2
16302	16052	45.0	1.7717	1-1/4	2	4-1/2

Mill Dia. Tolerance (inch)
0~+.0010
** 0~+.0015

- The 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

ISO	P										M						K														
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel						Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron								
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
HRc	13	25	28	32	30	29	32	38	15	35	15	23	10	10	26	3	25	130	210	15	30	25	38	34	40	45	50	55	60		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	◎	◎	◎	◎	○	◎	◎	○	○	◎	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	



### 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.

**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

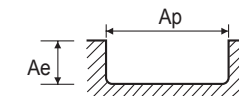
- The TiN coated, TiCN coated or TiAlN coated is available on your request. \* WITH TRANSPARENT PLASTIC CASE
- Coating Codes for Cobalt  
Uncoated EDP NO. + CN(TiN), CC(TiCN), CF(TiAlN F), CE(TiAlN E), CH(Hardslick)
- Coating Codes for HSS  
Uncoated EDP NO. + HN(TiN), HC(TiCN), HF(TiAlN F), HE(TiAlN E), HH(Hardslick)
- Coated Price Shown in Price List. Call for Availability.

**RECOMMENDED CUTTING CONDITIONS**

**E2030, E1030, E2080, E1080, E2033, E1033, E2050, E1050, E2163, E1163** SERIES

**2FLUTE - SLOTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)															
						1/8	1/4	3/8	1/2	5/8	3/4	7/8	1	1-1/8	1-3/8	1-1/2	1-3/4	2			
P	1	Non-alloy steel	1.0D	0.5D	SFM	115	120	110	120	115	125	115	120	120	110	120	130	130			
					IPT	.0003	.0010	.0018	.0024	.0031	.0032	.0040	.0039	.0039	.0039	.0039	.0043	.0040			
					RPM	3500	1800	1100	900	700	630	500	450	400	310	310	280	250			
	2		1.0D	0.5D	SFM	105	105	90	105	90	100	105	105	105	90	100	100	100			
					IPT	.0003	.0010	.0019	.0025	.0031	.0035	.0039	.0039	.0040	.0040	.0040	.0045	.0047			
					RPM	3200	1600	900	800	560	500	450	400	350	250	250	220	190			
	3-4		1.0D	0.5D	SFM	80	80	80	80	75	80	80	80	80	70	80	80	60			
					IPT	.0003	.0010	.0019	.0025	.0031	.0035	.0040	.0039	.0039	.0040	.0040	.0044	.0045			
					RPM	2500	1200	800	630	450	400	350	310	280	200	200	180	110			
	5		1.0D	0.5D	SFM	50	50	45	50	45	50	50	45	45	45	45	50	40			
					IPT	.0003	.0010	.0020	.0025	.0032	.0036	.0041	.0039	.0038	.0042	.0042	.0045	.0050			
RPM		1600			800	450	400	280	250	220	180	160	120	120	110	80					
6	1.0D	0.5D	SFM	105	105	90	105	90	100	105	105	105	90	100	100	100					
			IPT	.0003	.0010	.0019	.0025	.0031	.0035	.0039	.0039	.0040	.0040	.0040	.0045	.0047					
			RPM	3200	1600	900	800	560	500	450	400	350	250	250	220	190					
7	1.0D	0.5D	SFM	80	80	80	80	75	80	80	80	80	70	80	80	60					
			IPT	.0003	.0010	.0019	.0025	.0031	.0035	.0040	.0039	.0039	.0040	.0040	.0044	.0045					
			RPM	2500	1200	800	630	450	400	350	310	280	200	200	180	110					
8-9	1.0D	0.5D	SFM	50	50	45	50	45	50	50	45	45	45	45	50	40					
			IPT	.0003	.0010	.0020	.0025	.0032	.0036	.0041	.0039	.0038	.0042	.0042	.0045	.0050					
			RPM	1600	800	450	400	280	250	220	180	160	120	120	110	80					
10	1.0D	0.5D	SFM	105	105	90	105	90	100	105	105	105	90	100	100	100					
			IPT	.0003	.0010	.0019	.0025	.0031	.0035	.0039	.0039	.0040	.0040	.0040	.0045	.0047					
			RPM	3200	1600	900	800	560	500	450	400	350	250	250	220	190					
11.1	1.0D	0.5D	SFM	50	50	45	50	45	50	50	45	45	45	45	50	40					
			IPT	.0003	.0010	.0020	.0025	.0032	.0036	.0041	.0039	.0038	.0042	.0042	.0045	.0050					
			RPM	1600	800	450	400	280	250	220	180	160	120	120	110	80					
21-22	1.0D	0.5D	SFM	360	365	305	325	325	355	320	315	325	325	355	365	330					
			IPT	.0004	.0011	.0025	.0030	.0035	.0038	.0042	.0046	.0048	.0048	.0048	.0049	.0050					
			RPM	11000	5600	3100	2500	2000	1800	1400	1200	1100	900	900	800	630					
23-25	1.0D	0.5D	SFM	360	365	305	325	325	355	320	315	325	325	355	365	330					
			IPT	.0004	.0011	.0025	.0030	.0035	.0038	.0042	.0046	.0048	.0048	.0048	.0049	.0050					
			RPM	11000	5600	3100	2500	2000	1800	1400	1200	1100	900	900	800	630					

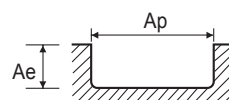


※ The Feed, in long & extra long types, should be reduced by around 50%.

**E2030, E1030, E2080, E1080, E2033, E1033, E2050, E1050, E2163, E1163** SERIES

**TiN Coated**  
**2FLUTE - SLOTTING**

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) (1/8 to 2), SFM, IPT, RPM, IPM. Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and Aluminum-wrought/cast alloys.

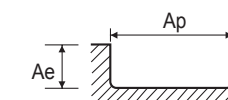


※ The Feed, in long & extra long types, should be reduced by around 50%.

**E2030, E1030, E2080, E1080, E2033, E1033, E2050, E1050, E2163, E1163** SERIES

**TiCN Coated**  
**2FLUTE - SLOTTING**

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) (1/8 to 2), SFM, IPT, RPM, IPM. Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and Aluminum-wrought/cast alloys.



※ The Feed, in long & extra long types, should be reduced by around 50%.



**E1070, E1071, E1072 SERIES 2FLUTE for ALUMINIUM - SIDE CUTTING & SLOTTING**

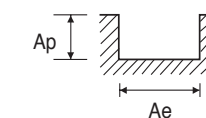
ISO	VDI 3323	Material Description	SIDE CUTTING		SLOTTING		Parameter	Diameter (Ø)										
			Ae	Ap	Ae	Ap		1/8	3/16	1/4	5/16	7/16	1/2	9/16	5/8	3/4	13/16	
<b>K</b>	15-16	Grey cast iron	Ø1/8~Ø5/16 = 0.25D Ø7/16~Ø13/16 = 0.5D	1.0D	1.0D	0.5D	SFM	260	365	445	425	575	590	515	575	450	425	
							IPT	.0018	.0022	.0027	.0053	.0047	.0068	.0090	.0090	.0146	.0168	
							RPM	8000	7400	6800	5200	5000	4500	3500	3500	2300	2000	
							IPM	29	33	37	55	47	61	63	63	67	67	
							SFM	260	365	445	425	575	590	515	575	450	425	
							IPT	.0018	.0022	.0027	.0053	.0047	.0068	.0090	.0090	.0146	.0168	
	17-18	Nodular cast iron	Ø1/8~Ø5/16 = 0.25D Ø7/16~Ø13/16 = 0.5D	1.0D	1.0D	0.5D	SFM	260	365	445	425	575	590	515	575	450	425	
							IPT	.0018	.0022	.0027	.0053	.0047	.0068	.0090	.0090	.0146	.0168	
							RPM	8000	7400	6800	5200	5000	4500	3500	3500	2300	2000	
							IPM	29	33	37	55	47	61	63	63	67	67	
							SFM	260	365	445	425	575	590	515	575	450	425	
							IPT	.0018	.0022	.0027	.0053	.0047	.0068	.0090	.0090	.0146	.0168	
19-20	Low alloy steel	Ø1/8~Ø5/16 = 0.25D Ø7/16~Ø13/16 = 0.5D	1.0D	1.0D	0.5D	SFM	260	365	445	425	575	590	515	575	450	425		
						IPT	.0018	.0022	.0027	.0053	.0047	.0068	.0090	.0090	.0146	.0168		
						RPM	8000	7400	6800	5200	5000	4500	3500	3500	2300	2000		
						IPM	29	33	37	55	47	61	63	63	67	67		
						SFM	260	365	445	425	575	590	515	575	450	425		
						IPT	.0014	.0017	.0021	.0042	.0047	.0052	.0070	.0070	.0111	.0128		
<b>N</b>	21-22	Aluminum-wrought alloy			1.0D	0.5D	SFM	260	365	445	425	575	590	515	575	450	425	
							IPT	.0014	.0017	.0021	.0042	.0047	.0052	.0070	.0070	.0111	.0128	
							RPM	8000	7400	6800	5200	5000	4500	3500	3500	2300	2000	
							IPM	23	25	29	44	47	47	49	49	51	51	
							SFM	170	235	290	275	370	385	335	370	295	275	
							IPT	.0014	.0017	.0021	.0042	.0047	.0052	.0070	.0070	.0111	.0128	
23-25	Aluminum-cast, alloyed				1.0D	0.5D	SFM	170	235	290	275	370	385	335	370	295	275	
							IPT	.0014	.0017	.0021	.0042	.0047	.0052	.0070	.0070	.0111	.0128	
							RPM	5200	4810	4420	3380	3250	2930	2280	2280	1500	1300	
							IPM	15	16	19	28	31	31	32	32	33	33	



※ The Feed, in long & extra long types, should be reduced by around 50%.

**E2160, E2161 SERIES 3 FLUTE - SLOTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)																		
						3/32	1/8	1/4	3/8	1/2	9/16	5/8	7/8	1	1-1/8									
<b>P</b>	1	Non-alloy steel	1.0D	0.5D	SFM	135	115	120	110	120	120	115	115	120	120									
					IPT	.0001	.0003	.0010	.0018	.0024	.0027	.0031	.0040	.0039	.0039									
					RPM	5600	3500	1800	1100	900	800	700	500	450	400									
					IPM	2	3	5	6	7	7	6	5	5	5									
					SFM	110	105	105	90	105	105	90	105	105	105									
					IPT	.0001	.0003	.0010	.0020	.0025	.0025	.0032	.0039	.0039	.0039									
	2		2	3	5	6	7	7	6	5	5	5	4											
														SFM	100	80	80	80	80	75	80	80	80	
														IPT	.0002	.0003	.0010	.0020	.0025	.0028	.0030	.0039	.0038	.0037
														RPM	4000	2500	1200	800	630	560	450	350	310	280
														IPM	2	2	4	5	5	5	4	4	4	3
														SFM	55	50	50	45	50	50	45	50	45	45
3-4	3-4	4	5	5	5	4	4	3	3	3	2													
												IPT	.0001	.0003	.0010	.0019	.0025	.0029	.0031	.0039	.0037	.0038		
												RPM	2200	1600	800	450	400	350	280	220	180	160		
												IPM	1	1	2	3	3	3	3	3	2	2		
												SFM	110	105	105	90	105	105	90	105	105	105		
												IPT	.0001	.0003	.0010	.0020	.0025	.0025	.0032	.0039	.0039	.0039		
5	5	6	6	6	5	5	4	4	3	3	2													
												RPM	4500	3200	1600	900	800	700	560	450	400	350		
												IPM	2	3	5	5	6	5	5	5	5	4		
												SFM	100	80	80	80	80	80	75	80	80	80		
												IPT	.0002	.0003	.0010	.0020	.0025	.0028	.0030	.0039	.0038	.0037		
												RPM	4000	2500	1200	800	630	560	450	350	310	280		
6	6	7	7	7	6	6	5	5	4	4	3													
												IPM	2	3	5	5	6	5	5	5	5	4		
												SFM	55	50	50	45	50	50	45	50	45	45		
												IPT	.0001	.0003	.0010	.0019	.0025	.0029	.0031	.0039	.0037	.0038		
												RPM	2200	1600	800	450	400	350	280	220	180	160		
												IPM	1	1	2	3	3	3	3	3	2	2		
7	7	8	8	8	7	7	6	6	5	5	4													
												SFM	110	105	105	90	105	105	90	105	105	105		
												IPT	.0001	.0003	.0010	.0020	.0025	.0025	.0032	.0039	.0039	.0039		
												RPM	4500	3200	1600	900	800	700	560	450	400	350		
												IPM	2	3	5	5	6	5	5	5	5	4		
												SFM	55	50	50	45	50	50	45	50	45	45		
8-9	8-9	9	9	9	8	8	7	7	6	6	5													
												IPT	.0001	.0003	.0010	.0019	.0025	.0029	.0031	.0039	.0037	.0038		
												RPM	2200	1600	800	450	400	350	280	220	180	160		
												IPM	1	1	2	3	3	3	3	3	2	2		
												SFM	110	105	105	90	105	105	90	105	105	105		
												IPT	.0001	.0003	.0010	.0020	.0025	.0025	.0032	.0039	.0039	.0039		
10	10	11	11	11	10	10	9	9	8	8	7													
												RPM	4500	3200	1600	900	800	700	560	450	400	350		
												IPM	2	3	5	5	6	5	5	5	5	4		
												SFM	55	50	50	45	50	50	45	50	45	45		
												IPT	.0001	.0003	.0010	.0019	.0025	.0029	.0031	.0039	.0037	.0038		
												RPM	2200	1600	800	450	400	350	280	220	180	160		
11.1	11.1	12	12	12	11	11	10	10	9	9	8													
												IPM	1	1	2	3	3	3	3	3	2	2		
												SFM	295	360	365	305	325	325	325	320	315	325		
												IPT	.0003	.0005	.0011	.0025	.0030	.0032	.0035	.0042	.0046	.0048		
												RPM	12000	11000	5600	3100	2500	2200	2000	1400	1200	1100		
												IPM	9	15	19	24	22	21	21	18	17	16		
<b>N</b>	21-22	Aluminum-wrought alloy	1.0D	0.5D	SFM	295	360	365	305	325	325	325	320	315	325									
					IPT	.0003	.0005	.0011	.0025	.0030	.0032	.0035	.0042	.0046	.0048									
					RPM	12000	11000	5600	3100	2500	2200	2000	1400	1200	1100									
					IPM	9	15	19	24	22	21	21	18	17	16									



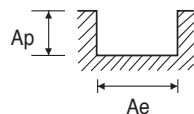
※ The Feed, in long & extra long types, should be reduced by around 50%.

CBN END MILLS  
i-Xmill END MILLS  
i-SMART MODULAR END MILLS  
X5070 END MILLS  
4G MILL END MILLS  
X-POWER PRO END MILLS  
TiAlN-coated END MILLS  
JET-POWER END MILLS  
V7 PLUS A END MILLS  
V7 MILL INOX  
ALU-POWER HPC END MILLS  
ALU-POWER END MILLS  
D-POWER GRAPHITE END MILLS  
STANDARD CARBIDE  
ONLY ONE COATED PM60 END MILLS  
SINE-POWER  
TANK-POWER END MILLS  
STANDARD COBALT & HSS  
TECHNICAL DATA

CBN END MILLS  
i-Xmill END MILLS  
i-SMART MODULAR END MILLS  
X5070 END MILLS  
4G MILL END MILLS  
X-POWER PRO END MILLS  
TiAlN-coated END MILLS  
JET-POWER END MILLS  
V7 PLUS A END MILLS  
V7 MILL INOX  
ALU-POWER HPC END MILLS  
ALU-POWER END MILLS  
D-POWER GRAPHITE END MILLS  
STANDARD CARBIDE  
ONLY ONE COATED PM60 END MILLS  
SINE-POWER  
TANK-POWER END MILLS  
STANDARD COBALT & HSS  
TECHNICAL DATA

**E2160, E2161** SERIES **TiN Coated 3 FLUTE - SLOTTING**

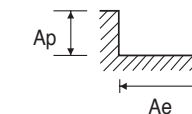
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)												
						3/32	1/8	1/4	3/8	1/2	9/16	5/8	7/8	1	1-1/8	1-3/16		
P	1	Non-alloy steel	1.0D	0.5D	SFM	165	135	140	130	140	125	125	135	140	125	130		
					IPT	.0001	.0003	.0010	.0018	.0024	.0031	.0032	.0040	.0040	.0043	.0039		
					RPM	6720	4200	2160	1320	1080	840	760	600	540	430	420		
					IPM	3	4	6	7	8	8	7	6	6	6	5		
	2		SFM	135	125	125	105	125	100	100	125	125	125	110				
			IPT	.0001	.0003	.0010	.0020	.0025	.0032	.0036	.0040	.0039	.0039	.0038				
			RPM	5400	3840	1920	1080	960	670	600	540	480	420	370				
			IPM	2	3	6	6	7	6	6	6	6	5	4				
	3-4		SFM	120	100	95	95	100	80	80	95	95	100	90				
			IPT	.0002	.0003	.0010	.0019	.0025	.0030	.0034	.0039	.0038	.0037	.0040				
			RPM	4800	3000	1440	960	760	540	480	420	370	340	300				
IPM		2	3	4	6	6	5	5	5	4	4	4						
5	SFM	65	65	65	55	65	50	50	60	55	55	55						
	IPT	.0001	.0002	.0010	.0019	.0025	.0031	.0034	.0039	.0037	.0038	.0038						
	RPM	2640	1920	960	540	480	340	300	260	220	190	190						
	IPM	1	1	3	3	4	3	3	3	2	2	2						
6	SFM	135	125	125	105	125	100	100	125	125	125	110						
	IPT	.0001	.0003	.0010	.0020	.0025	.0032	.0036	.0040	.0039	.0039	.0038						
	RPM	5400	3840	1920	1080	960	670	600	540	480	420	370						
	IPM	2	3	6	6	7	6	6	6	6	5	4						
7	SFM	120	100	95	95	100	80	80	95	95	100	90						
	IPT	.0002	.0003	.0010	.0019	.0025	.0030	.0034	.0039	.0038	.0037	.0040						
	RPM	4800	3000	1440	960	760	540	480	420	370	340	300						
	IPM	2	3	4	6	6	5	5	5	4	4	4						
8-9	SFM	65	65	65	55	65	50	50	60	55	55	55						
	IPT	.0001	.0002	.0010	.0019	.0025	.0031	.0034	.0039	.0037	.0038	.0038						
	RPM	2640	1920	960	540	480	340	300	260	220	190	190						
	IPM	1	1	3	3	4	3	3	3	2	2	2						
10	SFM	135	125	125	105	125	100	100	125	125	125	110						
	IPT	.0001	.0003	.0010	.0020	.0025	.0032	.0036	.0040	.0039	.0039	.0038						
	RPM	5400	3840	1920	1080	960	670	600	540	480	420	370						
	IPM	2	3	6	6	7	6	6	6	6	5	4						
11.1	SFM	65	65	65	55	65	50	50	60	55	55	55						
	IPT	.0001	.0002	.0010	.0019	.0025	.0031	.0034	.0039	.0037	.0038	.0038						
	RPM	2640	1920	960	540	480	340	300	260	220	190	190						
	IPM	1	1	3	3	4	3	3	3	2	2	2						
21-22	Aluminum-wrought alloy	SFM	355	430	440	365	395	355	355	385	375	390	390					
		IPT	.0003	.0005	.0011	.0025	.0030	.0035	.0039	.0042	.0046	.0048	.0048					
		RPM	14400	13200	6720	3720	3000	2400	2160	1680	1440	1320	1320					
		IPM	11	18	22	28	27	25	25	21	20	19	19					
23-25	Aluminum-cast, alloyed	SFM	355	430	440	365	395	355	355	385	375	390	390					
		IPT	.0003	.0005	.0011	.0025	.0030	.0035	.0039	.0042	.0046	.0048	.0048					
		RPM	14400	13200	6720	3720	3000	2400	2160	1680	1440	1320	1320					
		IPM	11	18	22	28	27	25	25	21	20	19	19					



※ The Feed, in long & extra long types, should be reduced by around 50%.

**E2160, E2161** SERIES **TiCN Coated 3 FLUTE - SLOTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)												
						3/32	1/8	1/4	3/8	1/2	9/16	5/8	7/8	1	1-1/8			
P	1	Non-alloy steel	1.0D	0.5D	SFM	180	150	155	140	155	155	150	150	155	155			
					IPT	.0001	.0003	.0010	.0018	.0024	.0027	.0031	.0040	.0039	.0044			
					RPM	7280	4550	2340	1430	1170	1040	910	650	590	520			
					IPM	3	4	7	8	9	9	8	7	7				
	2		SFM	145	75	135	115	135	135	120	135	135	135					
			IPT	.0001	.0005	.0010	.0020	.0025	.0025	.0032	.0039	.0039	.0039					
			RPM	5850	2340	2080	1170	1040	910	730	590	520	460					
			IPM	2	3	6	7	8	7	7	7	6	5					
	3-4		SFM	130	105	100	100	105	105	95	105	105	105					
			IPT	.0001	.0003	.0010	.0020	.0025	.0028	.0030	.0039	.0038	.0039					
			RPM	5200	3250	1560	1040	820	730	590	460	400	360					
IPM		2	3	5	6	6	6	5	5	5	4							
5	SFM	70	70	70	55	70	65	60	65	60	60							
	IPT	.0001	.0003	.0010	.0019	.0024	.0028	.0031	.0040	.0037	.0037							
	RPM	2860	2080	1040	590	520	460	360	290	230	210							
	IPM	1	2	3	3	4	4	3	3	3	2							
6	SFM	145	75	135	115	135	135	120	135	135	135							
	IPT	.0001	.0005	.0010	.0020	.0025	.0025	.0032	.0039	.0039	.0039							
	RPM	5850	2340	2080	1170	1040	910	730	590	520	460							
	IPM	2	3	6	7	8	7	7	7	6	5							
7	SFM	130	105	100	100	105	105	95	105	105	105							
	IPT	.0001	.0003	.0010	.0020	.0025	.0028	.0030	.0039	.0038	.0039							
	RPM	5200	3250	1560	1040	820	730	590	460	400	360							
	IPM	2	3	5	6	6	6	5	5	5	4							
8-9	SFM	70	70	70	55	70	65	60	65	60	60							
	IPT	.0001	.0003	.0010	.0019	.0024	.0028	.0031	.0040	.0037	.0037							
	RPM	2860	2080	1040	590	520	460	360	290	230	210							
	IPM	1	2	3	3	4	4	3	3	3	2							
10	SFM	145	75	135	115	135	135	120	135	135	135							
	IPT	.0001	.0005	.0010	.0020	.0025	.0025	.0032	.0039	.0039	.0039							
	RPM	5850	2340	2080	1170	1040	910	730	590	520	460							
	IPM	2	3	6	7	8	7	7	7	6	5							
11.1	SFM	70	70	70	55	70	65	60	65	60	60							
	IPT	.0001	.0003	.0010	.0019	.0024	.0028	.0031	.0040	.0037	.0037							
	RPM	2860	2080	1040	590	520	460	360	290	230	210							
	IPM	1	2	3	3	4	4	3	3	3	2							
21-22	Aluminum-wrought alloy	SFM	385	470	475	395	425	420	425	415	410	420						
		IPT	.0003	.0005	.0011	.0025	.0030	.0032	.0035	.0042	.0046	.0048						
		RPM	15600	14300	7280	4030	3250	2860	2600	1820	1560	1430						
		IPM	12	20	24	31	29	27	27	23	22	21						
23-25	Aluminum-cast, alloyed	SFM	385	470	475	395	425	420	425	415	410	420						
		IPT	.0003	.0005	.0011	.0025	.0030	.0032	.0035	.0042	.0046	.0048						
		RPM	15600	14300	7280	4030	3250	2860	2600	1820	1560	1430						
		IPM	12	20	24	31	29	27	27	23	22	21						

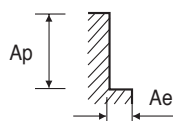


※ The Feed, in long & extra long types, should be reduced by around 50%.



E2160, E2161 SERIES 3 FLUTE - SIDE CUTTING

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) (3/32, 1/8, 5/32, 3/16, 1/4, 5/16, 3/8, 1/2, 9/16, 5/8, 11/16, 13/16, 7/8, 1, 1-1/8, 1-3/16). Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and Aluminum-wrought/alloyed.

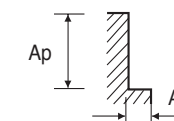


\* The Feed, in long & extra long types, should be reduced by around 50%.



E2160, E2161 SERIES TiN Coated 3 FLUTE - SIDE CUTTING

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) (3/32, 1/8, 1/4, 3/8, 1/2, 9/16, 5/8, 11/16, 7/8, 1, 1-1/8). Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and Aluminum-wrought/alloyed.

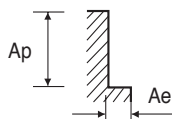


\* The Feed, in long & extra long types, should be reduced by around 50%.



**E2160, E2161 SERIES TiCN Coated 3 FLUTE - SIDE CUTTING**

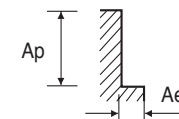
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)																	
						3/32	1/8	1/4	5/16	1/2	9/16	5/8	11/16	7/8	1	1-1/8							
						SFM	IPT	RPM	IPM	SFM	IPT	RPM	IPM	SFM	IPT	RPM	IPM	SFM	IPT	RPM	IPM	SFM	IPT
P	1	Non-alloy steel	0.1D	1.5D	SFM	180	150	145	150	155	155	150	145	150	155	155							
					IPT	.0001	.0003	.0010	.0014	.0024	.0027	.0031	.0032	.0040	.0039	.0039							
					RPM	7280	4550	2240	1820	1170	1040	910	820	650	590	520							
	2		SFM	145	135	135	115	135	120	115	135	135	135	135									
			IPT	.0001	.0002	.0009	.0012	.0022	.0022	.0028	.0031	.0035	.0036	.0035									
			RPM	5850	4160	2080	1430	1040	910	730	650	590	520	460									
	3-4		SFM	130	105	100	95	105	95	95	105	105	105	105									
			IPT	.0001	.0002	.0007	.0011	.0019	.0021	.0026	.0026	.0029	.0028	.0029									
			RPM	5200	3250	1560	1170	820	730	590	520	460	400	360									
	5		SFM	70	70	70	60	70	65	60	60	65	60	60									
			IPT	.0001	.0002	.0007	.0012	.0019	.0021	.0026	.0026	.0029	.0028	.0029									
RPM		2860	2080	1040	730	520	460	360	330	290	230	210											
6	SFM	145	135	135	115	135	120	115	135	135	135	135											
	IPT	.0001	.0002	.0009	.0012	.0022	.0022	.0028	.0031	.0035	.0036	.0035											
	RPM	5850	4160	2080	1430	1040	910	730	650	590	520	460											
7	SFM	130	105	100	95	105	95	95	105	105	105	105											
	IPT	.0001	.0002	.0007	.0011	.0019	.0021	.0026	.0026	.0029	.0028	.0029											
	RPM	5200	3250	1560	1170	820	730	590	520	460	400	360											
8-9	SFM	70	70	70	60	70	65	60	60	65	60	60											
	IPT	.0001	.0002	.0007	.0012	.0019	.0021	.0026	.0026	.0029	.0028	.0029											
	RPM	2860	2080	1040	730	520	460	360	330	290	230	210											
10	SFM	145	135	135	115	135	120	115	135	135	135	135											
	IPT	.0001	.0002	.0009	.0012	.0022	.0022	.0028	.0031	.0035	.0036	.0035											
	RPM	5850	4160	2080	1430	1040	910	730	650	590	520	460											
11.1	SFM	70	70	70	60	70	65	60	60	65	60	60											
	IPT	.0001	.0002	.0007	.0012	.0019	.0021	.0026	.0026	.0029	.0028	.0029											
	RPM	2860	2080	1040	730	520	460	360	330	290	230	210											
21-22	SFM	385	470	475	425	425	420	425	420	415	410	420											
	IPT	.0002	.0003	.0008	.0014	.0023	.0024	.0026	.0029	.0032	.0035	.0036											
	RPM	15600	14300	7280	5200	3250	2860	2600	2340	1820	1560	1430											
23-25	SFM	385	470	475	425	425	420	425	420	415	410	420											
	IPT	.0002	.0003	.0008	.0014	.0023	.0024	.0026	.0029	.0032	.0035	.0036											
	RPM	15600	14300	7280	5200	3250	2860	2600	2340	1820	1560	1430											



※ The Feed, in long & extra long types, should be reduced by around 50%.

**E2120, E2121 SERIES MULTI FLUTE - SIDE CUTTING**

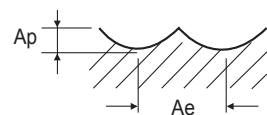
ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)															
				1/4	1/4	5/8	5/8	3/4	3/4	1	1	1-1/2	1-1/2	2	2				
				Ae	0.08D	0.32D	0.03D	0.3D	0.03D	0.35D	0.02D	0.3D	0.13D	0.05D	0.01D	0.8D			
P	1-5	Non-alloy steel	SFM	120	105	125	105	100	90	120	105	110	95	115	100				
			IPT	.0007	.0008	.0013	.0015	.0016	.0019	.0016	.0018	.0022	.0026	.0025	.0029				
			RPM	1840	1600	750	650	520	450	460	400	280	240	220	190				
			IPM	4	4	3	3	3	3	3	3	3	3	2	2				
			6-9	Low alloy steel	SFM	120	105	125	105	100	90	120	105	110	95	115	100		
					IPT	.0007	.0008	.0013	.0015	.0016	.0019	.0016	.0018	.0022	.0026	.0025	.0029		
	RPM	1840			1600	750	650	520	450	460	400	280	240	220	190				
	IPM	4			4	3	3	3	3	3	3	3	3	2	2				
	10-11	High alloyed steel, and tool steel			SFM	80	45	75	65	75	65	75	65	65	60	75	65		
					IPT	.0006	.0011	.0014	.0017	.0016	.0019	.0016	.0018	.0021	.0023	.0023	.0027		
			RPM	1250	650	460	400	370	320	290	250	170	150	140	120				
			IPM	2	2	2	2	2	2	2	2	1	1	1	1				
M			Stainless steel	SFM	65	35	65	55	60	50	65	55	60	50	60	50			
				IPT	.0006	.0010	.0012	.0014	.0016	.0018	.0015	.0017	.0022	.0025	.0024	.0028			
	RPM	980		510	390	340	300	260	240	210	150	130	120	100					
	IPM	2		2	1	1	1	1	1	1	1	1	1	1					
	K	Grey cast iron		SFM	135	70	135	120	125	110	135	115	125	110	135	120			
				IPT	.0008	.0014	.0016	.0019	.0022	.0025	.0021	.0024	.0028	.0032	.0028	.0032			
RPM			2050	1100	840	730	630	550	510	440	320	280	260	230					
IPM			5	5	4	4	4	4	4	4	4	4	3	3					
17-18			Nodular cast iron	SFM	135	70	135	120	125	110	135	115	125	110	135	120			
				IPT	.0008	.0014	.0016	.0019	.0022	.0025	.0021	.0024	.0028	.0032	.0028	.0032			
	RPM	2050		1100	840	730	630	550	510	440	320	280	260	230					
	IPM	5		5	4	4	4	4	4	4	4	4	3	3					
	19-20	Low alloy steel		SFM	135	70	135	120	125	110	135	115	125	110	135	120			
				IPT	.0008	.0014	.0016	.0019	.0022	.0025	.0021	.0024	.0028	.0032	.0028	.0032			
RPM			2050	1100	840	730	630	550	510	440	320	280	260	230					
IPM			5	5	4	4	4	4	4	4	4	4	3	3					



※ The Feed, in long & extra long types, should be reduced by around 50%.

**E2110, E1110, E2111, E1111, E2112, E1112** SERIES **2 FLUTE BALL NOSE- PROFILE MILLING**

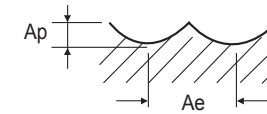
Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) [1/8, 5/32, 1/4, 5/6, 3/8, 1/2, 5/8, 3/4, 1]. Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and Aluminum-wrought/Aluminum-cast alloys.



※ The Feed, in long & extra long types, should be reduced by around 50%.

**E2110, E1110, E2111, E1111, E2112, E1112** SERIES **TiN Coated 2 FLUTE BALL NOSE- PROFILE MILLING**

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) [1/8, 5/32, 1/4, 5/6, 3/8, 1/2, 5/8, 3/4, 1]. Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and Aluminum-wrought/Aluminum-cast alloys.

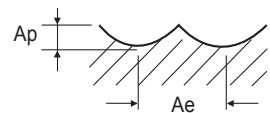


※ The Feed, in long & extra long types, should be reduced by around 50%.

**E2110, E1110, E2111, E1111, E2112, E1112** SERIES

**TiCN Coated**  
**2 FLUTE BALL NOSE - PROFILE MILLING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)									
						1/8	5/32	1/4	5/6	3/8	1/2	5/8	3/4	1	
P	1	Non-alloy steel	0.7D	0.3D	SFM	190	170	185	455	165	170	170	155	170	
					IPT	.0004	.0007	.0012	.0020	.0027	.0034	.0038	.0046	.0051	
					RPM	5850	4160	2860	2080	1690	1300	1040	780	650	
					IPM	5	6	7	8	9	9	8	7	7	
					SFM	145	130	145	340	130	135	130	130	135	
	IPT		.0004	.0006	.0010	.0017	.0023	.0025	.0033	.0034	.0035				
	RPM		4420	3120	2210	1560	1300	1040	780	650	520				
	IPM		4	4	5	5	6	5	5	4	4				
	SFM		85	75	85	200	70	75	75	75	75				
	IPT		.0003	.0005	.0009	.0014	.0021	.0025	.0032	.0033	.0037				
RPM	2600	1820	1300	910	730	590	460	390	290						
IPM	2	2	2	3	3	3	3	3	2						
SFM	60	55	60	140	50	55	55	50	55						
IPT	.0003	.0005	.0007	.0012	.0017	.0022	.0028	.0034	.0038						
RPM	1820	1300	910	650	520	420	330	260	210						
IPM	1	1	1	2	2	2	2	2	2						
SFM	145	130	145	340	130	135	130	130	135						
IPT	.0004	.0006	.0010	.0017	.0023	.0025	.0033	.0034	.0035						
RPM	4420	3120	2210	1560	1300	1040	780	650	520						
IPM	4	4	5	5	6	5	5	4	4						
SFM	85	75	85	200	70	75	75	75	75						
IPT	.0003	.0005	.0009	.0014	.0021	.0025	.0032	.0033	.0037						
RPM	2600	1820	1300	910	730	590	460	390	290						
IPM	2	2	2	3	3	3	3	3	2						
SFM	60	55	60	140	50	55	55	50	55						
IPT	.0003	.0005	.0007	.0012	.0017	.0022	.0028	.0034	.0038						
RPM	1820	1300	910	650	520	420	330	260	210						
IPM	1	1	1	2	2	2	2	2	2						
SFM	145	130	145	340	130	135	130	130	135						
IPT	.0004	.0006	.0010	.0017	.0023	.0025	.0033	.0034	.0035						
RPM	4420	3120	2210	1560	1300	1040	780	650	520						
IPM	4	4	5	5	6	5	5	4	4						
SFM	60	55	60	140	50	55	55	50	55						
IPT	.0003	.0005	.0007	.0012	.0017	.0022	.0028	.0034	.0038						
RPM	1820	1300	910	650	520	420	330	260	210						
IPM	1	1	1	2	2	2	2	2	2						
SFM	145	130	145	340	130	135	130	130	135						
IPT	.0004	.0006	.0010	.0017	.0023	.0025	.0033	.0034	.0035						
RPM	4420	3120	2210	1560	1300	1040	780	650	520						
IPM	4	4	5	5	6	5	5	4	4						
SFM	60	55	60	140	50	55	55	50	55						
IPT	.0003	.0005	.0007	.0012	.0017	.0022	.0028	.0034	.0038						
RPM	1820	1300	910	650	520	420	330	260	210						
IPM	1	1	1	2	2	2	2	2	2						
SFM	470	425	475	1135	410	425	425	410	440						
IPT	.0004	.0006	.0008	.0017	.0022	.0027	.0029	.0036	.0038						
RPM	14300	10400	7280	5200	4160	3250	2600	2080	1690						
IPM	12	13	12	18	19	17	15	15	13						
SFM	470	425	475	1135	410	425	425	410	440						
IPT	.0004	.0006	.0008	.0017	.0022	.0027	.0029	.0036	.0038						
RPM	14300	10400	7280	5200	4160	3250	2600	2080	1690						
IPM	12	13	12	18	19	17	15	15	13						

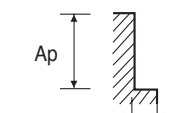


※ The Feed, in long & extra long types, should be reduced by around 50%.

**E2031, E1031, E2034, E1034, E2036, E1036, E2051, E1051, E2039, E1039, E2040, E1040, E2041, E1041, E2053, E1053** SERIES

**4 FLUTE - SIDE CUTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)											
						1/8	1/4	3/8	1/2	5/8	3/4	13/16	15/16	1	1 1/2	1 3/4	2
P	1	Non-alloy steel	0.1D	1.5D	SFM	115	120	110	120	115	125	105	125	120	120	145	
					IPT	.0003	.0010	.0018	.0025	.0032	.0032	.0040	.0040	.0039	.0040	.0045	.0045
					RPM	3500	1800	1100	900	700	630	500	500	450	310	280	280
					IPM	4	7	8	9	9	8	8	8	7	5	5	5
					SFM	105	105	90	105	90	100	95	110	105	100	100	100
	IPT		.0002	.0009	.0017	.0022	.0027	.0030	.0033	.0033	.0038	.0040	.0045	.0053			
	RPM		3200	1600	900	800	560	500	450	450	400	250	220	190			
	IPM		3	6	6	7	6	6	6	6	4	4	4	4			
	SFM		80	80	80	80	75	80	75	85	80	80	70	60			
	IPT		.0002	.0008	.0016	.0020	.0022	.0025	.0029	.0029	.0032	.0025	.0033	.0045			
RPM	2500	1200	800	630	450	400	350	350	310	200	150	110					
IPM	2	4	5	5	4	4	4	4	4	2	2	2					
SFM	50	50	45	50	45	50	45	55	45	45	50	40					
IPT	.0002	.0006	.0017	.0019	.0027	.0030	.0034	.0034	.0028	.0021	.0023	.0031					
RPM	1600	800	450	400	280	250	220	220	180	120	110	80					
IPM	1	2	3	3	3	3	3	3	2	1	1	1					
SFM	105	105	90	105	90	100	95	110	105	100	100	100					
IPT	.0002	.0009	.0017	.0022	.0027	.0030	.0033	.0033	.0038	.0040	.0045	.0053					
RPM	3200	1600	900	800	560	500	450	450	400	250	220	190					
IPM	3	6	6	7	6	6	6	6	4	4	4	4					
SFM	50	50	45	50	45	50	45	55	45	45	50	40					
IPT	.0002	.0006	.0017	.0019	.0027	.0030	.0034	.0034	.0028	.0021	.0023	.0031					
RPM	1600	800	450	400	280	250	220	220	180	120	110	80					
IPM	1	2	3	3	3	3	3	3	2	1	1	1					
SFM	360	365	305	325	325	355	300	345	315	355	365	330					
IPT	.0003	.0008	.0019	.0022	.0026	.0029	.0032	.0032	.0035	.0036	.0038	.0048					
RPM	11000	5600	3100	2500	2000	1800	1400	1400	1200	900	800	630					
IPM	15	19	24	22	21	21	18	18	17	13	12	12					



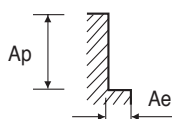
※ The Feed, in long & extra long types, should be reduced by around 50%.



**E2031, E1031, E2034, E1034, E2036, E1036, E2051, E1051, E2039, E1039, E2040, E1040, E2041, E1041, E2053, E1053** SERIES

**TiN Coated 4 FLUTE - SIDE CUTTING**

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) [1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 13/16, 15/16, 1, 1 1/2, 1 3/4, 2]. Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and Aluminum-wrought/cast alloy.

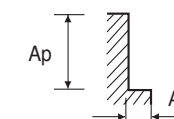


※ The Feed, in long & extra long types, should be reduced by around 50%.

**E2031, E1031, E2034, E1034, E2036, E1036, E2051, E1051, E2039, E1039, E2040, E1040, E2041, E1041, E2053, E1053** SERIES

**TiCN Coated 4 FLUTE - SIDE CUTTING**

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) [1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 13/16, 15/16, 1, 1 1/2, 1 3/4, 2]. Rows include Non-alloy steel, Low alloy steel, High alloyed steel, and Aluminum-wrought/cast alloy.

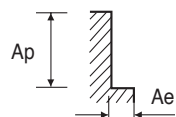


※ The Feed, in long & extra long types, should be reduced by around 50%.

**E2032, E1032, E2035, E1035, E2037, E1037, E2042, E1042, E2162, E1162, E2175, E1175, E2100, E1100** SERIES

**6 & 8 FLUTE - SIDE CUTTING**

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) (1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 13/16, 15/16, 1, 1 1/2, 1 3/4, 2 (6 & 8 FL)), SFM, IPT, RPM, IPM.

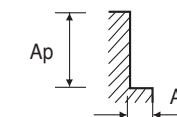


※ The Feed, in long & extra long types, should be reduced by around 50%.

**E2032, E1032, E2035, E1035, E2037, E1037, E2042, E1042, E2162, E1162, E2175, E1175, E2100, E1100** SERIES

**TiN Coated 6 & 8 FLUTE - SIDE CUTTING**

Table with columns: ISO, VDI 3323, Material Description, Ae, Ap, Parameter, Diameter (Ø) (1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 13/16, 15/16, 1, 1 1/2, 1 3/4, 2 (6 & 8 FL)), SFM, IPT, RPM, IPM.



※ The Feed, in long & extra long types, should be reduced by around 50%.

CBN END MILLS  
i-Xmill END MILLS  
i-SMART MODULAR END MILLS  
X5070 END MILLS  
4G MILL END MILLS  
X-POWER PRO END MILLS  
TiAlN-POWER END MILLS  
JET-POWER END MILLS  
V7 PLUS A END MILLS  
V7 MILL INOX  
ALU-POWER HPC END MILLS  
ALU-POWER END MILLS  
D-POWER GRAPHITE END MILLS  
STANDARD CARBIDE  
ONLY ONE COATED PM60 END MILLS  
SINE-POWER  
TANK-POWER END MILLS  
STANDARD COBALT & HSS

CBN END MILLS  
i-Xmill END MILLS  
i-SMART MODULAR END MILLS  
X5070 END MILLS  
4G MILL END MILLS  
X-POWER PRO END MILLS  
TiAlN-POWER END MILLS  
JET-POWER END MILLS  
V7 PLUS A END MILLS  
V7 MILL INOX  
ALU-POWER HPC END MILLS  
ALU-POWER END MILLS  
D-POWER GRAPHITE END MILLS  
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TANK-POWER END MILLS  
STANDARD COBALT & HSS

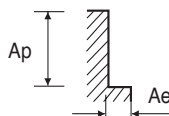
TECHNICAL DATA

TECHNICAL DATA

**E2032, E1032, E2035, E1035, E2037, E1037, E2042, E1042, E2162, E1162, E2175, E1175, E2100, E1100** SERIES

**TiCN Coated 6 & 8 FLUTE - SIDE CUTTING**

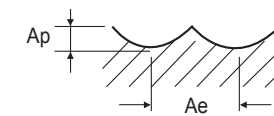
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)											
						1/8	1/4	3/8	1/2	5/8	3/4	13/16	15/16	1	1 1/2	1 3/4	2 (6 & 8 FL)
P	1	Non-alloy steel	0.1D	1.5D	SFM	150	155	140	155	150	160	140	160	155	160	165	190
					IPT	.0002	.0006	.0012	.0016	.0020	.0020	.0026	.0026	.0025	.0025	.0028	.0028 / .0021
					RPM	4550	2340	1430	1170	910	820	650	650	590	400	360	360
	2		SFM	135	135	115	135	120	130	125	145	135	130	130	130		
			IPT	.0002	.0006	.0011	.0014	.0018	.0021	.0023	.0023	.0022	.0025	.0029	.0033 / .0025		
			RPM	4160	2090	1170	1040	730	650	590	590	520	330	290	250		
	3-4		SFM	105	100	100	105	95	100	95	110	105	100	105	75		
			IPT	.0002	.0005	.0010	.0012	.0014	.0016	.0018	.0018	.0021	.0019	.0022	.0024 / .0018		
			RPM	3250	1560	1040	820	590	520	460	460	400	260	230	140		
	5		SFM	70	70	55	70	60	65	60	70	60	60	65	55		
			IPT	.0002	.0005	.0008	.0013	.0014	.0015	.0017	.0017	.0022	.0021	.0024	.0017 / .0013		
RPM		2080	1040	590	520	360	330	290	290	230	160	140	100				
6	SFM	135	135	115	135	120	130	125	145	135	130	130	130				
	IPT	.0002	.0006	.0011	.0014	.0018	.0021	.0023	.0023	.0022	.0025	.0029	.0033 / .0025				
	RPM	4160	2090	1170	1040	730	650	590	590	520	330	290	250				
7	SFM	105	100	100	105	95	100	95	110	105	100	105	75				
	IPT	.0002	.0005	.0010	.0012	.0014	.0016	.0018	.0018	.0021	.0019	.0022	.0024 / .0018				
	RPM	3250	1560	1040	820	590	520	460	460	400	260	230	140				
8-9	SFM	70	70	55	70	60	65	60	70	60	60	65	55				
	IPT	.0002	.0005	.0008	.0013	.0014	.0015	.0017	.0017	.0022	.0021	.0024	.0017 / .0013				
	RPM	2080	1040	590	520	360	330	290	290	230	160	140	100				
10	SFM	135	135	115	135	120	130	125	145	135	130	130	130				
	IPT	.0002	.0006	.0011	.0014	.0018	.0021	.0023	.0023	.0022	.0025	.0029	.0033 / .0025				
	RPM	4160	2090	1170	1040	730	650	590	590	520	330	290	250				
11.1	SFM	70	70	55	70	60	65	60	70	60	60	65	55				
	IPT	.0002	.0005	.0008	.0013	.0014	.0015	.0017	.0017	.0022	.0021	.0024	.0017 / .0013				
	RPM	2080	1040	590	520	360	330	290	290	230	160	140	100				
21-22	SFM	470	475	395	425	425	460	385	445	410	460	475	545				
	IPT	.0002	.0005	.0013	.0015	.0017	.0019	.0021	.0021	.0024	.0024	.0024	.0024 / .0018				
	RPM	14300	7280	4030	3250	2600	2340	1820	1820	1560	1170	1040	1040				
23-25	SFM	470	475	395	425	425	460	385	445	410	460	475	545				
	IPT	.0002	.0005	.0013	.0015	.0017	.0019	.0021	.0021	.0024	.0024	.0024	.0024 / .0018				
	RPM	14300	7280	4030	3250	2600	2340	1820	1820	1560	1170	1040	1040				



※ The Feed, in long & extra long types, should be reduced by around 50%.

**E2020, E2021, E2069** SERIES **4 FLUTE BALL NOSE- PROFILE MILLING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)						
						1/4	5/16	3/8	1/2	5/8	3/4	1
P	1	Non-alloy steel	0.7D	0.3D	SFM	145	130	130	130	130	120	130
					IPT	.0009	.0014	.0021	.0025	.0028	.0033	.0040
					RPM	2200	1600	1300	1000	800	600	500
	2		SFM	110	100	100	105	100	100	105		
			IPT	.0007	.0013	.0018	.0019	.0025	.0025	.0025		
			RPM	1700	1200	1000	800	600	500	400		
	3-4		SFM	65	55	55	60	55	60	60		
			IPT	.0008	.0011	.0018	.0017	.0021	.0025	.0023		
			RPM	1000	700	560	450	350	300	220		
	5		SFM	45	40	40	40	40	40	40		
			IPT	.0007	.0010	.0013	.0016	.0020	.0025	.0031		
RPM		700	500	400	320	250	200	160				
6	SFM	110	100	100	105	100	100	105				
	IPT	.0007	.0013	.0018	.0019	.0025	.0025	.0025				
	RPM	1700	1200	1000	800	600	500	400				
7	SFM	65	55	55	60	55	60	60				
	IPT	.0008	.0011	.0018	.0017	.0021	.0025	.0023				
	RPM	1000	700	560	450	350	300	220				
8-9	SFM	45	40	40	40	40	40	40				
	IPT	.0007	.0010	.0013	.0016	.0020	.0025	.0031				
	RPM	700	500	400	320	250	200	160				
10	SFM	110	100	100	105	100	100	105				
	IPT	.0007	.0013	.0018	.0019	.0025	.0025	.0025				
	RPM	1700	1200	1000	800	600	500	400				
11.1	SFM	45	40	40	40	40	40	40				
	IPT	.0007	.0010	.0013	.0016	.0020	.0025	.0031				
	RPM	700	500	400	320	250	200	160				
21-22	SFM	365	325	315	325	325	315	340				
	IPT	.0008	.0013	.0016	.0020	.0023	.0027	.0029				
	RPM	5600	4000	3200	2500	2000	1600	1300				
23-25	SFM	365	325	315	325	325	315	340				
	IPT	.0008	.0013	.0016	.0020	.0023	.0027	.0029				
	RPM	5600	4000	3200	2500	2000	1600	1300				

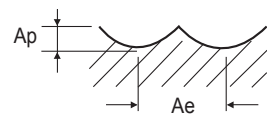


※ The Feed, in long & extra long types, should be reduced by around 50%.



### E2020, E2021, E2069 SERIES TiN Coated 4 FLUTE BALL NOSE- PROFILE MILLING

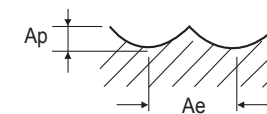
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)						
						1/4	5/16	3/8	1/2	5/8	3/4	1
P	1	Non-alloy steel	0.7D	0.3D	SFM	175	155	155	155	155	140	155
					IPT	.0009	.0014	.0021	.0025	.0029	.0035	.0042
					RPM	2640	1920	1560	1200	960	720	600
	IPM		10	11	13	12	11	10	10			
	2		SFM	135	120	120	125	120	120	125		
			IPT	.0007	.0014	.0019	.0021	.0024	.0025	.0026		
			RPM	2040	1440	1200	960	720	600	480		
	IPM		6	8	9	8	7	6	5			
	3-4		SFM	80	70	65	70	70	70	70		
			IPT	.0006	.0012	.0015	.0019	.0024	.0028	.0029		
			RPM	1200	840	670	540	420	360	260		
IPM	3	4	4	4	4	4	3					
5	SFM	55	50	45	50	50	45	50				
	IPT	.0006	.0008	.0010	.0013	.0017	.0021	.0026				
	RPM	840	600	480	380	300	240	190				
IPM	2	2	2	2	2	2	2					
6	SFM	135	120	120	125	120	120	125				
	IPT	.0007	.0014	.0019	.0021	.0024	.0025	.0026				
	RPM	2040	1440	1200	960	720	600	480				
IPM	6	8	9	8	7	6	5					
7	SFM	80	70	65	70	70	70	70				
	IPT	.0006	.0012	.0015	.0019	.0024	.0028	.0029				
	RPM	1200	840	670	540	420	360	260				
IPM	3	4	4	4	4	4	3					
8-9	SFM	55	50	45	50	50	45	50				
	IPT	.0006	.0008	.0010	.0013	.0017	.0021	.0026				
	RPM	840	600	480	380	300	240	190				
IPM	2	2	2	2	2	2	2					
10	SFM	135	120	120	125	120	120	125				
	IPT	.0007	.0014	.0019	.0021	.0024	.0025	.0026				
	RPM	2040	1440	1200	960	720	600	480				
IPM	6	8	9	8	7	6	5					
11.1	SFM	55	50	45	50	50	45	50				
	IPT	.0006	.0008	.0010	.0013	.0017	.0021	.0026				
	RPM	840	600	480	380	300	240	190				
IPM	2	2	2	2	2	2	2					
N	21-22	Aluminum-wrought alloy	0.7D	0.3D	SFM	440	395	375	395	395	375	410
					IPT	.0007	.0013	.0017	.0020	.0022	.0026	.0029
	RPM				6720	4800	3840	3000	2400	1920	1560	
	IPM				20	25	26	24	21	20	18	
23-25	Aluminum-cast, alloyed	SFM	440	395	375	395	395	375	410			
		IPT	.0007	.0013	.0017	.0020	.0022	.0026	.0029			
RPM	6720	4800	3840	3000	2400	1920	1560					
IPM	20	25	26	24	21	20	18					



※ The Feed, in long & extra long types, should be reduced by around 50%.

### E2020, E2021, E2069 SERIES TiN Coated 4 FLUTE BALL NOSE- PROFILE MILLING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)						
						1/4	5/16	3/8	1/2	5/8	3/4	1
P	1	Non-alloy steel	0.7D	0.3D	SFM	185	170	165	170	170	155	170
					IPT	.0009	.0014	.0021	.0025	.0029	.0035	.0038
					RPM	2860	2080	1690	1300	1040	780	650
	IPM		10	12	14	13	12	11	10			
	2		SFM	145	130	130	135	130	130	135		
			IPT	.0008	.0013	.0017	.0019	.0026	.0027	.0024		
			RPM	2210	1560	1300	1040	780	650	520		
	IPM		7	8	9	8	8	7	5			
	3-4		SFM	85	75	70	75	75	75	75		
			IPT	.0008	.0011	.0017	.0017	.0022	.0026	.0026		
			RPM	1300	910	730	590	460	390	290		
IPM	4	4	5	4	4	4	3					
5	SFM	60	55	50	55	55	50	55				
	IPT	.0005	.0008	.0014	.0018	.0023	.0029	.0024				
	RPM	910	650	520	420	330	260	210				
IPM	2	2	3	3	3	3	2					
6	SFM	145	130	130	135	130	130	135				
	IPT	.0008	.0013	.0017	.0019	.0026	.0027	.0024				
	RPM	2210	1560	1300	1040	780	650	520				
IPM	7	8	9	8	8	7	5					
7	SFM	85	75	70	75	75	75	75				
	IPT	.0008	.0011	.0017	.0017	.0022	.0026	.0026				
	RPM	1300	910	730	590	460	390	290				
IPM	4	4	5	4	4	4	3					
8-9	SFM	60	55	50	55	55	50	55				
	IPT	.0005	.0008	.0014	.0018	.0023	.0029	.0024				
	RPM	910	650	520	420	330	260	210				
IPM	2	2	3	3	3	3	2					
10	SFM	145	130	130	135	130	130	135				
	IPT	.0008	.0013	.0017	.0019	.0026	.0027	.0024				
	RPM	2210	1560	1300	1040	780	650	520				
IPM	7	8	9	8	8	7	5					
11.1	SFM	60	55	50	55	55	50	55				
	IPT	.0005	.0008	.0014	.0018	.0023	.0029	.0024				
	RPM	910	650	520	420	330	260	210				
IPM	2	2	3	3	3	3	2					
N	21-22	Aluminum-wrought alloy	0.7D	0.3D	SFM	475	425	410	425	425	410	440
					IPT	.0008	.0013	.0017	.0020	.0022	.0026	.0030
	RPM				7280	5200	4160	3250	2600	2080	1690	
	IPM				22	27	28	26	23	22	20	
23-25	Aluminum-cast, alloyed	SFM	475	425	410	425	425	410	440			
		IPT	.0008	.0013	.0017	.0020	.0022	.0026	.0030			
RPM	7280	5200	4160	3250	2600	2080	1690					
IPM	22	27	28	26	23	22	20					



※ The Feed, in long & extra long types, should be reduced by around 50%.

**E2001, E1001, E2003, E1003, E2005, E1005, E2002, E1002, E2004, E1004, E2006, E1006, E2008, E1008, E2013, E1013, E2015, E1015** SERIES

**MINIATURE**

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)																																						
				1/64	1/32	3/64	1/16	5/64	3/32	7/64	1/8	9/64	5/32	11/64	3/16																											
P	1-5	Non-alloy steel Low alloy steel	SFM	45	45~55	45~55	45~55	45~55	45~55	45~55	45~55	45~55	45~55	45~55	45~55	RPM	11000 up	5500~5600	3670~4400	2750~3300	2200~2640	1840~2200	1570~1890	1380~1650	1220~1470	1100~1320	1000~1200	920~1100	IPM	0.5	0.6	0.6	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.2	1.4	
			SFM	45	45~55	45~55	45~55	45~55	45~55	45~55	45~55	45~55	45~55	45~55	45~55	45~55	RPM	11000 up	5500~5600	3670~4400	2750~3300	2200~2640	1840~2200	1570~1890	1380~1650	1220~1470	1100~1320	1000~1200	920~1100	IPM	0.5	0.6	0.6	1.0	1.0	1.0	1.0	1.0	1.1	1.2	1.4	
	6-9	Low alloy steel	SFM	45	45~55	45~55	45~55	45~55	45~55	45~55	45~55	45~55	45~55	45~55	45~55	RPM	11000 up	5500~5600	3670~4400	2750~3300	2200~2640	1840~2200	1570~1890	1380~1650	1220~1470	1100~1320	1000~1200	920~1100	IPM	0.5	0.6	0.6	1.0	1.0	1.0	1.0	1.0	1.1	1.2	1.4		
			SFM	25~35	25~35	25~35	25~35	25~35	25~30	25~35	25~35	25~35	25~35	25~35	25~35	25~35	RPM	6600~8800	3300~4400	2200~2940	1650~2260	1320~1760	1100~1290	850~1260	830~1100	740~980	560~880	600~800	550~740	IPM	0.3	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.8	0.9	1.0
	10-11	High alloyed steel, and tool steel	SFM	25~35	25~35	25~35	25~35	25~35	25~30	25~35	25~35	25~35	25~35	25~35	25~35	RPM	6600~8800	3300~4400	2200~2940	1650~2260	1320~1760	1100~1290	850~1260	830~1100	740~980	560~880	600~800	550~740	IPM	0.3	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.8	0.9	1.0	
			SFM	25~35	25~35	25~35	25~35	25~35	25~30	25~35	25~35	25~35	25~35	25~35	25~35	RPM	6600~8800	3300~4400	2200~2940	1650~2260	1320~1760	1100~1290	850~1260	830~1100	740~980	560~880	600~800	550~740	IPM	0.3	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.8	0.9	1.0	
M	12-14	Stainless steel	SFM	25~35	25~35	25~35	25~35	25~35	25~30	25~35	25~35	25~35	25~35	25~35	RPM	6600~8800	3300~4400	2200~2940	1650~2260	1320~1760	1100~1290	850~1260	830~1100	740~980	560~880	600~800	550~740	IPM	0.3	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.8	0.9	1.0		
N	21-22	Aluminum-wrought alloy	SFM	45	90	135	180	175	180	180	180	180	180	180	180	RPM	11000 up	11000 up	11000 up	11000 up	8500 up	7330 up	5625 up	5500 up	4890~9780	4400~8800	3000~8000	3690~7340	IPM	1.5	2.5	2.6	4.2	4.2	4.2	4.3	4.5	4.5	4.5	4.6	4.7	
			SFM	45	90	135	180	175	180	180	180	180	180	180	180	180	RPM	11000 up	11000 up	11000 up	11000 up	8500 up	7330 up	5625 up	5500 up	4890~9780	4400~8800	3000~8000	3690~7340	IPM	1.5	2.5	2.6	4.2	4.2	4.2	4.3	4.5	4.5	4.5	4.6	4.7
	23-25	Aluminum-cast, alloyed	SFM	45	90	135	180	175	180	180	180	180	180	180	180	RPM	11000 up	11000 up	11000 up	11000 up	8500 up	7330 up	5625 up	5500 up	4890~9780	4400~8800	3000~8000	3690~7340	IPM	1.5	2.5	2.6	4.2	4.2	4.2	4.3	4.5	4.5	4.5	4.6	4.7	
			SFM	45	65~80	65~80	55~80	80	65~80	65~80	65~80	65~80	65~80	65~80	65~80	65~80	RPM	11000 up	7700~9900	5140~6600	3350~4950	3850~3960	2570~3300	2200~2830	1930~2480	1710~2200	1540~1980	1400~1800	1290~1650	IPM	0.8	1.6	2.5	3.3	3.3	3.3	3.3	3.3	3.4	3.6	3.7	3.3
	26-28	Copper and Copper Alloys (Bronze / Brass)	SFM	45	90	90~110	90~110	90~110	90~110	90~110	90~110	90~110	90~110	90~110	90~110	RPM	11000 up	11000 up	7335~8800	5500~6600	4400~5820	3665~4400	3140~3770	2750~3300	2445~3770	2205~2640	2000~2400	1535~2200	IPM	1.2	1.6	2.0	2.6	2.6	2.6	2.6	2.6	2.8	2.8	2.9	3.0	3.3
			SFM	45	90	90~110	90~110	90~110	90~110	90~110	90~110	90~110	90~110	90~110	90~110	RPM	11000 up	11000 up	7335~8800	5500~6600	4400~5820	3665~4400	3140~3770	2750~3300	2445~3770	2205~2640	2000~2400	1535~2200	IPM	1.2	1.6	2.0	2.6	2.6	2.6	2.6	2.6	2.8	2.8	2.9	3.0	3.3
30	Non Metallic Materials	SFM	45	90	90~110	90~110	90~110	90~110	90~110	90~110	90~110	90~110	90~110	90~110	RPM	11000 up	11000 up	7335~8800	5500~6600	4400~5820	3665~4400	3140~3770	2750~3300	2445~3770	2205~2640	2000~2400	1535~2200	IPM	1.2	1.6	2.0	2.6	2.6	2.6	2.6	2.6	2.8	2.8	2.9	3.0	3.3	
		SFM	45	45~55	45~55	45~55	45~55	45~55	45~55	45~55	45~55	45~55	45~55	45~55	RPM	11000 up	5500~5600	3670~4400	2750~3300	2200~2640	1840~2200	1570~1890	1380~1650	1220~1470	1100~1320	1000~1200	920~1100	IPM	0.5	0.6	0.6	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.2	1.4		
S	36	Titanium Alloys	SFM	25~35	25~35	25~35	25~35	25~35	25~30	25~35	25~35	25~35	25~35	25~35	RPM	6600~8800	3300~4400	2200~2940	1650~2260	1320~1760	1100~1290	850~1260	830~1100	740~980	560~880	600~800	550~740	IPM	0.3	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.8	0.9	1.0		
			SFM	25~35	25~35	25~35	25~35	25~35	25~30	25~35	25~35	25~35	25~35	25~35	25~35	RPM	6600~8800	3300~4400	2200~2940	1650~2260	1320~1760	1100~1290	850~1260	830~1100	740~980	560~880	600~800	550~740	IPM	0.3	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.8	0.9	1.0	

※ The Feed, in long & extra long types, should be reduced by around 50%.

**NOTES :**

- (1) The cutting conditions in this table are given for reference, which should be varied depending on the machine, tooling, depth of cut, cutting fluid and other conditons.
- (2) Use a holder of strong gripping force and machine of high stiffness

**E2086, E2085, E2079, E2077, E2170, E2171, E2172, E2241, E2195, E2197** SERIES

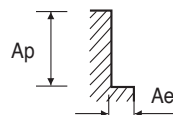
**MULTI FLUTE ROUGHING - SIDE CUTTING**

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)																																									
						1/4	5/16	3/8	1/2	5/8	11/16	7/8	1	1 1/8	1 1/4	1 3/8	1 3/4	2																													
P	1	Non-alloy steel	0.5D	1.5D	SFM	120	115	110	120	115	115	115	120	120	115	110	130	115	RPM	1800	1400	1100	900	700	630	500	450	400	350	310	280	220	IPM	3	4	6	7	7	7	9	9	8	8	8	8	8	8
			0.5D	1.5D	SFM	105	90	90	105	90	90	105	105	105	105	105	90	90	100	95	RPM	1600	1100	900	800	560	500	450	400	350	280	250	220	180	IPM	2	3	5	6	6	6	7	7	6	6	6	6
	2	Non-alloy steel	0.5D	1.5D	SFM	80	75	80	80	75	70	80	80	80	70	70	80	85	RPM	1200	900	800	630	450	400	350	310	280	220	200	180	160	IPM	2	3	4	4	4	4	6	6	5	5	5	5	6	
			0.5D	1.5D	SFM	50	45	45	50	45	45	50	45	45	45	45	45	50	45	RPM	800	560	450	400	280	250	220	180	160	140	120	110	90	IPM	1	1	2	3	3	3	3	3	3	3	3	3	3
	3-4	Non-alloy steel	0.5D	1.5D	SFM	105	90	90	105	90	90	105	105	105	105	90	90	100	95	RPM	1600	1100	900	800	560	500	450	400	350	280	250	220	180	IPM	2	3	5	6	6	6	7	7	6	6	6	6	7
			0.5D	1.5D	SFM	80	75	80	80	75	70	80	80	80	70	70	80	85	RPM	1200	900	800	630	450	400	350	310	280	220	200	180	160	IPM	2	3	4	4	4	4	6	6	5	5	5	5	6	
	5	Non-alloy steel	0.5D	1.5D	SFM	50	45	45	50	45	45	50	45	45	45	45	50	45	RPM	800	560	450	400	280	250	220	180	160	140	120	110	90	IPM	1	1	2	3	3	3	3	3	3	3	3	3	3	
			0.5D	1.5D	SFM	105	90	90	105	90	90	105	105	105	105	90	90	100	95	RPM	1600	1100	900	800	560	500	450	400	350	280	250	220	180	IPM	2	3	5	6	6	6	7	7	6	6	6	6	7
	6	Low alloy steel	0.5D	1.5D	SFM	80	75	80	80	75	70	80	80	80	70	70	80	85	RPM	1200	900	800	630	450	400	350	310	280	220	200	180	160	IPM	2	3	4	4	4	4	6	6	5	5	5	5	6	
			0.5D	1.5D	SFM	50	45	45	50	45	45	50	45	45	45	45	45	50	45	RPM	800	560	450	400	280	250	220	180	160	140	120	110	90	IPM	1	1	2	3	3	3	3	3	3	3	3	3	3
7	Low alloy steel	0.5D	1.5D	SFM	105	90	90	105	90	90	105	105	105	105	90	90	100	95	RPM	1600	1100	900	800	560	500	450	400	350	280	250																	

### E2086, E2085, E2079, E2077, E2170, E2171, E2172, E2241, E2195, E2197 SERIES

### TiN Coated MULTI FLUTE ROUGHING - SIDE CUTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)															
						1/4	5/16	3/8	1/2	5/8	11/16	7/8	1	1 1/8	1 1/4	1 3/8	1 3/4	2			
P	1	Non-alloy steel	0.5D	1.5D	SFM	140	135	130	140	135	135	135	140	140	135	135	155	140			
					RPM	2160	1680	1320	1080	840	760	600	540	480	420	370	340	260			
					IPM	4	5	7	9	9	10	10	10	10	10	10	10	10	10		
	2		SFM	125	110	105	125	110	110	125	125	125	110	110	110	120	115				
			RPM	1920	1320	1080	960	670	600	540	480	420	340	300	260	220	220				
			IPM	3	4	6	7	7	7	8	8	8	8	8	7	8	8				
	3-4		SFM	95	90	95	100	90	85	95	95	100	85	85	85	100	100				
			RPM	1440	1080	960	760	540	480	420	370	340	260	240	220	190	190				
			IPM	3	3	5	5	5	5	7	7	6	6	6	6	6	7				
	5		SFM	65	55	55	65	55	55	60	55	55	55	50	60	55	55				
RPM		960	670	540	480	340	300	260	220	190	170	140	130	110	110						
IPM		1	2	3	3	3	3	4	4	4	4	4	4	4	4						
6	SFM	125	110	105	125	110	110	125	125	125	110	110	120	115	115						
	RPM	1920	1320	1080	960	670	600	540	480	420	340	300	260	220	220						
	IPM	3	4	6	7	7	7	8	8	8	8	8	7	8	8						
7	SFM	95	90	95	100	90	85	95	95	100	85	85	100	100	100						
	RPM	1440	1080	960	760	540	480	420	370	340	260	240	220	190	190						
	IPM	3	3	5	5	5	5	7	7	6	6	6	6	7	7						
8-9	SFM	65	55	55	65	55	55	60	55	55	55	50	60	55	55						
	RPM	960	670	540	480	340	300	260	220	190	170	140	130	110	110						
	IPM	1	2	3	3	3	3	4	4	4	4	4	4	4	4						
10	SFM	125	110	105	125	110	110	125	125	125	110	110	120	115	115						
	RPM	1920	1320	1080	960	670	600	540	480	420	340	300	260	220	220						
	IPM	3	4	6	7	7	7	8	8	8	8	8	7	8	8						
11.1	SFM	65	55	55	65	55	55	60	55	55	55	50	60	55	55						
	RPM	960	670	540	480	340	300	260	220	190	170	140	130	110	110						
	IPM	1	2	3	3	3	3	4	4	4	4	4	4	4	4						
N	21-22	Aluminum-wrought alloy	0.5D	1.5D	SFM	355	305	295	315	315	300	300	315	320	315	300	345	315			
					RPM	5400	3720	3000	2400	1920	1680	1320	1200	1080	960	840	760	600	600		
					IPM	10	11	17	19	21	22	22	21	24	24	22	21	18	18		
23-25	Aluminum-cast, alloyed	0.5D	1.5D	SFM	355	305	295	315	315	300	300	315	320	315	300	345	315				
				RPM	5400	3720	3000	2400	1920	1680	1320	1200	1080	960	840	760	600	600			
				IPM	10	11	17	19	21	22	22	21	24	24	22	21	18	18			

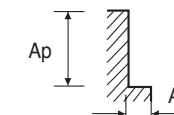


※ The Feed, in long & extra long types, should be reduced by around 50%.

### E2086, E2085, E2079, E2077, E2170, E2171, E2172, E2241, E2195, E2197 SERIES

### TiN Coated MULTI FLUTE ROUGHING - SIDE CUTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)															
						1/4	5/16	3/8	1/2	5/8	11/16	7/8	1	1 1/8	1 1/4	1 3/8	1 3/4	2			
P	1	Non-alloy steel	0.5D	1.5D	SFM	155	150	140	155	150	145	150	145	150	145	155	150				
					RPM	2340	1820	1430	1170	910	820	650	590	520	460	400	360	290			
					IPM	4	5	8	9	9	11	11	11	11	11	10	10	10	10		
	2		SFM	135	115	115	135	120	115	135	135	135	120	115	130	125	125				
			RPM	2080	1430	1170	1040	730	650	590	520	460	360	330	290	230	230				
			IPM	3	4	6	7	7	7	9	9	8	8	8	8	9	9				
	3-4		SFM	100	95	100	105	95	95	105	105	105	95	95	105	110	110				
			RPM	1560	1170	1040	820	590	520	460	400	360	290	260	230	210	210				
			IPM	3	3	6	6	6	6	7	7	7	7	7	6	7	7				
	5		SFM	70	60	55	70	60	60	65	60	60	60	55	65	60	60				
RPM		1040	730	590	520	360	330	290	230	210	180	160	140	120	120						
IPM		2	2	3	4	4	4	4	4	4	4	4	4	4	4						
6	SFM	135	115	115	135	120	115	135	135	135	120	115	130	125	125						
	RPM	2080	1430	1170	1040	730	650	590	520	460	360	330	290	230	230						
	IPM	3	4	6	7	7	7	9	9	8	8	8	8	9	9						
7	SFM	100	95	100	105	95	95	105	105	105	95	95	105	110	110						
	RPM	1560	1170	1040	820	590	520	460	400	360	290	260	230	210	210						
	IPM	3	3	6	6	6	6	7	7	7	7	7	6	7	7						
8-9	SFM	70	60	55	70	60	60	65	60	60	60	55	65	60	60						
	RPM	1040	730	590	520	360	330	290	230	210	180	160	140	120	120						
	IPM	2	2	3	4	4	4	4	4	4	4	4	4	4	4						
10	SFM	135	115	115	135	120	115	135	135	135	120	115	130	125	125						
	RPM	2080	1430	1170	1040	730	650	590	520	460	360	330	290	230	230						
	IPM	3	4	6	7	7	7	9	9	8	8	8	8	9	9						
11.1	SFM	70	60	55	70	60	60	65	60	60	60	55	65	60	60						
	RPM	1040	730	590	520	360	330	290	230	210	180	160	140	120	120						
	IPM	2	2	3	4	4	4	4	4	4	4	4	4	4	4						
N	21-22	Aluminum-wrought alloy	0.5D	1.5D	SFM	385	330	320	340	340	330	330	340	345	340	375	340				
					RPM	5850	4030	3250	2600	2080	1820	1430	1300	1170	1040	910	820	650			
					IPM	10	12	18	21	23	24	24	23	26	26	24	23	19	19		
23-25	Aluminum-cast, alloyed	0.5D	1.5D	SFM	385	330	320	340	340	330	330	340	345	340	375	340					
				RPM	5850	4030	3250	2600	2080	1820	1430	1300	1170	1040	910	820	650				
				IPM	10	12	18	21	23	24	24	23	26	26	24	23	19	19			

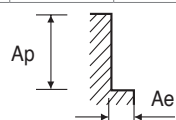


※ The Feed, in long & extra long types, should be reduced by around 50%.



**E2193, E2125 SERIES** MULTI FLUTE BALL ROUGHING - **SIDE CUTTING**

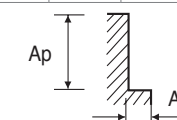
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)							
						5/16	3/8	1/2	5/8	3/4	1	1 1/4	1 3/4
P	1	Non-alloy steel	0.5D	1.5D	SFM	115	110	120	115	110	120	115	130
					IPT	.0010	.0014	.0019	.0025	.0031	.0040	.0038	.0048
					RPM	1400	1100	900	700	560	450	350	280
					IPM	4	6	7	7	7	9	8	8
	2		SFM	90	90	105	90	90	105	90	100		
			IPT	.0009	.0014	.0019	.0027	.0033	.0035	.0036	.0045		
			RPM	1100	900	800	560	450	400	280	220		
			IPM	3	5	6	6	6	7	6	6		
	3-4		SFM	75	80	80	75	80	80	70	80		
			IPT	.0011	.0013	.0016	.0022	.0025	.0039	.0038	.0046		
			RPM	900	800	630	450	400	310	220	180		
IPM		3	4	4	4	4	6	5	5				
5	SFM	45	45	50	45	45	45	45	50				
	IPT	.0006	.0011	.0019	.0027	.0034	.0033	.0036	.0045				
	RPM	560	450	400	280	220	180	140	110				
	IPM	1	2	3	3	3	3	3	3				
6	SFM	90	90	105	90	90	105	90	100				
	IPT	.0009	.0014	.0019	.0027	.0033	.0035	.0036	.0045				
	RPM	1100	900	800	560	450	400	280	220				
	IPM	3	5	6	6	6	7	6	6				
7	SFM	75	80	80	75	80	80	70	80				
	IPT	.0011	.0013	.0016	.0022	.0025	.0039	.0038	.0046				
	RPM	900	800	630	450	400	310	220	180				
	IPM	3	4	4	4	4	6	5	5				
8-9	SFM	45	45	50	45	45	45	45	50				
	IPT	.0006	.0011	.0019	.0027	.0034	.0033	.0036	.0045				
	RPM	560	450	400	280	220	180	140	110				
	IPM	1	2	3	3	3	3	3	3				
10	SFM	90	90	105	90	90	105	90	100				
	IPT	.0009	.0014	.0019	.0027	.0033	.0035	.0036	.0045				
	RPM	1100	900	800	560	450	400	280	220				
	IPM	3	5	6	6	6	7	6	6				
11.1	SFM	45	45	50	45	45	45	45	50				
	IPT	.0006	.0011	.0019	.0027	.0034	.0033	.0036	.0045				
	RPM	560	450	400	280	220	180	140	110				
	IPM	1	2	3	3	3	3	3	3				
21-22	SFM	255	245	260	260	235	260	260	290				
	IPT	.0010	.0010	.0020	.0028	.0042	.0036	.0042	.0048				
	RPM	3100	2500	2000	1600	1200	1000	800	630				
	IPM	9	10	16	18	20	18	20	18				
23-25	SFM	255	245	260	260	235	260	260	290				
	IPT	.0010	.0010	.0020	.0028	.0042	.0036	.0042	.0048				
	RPM	3100	2500	2000	1600	1200	1000	800	630				
	IPM	9	10	16	18	20	18	20	18				



※ The Feed, in long & extra long types, should be reduced by around 50%.

**E2248 SERIES** MULTI FLUTE ROUGHING & FINISHING - **SIDE CUTTING**

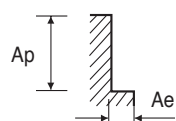
ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)											
						1/4	5/16	3/8	1/2	5/8	11/16	7/8	1	1 1/4	1 3/8	2 (6 & 8 FL)	
P	1	Non-alloy steel	0.5D	1.5D	SFM	120	115	110	120	115	115	115	120	115	110	125	
					IPT	.0004	.0005	.0011	.0017	.0021	.0024	.0028	.0031	.0033	.0038	.0035 / .0026	
					RPM	1800	1400	1100	900	700	630	500	450	350	310	240	
					IPM	3	3	5	6	6	7	7	7	7	7	5	
	2		SFM	85	90	90	105	90	105	105	90	100	100	100			
			IPT	.0004	.0005	.0011	.0013	.0018	.0020	.0022	.0025	.0030	.0033	.0035 / .0026			
			RPM	1300	1100	900	800	560	500	450	400	280	250	190			
			IPM	2	2	4	4	4	4	5	5	5	5	4			
	3-4		SFM	80	75	80	80	75	80	80	70	80	80	80			
			IPT	.0004	.0006	.0013	.0016	.0022	.0025	.0023	.0026	.0030	.0033	.0035 / .0025			
			RPM	1200	900	800	630	450	400	350	310	220	200	150			
IPM		2	2	4	4	4	4	4	4	4	4	3					
5	SFM	50	45	45	50	45	45	50	45	45	45	60					
	IPT	.0003	.0004	.0011	.0013	.0018	.0020	.0027	.0033	.0036	.0042	.0045 / .0034					
	RPM	800	560	450	400	280	250	220	180	140	120	110					
	IPM	1	1	2	2	2	2	3	3	3	3	3					
6	SFM	85	90	90	105	90	90	105	105	90	90	100					
	IPT	.0004	.0005	.0011	.0013	.0018	.0020	.0022	.0025	.0030	.0033	.0035 / .0026					
	RPM	1300	1100	900	800	560	500	450	400	280	250	190					
	IPM	2	2	4	4	4	4	5	5	5	5	4					
7	SFM	80	75	80	80	75	80	80	70	80	80	80					
	IPT	.0004	.0006	.0013	.0016	.0022	.0025	.0023	.0026	.0030	.0033	.0035 / .0025					
	RPM	1200	900	800	630	450	400	350	310	220	200	150					
	IPM	2	2	4	4	4	4	4	4	4	4	3					
8-9	SFM	50	45	45	50	45	45	50	45	45	45	60					
	IPT	.0003	.0004	.0011	.0013	.0018	.0020	.0027	.0033	.0036	.0042	.0045 / .0034					
	RPM	800	560	450	400	280	250	220	180	140	120	110					
	IPM	1	1	2	2	2	2	3	3	3	3	3					
10	SFM	85	90	90	105	90	90	105	105	90	90	100					
	IPT	.0004	.0005	.0011	.0013	.0018	.0020	.0022	.0025	.0030	.0033	.0035 / .0026					
	RPM	1300	1100	900	800	560	500	450	400	280	250	190					
	IPM	2	2	4	4	4	4	5	5	5	5	4					
11.1	SFM	50	45	45	50	45	45	50	45	45	45	60					
	IPT	.0003	.0004	.0011	.0013	.0018	.0020	.0027	.0033	.0036	.0042	.0045 / .0034					
	RPM	800	560	450	400	280	250	220	180	140	120	110					
	IPM	1	1	2	2	2	2	3	3	3	3	3					
21-22	SFM	295	255	245	260	260	250	250	260	260	250	260					
	IPT	.0003	.0006	.0011	.0016	.0022	.0027	.0027	.0028	.0033	.0036	.0037 / .0028					
	RPM	4500	3100	2500	2000	1600	1400	1100	1000	800	700	500					
	IPM	6	7	11	13	14	15	15	14	16	15	11					
23-25	SFM	295	255	245	260	260	250	250	260	260	250	260					
	IPT	.0003	.0006	.0011	.0016	.0022	.0027	.0027	.0028	.0033	.0036	.0037 / .0028					
	RPM	4500	3100	2500	2000	1600	1400	1100	1000	800	700	500					
	IPM	6	7	11	13	14	15	15	14	16	15	11					



※ The Feed, in long & extra long types, should be reduced by around 50%.

### E2191, E2226, E2192 SERIES 3 FLUTE ROUGHING FOR ALUMINIUM - SIDE CUTTING

ISO	VDI 3323	Material Description	Ae	Ap	Parameter	Diameter (Ø)										
						1/4	5/16	3/8	1/2	5/8	3/4	7/8	1	1 1/4	1 1/2	
P	1	Non-alloy steel	0.5D	1.5D	SFM	120	115	110	120	115	115	115	120	115	110	
					IPT	.0006	.0010	.0018	.0026	.0033	.0037	.0060	.0067	.0076	.0086	
					RPM	1800	1400	1100	900	700	630	500	450	350	310	
	2		SFM	105	90	90	105	90	105	90	105	90	90			
			IPT	.0004	.0009	.0019	.0025	.0036	.0040	.0052	.0058	.0071	.0080			
			RPM	1600	1100	900	800	560	500	450	400	280	250			
	3-4		SFM	80	75	80	80	75	70	80	80	70	70			
			IPT	.0006	.0011	.0017	.0021	.0030	.0033	.0057	.0065	.0076	.0083			
			RPM	1200	900	800	630	450	400	350	310	220	200			
	5		SFM	50	45	45	50	45	45	50	45	45	45			
			IPT	.0004	.0006	.0015	.0017	.0024	.0027	.0045	.0056	.0071	.0083			
RPM		800	560	450	400	280	250	220	180	140	120					
6	SFM	105	90	90	105	90	90	105	105	90	90					
	IPT	.0004	.0009	.0019	.0025	.0036	.0040	.0052	.0058	.0071	.0080					
	RPM	1600	1100	900	800	560	500	450	400	280	250					
7	SFM	80	75	80	80	75	70	80	80	70	70					
	IPT	.0006	.0011	.0017	.0021	.0030	.0033	.0057	.0065	.0076	.0083					
	RPM	1200	900	800	630	450	400	350	310	220	200					
8-9	SFM	50	45	45	50	45	45	50	45	45	45					
	IPT	.0004	.0006	.0015	.0017	.0024	.0027	.0045	.0056	.0071	.0083					
	RPM	800	560	450	400	280	250	220	180	140	120					
10	SFM	105	90	90	105	90	90	105	105	90	90					
	IPT	.0004	.0009	.0019	.0025	.0036	.0040	.0052	.0058	.0071	.0080					
	RPM	1600	1100	900	800	560	500	450	400	280	250					
11.1	SFM	50	45	45	50	45	45	50	45	45	45					
	IPT	.0004	.0006	.0015	.0017	.0024	.0027	.0045	.0056	.0071	.0083					
	RPM	800	560	450	400	280	250	220	180	140	120					
21-22	SFM	295	255	245	260	260	250	250	260	260	250					
	IPT	.0004	.0008	.0015	.0022	.0029	.0036	.0045	.0047	.0067	.0071					
	RPM	4500	3100	2500	2000	1600	1400	1100	1000	800	700					
23-25	SFM	295	255	245	260	260	250	250	260	260	250					
	IPT	.0004	.0008	.0015	.0022	.0029	.0036	.0045	.0047	.0067	.0071					
	RPM	4500	3100	2500	2000	1600	1400	1100	1000	800	700					



※ The Feed, in long & extra long types, should be reduced by around 50%.

### E2237, E1237 SERIES 4 FLUTE CORNER ROUNDING

ISO	VDI 3323	Material Description	Parameter	Diameter (Ø)													
				7/16	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2	1 5/8	1 15/16	1 7/8	
P	1	Non-alloy steel	SFM	65	65	65	65	65	65	65	65	65	65	65	65		
			IPT	.0008	.0008	.0011	.0012	.0014	.0016	.0017	.0019	.0019	.0021	.0022	.0023	.0023	
			RPM	580	500	400	340	290	250	220	200	180	170	160	130	130	
	2		SFM	50	50	50	50	50	50	50	50	50	50	50	50	50	
			IPT	.0008	.0008	.0011	.0012	.0014	.0016	.0016	.0018	.0018	.0021	.0021	.0023	.0023	
			RPM	430	370	300	250	210	190	170	150	140	120	120	100	100	
	3-4		SFM	35	35	35	35	35	35	35	35	35	35	35	35	35	
			IPT	.0009	.0010	.0013	.0015	.0018	.0019	.0023	.0025	.0028	.0031	.0031	.0035	.0036	
			RPM	290	250	200	170	140	130	110	100	90	80	80	70	70	
	5		SFM	50	45	45	50	45	45	50	45	45	50	45	45	45	
			IPT	.0004	.0006	.0015	.0017	.0024	.0027	.0045	.0056	.0071	.0083	.0083	.0083	.0083	
RPM		800	560	450	400	280	250	220	180	140	120	120	100	100			
6	SFM	50	50	50	50	50	50	50	50	50	50	50	50	50			
	IPT	.0008	.0008	.0011	.0012	.0014	.0016	.0016	.0018	.0018	.0021	.0021	.0023	.0023			
	RPM	430	370	300	250	210	190	170	150	140	120	120	100	100			
7	SFM	35	35	35	35	35	35	35	35	35	35	35	35	35			
	IPT	.0009	.0010	.0013	.0015	.0018	.0019	.0023	.0025	.0028	.0031	.0031	.0035	.0036			
	RPM	290	250	200	170	140	130	110	100	90	80	80	70	70			
8-9	SFM	50	45	45	50	45	45	50	45	45	50	45	45	45			
	IPT	.0004	.0006	.0015	.0017	.0024	.0027	.0045	.0056	.0071	.0083	.0083	.0083	.0083			
	RPM	800	560	450	400	280	250	220	180	140	120	120	100	100			
10	SFM	50	50	50	50	50	50	50	50	50	50	50	50	50			
	IPT	.0008	.0008	.0011	.0012	.0014	.0016	.0016	.0018	.0018	.0021	.0021	.0023	.0023			
	RPM	430	370	300	250	210	190	170	150	140	120	120	100	100			
11.1	SFM	50	45	45	50	45	45	50	45	45	50	45	45	45			
	IPT	.0004	.0006	.0015	.0017	.0024	.0027	.0045	.0056	.0071	.0083	.0083	.0083	.0083			
	RPM	800	560	450	400	280	250	220	180	140	120	120	100	100			
21-22	SFM	295	295	295	295	295	295	295	295	295	295	295	295	295			
	IPT	.0009	.0009	.0013	.0013	.0016	.0015	.0018	.0019	.0021	.0023	.0022	.0022	.0025			
	RPM	2580	2250	1800	1500	1290	1130	1000	900	820	750	690	580	600			
23-25	SFM	295	295	295	295	295	295	295	295	295	295	295	295	295			
	IPT	.0009	.0009	.0013	.0013	.0016	.0015	.0018	.0019	.0021	.0023	.0022	.0022	.0025			
	RPM	2580	2250	1800	1500	1290	1130	1000	900	820	750	690	580	600			

※ The Feed, in long & extra long types, should be reduced by around 50%.







Global Cutting Tool Leader **YG-1**



**MILLING**



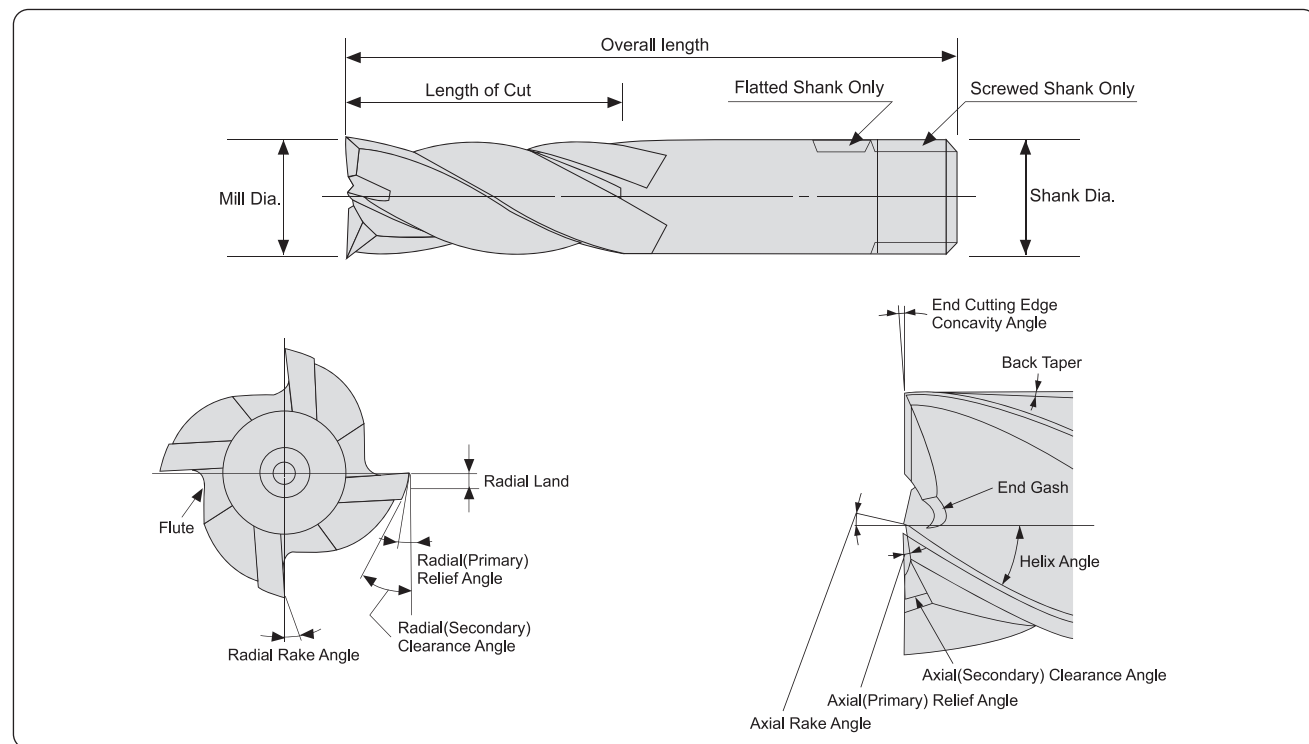
Being the best through innovation



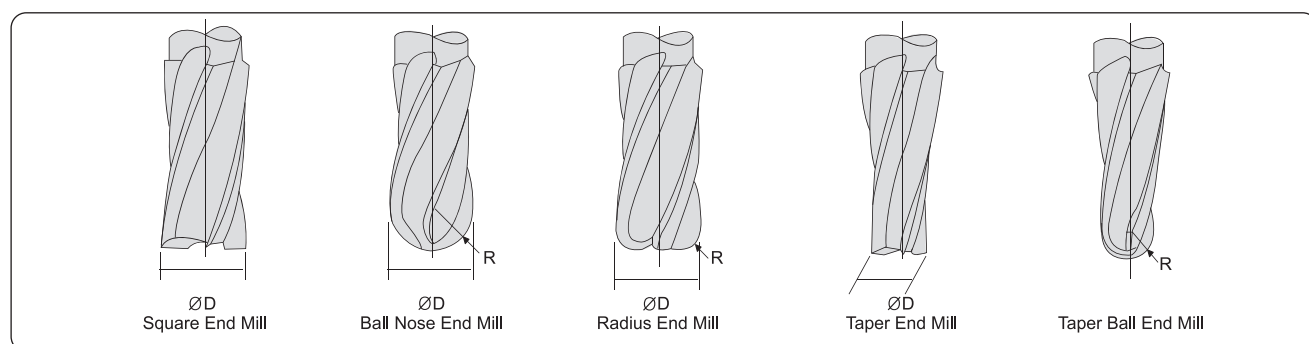
**END MILLS**

**TECHNICAL DATA**

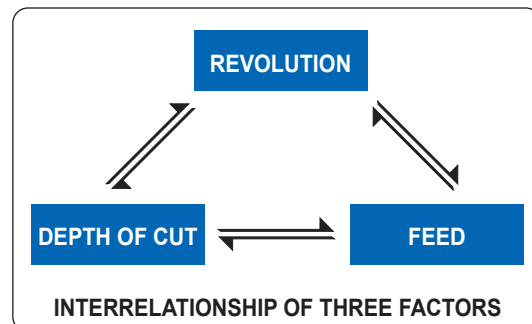
**1 Names of End Mill Parts**



**2 Type of End Mill**



Speed, feed and depth of cut are the most important factors to consider for best results in milling. Improper feeds and speeds often cause low production, poor work quality and unnecessary damage to the cutter. This section covers the basic principles of speed and feed selection for milling cutters and end mills. It will serve as a guide in setting-up new milling jobs.



**3 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”.

$$\text{Revolutions per Minute } N = \frac{1000V}{\pi \times D}$$

V : Cutting Speed(m/min)  
D : Diameter of Tool(mm)  
N : Revolution per minute(rev/min)  
π : 3.1416

They will have to be tempered to suit the conditons ON THE JOB. For example:

Use Lower Speed Ranges for	Use Higher Speed Ranges for
<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>

**4 Feeds**

Feed is usually measured in millimeters per minute. It is the product of feed per tooth times revolution per minute times the number of teeth in the cutter. Due to variations in cutter sizes, numbers of teeth and revolutions per minute, all feed rates should be calculated from feed per tooth. Feed per tooth is the basis of all feed rates per minute, whether the cutters are large or small, fine or coarse tooth, and are run at high or low peripheral speed. Because feed per tooth affects chip thickness. It is a very important factor in cutter life.

Highest possible feed per tooth will usually give longer cutter life between grinds and greater production per grind. Excessive feeds may over load the cutter teeth and cause breakage or chipping of the cutting edges. The following factors should be kept in mind when using the recommended starting feed per tooth.

Feed in milimeters per Minute  
F.M = F.R.×R.P.M

F.R. : Feed per Revolutions in milimeters  
R.P.M .: Revolutions per Minutes

The following factors should be kept in mind when using the recommended stating feed per tooth.

Use Higher Feeds For	Use Lower Feeds For
<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.

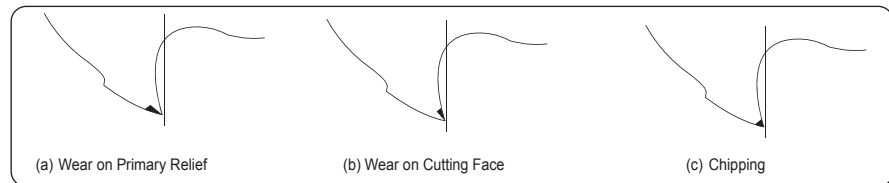


Fig. 1. Damages of Cutting Edge

**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.

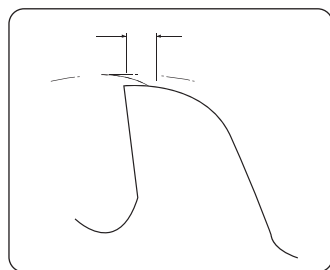


Fig. 2. Wear Land



**7 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 arc 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.

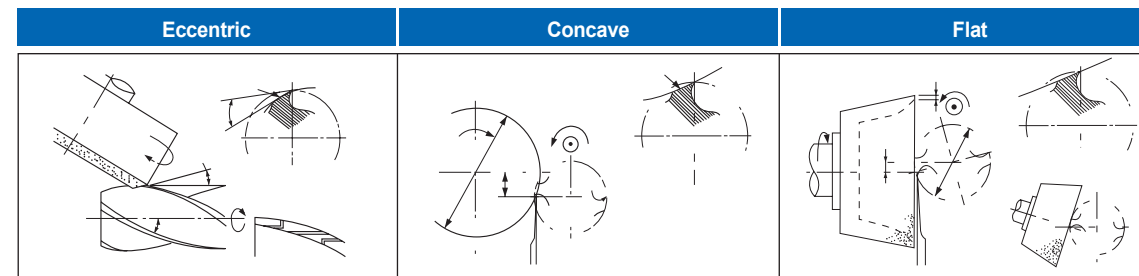


Fig. 3. Three Types of Primary Relief

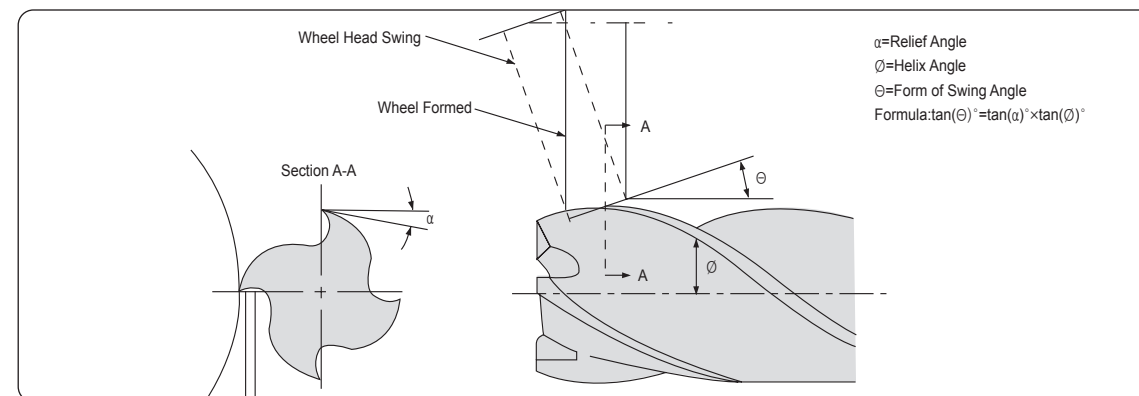


Fig. 4. Tothing of Eccentric Relief Angle

**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( $\alpha$ 1)	Clearance Angles( $\alpha$ 2)
	Min	Max.		15° Helix	30° Helix	60° Helix		
-			-	*Angle	*Angle	*Angle	*Angle	*Angle
1/8	.0040	.0052	.015	4° 42'	10° 02'	27° 58'	17° 03'	25°
1/4	.0035	.0050	.020	3° 15'	6° 59'	20° 12'	12° 00'	25°
1/2	.0040	.0053	.025	2° 51'	6° 07'	17° 51'	10° 32'	25°
1	.0038	.0055	1/32	2° 16'	4° 54'	14° 27'	8° 27'	25°
1-1/2	.0033	.0050	1/32	2° 02'	4° 22'	12° 57'	7° 33'	25°
2	.0033	.0050	1/32	2° 02'	4° 22'	12° 57'	7° 33'	25°

The actual at the radial relief angle is normally kept within the range shown but may be varied to suit the cutter material, the work material and the operating conditions.

\* Angle is calculated from the basic mean at the radical angle.

**8 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.

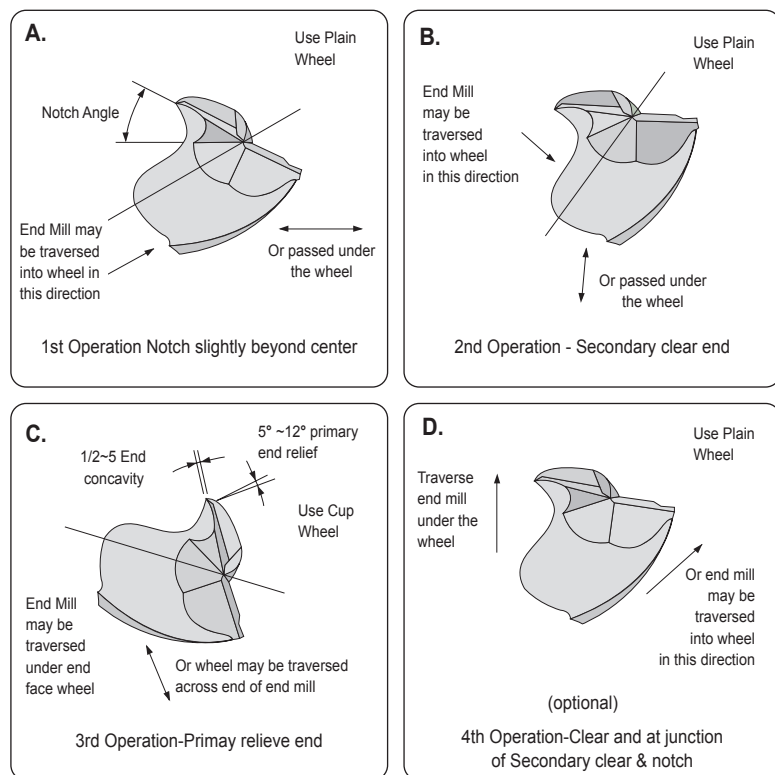


Fig 5. PROCEDURE FOR SHARPENING END OF 2 FLUTE SQUARE END MILLS

**9 Inspection**

The inspection is calculated by using the formula shown in Table 1.

**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 Figure 6
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.

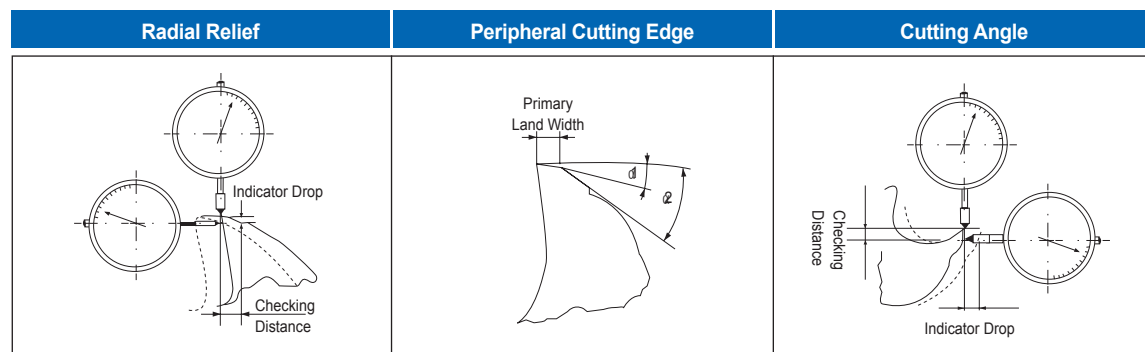
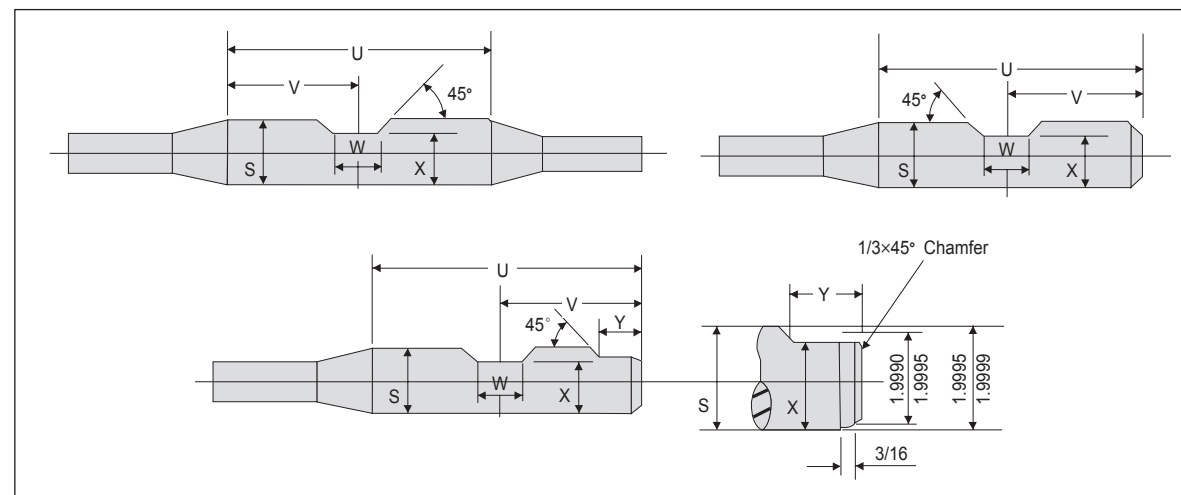


Fig. 6. Indicator Set-Up for Checking

**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

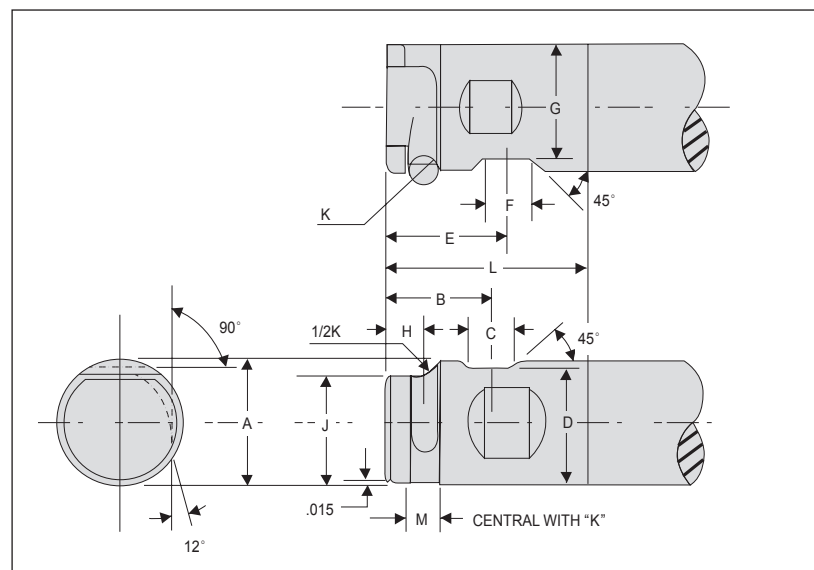
**12 Tolerances**

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.

### 13 Combination Shanks for End Mills

Right hand End Mill shank shown. For left hand End Mills flat "F" and pin groove "K" should be located 180° from that shown, maintaining 12° relationship of flat "F" and groove "K"



### 14 Dimensions

All dimensions are given in inches.

Diameter of Shank A	Length of Shank L	B	C	D	E	F	G	H	J	K	M
1-1/2	2-11/16	1-3/16	0.515	1.406	1-1/2	0.515	1.371	9/16	1.302	0.377	7/16
2	3-1/4	1-23/32	0.700	1.900	1-3/4	0.700	1.809	5/8	1.772	0.440	1/2
2-1/2	3-1/2	1-15/16	0.700	2.400	2	0.700	2.312	3/4	2.245	0.503	9/16

### 15 Tolerances

Element	Direction	Tolerance
Diameter of Shank, A	minus	.0001 to .0005
Length of Shank, L	plus or minus	1/32
Dimension, B	plus or minus	1/64
Dimension, C	plus	.002
Dimension, D	minus	1/64
Dimension, E	plus or minus	1/64
Dimension, F	plus or minus	.005
Dimension, G	minus	1/64
Dimension, H	plus	1/64
Dimension, J	plus or minus	.002
Dimension, K	plus	.003

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### 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>Decrease feed rate.</li> <li>Decrease projection amount</li> <li>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>Decrease feed rate</li> <li>Control wear → replace tool early</li> <li>Replace chuck or collet</li> <li>Decrease projection amount</li> <li>Carry out honing</li> <li>If 4 flute, reduce to 2 flute(clogging of chipping)</li> <li>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>Utilize circular interpolation(in case of NC machine) or temporarily stop feed(Dowelling)</li> <li>Reduce feed rate before and after change of directions</li> <li>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>Carry out chamfering or nose with hand lapper.</li> <li>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>Down cut → Up cut</li> <li>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>Carry out honing. Or enlarge.</li> <li>Change number of rotation(in case machine vibrates)</li> <li>Increase cutting speed</li> <li>In ease of squeaking noise during cutting, increase feed.</li> <li>If dry cutting use cutting fluid or blow air.</li> <li>Replace chuck or collet</li> <li>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>Decrease feed rate</li> <li>If 4 flute reduce to 2 flute</li> <li>Carry out honing. Or enlarge</li> <li>Replace chuck or collet</li> <li>Reduce cutting speed</li> <li>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>Reduce cutting speed</li> <li>Up cut → Down cut</li> <li>Increase feed</li> <li>Utilize wet cutting or air</li> <li>If reground tool, improve surface roughness of flank.</li> </ol>





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>